UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 20-F

☐ **REGISTRATION STATEMENT PURSUANT TO SECTION 12(b) OR (g) OF THE SECURITIES EXCHANGE ACT OF 1934**

OR

☒ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the fiscal year ended December 31, 2020

OR

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

OR

☐ **SHELL COMPANY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

Commission File Number: 001-36515

MATERIALISE NV
(Exact name of Registrant as specified in its charter)

Not Applicable
(Translation of Registrant's name into English)

Kingdom of Belgium
(Jurisdiction of incorporation or organization)

Technologielaan 15, 3001 Leuven, Belgium
(Address of principal executive offices)

Peter Leys, telephone +32 (16) 39 66 11, facsimile +32 (16) 39 66 00, Technologielaan 15, 3001 Leuven, Belgium
(Name, Telephone, E-mail and/or Facsimile number and Address of Company Contact Person)

Securities registered or to be registered pursuant to Section 12(b) of the Act:

Title of each class	Name of each exchange on which registered
American Depositary Shares, each representing one Ordinary Share, no nominal value per share	**The Nasdaq Stock Market LLC**
Ordinary Shares, no nominal value per share*	**The Nasdaq Stock Market LLC**

* Not for trading but only in connection with the registration of the American Depositary Shares pursuant to the requirements of the Securities and Exchange Commission.

Securities registered or to be registered pursuant to Section 12(g) of the Act: None.

Securities for which there is a reporting obligation pursuant to Section 15(d) of the Act: None.

The number of outstanding shares of each of the issuer's classes of capital or common stock as of December 31, 2020 was: 54,169,257 Ordinary Shares

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. ☐ Yes ☒ No

If this report is an annual or transition report, indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934. ☐ Yes ☒ No

Note – Checking the box above will not relieve any registrant required to file reports pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934 from their obligations under those Sections.

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. ☒ Yes ☐ No

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). ☒ Yes ☐ No

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or an emerging growth company. See the definition of “large accelerated filer,” “accelerated filer,” and “emerging growth company” in Rule 12b-2 of the Exchange Act.

Large accelerated filer	☐	Accelerated filer	☒
Non accelerated filer	☐	Emerging growth company	☐

If an emerging growth company that prepares its financial statements in accordance with U.S. GAAP, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards† provided pursuant to Section 13(a) of the Exchange Act. ☐

† The term “new or revised financial accounting standard” refers to any update issued by the Financial Accounting Standards Board to its Accounting Standards Codification after April 5, 2012.

Indicate by check mark whether the registrant has filed a report on and attestation to its management’s assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report. ☒

Indicate by check mark which basis of accounting the registrant has used to prepare the financial statements included in this filing:

U.S. GAAP ☐	International Financial Reporting Standards as issued by the International Accounting Standards Board ☒	Other ☐

If “Other” has been checked in response to the previous question, indicate by check mark which financial statement item the registrant has elected to follow. ☐ Item 17 ☐ Item 18

If this is an annual report, indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). ☐ Yes ☒ No

(APPLICABLE ONLY TO ISSUERS INVOLVED IN BANKRUPTCY PROCEEDINGS DURING THE PAST FIVE YEARS)

Indicate by check mark whether the registrant has filed all documents and reports required to be filed by Sections 12, 13 or 15(d) of the Securities Exchange Act of 1934 subsequent to the distribution of securities under a plan confirmed by a court. ☐ Yes ☐ No

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INTRODUCTION

Except as otherwise required by the context, references to (i) "Materialise," "Company," "we," "us" and "our" are to Materialise NV and its subsidiaries, (ii) "ACTech" are to ACTech Holding GmbH and its subsidiaries, which we acquired in 2017, (iii) "Engimplan" are to Engimplan Engenharia De Implante Indústria E Comércio Ltda., in which we acquired a controlling interest in 2019 and in which we acquired the remaining interest in 2020, making us Engimplan's sole shareholder (through our Brazilian subsidiary), and (iv) "RS Print" are to RSPrint NV, a joint venture we established in 2014 and in which we acquired the remaining interest in 2020, together with substantially all of the assets of RSScan International NV, or RS Scan, making us RS Print's sole shareholder.

Our trademark portfolio contained 149 registered trademarks and 10 pending trademark applications as of December 31, 2020. All other trademarks or trade names referred to in this annual report are the property of their respective owners. Solely for convenience, the trademarks and trade names in this annual report are referred to without the ® and ™ symbols, but such references should not be construed as any indicator that their respective owners will not assert, to the fullest extent under applicable law, their rights thereto.

All references in this annual report to "U.S. dollars" or "$" are to the legal currency of the United States and all references to "€" or "euro" are to the currency introduced at the start of the third stage of the European economic and monetary union pursuant to the treaty establishing the European Community, as amended.

SPECIAL NOTE REGARDING FORWARD-LOOKING INFORMATION

This annual report includes certain forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, or the Securities Act, and Section 21E of the Securities Exchange Act of 1934, as amended, or the Exchange Act, concerning our business, operations and financial performance and condition as well as our plans, objectives and expectations for our business operations and financial performance and condition. Any statements that are not of historical facts may be deemed to be forward-looking statements. You can identify these forward-looking statements by words such as "believes," "estimates," "anticipates," "expects," "plans," "intends," "may," "could," "might," "will," "should," "aims," or other similar expressions that convey uncertainty of future events or outcomes. Forward-looking statements appear in a number of places throughout this annual report and include statements regarding our intentions, beliefs, assumptions, projections, outlook, analyses or current expectations concerning, among other things, our intellectual property position, research and development projects, acquisitions, results of operations, cash needs, spending of the remaining net proceeds from our initial public offering, capital expenditures, financial condition, liquidity, prospects, growth and strategies, regulatory approvals and clearances, the markets and industry in which we operate and the trends and competition that may affect the markets, industry or us. In particular, under "Item 5. Operating and Financial Review and Prospects—D. Trend Information" of this annual report and in the notes to our audited consolidated financial statements, we discuss, based on our current assessment of the novel coronavirus (COVID-19), or coronavirus, pandemic, how our business, results of operations, and financial condition could be impacted during the year 2021 and beyond.

By their nature, forward-looking statements involve risks and uncertainties because they relate to events, competitive dynamics and industry change, and depend on economic circumstances that may or may not occur in the future or may occur on longer or shorter timelines than anticipated. Although we believe that we have a reasonable basis for each forward-looking statement contained in this annual report, we caution you that forward-looking statements are not guarantees of future performance and involve known and unknown risks, uncertainties and other factors that are in some cases beyond our control. All of our forward-looking statements are subject to risks and uncertainties that may cause our actual results to differ materially from our expectations.

Actual results could differ materially from our forward-looking statements due to a number of factors, including, without limitation, risks related to:

- our ability to enhance and adapt our software, products and services to meet changing technology and customer needs;
- fluctuations in our revenue and results of operations;
- impacts on our business, financial condition and results of operations from the current global health crisis related to the coronavirus pandemic;
- our ability to operate in a highly competitive and rapidly changing industry;
- our ability to adequately increase demand for our products and services;
- our collaborations, in-licensing arrangements, joint ventures, strategic alliances or partnerships with third parties;

- our ability to integrate acquired businesses or technologies effectively;
- our dependence upon sales to certain industries;
- our relationships with suppliers;
- our ability to attract and retain senior management and other key employees;
- any disruptions to our service center operations, including by accidents, natural disasters or otherwise;
- our ability to raise additional capital on attractive terms, or at all, if needed to meet our growth strategy;
- our ability to adequately protect our intellectual property and proprietary technology;
- our international operations;
- our ability to comply with applicable governmental laws and regulations to which our products, services and operations are subject; and
- other risk factors as set forth under "Item 3. Key Information—D. Risk Factors."

Any forward-looking statements that we make in this annual report speak only as of the date of such statement, and we undertake no obligation to update such statements to reflect events or circumstances after the date of this annual report or to reflect the occurrence of unanticipated events. Comparisons of results for current and any prior periods are not intended to express any future trends or indications of future performance, unless expressed as such, and should only be viewed as historical data. You should, however, review the factors and risks we describe in the reports we will file from time to time with the U.S. Securities and Exchange Commission, or the SEC, after the date of this annual report. See "Item 10. Additional Information—H. Documents on Display."

You should also read carefully the factors described in "Item 3. Key Information—D. Risk Factors" and elsewhere in this annual report to better understand the risks and uncertainties inherent in our business and underlying any forward-looking statements. As a result of these factors, we cannot assure you that the forward-looking statements in this annual report will prove to be accurate. Furthermore, if our forward-looking statements prove to be inaccurate, the inaccuracy may be material. In light of the significant uncertainties in these forward-looking statements, you should not regard these statements as a representation or warranty by us or any other person that we will achieve our objectives and plans in any specified timeframe, or at all.

PART I

ITEM 1. IDENTITY OF DIRECTORS, SENIOR MANAGEMENT AND ADVISERS

Not applicable.

ITEM 2. OFFER STATISTICS AND EXPECTED TIMETABLE

Not applicable.

ITEM 3. KEY INFORMATION

A. Selected Financial Data

The tables below contain a summary of our financial data as of and for years ended December 31, 2020, 2019, 2018, 2017 and 2016, which have been derived from our consolidated financial statements prepared in accordance with International Financial Reporting Standards, as issued by the International Accounting Standards Board, which we refer to as IFRS. Our consolidated financial statements and the related notes as of and for the years ended December 31, 2020, 2019 and 2018 appear elsewhere in this annual report.

Our historical results are not necessarily indicative of the financial results to be expected in any future periods. You should read this information in conjunction with our consolidated financial statements and related notes included elsewhere in this annual report, as well as the section entitled “Item 5. Operating and Financial Review and Prospects.”

The company has applied IFRS16 as from January 1, 2019 by using the modified retrospective approach, not restating comparatives for the 2018 reporting period. The reclassifications and the adjustments arising from the new leasing standard are recognized in the opening balance sheet on January 1, 2019.

Consolidated Statements of Financial Position Data:

	As of December 31,				
in 000€	2020	2019*	2018	2017	2016
Inventories and contracts in progress	10,043	12,696	9,986	11,027	7,870
Trade receivables	30,871	40,977	36,891	35,582	27,479
Cash and cash equivalents	111,538	128,897	115,506	43,175	55,912
Total assets	327,667	349,401	313,225	234,678	161,920
Total liabilities	194,563	206,619	177,236	157,624	82,887
Net assets(1)	133,104	142,782	135,989	77,054	79,033

* The year 2019 has been restated to reflect the final accounting of the business combination with Engimplan.

(1) Net assets represents total assets less total liabilities.

Consolidated Income Statements Data:

in 000€	For the year ended December 31, 2020	2019*	2018	2017	2016
Revenue	170,449	196,679	184,721	142,573	114,477
Cost of sales	(76,446)	(87,052)	(82,299)	(62,952)	(46,706)
Gross profit	**94,003**	**109,627**	**102,422**	**79,621**	**67,771**
Research and development expenses	(27,104)	(23,348)	(22,416)	(19,959)	(17,682)
Sales and marketing expenses	(44,636)	(52,989)	(46,303)	(38,935)	(36,153)
General and administrative expenses	(29,337)	(31,786)	(32,310)	(24,876)	(20,041)
Net other operating income	2,436	5,432	3,771	4,541	6,212
Operating profit (loss)	**(4,638)**	**6,936**	**5,164**	**392**	**107**
Financial expenses	(5,995)	(3,682)	(4,864)	(4,728)	(2,437)
Financial income	2,452	1,377	3,627	3,210	2,039
Share in loss of joint venture	(39)	(392)	(475)	(469)	(1,018)
Profit (loss) before taxes	**(8,221)**	**4,239**	**3,452**	**(1,595)**	**(1,309)**
Income taxes	949	(2,595)	(425)	(522)	(1,710)
Net profit (loss) for the year	**(7,272)**	**1,644**	**3,027**	**(2,117)**	**(3,019)**
Net profit (loss) attributable to:					
The owners of the parent	(7,124)	1,586	3,027	(2,117)	(3,019)
Non-controlling interest	(148)	58	—	—	—
Earnings per share attributable to the owners of the parent					
Basic	(0.13)	0.03	0.06	(0.04)	(0.06)
Diluted	(0.13)	0.03	0.06	(0.04)	(0.06)
Weighted average number of ordinary shares for basic earnings per share (´000)	53,364	52,915	49,806	47,325	47,325
Weighted average number of ordinary shares adjusted for effect of dilution (´000)	53,364	53,987	50,697	47,325	47,325
Consolidated Statements of Comprehensive Income Data:					
Net profit (loss) for the year	(7,272)	1,644	3,027	(2,117)	(3,019)
Other comprehensive income (loss), net of taxes	(5,687)	244	(47)	(691)	(1,833)
Total comprehensive income (loss) for the year, net of taxes	(12,959)	1,888	2,980	(2,808)	(4,852)

* The year 2019 has been restated to reflect the final accounting of the business combination with Engimplan.

Other Data (unaudited):

in 000€	For the year ended December 31, 2020	2019	2018	2017	2016
Adjusted EBITDA (unaudited)(1)	20,379	26,656	23,526	14,610	9,458

(1) We calculate EBITDA as net profit (loss) for the year plus income taxes, financial expenses (less financial income), depreciation and amortization, and share in loss of joint venture. We calculate Adjusted EBITDA by adding share-based compensation expenses, acquisition-related expenses of business combinations, impairments and revaluation of fair value due to business combinations to EBITDA. Disclosure in this annual report of EBITDA and Adjusted EBITDA, which are non-IFRS financial measures, is intended as a supplemental measure of our performance that is not required by, or presented in accordance with, IFRS. EBITDA and Adjusted EBITDA should not be considered as alternatives to net profit or any other performance measure derived in accordance with IFRS. Our presentation of EBITDA and Adjusted EBITDA should not be construed to imply that our future results will be unaffected by unusual or non-recurring items. For additional information, see “Item 5. Operating and Financial Review and Prospects—A. Operating Results—Other Financial Information.” The following table reconciles net profit to EBITDA and Adjusted EBITDA for the periods presented:

in 000€	For the year ended December 31, 2020	2019*	2018	2017	2016
Net profit (loss) for the year	(7,272)	1,644	3,027	(2,117)	(3,019)
Income tax expense (benefit)	(949)	2,595	425	522	1,710
Financial expenses	5,995	3,682	4,864	4,728	2,437
Financial income	(2,452)	(1,377)	(3,627)	(3,210)	(2,039)
Depreciation and amortization	19,775	19,278	17,287	12,576	8,374
Share in loss of joint venture	39	392	475	469	1,018
EBITDA (unaudited)	**15,136**	**26,214**	**22,451**	**12,968**	**8,481**
Share-based compensation expenses[a]	1,344	302	1,075	1,033	977
Acquisition-related expenses of business combinations[b]	63	140	—	609	—
Impairments[c]	4,606	—	—	—	—
Re-valuation of 50% RS Print interest[d]	(770)	—	—	—	—
Adjusted EBITDA (unaudited)	**20,379**	**26,656**	**23,526**	**14,610**	**9,458**

(a) Share-based compensation expenses represent the cost of equity-settled and cash-settled share-based payments to employees.
(b) Acquisition-related expenses of business combinations represent fees and costs in connection with the acquisition of ACTech in 2017, the Engimplan acquisition in 2019 and the RS Print acquisition in 2020.
(c) Impairments represents the impairment of capitalized expenditures related to our tracheal splint development project (€2.1 million) and the impairment of goodwill and intangible assets of Engimplan (€2.5 million).
(d) Represents a positive revaluation of our initial 50% interest in RS Print after our acquisition of the remaining interest in the joint venture.
* The year 2019 has been restated to reflect the final accounting of the business combination with Engimplan.

B. Capitalization and Indebtedness

Not applicable.

C. Reasons for the Offer and Use of Proceeds

Not applicable.

D. Risk Factors

Summary of Risk Factors

Risks Relating to the COVID-19 Pandemic

- The coronavirus global health crisis adversely impacted our business and results of operations in 2020 and may have a material adverse impact on our business, results of operations, financial condition, cash flows or liquidity during 2021 and beyond.

Risks Relating to Our Business

- We may not be able to maintain or increase the market share or reputation of our software and other products and services that they need to remain or become a market standard.
- We may not be successful in continuing to enhance and adapt our software, products and services in line with developments in market technologies and demands.
- The research and development programs that we are currently engaged in, or that we may establish in the future, may not be successful and our significant investments in these programs may be lost.
- Existing and increased competition may reduce our revenue and profits.
- We rely on collaborations with users of our additive manufacturing solutions to be present in certain large-scale markets and, indirectly, to expand into potentially high-growth specialty markets. Our inability to continue to develop or maintain these relationships in the future could harm our ability to remain competitive in existing markets and expand into other markets.
- Our revenue and results of operations may fluctuate.
- Demand for additive manufacturing generally and our additive manufacturing software solutions, products and services in particular may not increase adequately.
- We are dependent upon sales to certain industries.
- If our relationships with suppliers, including with limited source suppliers of consumables, were to terminate or our manufacturing arrangements were to be disrupted, our business could be adversely affected.
- The dominant software subscription model in the industrial sector is changing, and we may not be successful in developing a cloud-based platform to offer our software.

- We depend on the knowledge and skills of our senior management and other key personnel, and if we are unable to retain and motivate them or recruit additional qualified personnel, our operations could suffer.
- We may need to raise additional capital from time to time in order to meet our growth strategy and may be unable to do so on attractive terms, or at all.
- Our international operations subject us to various risks, and our failure to manage these risks could adversely affect our results of operations.
- We may engage in acquisitions or investments that could disrupt our business, cause dilution to our shareholders and harm our financial condition and results of operations.
- We may enter into collaborations, in-licensing arrangements, joint ventures, strategic alliances or partnerships with third parties that may not result in the development of commercially viable products or the generation of significant future revenue.
- Failure to comply with the U.S. Foreign Corrupt Practices Act or other applicable anti-corruption legislation could result in fines, criminal penalties and an adverse effect on our business.
- Errors or defects in our software or other products could cause us to incur additional costs, lose revenue and business opportunities, damage our reputation and expose us to potential liability.
- We rely on our information technology systems to manage numerous aspects of our business and customer and supplier relationships, and a disruption of these systems could adversely affect our results of operations.
- A breach of security in our products or computer systems may compromise the integrity of our products, harm our reputation, create additional liability and adversely impact our financial results.
- If our service center operations are disrupted, sales of our 3D printing services, including the medical devices that we print, may be affected, which could have an adverse effect on our results of operations.

Risks Related to Our Materialise Medical Segment and Regulatory Environment

- Our medical business, financial condition, results of operations and cash flows could be significantly and negatively affected by substantial government regulations.

Risks Related to Our Intellectual Property

- If we are unable to obtain patent protection for our products or otherwise protect our intellectual property rights, our business could suffer.
- We cannot predict the outcome of a lawsuit in which we are involved.

Risks Related to the American Depositary Shares (ADSs)

- We do not expect to be a passive foreign investment company for U.S. federal income tax purposes; however, there is a risk that we may be classified as a passive foreign investment company, which could result in materially adverse U.S. federal income tax consequences to U.S. investors.

Risks Relating to the COVID-19 Pandemic

The coronavirus global health crisis adversely impacted our business and results of operations in 2020 and may have a material adverse impact on our business, results of operations, financial condition, cash flows or liquidity during 2021 and beyond.

The worldwide coronavirus pandemic has negatively impacted the global, U.S. and E.U. economies, disrupted consumer spending and global supply chains, and created significant volatility and disruption of labor and financial markets. In response to the pandemic, since the first quarter of 2020, governments worldwide have closed business, restricted travel and implemented emergency quarantines, and businesses and individuals have reduced travel, cancelled meetings and events and implemented work-from-home policies, which have caused significant disruption to the global economy and normal business operations. The coronavirus pandemic may have broader macroeconomic implications, including a decrease in or halt to economic growth, the effects of which could be long lasting.

In an effort to protect the health and safety of employees, we, and many of our customers, partners, suppliers and other counterparties, currently require that employees work from home and restrict travel as much as possible, which affects, among other things, their ability to engage in production and research and development activities, to attend industry events and to engage in commercial visits. During 2020, the economic downturn resulting from the pandemic caused a significant reduction in demand for services, production and investments, and affected our global operations negatively. In the event we or our customers, partners, suppliers and other counterparties continue to maintain or expand these restrictions, we may suffer further disruptions to business operations, including the closure of manufacturing facilities, warehouses and logistics supply chains worldwide. Furthermore, the coronavirus and the responses thereto could have a range of other effects on us. For example, the implementation of business continuity plans in a fast-moving public health emergency could have an adverse effect on our internal controls (potentially giving rise to significant deficiencies or material weaknesses) and increase our vulnerability to information technology and other systems disruptions.

During 2020, the coronavirus pandemic negatively affected each of our Materialise Software, Materialise Medical and Materialise Manufacturing segments, and had a major impact on our consolidated results of operations. As of the date of this report, we are unable to predict the duration and severity of the spread of the coronavirus and the political and economic responses thereto and, as a result, we are unable to assess with certainty its impact on our business and operations, results of operations, financial condition, cash flows and liquidity during 2021 and beyond. The coronavirus and related responses are developing rapidly, making their impact highly uncertain, and are subject to many factors beyond our control, such as the speed of contagion, the outbreak of new variants of the virus, the implementation of effective preventative and containment measures, the impact of the existing vaccination programs and the development of other effective medical solutions, the timing and scope of governmental

restrictions on public gatherings, mobility and other activities, financial and other market reactions, and reactions and responses of the public. In particular, although we have included under "Item 5. Operating and Financial Review and Prospects—D. Trend Information" of this annual report and in the notes to our audited consolidated financial statements a discussion, based on our current assessment of the coronavirus pandemic, of how our business, results of operations, and financial condition could be impacted during the year 2021, this discussion should be considered as highly uncertain. While we expect we will continue to suffer adverse effects, the more severe the outbreak is and the longer it lasts, the more likely it is that the effects on us and our business will be materially adverse.

Risks Relating to Our Business

We may not be able to maintain or increase the market share or reputation of our software and other products and services that they need to remain or become a market standard.

The additive manufacturing, or 3D printing, industry is rapidly growing on a global scale and is subject to constant innovation and technological change. A variety of technologies compete against one another in our market, which is driven, in part, by technological advances and end-user requirements and preferences, as well as by the emergence of new standards and practices. As the additive manufacturing market evolves, the industry standards that are adopted and adhered to are a function of the inherent qualities of the technology as well as the willingness of members of the industry to adopt them. To remain competitive, we depend in large part on our ability to increase and maintain market share and influence in the industry in order to be recognized as a market standard. Nonetheless, in the future, our influence in setting standards for the additive manufacturing industry may be limited and the standards adopted by the market may not be compatible with our present or future products and services.

We may not be successful in continuing to enhance and adapt our software, products and services in line with developments in market technologies and demands.

Our present or future software, products and services could be rendered obsolete or uneconomical by technological advances by one or more of our present or future competitors, by other technologies or by new customer needs. Our ability to remain competitive will depend, in large part, on our ability to enhance and adapt our current software, product and services to developments in technologies and to new and changing customer needs (in particular in relation to the manufacturing of end parts). We believe that to remain competitive we must continuously enhance and expand the functionality and features of our products, services and technologies. However, there can be no assurance that we will be able to:

- maintain and enhance the market share of our current products, services and technologies;
- enhance our existing product, services and technologies;
- develop new products, services and technologies that address the increasingly sophisticated and varied needs of prospective end-users (including in the emerging market of using additive manufacturing for end parts instead of prototypes);
- respond to technological advances and emerging industry standards and practices on a cost-effective and timely basis; or
- adequately protect our intellectual property as we develop new products, services and technologies and anticipate intellectual property claims from third parties.

The research and development programs that we are currently engaged in, or that we may establish in the future, may not be successful and our significant investments in these programs may be lost.

To remain competitive, we invest, and intend to continue to invest, significant amounts in various research and development programs. There can be no assurances, however, that these research and development programs will improve our existing additive manufacturing software solutions, products and services or create new software, products or services. Even if some of these programs are successful, it is possible that the new software, products or services developed from such programs will not be commercially viable, that new 3D printing technologies that we, or others, develop will eventually supplant our current 3D printing technologies, that changes in the manufacturing or use of 3D printers will adversely affect the need or demand for our software, products or services or that our competitors will create or successfully market 3D printing technologies that will replace our solutions, products and services in the market. As a result, any of our software solutions, products or services may be rendered obsolete or uneconomical and our significant investments in all or some of our research and development programs may be lost.

Existing and increased competition may reduce our revenue and profits.

The market segments in which we operate, Materialise Software, Materialise Medical and Materialise Manufacturing, are characterized by vigorous competition, by entry of competitors with innovative technologies, by consolidation of companies with complementary products, services and technologies, and by entry of large corporations in any one or more of our market segments.

In particular, the barriers to enter the software, medical and industrial markets with 3D printing solutions are decreasing rapidly.

In the Materialise Software segment, the availability of computing devices with continually expanding performance at progressively lower prices contributes to the ease of market entry. Additionally, there are certain open source software applications that are being offered free of charge or for a nominal fee that can place additional competitive pressure on us. 3D printer manufacturers, which closely work with their customers, may also successfully bundle their own software solutions with their equipment, which may make our independent software solutions obsolete. In addition, companies that have greater financial, technical, sales and marketing and other resources, including market leaders with significant in-house capacities in software development, or existing computer-aided design, or CAD, or computer-aided manufacturing, or CAM, software providers, are entering the additive manufacturing market and may very rapidly gain a significant share of the markets that we target (including through the acquisition of startup and scale-up companies that are active in the development and sale of additive manufacturing software tools).

In the Materialise Medical segment, medical device companies are investing in 3D printing solutions that may compete with our software solutions, products and services. Companies that initially rely on us to enter the additive manufacturing market for medical applications may, as they gain experience and as 3D printing technology gains strategic importance, decide to develop their own in-house solutions and enter the market themselves with their own software, products or services, thus becoming competitors and denying us continued access to their distribution channels. In addition, startup and scale-up companies, as well as companies that have greater financial, technical, sales and marketing and other resources, are entering the additive manufacturing market and may very rapidly gain a significant share of the markets that we target.

In the Materialise Manufacturing segment, as additive manufacturing gains importance as a strategic technology, our customers are likely to bring 3D manufacturing in-house and reduce or even discontinue using our 3D printing services. In addition, competitors with more efficient or profitable business models, superior techniques or more advanced technologies may take market share away from us. Also, in certain specific markets that our Materialise Manufacturing segment targets, including, among others, the shoe wear, eyewear and fixtures markets, established players may develop their own competitive solutions or may engage in collaborations with competitors of ours, preventing us from gaining a viable position in these markets.

Because of these and other factors, competitive conditions in the industry are likely to intensify in the future. Increased competition could result in price reductions, reduced revenue and operating margins and loss of market share, any of which would likely harm our results of operations.

We rely on collaborations with users of our additive manufacturing solutions to be present in certain large-scale markets and, indirectly, to expand into potentially high-growth specialty markets. Our inability to continue to develop or maintain these relationships in the future could harm our ability to remain competitive in existing markets and expand into other markets.

Our strategy includes entering into collaborations with our customers in certain large-scale markets and leveraging these collaborations to enter into other underserved specialty markets. For example, in the medical market, we have entered into collaborations with Zimmer Biomet Holdings, Inc., or Zimmer Biomet, Encore Medical, L.P. (d/b/a DJO Surgical), or DJO Surgical, DePuy Synthes Companies of Johnson & Johnson, or DePuy Synthes, Limacorporate Spa, or Lima, Mathys AG, or Mathys, Corin Ltd, or Corin, Medtronic Inc., or Medtronic, and Abbott Laboratories Inc., or Abbott. Increased adoption of our software, products and services, especially in potentially high-growth specialty markets, will depend in part on our current and future collaborators' willingness to continue to adopt our additive manufacturing solutions in their markets and on our ability to continue to collaborate with these and other players. Certain of our customers that have initially relied on our 3D printing software and services have announced their intention to bring their 3D printing operations in-house and enter the market themselves, and other customers may also do so in the future as they gain experience and as 3D printing technology gains strategic importance, thus denying us continued access to their distribution channels. In addition, a change of control of any of our collaboration partners may negatively impact our relationship. If we are not able to maintain our existing collaborations and develop new collaborative relationships, our foothold in larger markets and expansion into potentially high-growth specialty markets could be harmed significantly.

Our revenue and results of operations may fluctuate.

Our revenue and results of operations may fluctuate from quarter-to-quarter and year-to-year and are likely to continue to vary due to a number of factors, many of which are not within our control. You should not rely on our past results as an indication of our future performance.

Fluctuations in our results of operations and financial condition may occur due to a number of factors, including, but not limited to, those listed below and those identified throughout this annual report:

- our ability to continue, renew or replace relationships with key customers;
- the degree of market acceptance of our software and our products;
- the mix of software, products and services that we sell during any period, as well as the mix of the various markets in which we make sales during said periods;
- a decline in new or renewed periodic licenses or maintenance contracts;
- delays in the introduction of new features;
- the entry of new competitors into our market;
- the development and degree of market acceptance of new competitive systems or processes by others;
- changes in our pricing policies or those of our competitors, including our responses to price competition;
- changes in the amount we spend in our marketing and other efforts;
- delays between our expenditures to develop, acquire or license new technologies and processes, and the generation of sales related thereto;
- the amounts we spend on, and the success rate of, our research and development activities;
- changes in the regulatory environment, including changes in regulatory laws and regulations and the interpretation thereof, applicable to our software programs, products or services;
- delays in obtaining regulatory approval for our software programs, products or services;
- interruptions to or other problems with our website and interactive user interface, information technology systems, manufacturing processes or other operations;
- general economic and industry conditions that affect end-user demand and end-user levels of product design and manufacturing, including the adverse effects of global economic uncertainties such as the recent global economic uncertainty related to the novel coronavirus pandemic; and
- changes in accounting rules and tax laws.

Demand for additive manufacturing generally and our additive manufacturing software solutions, products and services in particular may not increase adequately, or at all.

The industrial and medical industries are generally dominated by conventional production methods with limited use of additive manufacturing technology in certain specific instances. If additive manufacturing technology, in particular, but not limited to, for the production of end parts, does not gain more mainstream market acceptance, or gains market acceptance at a significantly slower pace than currently expected, or if the marketplace adopts additive manufacturing based on a technology other than the technologies that we currently use or serve (including in the medical, eyewear, footwear and fixtures markets that we target), we may not be able to meet our growth objectives or increase or sustain the level of sales of our additive manufacturing software solutions, products and services, and our results of operations would be adversely affected as a result.

We are dependent upon sales to certain industries.

Our revenue from products is currently relatively concentrated in the industrial and medical industries, and particularly in the automotive and orthopedic/cranio-maxillofacial segments within such industries, respectively, and we expect additional growth to come from certain other specific markets, such as the eyewear and the footwear markets. To the extent any of these industries experience, or continue to experience, a downturn, our results of operations may be adversely affected. Additionally, if any of these industries or their respective suppliers or other providers of manufacturing services develop new technologies or alternatives to manufacture the products that are currently manufactured using our 3D printing software, products and services, it may adversely affect our results of operations.

If our relationships with suppliers, including with limited source suppliers of consumables, were to terminate or our manufacturing arrangements were to be disrupted, our business could be adversely affected.

We purchase consumables and other components that are used in our production from third party suppliers. We currently use only a limited number of suppliers for several of the consumables for our print materials. Our reliance on a limited number of vendors involves a number of risks, including:

- potential shortages of some key consumables or other components;
- printed material performance or quality shortfalls, if traceable to particular consumables or other components, since the supplier of the faulty consumable or component cannot readily be replaced;
- discontinuation of a consumable or other component on which we rely;
- potential insolvency of these vendors; and
- reduced control over delivery schedules, manufacturing capabilities, quality and costs.

If certain suppliers were to decide to discontinue production, or the supply to us, of a consumable or other component that we use, the unanticipated change in the availability of supplies, or unanticipated supply limitations, could cause delays in, or loss of, sales, increased production or related costs and, consequently, reduced margins, and damage to our reputation. In addition, because we use a limited number of suppliers, increases in the prices charged by our suppliers may have an adverse effect on our results of operations, as we may be unable to find a supplier who can supply us at a lower price. As a result, the loss of a limited source supplier could adversely affect our relationships with our customers and our results of operations and financial condition.

The dominant software subscription model in the industrial sector is changing, and we may not be successful in developing a cloud-based platform to offer our software.

We offer most of our current software products through on-premises licensing (either on a perpetual or annual basis). We believe the industrial software market is evolving to SaaS (Software as a Service) and other cloud-based models of software deployment where software providers typically license their applications to customers for use as a service on demand through web browser technologies.. While we are developing a cloud-enabled platform to offer our software products either by means of a SaaS or a cloud-based subscription model, there is no guarantee that we will be able to complete this platform successfully or in a timely manner or that our platform will be adopted by customers over other platforms.

A SaaS or cloud-based “pay per use” software offering differs significantly from the perpetual and annual licensing models that we currently offer. An increase in the prevalence of SaaS and cloud-based delivery models offered by us or our competitors could unfavorably impact the pricing of our on-premises software offerings and have a dampening impact on overall demand for our on-premises software product offerings, which could reduce our revenues and profitability. In addition, to the extent that demand for our SaaS or cloud-based offerings increases in the future, we may experience volatility in our reported revenues and operating results due to the differences in timing of revenue recognition between our perpetual and annual software licenses and our SaaS and cloud-based offering arrangements.

Furthermore, any SaaS or cloud-based software products we develop may reside upon and be hosted by third party providers. A security breach, whether of our products, of our customers’ network security and systems or of third party hosting services, could disrupt access to our customers’ stored information and could lead to the loss of, damage to or public disclosure of our customers’ stored information.

We depend on the knowledge and skills of our senior management and other key personnel, and if we are unable to retain and motivate them or recruit additional qualified personnel, our operations could suffer.

Our success depends upon the continued service and performance of our senior management and other key personnel, including engineers, designers, software developers and product managers, and our ability to identify, hire, develop, motivate and retain qualified personnel in the future. Competition for senior management and key employees in our industry is intense and we cannot guarantee that we will be able to retain our personnel or attract new, qualified personnel. We may need to invest significant amounts of cash and equity to attract and retain new employees and we may not realize returns on these investments. The loss of the services of members of our senior management or key employees could prevent or delay the implementation and completion of our strategic objectives, could divert management’s attention to seeking certain qualified replacements or could adversely affect our ability to manage our company effectively. Each member of senior management as well as our key employees may resign at any time. Only some of the members of our senior management are subject to non-competition agreements, which may also be difficult to enforce. Accordingly, the adverse effect resulting from the loss of certain members of senior management or other key employees could be compounded by our inability to prevent them from competing with us. We do not carry key-man insurance on any member of our senior management team or other key personnel. If we lose the ability to hire and retain key executives and employees with a diversity and high level of skills in appropriate domains (such as research and development and sales), it could have a material adverse impact on our business activities and results of operations.

In addition, the success of our acquisitions may depend in part on our ability to retain senior management and other key personnel of the acquired company following the acquisition and to continue to attract such persons to our company. For example, the companies we acquire may depend on small teams of founders and senior managers with extensive market knowledge and relationships or that exercise substantial influence over the acquired business. As result, the loss of such persons could adversely affect us.

We may need to raise additional capital from time to time in order to meet our growth strategy and may be unable to do so on attractive terms, or at all.

We intend to continue to make investments to support the growth of our business and may require additional funds to respond to business challenges, including the need to implement our growth strategy, increase market share in our current markets or expand into other markets, or broaden our technology, intellectual property or service capabilities. Accordingly, we may require additional investments of capital from time to time, and our existing sources of cash and any funds generated from operations may not provide us with sufficient capital. For various reasons, including any noncompliance with existing or future lending arrangements, additional financing, may not be available when needed, or may not be available on terms favorable to us. If we fail to obtain adequate capital on a timely basis or if capital cannot be obtained on terms satisfactory to us, we may not be able to achieve our planned rate of growth, which will adversely affect our results of operations.

Our international operations subject us to various risks, and our failure to manage these risks could adversely affect our results of operations.

We face significant operational risks as a result of doing business internationally, including, among others:

- fluctuations in foreign currency exchange rates;
- potentially longer sales and payment cycles;
- potentially greater difficulties in collecting accounts receivable;
- potentially adverse tax consequences, including liabilities imposed from inconsistent enforcement;
- challenges in providing solutions across a significant distance, in different languages and among different cultures;
- the impact of global public health crises, such as the coronavirus pandemic currently impacting almost all large economies worldwide;
- transportation delays;
- becoming subject to the different, complex and changing laws, regulations and court systems of multiple jurisdictions and compliance with a wide variety of foreign laws, treaties and regulations;
- reduced protection of, or significant difficulties in enforcing, intellectual property rights in certain countries;
- difficulties in staffing and managing foreign operations, particularly in new geographic locations;
- restrictions imposed by local labor practices and laws on our business and operations, including unilateral cancellation or modification of contracts;
- expropriation or nationalization of property;
- rapid changes in government, economic and political policies and conditions, political or civil unrest or instability, terrorism or pandemics, epidemics and other similar outbreaks or events;
- operating in countries with a higher incidence of corruption and fraudulent business practices;
- seasonal reductions in business activity in certain parts of the world, particularly during the summer months in Europe;
- costs and difficulties of customizing products for foreign countries; and
- tariffs, trade barriers and other regulatory or contractual limitations on our ability to sell or develop our products in certain foreign markets.

We maintain important software research and development and engineering centers in Malaysia and Ukraine. In Malaysia, the government may exercise substantial control over certain sectors of the economy through regulation and state ownership. In Ukraine, the political and economic situation, in general, and the relations among Ukraine, United States, the European Union and Russia, in particular, remain unstable. We continue to monitor the situation in Ukraine and have a risk mitigation plan designed to limit the impact on our operations in case of escalation of the instability in that region. However, escalation could have a significant impact on our operations, in particular in the event where internet services would no longer be available in Ukraine or where the situation would become such that our employees would no longer be able to work from their homes. Our facility in Ukraine does not focus on sales to the Ukrainian market and mainly provides supporting activities for our global operations. Any material disruption of these supporting activities, however, could significantly impact our ability to further develop our products and to continue to service our customers globally. Moreover, changes in the laws and regulations of Malaysia or Ukraine, or in their interpretation or enforcement, including with respect to operations such as ours, which rely to a large extent on local private entrepreneurs, may significantly impact our activities in Malaysia or Ukraine, which would limit our future growth and adversely affect our results of operations. In addition, in August 2019, we acquired a 75% interest in Engimplan, a Brazil-based manufacturer of orthopedic and cranio-maxillofacial (CMF) implants and instruments and in December 2020, we acquired the remaining 25% interest in Engimplan, making us Engimplan’s sole shareholder (through our Brazilian subsidiary). Brazil has experienced recent political and economic uncertainty and instability, including as a result of country-wide money laundering and corruption probes. Our failure to manage the market and operational risks associated with our international operations effectively could limit the future growth of our business and adversely affect our results of operations.

Our international operations pose currency risks, which may adversely affect our results of operations and net income.

Our results of operations may be affected by volatility in currency exchange rates and our ability to effectively manage our currency transaction risks. In general, we conduct our business, earn revenue and incur costs in the local currency of the countries in which we operate. During the year ended December 31, 2020, 66% of our revenue was generated, and approximately 68% of our total costs were incurred in euros. As we continue to expand internationally, our exposure to currency risks will increase. Historically, we have not managed our foreign currency exposure in a manner that would eliminate the effects of changes in foreign exchange rates. Changes in exchange rates between the foreign currencies in which we do business and the euro will affect our revenue, cost of sales, and operating margins, and could result in exchange losses in any given reporting period.

Changes in tax laws, treaties or regulations could adversely affect our financial results.

Our future effective tax rates could be adversely affected by changes in tax laws, treaties and regulations, both internationally and domestically, including possible changes to the patent income deduction and innovation income deduction regime in Belgium or the way it proportionately impacts our effective tax rate. An increase of our future effective tax rates could have a material adverse effect on our business, financial position, results of operations and cash flows.

We may engage in acquisitions or investments that could disrupt our business, cause dilution to our shareholders and harm our financial condition and results of operations.

We have in the past and intend to continue to evaluate opportunities to acquire or invest in, companies that we believe have products, services, competencies or capabilities that are a strategic or commercial fit with any of our businesses or that otherwise offer opportunities for our company.

In connection with acquisitions or investments, we may:

- issue American Depositary Shares, or ADSs, or other forms of equity that would dilute our existing shareholders' percentage of ownership;
- incur debt and assume liabilities; and/or
- incur amortization expenses related to intangible assets or incur large and immediate write-offs.

If we complete an acquisition or investment, we cannot assure you that it will ultimately strengthen our competitive position or that it will be viewed positively by customers, suppliers, employees, financial markets or investors. Furthermore, future acquisitions or investments could pose numerous additional risks to our operations, including:

- problems integrating the purchased business, products, services or technologies;
- challenges in achieving strategic objectives, cost savings and other anticipated benefits;
- increases to our expenses;
- the potential write down of assets or goodwill acquired in the context of an acquisition or investment;
- due diligence investigations failing to discover undisclosed liabilities or risks affecting the acquired businesses;
- the assumption of significant liabilities that exceed the limitations of any applicable indemnification provisions or the financial resources of any indemnifying party;
- inability to maintain relationships with key customers, vendors and other business partners of our current or acquired businesses;
- diversion of management's attention from their day-to-day responsibilities;
- difficulty in maintaining controls, procedures and policies during the transition and integration;
- entrance into marketplaces where we have no or limited prior experience and where competitors have stronger marketplace positions;
- potential loss of key employees, particularly those of the acquired entity; and
- historical financial information may no longer be representative or indicative of our results as a combined company.

Alternatively, while certain acquisitions or investments may be of strategic importance for the execution of our business plan, we may not ultimately be able to complete such acquisitions or investments on favorable terms, or at all, which may in turn materially affect our ability to grow or even cause us to lose market share, and could have a material adverse effect on our business, financial condition and results of operations.

We may enter into collaborations, in-licensing arrangements, joint ventures, strategic alliances or partnerships with third parties that may not result in the development of commercially viable products or the generation of significant future revenue.

In the ordinary course of our business, we may enter into collaborations, in-licensing arrangements, joint ventures, strategic alliances or partnerships to develop proposed products or services and to pursue new markets. For example, in the Materialise Medical segment, we have collaborations with leading medical device companies and academic institutions for the development and distribution of our surgical planning software, services, and products, including with Zimmer Biomet, DJO Surgical, DePuy Synthes, Lima, Medtronic, Abbott, Corin, Mathys and the University of Michigan. Furthermore, in the Materialise Software segment, we have established collaborations with Siemens PLM, or Siemens, and Essentium Inc., or Essentium, and, in the Materialise Manufacturing segment, we have established collaborations with HOYA Vision Care Company, or HOYA, PTC Inc., or PTC, BASF 3D Printing Solutions GmbH and Essentium. Proposing, negotiating and implementing collaborations, in-licensing arrangements, joint ventures, strategic alliances or partnerships may be a lengthy and complex process. Other companies, including those with substantially greater financial, marketing, sales, technology or other business resources, may compete with us for these opportunities or arrangements. We may not succeed in maintaining, renewing or extending existing collaborations or in identifying, securing, or completing any such new transactions or arrangements in a timely manner, on a cost-effective basis, on acceptable terms or at all. We may also not realize the anticipated benefits of any such transaction or arrangement. In particular, these collaborations may not result in the development of products or services that achieve commercial success or result in significant revenue and could be terminated prior to developing any products or services.

Additionally, we may not be in a position to exercise sole decision making authority regarding the transaction or arrangement, which could create the potential risk of creating impasses on decisions, and our collaboration partners may have economic or business interests or goals that are, or that may become, inconsistent with our economic or business interests or goals. It is possible that conflicts may arise with our current or future collaboration partners, such as conflicts concerning the achievement of performance milestones, or the interpretation of terms under any agreement, such as those related to financial obligations, the ownership or license rights or control of intellectual property developed before or during the collaboration or indemnification. If any conflicts arise with our current or future collaboration partners, they may act in their self-interest, which may be adverse to our best interest, and they may breach their obligations to us. In addition, we have limited control over the amount and timing of resources that our current collaboration partners or any future collaboration partners devote to our collaboration partners' or our future products or services. Disputes with our collaboration partners may result in litigation or arbitration that would increase our expenses and divert the attention of our management. Further, these transactions and arrangements are contractual in nature and may be terminated or dissolved under the terms of the applicable agreements and, in such event, we may not continue to have rights to the products or access to the markets relating to such transaction or arrangement or may need to purchase such rights at a premium.

Failure to comply with applicable anti-corruption legislation could result in fines, criminal penalties and an adverse effect on our business.

We operate in a number of countries throughout the world, and are committed to doing business in accordance with applicable anti-corruption laws. We are subject, however, to the risk that our officers, directors, employees, agents and collaboration partners may take action determined to be in violation of such anti-corruption laws, including the U.S. Foreign Corrupt Practices Act of 1977, the U.K. Bribery Act 2010 and the Belgian Penal Code, as well as trade sanctions administered by the Office of Foreign Assets Control and the U.S. Department of Commerce. Any such violation could result in substantial fines, sanctions, civil and/or criminal penalties or curtailment of operations in certain jurisdictions, and might adversely affect our results of operations. In addition, actual or alleged violations could damage our reputation and ability to do business.

Errors or defects in our software or other products could cause us to incur additional costs, lose revenue and business opportunities, damage our reputation and expose us to potential liability.

Sophisticated software and complex 3D printed products may contain errors, defects or other performance problems at any point in the life of the product. If errors or defects are discovered in our current or future software or other products, we may not be able to correct them in a timely manner, or provide an adequate response to our customers. We may therefore need to expend significant financial, technical and management resources, or divert some of our development resources, in order to resolve or work around those defects. We may also experience an increase in our service and warranty costs. Particularly in the medical sector, errors or defects in our software or products could lead to claims by patients against us and our customers and expose us to lawsuits that may damage our and our customers' reputations. Claims may be made by individuals or by classes of users. Our product liability and related insurance policies may not apply or sufficiently cover any product liability lawsuit that arises from defective software or products. Customers such as our collaboration partners may also seek indemnification for third party claims allegedly arising from breaches of warranties under our collaboration agreements.

Errors, defects or other performance problems in our software or other products may also result in the loss of, or delay in, the market acceptance of our software, our products and related 3D printing or engineering services or postponement of customer deployment. Such difficulties could also cause us to lose customers and, particularly in the case of our largest customers, the potentially substantial associated revenue which would have been generated by our sales to companies participating in our customer's supply chain. Technical problems, or the loss of a customer with a particularly important global reputation, could also damage our own business reputation and cause us to lose new business opportunities.

We rely on our information technology systems to manage numerous aspects of our business and customer and supplier relationships, and a disruption of these systems could adversely affect our results of operations.

We rely on our information technology systems and databases to manage numerous aspects of our business and to provide analytical information to management. Our information technology systems allow us to, among other things, optimize our software development and research and development efforts, organize our in-house 3D printing services logistics, efficiently purchase products from our suppliers, provide other procurement and logistic services, ship and invoice products to our customers on a timely basis, maintain cost-effective operations and generally provide service to our customers. Our information technology systems are an essential component of our business and growth strategies, and a disruption to our information technology systems could significantly limit our ability to manage and operate our business efficiently. Although we take steps to secure our information technology systems, including our computer systems, intranet and internet sites, email and other telecommunications and data networks, the security measures we have implemented may not be effective and our systems may be vulnerable to, among other things, damage and interruption from power loss, including as a result of natural disasters, computer system and network failures, loss of telecommunication services, operator negligence, loss of data, security breaches, computer viruses and other disruptive events. Any such disruption could adversely affect our reputation, brand and financial condition.

A breach of security in our products or computer systems may compromise the integrity of our products, harm our reputation, create additional liability and adversely impact our financial results.

We make significant efforts to maintain the security and integrity of our product source code and computer systems. The risk of a security breach or disruption, particularly through cyber-attack or cyber intrusion, including by computer hackers, foreign governments and cyber terrorists, has increased as the number, intensity and sophistication of attempted attacks and intrusions from around the world have increased. These threats include identity theft, unauthorized access, DNS attacks, wireless network attacks, viruses and worms, advanced persistent threat (APT), application centric attacks, peer-to-peer attacks, phishing, backdoor trojans and distributed denial of service (DDoS) attacks. Any of the foregoing could attack our products and computer systems. Despite significant efforts to create and continuously reinforce the security barriers to such programs, it is virtually impossible for us to entirely eliminate this risk. Like all software products and computer systems, our software products and computer systems are vulnerable to such cyber-attacks, and our computer systems have been subject to certain cyber security incidents in the past. The impact of cyber-attacks could disrupt the proper functioning of our software products and computer systems, cause errors in the output of our or our customers' work, allow unauthorized access to sensitive, proprietary or confidential information of our company, our customers or the patients that we and our customers serve through our medical solutions. Moreover, as we continue to invest in new lines of products and services we are exposed to increased security risks and the potential for unauthorized access to, or improper use of, the information of our product and service users. If any of the foregoing occur, our reputation may suffer, customers may stop buying our products or services, we could face lawsuits and potential liability, and our results of operations could be adversely affected.

We rely on third-party technology, platform, carriers, server and hardware providers, and a failure of service by these providers could adversely affect our business and reputation.

We rely upon a third-party provider to host our main servers. If this provider is unable to handle current or higher volumes of use, experiences any interruption in operations or ceases operations for any reason or if we are unable to agree on satisfactory terms for a continued hosting relationship, we would be forced to enter into a relationship with other service providers or assume hosting responsibilities ourselves. If we are forced to switch hosting facilities, we may not be successful in finding an alternative service provider on acceptable terms or in hosting the computer servers ourselves. We may also be limited in our remedies against our third party hosting provider in the event of a failure of service. A failure or limitation of service or available capacity by our third party hosting provider could adversely affect our business and reputation.

Workplace accidents or environmental damage could result in substantial remedial obligations and damage to our reputation.

Accidents or other incidents that occur at our service centers and other facilities or involve our personnel or operations could result in claims for damages against us. In addition, in the event we are found to be financially responsible, as a result of environmental or other laws or by court order, for environmental damages alleged to have been caused by us or occurring on our premises, we could be required to pay substantial monetary damages or undertake expensive remedial obligations. The amount of any costs, including fines or damages payments that we might incur under such circumstances could substantially exceed any insurance we have to cover such losses. Any of these events, alone or in combination, could have a material adverse effect on our business, financial condition and results of operations and could adversely affect our reputation.

Our operations are subject to environmental laws and other government regulations that could result in liabilities in the future.

We are subject to local environmental laws and regulations governing our operations, including, but not limited to, emissions into the air and water and the use, handling, disposal and remediation of hazardous substances. A certain risk of environmental liability is inherent in our production activities. Under certain environmental laws, we could be held solely or jointly and severally responsible, regardless of fault, for the remediation of any hazardous substance contamination at our service centers and other facilities and the respective consequences arising out of human exposure to such substances or other environmental damage. We may not have been and may not be at all times in complete compliance with environmental laws, regulations and permits, and the nature of our operations exposes us to the risk of liabilities or claims with respect to environmental and worker health and safety matters. If we violate or fail to comply with environmental laws, regulations and permits, we could be subject to penalties, fines, restrictions on operations or other sanctions, and our operations could be interrupted. The cost of complying with current

and future environmental, health and safety laws applicable to our operations, or the liabilities arising from past releases of, or exposure to, hazardous substances, may result in future expenditures. Any of these developments, alone or in combination, could have a material adverse effect on our business, financial condition and results of operations.

If our service center operations are disrupted, sales of our 3D printing services, including the medical devices that we print, may be affected, which could have an adverse effect on our results of operations.

We have seven production service centers in Europe, the United States, Brazil and Japan, including our principal 3D printing service center located in Leuven, Belgium. If the operations of these facilities are materially disrupted, whether by fires or other industrial accidents, extreme weather, natural disasters, labor stoppages, acts of terror, or otherwise, we would be unable to fulfill customer orders for the period of the disruption, we would not be able to recognize revenue on orders, we could suffer damage to our reputation, and we might need to modify our standard sales terms to secure the commitment of new customers during the period of the disruption and perhaps longer. Depending on the cause of the disruption, we could incur significant costs to remedy the disruption and resume providing 3D printing services. Such a disruption could have an adverse effect on our results of operations.

We could experience unforeseen difficulties in building and operating key portions of our 3D printing infrastructure.

We have designed and built our own 3D printing operations, 3D printer platforms and other key portions of our technical infrastructure through which we serve our products and services, and we plan to continue to expand the size of our infrastructure through expanding our 3D printing facilities. The infrastructure expansion we may undertake may be complex, and unanticipated delays in the completion of these projects or availability of components may lead to increased project costs, operational inefficiencies, or interruptions in the delivery or degradation of the quality of our products. In addition, there may be issues related to this infrastructure that are not identified during the design and implementation phases, which may only become evident after we have started to fully utilize the underlying equipment, that could further degrade the user experience or increase our costs.

We may not have adequate insurance for potential liabilities, including liabilities arising from litigation.

In the ordinary course of business, we have been, and in the future may be, subject to various product and non-product related claims, lawsuits and administrative proceedings seeking damages or other remedies arising out of our commercial operations, including litigation related to defects in our software or other products. We maintain insurance to cover our potential exposure for a number of claims and losses. However, our insurance coverage is subject to various exclusions, self-retentions and deductibles, may be inadequate or unavailable to protect us fully, and may be cancelled or otherwise terminated by the insurer. Furthermore, we face the following additional risks related to our insurance coverage:

- we may not be able to continue to obtain insurance coverage on commercially reasonable terms, or at all, including with respect to our activities in the medical industry;
- we may be faced with types of liabilities that are not covered under our insurance policies, such as environmental contamination, terrorist attacks or alleged infringements of third parties' intellectual property rights, and that exceed any amounts that we may have reserved for such liabilities;
- the amount of any liabilities that we may face may exceed our policy limits; and
- we may incur losses resulting from the interruption of our business that may not be fully covered under our insurance policies.

Even a partially uninsured claim of significant size, if successful or if settled for a substantial amount of money, could have a material adverse effect on our business, financial condition, results of operations and liquidity. However, even if we successfully defend ourselves against any such claim, we could be forced to spend a substantial amount of money in litigation expenses, our management could be required to spend valuable time defending these claims and our reputation could suffer, any of which could adversely affect our results of operations.

Current and future global economic uncertainties and political conditions may adversely affect our results of operations.

Our results of operations could be substantially affected not only by global economic conditions, but also by local operating, economic, public health or environmental conditions, which can vary substantially by market. Unfavorable conditions can depress sales in a given market and may result in actions that adversely affect our margins, constrain our operating flexibility or result in charges that are unusual or non-recurring. Certain macroeconomic events, such as adverse conditions in the global economy, including with the continuing market disruptions caused by the containment measures taken by almost all countries in response to the coronavirus pandemic, the consequences of the exit by the United Kingdom from the European Union (commonly referred to as "Brexit") and the economic and political challenges facing China, Brazil, the United States, and certain Eurozone countries, could have a more wide-ranging and prolonged impact on the general business environment, which could also adversely affect us. These economic developments could affect us in numerous ways, many of which we cannot predict. We are unable to predict the likely duration and severity of the current disruption in financial markets and adverse economic conditions, or the effects these disruptions and conditions could have on us.

In addition, political and economic developments could also result in changes to legislation or reformation of government policies, rules and regulations, including in relation to tax and trade. Such changes could have a significant impact on our business by increasing the cost of doing business, affecting our ability to sell our software, products and services and negatively impacting our profitability. For example, on January 31, 2020, the United Kingdom ceased to be a member state of the European Union, and, on December 31, 2020, the United Kingdom ceased to be part of the E.U. single market and customs union, as well as all E.U. policies and international agreements. As a result, the free movement of persons, goods, services and capital between the United Kingdom and the European Union ended, and the European Union and the United Kingdom formed two separate markets and two distinct regulatory and legal spaces. On December 24, 2020, the European Commission reached a trade agreement with the United Kingdom on the terms of its future cooperation with the European Union, which we refer to as the "Trade Agreement". The Trade Agreement offers U.K. and E.U. companies preferential access to each other's markets, ensuring imported goods will be free of tariffs and quotas; however, economic relations between the United Kingdom and the European Union will now be on more restricted terms than existed previously. We cannot predict at this time the full impact that Brexit, the Trade Agreement or any future agreements or arrangements that may be implemented between the United Kingdom or the European Union may have on our business, operations and financial results.

Moreover, significant changes in U.S. tax and trade policies, including tariffs and government regulations affecting trade between the United States and other countries, could have an adverse effect on us. For example, trade relations between the United States and China were, at times, significantly strained during the presidency of Donald Trump, as both countries imposed increased tariffs on the importation of certain product categories. While it is not possible to predict the tax and trade policies for China under President Biden's administration, the implementation of a border tax, tariff or higher customs duties on our products imported into the United States or on raw materials we import into the United States, or any potential corresponding actions by other countries in which we do business, could negatively impact our financial performance. In addition, other countries may change their business and trade policies in anticipation of or in response to increased import tariffs and other changes in the United States' trade policy and regulations, which could also negatively impact our financial performance.

We face potential liability related to the privacy and security of personal information we collect.

In particular, but not exclusively, in connection with our Materialise Medical segment and the personalized wearables business we are pursuing within our Materialise Manufacturing segment, we may have access to personal information that is subject to a number of U.S. federal and state, E.U. and other applicable foreign laws protecting the confidentiality of certain patient health or other private information, including patient records, and restricting the use and disclosure of that protected information.

In the United States, we are subject to the Health Insurance Portability and Accountability Act, or HIPAA, the Health Information Technology for Economic and Clinical Health Act of 2009, regulations issued pursuant to these statutes, state privacy and security laws and regulations. These statutes, regulations and contractual obligations impose numerous requirements regarding the use and disclosure of personal health information with which we must comply. In addition, a new privacy law, the California Consumer Privacy Act, or CCPA, effective as of January 1, 2020, requires, among other things, covered companies, including us, to provide new disclosures to California consumers and afford such consumers the ability to opt out of certain sales of personal information. We cannot yet predict the impact of the CCPA on our business or operations, but it may require us to modify our data processing practices and policies and to incur substantial costs and expenses in an effort to comply.

In the European Union, the General Data Protection Regulation, or the GDPR, was passed on May 24, 2016, and replaced the E.U. Data Protection Directive when it came into force on May 25, 2018. GDPR introduced new data protection requirements in the European Union, unprecedented regulatory risk for non-compliant data processors and controllers and sizeable penalties for serious breaches—up to €20 million or 4% of global turnover, whichever is higher. The GDPR also significantly expands the territorial reach of existing E.U. data protection and privacy rules. Our business processes have been and continue to be modified in order to incorporate the requirements of the GDPR. In addition, in connection with its withdrawal from the European Union, the United Kingdom has implemented the GDPR as of January 1, 2021 (as it existed on December 31, 2020 but subject to certain U.K.-specific amendments), or U.K. GDPR.

In ensuring continued compliance with the E.U. regime, our transfer of any personal data from the European Union to the United States must be done in a manner which satisfies E.U. cross-border data transfer requirements. The E.U.-U.S. Privacy Shield, which had been adopted by the United States and the European Union as a framework for protecting the fundamental rights of anyone in the European Union whose personal data is transferred to the United States for commercial purposes, was subsequently invalidated by the European Court of Justice on July 16, 2020 for not meeting E.U. regulatory requirements. We are investigating and undertaking appropriate steps to mitigate the risks caused by the invalidation of the Privacy Shield.

In addition, the use and disclosure of personal health and other private information is subject to regulation in other jurisdictions in which we do business or expect to do business in the future. Those jurisdictions may attempt to apply such laws extraterritorially or through treaties or other arrangements with European governmental entities. We might unintentionally violate such laws, such laws may be modified and new laws may be enacted in the future which may increase the chance that we violate them. For example, each of the GDPR and the U.K. GDPR contains rules relating to the collection and processing of personal information, which are not identical to the current rules under national privacy laws and which contain more strict provisions. Any such developments, or developments stemming from enactment or modification of other laws, or the failure by us to comply with their requirements or to accurately anticipate the application or interpretation of these laws could create material liability to us, result in adverse publicity and negatively affect our medical business.

Our failure to accurately anticipate the application or interpretation of these statutes, regulations and contractual obligations as we develop our medical and other products and services, a failure by us to comply with their requirements (e.g., evolving encryption and security

requirements) or an allegation that defects in our medical or other products have resulted in noncompliance by our customers could create material civil and/or criminal liability for us, resulting in adverse publicity and negatively affecting our medical business. Any legislation or regulation in the area of privacy and security of personal information could affect the way we operate and could harm our business. The costs of compliance with, and the other burdens imposed by, these and other laws or regulatory actions may prevent us from selling our solutions or increase the costs associated with selling our products and services, and may affect our ability to invest in or jointly develop our products and services in the United States, the European Union and in foreign jurisdictions. Further, we cannot assure you that our privacy and security policies and practices will be found sufficient to protect us from liability or adverse publicity relating to the privacy and security of personal information.

Risks Related to Our Materialise Medical Segment and Regulatory Environment

Our medical business, financial condition, results of operations and cash flows could be significantly and negatively affected by substantial government regulations.

Our medical products are subject to rigorous regulation by the European Commission, the U.S. Food and Drug Administration, or the FDA, and numerous other applicable governmental authorities. In general, the development, testing, manufacturing and marketing of our medical products are subject to extensive regulation and review by numerous governmental authorities in the European Union, the United States, the United Kingdom, Canada, Brazil, Japan and Australia, and in other markets where we are currently active or may become active in the future. The regulatory process requires the expenditure of significant time, effort and expense to bring new medical products to market, and we cannot be certain that we will receive regulatory approvals, certifications or registrations in any country in which we plan to market our medical products.

The laws and regulations, including the requirements for approvals, certifications or registrations and the time required for regulatory review, vary from country to country. For example, to market our medical products within the member states of the European Union, we are required to comply with the European Medical Device Directive. Under the European Medical Device Directive, all medical devices except custom-made and investigational devices must bear the CE mark. To obtain authorization to affix the CE mark to our medical products, a recognized European notified body must assess our quality systems and the product's conformity to the requirements of the European Medical Device Directive. Recently, this process has been impacted by the general lack of capacity of notified bodies properly designated under the new E.U. Medical Device Regulation, which will become effective on May 26, 2021, as well as difficulties due to the COVID-19 pandemic in executing on-site audits. These issues may delay the (re)certification and commercialization of our new or updated medical products in the European Economic Area, or EEA. Similarly, in the United States, we are required to obtain clearance or approval from the FDA prior to marketing our medical products.

The regulatory approval process outside the European Union and the United States may include all of the risks associated with obtaining CE or FDA clearance or approval in addition to other risks. Clearance or approval by the FDA in the United States, or conformity assessment and affixing a CE mark in the EEA does not ensure approval or certification by regulatory authorities in other countries, and approval or certification by one foreign regulatory authority does not ensure approval by regulatory authorities in other countries. We may be required to perform additional pre-clinical or clinical studies even if FDA clearance or approval, or the right to bear the CE label, has been obtained. We may not obtain regulatory approvals or certifications outside the European Union and the United States on a timely basis, if at all. If we fail to receive necessary approvals to commercialize our medical products in jurisdictions outside the European Union and the United States on a timely basis, or at all, our medical business, financial condition and results of operations could be adversely affected.

As a manufacturer of medical devices, we participate in the Medical Device Single Audit Program, or MDSAP, which is a prerequisite for market entry in Canada, and which makes results from external audits by an accredited auditing organization available to the regulatory authorities of the United States, Canada, Brazil, Japan and Australia. A single audit is used in lieu of multiple separate audits or inspections by participating regulatory authorities or their representatives, reducing the overall number of audits or inspections. However, the auditing organization must inform regulatory authorities directly when certain non-conformity thresholds are reached, enabling participating regulatory authorities to immediately undertake actions appropriate for their jurisdictions.

In addition, we are required to implement and maintain stringent reporting, labelling and record keeping procedures and make our facilities and operations subject to periodic inspections, both scheduled and unannounced, by the regulatory authorities. The medical device industry is also subject to a myriad of complex laws and regulations governing reimbursement, which varies from jurisdiction to jurisdiction in the European Union and which includes Medicare and Medicaid reimbursement in the United States as well as healthcare fraud and abuse laws, with these laws and regulations being subject to interpretation. In many instances, the industry does not have the benefit of significant regulatory or judicial interpretation of these laws and regulations. In certain public statements, governmental authorities have taken positions on issues for which little official interpretation was previously available. Some of these positions appear to be inconsistent with common practices within the industry but that have not previously been challenged.

Various governmental agencies have become increasingly vigilant in recent years in their investigation of various business practices. Governmental and regulatory actions against us can result in various actions that could adversely impact our medical operations, including:

- the recall or seizure of products;

- the suspension or revocation of the authority necessary for the production or sale of a product;
- the delay of our ability to introduce new products into the market;
- the suspension of shipments from particular manufacturing facilities;
- the issuance of warning letters or untitled letters;
- the imposition of operating restrictions;
- the imposition of injunctions, fines and penalties;
- the exclusion of our products from being reimbursed by healthcare programs in the European Union or U.S. federal and state healthcare programs (such as Medicare, Medicaid, Veterans Administration health programs and Civilian Health and Medical Program of the Uniformed Services);
- the delay or denial of customs clearance of our products for import in certain jurisdictions; and
- other civil or criminal sanctions against us.

Failure to comply with applicable regulatory requirements could also result in civil actions against us and other unanticipated expenditures. Any of these actions, in combination or alone, or even a public announcement that we are under investigation for possible violations of these laws, could have a material adverse effect on our medical business, financial condition, results of operations and cash flows. If investigated, we cannot assure that the costs of defending or resolving those investigations or proceedings would not have a material adverse effect on our financial condition, results of operations and cash flows.

In many of the countries in which we market our medical products, we are subject to regulations affecting, among other things, clinical efficacy, product standards, packaging requirements, labelling requirements, import/ export restrictions, tariff regulations, duties and tax requirements. Many of the regulations applicable to our medical surgical guides, models, implants and software products in these countries are similar to those of the European Commission and the FDA. In addition, in many countries the national health or social security organizations require our medical products to be qualified before they can be marketed with the benefit of reimbursement eligibility. Failure to receive or delays in the receipt of relevant foreign qualifications also could have a material adverse effect on our medical business, financial condition, results of operations and cash flows.

As the government regulators in the European Union, United States and elsewhere have become increasingly stringent, we may be subject to more rigorous regulation by governmental authorities in the future.

Modifications to our medical products marketed in the United States may require new 510(k) clearances or premarket approvals, or may require us to cease marketing or recall the modified products until clearances are obtained.

Any modification to a 510(k)-cleared device that could significantly affect its safety or efficacy, or that would constitute a major change in its intended use, technology, materials, packaging and certain manufacturing processes, may require a new 510(k) clearance or, possibly, a premarket approval, or PMA. The FDA requires every manufacturer to make the determination regarding the need for a new 510(k) clearance or PMA in the first instance, but the FDA may (and often does) review the manufacturer's decision. The FDA may not agree with a manufacturer's decision regarding whether a new clearance or approval is necessary for a modification, and may retroactively require the manufacturer to submit a premarket notification requesting 510(k) clearance or an application for PMA. We have made modifications to our medical products in the past and may make additional modifications in the future that we believe did not or will not require additional clearances or approvals. No assurance can be given that the FDA would agree with any of our decisions not to seek 510(k) clearance or PMA. If the FDA requires us to cease marketing and recall the modified device until we obtain a new 510(k) clearance or PMA, our medical business, financial condition, results of operations and future growth prospects could be materially adversely affected. Further, our medical products could be subject to recall if the FDA determines, for any reason, that our products are not safe or effective. Any recall or FDA requirement that we seek additional approvals or clearances could result in significant delays, fines, increased costs associated with modification of a product, loss of revenue and potential operating restrictions imposed by the FDA.

Healthcare policy changes, including legislation to reform the U.S. healthcare system, could adversely affect us.

From time to time, legislation is drafted and introduced that could significantly change the statutory provisions governing the clearance or approval, manufacture and marketing of a medical device. In addition, regulations and guidance are often revised or reinterpreted in ways that may significantly affect our medical business and our medical products. It is impossible to predict whether legislative changes will be enacted or regulations, guidance or interpretations changed, and what the impact of such changes, if any, may be.

For instance, in 2010, the U.S. Patient Protection and Affordable Care Act, as amended by the U.S. Health Care and Education Reconciliation Act of 2010, or collectively, the PPACA, was enacted, which included, among other things, the following measures: a Patient-Centered Outcomes Research Institute to oversee, identify priorities in and conduct comparative clinical effectiveness research; reporting and disclosure requirements on device manufacturers for any "transfer of value" made or distributed to prescribers and other healthcare providers, effective March 30, 2013 (referred to as the Physician Sunshine Payment Act); payment system reforms including a national pilot program on payment bundling to encourage hospitals, physicians and other providers to improve the coordination, quality and efficiency of certain healthcare services through bundled payment models, beginning on or before January 1, 2013; and an independent payment advisory board that will submit recommendations to reduce Medicare spending if projected Medicare spending exceeds a specified growth rate. Some of the provisions of the PPACA have yet to be fully implemented, while certain provisions have been subject to U.S. judicial and Congressional challenges. Efforts to repeal and replace the PPACA have been ongoing since the 2016 election, but it is unclear if these efforts will be successful. Since January 2017, President Trump has signed Executive Orders and other directives designed to delay, circumvent or loosen the implementation of certain provisions requirements mandated by the PPACA or otherwise circumvent some of the requirements for health insurance mandated by the PPACA. In addition, as part of the December 2017 Tax Cuts and Jobs Act, the "individual mandate," which required individuals to purchase insurance, was repealed. Furthermore, in December 2018, a U.S. District Court Judge in the Northern District of Texas ruled that the PPACA is unconstitutional in its entirety because such individual mandate was repealed, although the U.S. District Court Judge and President Trump, among others, have acknowledged the ruling will have no immediate effect pending appeal. Thus, the full impact of the PPACA, any law repealing or replacing elements of it, and the political uncertainty surrounding any repeal or replacement legislation on our business remains unclear.

We cannot predict what healthcare programs and regulations will be ultimately implemented at the U.S. federal or state level, or at the E.U. level or within the implementing legislation of the individual E.U. Member States, or the effect of any future legislation or regulation. However, these provisions as adopted could meaningfully change the way healthcare is delivered and financed, and may materially impact numerous aspects of our medical business. In particular, any changes that lower reimbursements or reduce medical procedure volumes could adversely affect our medical business and results of operations.

In addition, in the future there may continue to be additional proposals relating to the reform of the healthcare systems of the United States, the European Union, any individual Member State of the European Union or any other jurisdiction where we may operate. For example, on April 5, 2017, the Medical Devices Regulation (Regulation (EU) 2017/745) was adopted. Subject to any postponement of the implementation of the Medical Devices Regulation by the European Council and European Parliament, the regulation will become effective on May 26, 2021. Once effective, the new regulation will, among other things:

- strengthen the rules on placing devices on the market and reinforce surveillance once they are available;
- establish explicit provisions on manufacturers' responsibilities for the follow-up of the quality, performance and safety of devices placed on the market;
- improve the traceability of medical devices throughout the supply chain to the end-user or patient through a unique identification number;
- set up, as of 2022, a central database to provide patients, healthcare professionals and the public with comprehensive information on products available in the European Union; and
- strengthen rules for the assessment of certain high-risk devices, such as implants, which may have to undergo an additional check by experts before they are placed on the market.

Transition from the regulation of our products under the current E.U. regulatory framework to regulation under the Medical Devices Regulation may require a substantial transition effort by us. In addition, detail as to how certain aspects of the Medical Devices Regulation will be applied remains unclear. Failure to update our quality system and regulatory documentation could delay our transition to compliance with the Medical Devices Regulation and delay or prevent us from obtaining new CE Certificates of Conformity under the Regulation. As a result, transition from compliance with the current E.U. regulatory framework to the Medical Devices Regulation could result in disruption to our business in the European Economic Area, which could adversely affect our business, results of operation and financial condition.

Furthermore, initiatives sponsored by government agencies, legislative bodies and the private sector to limit the growth of healthcare costs, including price regulation and competitive pricing, are ongoing in markets where we do business. We could experience a negative impact on our results of operations due to increased pricing pressure in certain or all of the markets in which we operate. Governments, hospitals and other third party payors could reduce the amount of approved reimbursements for our products. Reductions in reimbursement levels or coverage or other cost-containment measures could unfavorably affect our future results of operations.

The use, including the misuse or off-label use, of our medical services and products may be deemed unauthorized use or improper promotion, which could harm our image in the marketplace or result in injuries that lead to product liability suits and could be costly to our business or result in regulatory sanctions.

Medical decisions may only be made and operations may only be executed by trained professionals who are authorized to do so in the jurisdictions in which they operate.

Our medical services and products are generally designed to support surgeons in the planning and performance of their operations. In our medical software products set up, training and engineering support, we make it very clear that responsibility for medical decisions rests exclusively with the responsible surgeon, who is responsible for carefully reviewing and explicitly approving the surgical plan and/or the design of

the medical device that is proposed by our software and engineers. Nonetheless, we cannot assure that patients, hospitals, surgeons or other parties will not try to hold us responsible for all or a part of the medical decisions underlying the operations that we support, exposing us to potential litigation or civil and criminal liability for unauthorized medical decision-making. Such actions or liability could lead governmental agencies to conclude that our products or services are used improperly, all of which could significantly damage our reputation and could materially impair the continued adoption of our medical services and product offering in the market.

In the markets in which we operate, our medical promotional materials and training methods must comply with numerous applicable laws and regulations, including the prohibition on the promotion of a medical device for a use that has not been cleared or approved by the relevant regulator or supervisory body. Use of a device outside of its cleared or approved indication is known as "off-label" use. If a relevant governmental authority determines that our medical promotional materials or training constitute promotion of an off-label use, it could request that we modify our training or promotional materials or subject us to regulatory or enforcement actions, including the issuance of an untitled letter, a warning letter, injunction, seizure, civil fine and criminal penalties. In that event, our reputation could be damaged and adoption of our medical products would be impaired. Although we train our sales force not to promote our medical products for off-label uses, and our instructions for use in all markets specify that our products are not intended for use outside of those indications cleared for use, competent regulatory agency could conclude that we have engaged in off-label promotion. In addition, there may be increased risk of injury if surgeons attempt to use our medical products off-label.

Surgeons also may misuse our medical products or use improper techniques if they are not adequately trained, potentially leading to injury and an increased risk of product liability. Product liability claims are expensive to defend and could divert our management's attention and result in substantial damage awards against us. Any of these events could adversely affect our medical business, results of operations and reputation and our ability to attract and retain customers for our products and services.

If our marketed medical devices are defective or otherwise pose safety risks, the relevant governmental authorities could require their recall, or we may initiate a recall of our products voluntarily.

The relevant governmental authorities may require the recall of commercialized products in the event of material deficiencies or defects in design or manufacture or in the event that a product poses an unacceptable risk to health. Manufacturers, on their own initiative, may recall a product if any material deficiency in a device is found. A government mandated or voluntary recall could occur as a result of an unacceptable risk to health, component failures, manufacturing errors, design or labelling defects or other deficiencies and issues. Recalls of any of our medical products would divert managerial and financial resources and have an adverse effect on our financial condition and results of operations. Any recall could impair our ability to produce our medical products in a cost-effective and timely manner in order to meet our customers' demands. We also may be required to bear other costs or take other actions that may have a negative impact on our future revenue and our ability to generate profits. We may initiate voluntary recalls involving our medical products in the future that we determine do not require notification of the relevant regulatory body. If a governmental agency disagrees with our determinations, they could require us to report those actions as recalls. A future recall announcement could harm our reputation with customers and negatively affect our revenue. In addition, the relevant authority could take enforcement action for failing to report the recalls when they were conducted.

Alternative medical solutions could outperform the solutions we offer, rendering our solutions obsolete.

Our Materialise Medical segment products and services compete with other innovative technologies that offer similar medical solutions. In addition, many of our competitors are continuing to innovate in the subsegments of the market that we seek to address. For example, our 3D printed surgical guides compete with robotics and navigational solutions, which offer alternative methods to guide a surgeon during an intervention. These current and future alternative technological solutions could outperform the solutions we offer and render our solutions, obsolete.

If our Materialise Medical segment products cause or contribute to a death or a serious injury, or malfunction in certain ways, we will be subject to medical device reporting regulations, which can result in voluntary corrective actions or agency enforcement actions.

Under the FDA medical device reporting regulations, or MDR, we are required to report to the FDA any incident in which our medical product has malfunctioned and would be likely to cause or contribute to a death or serious injury if the malfunction happened again. If we fail to report these events to the FDA within the required timeframes, or at all, the FDA could take enforcement action against us. Any adverse event involving our medical products could result in future voluntary corrective actions, such as recalls or customer notifications, or agency action, such as inspection, mandatory recall or other enforcement action. Any corrective action, whether voluntary or involuntary, as well as defending ourselves in a lawsuit, will require the dedication of our time and capital, distract management from operating our business, and may harm our reputation and financial results.

In the EEA, we must comply with the E.U. Medical Device Vigilance System, the purpose of which is to improve the protection of health and safety of patients, users and others by reducing the likelihood of reoccurrence of incidents related to the use of a medical device. Under this system, incidents must be reported to the competent authorities of the Member States of the EEA. An incident is defined as any malfunction or deterioration in the characteristics and/or performance of a device, as well as any inadequacy in the labelling or the instructions for use which, directly or indirectly, might lead to or might have led to the death of a patient or user or of other persons or to a serious deterioration in their state of health. Incidents are evaluated by the EEA competent authorities to whom they have been reported, and where appropriate, information is disseminated between them in the form of National Competent Authority Reports. The E.U. Medical Device Vigilance System is further intended to facilitate a direct, early and harmonized implementation of Field Safety Corrective Actions, or FSCAs, across the Member States of the EEA where the device is in use. An FSCA is an action taken by a manufacturer to reduce a risk of death or serious deterioration in the state of health associated

with the use of a medical device that is already placed on the market. An FSCA may include the recall, modification, exchange, destruction or retrofitting of the device. FSCAs must be communicated by the manufacturer or its legal representative to its customers and/or to the end users of the device through Field Safety Notices.

Our Materialise Medical segment's 3D printing operations are required to operate within a quality management system that is compliant with the regulations of various jurisdictions, including the requirements of ISO 13485, and the U.S. Quality System Regulation, which is costly and could subject us to enforcement action.

We are subject to the regulations of various jurisdictions regarding the manufacturing process for our medical products, including the requirements of ISO 13485. Within the United States, we are required to comply with the Quality System Regulation, which covers, among other things, the methods of documentation of the design, testing, production, control, quality assurance, labelling, packaging, sterilization, storage and shipping of our medical products. Compliance with these regulations is costly and time-consuming. In addition, the FDA enforces the Quality System Regulation through periodic announced and unannounced inspections of manufacturing facilities. The failure by a manufacturer to comply with applicable statutes and regulations administered by the FDA and other regulatory bodies, or the failure to timely and adequately respond to any adverse inspectional observations or product safety issues, could result in, among other things, any of the following enforcement actions:

- untitled letters, warning letters, fines, injunctions, consent decrees and civil penalties;
- customer notifications or repair, replacement, refunds, recall, detention or seizure of our medical products;
- operating restrictions or partial suspension or total shutdown of production;
- refusing or delaying requests for 510(k) clearance or PMA of new products or modified products;
- withdrawing 510(k) clearances or PMAs that have already been granted;
- refusal to grant export approval for our medical products; or
- criminal prosecution.

Any regulatory enforcement actions could impair our ability to produce our medical products in a cost-effective and timely manner in order to meet our customers' demands. We also may be required to bear other costs or take other actions that may have a negative impact on our future revenue and our ability to generate profits. Furthermore, our key component suppliers may not currently be or may not continue to be in compliance with all applicable regulatory requirements, which could result in our failure to produce our medical products on a timely basis and in the required quantities, if at all.

We may be subject to or otherwise affected by U.S. federal and state, European or other healthcare laws, including fraud and abuse and health information privacy and security laws, and could face substantial penalties if we are unable to fully comply with such laws.

Healthcare regulation by U.S. federal and state, European or other governments could significantly impact our medical business. Healthcare fraud and abuse and health information privacy and security laws potentially applicable to our medical operations include:

- the U.S. federal Anti-Kickback Law, which constrains our marketing practices and those of our independent sales agencies, educational programs, pricing, bundling and rebate policies, grants for physician-initiated trials and continuing medical education, and other remunerative relationships with healthcare providers, by prohibiting, among other things, soliciting, receiving, offering or providing remuneration, intended to induce the purchase or recommendation of an item or service reimbursable under a U.S. federal healthcare program, such as the Medicare or Medicaid programs;
- U.S. federal false claims laws which prohibit, among other things, knowingly presenting, or causing to be presented, claims for payment from Medicare, Medicaid, or other third party payors that are false or fraudulent;
- HIPAA, and its implementing regulations, which created federal criminal laws that prohibit executing a scheme to defraud any healthcare benefit program or making false statements relating to healthcare matters and which also imposes certain regulatory and contractual requirements regarding the privacy, security and transmission of individually identifiable health information;
- U.S. state laws analogous to each of the above federal laws, such as anti-kickback and false claims laws that may apply to items or services reimbursed by any third party payor, including commercial insurers, and state laws governing the privacy and security of certain health information, many of which differ from each other in significant ways and often are not pre-empted by HIPAA, thus complicating compliance efforts; and

- similar foreign laws and regulations governing healthcare fraud and abuse, patient data privacy, interactions with healthcare professionals and related laws and regulations that apply to us in the countries in which we operate.

If our past or present operations are found to be in violation of any of such laws or any other governmental regulations that may apply to us, we may be subject to penalties, including civil and criminal penalties, damages, fines, exclusion from U.S. federal healthcare programs and the curtailment or restructuring of our operations. Similarly, if the healthcare providers or entities with whom we do business are found to be non-compliant with applicable laws, they may be subject to sanctions, which could also have a negative impact on us. Any penalties, damages, fines, curtailment or restructuring of our operations could adversely affect our ability to operate our medical business and our financial results. The risk of our company being found in violation of these laws is increased by the fact that many of them have not been fully interpreted by the regulatory authorities or the courts, and their provisions are open to a variety of interpretations. Further, the PPACA, among other things, amends the intent requirement of the U.S. federal anti-kickback and criminal health care fraud statutes. A person or entity no longer needs to have actual knowledge of this statute or specific intent to violate it. In addition, the PPACA provides that the government may assert that a claim including items or services resulting from a violation of the U.S. federal anti-kickback statute constitutes a false or fraudulent claim for purposes of the false claims statutes. Any action against us for violation of these laws, even if we successfully defend against them, could cause us to incur significant legal expenses and divert our management's attention from the operation of our business.

Risks Related to Our Intellectual Property

If we are unable to obtain patent protection for our products or otherwise protect our intellectual property rights, our business could suffer.

We rely on a combination of patents, copyrights, trademarks, trade secrets, confidentiality and other contractual arrangements with our employees, end-users and others to maintain our competitive position. Our success depends, in part, on our ability to obtain patent protection for or maintain as trade secrets our proprietary products, technologies and inventions and to maintain the confidentiality of our trade secrets and know-how, operate without infringing upon the proprietary rights of others and prevent others from infringing upon our business proprietary rights.

Despite our efforts to protect our proprietary rights, it is possible that competitors or other unauthorized third parties may obtain, copy, use or disclose or otherwise circumvent our technologies, software, inventions, processes or improvements. We cannot assure investors that any of our existing or future patents or other intellectual property rights will be enforceable, will not be challenged, invalidated or circumvented, or will otherwise provide us with meaningful protection or any competitive advantage. In addition, our pending patent applications may not be granted, and we may not be able to obtain foreign patents or elect to file applications corresponding to our U.S., European or other patents. We intend to expand our business to certain countries that may not provide the same level of patent or other intellectual property protection as the United States and the European Union. Even if we assert our patents or obtain additional patent or similar protection in such countries, effective enforcement of such patents or other rights may not be available. If our patents do not adequately protect our technology, our competitors may be able to offer products or services similar to ours or potential customers may gain illegal access to our proprietary technology. Our competitors may also be able to develop similar technology independently or design around our patents, and we may not be able to detect the unauthorized use of our proprietary technology or take appropriate steps to prevent such use. Any of the foregoing events would lead to increased competition and lower revenue or gross margins, which could adversely affect our results of operations.

Moreover, ongoing changes to the U.S. patent laws may impact our ability to obtain and enforce our intellectual property rights. In recent years, the courts have interpreted U.S. patent laws and regulations differently, and in particular the U.S. Supreme Court has decided a number of patent cases and continues to actively review more patent cases than it has in the past. Some of these changes or potential changes may not be advantageous for us, and may make it more difficult to obtain adequate patent protection or to enforce our patents against parties using them without a license or payment of royalties. These changes could increase the costs and uncertainties surrounding the prosecution of our patent applications and the enforcement or defense of our patent rights, all of which could have a material adverse effect on our business and financial condition.

We may not be able to protect our trade secrets and intellectual property.

While some of our technology is licensed under patents belonging to others or is covered by process patents which are owned or applied for by us, much of our technology is not protected by patents. Furthermore, patents are jurisdictional in nature and therefore only protect us in certain markets, rather than globally. We have devoted substantial resources to the development of our technology, trade secrets, know-how and other unregistered proprietary rights. While we enter into confidentiality and invention assignment agreements intended to protect such rights, such agreements can be difficult and costly to enforce or may not provide adequate remedies if violated. Such agreements may be breached and confidential information may be willfully or unintentionally used or disclosed in violation of the agreements, or our competitors or other parties may learn of the information in some other way. We cannot legally prevent one or more other companies from developing similar or identical technology to our unpatented technology and accordingly, it is likely that, over time, one or more other companies may be able to replicate our technology, thereby reducing our technological advantages. If we do not protect our technology or are unable to develop new technology that can be protected by patents or as trade secrets, we may face increased competition from other companies, which may adversely affect our results of operations.

We may incur substantial costs enforcing or acquiring intellectual property rights and defending against third party claims as a result of litigation or other proceedings.

In connection with the enforcement of our intellectual property rights, opposing third parties from obtaining patent rights or disputes related to the validity or alleged infringement of our or third party intellectual property rights, including patent rights, we have been and may in the future be subject or party, directly or indirectly, to claims, negotiations or complex, protracted litigation.

While we strive to avoid infringing the intellectual property rights of third parties, we cannot provide any assurances that we will be able to avoid any claims, directed against us directly or against our collaboration partners or our other customers, that our products and technology, including the technology that we license from others, infringe the intellectual property rights of third parties. Patent applications in the United States and most other countries are confidential for a period of time until they are published, and the publication of discoveries in scientific or patent literature typically lags actual discoveries by several months or more. As a result, the nature of claims contained in unpublished patent filings around the world is unknown to us, and we cannot be certain that we were the first to conceive inventions covered by our patents or patent applications or that we were the first to file patent applications covering such inventions. Furthermore, it is not possible to know in which countries patent holders may choose to extend their filings under the Patent Cooperation Treaty or other mechanisms. Moreover, the patent landscape in the different fields in which we operate is heavily occupied and freedom to operate examinations are costly and time-consuming. We have not obtained extensive freedom to operate reports in the past for each and all of our products and services, nor do we intend to install on a general basis freedom to operate examinations for our future products and services. In addition, we may be subject to intellectual property infringement claims from individuals, vendors and other companies, including those that are in the business of asserting patents, but are not commercializing products or services in the different fields in which we operate, or our collaboration partners or our other customers may seek to invoke indemnification obligations to involve us in such intellectual property infringement claims. Furthermore, although we maintain certain procedures to help to ensure that the items we 3D print on behalf of customers do not infringe upon the intellectual property rights of others, we cannot be certain that our procedures will be effective in preventing any such infringement.

Intellectual property disputes and litigation, regardless of the merit or resolution, could cause us to incur significant costs in enforcing, or responding to, defending and resolving such claims. In addition, such claims can be costly and disruptive to our business operations by diverting attention and energies of management and key technical personnel, by prohibiting or otherwise impairing our ability to commercialize new or existing products or services and by increasing our costs of doing business. We may not prevail in any such dispute or litigation, and an adverse decision in any legal action involving intellectual property rights, including any such action commenced by us, could limit the scope of our intellectual property rights and the value of the related technology. Third party claims of intellectual property infringement successfully asserted against us may require us to redesign infringing technology or enter into costly settlement or license agreements on terms that are unfavorable to us, prevent us from manufacturing or licensing certain of our products, subject us to injunctions restricting our sale of products and use of infringing technology, cause severe disruptions to our operations or the markets in which we compete, impose costly damage awards or require indemnification of our sales agents and end-users. In addition, as a consequence of such claims, we may incur significant costs in acquiring the necessary third party intellectual property rights for use in our products and services or developing non-infringing substitute technology. Any of the foregoing developments may have a material adverse effect on our business, financial condition and results of operations.

We cannot predict the outcome of a lawsuit in which we are involved.

In addition, on May 6, 2020, we received a written notice and request for indemnification from Zimmer Biomet, which had been named as a defendant in a patent infringement suit filed by Osteoplastics, LLC on March 20, 2020 in the United States District Court for the District of Delaware. Zimmer Biomet based its request for indemnification on the terms of its license and distribution agreement with us. The complaint alleges infringement by Zimmer Biomet of four U.S. patents. The allegedly infringing products include certain instruments allegedly manufactured with certain of our software. The litigation is currently in the early stages of discovery and the case is scheduled for trial in October 2022. We have entered into a cost-sharing agreement with Zimmer Biomet pursuant to which we have exercised our right to assume and control the defense of the action related to the products covered by our indemnity obligations. We have also filed petitions requesting a review of the patents asserted by Osteoplastics by the U.S. Patent and Trademark Office, as well as other patents asserted by Osteoplastics in certain other actions brought against third party defendants. We believe there are meritorious defenses to the complaint and intend to contest it vigorously. However, an adverse resolution of this litigation could have an adverse effect on our results of operations, financial condition or cash flows in the period in which the litigation is resolved. No amounts have been accrued for this loss contingency.

Obtaining and maintaining our patent protection depends on compliance with various procedural, documentary, fee payment and other requirements imposed by governmental patent agencies, and our patent protection could be reduced or eliminated for non-compliance with these requirements.

Periodic maintenance fees on any issued patent are due to be paid to governmental patent agencies, including the U.S. Patent and Trademark Office, or USPTO, in several stages over the lifetime of the patent. The USPTO and various foreign governmental patent agencies require compliance with a number of procedural, documentary, fee payment and other similar provisions during the patent application process. While an inadvertent lapse can in many cases be cured by payment of a late fee or by other means in accordance with the applicable rules, there are situations in which noncompliance can result in lapse of the patent or patent application, resulting in partial or complete loss of patent rights in the relevant jurisdiction. Non-compliance events that could result in lapse of a patent or patent application include, but are not limited to, failure to respond to official actions within prescribed time limits, non-payment of fees and failure to properly legalize and submit formal documents. If we or our licensors fail to maintain the patents and patent applications covering our products and processes, our competitive position could be adversely affected.

We may be subject to claims that our employees have wrongfully used or disclosed alleged trade secrets of their former employers.

Certain of our past and present employees were previously employed at other companies, including our competitors or potential competitors. Some of these employees executed proprietary rights, non-disclosure and non-competition agreements in connection with such previous employment. Although we try to ensure that our employees do not use the proprietary information or know-how of others in their work for us, we may be subject to claims that we or these employees have used or disclosed intellectual property, including trade secrets or other proprietary information, of any such employee's former employer. We are not aware of any threatened or pending claims related to these matters, but in the future litigation may be necessary to defend against such claims. If we fail in defending any such claims, in addition to paying monetary damages, we may lose valuable personnel or intellectual property rights. Even if we are successful in defending against such claims, litigation could result in substantial costs and be a distraction to management.

If disputes arise, we could lose rights that are important to our business or be subject to restrictions on the conduct of our business.

We have license agreements with respect to certain intellectual property that is important to our business and that may include exclusivity and non-competition undertakings. Disputes may arise between the counterparties to these agreements and us that could result in termination of these agreements. If we fail to comply with our obligations under our intellectual property-related agreements, or misconstrue the scope of the rights granted to us or restrictions imposed on us under these agreements, the counterparties may have the right to terminate these agreements or sue us for damages or equitable remedies, including injunctive relief. Termination of these agreements, the reduction or elimination of our rights under these agreements, or the imposition of restrictions under these agreements that we have not anticipated may result in our having to negotiate new or reinstated licenses with less favorable terms, or to cease commercialization of licensed technology and products. This could materially adversely affect our business.

Certain technologies and patents have been developed with collaboration partners and we may face restrictions on this jointly developed intellectual property.

We have entered into collaborations with a number of industrial and medical device companies and academic institutions, including Zimmer-Biomet, DJO Surgical, DePuy Synthes, Lima, Mathys, Siemens, BASF 3D Printing Solutions GmbH, FluidDa NV, or FluidDa, the University of Michigan, and HOYA. We have, in some cases individually and in other cases along with our collaboration partners, filed for patent protection for a number of technologies developed under these agreements and may in the future file for further intellectual property protection and/or seek to commercialize such technologies. Under some of these agreements, certain intellectual property developed by us and the relevant partner may be subject to joint ownership by us and the partner and our commercial use of such intellectual property may be restricted, or may require written consent from, or a separate agreement with, the partner. In other cases, we may not have any rights to use intellectual property solely developed and owned by the partner. If we cannot obtain commercial use rights for such jointly-owned intellectual property or partner-owned intellectual property, our future product development and commercialization plans may be adversely affected. For additional information, see "Item 4. Information on the Company—B. Business Overview—Intellectual Property."

Our use of open source software may expose us to additional risks and harm our intellectual property.

Some of our proprietary software, including some of our 3D printing software, may use or incorporate open source software. Some open source software licenses require users who distribute open source software as part of their own software product to publicly disclose all or part of the source code to such software product or make available any derivative works of the open source code on unfavorable terms or at no cost. We monitor, on an ongoing basis, whether our proprietary software, including that in our 3D printing software, would make use of any open source software that could require us to disclose our proprietary source code, which could adversely affect our business.

Risks Related to the ADSs

The ADSs may experience price and volume fluctuations.

The stock market generally has experienced extreme price and volume fluctuations that have often been unrelated or disproportionate to the operating performance of listed companies. Broad market and industry factors may negatively affect the market price of the ADSs, regardless of our actual operating performance. The market price and liquidity of the market for the ADSs may be higher or lower than the price you paid and may be significantly affected by numerous factors, some of which are beyond our control. These factors include:

- significant volatility in the market price and trading volume of securities of companies in our sector, which is not necessarily related to the operating performance of these companies;
- the mix of products that we sell, and related services that we provide, during any period;
- delays between our expenditures to develop and market new products and the generation of sales from those products;
- changes in the amount that we spend to develop, acquire or license new products, technologies or businesses;
- changes in our expenditures to promote our products and services;

- success or failure of research and development projects of us or our competitors;
- announcements of acquisitions by us or one of our competitors;
- the general tendency towards volatility in the market prices of shares of companies that rely on technology and innovation;
- changes in regulatory policies or tax guidelines;
- changes or perceived changes in earnings or variations in operating results;
- any shortfall in revenue or net income from levels expected by investors or securities analysts; and
- general economic trends and other external factors.

Any of these could result in a material decline in the price of the ADSs.

Members of our board of directors and senior management own a significant percentage of our ordinary shares and are able to exert significant influence over matters subject to shareholder approval.

Members of our board of directors and senior management beneficially owned approximately 60.6% of our outstanding ordinary shares (including ordinary shares represented by ADSs), as of April 24, 2021. These shareholders have significant influence over the election of members of our board of directors and the outcome of corporate actions requiring shareholder approval, including dividend policy, mergers, share capital increases, amendments of our restated articles of association and other extraordinary transactions. For example, these shareholders may be able to influence the outcome of elections of members of our board of directors, amendments of our organizational documents, or approval of any merger, sale of assets, or other major corporate transactions. In addition, our restated articles of association provide that, as long as Wilfried Vancraen, our founder and Chief Executive Officer, Hilde Ingelaere, an Executive Vice President of our company who is also Mr. Vancraen's spouse, and their three children, Linde, Sander and Jeroen Vancraen, or collectively the Family Shareholders, control, directly or indirectly, in the aggregate at least 20% of the voting rights attached to our ordinary shares, a majority of our directors must be appointed by our shareholders from a list of candidates proposed by the Family Shareholders. This concentration of ownership within this group of shareholders and the rights of the Family Shareholders prevent or discourage unsolicited acquisition proposals or offers for our ordinary shares or ADSs that you may feel are in your best interest as one of our shareholders. The interests of these existing shareholders or the Family Shareholders may not always coincide with your interests or the interests of other shareholders, and they may act in a manner that advances their best interests and not necessarily those of other shareholders, including seeking a premium value for their ordinary shares, which might affect the prevailing market price for the ADSs.

The dilutive effect of our warrants could have an adverse effect on the future market price of the ADSs or otherwise adversely affect the interests of our shareholders.

Based on outstanding granted warrants, as of December 31, 2020, there were outstanding granted warrants to subscribe for an aggregate of 407,722 ordinary shares at a weighted average exercise price of €7.92 per share. The warrants likely will be exercised if the market price of the ADSs equals or exceeds the applicable exercise price. To the extent such securities are exercised, additional ordinary shares will be issued, which would dilute the ownership of existing shareholders.

You may not have the same voting rights as the holders of our ordinary shares and may not receive voting materials in time to be able to exercise your right to vote.

Except as described in the deposit agreement related to the ADSs, holders of ADSs are not able to exercise voting rights attaching to the ordinary shares evidenced by the ADSs on an individual basis. Under the terms of the deposit agreement, holders of ADSs may instruct the depositary to vote the ordinary shares underlying their ADSs, but only if we ask the depositary to ask for their instructions. Otherwise, holders of ADSs are not able to exercise their right to vote, unless they withdraw our ordinary shares underlying the ADSs they hold to vote them in person or by proxy. However, holders of ADSs may not know about the meeting far enough in advance to withdraw those ordinary shares. If we ask for the instructions of holders of ADSs, the depositary, upon timely notice from us, will notify holders of ADSs of the upcoming vote and arrange to deliver our voting materials to them. Upon our request, the depositary will mail to holders of ADSs a shareholder meeting notice which contains, among other things, a statement as to the manner in which voting instructions may be given, including an express indication that such instructions may be given or deemed given to the depositary to give a discretionary proxy to a person designated by us if no instructions are received by the depositary from holders of ADSs on or before the response date established by the depositary. However, no voting instruction shall be deemed given and no such discretionary proxy shall be given with respect to any matter as to which we inform the depositary that (i) substantial opposition exists, or (ii) such matter materially and adversely affects the rights of shareholders. We cannot guarantee that holders of ADSs will receive the voting materials in time to ensure that they can instruct the depositary to vote their shares. In addition, the depositary's liability to holders of ADSs for failing to execute voting instructions or for the manner of executing voting instructions is limited by the deposit agreement. As a result, holders of ADSs may not be able to exercise their right to give voting instructions or to vote in person or by proxy and they may not have any recourse against the depositary or our company if their shares are not voted as they have requested or if their shares cannot be voted.

You may not receive distributions on our ordinary shares represented by the ADSs or any value for them if it is illegal or impractical to make them available to holders of ADSs.

Under the terms of the deposit agreement, the depositary for the ADSs has agreed to pay to you the cash dividends or other distributions it or the custodian receives on our ordinary shares or other deposited securities after deducting its fees and expenses. You will receive these distributions in proportion to the number of our ordinary shares your ADSs represent. However, in accordance with the limitations set forth in the deposit agreement, it may be unlawful or impractical to make a distribution available to holders of ADSs. We have no obligation to take any other action to permit the distribution of the ADSs, ordinary shares, rights or anything else to holders of ADSs. This means that you may not receive the distributions we make on our ordinary shares or any value from them if it is unlawful or impractical to make them available to you. These restrictions may have a material adverse effect on the value of your ADSs.

We have no present intention to pay dividends on our ordinary shares in the foreseeable future and, consequently, your only opportunity to achieve a return on your investment during that time is if the price of the ADSs appreciates.

We have no present intention to pay dividends on our ordinary shares in the foreseeable future. Any recommendation by our board of directors to pay dividends will depend on many factors, including our financial condition, results of operations, legal requirements and other factors. Furthermore, pursuant to Belgian law, the calculation of amounts available for distribution to shareholders, as dividends or otherwise, must be determined on the basis of our non-consolidated statutory financial statements prepared under generally accepted accounting principles in Belgium, or Belgian GAAP. In addition, in accordance with Belgian law and our restated articles of association, we must allocate each year an amount of at least 5% of our annual net profit under our statutory non-consolidated accounts (prepared in accordance with Belgian GAAP) to a legal reserve until the reserve equals 10% of our share capital. Our legal reserve currently does not meet this requirement. As a consequence of these facts, there can be no assurance as to whether dividends or other distributions will be paid out in the future or, if they are paid, their amount.

As a foreign private issuer, we are exempt from a number of rules under the U.S. securities laws and are permitted to file less information with the SEC than U.S. domestic issuers. This may limit the information available to holders of ADSs.

We are a “foreign private issuer,” as defined in the rules and regulations of the SEC and, consequently, we are not subject to all of the disclosure requirements applicable to U.S. domestic issuers. For example, we are exempt from certain rules under the Exchange Act that regulate disclosure obligations and procedural requirements related to the solicitation of proxies, consents or authorizations applicable to a security registered under the Exchange Act. In addition, our officers, directors and principal shareholders are exempt from the reporting and “short-swing” profit recovery provisions of Section 16 of the Exchange Act and related rules with respect to their purchases and sales of our securities. Moreover, we are not required to file periodic reports and consolidated financial statements with the SEC as frequently or as promptly as U.S. domestic issuers. Accordingly, there may be less publicly available information concerning our company than there is for U.S. public companies. As a foreign private issuer, we file an annual report on Form 20-F within four months of the close of each year ended December 31 and furnish reports on Form 6-K relating to certain material events promptly after we publicly announce these events. However, although we intend to continue to issue quarterly financial information, because of the above exemptions for foreign private issuers, we are not required to do so, and, therefore, our shareholders will not be afforded the same protections or information generally available to investors holding shares in public companies organized in the United States.

We may lose our foreign private issuer status in the future, which could result in significant additional costs and expenses.

As a foreign private issuer, we are not required to comply with all the periodic disclosure and current reporting requirements of the Exchange Act and related rules and regulations. The determination of foreign private issuer status is made annually on the last business day of an issuer’s most recently completed second fiscal quarter. Accordingly, we will next make a determination with respect to our foreign private issuer status on June 30, 2021. There is a risk that we will lose our foreign private issuer status in the future.

We would lose our foreign private issuer status if, for example, more than 50% of our assets are located in the United States and more than 50% of our outstanding ordinary shares are held of record by U.S. residents. As of December 31, 2020, 1.9% of our assets were located in the United States. The regulatory and compliance costs to us under U.S. securities laws as a U.S. domestic issuer may be significantly greater than the costs we incur as a foreign private issuer. If we are not a foreign private issuer, we will be required to file periodic reports and registration statements on U.S. domestic issuer forms with the SEC, which are more detailed and extensive in certain respects than the forms available to a foreign private issuer. We would be required under current SEC rules to prepare our consolidated financial statements in accordance with U.S. GAAP and modify certain of our policies to comply with corporate governance practices associated with U.S. domestic issuers. Such conversion and modifications would involve significant additional costs. In addition, we may lose our ability to rely upon exemptions from certain corporate governance requirements on U.S. stock exchanges that are available to foreign private issuers such as the ones described above and exemptions from procedural requirements related to the solicitation of proxies.

We have identified material weaknesses in our internal controls over financial reporting and if we fail to establish and maintain an effective system of internal control over financial reporting, we may not be able to accurately report our financial condition, results of operations or cash flows, which may adversely affect investor confidence in us.

The Sarbanes-Oxley Act requires, among other things, that we maintain effective internal control over financial reporting and disclosure controls and procedures. In particular, we are required, under Section 404 of the Sarbanes-Oxley Act, to perform system and process evaluations and testing of our internal controls over financial reporting to allow management and our independent registered public accounting firm to report on the effectiveness of our internal control over financial reporting. This assessment must include disclosure of any material weaknesses in our internal control over financial reporting identified by our management or our independent registered public accounting firm. A material weakness is a control deficiency, or combination of control deficiencies, in internal control over financial reporting that results in more than a reasonable possibility that a material misstatement of annual or interim consolidated financial statements will not be prevented or detected on a timely basis. Section 404 of the Sarbanes-Oxley Act also generally requires an attestation from our independent registered public accounting firm on the effectiveness of our internal control over financial reporting. Our independent registered public accounting firm may issue a report that is adverse in the event it is not satisfied with the level at which our controls are documented, designed or operating. Our remediation efforts may not enable us to avoid a material weakness in the future.

Although we have implemented an internal control system and devoted significant resources to internal audit, accounting, IT and other functions to improve our internal control system, our compliance with Section 404 will require that we incur further substantial accounting expenses and continue to expend significant management efforts to further implement and maintain our internal control system. We may not be able to further implement or maintain an effective internal control system or complete our evaluation, testing and any required remediation in a timely fashion. In connection with the preparation of this annual report, during the evaluation and testing process, we identified material weaknesses in our internal control over financial reporting, and concluded that our internal control over financial reporting was not effective as of December 31, 2020. See “Item 15. Controls and Procedures.” We cannot assure you that we will be able to remedy the material weaknesses in a timely fashion or at all, or that there will not be material weaknesses or significant deficiencies in our internal control over financial reporting in the future. Any failure to maintain internal control over financial reporting could severely inhibit our ability to accurately report our financial condition, results of operations or cash flows. If we are unable to remedy any of the material weaknesses and conclude that our internal control over financial reporting is effective, or if our independent registered public accounting firm determines we have a material weakness or significant deficiency in our internal control over financial reporting, we could lose investor confidence in the accuracy and completeness of our financial reports, the market price of the ADSs could decline, and we could be subject to sanctions or investigations by the Nasdaq Stock Market, the SEC or other regulatory authorities. Failure to remedy any material weakness in our internal control over financial reporting, or to implement or maintain other effective control systems required of public companies, could also restrict our future access to the capital markets.

We have incurred and will incur significant increased costs as a result of operating as a company whose ADSs are publicly traded in the United States, and our management is required to devote substantial time to new compliance initiatives.

As a company whose ADSs are publicly traded in the United States, we have incurred and will incur significant legal, accounting, insurance and other expenses that we did not incur prior to our initial public offering. In addition, the Sarbanes-Oxley Act, the Dodd-Frank Wall Street Reform and Consumer Protection Act and related rules implemented by the SEC and the Nasdaq Stock Market have imposed various requirements on public companies, including requiring establishment and maintenance of effective disclosure and financial controls. These costs have increased now that we are no longer an emerging growth company eligible to rely on exemptions under the JOBS Act from certain disclosure and governance requirements. Our management and other personnel need to devote a substantial amount of time to these compliance initiatives. Moreover, these rules and regulations increase our legal and financial compliance costs and make some activities more time-consuming and costly. These laws and regulations could also make it more difficult and expensive for us to attract and retain qualified persons to serve on our board of directors or its committees. Furthermore, if we are unable to satisfy our obligations as a public company, we could be subject to delisting of the ADSs, fines, sanctions and other regulatory action and potentially civil litigation.

In order to satisfy our obligations as a U.S. public company, we may need to hire or engage additional qualified accounting and financial personnel and consultants with appropriate experience.

As a U.S. public company, we are required to establish and maintain effective internal control over financial reporting and disclosure controls and procedures. In order to establish and maintain this control environment, we have hired accounting and financial personnel and engaged consultants with experience and technical accounting knowledge, but we may need to hire or engage additional personnel and consultants to further our efforts. It is difficult to recruit and retain qualified personnel and consultants, and our operating expenses and operations have been and may continue to be impacted by the costs of their employment or engagement. Further, these efforts may divert management’s attention from their day-to-day responsibilities.

You may be subject to limitations on the transfer of your ADSs.

Your ADSs are transferable on the books of the depositary. However, the depositary may close its books at any time or from time to time when it deems doing so expedient in connection with the performance of its duties. The depositary may close its books from time to time for a number of reasons, including in connection with corporate events such as a rights offering, during which time the depositary needs to maintain an exact number of ADS holders on its books for a specified period. The depositary may also close its books in emergencies, and on weekends and public holidays. The depositary may refuse to deliver, transfer or register transfers of the ADSs generally when our share register or the books of the depositary are closed, or at any time if we or the depositary thinks that it is advisable to do so because of any requirement of law or of any government or governmental body, or under any provision of the deposit agreement, or for any other reason in accordance with the terms of the deposit agreement. As a result, you may be unable to transfer your ADSs when you wish to.

If securities or industry analysts do not publish research or reports about our business, or if they adversely change their recommendations regarding the ADSs, the market price for the ADSs and trading volume could decline.

The trading market for the ADSs is influenced by research or reports that industry or securities analysts publish about our business. If one or more analysts who cover us downgrade the ADSs, the market price for the ADSs would likely decline. If one or more of these analysts cease to cover us or fail to regularly publish reports on us, we could lose visibility in the financial markets, which, in turn, could cause the market price or trading volume for the ADSs to decline.

It may be difficult for investors outside Belgium to serve process on or enforce foreign judgments against us or our directors and senior management.

We are a Belgian limited liability company. None of the members of our board of directors and senior management is a resident of the United States. All or a substantial portion of the assets of such non-resident persons and most of our assets are located outside the United States. As a result, it may not be possible for investors to effect service of process upon such persons or on us or to enforce against them or us a judgment obtained in U.S. courts. Original actions or actions for the enforcement of judgments of U.S. courts relating to the civil liability provisions of the federal or state securities laws of the United States are not directly enforceable in Belgium. The United States and Belgium do not currently have a multilateral or bilateral treaty providing for reciprocal recognition and enforcement of judgments, other than arbitral awards, in civil and commercial matters. In order for a final judgment for the payment of money rendered by U.S. courts based on civil liability to produce any effect on Belgian soil, it is accordingly required that this judgment be recognized or be declared enforceable by a Belgian court in accordance with Articles 22 to 25 of the 2004 Belgian Code of Private International Law. Recognition or enforcement does not imply a review of the merits of the case and is irrespective of any reciprocity requirement. A U.S. judgment will, however, not be recognized or declared enforceable in Belgium if it infringes upon one or more of the grounds for refusal which are exhaustively listed in Article 25 of the Belgian Code of Private International Law. These grounds mainly require that the recognition or enforcement of the foreign judgment should not be a manifest violation of public policy, that the foreign courts must have respected the rights of the defense, that the foreign judgment should be final, and that the assumption of jurisdiction by the foreign court may not have breached certain principles of Belgian law. In addition to recognition or enforcement, a judgment by a federal or state court in the United States against us may also serve as evidence in a similar action in a Belgian court if it meets the conditions required for the authenticity of judgments according to the law of the state where it was rendered. The findings of a federal or state court in the United States will not, however, be taken into account to the extent they appear incompatible with Belgian public policy.

Holders of ADSs are not treated as shareholders of our company.

Holders of ADSs with underlying shares in a Belgian limited liability company are not treated as shareholders of our company, unless they withdraw our ordinary shares underlying the ADSs that they hold. The depository is the holder of the ordinary shares underlying the ADSs. Holders of ADSs therefore do not have any rights as shareholders of our company, other than the rights that they have pursuant to the deposit agreement.

We are a Belgian limited liability company but are not a listed company in Belgium, and shareholders of our company may have different and in some cases more limited shareholder rights than shareholders of a listed company in Belgium or of a U.S. listed corporation.

We are organized as a limited liability company (naamloze vennootschap / société anonyme) under the laws of Belgium. Our corporate affairs are governed by Belgian corporate law. From a Belgian corporate law point of view, we do not qualify as a listed company (genoteerde vennootschap / société cotée) because none of our securities are listed on any regulated market in the EEA. The Belgian corporate law provisions that are applicable to Belgian listed companies do therefore not apply to us. Furthermore, we are not subject to most of the disclosure obligations applicable to Belgian listed companies. As a result, shareholders of our company may not enjoy certain of the rights and protection generally afforded to shareholders of a Belgian listed company. You should also be aware that the rights provided to our shareholders under Belgian corporate law and our restated articles of association differ in certain respects from the rights that you would typically enjoy as a shareholder of a U.S. corporation under applicable U.S. federal and state laws.

Under Belgian corporate law, except in certain limited circumstances, our shareholders may not ask for an inspection of our corporate records, while under Delaware corporate law any shareholder, irrespective of the size of his or her shareholdings, may do so. Shareholders of a Belgian corporation are also unable to initiate a derivative action, a remedy typically available to shareholders of U.S. companies, in order to enforce a right of our company, in case we fail to enforce such right ourselves, other than in certain cases of director liability under limited circumstances. In addition, a majority of our shareholders may release a director from any claim of liability we may have, including if he or she has acted in bad faith or has breached his or her duty of loyalty, provided, in some cases, that the relevant acts were specifically mentioned in the convening notice to the shareholders' meeting deliberating on the discharge. In contrast, most U.S. federal and state laws prohibit a company or its shareholders from releasing a director from liability altogether if he or she has acted in bad faith or has breached his or her duty of loyalty to the company. Finally, Belgian corporate law does not provide any form of appraisal rights in the case of a business combination. For additional information on these and other aspects of Belgian corporate law and our restated articles of association, see "Item 10. Additional Information—B. Memorandum and Articles of Association." As a result of these differences between Belgian corporate law and our restated articles of association, on the one hand, and U.S. federal and state laws, on the other hand, in certain instances, you could receive less protection as a shareholder of our company than you would as a shareholder of a U.S. corporation.

As a foreign private issuer, we are not subject to certain Nasdaq Stock Market corporate governance rules applicable to U.S. listed companies.

We rely on provisions in the Listing Rules of the Nasdaq Stock Market that permit us to follow our home country corporate governance practices with regard to certain aspects of corporate governance. This allows us to follow Belgian corporate law and the Belgian Company Code, which differ in significant respects from the corporate governance requirements applicable to U.S. companies listed on the Nasdaq Global Select Market. See "Item 16G. Corporate Governance."

Holders of ADSs or ordinary shares have limited rights to call shareholders' meetings or to submit shareholder proposals, which could adversely affect their ability to participate in the governance of our company.

Except under limited circumstances, only the board of directors may call a shareholders' meeting. Shareholders who collectively own at least 10% of the ordinary shares of our company may require the board of directors or the statutory auditor to convene a special or an extraordinary general meeting of shareholders. As a result, the ability of individual holders of the ADSs or ordinary shares to influence the governance of our company is limited.

Holders of the ADSs have limited recourse if we or the depositary fail to meet our respective obligations under the deposit agreement or if they wish to involve us or the depositary in a legal proceeding.

The deposit agreement expressly limits the obligations and liability of us and the depositary. Neither we nor the depositary will be liable to the extent that liability results from the fact that we:

- are prevented or hindered in performing any obligation by circumstances beyond their control;
- exercise or fail to exercise discretion under the deposit agreement;
- perform our obligations without negligence or bad faith;
- take any action based upon advice of or information from legal counsel, accountants, any person presenting shares for deposit, any holder of the ADSs or any other qualified person; or
- rely on any documents we believe in good faith to be genuine and properly executed.

In addition, neither we nor the depositary has any obligation to participate in any action, suit or other proceeding in respect of the ADSs which may involve it in expense or liability unless it is indemnified to its satisfaction. These provisions of the deposit agreement will limit the ability of holders of the ADSs to obtain recourse if we or the depositary fails to meet our respective obligations under the deposit agreement or if they wish to involve us or the depositary in a legal proceeding.

Investors may not be able to participate in equity offerings, and ADS holders may not receive any value for rights that we may grant.

In accordance with Belgian corporate law, our restated articles of association provide for preferential subscription rights to be granted to our existing shareholders to subscribe on a pro rata basis for any issue for cash of new shares, convertible bonds or warrants that are exercisable for cash, unless such rights are cancelled or limited by resolution of our shareholders' meeting or the board of directors. Our shareholders' meeting or board of directors may cancel or restrict such rights in future equity offerings. In addition, certain shareholders (including those in the United States, Australia, Canada or Japan) may not be entitled to exercise such rights even if they are not cancelled unless the rights and related shares are registered or qualified for sale under the relevant legislation or regulatory framework. As a result, there is the risk that investors may suffer dilution of their shareholding should they not be permitted to participate in preference right equity or other offerings that we may conduct in the future.

If rights are granted to our shareholders, as the case may be, but if by the terms of such rights offering or for any other reason, the depositary may not either make such rights available to any ADS holders or dispose of such rights and make the net proceeds available to such ADS holders, then the depositary may allow the rights to lapse, in which case ADS holders will receive no value for such rights.

Shareholders in jurisdictions with currencies other than the euro face additional investment risk from currency exchange rate fluctuations in connection with their holding of our shares.

Any future payments of dividends on shares will be denominated in euro. The U.S. dollar—or other currency—equivalent of any dividends paid on our shares or received in connection with any sale of our shares could be adversely affected by the depreciation of the euro against these other currencies.

We do not expect to be a passive foreign investment company for U.S. federal income tax purposes; however, there is a risk that we may be classified as a passive foreign investment company, which could result in materially adverse U.S. federal income tax consequences to U.S. investors.

We do not expect to be a passive foreign investment company, or a PFIC. However, the relevant rules are not entirely clear and certain aspects of the tests will be outside our control; therefore, no assurance can be given that we will not be classified as a PFIC for any taxable year. If you are a U.S. taxpayer and we are determined to be a PFIC at any time during your holding period, you may be subject to materially adverse consequences, including additional tax liability and tax filing obligations. See "Item 10. Additional Information—E. Taxation—U.S. Taxation—Passive Foreign Investment Company."

ITEM 4. INFORMATION ON THE COMPANY

A. History and Development of the Company

Materialise NV was incorporated in Belgium on June 28, 1990 as a limited liability company under Belgian company law.

After acquiring 75% of the shares of Engimplan on August 6, 2019 through a combined acquisition of existing and new shares through our Brazilian subsidiary Engimplan Holding Ltda., or Engimplan Holding, we acquired the remaining 25% interest in Engimplan in December 2020 in exchange for Engimplan's spinal implant business line, which was non-strategic for us. This acquisition made us Engimplan's sole shareholder (through Engimplan Holding). Engimplan is a Brazil-based manufacturer of orthopedic and CMF implants and instruments. As part of these transactions, we have gained access to Engimplan's local production facility and we intend to expand Engimplan's portfolio with our 3D printed implants and expertise and leverage Engimplan's existing partner and distribution network in Brazil. We believe that the combination of our expertise in 3D printed medical solutions and Engimplan's innovative product portfolio will help accelerate the introduction of 3D printed, personalized implants and instruments in the Brazilian market.

On November 9, 2020, we acquired the remaining 50% of the shares and voting interests in RS Print, making us RS Print's sole shareholder. In addition, we acquired substantially all of the assets of RS Scan.

On October 30, 2020, we incorporated a wholly-owned subsidiary in South Korea.

Our principal executive and registered offices are located at Technologielaan 15, 3001 Leuven, Belgium. Our telephone number is +32 (16) 39 66 11. We are registered with the Register of Legal Entities of Leuven under the number 0441.131.254. Our agent for service of process in the United States is Materialise USA, LLC, located at 44650 Helm Ct., Plymouth, Michigan 48170, telephone number (734) 259-6445. Our internet website is www.materialise.com. The information contained on, or accessible through, our website is not incorporated by reference into this annual report and should not be considered a part of this annual report.

The SEC maintains an internet website that contains reports, proxy and information statements, and other information regarding issuers that file electronically with the SEC at www.sec.gov.

Capital Expenditures (Property Plant and Equipment and Intangible Assets)

Our capital expenditures amounted to €17.7 million, €15.7 million and €20.1 million for the years ended December 31, 2020, 2019, and 2018, respectively. In 2020, our main capital expenditures were €2.8 million for office software, €2.2 million for our internal digital transformation program, €0.7 million for medical projects, €4.9 million for a new building in Germany and €7.1 million for new machinery and installations in Belgium, Germany, Poland, Brazil and the United States In 2019, our main capital expenditures were €0.8 million for a cleanroom in Belgium, €1.2 million for a new building in Germany, €1.1 million for medical projects and €8.8 million for new machinery and installations in Belgium, Poland, Germany and the United States.

B. Business Overview

Our Mission

Our mission is to innovate product development that results in a better and healthier world, through our software and hardware infrastructure, and an in-depth knowledge of additive manufacturing.

Our Company

We are a leading provider of additive manufacturing and medical software and of sophisticated 3D printing services. With our knowledge, products and services, we empower our customers' use of additive manufacturing technology, in general, and we enable certain specific and significant applications of additive manufacturing, in particular. In both instances, we seek to empower the choice for sustainability through the use of additive manufacturing.

The customers of our general software tools and 3D printing services are active in a wide variety of industries, including healthcare, automotive, aerospace, art and design and consumer products. The significant additive manufacturing applications that we are more deeply and more directly involved in currently include applications for cranio maxillo facial, eyewear, footwear and measurement fixtures.

As of December 31, 2020, our team consisted of 2,163 full-time equivalent employees, or FTEs, and fully dedicated consultants. Our portfolio of intellectual property featured 307 patents and 167 pending patent applications as of December 31, 2020. For the year ended December 31, 2020, we generated € 170.4 million of revenue, representing a 13.3% decrease over the prior year, a net loss of € 7.3 million and Adjusted EBITDA of € 20.4 million. For a description of Adjusted EBITDA and a reconciliation of our net profit to our Adjusted EBITDA, see "Item 5. Operating and Financial Review and Prospects—A. Operating Results—Other Financial Information."

Our Core Competencies

Our established and proven business model integrates our three research-based core competencies: (i) software development, (ii) 3D printing, and (iii) engineering for 3D printing, which act as complementary incubators for our new products and function as integrated support centers for our existing products. The interaction and synergies among our software development, 3D printing and engineering teams position us well to continuously develop and support innovative applications of 3D printing that often integrate all three core competencies.

Software Development (Software). Our expertise in developing 3D printing software originated from our efforts to enable 3D printing applications and to continually improve processes within our own additive manufacturing operations. As a result of our continued deployment over the course of 30 years of human, intellectual and economic capital to software development, a number of our products, including Magics and Streamics, have evolved into industry-leading flagship products. Our software development team works in close partnership with the commercial groups that are active in our various market segments through project teams that support our various products and services. These project teams rely, in turn, on research and development groups that develop libraries of software code that can be shared in multiple products and services across various markets. We have an established quality management system for the development of our software products that is ISO 9001:2015 certified. We are also ISO 13485:2016 certified for our medical applications and our medical applications comply with the regulatory requirements of several jurisdictions, including Europe and the United States.

3D Printing (Hardware). As a pioneer in the additive manufacturing industry, we believe we have an extensive history of 3D printing millions of parts utilizing a broad array of technologies, often in highly regulated environments, for thousands of commercial, industrial and medical customers. We operate some of the most sophisticated printing machines currently available on the market, as well as our own proprietary stereolithography-based technology, Mammoth, to provide a very broad range of technologies, sizes, materials and finishing degrees and to address the needs of customers across a large number of potential markets. Production is organized in multiple production lines that are dedicated to the Medical and the Industrial Production segments that we serve. Our 3D printing group, which operates in an ISO 9001:2015-certified quality management system, in an ISO 13485:2016-certified system for the production of medical devices, and in an EN9100:2016 as well as EASA Part 21G POA certified system for the production of plastic aerospace parts, has its own maintenance and research team that utilizes an in-house laboratory facility where products can be tested. The wide variety of products that are processed by our multiple production lines are logistically streamlined through our proprietary database systems that manage the entire process from order intake to 3D printing to final shipment. As of December 31, 2020, we operated a total of 188 3D printers, six vacuum casting machines and 30 computer numeric control, or CNC, machines at these service centers. (See "—Manufacture and Supply" for more detailed information about the printers we operate).

Engineering (Mindware). Our engineering expertise is integral to our entire business, as it enhances our software development and 3D printing expertise. Our engineers work in teams that support customers in different market segments. These teams work directly with our customers to identify new, and customize and refine existing, 3D printing applications and to increase productivity, efficiency and ease of use across all aspects of the solutions we provide. Our engineering teams have particular expertise in industrial and medical applications, including patient-specific surgical guides, models and implants with the applicable market clearances. Our teams are highly specialized, especially in the medical field, and include quality controllers, development researchers for new hardware concepts and trainers who bring new engineers to the required level of expertise. Our engineers operate within the framework of a certified quality management system. Our engineering teams make extensive use of our proprietary software tools and have direct access to our 3D printing center where developments can be tested in an actual production environment.

Our Market Segments

The product and service offerings developed by our three core competencies are offered through a market oriented organization that is active across three principal market segments: (i) Materialise Software, (ii) Materialise Medical, and (iii) Materialise Manufacturing. We believe that our customers benefit significantly from the synergistic interplay between our core competencies and the three market segments on which we focus and which provide constant end-user feedback to the product development and support teams within our core competencies.

Our discussion below of the growth opportunities for each of our market segments is based on our medium- and long-term expectations for these segments. In the short term, we expect both the 3D printing industry and our business will be impacted by the current coronavirus pandemic, although we cannot predict with certainty the impact the pandemic will have. For more information, see "Item 5. Operating and Financial Review and Prospects—D. Trend Information" below.

Our Materialise Software Segment

In our Materialise Software segment, we offer proprietary software worldwide through programs and platforms that enable companies to set up efficient, reliable and sustainable 3D printing production. Our software supports large corporations producing at volume, either through significant serial manufacturing or mass customization. Our software also supports 3D printing services bureaus both large and small that are producing a wide variety of different parts for their customers. In all of these environments, we believe our software enables both operational excellence and flexibility. We also work directly with the global main 3D printing machine manufacturers to enable and enhance the functionality of 3D printers and of 3D printing operations. We have developed software that interfaces between almost all types of industrial 3D printers, and various software applications and capturing technologies, including CAD/CAM packages and 3D scanners, by enabling data preparation and process planning and execution. Our programs interface with machines manufactured by leading original equipment manufacturers, or OEMs, such as Sindoh Co. Ltd., EOS GmbH, Essentium Inc., HP Inc., The ExOne Company, Renishaw PLC, SLM Solutions Group AG, Stratasys Ltd., Trumpf GmbH &

Co. KG, Uniontech Corporation and Voxeljet AG. In addition, we have entered into partnership agreements with leading CAD, CAM and product lifecycle management, or PLM, companies such as Siemens, HCL Technologies Ltd., or HCL, and PTC, for the integration of our additive manufacturing technology into Siemens' NX software, HCL's CAMworks, and PTC's Creo software. This enables the streamlining of the design to manufacturing process for products being produced using additive manufacturing. We offer software that enables our customers to more efficiently organize the entire workflow of a 3D printing operation with multiple 3D printing machines, many operators and complex data flow and logistical requirements. We believe that the capabilities of our software products and their unique compatibility with almost all 3D printing systems continue to set standards in the professional 3D printing software market. Customers operating machines from multiple OEMs and customers running large 3D printing operations are among those who can benefit the most from our software packages and we believe that in many cases those customers demand compatibility with our software from the systems of OEMs.

As of December 31, 2020, our Materialise Software segment had a team of approximately 285 FTEs and fully dedicated consultants, with approximately 35.8% based at our headquarters in Belgium and the remaining employees distributed throughout our local field offices in China, Germany, Japan, Malaysia, Ukraine, the United Kingdom and the United States.

Business Model. We generate revenue in our Materialise Software segment from our software licenses, maintenance contracts, hardware controller sales for our Materialise Controllers and custom software development services. Additionally, we offer consultancy and training services. We license our software products to our customers on either a time-based or perpetual basis, in which case we offer annual maintenance contracts that provide for software updates and support. In 2020, we also announced a number of cloud-based solutions that are scheduled to be released over the course of 2021. We intend to establish appropriate cloud and platform licensing and usage models gradually as the market demand for these products develops. We charge our custom software development services either on a time and material or on a fixed-cost basis. For the years ended December 31, 2020, 2019 and 2018, our Materialise Software segment generated revenue of € 39.1 million, € 41.7 million and €37.4 million, respectively 22.9%, 21.2% and 20.2% of our total revenue, respectively 6.2% decrease and 11.5%, 4.5% growth over the prior year, respectively.

Software Products. We have a diversified portfolio comprised of software applications addressing different 3D market opportunities. Our decades of experience in the additive manufacturing industry are reflected in the sophisticated 3D printing software and business management tools we provide for our customers. We believe that each of our software applications is, or has the potential of becoming, one of the leading technologies in its domain. We believe that our neutral platform approach positions our software to drive greater innovation and choice across the 3D printer software ecosystem, and provides 3D printer users with more powerful and flexible printing capabilities.

In particular, we offer the following software applications:

- *Magics.* Magics enables customers to import a wide variety of CAD formats and to export standard tessellation language, or STL, files ready for additive manufacturing. Magics' applications include repairing and optimizing 3D models; analyzing parts; making process-related design changes on customers' STL files; designing support structures; documenting customer projects; nesting multiple parts in a single print run; and process planning.

  Our Magics platform is enhanced with modules that further expand functionality and utility for our customers. For instance, the Magics Import Module plays an important role in efficiently moving CAD designs through to manufactured products by importing nearly all standard CAD formats into Magics. The Magics Structures Module was designed to help customers to reduce weight and material usage in their designs. We also have developed logistical modules such as the Magics SG Module, which offers tools for support structure design during the 3D printing process, and the Magics Sintermodule, which offers solutions for automated part nesting, protecting small and fragile parts and locating them after building. The Magics Simulation module enables our users to simulate the build process virtually, and optimize the build preparation based on the results, thus reducing build failures and improving the result.

  In addition to offering state-of-the-art data preparation functionality to our users, our Magics platform also focuses on automation and other productivity improvements and brings interconnectivity to machines and enterprise software platforms.

  Specific versions of the Magics application were also brought to the market by us:

  - *Magics Essentials*: an entry-level package offering premium data preparation functionality (but without machine connectivity), that can be used in combination with machine build preparation software offered by machine vendors. The package is available on a monthly or annual rental basis, through e-commerce.
  - *Magics Print*: This software combines the most important build preparation tools (Materialise Magics) and straightforward build file generation technology (Materialise Build Processor). This package is sold to machine manufacturers so that they can bundle it with their machines to offer their customers a complete, high-value service package that can get them started with 3D printing. Magics Print is available for DLP and metal technologies, and we plan to work together with Essentium Inc. to develop a version tailored at industrial FDM/Essentium's high speed extrusion machines.

  Users of Magics Essentials and Magics Print can upgrade to our expert Materialise Magics platform in case they want the full data and build preparation functionality at their disposal in one package, potentially extended with the above mentioned specialty modules.

- *Streamics.* Complementary to Magics is our Streamics product, which is a central additive manufacturing logistics and control system that links operators, 3D printers (including those from various OEMs and based on different technologies), processes, materials and shipment flows together to improve customer service and save time and money. Streamics provides a user-friendly, server-based system, which centralizes our customers' project data and makes it easier to collaborate among team members and communicate with customers. The configurable modules are designed to facilitate communication, support the organization and execution of data preparation, plan machine capacity, and guide post-processing steps, allowing additive manufacturing teams to quickly adapt to business and market changes.

- *3-maticSTL.* 3-maticSTL is a versatile application that permits, among other things, design modification, design simplification, 3D texturing, re-meshing and forward engineering directly to standard additive manufacturing STL files. Using Materialise consultancy services, targeted design automation solutions can be created for specific workflows.
- *MiniMagics and MiniMagics*^{Pro}. MiniMagics and MiniMagics^{Pro} provide solutions for our customers working in data preparation, or in quoting and quality control teams. MiniMagics allows customers to view STL files and communicate in an efficient way with their account manager by seeing the same visualization of the part on their respective screens. MiniMagicsPro is a professional STL file communication tool that allows account managers to access multiple file formats and exchange annotations and comments with the customer, and generate quotations taking into account file quality and the appropriate build orientation of each part. MiniMagics Pro is designed to give our customers' quality control and finishing teams the ability to compare measurement results with the initial design and deliver professional quality reports.
- *Build Processors.* We work in close collaboration with a wide variety of 3D printer OEMs to develop customized and integrated solutions for their additive manufacturing machines. Our build processors automatically translate the 3D model data into layer data to provide sliced geometry and can link the latter with the appropriate build parameters to feed the machine control software. Another key benefit of our build processors is that they allow for a two-way communication between Magics and 3D printers. In essence, the build processor not only tells the machine what to do, but is also capable of receiving feedback from the machine allowing the operator to trace and store data on specific jobs for quality control and other purposes. Our machine control software interprets sliced build data that is transferred to 3D printers and steers such machines, helping to ensure smooth and trouble-free production. We also develop the metal build processors in Materialise Bremen and as a consequence we are able to cover a wide range of metal 3D printers. Furthermore, licensing and integrating our build processor framework, companies such as Siemens and PTC can also leverage the extensive ecosystem of build processors we have developed together with OEMs. Powered by our build processor framework and the appropriate build processor, users of Siemens and PTC CAD packages can seamlessly connect directly to the printer from within the CAD application.
- *e-Stage.* e-Stage is a software solution that increases additive manufacturing productivity by automating STL support generation, optimizing the STL build process, and reducing the time our customers spend on finishing work such as build support removal and sanding. e-Stage is designed to allow our customers to use less material, to be able to 3D nest and to minimize failed builds. e-Stage for plastic has been commercially available since September 2007, and in the fall of 2017, we released e-Stage for metal. In 2018, we won the TCT SOFTWARE AWARD 2018 for e-Stage for metal.
- *Materialise Controller.* Materialise Controller controls and steers additive manufacturing machines using embedded Materialise software, and is fully integrated into the Materialise 3D printing software platform. It is engineered towards research and development applications, machine manufacturers and those who want to control or adapt the production process to their specific needs.
    - Materialise Storefront: a new cloud-based e-commerce solution, announced in 2020 and intended to launch in 2021, which automates the intake and sales process of 3D printing factories and facilitates communication with customers. It is targeted at both internal and external service bureaus that deal with many incoming print orders per day and want to automate a number of these intake processes in an online environment. Storefront is a full e-commerce and CRM solution in one platform. It supports automatic and manual price calculation and quoting, AM data preparation, order management and integration with payment and shipment providers. Magics Storefront can be used as a standalone solution, but it also offers out-of-the-box integration with Materialise Streamics and Magics software.
    - Materialise Process Tuner: an intuitive online platform that helps manufacturing companies, service bureaus and machine builders speed up the process tuning that is required for mass-manufacturing 3D printed parts. This allows them to reduce the cost and waste associated with printing hundreds of test samples before finding the optimal process parameters. The Materialise Process Tuner makes it possible to drastically reduce the amount of physical test prints required to find the optimal print settings. It builds on three decades of 3D printing experience and allows companies to scale up their 3D printing operations in a more sustainable way through advanced automation, artificial intelligence and smart simulations to predict sub-optimal prints. The Materialise Process Tuner can be accessed via a web-browser as well as through an API, making it the company's first cloud-native Magics application. Companies can also choose to deploy and run the application on site.

Sales and Marketing. We market and distribute our software directly through our sales force as well as through our own website and third party distributors. Our Belgian team oversees our global marketing strategy and sales processes. Our local field office employees manage sales for particular markets and provide pre- and post-sales technical support to our customers. We also utilize a growing network of distributors and resellers to bring our solutions to specific regions or market segments. In addition, machine manufacturers and their local dealers often distribute our software products together with their 3D printers, with our software enhancing the printers' value proposition and broadening the suite of applications available to the machines. Our sales force will typically follow up on these OEM or distributor sales to offer follow on products and services to the machine users. We intend to continue focusing on managing sales by third party distributors through our "channel partner program", which is designed to provide our resellers and distributors with valuable resources and support in order to assist them in achieving their sales goals. We believe that this focus has led to an increase of approximately 15% in third party distributor sales in the year ended December 31, 2020.

Customers. We believe we have a reputation for providing high-quality software in the marketplace and have strong relationships with leading multinational customers and other key users of additive manufacturing. The customers for our Materialise Software segment include 3D printing machine manufacturers as well as production companies and contract manufacturers in a variety of other industries, such as the automotive, aerospace, consumer goods and hearing aid industries, and external 3D printing service bureaus. Our Materialise Software segment customer base is spread across Asia, Europe and the Americas.

Competition. In our Materialise Software segment, we face indirect competition from the software developed by 3D printing OEMs, which are often more "closed ecosystem"-oriented (i.e., only focused on their own machines), and from companies that offer software that addresses one or more specific functional areas covered by our software solutions, such as providers of traditional CAD solutions. We compete directly with other providers of additive manufacturing management and machine control software, including open source software providers.

Growth Opportunities. As the number of internal and external service or production centers across the 3D printing industry grows with these 3D printing operations running more complex mixes of machines from different manufacturers and based on various technologies, as 3D printing will be increasingly used for the manufacturing of complex or customized end parts, and as the number of 3D printer manufacturers increases with certain new players initially focusing more on the hardware than on the software component of their 3D printers, we believe the demand for highly performing industrial 3D printing software platforms is likely to grow accordingly. Furthermore, we believe that the worldwide market for additive manufacturing software is tied to the growth of the overall additive manufacturing sector and in particular the number of industrial 3D printing systems in operation. We expect that the volume of industrial 3D printing systems sold will grow with increased adoption of additive manufacturing processes, and that 3D printing software, in particular in the professional segment of the market, will increasingly be needed to interface with these systems and allow for more efficient operation of those systems.

We believe that we can continue to expand our market penetration through expanding relationships with customers and OEMs, and through the continued innovation of our software products to adapt to and meet market demands. In order to be able to do so, we intend to bring our teams closer to our customer base worldwide, which will require continued investments in the expansion of our marketing and sales presence. In order to be able to meet the demands of new entrants on the market and to better address the needs of the end parts market, we also intend to continue to invest significantly in the development of our software tools and solutions, including furthering their compatibility with as many 3D printers on the market as possible. For example, we believe the market for metal-based printing will be a key growth area in the additive manufacturing industry and, while we believe we currently have a strong market position in software for metal printing, we are also committed to research and development of metal-based technologies, such as machine integration and porous structures generation.

Our Materialise Medical Segment

In our Materialise Medical segment, our product and services offering addresses what we believe to be long-term trends in the medical industry towards personalized, functional and evidence-based medicine.

As of December 31, 2020, our Materialise Medical segment consisted of approximately 738 FTEs and fully dedicated consultants, with approximately 23.8% based at our headquarters in Belgium and the remaining employees distributed throughout our local offices in Australia, Brazil, China, Colombia, France, Germany, Japan, Malaysia, Ukraine, the United Kingdom and the United States.

Business Model. We generate revenue in our Materialise Medical segment through clinical services and medical software. We sell medical devices that we print for our customers and sell licenses to our medical software packages and software maintenance contracts. We also provide custom software development and engineering services, for which we charge either on a time and material or fixed-cost basis. The majority of the medical devices that we printed in 2020 were surgical guides (and related bone models) that were distributed to surgeons through our collaboration partners Corin, DJO Surgical, DePuy Synthes, Integra, Lima, Mathys, Smith & Nephew, Stryker and Zimmer Biomet. We also print patient-specific implants that we sell directly to hospitals or distribute through partners such as DePuy Synthes. The customer base for our medical software products includes academic institutions, medical device companies and hospitals.

For the years ended December 31, 2020, 2019 and 2018, our Materialise Medical segment generated revenue of € 61.7 million, €60.8 million and €52.3 million, respectively, representing 36.2%, 30.9% and 28.3% of our total revenue, respectively, and 1.5%, 16.4% and 22.0% growth over the prior year, respectively.

Medical Software. Our software allows medical-image based analysis and engineering as well as patient-specific design of surgical devices and implants. Our customers include leading research institutes, renowned hospitals and major medical device companies. Our medical software packages often serve as an introduction to our capabilities and in certain cases lead to custom software developments and clinical services opportunities. Our medical software packages are:

- *Materialise Mimics Innovation Suite.* The Materialise Mimics Innovation Suite is a complete set of tools developed for biomedical professionals that allows them to perform a multitude of engineering operations based on medical imaging data. The suite consists of several complementary products and services, including Materialise Mimics, Materialise 3-matic, engineering services and medical models, as well as consultancy and custom software development.
- *Materialise Mimics.* Materialise Mimics is software addressing medical professionals specifically developed for medical image processing that can be used to segment accurate 3D models from medical imaging data (for example, from CT or MRI) to measure accurately in 2D and 3D and to export 3D models for additive manufacturing or to Materialise 3-matic. These patient-specific models can be used for a variety of engineering applications directly in Materialise Mimics or Materialise 3-matic, or may be exported to third party software focused on statistical analysis, CAD or finite element analysis (which is used to predict how a product reacts to real-world forces such as vibration, heat and fluid flow).
- *Materialise 3-matic.* Materialise 3-matic focuses on anatomical design and is able to combine CAD tools with pre-processing capabilities directly on the anatomical data coming from Materialise Mimics. It enables our customers to conduct thorough 3D measurements and analysis, design a patient-specific implant, a surgical guide, or a benchtop model, and to prepare the anatomical data and/or resulting implants for simulation
- *Materialise OrthoView.* Materialise OrthoView is a 2D digital pre-operative planning and templating solution for orthopedic surgeons. The software imports a digital X-ray image from a Picture Archiving and Communication System, or PACS, and positions the templates of suitable prostheses on the X-ray image at the correct scale. Materialise OrthoView currently serves more than 15,000 orthopedic surgeons in 60 countries globally, focusing primarily on joint replacements. We acquired OrthoView Holdings Limited in October 2014, and have included the OrthoView solution in our portfolio of pre-operative planning solutions.
- *Materialise Mimics inPrint.* With Materialise Mimics inPrint, clinicians can easily create files for 3D printing and use anatomically accurate models to help simulate or evaluate options for patient-specific surgical treatment. This software was designed specifically around the needs of clinicians to integrate seamlessly into their existing workflow. Materialise Mimics inPrint allows clinicians to get patient images from PACS and directly import them to start the 3D printing process. The software is compatible with digital imaging and communications in medicine, or DICOM, standard, which ensures easy connections with all modern imaging systems. By sharing virtual or printed 3D models as an interactive PDF on any device, communication is both immediate and clear with co-workers, the surgical team and patients. We have received FDA 510(k) clearance, pursuant to which we are permitted to certify certain 3D printer and software combinations for anatomically accurate model printing in hospitals.
- *Materialise ProPlan CMF.* Materialise ProPlan CMF is a software package developed for oral, maxillofacial, nose, throat and plastic surgeons. The software allows surgeons to pre-operatively plan their surgeries in 3D based on (CB)CT or MRI images using a set of tools to analyze, measure and reconstruct the patient's anatomy. With the software the surgeon can also plan the movements (translations and rotations) of the mandible or maxilla and preplan the reconstruction of defects.
- *Materialise Mimics Enlight.* Materialise Mimics Enlight planning software enables clinicians and hospitals to scale their 3D planning for procedures. Mimics Enlight is based on the strengths of Materialise's Mimics Innovation Suite and can be applied in various clinical fields.

Mimics Enlight C&V has been created in collaboration with Henry Ford Health System in Detroit, Michigan, and is intended to support patient selection and planning for structural heart and vascular therapy. It currently provides streamlined, easy-to-use clinical workflow for planning complex procedures to correct mitral regurgitation and left atrial appendage. In 2020 Mimics Enlight Lung was developed for planning of segmentectomies on lung cancer patients and it is currently being validated and prepared for submission to the regulatory authorities.

Clinical Services and Products. Using our FDA-cleared and CE compliant medical software, we analyze 3D medical images of patients and provide doctors with virtual surgical planning services for their review and approval. In most cases, we also design and 3D print surgical guides that uniquely fit a specific patient and allow the surgeon to conduct the operation in accordance with the approved surgical plan. In certain circumstances, we deliver 3D printed customized patient-specific medical implants.

In our 3D printing centers in Belgium, Japan and the United States, we have separate production lines for our Materialise Medical segment.

We believe that our medical image-based simulation and planning software and 3D printing technology can assist hospitals and clinicians in solving complex problems, ranging from virtual preparation tools, over patient-specific surgical guides, to patient-specific implants which can contribute to increased quality of life.

Surgeons using our clinical services work together with our clinical engineers to turn their patients' medical image data into virtual surgical plans, and patient-specific 3D printed precise surgical and customized anatomical models to optimize intervention planning. For indications such as shoulder surgery, we have optimized and automated our 3D planning capabilities to provide surgical plans within a short timeframe and at a high quality that does not require an anatomical model to be provided. Utilizing our SurgiCase tool, surgeons upload CT or MRI medical image data and submit their cases to us, track their cases and review them as interactive virtual 3D models. In the framework of our collaborations with certain leading medical device companies, our SurgiCase tool is rebranded and adapted to the specific product offering and needs of our collaboration partners.

In many cases surgeons use personalized surgical guides or implants to translate the surgical plan into the operating room. Our 3D printed surgical guides include joint replacement guides for knee, shoulder and hip replacement surgeries, osteotomy guides and CMF guides, and our 3D printed implants include hip-revision implants, shoulder and CMF implants. The surgical guides and implants we print for U.S. based patients are FDA-cleared, and to the extent required by law, our medical devices for EEA-based patients bear the appropriate CE labels.

We address large surgical markets in orthopedics and CMF through collaboration agreements with leading medical device companies, including Zimmer-Biomet, DJO Surgical, DePuy Synthes, and Lima. Pursuant to these agreements, we print joint replacement and/or CMF guides that our collaboration partners distribute under their own brands, together with their own implants, in the United States, Canada, South Africa, Latin America, Europe, China, Japan and Australia. We leverage our collaboration partners' distribution capabilities to extend our reach into these large markets, and our collaboration partners utilize our 3D printing-related expertise to provide surgical planning and customized devices to surgeons.

We also address certain high value-added, specialty applications by providing the full solution ourselves, including the delivery of implants and guides directly to the hospital or surgeon. Such applications include customized CMF implants and guides, hip revision and shoulder implants in a patented porous matrix configuration and osteotomy guides. Our CMF implants and guides, hip revision, shoulder implants and/or osteotomy guides are currently distributed in Europe, the United States, Canada and Australia. Through Engimplan, we also distribute implants and instruments in Brazil, offering both traditional and 3D printed CMF products as well as a broader portfolio that includes additional new product lines for trauma and sport medicine.

We also work with customers to print anatomical models that may be used for a wide range of applications such as sizing of medical devices, clinical trials, training, patient communications and marketing. For example, our HeartPrint service provides 3D printed cardiovascular anatomical models. These models are printed using our proprietary process that makes possible a superior final product that is flexible. We also print transparent or multi-color models for better visualization of the anatomy. Each of our core competencies was instrumental in developing the HeartPrint technology.

Sales and Marketing. We distribute our medical software through our direct sales force, our website and PACS partners (some of which partners also include our OrthoView solutions in their product offering to hospitals) and through our agreements with collaboration partners such as Zimmer Biomet and Depuy Synthes. In specialty markets, we market and distribute our 3D printed medical devices and other clinical services through our experienced engineers who develop a close collaboration with key opinion leaders in each of these market segments.

All our activities in our Materialise Medical segment are coordinated and supervised from our headquarters in Belgium, which supervises product management and sales of our medical devices and software products.

Customers. The customers for our Materialise Medical segment mainly include medical device companies, hospitals, universities, research institutes and industrial companies. For the year ended December 31, 2020, partner sales to medical companies collectively represented 50% and total software revenue represented 32% of our total Materialise Medical segment revenue. Most of our other clinical service sales to customers are executed on the basis of single transaction contracts or purchase orders. These contracts and purchase orders lay out the pricing, delivery and other terms of the order.

Collaboration Partners. We collaborate with leading medical device companies and academic institutions for the development and distribution of our surgical planning software, services, and products, including with Zimmer Biomet, DJO Surgical, DePuy Synthes, Integra, Lima, Mathys, Medtronic, Abbott, Corin and the University of Michigan. Pursuant to these arrangements, we develop and license software and sell surgical planning, guides and implants, including for use in the fields of knee and shoulder replacement, CMF and thoracic procedures that our collaboration partners may then distribute under their own brands, together with their own implants, mainly in the United States, Europe, Japan and Australia. In addition, we grant licenses to collaboration partners to use, market and distribute such software or surgical guides and implants. Some of the licenses we have granted to our products and software provide for exclusive rights, including with respect to a particular field of medicine or to the software or product developed during the collaboration, and certain collaboration partners may have rights of first refusal with respect to related products or collaborations. The compensation structures under these arrangements vary and may include an upfront fee, royalties, milestone payments linked to certain targets, and fees for the service, maintenance and training we provide in connection with our software and products.

Competition. In our Materialise Medical segment, we compete with a number of companies that provide image based software, 3D printed surgical models or medical devices, such as 3DSystems, Stratasys, Simpleware, Pie Medical, Within Lab as well as with medical device companies that are developing in-house capacity to offer 3D printed medical devices and related software services.

Growth Opportunities. The Materialise Medical segment is the market where we believe we can most directly realize our mission statement and contribute to a healthier world. We believe that personalized surgical approaches, as a result of their higher predictability and accuracy, lead to improved patient outcomes, fewer complications and increased long-term survival rates. Personalization also drives operational efficiencies by replacing a broad range of instrumentation with tailored versions. This makes surgery more efficient, but also lowers the cost of operational steps like sterilization. We believe that personalized surgical solutions will therefore see an increased adoption in the future.

As a result, we are currently investing significantly in the development of new product offerings and the optimization of existing offerings in terms of cost and lead times, as well as in the expansion of our distribution channel in the various sub-segments of our Materialise Medical segment and in new territories.

As a result of the trend that we see in the medical community towards more patient-specific devices and treatments, as well as towards more advanced planning, a growing number of academic, clinical and commercial researchers are focusing on personalized medical treatments. Because these new products and treatments can only be brought to the market in compliance with very strict regulatory requirements, we believe there is an opportunity for safe and stable medical software tools, such as our Mimics Innovation Suite, that can pass significant regulatory scrutiny. We also believe that increasing regulatory requirements provide opportunities for our clinical services as we can leverage our significant medical sector experience and strong quality management systems.

Our medical engineering services offerings, which we continue to build, assist medical device companies in their designs. Our engineers not only serve the CMF and orthopedic fields but also the cardiovascular field where new and customized approaches are being developed and the sizing of devices is an important development area. As product managers in the medical device industry continue to recognize the value of, and need for, specialized advice and assistance in the design of new 3D printable devices, our medical engineering services may grow accordingly.

A growing number of hospitals have adopted personalized solutions and built 3D printing facilities on site for point-of-care printing of these personalized solutions. We believe that there is a growing opportunity to provide our clinical services as well as our software solutions and experience in establishing operations to design personalized solutions in compliance with regulatory requirements.

We believe that our medical services and software may also help to reduce the clinical trial effort and expense for medical device companies by allowing more efficient bench-top modelling, testing and simulations and by increasing efficiency in the selection of eligible patients. We are investing significantly in the development of new solutions for other sub-markets, including planning tools for the cardiovascular markets in the shorter term and the pneumology markets in the longer term.

We have also developed other applications, such as malunion and osteotomy surgical guides. We intend to further diversify our product portfolio through product development and entering into new collaborations.

As we intend to continue to invest in product development and market penetration, we will require certain capital commitments and may experience an impact to our revenue and profitability levels in the near term. However, we expect such investments to form the basis of stable annual revenue growth in the longer term.

Our Materialise Manufacturing Segment

In our Materialise Manufacturing segment, we primarily offer 3D printing services to industrial and commercial customers, the majority of which are located in Europe. In addition, we have identified, and provide 3D printing services to, certain specialty growth markets in both the industrial and consumer marketplaces.

Many of the parts we print require functionality that cannot be delivered using other production processes. We believe that our industrial customers value the high quality, accuracy, complexity, durability, functionality and diversity in terms of size, scale and materials of the 3D printing services that we can offer. We deliver products to highly regulated industries, such as aerospace, healthcare, machine manufacturing, quality control equipment and consumer goods, where our applications, technology and hardware capabilities enable us to adhere to high quality standards in a certified production environment.

As of December 31, 2020, our Materialise Manufacturing segment consisted of 760 FTEs and fully dedicated consultants, with 26.1% based at our headquarters in Belgium and in RS Print and the remaining employees distributed throughout our local field offices in Austria, the Czech Republic, France, Germany, India, Italy, Poland, Spain, Ukraine, the United States and the United Kingdom.

On September 21, 2020, we announced a strategic investment in Ditto Technologies Inc., a developer of virtual eyewear try-on platforms. We and Ditto will collaborate to advance the digital transformation in the eyewear industry and support the creation of new and personalized shopping experiences. Ditto partners with retailers, brands and eye care professionals to create personalized shopping experiences for eyewear customers. As part of the digital platform, personalized eyewear frames can also be 3D printed.

On November 9, 2020, we acquired the remaining 50% interest in RS Print, the owner of the Phits personalized insole product line, from our joint venture partner Superfeet, Inc. In addition, we acquired substantially all the assets of RS Scan, including dynamic foot measurement technology. RS Scan is a pioneer and market leader in the development and supply of intelligent foot measurement technology and systems. By consolidating the RS Print and RS Scan technology within our company, we intend to accelerate our research and product development efforts for the personalization of footcare to build a more comprehensive suite of solutions for footcare experts and their patients.

Business Model. We generate revenue in our Materialise Manufacturing segment through the sale of parts that we print for our customers and design and engineering services. We charge for our design and engineering services either on a time or on a fixed-cost basis.

For the years ended December 31, 2020, 2019 and 2018, our Materialise Manufacturing segment generated revenue of € 69.6 million, €94.2 million and €95.0 million, respectively, representing 40.9%, 47.9% and 51.4% of our total revenue, respectively, and a 26.0%, 0.8% decrease and 49.0% increase, as applicable, over the prior year, respectively.

B2B (Business-to-Business) Services. We offer the following services in our Materialise Manufacturing segment:

Additive Manufacturing Solutions. We provide design and engineering services and rapid prototyping and additive manufacturing of production parts to customers serving the automotive, consumer goods (including eyewear and footwear), industrial goods, art and architecture and aerospace markets. Our service centers offer a variety of 3D printing technologies including stereolithography, laser sintering, FDM (also known as Filament Fusion), PolyJet, powder binding, Multi Jet Fusion, selective laser melting(or SLM), vacuum casting and foundry parts based on sand-printed molds. In order to meet specific customer needs for very large printed parts, we developed Mammoth, our own proprietary stereolithography technology, which utilizes a build area of approximately 1.26 cubic meters with a length of 2 meters. We currently operate 15 Mammoth 3D printers in our Belgian service center.

- *Niche Industrial and Consumer Solutions*. We have developed additive manufacturing solutions that serve certain specialty industrial applications. Our RapidFit+ business utilizes additive manufacturing to provide the automotive market with customized, highly precise and, in certain cases, patent protected measurement and fixturing tools. Through the use of additive manufacturing technology, we believe that RapidFit+ fixtures provide more functionality and flexibility than the traditional fixtures that are currently widely used in the automotive industry. We also offer production tooling that we believe has substantially better ergonomics and improved functionality than traditional fixtures. ACTech also provides specialized additive manufacturing solutions. In particular, ACTech provides prototyping of highly complex metal components through casting techniques that result in products that have a production grade performance. The casting is done using state-of-the-art 3D printed sand molds, while the final functionality of the components is achieved by a fully integrated post processing of the components in our CNC workshop.

In the consumer market, i.materialise, our global online 3D printing service that caters to the “home professional.” Designers, students, inventors and everyday consumers who want to create something unique can utilize our online service to produce their own products and, if they desire, share their products with, and even offer them for sale to others through our platform. Users can upload their 3D designs, choose from a large selection of materials and colors, and instantly see the price for such models in the desired scale and quantities. In 2016, we fully integrated the i.materialise platform into our Materialise Manufacturing segment.

Sales and Marketing. We market our services to our additive manufacturing solutions business customers using our sales force and through our website. Our more complex product offerings are addressed directly by our specialized sales teams who are located throughout Europe in close

proximity to our larger accounts and who align our customers' needs with the wide range of 3D printing technologies that we offer. More straightforward products can be ordered directly by our customers through our "Materialise OnSite" or i.materialise web portals, a proprietary automated system that takes orders, provides quotes and manages the printing process from start to finish, and allows customers to track the manufacturing and shipment process of their product online. Within our larger sales teams, specialized sales managers focus either on rapid prototyping, which is our traditional and well-established market, or the additive manufacturing of end-use production parts, which is the market where we see opportunities for significant growth. Our marketing team in Belgium oversees our global marketing strategy. In addition, employees at our Belgian headquarters and in our local field offices manage sales for particular markets and accounts and provide back office and production management support to our customers.

We have a separate team dedicated to the fixtures market where our account managers' thorough technical knowledge is key to effectively managing our RapidFit+ application.

In addition, as a result of its specific product portfolio, we have dedicated sales, marketing and project teams based in Germany (Freiberg), the United States and India for ACTech products.

Customers. The customers for our Materialise Manufacturing segment are from a wide variety of industries, including automotive, aerospace, healthcare, industrial machining, art and design and consumer products For these customers, we offer a complete set of services ranging from co-creation, to design and engineering, rapid prototyping, and certified manufacturing of end-use parts, including the RapidFit+ service offered to automotive customers.

Through our co-creation offering, which we branded as Materialise Mindware in 2020, we work together with customers to solve complex design challenges and to discuss how the introduction of 3D printing can affect product development, manufacturing workflow, business models and customer experiences. For example, a co-creation with HOYA, in collaboration with Hoet Design Studio, saw the launch of the world's first vision-centric, 3D-tailored eyewear solution, Yuniku, in the fall of 2016. Yuniku enables individualized lens and frame design through a sophisticated end-to-end digital supply chain, which includes a custom 3D scanner and software platform, co-created by us and HOYA, directly linked to our manufacturing factory where we provide our Certified Additive Manufacturing services. In 2017, we started shipping the first Yuniku scanners. In 2018, together with our partners Mclaren (L'Amy) for titanium printed eyewear and Impressio, respectively, we won the Silmo d'Or in the Technological Innovation category and a Silmo d'Or for the Best Sun Glasses.

Through our design and engineering service, we also provide support for those customers looking for support in their initial concept design or with maximizing a design for 3D printing. Our design and engineering team, which is comprised of highly specialized designers and CAD engineers, offers dedicated design and software support for additive manufacturing, including remodeling and file preparation, as well as 3D scanning and measuring.

The customers of both our Materialise OnSite and i.materialise platforms order through our website. Materialise OnSite customers tend to be industrial customers looking to rapid prototype parts quickly and reliably, often taking advantage of fast-lane machines to ensure short lead times for time-critical projects. For i.materialise, while there is a potential to address the wide consumer market with this platform, we prefer to describe our current customers as "home professionals." Our i.materialise client base includes independent designers and CAD hobbyists that often sell their creations or their services to others, including, in certain instances, through the i.materialise gallery. Through i.materialise's APIs, companies can also partner with i.materialise to give their own customers a cloud-based, 3D-printing solution on their website, streamlining the ordering, manufacturing and shipping processes through a direct link to our factory for 3D printing. Since 2016, Microsoft has been using the i.materialise API to offer a cloud-based 3D print solution for Windows 10 users, and PTC did the same for Creo 4.0 software users.

Most of our straightforward additive manufacturing and rapid prototyping solutions are executed on the basis of single transaction contracts or purchase orders with the customer. These contracts and purchase orders lay out the pricing, delivery and other terms of the order. For our Certified Additive Manufacturing service an entirely new approach to ensure parts are made according to agreed standards is required, for which we have set processes to onboard new customers. An example of this is our dedicated aerospace manufacturing line, backed by certifications EN9100 and EASA Part 21G, through which we are currently manufacturing plastic parts for, among others, Airbus's A350 XWB. We expect that as demand for our Certified Additive Manufacturing service grows, more long-term agreements may be entered into.

For the automotive manufacturers and their suppliers that use our RapidFit+ service, the fixtures are custom engineered by dedicated teams. Our RapidFit+ customers, which include their quality departments, expect that fixtures meet high accuracy standards. A number of automotive OEMs in Europe are currently considering our innovative solution as a potential new standard, while a solid base of automotive Tier 1 suppliers in Europe has embraced RapidFit as one of their fixture solutions.

We have dedicated solutions for the footwear market. We believe 3D printing and design technology has great potential to help both consumers and healthcare professionals improve comfort, health and performance through personalized footwear. Building on our Materialise Medical and eyewear expertise in providing patient specific planning tools and customized devices to healthcare and eyewear professionals, we offer similar digital measurement tools and personalized solutions to footcare professionals treating foot or gait problems.

Competition. In our additive manufacturing solutions business, we compete with a number of companies that provide industrial 3D printing services, including ARRK, Cresilas, Prototal, Protolabs and 3D Systems Corporation. In addition, larger accounts tend to move their 3D printing production in-house once their orders have reached certain volumes, which not only creates opportunities for our Materialise Software segment but also for our Materialise Manufacturing segment in terms of capacity balancing services. In the measurement and quality control fixture market addressed by

RapidFit+, we are not aware of any direct competition coming from 3D printing companies. We do have competition, however, from a large group of smaller companies that are active in this field. While there are multiple start-up companies seeking to address the home 3D printing services market, we believe that Shapeways and Sculpteo are the most prominent direct competitors of i.materialise based on their global reach. i.materialise focuses on standing out as a brand in terms of service and reliability.

Growth Opportunities. We believe that there is particular potential to grow our presence in the markets for additive manufacturing of complex and/or unique end products, including for instance certain parts for the aviation industry and eyewear and footwear products. In recent years, more companies have been using additive manufacturing for production across a broad range of industrial sectors, including aerospace, orthopedic implants, surgical guides, dental copings and hearing devices. Additive manufacturing is also being used to manufacture specialty furniture, accessories for the home and office, personal accessories, fashion products, jewelry and footwear.

For industrial end parts, we intend to continue to selectively invest in the expansion and creation of certified 3D manufacturing environments that meet the high standards of the specialized segments of the industrial production market that we focus on. In addition, we believe that our local sales teams, which are in close proximity to our customers, as well as our engineering teams, which can bring in additional expertise where required, are important and rather unique assets in this market that are worthwhile to continue to invest in.

Manufacture and Supply. We produce our 3D printed products at our service centers in Belgium, Brazil, the Czech Republic, Germany, Poland, Japan and the United States. We print substantially all of products in-house using a variety of technologies, including stereolithography, laser sintering, FDM (also known as Filament Fusion), PolyJet, powder binding, Multi Jet Fusion, Powder Bed Fusion and vacuum casting, and only subcontract the manufacture of products if certain other technologies (such as CNC machined components) are required or for capacity balancing purposes. As of December 31, 2020, we operated a total of 188 3D printers and six vacuum casting machines at these service centers, which include distinct areas dedicated to the machinery, quality control, cleaning and labelling of our products. The table below provides selected information about our 3D printers and vacuum casting machines:

Technology	Size	Manufacturer	Number
Stereolithography	Small/Medium Size	3D Systems Corporation / Other	39
	Medium Size	Materialise	2
	Mammoth	Materialise(1)	15
PolyJet	Connex	Stratasys Ltd.	4
FDM	Small Size(2)	Stratasys Ltd.	2
	Medium Size(3)	Stratasys Ltd.	18
	Large Size(4)	Stratasys Ltd.	16
Laser Sintering	Small Size	EOS GmbH	11
	Medium Size	3D Systems Corporation/ EOS GmbH / Other	24
	Large Size	EOS GmbH	25
Multi Jet Fusion	Medium Size	HP	10
Powder Binding	Large Size	ExOne	3
Vacuum Casting	Small Size	MCP HEK GmbH	1
	Medium Size	MCP HEK GmbH	2
	Medium Size	SCHUHL	1
	Large Size	MCP HEK GmbH	2
Direct Metal Laser Sintering	Medium Size	EoS GmbH / GE Additive / Renishaw / SLM Solutions	16
	Large Size	SLM Solutions	3

(1) We have proprietary stereolithography machines based on our patented curtain coat technologies. The original curtain coat machines had a medium sized build volume. These medium sized machines have subsequently been adapted to become the extra-large sized Mammoth machines.
(2) Small size machines are machines with a build volume of less than 250×250×250 mm.
(3) Medium size machines have a build volume of less than 500×500×500 mm.
(4) Large size machines have a build volume of more than 500×500×500 mm.

As of December 31, 2020, 41 printers produced parts exclusively for our Materialise Medical segment, while the other 147 printers and six vacuum casting machines printed parts for our Materialise Manufacturing segment.

As of December 31, 2020, all of our 3D printers and vacuum casting machines were either owned or held under a lease contract. At the end of the lease agreements (which are typically for a period of five years), we have an option to purchase the machines for a value of approximately 1.0% of their original value. We are responsible for the maintenance of such leased equipment.

We devote significant time and attention to the quality control of our products during the printing process by maintaining a comprehensive quality control program, which, among other things, includes the control and documentation of all material specifications, operating procedures, equipment maintenance and quality control methods. In addition, we inspect all of our raw materials to be used in our products throughout the printing process. We control our production orders through the use of labels or visual references on our internal database, bar-codes, controlled prints and routers, which enables us to trace our products during the printing process. Upon completion of the production process, we package and label our products.

The raw materials used in the printing of our products are mainly aluminum, titanium alloy and stainless steel powders, epoxy based photocurable resins, PA12 and thermoplastic polyurethane, or TPU, based powders and a suite of thermoplastic filaments like ABS, PC and Ultem and quartz sand and furanic resin binder.

With the exception of FDM and PolyJet -materials, we believe that none of our other raw material requirements is limited to any significant extent by critical supply or price volatility. We continuously look for second sourcing of our raw materials in order not to be dependent on a single supplier in case a supply issue was to occur. We monitor the costs of our raw materials in order to optimize the cost/performance whilst not jeopardizing the expectations of our customers and the safe use of the materials in critical applications. With our strategic partnership with BASF 3D Printing Solutions GmbH, we are working towards offering to the market open solutions in terms of materials and software through which the user of additive manufacturing equipment can choose functionalities that best suit the user.

Our 3D printing operations for our patient-specific surgical guides, models and implants are subject to extensive regulation. We operate a certified quality management system in line with the U.S. Quality System Regulation, good manufacturing practice regulations and ISO 13485. We are registered with regulatory authorities in the United States, Europe, Canada, Australia and other jurisdictions. We CE mark our products where required. Our service centers are subject to periodic and sometimes unannounced inspections by regulatory authorities, including inspections by the FDA.

Research and Development

We have an ongoing research and development program to improve and expand the capabilities of our existing technology portfolio, which reflects our continued investments in a range of disciplines, including software development, industrial, mechanical and biomedical engineering, physics and chemistry.

We have a long history of research and development through collaborations, which augment our internal development efforts. Our earliest joint research projects date from the early 1990s with market leading collaboration partners such as Siemens AG, Zeneca and the University of Leuven (*Katholieke Universiteit Leuven*), or KU Leuven. Many of our innovations are based on industrial collaborations such as those with Phonak Staefa Switzerland, Zimmer Biomet, DePuy Synthes, and BASF SE and its subsidiaries. As of December 2020, we were active in over 20 government funded research projects and we also employed multiple researchers with a publicly funded scholarship. With our platform technologies and strong track record in successful commercialization of scientific innovations, we receive many requests for participation in new development projects. While we strongly protect our intellectual property in our core competencies, many of our products require collaborations in order to create healthy ecosystems for their successful implementation.

As of December 31, 2020, we had approximately 80 active research and development projects in various stages of completion and approximately 410 FTEs and fully dedicated consultants working on research and development in our facilities in Belgium, France, Germany, the United Kingdom, the United States, Ukraine, China and Malaysia.

Our research and development projects include (but are not limited to) the following:

1. various software development projects including projects related to engineering and design for 3D printing, and improving existing technological challenges (for example, the handling of large amounts of data and advanced image segmentation), which are expected to benefit both our Materialise Software and Materialise Medical segments;
2. research projects to understand and develop cutting-edge software tools for industrially relevant additive manufacturing technologies (powder bed fusion for plastics (laser sintering) and metal (laser melting and electron beam), stereolithography, FDM (also known as Filament Fusion), binder jetting power bed fusion, DLP-based printing and inkjet based technologies);
3. research projects in our Materialise Medical segment to develop patient specific surgical planning tools or surgical guides or implants for orthopedic, CMF and cardiovascular surgeries;
4. a research program on the use of virtual reality which resulted in the release of our Mimics VR View;
5. a research and development project on smart digital technologies for the large-scale personalization of wearables;
6. various research projects on the use of artificial intelligence and (deep) machine learning in the fields of image processing and additive manufacturing; and
7. several research projects related to improving the maturity, reliability and quality of the additive manufacturing process, which are expected to benefit each of our three segments.

In addition, our strategic partnership with BASF New Business GmbH focuses on collaboration for research and development activities in multiple areas, primarily focusing on the introduction of new plastic materials in additive processes.

We also regularly apply for research and development grants and subsidies under European, Belgian, British, French and German, grant rules. The majority of these grants and subsidies are non-refundable. We have received grants and subsidies from different authorities, including the Flemish government (VLAIO, or Vlaams Agentschap Innoveren en Ondernemen), the European Union (FP7 and H2020 framework programs) and BMBF, the German Federal Ministry of Education and Research.

We expect to continue to invest significantly in research and development in the future.

Intellectual Property

We regard our intellectual property rights as valuable to our business and protect our technology portfolio through a combination of patent, copyright, trademark, trade secret and other intellectual property laws, confidentiality and other contractual provisions and other measures. The nature and extent of legal protection associated with each such intellectual property right depends on, among other things, the type of intellectual property right and the given jurisdiction in which such right arises.

As of December 31, 2020, our portfolio of intellectual property featured 307 issued patents and an additional 167 pending patent applications primarily in the United States, the European Union and Japan. Of these, our issued patents expire between approximately 2020 and 2035, while our currently pending patent applications will generally remain in effect for 20 years from the date of the initial applications. We believe that, while our patents provide us with a competitive advantage, our success depends primarily on our business development, applications know-how and ongoing research and development efforts. Accordingly, we believe that the expiration of any single patent, or the failure of any single patent application to result in an issued patent, would not be material to our business or financial position.

As is the case in the 3D printing industry generally, the development of our products, processes and materials has required considerable experience, manufacturing and processing know-how and research and development activities. We protect our proprietary products, processes and materials as trade secrets through nondisclosure and confidentiality agreements with our employees, consultants and customers.

In addition, we own the trademark registrations for “Materialise” and “ACTech” and trademark registrations and pending applications for many of our services and software solutions in those territories where we have substantial sales, including “Streamics”, “Mimics”, “3-matic”, “Inspector”, “Magics”, “RapidFit+”, “MGX by Materialise”, “Heartprint”, “ADaM”, “Engineering on Anatomy”, “Surgicase”, “Enlight”, “Mindware” and “Phits”, among others.

We are party to various licenses and other arrangements that allow us to practice and improve our technology under a broad range of patents, patent applications and other intellectual property, including agreements with our collaboration partners, Zimmer Biomet, DJO Surgical, DePuy Synthes, Lima, Mathys, Stryker, Corin, Siemens, FluidDa, HOYA, the University of Michigan and PTC.

There can be no assurance that the steps we take to protect our proprietary rights will be adequate or that third parties will not infringe or misappropriate such rights. We have been subject to claims and expect to be subject to legal proceedings and claims from time to time in the ordinary course of our business. In particular, we may face claims from third parties that we have infringed their patents, trademarks or other intellectual property rights. Such claims, even if not meritorious, could result in the expenditure of significant financial and managerial resources. Any unauthorized disclosure or use of our intellectual property could make it more expensive to do business and harm our operating results.

Seasonality

End markets such as healthcare, automotive, aerospace and consumer products may experience some seasonality. While the historical impact of seasonality on the revenue of our Materialise Medical and Materialise Manufacturing segments has not been material, the project related nature of our ACTech business, may make our Materialise Manufacturing segment more susceptible to fluctuations, although not necessarily in a seasonal pattern. Historically, the revenue of our Materialise Software segment has been greater in the fourth quarter, as compared to the revenue of each of the other quarters. A number of our customers make their initial software purchase in the fourth quarter prior to the end of their annual budget cycle and tend to renew, extend or broaden the scope of their licenses on the anniversary date of their first purchase. In addition, we have in the past often brought new releases on the market in the third quarter of the calendar year, which may also have an impact on sales in the subsequent quarter.

Regulatory / Environmental Matters

Environmental Matters

Our facilities and operations are subject to extensive U.S. federal, state and local, European and other applicable foreign environmental and occupational health and safety laws and regulations. These laws and regulations govern, among other things, air emissions; wastewater discharges; the generation, storage, handling, use and transportation of hazardous materials; the handling and disposal of hazardous wastes; the clean-up of contamination; and the health and safety of our employees. Under such laws and regulations, we are required to obtain permits from governmental authorities for some of our operations. If we violate or fail to comply with these laws, regulations or permits, we could be fined or otherwise sanctioned by regulators. We could also be held responsible for costs and damages arising from any contamination at our past or present facilities or at third party waste disposal sites.

Our headquarters in Belgium, our manufacturing site in Poland, and ACTech's headquarters in Germany, follow the ISO 14001:2015 criteria for an effective environmental management system. Our headquarters in Belgium and ACTech's headquarters in Germany are ISO 14001:2015 certified.

Compliance with laws and regulations relating to the discharge of materials into the environment or otherwise relating to the protection of the environment has not had a material impact on capital expenditures, earnings or the competitive position of our subsidiaries and us. We are not the subject of any legal or administrative proceedings relating to the environmental laws of Belgium or any country in which we have facilities. We have not received any notices of any violations of any such environmental laws.

Healthcare Regulatory Matters

In our Materialise Medical segment, we are subject to extensive and complex U.S. federal, state and local, European and other applicable foreign healthcare and medical devices laws and regulations.

Both before and after approval or clearance our medical products and product candidates are subject to extensive regulation. In the United States, the FDA under the Federal Food, Drug and Cosmetic Act primarily regulates us. In Europe and in other foreign jurisdictions in which we sell our medical products, many of the regulations applicable to our medical devices and products in these countries are similar to those of the FDA. Together, these regulations govern, among other things and where applicable, the following activities in which we are involved:

- product development;
- product testing;
- product clinical trial compliance;
- product manufacturing;
- product labelling and instructions for use;
- product safety, product safety reporting, recalls and field corrective actions;
- product packaging and storage;
- product registration, market clearance or approval;
- product modifications;
- product marketing, advertising and promotion;
- product import and export, restrictions, tariff regulations, duties and tax requirements;
- product sales and distribution;
- post-market surveillance, including reporting of deaths or serious deterioration in the state of health and malfunctions that, if they were to recur, could lead to death or serious deterioration in the state of health;
- record keeping procedures;
- registration for reimbursement; and
- necessity of testing performed in country by distributors for licenses.

Failure to comply with the Federal Food, Drug and Cosmetic Act could result in, among other things, warning letters, civil penalties, delays in approving or refusal to approve a medical device candidate, product recall, product seizure, interruption of production, operating restrictions, suspension or withdrawal of product approval, injunctions or criminal prosecution. Outside the United States, failure to comply with applicable laws and regulations could result in similar actions, and in the suspension or withdrawal of Quality Management System certification which may be a prerequisite to market medical devices.

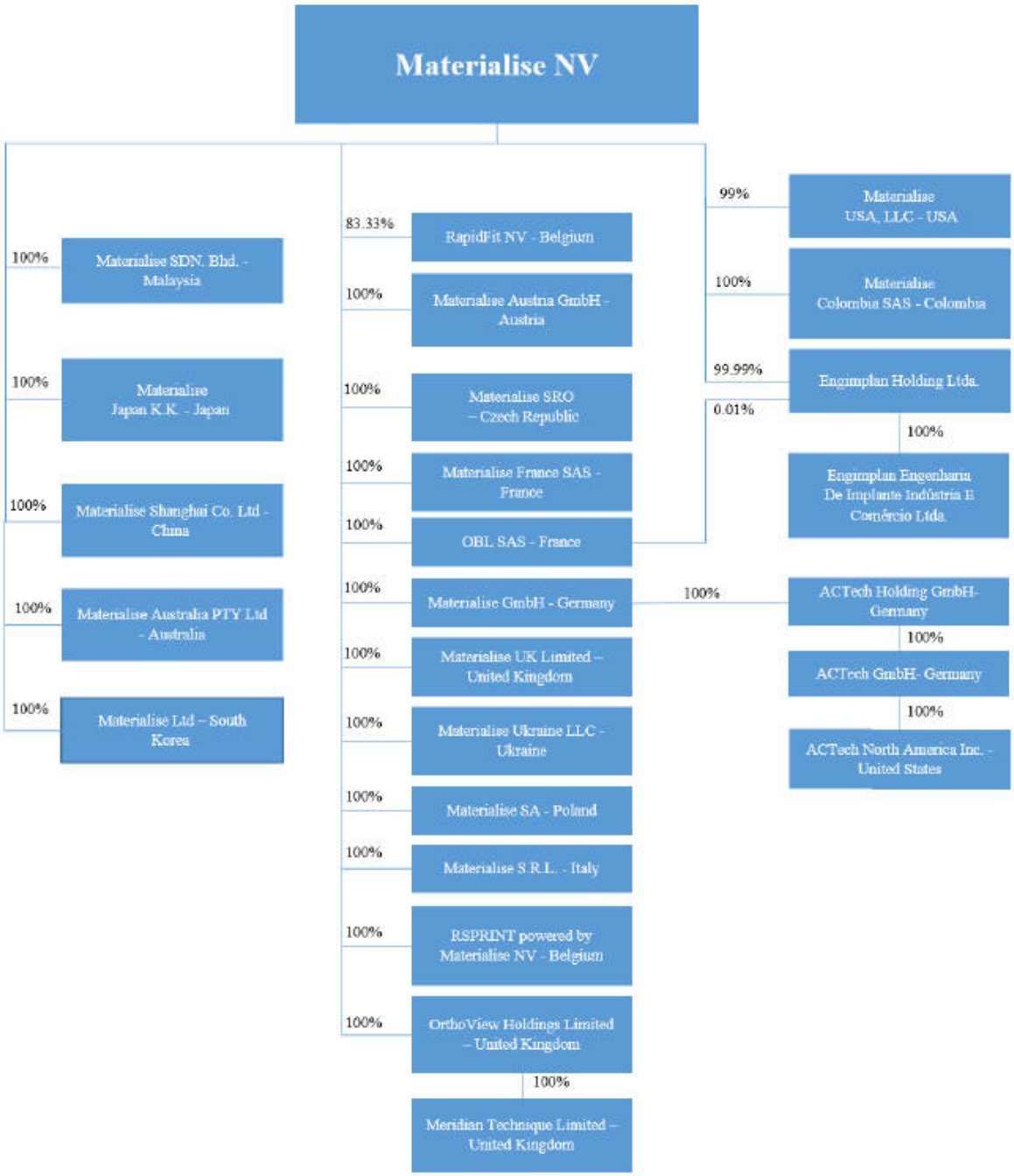
The time required to obtain clearance required by foreign countries may be longer or shorter than that required for FDA clearance, and requirements for licensing a product in a foreign country may differ significantly from FDA requirements.

Moreover, these laws and regulations are subject to change. For example, on May 26, 2021, the Medical Devices Regulation will become fully applicable in the European Union, which is requiring us to adopt certain measures in anticipation of its effectiveness. For more information, see “Item 3. Key Information—D. Risk Factors—Risks Related to Our Materialise Medical Segment and Regulatory Environment—Healthcare policy changes, including legislation to reform the U.S. healthcare system, could adversely affect us.”

We have obtained MDSAP certification. This program allows an MDSAP-recognized auditing organization to conduct a single regulatory audit of a medical device manufacturer that satisfies the relevant requirements of the regulatory authorities participating in the program. To the extent that we do business in the participating jurisdictions, certain major non-conformities identified under this program may be escalated to the regulatory authorities of the United States, Canada, Japan, Australia and Brazil. The Canadian regulatory authority, Health Canada, has made participation in MDSAP a mandatory requirement for medical device manufacturers importing products to Canada. Failure to maintain certification under MDSAP may impact our capability to do business in Canada. In addition, failure to address escalated issues reported to the participating authorities may impact our capability to do business in the respective jurisdictions.

C. Organizational Structure

The following illustrates our corporate structure as of the date of this annual report:


Materialise NV
100%
Materialise SDN. Bhd. - Malaysia
100%
Materialise Japan K.K. - Japan
100%
Materialise Shanghai Co. Ltd - China
100%
Materialise Australia PTY Ltd - Australia
100%
Materialise Ltd – South Korea
83.33%
RapidFit NV - Belgium
100%
Materialise Austria GmbH - Austria
100%
Materialise SRO – Czech Republic
100%
Materialise France SAS - France
100%
OBL SAS - France
100%
Materialise GmbH - Germany
100%
Materialise UK Limited – United Kingdom
100%
Materialise Ukraine LLC - Ukraine
100%
Materialise SA - Poland
100%
Materialise S.R.L. - Italy
100%
RSPRINT powered by Materialise NV - Belgium
100%
OrthoView Holdings Limited – United Kingdom
100%
Meridian Technique Limited – United Kingdom
99%
Materialise USA, LLC - USA
100%
Materialise Colombia SAS - Colombia
99.99%
0.01%
Engimplan Holding Ltda.
100%
Engimplan Engenharia De Implante Indústria E Comércio Ltda.
100%
ACTech Holding GmbH- Germany
100%
ACTech GmbH- Germany
100%
ACTech North America Inc. - United States

RapidFit NV Shareholders' Agreement

On June 27, 2013, we entered into a shareholders' agreement with PMV-TINA Comm.VA, or PMV, with respect to our subsidiary RapidFit NV, of which we own 83.33% and PMV owns 16.66%. Pursuant to the agreement, we have the right to appoint four out of the five members of the board of directors and PMV has the right to appoint one director, who has approval rights for certain company decisions and transactions, including with respect to certain acquisitions, dispositions or pledges of assets, the budget, officers, and issuance or offering of shares of RapidFit NV. The shareholders' agreement contains provisions regarding restrictions against the transfer of shares, put and call options, anti-dilution warrants, liquidation preference, tag along rights and drag along rights. For additional information regarding the accounting treatment of the put and call options and warrants, see Note 13 to our audited consolidated financial statements.

D. Property, Plants and Equipment

Our corporate headquarters and our largest 3D printing service center are located in Leuven, Belgium. We currently own office and service spaces in Belgium as well as in the Czech Republic, France, Germany, Poland and the United States. We also lease other service centers and sales offices, which are located in Austria, Belgium, Brazil, China, France, Germany, India, Japan, Malaysia, Ukraine, the United Kingdom, the United States, Poland, Colombia, Australia, Italy and South Korea. The aggregate annual lease payments for our facilities in 2020, 2019 and 2018 were €1.8 million, €2.1 million and €1.8 million, respectively. The table below provides selected information regarding our facilities.

Location	Ownership	Use	Approximate Area	Lease Expiration
Leuven, Belgium	Owned	Corporate headquarters; production	50,614.35 sq. m.	N/A
Leuven, Belgium	Leased	Warehouse	200 sq. m.	March 31, 2021
Ghent, Belgium	Leased	Office/Production	547 sq. m.	December 31, 2023
Paal, Belgium	Leased	Office/Production	2848.25 sq. m.	October 31, 2030
Plymouth, Michigan, United States	Owned	Office; production; parking	3.89 acres	N/A
Ann Arbor, Michigan, United States	Leased	Office/Production	2,771 sq. ft.	October 31, 2023
Saint Marcel les Valence, France	Owned	Office	1,100 sq. m.	N/A
Yokohama, Japan	Leased	Office	515.58 sq. m.	March 31, 2022
Kawasaki, Japan	Leased	Production	205 sq. m.	May 19, 2024
Ústí nad Labem, Czech Republic	Owned	Office; production	16,013 sq. m.	N/A
Vienna, Austria	Leased	Office	44 sq. m.	December 31, 2021
Gilching, Germany	Leased	Office	399 sq. m.	December 31, 2021
Bremen, Germany	Owned	Office	6724 sq. m.	N/A
Petaling Jaya, Malaysia	Leased	Office	13,935 sq. ft. 6,403 sq. ft.	May 31, 2024 May 31, 2024
Malakoff, France	Leased	Office	564.40 sq. m.	May 31 30, 2028
Kiev, Ukraine	Leased	Office	3,384.8 sq. m.	June 29, 2028
Kiev, Ukraine	Leased	Office	171 sq. m.	December 31, 2021
Sheffield, United Kingdom	Leased	Office	1,575 sq. ft.	January 31, 2022 (partially) and November 30, 2021 (partially)
Southampton, United Kingdom	Leased	Office	3,340 sq. ft.	April 22, 2023
Shanghai, China	Leased	Office	1,200 sq. m.	June 8, 2021
Medellin, Colombia	Leased	Office	247.25 sq. m.	May 31, 2022
	Leased	Office	64.06 sq. m.	January 31, 2023
Wroclaw, Poland	Owned	Office; production	2.3975 hectare	N/A

Gold Coast, Australia	Leased	Office	38 sq. m.	January 1, 2022
Milan, Italy	Leased	Office	55 sq. m.	December 31, 2023
Freiberg, Germany	Owned	Office, Production, Parking (Land)	26,277 sq. ft.	N/A
Freiberg, Germany	Owned	Office, warehouse, production, parking (Land)	7,996 sq. m.	N/A
Ann Arbor, Michigan, United States	Leased	Office	1,987 sq. ft.	December 31, 2023
Bangalore, India	Leased	Office	2,000 sq. ft.	March 31, 2022
Rio Claro, Brazil	Leased	Corporate Offices, R&D Laboratory, Production	4,092.27 sq. m.	August 5, 2029
Seoul, South Korea	Leased	Shared workspace	N/A	July 31, 2021

See also “—B. Business Overview—Manufacture and Supply” for information about the printers we operate, “—Regulatory / Environmental Matters—Environmental Matters” for information about environmental matters and “Item 5. Operating and Financial Review and Prospects—B. Liquidity and Capital Resources—Indebtedness” for information about indebtedness secured by mortgages.

ITEM 4A. UNRESOLVED STAFF COMMENTS

Not applicable.

ITEM 5. OPERATING AND FINANCIAL REVIEW AND PROSPECTS

The following discussion and analysis should be read in conjunction with the information set forth in "Item 3. Key Information—A. Selected Financial Data," and our consolidated financial statements and accompanying notes included elsewhere herein.

This section contains forward-looking statements that involve risks and uncertainties. Our actual results could differ materially from those contained in forward-looking statements. Factors that could cause or contribute to such differences include, without limitation, those discussed in the sections entitled "Item 3. Key Information—D. Risk Factors," "Special Note Regarding Forward-Looking Information" and "Item 4. Information on the Company—B. Business Overview" and elsewhere in this annual report.

A. Operating Results

Overview

Company Overview

We are a leading provider of additive manufacturing and medical software and of sophisticated 3D printing services. With our knowledge, products and services, we empower our customers' use of additive manufacturing technology, in general, and we enable certain specific and significant applications of additive manufacturing, in particular. In both instances, we seek to empower the choice for sustainability through the use of additive manufacturing.

The customers of our general software tools and 3D printing services are active in a wide variety of industries, including healthcare, automotive, aerospace, art and design and consumer products. The significant additive manufacturing applications that we are more deeply and more directly involved in currently include applications for cranio maxillo facial, eyewear, footwear and measurement fixtures.

As of December 31, 2020, our team consisted of 2,163 FTEs, and fully dedicated consultants. Our portfolio of intellectual property featured 307 patents and 167 pending patent applications as of December 31, 2020. For the year ended December 31, 2020, we generated € 170.4 million of revenue, representing 13.3% decrease over the prior year, a net loss of € 7.3 million and Adjusted EBITDA of € 20.4 million. For a description of Adjusted EBITDA and a reconciliation of our net profit to our Adjusted EBITDA, see "—Other Financial Information" below.

Private Placement and Public Offering

On July 19, 2018, we closed a private placement of 1,953,125 newly issued ordinary shares to BASF Antwerpen for gross proceeds of approximately $ 25 million.

On July 27, 2018, we closed a follow-on public offering of a total of 3,450,000 ADSs at a public offering price of $13.00 per ADS for gross proceeds of $ 44.90 million.

We raised approximately $ 65.20 million (or € 55.90 million, based on the exchange rate as of December 31, 2018) in aggregate net proceeds from such private placement and follow-on public offering, collectively.

Acquisition of Majority Interest in Engimplan

On August 6, 2019, we acquired 40% of the shares and voting interest of Engimplan and subsequently increased our shareholding in Engimplan to 75% with a capital increase in Engimplan. In December 2020, we acquired the remaining 25% interest in Engimplan, making us Engimplan's sole shareholder (through our Brazilian subsidiary).

The Brazil-based company is a specialized manufacturer of orthopedic and CMF implants and instruments. Engimplan operates within our Materialise Medical segment.

Strategic Collaboration with Ditto Technologies Inc.

On August 14, 2020, we entered into a convertible note agreement with Ditto Technologies Inc. under which we may loan Ditto up to $9 million, which loan may be converted by us into equity under certain conditions.

On September 17, 2020, we entered into a strategic collaboration framework agreement with Ditto for the development and commercialization of a set of digital tools and assets, including digital frame assets, 3D-face reconstructions, measurement and fitting, virtual try-on and additive manufacturing of custom eyewear.

Acquisition of Remainder of Shares in RS Print and Acquisition of Substantially All of the Assets of RS Scan

On November 9, 2020, we acquired the remaining 50% of the shares and voting interests in RS Print, making us RS Print's sole shareholder . In addition, we acquired substantially all of the assets of RS Scan.

RS Print is a custom footwear technology company, using scientific movement analysis to produce 3D printed footwear solutions. RS Print operates within our Materialise Manufacturing segment.

Growth Strategy

We believe that our existing products, such as our Magics Software Platform, our Mimics Innovation Suite and our metal 3D printing business, have significant potential to continue to grow, as the use of 3D printing in general continues to grow. In addition, in each of our segments we are currently active in key new business areas that we believe will further accelerate our longer term growth.

In our Materialise Software segment, we intend to accelerate the market penetration of our software offering (i) by expanding our product portfolio with innovative solutions that focus on volume production, including manufacturing execution systems, or MES, and automated workflows for additive manufacturing and (ii) by offering our customers cloud-based access to our integrated software platform. Our development of a cloud-based software platform may affect our revenue levels in the near term, but we believe it will ensure the continued strength of our business model going forward. Further, in order to be able to meet the demands that are associated with volume production, including mass customization, and to accelerate the development and roll out of our cloud-based software platform, where software as a service (SaaS), big data technologies, and machine learning will be key drivers, we intend to continue to invest significantly in both research and development. As part of this growth strategy, we recently acquired an option to purchase Link3D Inc., an additive workflow and MES company.

In our Materialise Medical segment, we believe that the growing trend of personalized patient care will boost the demand for digital planning tools as well as for customized medical devices. In response to that trend, we intend to continue to increase the penetration of our existing software products in the hospitals' point-of-care market and to expand our portfolio of planning tools into new areas such as cardiovascular and pulmonology. We also intend to continue to develop and grow the sales of our personalized medical device portfolio, both directly and indirectly and in existing as well as in new markets, including in particular in the CMF market.

In our Materialise Manufacturing segment, we believe that there is significant growth potential in the markets for additive manufacturing of end products. We therefore intend to continue to invest in the expansion and creation of certified 3D manufacturing environments that meet the high standards of the specialized segments of the industrial market, including the aerospace market. More particularly, we believe that our growth initiatives in the wearables market that have been incubated within Materialise Manufacturing may drive growth in the coming years. In the eyewear market, we are investing in the introduction of advanced front-end digital technologies, such as virtual try on and fitting solutions (including in collaboration with Ditto), as well as in back-end production facilities for the production of 3D printed eyewear, including customized frames. In the footwear market, we will continue to invest in the development and commercial roll out of the pressure plate technology and related applications that we acquired from RS Scan and in the worldwide commercialization of our Phits customized 3D printed insoles, in collaboration with our former joint venture partner, Superfeet.

Importantly, our applications and solutions focus on empowering our customers' and partners' choice for sustainability. In the applications that we support, additive manufacturing has the potential to not only replace traditional manufacturing technologies, but also enable the digitization of customer journeys and supply chains, to localize manufacturing, to reduce inventories and the use of raw materials and to make end customers' solutions more durable through personalization. We believe that this focus on the choice for sustainability will position us for long term sustainable growth, even if this may imply that we forego short term growth opportunities that do not fit this vision.

Our growth strategies for both our existing and new businesses and for each of our three market segments are based on our medium and long term expectations for these businesses and segments. In the short term, we expect both the 3D printing industry in general and our business will continue to be impacted by the current coronavirus pandemic. For more information, see "—Trend Information" below.

Recent Developments

See Note 27 to our audited consolidated financial statements for disclosure of significant transactions and significant changes in our financial condition or results of operations that occurred subsequent to December 31, 2020. In addition, see "—Trend Information" below.

Key Income Statement Items

Revenue

Revenue is generated primarily by the sale of our software and 3D printed and complex manufactured products and services.

In our Materialise Software segment, we generate revenues from software licenses, maintenance contracts and custom software development services and sales of Materialise Controller.

In our Materialise Medical segment, we generate revenue through the sale of medical devices that we print or manufacture for our customers and from the sale of licenses on our medical software packages, software maintenance contracts and custom software development and engineering services.

In our Materialise Manufacturing segment, we generate most of our revenue through the sale of parts that we print or produce for our customers.

Software. Software revenue is comprised of perpetual and time-based licenses, maintenance revenue and software development service fees. Our software products are mainly licensed pursuant to one of two payment structures: (i) perpetual licenses, for which the customer pays an initial fee for a perpetual license and subsequently pays fees for maintenance under separate maintenance contracts, generally on an annual basis, or (ii) time-based licenses (generally annual licenses), for which the customer pays equal periodic fees to keep the license active. Perpetual licenses require the payment of fees for maintenance, technical support and product updates. Time-based licenses entitle the customer to corrective maintenance and product updates without additional charge. We generally recognize revenue from our time-based licenses and our maintenance revenue ratably on a straight-line basis over the term of the applicable license or maintenance contracts. Our software revenue depends upon both incremental sales of software licenses to both new and existing customers and renewals of existing time-based licenses and maintenance contracts. Sales and renewals are also driven by our customers' usage and budget cycle. Software development services are typically charged either on a time and materials basis or on a fixed fee basis.

3D printed products and services. 3D printed products revenue is derived from our network of 3D printing service centers. Our service centers not only utilize our 3D printing technology to print products but are also full-service operations that provide support and services such as pre-production collaboration prior to printing the product. Revenue from 3D printed products depends upon the volume of products that we print for our customers. Sales of these products are linked to the number of our 3D printing machines that are installed and active worldwide. We have dedicated teams and production lines for industrial applications and medical applications. All medical products require a highly regulated production environment. Whereas both segments use the same 3D printing technologies, the complex combination of our engineering and software solutions in connection with medical applications results in higher margins for our medical applications.

Production of limited runs of highly complex casted metal parts. Casted products revenue is derived from ACTech's network, with its production unit in Freiberg, Germany. ACTech is utilizing casting technology, including 3D printing technology for mold making, and offers full-service project operations, including project and pre-production collaboration, and high-end complex finishing services.

Cost of Sales

Our cost of sales includes raw materials, external subcontracting services, labor costs, manufacturing overhead expenses, amortization and depreciation and reserves for inventory obsolescence. Our manufacturing overhead expenses include quality assurance, manufacturing engineering, material procurement, inventory control, facilities, equipment and information technology and operations supervision and management.

Research and Development Expenses

Our research and development activities primarily consist of engineering and research programs associated with our products under development as well as research and development activities associated with our core technologies and processes. Research and development expenses are primarily related to employee compensation, including salary, fringe benefits, share-based compensation and temporary employee expenses. We also incur expenses for software and materials, supplies, costs for facilities and equipment, depreciation, and outside design and outside research support.

Development expenditures on an individual project are recognized as an intangible asset when we can demonstrate:

- the technical feasibility of completing the intangible asset so that the asset will be available for use or sale;
- the intention to complete and the ability to use or sell the asset;
- how the asset will generate future economic benefits;
- the availability of resources to complete the asset; and
- the ability to measure reliably the expenditure during development.

We have determined that the conditions for recognizing internally generated intangible assets from proprietary software, guides and other product development activities are not met until shortly before the products are available for sale, unless either (i) we have strong evidence that the above criteria are met and a detailed business plan is available showing the asset will on a reasonable basis generate future economic benefits or (ii) the development is done based upon specific request of the customer, we have the intention to market the product to parties other than the customer, the development is subject to an agreement and the substance of the agreement is that the customer reimburses us for a significant portion of the development expenses incurred. As such, development expenditures not satisfying the above criteria and expenditures on the research phase of internal projects are recognized in the consolidated income statement as incurred.

Sales and Marketing Expenses

Our sales and marketing expenses primarily consist of employee compensation, including salary, fringe benefits and share-based compensation for our marketing, sales and business development functions. Other significant expenses include travel, depreciation, product demonstration samples, brochures, websites and trade show expenses.

General and Administrative Expenses

Our general and administrative expenses primarily consist of employee compensation, including salary, fringe benefits and share-based compensation for our executive, financial, human resources, information technology support and regulatory affairs and administrative functions. Other significant expenses include outside legal counsel, independent auditors and other outside consultants, insurance, facilities, depreciation and information technologies expenses.

Net Other Operating Income

Net other operating income consists primarily of withholding tax exemptions for qualifying researchers, development and government grants, partial funding of research and development projects, currency exchange results on purchase and sales transactions the amortization of intangible assets from business combinations, write-off of trade receivables, impairment of goodwill and intangible assets, and revaluation income or costs from participations.

Government grants are recognized when there is reasonable assurance that the grant will be received and all attached conditions will be complied with. When the grant relates to development costs or another expense, it is recognized as income over the grant period necessary to match the income on a systematic basis to the costs that it is intended to compensate. When the grant relates to the construction of buildings, it is recognized as income over the depreciation period of the related building.

Such grants have been received from the federal and regional governments and from the European Union in the forms of grants linked to certain of its research and development programs, reduced payroll taxes and the financing of the construction of an office building in Leuven, Belgium and in Freiberg, Germany.

Where retention of a government grant is related to assets or to income and dependent on the Company satisfying certain criteria, it is initially recognized as deferred income. When the criteria for retention have been satisfied, the deferred income balance is released to other operating income in the consolidated income statement on a systematic basis over the periods in which the entity recognizes as expenses the related costs for which the grants are intended to compensate.

Government grants are recognized when there is reasonable assurance that the grant will be received and all attached conditions will be complied with.

Financial Expenses

Our financial expenses primarily include costs associated with currency exchange differences and with interest payments on our debt.

Critical Accounting Policies and Accounting Estimates

The preparation of our consolidated financial statements requires management to make judgments, estimates and assumptions that affect the reported amounts of revenue, expenses, assets and liabilities, and the accompanying disclosures. Uncertainty about these assumptions and estimates could result in outcomes that require a material adjustment to the carrying amount of assets or liabilities for future periods.

On an ongoing basis, we evaluate our estimates, assumptions and judgments, including those related to revenue recognition, development expenses, share-based payment transactions, income taxes, impairment of goodwill, intangible assets and property, plant & equipment and business combinations.

We based our assumptions and estimates on parameters available when the consolidated financial statements were prepared. Existing circumstances and assumptions about future developments, however, may change due to market changes or circumstances arising beyond our control. Such changes are reflected in the assumptions when they occur.

Revenue Recognition

Our revenue recognition policies require management to make significant estimates. Management analyzes various factors, including a review of specific transactions, historical experience, creditworthiness of customers and current market and economic conditions. Changes in judgments based upon these factors could impact the timing and amount of revenue and cost recognized and thus affects our results of operations and financial condition. The significant estimates and judgments relate to:

- The assessment whether a performance obligation is distinct in a bundled sale(s) transaction;
- Estimates of the variable considerations and the assessment of the revenue constraint limitation;
- Estimates of the stand-alone selling prices for each distinct performance obligation; and
- The stage of completion of our customized development of software components for customers when revenue is satisfied over time.

We make significant judgments when performing the assessment of whether a performance obligation is distinct from the other performance obligations in a contract, i.e., whether the good or service has a benefit for the customer on its own or together with readily available resources and/or whether the good or service is highly interrelated or a significant input with another good or service delivered, or whether it significantly modifies or customizes another good or service. Relevant judgments include the following:

- Whether the software license is distinct from the 3D printed guides — in most cases with contracts with collaboration partners in the Materialise Medical segment, the software license is combined with the manufacturing of the 3D printed guides as the software license has no benefit for the customer without the manufacturing services. We have also implemented a new “Plan Only” feature where the collaboration partners can benefit from a virtual plan produced with the software license without the manufacturing of any physical product. Such Plan Only features are recognized in revenue as a separate performance obligation based on the usage by the collaboration partner.
- Whether the development services are distinct from other performance obligations — in most cases, those performance obligations are distinct however for one contract with a collaboration partner in the Materialise Medical segment, the software license is combined with the license and the 3D printed guides as one “distinct” performance obligation

For the stand-alone selling prices, we are using prices from price list or historical prices for similar transactions. However, in certain cases, such information is not immediately available, and in such cases, we estimate the stand-alone selling price by using a cost-plus or another estimate. In addition, for certain performance obligations such as development services, stand-alone selling prices also require an estimate of the time to complete the development.

Certain contracts include estimates of variable considerations within the transaction price and assessing the revenue constraint, such as:

- Quantities/volume sold for fixed prices in relation to, but not limited to, manufacturing of 3D printed products, software licenses sold and maintenance renewals;
- Contractual prices may be different based on volume purchased during a certain period;
- FTE expenses for development or other services billed on a time & material basis; and
- Volume rebates.

The method applied to estimate the variable consideration is dependent on the number of possible scenarios and the probability of each scenario. In case there are many possible scenarios with a wide range of probabilities (each less than 50%), we will use the expected value method while the most likely method is used when there is a scenario with a higher probability (more than 50%).

Variable consideration is not a constraint when, based on historical experience, high reliable business forecast and/or the timeframe of the estimates, we determine that there is a high probability that this will not result in a future revenue reversal.

We determine the stage of completion for development contracts satisfied over time by comparing labor hours incurred to-date to the estimated total labor hours required to complete the project. We consider labor hours to be the most reliable, available measure of progress on these projects. Adjustments to estimates to complete are made in the periods in which facts resulting in a change become known. When the estimate indicates that a loss will be incurred, such loss is recorded in the period identified. Significant judgments and estimates are involved in determining the percent complete of each contract. Different assumptions could yield materially different results.

Development Expenses

Under International Accounting Standards 38, or IAS 38, internally generated intangible assets from the development phase are recognized if certain conditions are met. These conditions include the technical feasibility, intention to complete, the ability to use or sell the asset under development, the availability of technical, financial and other resources to complete the asset, and the demonstration of how the asset will generate probable future economic benefits. The cost of a recognized internally generated intangible asset comprises all directly attributable cost necessary to make the asset capable of being used as intended by management. In contrast, all expenditures arising from the research phase are expensed as incurred.

Determining whether internally generated intangible assets from development are to be recognized as intangible assets requires significant judgment, particularly in determining whether the activities are considered research activities or development activities, whether the product enhancement is substantial, whether the completion of the asset is technically feasible considering a company-specific approach and the probability of future economic benefits from the sale or use.

We have determined that the conditions for recognizing internally generated intangible assets from proprietary software, guide and other product development activities are not met until shortly before the products are available for sale, unless either (i) we have strong evidence that the above criteria are met and a detailed business plan is available showing the asset will on a reasonable basis generate future economic benefits or (ii) the development is done based upon specific request of the customer, we have the intention to market the product also to other parties than the customer, the development is subject to an agreement and the substance of the agreement is that the customer reimburses us for a significant portion of the development expenses incurred. As such, development expenditures not satisfying the above criteria and expenditures on the research phase of internal projects are recognized in the consolidated income statement as incurred. This assessment is monitored by us on a regular basis.

We have determined that the criteria for internally generated intangible assets were met for two projects in 2018: (1) the software development of a new planner for hospitals within the cardiovascular field and (2) the process to obtain FDA and E.U. approval for a 3D printed tracheal splint within the Materialise Medical segment. The first project was successfully completed in 2019. From 2017 through September 2020, the total amount capitalized for the U.S. market component of the tracheal splint development project had accumulated to €2.1 million, based on a positive assessment of all recognition criteria. In September 2020, the FDA disapproved the Investigational Device Exemption, or IDE, submission, and in December 2020, the FDA disapproved an amended IDE submission. Our management believes that the technical feasibility of the project (the IDE approval, successful outcome of the clinical trial and obtaining the FDA's premarket approval, or PMA) remains positive. However, the FDA regulatory process has resulted in a delay of two years compared to our previous assumptions regarding obtaining the PMA and commencing commercialization. As a result, the headroom (defined as the difference between the development expenses capitalized and to be incurred until the PMA is obtained, and the present value of the expected cash flows until 2030 (the year after which the patent would expire)) has become negative. Accordingly, in 2020 we have concluded that a full impairment of the capitalized expenditures is appropriate for the total amount of €2.1 million.

Share-Based Payment Transactions

We measure the cost of equity-settled transactions with employees by reference to the fair value of the equity instruments at the date at which they are granted and measured the cost of cash-settled transactions by reference to the fair value of the equity instrument at the date of reporting. We have applied the Black-Scholes valuation model to estimate fair value. Using this model requires management to make assumptions with regards to volatility and expected life of the equity instruments. The assumptions used for estimating fair value for share-based payment transactions are disclosed in Note 14 to our consolidated financial statements and are estimated as follows:

- The dividend return is estimated by reference to the historical dividend payment. Currently, this is estimated to be zero as no dividends have been paid since inception;
- Expected volatility is estimated based on the average annualized volatility of the volatility of our shares (until September 2016: of a number of quoted peers in the 3D printing industry and the volatility of our shares);
- Estimated life of the warrant is determined to be until the first exercise period which is typically the month after vesting; and
- Fair value of the shares is determined based on the share price of our ADSs on Nasdaq at the date of valuation. For the grants prior to the initial public offering, the fair value of the shares was estimated based on a discounted cash flow model with three-year cash flow projections and a multiple of EBITDA determined based on a number of quoted peers in the 3D printing industry.

Income Taxes

Deferred tax assets are recognized for unused tax losses to the extent that it is probable that taxable profit will be available against which the losses can be utilized. Significant management judgment is required to determine the amount of deferred tax assets that can be recognized, based upon the likely timing and the level of future taxable profits together with future tax planning strategies.

As at December 31, 2020, we had current and non-current receivables related to tax credits for an amount of € 5 million (2019: € 4 million; 2018: € 3 million)

As at December 31, 2020, we had € 51 million (2019: € 37 million; 2018: € 25 million) of tax losses carry forward and Innovation Income Deductions, of which € 28 million related to Materialise NV (2019: € 25 million; 2018: € 16 million). These losses relate to Materialise NV and subsidiaries that have a history of losses, in countries where these losses do not expire and may not be used to offset taxable income elsewhere in our consolidated group.

With respect to the unused tax losses of Materialise NV, no deferred tax assets have been recognized in 2020, 2019 and 2018, given that in view of the Belgian Patent Income Deduction and Innovation Income Deduction there is an uncertainty to which extent these tax losses will be used in future years. As from July 1, 2016, the new Innovation Income Deduction replaces the former Patent Income Deduction. Under the grandfathering rule the

Patent Income Deduction system can still be applied until June 30, 2021. The Belgian Patent Income Deduction allows companies to deduct 80% of the qualifying gross patent income from the taxable basis. Under the Innovation Income Deduction system, companies can deduct up to 85% of their net innovation income from the taxable basis. Based on our analysis in 2019 we have assessed that no deferred tax asset should be accounted for with respect to our unused tax losses in Belgium.

With respect to the unused tax losses of the other entities, no deferred tax assets have been recognized in 2020, 2019 nor 2018. We have not recognized deferred tax assets on unused tax losses totaling € 23 million in 2020 (2019: € 11 million; 2018: € 12 million) given that it is not probable that sufficient positive taxable base will be available in the foreseeable future against which these tax losses can be utilized.

If the consolidated group was able to recognize all unrecognized deferred tax assets, net result for the year would have improved by € 9 million in 2020 through a deferred tax gain. This would represent the planned recovery of € 36 million carry forward tax losses in future periods. Further details on taxes are disclosed in Note 22.10 to our consolidated financial statements.

Impairment of Goodwill, Intangible Assets and Property, Plant & Equipment

We have goodwill for a total amount of € 20.3 million as of December 31, 2020 (2019*: € 19.6 million; 2018: € 17.5 million) which has been subject to an impairment test. Goodwill is tested for impairment based on a discounted cash flow model with cash flows for the next five years derived from the budget and a residual value considering a perpetual growth rate. The value in use is sensitive to the discount rate used for the discounted cash flow model as well as the expected future cash-inflows and the growth rate used for extrapolation purposes. The key assumptions used to determine the value in use for the different cash generating units, or CGUs, are disclosed and further explained in Note 5 to our consolidated financial statements

An impairment has been booked on the Engimplan CGU. It was concluded that the value in use is lower than the carrying value of the CGU of € 9.3 million which has resulted in a full impairment of the goodwill for an amount of € 1.4 million as well as a partial impairment on intangible assets of customer lists and trade marks for respectively € 0.9 million and € 0.2 million. The key events that led to the impairment loss for the Engimplan CGU were a loss of business resulting from the COVID-19 pandemic and a slower recovery from the pandemic than expected and a slower than expected benefit from the anticipated synergies of the Engimplan acquisition.

We capitalized internal development expenses amounting to € 1.1 million in 2020. These expenses were assets under construction. These development expenses have been subject to an impairment test based on a discounted cash flow, or DCF, model with cash flows derived from the latest business plan. Of the €1.1 million, €0.7 million was related to our tracheal splint development project and was impaired as part of the total accumulated €2.1 million impairment related to this project.

We are in the process of building or refurbishing a number of machines that allow for the use of recycled powder and reduce the scrap rate, which are expected to bring significant production benefits to our consolidated group. In 2020 four machines were in use in production and two other ones were in commission phase. We aim to complete the full project in 2021. The total carrying value of these assets under construction is €1.1 million as at December 31, 2020. These assets have been subject to an impairment test based on a DCF model using five years of projected cash flows. The present value is sensitive to the discount rate (9.86% applied) used for the DCF model, the expected date the assets may be used in production and the expected future net cash inflows (revenue minus production costs).

When events or changes in circumstances indicate that the carrying amount of the intangible assets and property, plant & equipment may not be recoverable, we estimate the value in use for the individual assets, or when not possible, at the level of CGUs to which the individual assets belong. Total impairment charges were recorded during 2020 was € 4.6 million (€ 0 in 2019 and € 0 in 2018).

Business Combinations

We determine and allocate the purchase price of an acquired business to the assets acquired and liabilities assumed as of the business combination date. The purchase price allocation process requires us to use significant estimates and assumptions, including:

- estimated fair value of the acquired intangible assets;
- estimated fair value of property, plant and equipment; and
- estimated fair value of the contingent consideration.

The contingent consideration as included in the financial statements is recorded at fair value at the date of acquisition and is reviewed on a regular basis, at least annually. The fair value of the contingent consideration is based on risk-adjusted future cash flows of different scenarios discounted using appropriate interest rates. The structure of the possible scenarios and the probability assigned to each one of them is reassessed by management at every reporting period and requires judgement from management about the outcome and probability of the different scenarios as well as the evolution of the variables.

While we are using our best estimates and assumptions as part of the purchase price allocation process to accurately value assets acquired and liabilities assumed at the date of acquisition, our estimates and assumptions are inherently uncertain and subject to refinement. Examples of critical estimates in valuing certain of the intangible assets we have acquired or may acquire in the future include but are not limited to:

- future expected cash flows from customer contracts and relationships, software license sales and maintenance agreements;
- the fair value of the plant and equipment;
- the fair value of the deferred revenue;
- discount rates; and
- the developed technology royalty rate assumptions used

Provision for Expected Credit Losses, or ECLs, of Trade Receivables and Contract Assets

We use a provision matrix to calculate ECLs for trade receivables and contract assets. The provision rates are based on days past due for groupings of various customer segments that have similar loss patterns (i.e., by legal entity).

The provision matrix is initially based on our historical observed default rates. We will calibrate the matrix to adjust the historical credit loss experience with forward-looking information. For instance, if forecast economic conditions (i.e., gross domestic product) are expected to deteriorate over the next year which can lead to an increased number of defaults, the historical default rates are adjusted. At every reporting date, the historical observed default rates are updated and changes in the forward-looking estimates are analyzed.

The assessment of the correlation between historical observed default rates, forecast economic conditions and ECLs is a significant estimate. The amount of ECLs is sensitive to changes in circumstances and of forecast economic conditions. Our historical credit loss experience and forecast of economic conditions may also not be representative of a customer's actual default in the future. Information about the ECLs on our trade receivables and contract assets is disclosed in Note 25 to our consolidated financial statements.

Convertible Loans Granted to FluidDa & Ditto

We account for the convertible loan granted to FluidDa in January 2019, with a notional amount of € 2.5 million, at fair value. The carrying value of the convertible loan amounts to € 3.3 million at December 31, 2020. FluidDa is a private start-up company which delivers contract research organization, or CRO, services for drug development and develops medical devices that require EMA and/or FDA approval. FluidDa is currently loss-making. In determining the fair value of the convertible loan, we consider different contractual parameters such as the repayment and conversion scenarios and dates. In addition, we must make significant estimates such as (i) the discount rate, (ii) the probability and timing of each repayment and conversion scenario, and (iii) the amount of a qualified capital increase that will determine the conversion factor. The convertible loan has a duration of seven years with a 10.0% annual interest rate which is capitalized. We have applied a discount factor of 14.44% that is based on the estimated weighted average cost of capital of FluidDa, reflecting the uncertainty in relation to FluidDa's ability to be successful and the applied estimates by our consolidated group.

At December 31, 2020 the carrying value of the convertible loan amounted to €3,3 million which included a fair value adjustment of €316 000 recorded in financial income during 2020. Changes in significant assumptions may lead to a significant increase or decrease in the fair value of the convertible loan. An increase or decrease in the applied discount rate by 1.0% would lead to a change in fair value by € (0.031) million.

The convertible loan that was granted at fair value to Ditto in August 2020 has a notional amount up to € 9 million. The convertible loan will be funded when certain milestones are reached. The carrying value of the convertible loan amounted to € 3 million, as at December 31, 2020. No fair value adjustment has been recorded yet as the fair value equals its carrying amount. Ditto is a private technology company which has a software solution for the eyeware industry with an application, frame recommendation and virtual try-on technology platform. Ditto is currently loss-making. The convertible loan has a duration of 5 years with a 8% annual interest rate which are capitalized.

Changes in useful life for certain assets

We review the useful life for the intangible assets and property, plant and equipment on an annual basis considering the current facts and circumstances available. This review has not resulted in 2020 in a re-assessment of the useful life for certain specific assets in the categories buildings, fixtures, vehicles and machinery. We refer to Note 7 to our audited consolidated financial statements for the impact of the change in useful lives during the year 2019.

Leases IFRS 16 – Estimating the Discount Rate and Probability of Exercising Extension Options/Termination Options and Purchase Options

As we cannot always determine the interest rate implicit in lease contracts, we must estimate the incremental borrowing rate to measure certain lease liabilities such as buildings. For buildings, we use the property yield as a reference to determine the incremental borrowing rate. For other assets, we generally use the interest rate implicit in the lease contract or apply the incremental borrowing rate for a portfolio of similar assets. The incremental borrowing rate reflects what we "would have to pay", which requires estimation when no observable rates are available or when they need to be adjusted to reflect the terms and conditions of the lease.

In addition, certain lease contracts may have extension options, termination options (in the case of property leases) and/or purchase options (in the case of leases). We estimate whether it is reasonably certain that such options will be exercised, which impacts the lease term in the case of extension options and termination options and the period over which the lease assets are depreciated in the case of purchase options.

Recent Accounting Pronouncements

The standards and interpretations that are issued, but not yet effective, up to the date of issuance of our financial statements are disclosed in our financial statements included elsewhere in this annual report.

Of those standards that are not yet effective, none are expected to have a material impact on our financial statements in the period of initial application.

Other Financial Information

We believe EBITDA and Adjusted EBITDA are meaningful measures to our investors to enhance their understanding of our financial performance. Although EBITDA and Adjusted EBITDA are not necessarily a measure of our ability to fund our cash needs, we understand that it is frequently used by securities analysts, investors and other interested parties as a measure of financial performance and to compare our performance with the performance of other companies that report EBITDA or Adjusted EBITDA. Management believes these non-IFRS measures to be important measures as they exclude the effects of items which primarily reflect the impact of long-term investment and financing decisions, rather than the performance of our day-to-day operations. As compared to net profit, these measures are limited in that they do not reflect the periodic costs of certain capitalized tangible and intangible assets used in generating revenues in our business, or the charges associated with impairments. Management evaluates such items through other financial measures such as capital expenditures and cash flow provided by operating activities. We believe that these measurements are useful to measure a company's ability to grow or as a valuation measurement. Our calculation of EBITDA and Adjusted EBITDA may not be comparable to similarly titled measures reported by other companies.

We calculate EBITDA as net profit plus income taxes, financial expenses (less financial income), depreciation and amortization, and share in loss of joint venture. We calculate Adjusted EBITDA by adding share-based compensation expenses, acquisition-related expenses of business combinations, impairments and revaluation of fair value due to business combinations to EBITDA.

Disclosure in this annual report of EBITDA and Adjusted EBITDA, which are non-IFRS financial measures, is intended as a supplemental measure of our performance that is not required by, or presented in accordance with, IFRS. EBITDA and Adjusted EBITDA should not be considered as alternatives to net profit or any other performance measure derived in accordance with IFRS. Our presentation of EBITDA and Adjusted EBITDA should not be construed to imply that our future results will be unaffected by unusual or non-recurring items.

Reconciliation of Net Profit to Adjusted EBITDA (unaudited) on a Consolidated Basis

	For the year ended December 31,		
in 000€	**2020**	**2019***	**2018**
Net profit (loss)	(7,272)	1,644	3,027
Income tax expense / (benefit)	(949)	2,595	425
Financial expenses	5,995	3,682	4,864
Financial income	(2,452)	(1,377)	(3,627)
Depreciation and amortization	19,775	19,278	17,287
Share in loss of joint venture	39	392	475
EBITDA (unaudited)	**15,136**	**26,214**	**22,451**
Share-based compensation expenses(1)	1,344	302	1,075
Acquisition-related expenses of business combinations(2)	63	140	—
Impairments(3)	4,606	—	—
Re-valuation of 50% RS Print interest (4)	(770)	—	—
Adjusted EBITDA (unaudited)	**20,379**	**26,656**	**23,526**

(1) Share-based compensation expenses represent the cost of equity-settled and cash-settled share-based payments to employees.
(2) Acquisition-related expenses of business combinations represent fees and costs in connection with the acquisition of the Engimplan acquisition in 2019 and the RS Print acquisition in 2020.
(3) Impairments represents the impairment of capitalized expenditures related to our tracheal splint development project (€2.1 million) and the impairment of goodwill and intangible assets of Engimplan (€2.5 million).
(4) Represents a positive revaluation of our initial 50% interest in RS Print after our acquisition of the remaining interest in the joint venture.
* The year 2019 has been restated to reflect the final accounting of the business combination with Engimplan.

Results of Operations

Comparison of Years Ended December 31, 2020 and 2019

in 000€, except percentages	For the year ended December 31, 2020	2019*	% Change
Revenue	170,449	196,679	-13.34%
Cost of sales	(76,446)	(87,052)	-12.18%
Gross profit	**94,003**	**109,627**	**-14.25%**
Research and development expenses	(27,104)	(23,348)	16.09%
Sales and marketing expenses	(44,636)	(52,989)	-15.76%
General and administrative expenses	(29,337)	(31,786)	-7.70%
Net other operating income	2,436	5,432	-55.15%
Operating profit	**(4,638)**	**6,936**	**-166.87%**
Financial expenses	(5,995)	(3,682)	62.82%
Financial income	2,452	1,377	78.07%
Share in loss of joint venture	(39)	(392)	-90.05%
Profit before taxes	**(8,220)**	**4,239**	**-293.91%**
Income taxes	949	(2,595)	-136.57%
Net profit	**(7,272)**	**1,644**	**-542.34%**

* The year 2019 has been restated to reflect the final accounting of the business combination with Engimplan.

Comparison of Years Ended December 31, 2020 and 2019 by Segment

in 000€	Materialise Software	Materialise Medical	Materialise Manufacturing	Total segments	Unallocated (1)	Consolidated
For the year ended December 31, 2020						
Revenues	39,054	61,729	69,635	170,418	31	170,449
Segment Adjusted EBITDA	13,383	13,915	2,548	29,847	(9,468)	20,378
Segment Adjusted EBITDA %	34.3%	22.5%	3.7%	17.5%	—	12.0%
For the year ended December 31, 2019						
Revenues	41,654	60,808	94,156	196,618	61	196,679
Segment Adjusted EBITDA	13,812	10,774	12,154	36,740	(10,084)	26,656
Segment Adjusted EBITDA %	33.2%	17.7%	12.9%	18.7%	—	13.6%

(1) *Unallocated related Revenues consist of occasional one-off sales by our core competencies not allocated to any of our segments. Unallocated related Segment Adjusted EBITDA consist of corporate research and development, corporate headquarter costs and other operating income (expense).*

COVID-19 impact on 2020 results. The economic downturn related to the coronavirus pandemic has caused significant reduction in demand for services, production and investments, and has affected our global operations negatively. With respect to each our market segments, for example:

- *Materialise Software*: A significant portion of the sales of this segment comes from parties that either sell or use 3D printing systems. During 2020, 3D printing manufacturers suffered from cancelled orders due to reduced investments from their customers. In addition, our direct sales suffered from a similar negative customer investment climate.
- *Materialise Medical*: A significant percentage of this segment's revenue stems, directly or indirectly, from elective surgeries. During the second quarter of 2020 in particular, non-elective surgeries were delayed in order to prioritize COVID-19 treatments. In addition, certain of our customer's investments were delayed or cancelled.
- *Materialise Manufacturing*: This segment operates as part of the overall manufacturing sector in Europe. The manufacturing sector has been severely impacted generally by the pandemic, including the automotive and the aerospace industries in particular. There have been far less co-creation initiatives, as well as lower levels of demand for 3D printing service bureaus.

As a result of the negative effect on all of our segments, the coronavirus pandemic had a major impact on our consolidated results of operations.

Revenue. Revenue was € 170.4 million in the year ended December 31, 2020 compared to € 196.7 million in the year ended December 31, 2019, a decrease of €26 million, or -13.3%.

Revenue by geographical area is presented as follows:

in 000€	For the year ended December 31, 2020	2019
Americas	52,562	59,630
Europe & Africa	100,371	117,784
Asia-Pacific	17,516	19,265
Total	**170,449**	**196,679**

Revenue generated in Europe & Africa decreased by € 17.4 million, or 14.8 %, in the year ended December 31, 2020 compared to the year ended December 31, 2019, mainly due to lower revenue from our Materialise Manufacturing segment and to a lesser extent due to lower revenue from our Materialise Software and Materialise Medical segments. Revenue generated throughout the Americas decreased by € 7.1 million, or 11.9%, in the year ended December 31, 2020 compared to the year ended December 31, 2019. In the Americas, revenue for the Materialise Manufacturing segment decreased, revenue for the Materialise Medical segment increased and revenue for the Materialise Software segment was essentially flat. Revenue generated in Asia-Pacific decreased by €1.7 million, or 9.1% in the year ended December 31, 2020 compared to the year ended December 31, 2019. The main decreases in this region occurred in the Materialise Software and the Materialise Manufacturing segments.

Revenue from our Materialise Software segment decreased 6.2% from € 41.7 million in the year ended December 31, 2019 to € 39.1 million in the year ended December 31, 2020. Recurrent revenue, consisting of limited license fees and maintenance fees, grew 14.9%. Non-recurrent revenue, mainly consisting of perpetual fees, decreased 26.7%. Deferred revenue from license and maintenance fees was flat, compared to an increase of €3.1 million in the year ended December 31, 2019.

Revenue from our Materialise Medical segment increased €0.9 million, or 1.5%, from € 60.8 million in the year ended December 31, 2019 to € 61.7 million in the year ended December 31, 2020. Medical software revenue grew by 3.3% from 2019 to 2020. Within our medical software department recurrent revenue from annual and renewed licenses and maintenance fees increased by 2.4%, reflecting the implementation of our continued strategy focused on products with defined contractual periods. These recurrent revenues represented 77.0% of all medical software revenues in the year ended December 31, 2020, compared to 77.7% in the year ended December 31, 2019. Our non-recurrent revenue from perpetual licenses and services increased also 6.3%. Revenues from medical devices and services grew 0.7% in the year ended December 31, 2020. As of December 31, 2020, our Materialise Medical segment operated 41 3D printers, as compared to 32 as of December 31, 2019.

Revenue from our Materialise Manufacturing segment decreased from € 94.2 million in the year ended December 31, 2019 to € 69.6 million in the year ended December 31, 2020, representing a decrease of €24.5 million. During 2020, the revenue of our ACTech business dropped by €18.2 million. The sales decrease was driven by the global economic impact of the COVID-19 pandemic, which affected our manufacturing market segments in general, and the automotive and aerospace market in particular. As of December 31, 2020, Materialise Manufacturing operated 147 3D printers, six vacuum casting machines and 20 CNC machines, as compared to 149, six and 20 as of December 31, 2019, respectively. The total number of 3D printers decreased from the year ended December 31, 2019 to the year ended December 31, 2020, by 2 printers.

Cost of sales. Cost of sales was € 76.4 million in the year ended December 31, 2020, compared to € 87.1 million* in the year ended December 31, 2019, representing a decrease of €10.5 million, or 12.1%. This decrease in cost of sales was mainly related to decreases in sales volumes.

Gross profit. Gross profit decreased €15.7 million from €109.7 million in the year ended December 31, 2019, to €94.0 million in the year ended December 31, 2020, mainly driven by the decreased revenue in the Materialise Manufacturing segment. The overall gross profit margin (gross profit divided by our revenue) amounted to 55.2% in the year ended December 31, 2020, compared to 55.8% in the year ended December 31, 2019. The slight deterioration of the margin was mainly driven by the decrease in sales volume in the Materialise Manufacturing segment. The corresponding decrease in revenue was not fully matched by the reductions in certain fixed costs, mainly salary costs, from efficiency programs that were implemented during the year ended December 31, 2020.

Research and development, or R&D, sales and marketing, or S&M, and general and administrative, or G&A, expenses. R&D, S&M and G&A expenses decreased, in the aggregate, to €101.1 million in the year ended December 31, 2020, compared to €108.1 million in the year ended December 31, 2019. R&D expenses increased from € 23.3 million to € 27.1 million, S&M expenses decreased from € 53.0 million to € 44.6 million and G&A expenses decreased from € 31.8 million to € 29.3 million. The R&D cost increase included an impairment charge on the tracheal splint development project of € 2.1 million. However, even without this cost, the R&D expenses increased 7.1% from € 23.3 million to € 25.0 million. In total, the intangible assets related to the internal development projects amounted to € 1.1 million on our balance sheet at December 31, 2020.

Net other operating income. Net other operating income decreased to €2.4 million in the year ended December 31, 2020, compared to €5.4 million in the year ended December 31, 2019. The 2020 result included the €2.5 million impairment of goodwill and intangibles related to the Engimplan acquisition of 2019, as a result of the COVID-19 pandemic in Brazil that delayed the roll out of our business plan in that region, including the introduction of 3D printed devices. The 2020 result also included a positive €0.8 million revaluation of our initial 50% interest in RS Print.

Net financial expense (financial expenses and financial income). In each of 2019 and 2020, the net financial expense mainly related to the net interest expense from loans and deposits of financial institutions. The net financial result (financial expenses and financial income) increased from €2.3 million in the year ended December 31, 2019 to €3.5 million in the year ended December 31, 2020. This increase was mainly due to an increase of (un)realized exchange losses of €1.5 million, partly offset by the fair value adjustment of the FluidDa convertible loan for €0.3 million.

Income taxes. Income taxes in the year ended December 31, 2020 resulted in a benefit of € 0.9 million, which was a combination of deferred tax bookings for €0.9 million and income taxes of € 0 million. This income was mainly due to the new German tax law enabling tax carry-back on 2019 taxes. Income tax expenses in 2019 amounted to €2.6 million.

Net profit. As a result of the factors described above, net loss was €7.3 million in the year ended December 31, 2020 compared to a net profit of €1.6 million* in the year ended December 31, 2019, or a decrease of €8.9 million.

EBITDA. As a result of the factors described above, our consolidated EBITDA decreased from €26.2 million in the year ended December 31, 2019 to €15.1 million in the year ended December 31, 2020, a decrease of €11.1 million, or 42.3%. Our EBITDA included non-recurring expenses of €2.5 million from Engimplan's impairment and €2.1 million from the tracheal splint development project impairment, and income for €0.8 million from the revaluation of our initial 50% interest in RS Print, which expenses and income were not reflected in our Adjusted EBITDA. Our Adjusted EBITDA decreased from €26.7 million in the year ended December 31, 2019 to €20.4 million in the year ended December 31, 2020, a decrease of €6.3 million, or 23.5%. Our total segment EBITDA decreased from €36.7 million in the year ended December 31, 2019 to €29.8 million in the year ended December 31, 2020, a decrease of €6.9 million, or 18.8%.

Our Materialise Software segment's Adjusted EBITDA decreased from € 13.8 million in the year ended December 31, 2019 to € 13.4 million in the year ended December 31, 2020, a decrease of €0.4 million, or 3.1%. This segment's Adjusted EBITDA margin (the segment's Adjusted EBITDA divided by the segment's revenue) increased from 33.2% for the year ended December 31, 2019 to 34.3% in the year ended December 31, 2020. The increase in the Adjusted EBITDA margin was due to cost control measures related to compensation and other expenses. The revenue decreased by 6.2% (which was due to the coronavirus pandemic), which was almost completely matched by a decrease in operating expenses by 8.3%, mainly in G&A expenses and S&M expenses. The segment's R&D costs were flat.

Our Materialise Medical segment's Adjusted EBITDA increased from € 10.8 million in the year ended December 31, 2019 to €13.9 million in the year ended December 31, 2020. The segment's Adjusted EBITDA margin increased from 17.7% in the year ended December 31, 2019 to 22.5% in the year ended December 31, 2020. The segment's Adjusted EBITDA margin was affected positively by cost control measures related to raw materials, S&M expenses and G&A expenses. The segment's R&D expenses increased.

Our Materialise Manufacturing segment's Adjusted EBITDA decreased from €12.2 million in the year ended December 31, 2019 to €2.5 million in the year ended December 31, 2020. The Adjusted EBITDA margin of this segment decreased from 12.9% in the year ended December 31, 2019 to 3.7% in the year ended December 31, 2020. While the gross margin dropped by 7%, operating expenses (S&M, R&D, and G&A) decreased by 14.7%.

Reconciliation of Net Profit to Segment Adjusted EBITDA

in 000€	For the year ended December 31, 2020	2019*
Net profit	**(7,272)**	**1,644**
Income tax expense / (benefit)	(949)	2,595
Finance costs	5,995	3,682
Finance income	(2,452)	(1,377)
Share in loss of joint venture	39	392
Operating profit / loss	**(4,639)**	**6,936**
Depreciation and amortization	19,775	19,278
Corporate research and development	2,824	1,859
Corporate headquarters costs	11,719	11,077
Net other operating (income) expense	(3,668)	(2,410)
Impairments	4,606	—
Re-valuation of 50% RS Print interest	(770)	—
Segment adjusted EBITDA (unaudited)	**29,847**	**36,740**

* The year 2019 has been restated to reflect the final accounting of the business combination with Engimplan.

Comparison of Years Ended December 31, 2019 and 2018

in 000€, except percentages	For the year ended December 31, 2019*	2018	% Change
Revenue	196,679	184,721	6.5%
Cost of sales	(87,052)	(82,299)	5.8%
Gross profit	**109,627**	**102,422**	7.0%
Research and development expenses	(23,348)	(22,416)	4.2%
Sales and marketing expenses	(52,989)	(46,303)	14.4%
General and administrative expenses	(31,786)	(32,310)	-1.6%
Net other operating income (expenses)	5,432	3,771	44.0%
Operating profit	**6,936**	**5,164**	34.3%
Financial expenses	(3,682)	(4,864)	-24.3%
Financial income	1,377	3,627	-62.0%
Share in loss of joint venture	(392)	(475)	-17.5%
Profit (loss) before taxes	**4,239**	**3,452**	22.8%
Income tax expense / (benefit)	(2,595)	(425)	510.6%
Net profit (loss)	**1,644**	**3,027**	-45.7%

* The year 2019 has been restated to reflect the final accounting of the business combination with Engimplan.

Comparison of the Years Ended December 31, 2019 and 2018 by Segment

in 000€	Materialise Software	Materialise Medical	Materialise Manufacturing	Total segments	Unallocated (1)	Consolidated
For the year ended December 31, 2019						
Revenues	41,654	60,808	94,156	196,618	61	196,679
Segment Adjusted EBITDA	13,812	10,774	12,154	36,740	(10,084)	26,656
Segment Adjusted EBITDA %	33.2%	17.7%	12.9%	18.7%	0.0%	13.6%
For the year ended December 31, 2018						
Revenues	37,374	52,252	94,956	184,582	139	184,721
Segment Adjusted EBITDA	11,536	10,252	10,785	32,573	(9,047)	23,526
Segment Adjusted EBITDA %	30.9%	19.6%	11.4%	17.6%	0.0%	12.7%

(1) Unallocated Revenues consist of occasional one-off sales by our core competencies not allocated to any of our segments. Unallocated Segment Adjusted EBITDA consists of corporate research and development, corporate headquarter costs and other operating income (expense).

Revenue. Revenue was € 196.7 million in the year ended December 31, 2019 compared to € 184.7 million in the year ended December 31, 2018, an increase of €42.1 million, or 6.5%.

Revenue by geographical area is presented as follows:

	For the year ended December 31	
in 000€	2019	2018
Americas	59,630	43,917
Europe & Africa	117,784	120,378
Asia-Pacific	19,265	20,426
Total	**196,679**	**184,721**

Revenue generated in Europe & Africa decreased by € 2.6 million, or 2.2%, in the year ended December 31, 2019 compared to the year ended December 31, 2018, mainly due to lower revenue from our Materialise Manufacturing segment, which was partly offset by increased revenue from our Materialise Software and our Materialise Medical segments. Revenue generated throughout the Americas increased by € 15.7 million, or 35.8%, in the year ended December 31, 2019 compared to the year ended December 31, 2018, with a strong revenue increase for all our segments Revenue generated in Asia-Pacific decreased by €1.2 million, or 5.7%, in the year ended December 31, 2019 compared to the year ended December 31, 2018.

Revenue from our Materialise Software segment increased 11.4% from € 37.4 million in the year ended December 31, 2018 to € 41.7 million in the year ended December 31, 2019. Recurrent revenue, consisting of limited license fees and maintenance fees, grew 20.0%. Non-recurrent revenue, mainly consisting of perpetual fees, increased 4.3%. Deferred revenue from license and maintenance fees increased to €3.1 million, compared to €2.8 million in the year ended December 31, 2018.

Revenue from our Materialise Medical segment increased € 8.6 million, or 16.4%, from € 52.3 million in the year ended December 31, 2018 to € 60.8 million in the year ended December 31, 2019, including €2.4 million from Engimplan. Medical software revenue grew by 18.3% from 2018 to 2019. Within our medical software department recurrent revenue from annual and renewed licenses and maintenance fees increased by 20.0%, reflecting the implementation of our strategy focused on products with defined contractual periods. Our non-recurrent revenue from perpetual licenses and services decreased by 3.3%. These recurrent revenues represented 77.7% of all medical software revenues in the year ended December 31, 2019, compared to 73.7% in the year ended December 31, 2018. Revenues from medical devices and services grew 17.6% in the year ended December 31, 2019, due to the revenue increase from partner sales business lines (especially in CMF), and Engimplan. As of December 31, 2019, our Materialise Medical segment operated 32 3D printers, as compared to 32 as of December 31, 2018.

Revenue from our Materialise Manufacturing segment decreased from € 95.0 million in the year ended December 31, 2018 to € 94.2 million in the year ended December 31, 2019, representing a decrease of €0.8 million. During 2019, we had moderate single-digit revenue growth in the first three quarters, which was offset by a decrease of 11% in the fourth quarter, reflecting lower activity in both our traditional manufacturing and ACTech business lines, which were affected by the softened macro-economic environment. As of December 31, 2019, Materialise Manufacturing operated 149 3D printers, six vacuum casting machines and 20 CNC machines, as compared to 149, six and 19 as of December 31, 2018, respectively. Although the total number of 3D printers did not change from the year ended December 31, 2018 to the year ended December 31, 2019, we replaced certain printers with printers we believe to be more efficient. Four metal 3D printers were added, while four older plastic 3D printers were put out of operation during the year ended December 31, 2019.

Cost of sales. Cost of sales was € 87.1 million in the year ended December 31, 2019, compared to € 82.3 million in the year ended December 31, 2018, representing an increase of €4.7 million, or 5.8%. This increase in cost of sales was mainly due to increased payroll expenses and the inclusion of Engimplan's cost of sales as of August 1, 2019.

Gross profit. The overall gross profit margin (gross profit divided by our revenue) amounted to 55.8% in the year ended December 31, 2019, compared to 55.4% in the year ended December 31, 2018. The improved margin reflected a combination of the following factors: a change in sales mix, which was positively affected by the growing importance of our software revenues and negatively affected by the growing cost of sales from medical devices (specifically, our Engimplan and CMF business lines); and improvements in efficiency in general in all of our business lines.

Research and development, or R&D, sales and marketing, or S&M, and general and administrative, or G&A, expenses. R&D, S&M and G&A expenses increased, in the aggregate, to €108.1 million in the year ended December 31, 2019, compared to €101.0 million in the year ended December 31, 2018. R&D expenses increased from € 22.4 million to € 23.3 million, S&M expenses increased from € 46.3 million to € 53.0 million and G&A expenses decreased from € 32.3 million to € 31.8 million. The R&D cost increase excludes €0.9 million of expenditures in 2019 that were capitalized as intangible assets and related to our tracheal splint project. In total, the intangible assets related to this development project amounted to K€1,651 on our balance sheet at December 31, 2019.

Net other operating income. Net other operating income increased from € 3.8 million in the year ended December 31, 2018 to € 5.4 million in the year ended December 31, 2019. The variance was mainly due to higher grant income and an improvement of our bad debt position.

Net financial expense (financial expenses and financial income). In each of 2018 and 2019, the net financial expense mainly related to the net interest expense from loans and deposits of financial institutions. The net financial expense increased from €1.2 million in the year ended December 31, 2018 to €2.3 million in the year ended December 31, 2019. This variance was due to an increase of net interest expense and bank charges.

Income taxes. Income taxes in the year ended December 31, 2019 resulted in an expense of € 2.6 million, which was a combination of deferred tax bookings and income taxes due over the result for the period.

Net profit. As a result of the factors described above, net profit was €1.7 million in the year ended December 31, 2019 compared to a net profit of €3.0 million in the year ended December 31, 2018, or a decrease of €1.3 million.

EBITDA. As a result of the factors described above, our consolidated EBITDA increased from €22.5 million in the year ended December 31, 2018 to €26.2 million in the year ended December 31, 2019, an increase of €3.8 million, or 16.8%, and our total segment EBITDA increased from €32.6 million in the year ended December 31, 2018 to €36.7 million in the year ended December 31, 2019, an increase of €4.2 million, or 12.8%. The 2019 EBITDA includes Engimplan's contribution of €0.7 million.

Our Materialise Software segment's Adjusted EBITDA increased from € 11.5 million in the year ended December 31, 2018 to € 13.8 million in the year ended December 31, 2019, an increase of €2.3 million, or 19.7%. This segment's Adjusted EBITDA margin (the segment's Adjusted EBITDA divided by the segment's revenue) increased from 30.9% for the year ended December 31, 2018 to 33.2% in the year ended December 31, 2019. The decrease in the Adjusted EBITDA margin was due to revenue growth of 11.4% (which was affected positively by sales mix with a higher portion of recurrent sales), partly offset by an increase in operating expenses by 11.7%, reflecting continued investments in S&M. R&D costs were flat, while G&A expenses decreased.

Our Materialise Medical segment's Adjusted EBITDA increased from € 10.3 million in the year ended December 31, 2018 to € 10.8 million in the year ended December 31, 2019. The segment's Adjusted EBITDA margin decreased from 19.6% in the year ended December 31, 2018 to 17.7% in the year ended December 31, 2019. Excluding Engimplan's contribution, the margin was 17.4% in 2019. The segment's Adjusted EBITDA margin was affected negatively by a changed sales mix in our medical devices business (CMF's production revenue grew significantly resulting in higher cost of sales), and our operating expenses, which grew in the aggregate by 16.4%. The increase in our operating expenses was mainly due to an increase in remuneration expenses.

Our Materialise Manufacturing segment's Adjusted EBITDA increased from €10.8 million in the year ended December 31, 2018 to €12.2 million in the year ended December 31, 2019. The Adjusted EBITDA margin of this segment increased from 11.4% in the year ended December 31, 2018 to 12.9% in the year ended December 31, 2019. While the gross margin remained stable, operating expenses (S&M, R&D, and G&A) decreased slightly and net other operating income (including grants) increased.

Reconciliation of Net Profit to Segment Adjusted EBITDA

in 000€	For the year ended December 31, 2019*	2018
Net profit (loss)	**1,644**	**3,027**
Income tax expense / (benefit)	2,595	425
Finance costs	3,682	4,864
Finance income	(1,377)	(3,627)
Share in loss of joint venture	392	475
Operating profit	**6,936**	**5,164**
Depreciation and amortization	19,278	17,287
Corporate research and development	1,859	1,913
Corporate headquarters costs	11,077	10,358
Net other operating income (expense)	(2,410)	(2,149)
Segment Adjusted EBITDA (unaudited)	**36,740**	**32,573**

* The year 2019 has been restated to reflect the final accounting of the business combination with Engimplan.

B.Liquidity and Capital Resources

Prior to our initial public offering, we historically funded our operations principally from cash generated from operations and borrowings. On June 30, 2014, we completed our initial public offering of 8,000,000 ADSs at a public offering price of $12.00 per ADS, and received net proceeds of approximately $88.3 million. On July 19, 2018, we completed a private placement of 1,953,125 newly issued ordinary shares to BASF Antwerpen for gross proceeds of approximately $25 million. On July 27, 2018, we sold 3,450,000 ADSs in our follow-on public offering at a public offering price of $13.00 per ADS, and received net proceeds of approximately $40.2 million. As we continue to grow our business, we envision funding our operations through multiple sources, including the remaining proceeds from our initial public offering, our private placement to BASF Antwerpen and our follow-on offering, and future earnings and cash flow from operations and borrowings. We may also seek to raise additional capital from offerings of our equity or debt securities on an opportunistic basis when we believe there are suitable opportunities for doing so.

We expect our main uses of cash in the future will be funding our business operations, capital expenditures and loan reimbursements, acquisitions and partnerships. We believe that we will have sufficient liquidity to satisfy the operating requirements of our business through the next 12 months.

Our liquidity plans are subject to a number of risks and uncertainties, including those described in the section of this annual report titled “Item 3. Key Information—D. Risk Factors,” some of which are outside of our control. Macro-economic conditions, including the impact of the COVID-19 pandemic on the global economy, could hinder our business plans, which could, in turn, adversely affect our financing strategy.

Cash Flows

The table below summarizes our cash flows from operating activities, investing activities and financing activities for the years ended December 31, 2020, 2019 and 2018.

in 000€	For the year ended December 31, 2020	2019	2018
Net cash flow from operating activities	29,978	28,402	28,320
Net cash flow from/(used in) investing activities	(28,265)	(25,617)	(22,133)
Net cash flow from/(used in) financing activities	(16,888)	10,781	65,235
Net increase / (decrease) of cash and cash equivalents	**(15,175)**	**13,566**	**71,422**

Comparison of Years Ended December 31, 2020 and 2019

Net cash flow from operating activities was € 30.0 million in the year ended December 31, 2020 compared to € 28.4 million in the year ended December 31, 2019, an increase of € 1.6 million, or 5.6%. The decrease in Adjusted EBITDA (€6.3 million) was offset in full by improvements in our working capital.

Net cash flow used in investing activities was € 28.3 million in the year ended December 31, 2020 compared to € 25.6 million in the year ended December 31, 2019, an increase of € 2.6 million, or 10.3%. In 2020, in addition to capital expenditures of €17.6 million, cash flow used in investing activities were impacted by the acquisition of our remaining interest in RS Print and convertible loan we granted to Ditto and AM Flow. For more information regarding this loan, see Note 3 to our consolidated financial statements.

Net cash flow used in financing activities was € -16.9 million in the year ended December 31, 2020 compared to € 10.8 million in net cash flow from financing activities in the year ended December 31, 2019, a decrease of € 27.7 million, or 256.7 %. In 2020 we did not enter into any new loans or borrowings, while the repayment of borrowings and leases amounted to €17.4 million. During 2019, we drew an additional €25.0 million tranche under our finance contract with the European Investment Bank, and €4.0 million to finance capital expenditures from other credit institutions.

Comparison of Years Ended December 31, 2019 and 2018

Net cash flow from operating activities was € 28.4 million in the year ended December 31, 2019 compared to € 28.3 million in the year ended December 31, 2018, an increase of € 0.1 million, or 0.3%, resulting from the increase in EBITDA (€3.1 million) offset by higher income taxes and working capital requirements.

Net cash flow used in investing activities was € 25.6 million in the year ended December 31, 2019 compared to € 22.1 million in the year ended December 31, 2018, an increase of €3.5 million, or 15.7%. In 2019, in addition to capital expenditures, cash flow used in investing activities were impacted by the acquisition of Engimplan and a convertible loan we granted to FluidDa.

Net cash flow from financing activities was € 10.8 million in the year ended December 31, 2019 compared to € 65.2 million in the year ended December 31, 2018, an decrease of € 54.5 million, or 83.5%. During 2018, the main cash flow from financing activity resulted from our follow-on public offering and BASF Antwerpen private placement in July 2018. During 2019, we drew an additional €25.0 million tranche under our finance contract with the European Investment Bank, and €4.0 million to finance capital expenditures from other credit institutions.

Investments in Property, Plant & Equipment and Intangible Assets

The table below describes cash paid for investments in property, plant & equipment and intangible assets for the years ended December 31, 2020, 2019 and 2018:

	For the year ended December 31,		
in 000€	2020	2019	2018
Purchase of property, plant and equipment	11,032	13,472	18,557
Purchase of intangible assets	6,618	2,193	2,344
Total	**17,650**	**15,665**	**20,901**

Indebtedness

As of December 31, 2020, we had loans and borrowings in the total amount of € 115.1 million, with mainly fixed interest rates. These loans include secured bank loans used to finance the acquisition of ACTech, the construction of office and production facilities in Belgium and Poland, the acquisition of production equipment and installations, and research and development projects.

The following table sets forth our principal indebtedness:

	As of December 31		
in 000€	2020	2019	2018
K€35,000 EIB bank loan	35,000	35,000	10,000
K€28,000 acquisition bank loan	18,621	21,612	24,576
K€18,000 secured bank loans	17,013	17,429	17,739
K€12,300 bank loans ACTech	10,470	11,850	12,300
K€9,050 other facility loans	2,910	3,599	4,299
Bank investment loans—top 20 outstanding	17,280	22,132	23,801
Bank investment loans—other	2,681	4,429	3,808
Lease liabilities (2018: Finance leases)	10,624	9,876	6,809
Institutional loan	353	824	1,492
Convertible bonds	—	1,000	1,000
Related party loan	158	187	214
Total loans and borrowings	**115,110**	**127,938**	**106,038**
Current	17,523	16,838	13,598
Non-Current	97,588	111,100	92,440

K€35,000 EIB bank loan

On December 20, 2017, we entered into a finance contract with the European Investment Bank, or EIB, to finance future research and development programs. The contract provides a credit of up to €35.0 million drawable in two tranches. As part of the first tranche, an amount of €10.0 million was drawn in July of 2018. The duration of the loan will be between six to eight years, and includes a two-year loan repayment grace period.

In July 2019, the second tranche of €25.0 million was drawn. Similar to the first tranche, the duration of the loan will be between six to eight years, and includes a two-year loan repayment grace period.

Loans under the contract are made at a fixed rate, based on the Euribor rate at the time of the borrowing, plus a variable margin. The applied rate for the first tranche is initially equal to 2.4%. The applied rate for the second tranche is initially equal to 2.72% and varies in function of certain EBITDA levels and debt ratios. The contract contains customary security, covenants and undertakings. Certain of the covenants have been temporarily waived or adjusted as a result of the COVID-19 pandemic. For more information regarding these waivers, see Note 15 to our consolidated financial statements.

K€28,000 *Acquisition loan*

This bank loan was concluded in October 2017 to finance the acquisition of ACTech. The loan includes a portion of € 18.0 million, repayable monthly over seven years, and a bullet portion of € 10.0 million, payable at once in October 2024. The interest rate is fixed for the duration of the loan, and amounts to 1.1% on average for both portions. The bank loans are secured with a business pledge mandate, a share pledge on Materialise Germany GMBH, and debt covenants.

K€18,000 secured bank loans

The € 18.0 million loan has been concluded in 2016 in two agreements to finance the construction of new facilities in Leuven (Belgium) and in Poland, both maturing in 2032. The agreement for the Belgian facility financing amounts to € 12.0 million (drawn per end 2019: € 11.7 million; per end 2018 € 11.7 million), and with reimbursements only starting in December 2022. The agreement for the Polish facility financing amounts to € 6.0 million (fully drawn per end of 2017), and with reimbursements only starting in June 2019. The average interest rate of both agreements amounts to 1.2%. The bank loan is secured with a mortgage mandate on the Belgian facility buildings.

K€12,300 *bank loans*

In March 2018, three bank loans originating from the acquired ACTech business were refinanced in their entirety for an aggregate amount of € 9.3 million, with the maturity adjusted to May 2025 and the first repayments beginning in August 2020. The interest rate was fixed at approximately 1.6%, and pledges including a € 4.7 million mortgage on ACTech's facilities and guaranteed by Materialise NV. In addition, a new investment credit of €3.0 million was obtained from Commerzbank in June 2018, repayable as from January 2019 and with a fixed interest rate of 1.5%.

K€9,050—Other facility loans

Three facility loans were contracted in 2005, 2006 and 2012 for the construction of Leuven office and production facilities (€ 2.0 million, € 0.3 million and € 5.0 million respectively) and another loan for the Czech Republic offices in 2008 (€ 1.8 million). The aggregate balance of the four loans amounted to €2.9 million as of December 31, 2020. All loans have a repayment schedule of 15 years and interest rates are fixed between 4.3% and 5.4% for the four loans.

Bank investment loans

The 20 largest of these investment loans outstanding as of December 31, 2020 amount to a balance of € 17.3 million. They were agreed in 2018, 2017 and prior years to finance various investments in machinery, printers, equipment, and software tools. The vast majority of the loans have a reimbursement period over seven years, and are at fixed interest rates with weighted average below 1%.

K€10,624 Lease liabilities included lease with related party

We have had several lease obligations, mainly with financial institutions and related to the financing of buildings and various other items of plant and equipment such as 3D printers. As at December 31, 2020 the balance of these lease obligations amounts to € 10.6 million, and are mostly at fixed interest rates with weighted average below 2%.

K€2,000 institutional loan

This loan was contracted with a governmental institution in Germany to finance the production operations of Materialise Germany for a maximum amount of € 2.0 million. The loan is repayable over a four year period, starting as of September 2017 with a fixed interest rate of 0.25% payable per quarter. As of December 31, 2020 € 2.0 million has been drawn with an outstanding balance of € 0.4 million.

Related party loan

Ailanthus NV previously granted us a loan at a fixed interest rate of 4.23% that matures in 2025. Prior to the merger between Ailanthus NV and Materialise NV, Ailanthus NV was demerged into Lunebeke NV, a newly incorporated company. As a result of this demerger, the loan was transferred from Ailanthus NV to Lunebeke NV. For more information on the merger and related demerger, see "Item 7. Major Shareholders and Related Party Transactions—B. Related Party Transactions." The purpose of the loan was to finance the purchase of a building in France. The amounts outstanding as of December 31, 2020 were € 0.2 million (2019: € 0.2 million; 2018: € 0.2 million). The interest expense for the year ended December 31, 2020 was €7,440 (2019: €8,645; 2018: €10,000).

Material Unused Sources of Liquidity

Our cash and cash equivalents as of December 31, 2020, 2019 and 2018 were € 111.5 million, € 128.9 million and € 115.5 million, respectively. We have no longer undrawn lines of credit at December 31, 2020.

Transfers from Subsidiaries

The amount of dividends payable by our subsidiaries to us is subject to, among other restrictions, general limitations imposed by the corporate laws, capital transfer restrictions and exchange control restrictions of the respective jurisdictions where those subsidiaries are organized and operate. For example, China has very specific approval regulations for all capital transfers to or from the country, certain capital transfers to and from Ukraine are subject to obtaining a specific permit and current legislation in Brazil permits the Brazilian government to impose temporary restrictions on remittances of foreign capital abroad in the event of a serious imbalance or an anticipated serious imbalance in Brazil's balance of payments. Dividends paid to us by certain of our subsidiaries may also be subject to withholding taxes in certain jurisdictions. Of our cash and cash equivalents held outside of Belgium as of December 31, 2020, 2019 and 2018, the amount of cash that would have been subject to withholding taxes if transferred to us by way of dividends and the amount of cash that could not have been transferred by law, or the transfer of which would have been subject to prior approval that was beyond our control, was in each case immaterial.

C. Research and Development, Patents and Licenses

For information regarding our research and development program, see "Item 4. Information on the Company—B. Business Overview—Research and Development."

D. Trend Information

The COVID-19 pandemic has impacted our financial performance for the year ended December 31, 2020. However, the pandemic's continued trajectory remains highly uncertain and we cannot predict the duration and severity of the pandemic and its containment measures.

Based on our current assessment of the COVID-19 pandemic, we have considered various hypothetical scenarios on how our business, results of operations and financial condition could be impacted during the year 2021 and beyond. In these scenarios, we take the general view, but without any certainty as we are reviewing the situation constantly, that our business will continue to be impacted in 2021, and our revenue may gradually grow sequentially, as the COVID-19 crisis subsides. However, in the current situation, in view of the many uncertainties of this unprecedented crisis, we find it very hard to gain any visibility beyond the second quarter of 2021.

In our Materialise Software segment, we believe that an important part of the software sales of this segment remain, at least temporarily, at risk. A significant portion of the sales of this segment comes from parties that either sell or use 3D printing systems. The weakness of the 3D printing industry in general, including the macro-economic market circumstances of the automotive and aerospace industries in particular, is expected to continue weighing negatively on 3D printing system sales and thus also on our software sales.

In our Materialise Medical segment, we design, produce and sell customized implants, surgical guides and models as well as visualization and planning software to research institutes, universities, medical device companies and hospitals. A significant percentage of this segment's revenue stems, directly or indirectly, from elective surgeries, almost all of which are now being postponed due to the U.S. Centers for Disease Control and Prevention, or CDC, guidelines, which require hospitals to prioritize preparation and response to the pandemic. As a result, these revenues (and at least the timing thereof) remain uncertain, which may result in a limitation of sales of this segment, definitely in the second quarter of 2021, and possibly in the next quarters as well, depending on when the vaccination of the population in the countries we operate, will have relieved the hospitals.

Our Materialise Manufacturing segment operates as part of the overall manufacturing sector in Europe, which includes subsectors such as automotive, aviation, machine parts and consumer products, all of which are heavily impacted by the coronavirus crisis. We now expect a slow recovery as from the second quarter of 2021, to the extent that the COVID-19 pandemic subsides and industrial sectors are faring better.

Although we were not impacted in 2020 by an increase of bad debt, or major delays in trade payments, we cannot exclude that some of our customers may experience liquidity problems due to the protracted pandemic, and that we will not be able to adjust and align all of our costs according to the expected decrease of revenue. We experienced the negative effects of this crisis on our revenues in 2020 and in the first quarter of 2021. In these analyses, we considered a continued negative impact in the second quarter of 2021, and only a gradual and partial recovery in the third and fourth quarter of this year. From these analyses, we conclude that (according to the currently most likely scenarios), the going concern principle should be maintained, and that the principle financial covenants of our credit facilities will not be violated in 2021. We believe that the expected situation does not impact the current valuation of our inventories, investments, intangible assets (including goodwill), long-lived assets, or our debt.

While we continue to monitor the situation regularly, we believe that eventually the 3D printing industry will recover and may even come out of this crisis stronger, as the crisis appears to be underscoring certain advantages of the 3D printing technology, in particular its flexibility in terms of part design, speed, production of smaller strategic batches and localization. Therefore, while we try to adjust our costs and capital spending in proportion to the short term reduction of our revenues, we currently take the view that these cost and spending reductions should, where possible, be as moderate and temporary as possible, since we believe that continued innovation during the current crisis may give us a competitive advantage going forward. This strategy involves significant risks, including risks in terms of its impact on our cash position, and as the crisis lasts longer, we may not be able to sustain this strategy and it might have negative implications for our long term competitive position.

Notwithstanding our current assessment of the potential impact of the COVID-19 pandemic on our business, financial condition and results of operations, we cannot predict with certainty the impacts, trends and uncertainties involving the pandemic's effects on economic activity,

the 3D printing software and services markets, our sales, the availability and price of our products, and the extent to which our business may be materially and adversely affected. For more information regarding the risks of the COVID-19 pandemic, see “Item 3. Key Information—D. Risk Factors—Risks Relating to our Business.” In addition, see “Special Note Regarding Forward-Looking Information” on page 1 of this annual report.

E. Off-Balance Sheet Arrangements

We do not have any off-balance sheet arrangements that have, or are reasonably likely to have, a current or future effect on our financial condition, changes in financial condition, revenues or expenses, results of operations, liquidity, capital expenditures or capital resources that is material to investors.

F. Tabular Disclosure of Contractual Obligations

The table below sets forth our contractual obligations as of December 31, 2020:

in 000€	Total	Less than 1 year	2-3 years	4-5 years	More than 5 years
Loans and borrowings	104,486	13,994	34,691	33,336	22,465
Lease Liabilities	10,624	3,493	4,451	1,395	1285
Scheduled interest payments(1)	7,208	1,680	2,527	1,767	1,234
Purchase obligations	6,384	5,710	674	0	0
Total	**128,702**	**24,877**	**42,343**	**36,498**	**24,984**

(1) Scheduled interest payments comprises the interest payable on loans and borrowings and financial lease commitments. No interest is payable on the other contractual obligations in the above table.

As of the end of December 31, 2020 and 2019, we had no significant purchase commitments related to property, plant & equipment.

G. Safe Harbor

See “Special Note Regarding Forward-Looking Information” on page 1 of this annual report.

ITEM 6. DIRECTORS, SENIOR MANAGEMENT AND EMPLOYEES

A. Directors and Senior Management

The following table sets forth certain information with respect to the current members of our board of directors and senior management:

Name	Age	Position
Directors:		
Wilfried Vancraen	59	Founder, Director & Chief Executive Officer
Peter Leys	56	Executive Chairman
A Tre C CVOA, represented by Johan De Lille	58	Director
Hilde Ingelaere	59	Director & Executive Vice President
Sander Vancraen	30	Director
Jürgen Ingels	50	Director
Jos Vander Sloten	58	Director
Lieve Verplancke	61	Director
Bart Luyten	44	Director
Volker Hammes	57	Director
Senior Management and Executive Committee Members:		
Wilfried Vancraen	59	Founder, Director & Chief Executive Officer
Peter Leys	56	Executive Chairman
Hilde Ingelaere	59	Director & Executive Vice President
Seaquence BV, represented by Johan Pauwels	53	Executive Vice President
Bart Van der Schueren	54	Executive Vice President, Chief Technology Officer
Alfinco BV, represented by Johan Albrecht	57	Executive Vice President, Chief Financial Officer
Ioberan BV, represented by Stefaan Motte	44	Vice President, Materialise Software segment
De Vet Management BV, represented by Brigitte de Vet-Veithen	50	Vice President, Materialise Medical segment
Level 5 BV, represented by Jurgen Laudus	42	Vice President, Materialise Manufacturing segment
Eduard Crits	62	Chief Information Officer
SoHo services, represented by Conny Hooghe	55	Vice President, Human Resources
Carla Van Steenbergen	45	Vice President, Chief Legal Officer

The term of the directorship of each member of our board of directors will expire at the 2021 annual general meeting of shareholders. The business address of the members of our board of directors is the same as our business address: Technologielaan 15, 3001 Leuven, Belgium. Our board of directors has determined that three members of our board of directors, Jürgen Ingels, Lieve Verplancke and A Tre C CVOA, represented by Johan De Lille, are independent under Belgian law and the Nasdaq Stock Market listing requirements.

The following is a brief summary of the business experience of the current members of our board of directors:

Wilfried Vancraen. Wilfried Vancraen has served as one of our directors and as our Chief Executive Officer since founding our company in July 1990. Mr. Vancraen previously worked as a research engineer and consultant at the Research Institute of the Belgian Metalworking Industry, where he was introduced to 3D printing. Passionate about this new technology and firm in his belief that it could help create a better and healthier world, he founded Materialise in July 1990. Mr. Vancraen holds several patents related to the technical and medical applications of 3D printing and remains committed to using the technology to make positive changes in people's lives. In recent years, Mr. Vancraen has been awarded the RTAM/SME Industry Achievement Award, the highest honor in the 3D printing industry, has been selected as the most influential person in additive manufacturing by industry professionals and TCT Magazine, and has been listed one of the five leading players in his sector by the Financial Times. He is also the recipient of a 2013 Visionaries! Award from the Museum of Art and Design in New York. Mr. Vancraen holds a Master of Science in Electro-Mechanical Engineering and a Master in Business Administration from KU Leuven. Wilfried Vancraen was chosen in the TCT Hall of Fame in 2017 for his contributions to the 3D printing industry. In 2018, he was chosen by the Additive Manufacturing Users Group (AMUG) as the Innovators Showcase and received the Industry Dino Award. In 2019, Mr. Vancraen was appointed as a faculty honorary professor at the Faculty of Engineering, KU Leuven on the recommendation of the Department of Mechanical Engineering because of his role as founder and CEO of our company.

Peter Leys. Peter Leys has served as one of our directors and as our Executive Chairman since 2013. Previously, from 1990 to 2013, Mr. Leys was at the Brussels office of Baker & McKenzie CVBA, where he focused on mergers and acquisitions, and capital markets. Mr. Leys lectures a contract negotiation course at the KU Leuven. Mr. Leys holds a Candidacy Degree in Philosophy from KU Leuven and Master of Law degrees from KU Leuven and the University of Georgia.

Johan De Lille. Johan De Lille has represented A Tre C CVOA as one of our directors since July 2006, and A Tre C CVOA has been an independent director of Materialise since 2006. Mr. De Lille started his professional career as an auditor at Arthur Andersen LLP in 1988. In 1994, he became Vice President & Group Controller of Ackermans & van Haaren NV, a Belgian public holding company. In 1999, he became Chief Financial Officer of Easdaq/Nasdaq Europe and took on the role of Chief Financial Officer of Option NV, a Belgian public technology company, in 2001. Mr. De Lille joined Delhaize Group, a Belgian public company, as Vice President & Controller in September 2002, and later became Chief Internal Auditor of the Delhaize Group in August 2006, and Chief Financial Officer of Delhaize Belgium in January 2009. Since 2013, Mr. De Lille has acted as Chief Financial & Information Officer of BMT Group, an industrial family owned holding company active in high-precision machining. Mr. De Lille serves as an independent director on the board of directors of Boma NV, a Belgian private company specializing in cleaning products. In 1988, Mr. De Lille was the award winner for the best final paper of the Department of Economics from KU Leuven. In 2010, he received the CFO Magazine Award for the Best Finance Team of the year for Working Capital in Belgium. Mr. De Lille holds a Master's degree in Economics, with a major in Econometrics and Mathematical Economics, from KU Leuven.

Hilde Ingelaere. Hilde Ingelaere co-founded Materialise in 1990, together with the company's Chief Executive Officer, Wilfried Vancraen, and has served as one of our directors since 1997. In her early years at Materialise, Ms. Ingelaere managed several staff departments including human resources, finance and legal. Today as the Executive Vice President of Materialise, she plays an important role in strategic negotiations with a focus on partnerships and applications in the medical domain. Prior to joining Materialise, Ms. Ingelaere conducted cardiovascular clinical research at Bristol-Myers Squibb from 1986 to 1989. She then worked as a business analyst with Plant Genetic Systems from 1989 to 1992. Ms. Ingelaere holds a Master's degree in Bioengineering from KU Leuven, where she focused on Biotechnology, and a Master's degree in Business Administration from KU Leuven.

Sander Vancraen. Sander Vancraen has served as one of our directors since 2020. Mr. Vancraen holds a Bachelor's degree in Aerospace Engineering from Delft University of Technology, with a thesis on a GES (Gravity Explorer Satellite), providing data on temporal changes in Earth's gravity field for scientific use at low cost. He also holds Master's degree in Aerospace Engineering, track Space Exploration, from Delft University of Technology, with a thesis on aCOTS GNSS Receiver, testing of an onboard receiver for the Indian Space Research Organization. In 2013, he did a three month internship at Materialise USA in Plymouth, MI, supporting the clinical engineering team. From 2013 to 2018, he managed a guesthouse, Intermezzo. Since October 2018, he has been a design engineer for the EASA DOA of TUI fly, a charter airline.

Jürgen Ingels. Jürgen Ingels has served as one of our independent directors since November 2013. Mr. Ingels is Founder and Managing Partner of SmartFin Capital, a growth stage private equity fund that was set up in December 2014. In October 2014, Mr. Ingels sold Clear2Pay NV/S.A., a global innovative payments software technology company he founded in 2000, to FIS Global. The clients of Clear2Pay include global and major regional financial institutions such as ING Group, Banco Santander, S.A., Crédit Agricole S.A., BNP Paribas, The U.S. Federal Reserve, Royal Bank of Scotland, The People's Bank of China (PBOC). Mr. Ingels started his career in private equity in 1997 at Dexia NV/S.A., where his role was focused on investing in technology companies. Mr. Ingels currently serves as a director on the board of directors for UnifiedPost NV, Guardsquare NV, Projective NV, Itineris NV, Itiviti AB, Willemen Groep, Ghelamco NV, WDP (Euronext), and Vavato. In 2015, Mr. Ingels co-founded The Glue, a provider of infrastructure solutions for financial institutions. In 2018, Mr. Ingels founded Scale-Ups.eu and organized Supernova, a four-day technology event in Antwerp with over 30.000 visitors. Mr. Ingels holds a Master's degree in Business Administration and a Master's degree in Political and Social Sciences from the University of Antwerp.

Jos Vander Sloten. Jos Vander Sloten has served as one of our directors since January 2007. Mr. Vander Sloten is a full professor at the Faculty of Engineering Science, KU Leuven and chaired the Division of Biomechanics for two terms from 2006 to 2014. He chaired the Leuven Medical Technology Centre (L-MTC), which he founded in 2008 until the end of his two terms in 2016. Mr. Vander Sloten teaches engineering mechanics, problem solving and engineering design, computer integrated surgery systems, and medical device design including regulatory affairs. From 2006 to 2012, he served as program director of the Master in Biomedical Engineering at KU Leuven. His research interests are computer applications in musculoskeletal biomechanics and computer integrated surgery, on which he authored more than 160 journal papers. Mr. Vander Sloten is a Founding Fellow of the European Alliance for Medical and Biological Engineering and Science, where he previously served as president in 2006, president-elect in 2005 and secretary-general from 2003 to 2004. In 2015, he was elected as a member of the International Academy for Medical and Biological Engineering. Mr. Vander Sloten holds a Master's degree in Mechanical Engineering and a PhD in Mechanical Engineering — Biomedical Engineering from KU Leuven. Since 2016, he is Vice-Dean for International Affairs at the Faculty of Engineering Science, KU Leuven.

Lieve Verplancke. Lieve Verplancke has served as one of our independent directors since June 2015. Ms. Verplancke began her career in 1984 with The Beecham Group (now part of GlaxoSmithKline), and has since held key management positions with Merck & Co., as well as Bristol-Myers Squibb, where she served as Managing Director, leading their Belgian/GDL subsidiary until 2012. Ms. Verplancke has also served as a board member for Brussels-based Europe Hospitals, the Imelda Hospital in Bonheiden, the Euronext fund, Quest for Growth, MDxHealth and the Stichting tegen Kanker. She is also the founder and managing director of Qaly@Beersel, an elderly care center in Belgium. In addition to being a medical doctor (MD—KU Leuven), Ms. Verplancke holds a postgraduate degree in Economics and a Master in Business Administration from the University of Antwerp. She has also completed courses at INSEAD, CEDEP, Columbia University and the Vlerick Business School, and is a certified Executive Coach (PCC).

Bart Luyten. Bart Luyten has served as one of our independent directors since June 2017 and also previously served as representative of one of our directors from 2012 to 2015. Mr. Luyten is Founder and Managing Partner of SmartFin Capital, a private equity fund investing in growth stage technology companies. Previously, Mr. Luyten was the Founder and Managing Director of Sniper Investments NV, a smart technologies venture capital fund that was liquidated in 2016. Mr. Luyten has experience as Investment Director of Partners At Venture, Managing Partner of Privast Capital Partners and General Partner of Nausicaa Ventures, all Belgian-based private equity and venture capital funds with a focus on technology investments. Mr. Luyten currently holds positions on the boards of directors of a number of European technology companies and serves on the advisory board of Boston Millennia Partners II, a U.S. based venture capital and private equity firm he was associated with earlier in his career. Mr. Luyten holds a Master of Science degree in Applied Economics from the University of Antwerp and a postgraduate Master degree in SME management from VIZO Brussels.

Volker Hammes. Volker Hammes, has served as one of our directors since November 2018. Mr. Hammes has served as a Managing Director of BASF New Business GmbH, a subsidiary of BASF SE, the German chemical conglomerate (FWB: BAS), since January 2016 as well as first as Managing Director and then as Chairman of BASF 3D Printing Solutions GmbH, another subsidiary of BASF, since August 2017 and June 2019 respectively. Between 2012 and 2016, Mr. Hammes also served as director or officer of various BASF affiliates, including as Chief Executive Officer and Managing Director, Head of Business Center Turkey, Middle East and North Africa of BASF Turk Kimya San. Ltd. Sti. In addition, Mr. Hammes has served as a director on the board of directors of Essentium Inc. and Evolve Additive Solutions, both providers of industrial 3D printing solutions, since December 2017 and January 2021 respectively. Mr. Hammes holds a Master of Science degree in Mechanical Engineering, Polymer Technology from RWTH Aachen.

Our board of directors has established an Executive Committee. The following is a brief summary of the professional experience of the members of our Executive Committee, which was established effective as of January 1, 2017:

Johan Pauwels. Johan Pauwels has served as an Executive Vice President of our company since January 2011 and has been with our company since our founding. In 1990, Mr. Pauwels completed his Master's thesis on stereolithography on the very first 3D printing machine at Materialise. After graduating in 1991, Mr. Pauwels stayed on with our company, focusing on software development to support our 3D printing services. Throughout his career with our company, Mr. Pauwels has held several positions, including Software Sales Manager and Director of Sales, and is currently an Executive Vice President responsible for global sales organization and our sales offices around the world. Mr. Pauwels holds a Master's degree in Electro-Mechanical Engineering from KU Leuven.

Bart Van der Schueren. Bart Van der Schueren has served as an Executive Vice President of our company since January 2011 and as our Chief Technology Officer since 2016. Prior to joining Materialise, Mr. Van der Schueren was at KU Leuven as a liaison engineer for the newly founded Materialise and established the basic research activities for the company while also founding the research activities in 3D printing at the KU Leuven. Mr. Van der Schueren then went on to obtain a PhD in selective laser metal sintering. In 1995, Mr. Van der Schueren officially joined Materialise and ran the service bureau. Over the years, his dedication and expertise has grown the service bureau from a regional player to one of the most prominent additive manufacturing facilities in Europe. In 2011, Mr. Van der Schueren became an Executive Vice President of our company, responsible for the Materialise Manufacturing segment and focusing on production and engineering services. Since 2018, Mr. Van der Schueren is globally responsible for the research activities of Materialise. Mr. Van der Schueren holds a PhD in Selective Laser Metal Sintering and a Master's degree in Mechanical Engineering from KU Leuven.

Johan Albrecht. Johan Albrecht has represented Alfinco BV as our Chief Financial Officer since August 2015. Mr. Albrecht joined Materialise from BARC NV, a global central laboratory that supports the pharmaceutical and biotech industry in the development of new drugs, where he served as Chief Financial Officer between 1989 and 2015, with responsibility for its worldwide financial and business reporting and control systems. Mr. Albrecht was also a member of BARC NV's executive committee and a director in its subsidiaries in Belgium, the United States, China, Australia, Singapore and South Africa. After Cerba European Lab, a network of 200 laboratories, acquired BARC NV in 2007, Mr. Albrecht also joined Cerba European Lab's executive committee in 2011. Prior to joining BARC NV, Mr. Albrecht served in various financial capacities with Pizzaland Benelux (United Biscuits), Applied Data Research and Minit International. Mr. Albrecht holds a postgraduate degree in corporate finance from KU Leuven and a Bachelor of Science in Business Administration from HU Brussels University.

Stefaan Motte. Stefaan Motte serves as Vice President and General Manager of the Materialise Software segment, and as such is responsible for the general strategic management of that segment. Mr. Motte joined us in April 2010, with an initial focus on growing our cranio-maxillofacial business. From 2012 onwards, Mr. Motte's scope broadened to orthopedic applications as he took up the role of Director of the Clinical Business Unit. From 2015 onwards, Mr. Motte assumed his current role leading the Software business. Mr. Motte has been a member of the Materialise Executive Committee since 2010. Prior to joining Materialise, Mr. Motte was a software architect and project manager with Koninklijke Philips NV from 2001 to 2006. From 2006 to 2010, Mr. Motte worked with NXP semiconductors as a competence center manager, and a member of the NXP Belgium management team. Mr. Motte holds a Master of Science degree in Mathematics from KU Leuven and a Master of Science degree in Applied Informatics from KU Leuven. In 2017 Mr. Motte was appointed Fellow of the Faculty of Science, KU Leuven.

Brigitte de Vet-Veithen. Brigitte de Vet-Veithen has represented De Vet Management BV as Vice President Medical since June 2016. Mrs. de Vet-Veithen has more than 20 years of experience in the Healthcare and Life Sciences Sector. She has worked in various management roles for Johnson & Johnson, ultimately serving as Vice President for the EMEA region of Cordis Neurovascular and General Manager of Cordis in Germany. Before joining Materialise she has held various leadership roles as representative of De Vet Management BV including the role of Chief Executive Officer of Acertys group, a provider of medical devices, software, services and supplies to hospitals and medical professionals. Mrs. de Vet-Veithen holds a Master of Business Administration with a Major in Engineering from HEC Liege and an MBA from INSEAD.

Jurgen Laudus. Jurgen Laudus serves as Vice-President of our Materialise Manufacturing segment. Mr. Laudus joined us in August 2001 as project manager and continued to our U.K. office to become Rapid Tooling manager in 2003. For two years, Mr. Laudus was responsible for both our Rapid Tooling sales support and production management. In 2005, Mr. Laudus returned to Belgium to become international production manager for our additive manufacturing services and later on sales manager, playing an active role in the growth of the additive manufacturing production activities of Materialise. Mr. Laudus holds a Master of Science degree in Engineering from the KU Leuven.

Eddy Crits. Eduard (Eddy) Crits has served as our Chief Information Officer since August 2018. For the past 30 years of his career, Mr. Crits held managerial and executive positions in ICT, Product Development, Operations and Engineering in global technological companies such as Agfa, IPTE and IBA. Mr. Crits holds a PhD degree in Physics from KU Leuven and an Executive MBA degree from the University of Antwerp.

Conny Hooghe. Conny Hooghe represented SoHo Services as our Global HR Director since September 2017. She holds a Master of Industrial Psychology from the University of Ghent. Previously she has held several human resources management positions within technological oriented or IT companies like Wolters Kluwer, Fujitsu Services and Atos Origin.

Carla Van Steenbergen. Carla Van Steenbergen has served as our in-house counsel since 2003, and her role has gradually evolved into our Chief Legal Officer. Ms. Van Steenbergen has served as our Compliance Officer since June 2014, and is a member of our Executive Committee in addition to being secretary to the board of directors. Ms. Van Steenbergen graduated from the law faculty of KU Leuven in 1999. After having worked for three years at Brussels' based law firm Marx Van Ranst Vermeersch & Partners, she temporarily moved to London to earn a LLM degree at King's College London. Upon her return to Belgium, she started working as in-house legal counsel for our company, a position which she holds to this day. Over the years, our legal department has expanded, changing Ms. Van Steenbergen's role from the sole company lawyer to that of a legal team manager.

Family Relationships

Wilfried Vancraen and Hilde Ingelaere are spouses. Sander Vancreaen is the son of Wilfried Vancraen and Hilde Ingelaere. No other family relationship exists between any members of our board of directors or senior management.

B. Compensation

Compensation of Directors

Our Remuneration and Nomination Committee recommends the level of remuneration for directors. These recommendations are subject to approval by our board of directors and, subsequently, by our shareholders at the annual general meeting. During the year ended December 31, 2020, only the directorships of Mr. Wilfried Vancraen, Mr. Leys, Ms. Ingelaere, Mr. De Lille, Mr. Vander Sloten, Mr. Ingels, Mr. Luyten, Ms. Verplancke and Mr. Hammes were remunerated. See "—Compensation of Senior Management and Executive Committee" below for more information about the remuneration of the directorships of Mr. Wilfried Vancraen, Mr. Leys and Ms. Ingelaere. During the year ended December 31, 2020, Mr. De Lille, Mr. Vander Sloten, Mr. Ingels, Mr. Luyten, Ms. Verplancke and Mr. Hammes each received annual remuneration equal to €10,000. In addition, Mr. De Lille, Mr. Vander Sloten, Mr. Ingels, Mr. Luyten, Ms. Verplancke and Mr. Hammes each received a remuneration of €1,250 per physical board meeting that he or she attended and €625 for each board meeting held via conference call (lasting more than one hour) that he or she attended.

In addition, the Chairman of the Audit Committee received an annual remuneration of €7,500. Each independent member (including the Chairman) of the Audit Committee or the Remuneration and Nomination Committee received a remuneration of €1,250 for each physical committee meeting that he or she attended, and €625 for each committee meeting held via conference call (lasting more than one hour) and that he or she attended. The Remuneration and Nomination Committee benchmarks directors' compensation against peer companies to ensure that it is competitive. In addition, our board of directors sets and revises, from time to time, the rules and level of compensation for directors carrying out a special mandate or sitting on one or more of the board of directors committees and the rules for reimbursement of directors' business-related out-of-pocket expenses.

Compensation of Senior Management and Executive Committee

In 2020, our senior management received in the aggregate total gross compensation of €2.39 million, which included base salary, bonus payments, company car allowance and other benefits. This amount also includes the remuneration of the directorships of Mr. Wilfried Vancraen, Mr. Leys and Ms. Ingelaere and the compensation for the members of the Executive Committee.

We have entered into services agreements (Contracts for Paid Office as a member of the Executive Committee) with each member of our Executive Committee. The terms of these agreements are substantially similar. These agreements generally provide for an annual base salary. In addition to the fixed remuneration components, under the terms of these agreements, members of our Executive Committee are entitled to certain additional benefits (including mobile phone and director and officer liability insurance) and reimbursement of necessary and reasonable expenses. These services agreements with members of our Executive Committee provide for payments and benefits (including upon termination of employment) that we believe are in line with customary market practice for similar companies who are operating in our industry.

C. Board Practices

Service Contracts

Except as described above under "—B. Compensation—Compensation of Senior Management and Executive Committee," we do not have service contracts with any member of our board of directors or Executive Committee.

Board of Directors Practices

Decisions are generally made by our board of directors as a whole. However, decisions on certain matters may be delegated to committees of our board of directors or to the Executive Committee to the extent permitted by law and our restated articles of association. The chairperson, or if he or she is prevented from doing so, the vice chairperson, chairs the meetings of our board of directors.

Our board of directors transferred management powers to the Executive Committee, except for the general policy of the company and other powers which are reserved by Belgian company law to the board of directors. The Executive Committee is supervised by our board of directors. The following actions are comprised under general policy of our company and are thus excluded from the powers of the Executive Committee:

- mergers and acquisitions;
- transfer and waive of intellectual property rights to third parties;
- granting of exclusivity rights to third parties with an important impact on the freedom of a particular business segment;
- nomination and removal of members of the Executive Committee;
- opening of offices abroad and nomination and removal of managers thereof;
- conclusion of financial loans;
- sale and purchase of real estate; and
- cancellation of a particular product line.

Our board of directors entrusted the daily management of the company to Wilfried Vancraen, our Chief Executive Officer, in conformity with article 7:121 of the Belgian Companies and Associations Code.

Pursuant to our restated articles of association, our board of directors may form committees from among its members and charge them with the performance of specific tasks. The committees' tasks, authorizations and processes are determined by our board of directors. Where permissible by law and our restated articles of association, important powers of our board of directors may also be transferred to committees.

Audit Committee

The Audit Committee consists of three members: Johan De Lille (Chairman), Lieve Verplancke and Jürgen Ingels. Our board of directors has determined that Messrs. De Lille and Ingels and Ms. Verplancke are independent under Rule 10A-3 of the Exchange Act and the applicable rules of the Nasdaq Stock Market and that each of Messrs. De Lille and Ingels and Ms. Verplancke qualifies as an "audit committee financial expert" as defined under the Exchange Act.

Our Audit Committee assists our board of directors in overseeing the accuracy and integrity of our accounting and financial reporting processes and audits of our consolidated financial statements, the implementation and effectiveness of an internal control system and our compliance with legal and regulatory requirements, the independent auditors' qualifications and independence and the performance of the independent auditors.

The Audit Committee's duties and responsibilities to carry out its purposes include, among others:

- the review of our accounting processes;
- the review of the effectiveness of our internal systems of control, risk management and compliance;
- the consideration and recommendation of the nomination, compensation, retention and termination of the Company's statutory auditor for Belgian company law purposes and the Company's independent auditor for SEC purposes, the commissioning of the auditors to conduct audits, agreeing on additional services to be provided by the auditors under their respective engagements, the establishment of the scope and the main review points of the audit and oversight of the auditors' work (including resolution of disagreements with the auditors);

- the preparation of our board of directors' resolution on our consolidated financial statements;
- reviewing our interim consolidated financial statements that are made public or otherwise filed with any securities regulatory authority;
- discussing any flaws relating to our internal control systems, as reported by our board of directors to the audit committee;
- monitoring our bookkeeping and records; and
- the establishment of procedures for (i) the receipt, retention and treatment of complaints we receive regarding accounting, internal accounting controls or auditing matters and (ii) the confidential, anonymous submission by our employees of concerns regarding questionable accounting or auditing matters.

Our Audit Committee is entitled to review information on any point it wishes to verify, and is authorized to acquire such information from any of our employees. It is also authorized to obtain independent advice, including legal advice, if this is necessary for an inquiry into any matter under its responsibility. It is entitled to call on the resources that will be needed for this task. It is entitled to receive reports directly from the auditors, including reports with recommendations on how to improve our control processes.

Remuneration and Nomination Committee

Our Remuneration and Nomination Committee consists of three members: Wilfried Vancraen, Jozef Vander Sloten and Johan De Lille. Our board of directors has determined that Mr. De Lille is independent under the applicable rules of the Nasdaq Stock Market.

Our Remuneration and Nomination Committee assists our board of directors in its decisions relating to the remuneration policy and individual remuneration packages for our board of directors, the appointment of directors, the Chief Executive Officer and the other members of senior management.

The Remuneration and Nomination Committee's duties and responsibilities to carry out its purposes include, among others:

- identifying individuals qualified to become members of our board of directors, consistent with criteria approved by our board of directors;
- recommending to our board of directors the director nominees for each annual general meeting, taking into account any nomination rights that certain shareholders may have under our restated articles of association;
- recommending to our board of directors director nominees to fill vacancies;
- recommending to our board of directors qualified and experienced directors for service on the committees of the board of directors;
- recommending to our board of directors the compensation of the members of senior management;
- recommending to our board of directors any incentive compensation plans and equity-based plans, and awards thereunder, and profit-sharing plans for our employees;
- evaluating the performance of our Chief Executive Officer; and
- advising our board of directors on other compensation issues.

D. Employees

The table below sets out information about the number of FTEs and fully dedicated consultants, which consultants included individual professionals who are registered as private entrepreneurs in Ukraine and who work exclusively with our company. FTEs who are a part of one or more of our three core competencies are allocated to one of our segments and therefore included in our segment reporting.

	For the year ended December 31,		
	2020	2019*	2018
Total	2,163	2,177	2,009
Segments:			
Materialise Software	285	303	273
Materialise Medical*	738	763	634
Materialise Manufacturing	760	775	783
Additional staff	380	336	319

* *Includes 104 Engimplan FTEs.*

We currently do not have a work council or trade union delegation. We have a health and safety committee entitled to certain information and consultation rights under Belgian law, at our Belgian headquarters. We consider our employee relations to be good and have never experienced a work stoppage.

E. Share Ownership

The following table sets forth information relating to beneficial ownership of our ordinary shares, as of April 23, 2021, for each member of our board of directors and senior management as of April 23, 2021:

	Ordinary Shares Beneficially Owned as of April 23, 2021	
Name of beneficial owner(1)	Number(2)	Percent(2)
Wilfried Vancraen(3)	32,229,946	59.5
Peter Leys(4)	314,459	*
A Tre C CVOA, represented by Johan De Lille(5)	—	—
Sander Vancraen	—	—
Jürgen Ingels	—	—
Jos Vander Sloten	12,000	*
Lieve Verplancke	—	—
Hilde Ingelaere(3)	32,229,946	59.5
Bart Luyten	—	—
Volker Hammes	—	—
Johan Pauwels(6)	140,000	*
Bart Van der Schueren(7)	139,377	*
Johan Albrecht	—	—
Jurgen Laudus(8)	1	*
Carla Van Steenbergen(9)	664	*
Stefaan Motte(10)	1	*
Brigitte de Vet-Veithen(11)	9,793	*
Conny Hooghe	—	—
Eddy Crits	—	—

* Less than 1%

(1) Except as otherwise indicated, the address for each of the persons named above is Technologielaan 15, 3001 Leuven, Belgium.

(2) Beneficial ownership is determined in accordance with the rules and regulations of the SEC. In computing the number of shares beneficially owned by a person and the percentage ownership of that person, we have included shares that the person has the right to acquire within 60 days of April 12, 2019, including through the exercise of any option, warrant or other right or the conversion of any other security. These shares, however, are not included in the computation of the percentage ownership of any other person. Except as otherwise indicated, we believe the persons named in this table have sole voting and investment power with respect to all ordinary shares shown as beneficially owned by them, subject to community property laws where applicable and to the information contained in the footnotes to this table.

(3) Consists of (i) 5,465,405 ordinary shares and 27,135 ADSs held by Mr. Vancraen, (ii) 13,571,947 ordinary shares and 27,135 ADSs held by Ms. Ingelaere and (iii) 12,021,612 ordinary shares and 1,116,712 ADSs jointly held by Mr. Vancraen and Ms. Ingelaere through Idem, a partnership (*maatschap*) that is controlled and managed by Mr. Vancraen and Ms. Ingelaere. Does not include (i) 4,545 warrants issued and granted to Mr. Vancraen or 4,545 warrants issued and granted to Ms. Ingelaere under the 2014 Warrant Plan, which warrants are exercisable for 4,545 ordinary shares and 4,545 ordinary shares, respectively, at €8.81 per share, vest 25% on a yearly basis beginning in October 2018 and expire in 2024 (with the percentage vesting on each applicable vesting date calculated as a percentage of the total number of warrants initially granted) or (ii) 6,000 warrants issued and granted to Mr. Vancraen or 6,000 warrants issued and granted to Ms. Ingelaere under the 2015 Warrant Plan, which warrants are exercisable for 6,000 ordinary shares and 6,000 ordinary shares, respectively, at €6.45 per share, vested or will vest 10% on September 2018, 20% on September 2019, 30% on September 2020 and 40% on September 2021, and expire in 2025 (with the percentage vesting on each applicable vesting date calculated as a percentage of the total number of warrants initially granted). In the weeks following the filing of this annual report, Mr. Vancraen and/or Ms. Ingelaere may transfer certain of the shares or ADSs they own directly to Idem for estate planning purposes.

(4) Consists of (i) 7,040 ADSs held by Peter Leys, 4,215 ADSs held by Els Kindt (the spouse of Peter Leys), 22,862 ADS held by Riverside, a partnership (*maatschap*) that is controlled and managed by Mr. Leys and Ms. Kindt and 75,000 ADSs held by Mountain View, a partnership that is controlled and managed by Mr. Leys and Ms. Kindt and (ii) 103,561 ordinary shares held by Els Kindt and 101,781 ordinary shares held by Mountain View. Does not include 6,000 warrants issued and granted to Mr. Leys under the 2015 Warrant Plan, which warrants are exercisable for 6,000 ordinary shares at €6.45 share, vested or will vest 10% on September 2018, 20% on September 2019, 30% on September 2020 and 40% on September 2021, and expire in 2025 (with the percentage vesting on each applicable vesting date calculated as a percentage of the total number of warrants initially granted).

(5) The address for A Tre C CVOA is Timmermansstraat 32, 8340 Damme, Belgium.

(6) Consists of (i) 40,000 ordinary shares held jointly with Mr. Pauwels' spouse Kristine Van Muylder, and (ii) 100,000 ordinary shares jointly held by Mr. Pauwels and Ms. Van Muylder through Sorelle, a partnership that is controlled and managed by Mr. Pauwels and Ms. Van Muylder. Does not include (i) 4,545 warrants issued and granted to Mr. Pauwels under the 2014 Warrant Plan, which warrants are exercisable for 4,545 ordinary shares at €8.81 per share, vest 25% on a yearly basis beginning in October 2018 and expire in 2024 (with the percentage vesting on each applicable vesting date calculated as a percentage of the total number of warrants initially granted) or (ii) 6,000 warrants issued and granted to Mr. Pauwels under the 2015 Warrant Plan, which warrants are exercisable for 6,000 ordinary shares at €6.45 per share, vested or will vest 10% on September 2018, 20% on September 2019, 30% on September 2020 and 40% on September 2021, and expire in 2025 (with the percentage vesting on each applicable vesting date calculated as a percentage of the total number of warrants initially granted).

(7) Consists of (i) 124,552 ordinary shares held by Mr. Van der Schueren and (ii) 14,825 ADSs held by Mr. Van der Schueren. Does not include (i) 4,545 warrants issued and granted to Mr. Van der Schueren under the 2014 Warrant Plan, which warrants are exercisable for 4,545 ordinary shares at €8.81 per share, vest 25% on a yearly basis beginning in October 2018 and expire in 2024 (with the percentage vesting on each applicable vesting date calculated as a percentage of the total number of warrants initially granted) or (ii) 6,000 warrants issued and granted to Mr. Van der Schueren under the 2015 Warrant Plan, which warrants are exercisable for 6,000 ordinary shares at €6.45 per share, vested or will vest 10% on September 2018, 20% on September 2019, 30% on September 2020 and 40% on September 2021, and expire in 2025 (with the percentage vesting on each applicable vesting date calculated as a percentage of the total number of warrants initially granted).

(8) Consists of 34,600 ADSs held by Mr. Laudus. Does not include (i) 4,545 warrants issued and granted to Mr. Laudus under the 2014 Warrant Plan, which warrants are exercisable for 4,545 ordinary shares at €8.81 per share, vest 25% on a yearly basis beginning in October 2018 and expire in 2024 (with the percentage vesting on each applicable vesting date calculated as a percentage of the total number of warrants initially granted) or (ii) 6,000 warrants issued and granted to Mr. Laudus under the 2015 Warrant Plan, which warrants are exercisable for 6,000 ordinary shares at €6.45 per share, vested or will vest 10% on September 2018, 20% on September 2019, 30% on September 2020 and 40% on September 2021, and expire in 2025 (with the percentage vesting on each applicable vesting date calculated as a percentage of the total number of warrants initially granted).

(9) Consists of 664 ADSs held by Ms. Van Steenbergen. Does not include (i) 4,545 warrants issued and granted to Ms. Van Steenbergen under the 2014 Warrant Plan, which warrants are exercisable for 4,545 ordinary shares at €8.81 per share, vest 25% on a yearly basis beginning in October 2018 and expire in 2024 (with the percentage vesting on each applicable vesting date calculated as a percentage of the total number of warrants initially granted) or (ii) 6,000 warrants issued and granted to Ms. Van Steenbergen under the 2015 Warrant Plan, which warrants are exercisable for 6,000 ordinary shares at €6.45 per share, vested or will vest 10% on September 2018, 20% on September 2019, 30% on September 2020 and 40% on September 2021, and expire in 2025 (with the percentage vesting on each applicable vesting date calculated as a percentage of the total number of warrants initially granted).

(10) Consists of 1 ADS held by Mr. Motte. Does not include (i) 4,545 warrants issued and granted to Mr. Motte under the 2014 Warrant Plan, which warrants are exercisable for 4,545 ordinary shares at €8.81 per share, vest 25% on a yearly basis beginning in October 2018 and expire in 2024 (with the percentage vesting on each applicable vesting date calculated as a percentage of the total number of warrants initially granted) or (ii) 2,000 warrants issued and granted to Mr. Motte under the 2015 Warrant Plan, which warrants are exercisable for 2,000 ordinary shares at €6.45 per share, vested or will vest 10% on September 2018, 20% on September 2019, 30% on September 2020 and 40% on September 2021, and expire in 2025 (with the percentage vesting on each applicable vesting date calculated as a percentage of the total number of warrants initially granted).

(11) Consists of 9,793 ADSs held by Ms. de Vet-Veithen. Does not include 18,000 warrants issued and granted to Ms. de Vet-Veithen under the 2015 Warrant Plan, which warrants are exercisable for 18,000 ordinary shares at €6.45 per share, vested or will vest 10% on September 2018, 20% on September 2019, 30% on September 2020 and 40% on September 2021, and expire in 2025 (with the percentage vesting on each applicable vesting date calculated as a percentage of the total number of warrants initially granted).

ITEM 7. MAJOR SHAREHOLDERS AND RELATED PARTY TRANSACTIONS

A. Major Shareholders

The following table sets forth information relating to beneficial ownership of our ordinary shares, as of April 24, 2020, for each person who is known by us to own beneficially 5% or more of our outstanding ordinary shares:

	Ordinary Shares Beneficially Owned as of April 24, 2020	
Name of Beneficial Owner(1)	Number(2)	Percent(2)
Wilfried Vancraen(3)	32,229,946	59.5
Hilde Ingelaere(3)	32,229,946	59.5
Nikko Asset Management Americas Inc.(4)	2,655,198	[5.07]
ARK Investment Management LLC(5)	8,564,081	[16.35]

(1) Except as otherwise indicated, the address for each of the persons named above is Technologielaan 15, 3001 Leuven, Belgium.

(2) Beneficial ownership is determined in accordance with the rules and regulations of the SEC. In computing the number of shares beneficially owned by a person and the percentage ownership of that person, we have included shares that the person has the right to acquire within 60 days of April 24, 2021, including through the exercise of any option, warrant or other right or the conversion of any other security. These shares, however, are not included in the computation of the percentage ownership of any other person. Except as otherwise indicated, we believe the persons named in this table have sole voting and investment power with respect to all ordinary shares shown as beneficially owned by them, subject to community property laws where applicable and to the information contained in the footnotes to this table.

(3) Consists of (i) 5,465,405 ordinary shares and 27,135 ADSs held by Mr. Vancraen, (ii) 13,571,947 ordinary shares and 27,135 ADSs held by Ms. Ingelaere and (iii) 12,021,612 ordinary shares and 1,116,712 ADSs jointly held by Mr. Vancraen and Ms. Ingelaere through Idem, a partnership (*maatschap*) that is controlled and managed by Mr. Vancraen and Ms. Ingelaere. Does not include (i) 4,545 warrants issued and granted to Mr. Vancraen or 4,545 warrants issued and granted to Ms. Ingelaere under the 2014 Warrant Plan, which warrants are exercisable for 4,545 ordinary shares and 4,545 ordinary shares, respectively, at €8.81 per share, vest 25% on a yearly basis beginning in October 2018 and expire in 2024 (with the percentage vesting on each applicable vesting date calculated as a percentage of the total number of warrants initially granted) or (ii) 6,000 warrants issued and granted to Mr. Vancraen or 6,000 warrants issued and granted to Ms. Ingelaere under the 2015 Warrant Plan, which warrants are exercisable for 6,000 ordinary shares and 6,000 ordinary shares, respectively, at €6.45 per share, vested or will vest 10% on September 2018, 20% on September 2019, 30% on September 2020 and 40% on September 2021, and expire in 2025 (with the percentage vesting on each applicable vesting date calculated as a percentage of the total number of warrants initially granted).

(4) Based on a Schedule 13G/A filed with the SEC on February 11, 2021 by Nikko Asset Management Americas Inc. (“NAMA”) and jointly by Sumitomo Mitsui Trust Holdings Inc. (“SMTH”) and Nikko Asset Management Co., Ltd. (“NAMC”). NAMA is an investment advisor and in the Schedule 13G/A filed by NAMA it is reported that NAMA has (a) shared voting with respect to 2,645,352 ADSs and (b) shared dispositive power with respect to 2,655,198 ADSs. SMTH and NAMC are parent holding companies of NAMA and are non-U.S. institutions. NAMC is an investment advisor and in the Schedule 13G/A jointly filed by SMTH and NAMC on February 5, 2021, it is reported that SMTH and NAMC beneficially own, as parent holding companies of NAMA, 2,655,198 ADSs and have (a) shared voting with respect to 2655,198 ADSs and (b) shared dispositive power with respect to 2,655,198 ADSs.

(5) Based on a Schedule 13G/A filed with the SEC on February 16, 2021 by ARK Investment Management LLC (“ARK”). ARK is an investment advisor and in the Schedule 13G/A filed by ARK it is reported that ARK has (a) sole voting power with respect to 8,257,636 ADSs; (b) shared voting with respect to 75,126 ADSs; and (c) sole dispositive power with respect to 28,564,081 ADSs.

None of our shareholders have different voting rights from other shareholders, except that as long as the Family Shareholders control, directly or indirectly, in the aggregate at least 20% of the voting rights attached to our ordinary shares, a majority of our directors must be appointed by our shareholders from a list of candidates proposed by the Family Shareholders. We are not aware of any arrangement that may, at a subsequent date, result in a change of control of our company.

As of February 1, 2021, there were 40 individual holders of record entered in our share register. The number of individual holders of record is based exclusively upon our share register and does not address whether a share or shares may be held by the holder of record on behalf of more than one person or institution who may be deemed to be the beneficial owner of a share or shares in our company. As of February 1, 2021, 58.4% of our outstanding ordinary shares were held in Belgium by 39 holders of record. As of February 1, 2021, assuming that all of our ordinary shares represented by ADSs are held by residents of the United States, approximately 41.6% of our outstanding ordinary shares were held in the United States by one holder of record, the Bank of New York Mellon, depositary of the ADSs. At such date, there were outstanding 22,527,940 ADSs, each representing one of our ordinary shares, and in the aggregate representing approximately 41.6% of our outstanding ordinary shares. The actual number of holders is greater than these numbers of record holders, and includes beneficial owners whose ADSs are held in street name by brokers and other nominees. This number of holders of record also does not include holder whose shares may be held in trust by other entities.

B. Related Party Transactions

Since January 1, 2020, there has not been, nor is there currently proposed, any material transaction or series of similar material transactions to which we were or are a party in which any of the members of our board of directors or senior management, holders of more than 10% of any class of our voting securities, or any member of the immediate family of any of the foregoing persons, had or will have a direct or indirect material interest, other than the compensation and shareholding arrangements we describe in "Item 6. Directors, Senior Management and Employees" and "—A. Major Shareholders," and the transactions we describe below.

Merger between Materialise NV and Ailanthus NV

Merger

On December 31, 2020, Ailanthus NV, an entity previously owned and controlled by Wilfried Vancraen and Hilde Ingelaere, was merged into our company (which we refer to as the "Merger"). Prior to the Merger, Ailanthus NV was demerged into Lunebeke NV, a newly incorporated company. All of Ailanthus NV's assets and liabilities were transferred to Lunebeke NV, with the exception of (i) the ordinary shares of our company held by Ailanthus NV and (ii) the corresponding accounting equity components. As such, at the time of the Merger, the only assets held by Ailanthus NV were 13,428,688 ordinary shares of our company.

Upon consummation of the Merger, Wilfried Vancraen and Hilde Ingelaere, in their capacity of shareholders of Ailanthus NV, received 13,428,688 new ordinary shares of our company (with the same rights and obligations as the other outstanding shares of our company). Immediately following the Merger, we annulled the 13,428,688 shares that we had acquired in the Merger. As a result, the same amount of shares was outstanding after the Merger as before. Also, no other changes were made to the organizational documents of our company in connection with the Merger and all our existing ordinary shares (other than the shares formerly held by Ailanthus NV that were annulled by us) remained outstanding with the same rights that applied before the Merger.

This transaction constituted part of the restructuring of the family assets held by the family Vancraen-Ingelaere.

Indemnification agreement

In connection with and prior to the Merger, we entered into an indemnification agreement with Ailanthus NV and with Wilfried Vancraen, Hilde Ingelaere and Lunebeke NV (which we refer to collectively as the "indemnifying parties"). Pursuant to the indemnification agreement, among other things, the indemnifying parties agreed to reimburse us for: (i) costs incurred by us in connection with the Merger, (ii) possible liabilities of our company as a result of the Merger, and (iii) possible negative tax consequences, if any, for certain of our shareholders. The obligation to reimburse our shareholders applies to shareholders who were shareholders prior to April 30, 2021 (which we refer to as "qualifying shareholders").

The term of the indemnification agreement expires on December 31, 2030. However, we and any qualifying shareholders have the right to make claims against the indemnifying parties for a period of 10 years following the occurrence giving rise to the claim.

Letter Agreement

In addition, in connection with the Merger, we entered into a letter agreement, dated December 31, 2020, with Wilfried Vancraen and Hilde Ingelaere pursuant to which, among other things, we granted certain demand and "piggyback" registration rights to Wilfried Vancraen and Hilde Ingelaere in respect of the new ordinary shares that were issued to them in connection with the Merger.

Lunebeke NV

In the past, Ailanthus NV, which was a shareholder of our company up until the Merger and which was owned and controlled by Mr. Vancraen and Ms. Ingelaere, had provided several loans and financial leases to us for the purchase of machinery and a portion of our office and production buildings.

Ailanthus NV had granted us one loan at a fixed interest rate of 4.23% that matures in 2025. The purpose of the loan was to finance the purchase of a building in France. As described above, prior to the Merger, Ailanthus NV was demerged into Lunebeke NV, a newly incorporated company. All of Ailanthus NV's assets and liabilities were transferred to Lunebeke NV, with the exception of (i) the ordinary shares of our company held by Ailanthus NV and (ii) the corresponding accounting equity components. As such, the loan granted by Ailanthus NV was also transferred from Ailanthus NV to Lunebeke NV. For additional information about the loan, see Note 15 to our audited consolidated financial statements.

We used to rent apartments on a regular basis from Ailanthus NV in order to host our employees from foreign subsidiaries who were visiting our headquarters in Leuven. The total amount paid to Ailanthus NV for rent in 2020 was €0.11 million. This activity was also transferred from Ailanthus NV to Lunebeke NV as a result of Ailanthus's demerger.

Convertible Bonds Conversion

On October 28, 2013, we issued to Mr. Leys and his spouse Els Kindt 1,000 convertible bonds at an issuance price of €1,000 per bond. The bonds had a maturity of seven years, bore an annual interest rate of 3.7% and could be converted into ordinary shares at a conversion price of €1.97 per share.

On October 9, 2020, we issued 508,904 new shares and increased our share capital with €1 million following the conversion of the 1,000 bonds. In particular, 203,561 ordinary shares were issued to Els Kindt, and 203,562 ordinary shares were issued to Riverside BM and 101,781 ordinary shares were issued to Mountain View BM, which are civil partnerships (burgerlijke maatschap / société civile de droit commun) controlled and managed by Peter Leys and Els Kindt.

Registration Rights Agreement

On September 15, 2016, we entered into a registration rights agreement with certain holders of our ordinary shares, warrants and convertible bonds, including certain of our directors, senior management and consultants, which we refer to as the Registration Rights Agreement. In accordance with the terms of the Registration Rights Agreement, we filed a shelf registration statement on Form F-3 to register up to 35,032,250 ordinary shares represented by 35,032,250 ADSs to be sold by the selling shareholders from time to time. These ordinary shares consist of ordinary shares previously issued to and ordinary shares issuable upon exercise of warrants or conversion of convertible bonds held by the selling shareholders, as well as ordinary shares underlying ADSs that were acquired by the selling shareholders on the Nasdaq Global Select Market.

C. Interests of Experts and Counsel

Not applicable.

ITEM 8. FINANCIAL INFORMATION

A. Consolidated Financial Statements and Other Information

See “Item 3.A. Key Information—A. Selected Financial Data” and “Item 18. Financial Statements.”

Legal or Arbitration Proceedings

From time to time, we may be subject to various claims or legal or arbitration proceedings that arise in the ordinary course of our business.

We are currently involved in a legal proceeding with Dentsply Implants NV regarding the alleged wrongful termination of a supply agreement we entered into with Dentsply Implants NV in 2010. The court of first instance ruled in favor of Dentsply Implants NV that we have wrongfully terminated the relationship. We have appealed this decision before the court has pronounced itself on the monetary damages. The amount of damages which Dentsply Implants NV is claiming is €2.7 million. While we are confident that the first instance decision will be overruled, we believe that, in the event that the first instance decision would be confirmed, the amount of monetary damages that we would be exposed to will not have a material adverse effect on our business, financial conditions or results of operations.

In addition, on May 6, 2020, we received a written notice and request for indemnification from Zimmer Biomet, which had been named as a defendant in a patent infringement suit filed by Osteoplastics, LLC on March 20, 2020 in the United States District Court for the District of Delaware. Zimmer Biomet based its request for indemnification on the terms of its license and distribution agreement with us. The complaint alleges infringement by Zimmer Biomet of four U.S. patents. The allegedly infringing products include certain instruments allegedly manufactured with certain of our software. The litigation is currently in the early stages of discovery and the case is scheduled for trial in October 2022. We have entered into a cost-sharing agreement with Zimmer Biomet pursuant to which we have exercised our right to assume and control the defense of the action related to the products covered by our indemnity obligations. We have also filed petitions requesting a review of the patents asserted by Osteoplastics by the U.S. Patent and Trademark Office, as well as other patents asserted by Osteoplastics in certain other actions brought against third party defendants. We believe there are meritorious defenses to the complaint and intend to contest it vigorously. However, an adverse resolution of this litigation could have an adverse effect on our results of operations, financial condition or cash flows in the period in which the litigation is resolved. No amounts have been accrued for this loss contingency.

Other than the litigation described above, we are currently not a party to any other legal or arbitration proceedings, which, in the opinion of our management, is likely to have or could reasonably possibly have a material adverse effect on our business, financial condition or results of operations.

Policy on Dividend Distribution

We have never declared or paid any cash dividends on our shares, and we have no present intention of declaring or paying any dividends in the foreseeable future. Any recommendation by our board of directors to pay dividends, subject to compliance with applicable law and any contractual provisions that restrict or limit our ability to pay dividends, including under agreements for indebtedness that we may incur, will depend on many factors, including our financial condition, results of operations, legal requirements, capital requirements, business prospects and other factors that our board of directors deems relevant.

All of the shares represented by the ADSs have the same dividend rights as all of our other outstanding shares. In general, distributions of dividends proposed by our board of directors require the approval of our shareholders at a shareholders’ meeting, although our board of directors may declare interim dividends without shareholder approval.

Furthermore, pursuant to Belgian law, the calculation of amounts available for distribution to shareholders, as dividends or otherwise, must be determined on the basis of our non-consolidated statutory Belgian GAAP financial statements. In addition, in accordance with Belgian law and our restated articles of association, we must allocate each year an amount of at least 5% of our annual net profit under our statutory non-consolidated accounts (prepared in accordance with Belgian GAAP) to a legal reserve until the reserve equals 10% of our share capital. As a consequence of these facts there can be no assurance as to whether dividends or other distributions will be paid out in the future or, if they are paid, their amount.

For information regarding the Belgian withholding tax applicable to dividends and related U.S. reimbursement procedures, see “Item 10. Additional Information—E. Taxation—Belgian Taxation.”

B. Significant Changes

None.

ITEM 9. THE OFFER AND LISTING

A. Offer and Listing Details

Price History

The ADSs, each representing one ordinary share, have been listed on the Nasdaq Global Select Market under the symbol “MTLS” since June 25, 2014. Prior to that date, there was no public trading market for ADSs or our ordinary shares.

B. Plan of Distribution

Not applicable.

C. Markets

The ADSs have been listed on the Nasdaq Global Select Market under the symbol “MTLS” since June 25, 2014.

D. Selling Shareholders

Not applicable.

E. Dilution

Not applicable.

F. Expenses of the Issue

Not applicable.

ITEM 10. ADDITIONAL INFORMATION

A. Share Capital

Not applicable.

B. Memorandum and Articles of Association

The information called for by this item is being reported in Exhibit 2.3 (Description of Securities) to this annual report, which exhibit is incorporated herein by reference, and is supplemented by the following additional information related to changes in our share capital.

The share capital of Materialise NV was increased following the exercise of warrants previously issued under our 2007 Warrant Plan on November 27, 2014, with €4,336.77 (excluding an issuance premium of €69,359.23) against the issuance of 75,200 new ordinary shares.

On March 5, 2015, the board of directors increased the share capital of Materialise NV by €4,626.50 (excluding an issuance premium of €574,290.50) against the issuance of 80,182 new ordinary shares.

The share capital of Materialise NV was increased following the exercise of warrants previously issued under our 2007 Warrant Plan on November 20, 2015, with €5,647.15 (excluding an issuance premium of €90,392.85) against the issuance of 98,000 new ordinary shares. The 2007 Warrant Plan 2007 is now terminated. There are no outstanding warrants issued under this plan.

On December 18, 2015, the board of directors adopted a new Warrant Plan, our 2015 Warrant Plan, and issued 1,400,000 warrants, which warrants are exercisable for 1,400,000 new ordinary shares. As of December 31, 2020, 352,000 of the warrants were granted.

On March 30, 2018, the board of directors increased the share capital of Materialise NV by €5,931.68 (excluding an issuance premium of €201,331.37) against the issuance of 102,856 new ordinary shares.

On July 19, 2018, the board of directors increased the share capital of Materialise NV by €112,636.20 (excluding an issuance premium of €21,418,670.32) against the issuance of 1,953,125 new ordinary shares.

On July 18, 2018, the board of directors decided to increase the share capital of Materialise NV, which capital increase was confirmed on July 26 and July 27, 2018, by €173,009.19 (excluding an issuance premium of €33,188,838.54) and €25,951.38 (excluding an issuance premium of €4,967,220.35), respectively, against the issuance of 3,000,000 and 450,000 new ordinary shares, respectively.

On December 28, 2018, the board of directors increased the share capital of Materialise NV following the exercise of warrants previously issued under the 2013 Warrant Plan and the 2014 Warrant Plan by €1,102.07 (excluding an issuance premium of €39,676.43) and €2,321.96 (excluding share premium of €352,210.06), respectively, against the issuance of 19,100 and 40,242 new ordinary shares, respectively.

On November 29, 2019, the board of directors increased the share capital of Materialise NV following the exercise of warrants previously issued under the 2013 Warrant Plan and the 2014 Warrant Plan by €10,274.68 (excluding an issuance premium of €345,325.58) and €5,973.90 (excluding an issuance premium of €906,636.38), respectively, against the issuance of 178,164 and 103,588 new ordinary shares, respectively.

On April 16, 2020, the board of directors increased the share capital of Materialise NV following the exercise of warrants previously issued under the 2015 Warrant Plan by €1,254.32 (excluding an issuance premium of €139,033.18) against the issuance of 21,750 new ordinary shares.

On October 9, 2020, the board of directors increased the share capital of Materialise NV following the conversion of the convertible bonds held by Peter Leys and his spouse by €1,000,000 against the issuance of 508,904 new ordinary shares.

On November 13, 2020, the board of directors increased the share capital of Materialise NV following the exercise of warrants previously issued under the 2013 Warrant Plan, the 2014 Warrant Plan and the 2015 Warrant Plan by €2,180.98 (excluding an issuance premium of 231,347.86), €15,212.54 (excluding an issuance premium of €1,757,042.30) and €11,324.48 (excluding an issuance premium of €954,563.02) against the issuance of 115,176, 201,164 and 149,750 new ordinary shares, respectively.

On December 31, 2020, in the context of the merger between Materialise NV and Ailanthus NV, the extraordinary general meeting of shareholders decided to increase the share capital of Materialise NV and in the same notarial deed of the same date, decided to decrease the share capital of Materialise NV by the same amount. As a result, the share capital of Materialise NV did not change as a result of the aforementioned merger. See “Item 7. Major Shareholders and Related Party Transactions.”

C. Material Contracts

We have not entered into any material contracts in the prior two years other than in the ordinary course of business and other than those described elsewhere in this annual report, including under “—B. Memorandum and Articles of Association,” “Item 7. Major Shareholders and Related Party Transactions—B. Related Party Transactions.”

D. Exchange Controls

There are no Belgian exchange control regulations that impose limitations on our ability to make, or the amount of, cash payments to residents of the United States. See “Item 5. Operating and Financial Review and Prospects—B. Liquidity and Capital Resources—Transfers from Subsidiaries” for a discussion of various restrictions applicable to transfers of funds by our subsidiaries.

E. Taxation

Belgian Taxation

The following paragraphs are a summary of material Belgian tax consequences of the ownership of ADSs by an investor. The summary is based on laws, treaties and regulatory interpretations in effect in Belgium on the date of this document, all of which are subject to change, including changes that could have retroactive effect.

The summary only discusses Belgian tax aspects which are relevant to U.S. holders of ADSs (“Holders”). This summary does not address Belgian tax aspects which are relevant to persons who are residents in Belgium or engaged in a trade or business in Belgium through a permanent establishment or a fixed base in Belgium. This summary does not purport to be a description of all of the tax consequences of the ownership of ADSs, and does not take into account the specific circumstances of any particular investor, some of which may be subject to special rules, or the tax laws of any country other than Belgium. This summary does not describe the tax treatment of investors that are subject to special rules, such as banks, insurance companies, collective investment undertakings, dealers in securities or currencies, persons that hold, or will hold, ADSs in a position in a straddle, share-repurchase transaction, conversion transactions, synthetic security or other integrated financial transactions. Investors should consult their own advisers regarding the tax consequences of an investment in ADSs in the light of their particular circumstances, including the effect of any state, local or other national laws, treaties and regulatory interpretation thereof.

In addition to the assumptions mentioned above, it is also assumed in this discussion that for purposes of the domestic Belgian tax legislation, the owners of ADSs will be treated as the owners of the ordinary shares represented by such ADSs. However, the assumption has not been confirmed by or verified with the Belgian Tax Administration.

For the purposes of this summary, ADSs or ordinary shares means ordinary shares represented by ADSs. Both terms are used interchangeably.

Dividend Withholding Tax

As a general rule, a withholding tax of 30% is levied on the gross amount of dividends paid on or attributed to the ordinary shares represented by the ADSs, subject to such relief as may be available under applicable domestic or tax treaty provisions. Dividends subject to the dividend withholding tax include all benefits attributed to the ordinary shares represented by the ADSs, irrespective of their form. A reimbursement of fiscal capital made in accordance with the Belgian Code of Companies and Associations is partly considered to be a distribution of the existing taxed reserves (irrespective whether incorporated into the capital or not) and/or the tax-free reserves incorporated into the capital. The proportion is determined on the basis of the ratio between certain taxed reserves and tax-free reserves incorporated into the capital on the one hand and, on the other hand, the aggregate of such reserves and the fiscal capital. In principle, fiscal capital includes paid-up statutory share capital, and subject to certain conditions, the paid-up issue premiums and the cash amounts subscribed to at the time of the issue of profit sharing certificates.

In case of a redemption by us of own shares represented by ADSs, the redemption distribution (after deduction of the portion of fiscal capital represented by the redeemed shares) will be treated as a dividend which in certain circumstances may be subject to a withholding tax of 30%, subject to such relief as may be available under applicable domestic or tax treaty provisions. In case of a liquidation of our Company, any amounts distributed in excess of the fiscal capital will be subject to a 30% withholding tax, subject to such relief as may be available under applicable domestic or tax treaty provisions.

For non-residents, the dividend withholding tax will be the only tax on dividends in Belgium, unless the non-resident holds ADSs in connection with a business conducted in Belgium, through a fixed base in Belgium or a Belgian permanent establishment.

Relief of Belgian Dividend Withholding Tax

Under the Belgium-United States Tax Treaty (the “Treaty”), there is a reduced Belgian withholding tax rate of 15% on dividends paid by us to a U.S. resident which beneficially owns the dividends and is entitled to claim the benefits of the Treaty under the limitation of benefits article included in the Treaty, (a “Qualifying Holder”). If such Qualifying Holder is a company that owns directly at least 10% of our voting stock, the Belgian withholding tax rate is further reduced to 5%. No withholding tax is however applicable if the Qualifying Holder, is: (i) a company that is a resident of the United States that has owned directly ADSs representing at least 10% of our capital for a 12-month period ending on the date the dividend is declared, or (ii) a pension fund that is a resident of the United States, provided that such dividends are not derived from the carrying on of a business by the pension fund or through an associated enterprise.

Under the normal procedure, we or our paying agent must withhold the full Belgian withholding tax (without taking into account the Treaty rate). Qualifying Holders may make a claim for reimbursement for amounts withheld in excess of the rate defined by the Treaty. The reimbursement form (Form 276 Div-Aut.) may be obtained from the Centre Etrangers, Team 6, Kruidtuinlaan 50, PO 3429, 1000 Brussels, Belgium or online on the website of the Belgian tax authorities. Qualifying Holders may also, subject to certain conditions, obtain the reduced Treaty rate at source. Qualifying Holders should deliver a duly completed Form 276 Div-Aut. no later than ten days after the date on which the dividend is paid or attributed. U.S. holders should consult their own tax advisors as to whether they qualify for reduction in withholding tax upon payment or attribution of dividends, and as to the procedural requirements for obtaining a reduced withholding tax upon the payment of dividends or for making claims for reimbursement.

Withholding tax is also not applicable, pursuant to Belgian domestic tax law, on dividends paid to certain U.S. pension funds provided that the U.S. pension fund (i) qualifies as a non-resident saver for Belgian withholding tax purposes (i.e., it has a separate legal personality and fiscal residence outside of Belgium and without a permanent establishment or fixed base in Belgium), (ii) has a corporate purpose that consists solely in managing and investing funds collected in order to pay legal or complementary pensions, (iii) has activity that is limited to the investment of funds collected in the exercise of its statutory purpose, without any profit making activity and (iv) is exempt from income taxes in the United States. Furthermore, such pension fund may not contractually be obligated to redistribute the dividends to any beneficial owner of such dividends for whom it would manage the ADSs nor obligated to pay a manufactured dividend with respect to the ADSs under a securities borrowing transaction (save in certain particular cases as described in Belgian law) and subject to certain procedural formalities.

Under Belgian domestic tax law, a withholding tax exemption is available to dividends paid to a non-resident corporate shareholder (located in a Member State of the European Union or in a country with which Belgium has entered in a double tax treaty including sufficient information exchange provisions) provided that (i) at the date of payment or attribution of the dividend it holds a participation in our company representing at least 10% of our share capital, (ii) this holding is held or will be held in full ownership for an uninterrupted period of at least one year, (iii) this non-resident corporate shareholder is tax resident of the country where it is established according to the tax laws of and the bilateral tax treaties established by such country, (iv) this non-resident corporate shareholder is subject to a corporate income tax regime similar to Belgian corporate income tax regime without benefitting from a tax regime that derogates from the ordinary tax regime and (v) its legal form is (similar to one of the legal forms) listed in the annex of the E.U. directive dated 23 July 1990 (90/435/EC) as amended by the directive of 22 December 2003 (2003/123/EC). This reduced withholding tax will apply provided that certain procedural formalities are complied with.

Finally, a withholding tax exemption is available, pursuant to Belgian domestic tax law, to dividends paid to a non-resident corporate shareholder (located in the European Economic Area or in a country with which Belgium has entered in a double tax treaty including sufficient information exchange provisions) to the extent that at the date of payment or attribution of the dividend it holds a participation in our company representing less than 10% of our share capital but the acquisition value of which is at least €2.5 million and provided that certain other conditions are met, i.e., that (i) this holding is held or will be held in full ownership for an uninterrupted period of at least one year (ii) this non-resident corporate shareholder is subject to a corporate income tax regime similar to Belgian corporate income tax regime without benefitting from a tax regime that derogates from the ordinary tax regime, and (iii) its legal form is (similar to one of the legal forms) listed in the annex I, part A, of the E.U. directive dated 30 November 2011 (2011/96/EU) as amended by the directive of 8 July 2014 (2014/86/EU). This reduced withholding tax will apply only if and to the extent that the ordinary Belgian withholding tax cannot be credited or reimbursed to the non-resident corporate shareholder referred to above and subject to certain procedural formalities.

Capital Gains and Losses

Pursuant to the Treaty, capital gains and/or losses realized by a Qualifying Holder from the sale, exchange or other disposition of ADSs do not fall within the scope of application of Belgian domestic tax law.

Capital gains realized on ADSs by a corporate Holder which is not entitled to claim the benefits of the Treaty under the limitation of benefits article included in the Treaty are generally not subject to taxation in Belgium unless the corporate Holder is acting through a Belgian permanent establishment or a fixed place in Belgium to which the ADSs are effectively connected. Capital losses are not deductible.

Private individual Holders who are not entitled to claim the benefits of the Treaty under the limitation of benefits article included in the Treaty and which are holding ADSs as a private investment will, as a rule, not be subject to tax on any capital gains arising out of a disposal of ADSs. Losses will, as a rule, not be deductible in Belgium.

However, if the gain realized by such individual Holders on ADSs is deemed to be realized outside the scope of the normal management of such individual's private estate and the capital gain is obtained or received in Belgium, the gain will in principle be taxable at 33%. The Official Commentary to the ITC 1992 stipulates that occasional transactions on a stock exchange regarding ADSs should not be considered as transactions realized outside the scope of normal management of one's own private estate.

Capital gains realized by such individual Holders on the disposal of ADSs for consideration, outside the exercise of a professional activity, to a non-resident company (or a body constituted in a similar legal form), to a foreign state (or one of its political subdivisions or local authorities) or to a non-resident legal entity who is established outside the European Economic Area, are in principle taxable at a rate of 16.5% if, at any time during the five years preceding the sale, such individual Holders has owned directly or indirectly, alone or with his/her spouse or with certain relatives, a substantial shareholding in us (that is, a shareholding of more than 25% of our shares).

Capital gains realized by a Holder upon the redemption of ADSs or upon our liquidation will generally be taxable as a dividend. See section "Dividend Withholding Tax."

Estate and Gift Tax

There is no Belgian estate tax on the transfer of ADSs upon the death of a Belgian non-resident.

Donations of ADSs made in Belgium may or may not be subject to gift tax in Belgium depending on the modalities under which the donation is carried out.

Belgian Tax on Stock Exchange Transactions

A tax on stock exchange transactions (taxe sur les opérations de bourse/taks op de beursverrichtingen) is generally levied on the purchase and the sale and on any other acquisition and transfer for consideration of existing ADSs on the secondary market carried out by a Belgian resident investor through a professional intermediary if (i) executed in Belgium through a professional intermediary, or (ii) deemed to be executed in Belgium, which is the case if the order is directly or indirectly made to a professional intermediary established outside of Belgium, either by private individuals having their usual residence in Belgium, or legal entities for the account of their seat or establishment in Belgium.

The applicable rate amounts to 0.35% of the consideration paid but with a cap of €1,600 per transaction and per party. The tax is due separately from each party to any such transaction, i.e., the seller (transferor) and the purchaser (transferee), both collected by the professional intermediary.

However, if the intermediary is established outside of Belgium, the tax will in principle be due by the ordering private individual or legal entity, unless that individual or entity can demonstrate that the tax has already been paid. Professional intermediaries established outside of Belgium can, subject to certain conditions and formalities, appoint a Belgian representative for tax purposes, which will be liable for the tax on stock exchange transactions in respect of the transactions executed through the professional intermediary.

Belgian non-residents who purchase or otherwise acquire or transfer, for consideration, ADSs in Belgium for their own account through a professional intermediary may be exempt from the tax on stock exchange transactions if they deliver a sworn affidavit to the intermediary in Belgium confirming their non-resident status.

A tax on repurchase transactions (taxe sur les reports/taks op de reportverrichtingen) at the rate of 0.085%. will be due from each party to any such transaction entered into or carried out in Belgium by a Belgian resident investor in which a stockbroker acts for either party (with a maximum amount of €1,600 per transaction and per party).

No stock exchange tax, nor tax on repurchase transactions is payable by: (i) professional intermediaries described in Article 2, 9° and 10° of the Law of August 2, 2002 acting for their own account, (ii) insurance companies described in Article 2, §1 of the Law of 9 July 1975 acting for their own account, (iii) professional retirement institutions referred to in Article 2, 1° of the Law of October 27, 2006 relating to the control of professional retirement institutions acting for their own account, (iv) collective investment institutions acting for their own account, or (v) regulated real estate companies (for the stock exchange tax only).

No stock exchange tax, nor tax on repurchase transactions will thus be due by Holders on the subscription, purchase or sale of ADSs, if the Holders are acting for their own account. In order to benefit from this exemption, the Holders must file with the professional intermediary in Belgium a sworn affidavit evidencing that they are non-residents for Belgian tax purposes.

Belgian Annual Tax on Securities Accounts

Pursuant to the Law of February 17, 2021 introducing a new annual tax on securities accounts due on securities accounts held through an intermediary if the average value of the taxable financial instruments held on this securities account exceeds €1 million during a reference period of 12 consecutive months. This new annual tax on securities accounts is introduced because the previous tax on securities accounts was annulled by the Belgian Constitutional Court.

The annual tax on securities accounts is due irrespective of whether the holder of a securities account is a physical person or a legal entity. If the holder of a securities account is a Belgian resident, the annual tax on securities accounts will be applicable both to securities accounts held in Belgium as well as securities accounts held abroad. For non-residents, only securities accounts held in Belgium fall in scope of the annual tax on securities accounts. A double tax treaty could prevent Belgium to levy the annual tax on securities accounts.

Certain exemptions exist to mitigate the impact of the annual tax on securities accounts on the financial sector. As such, securities accounts held by certain financial undertakings are exempt.

All securities held on a securities account are targeted, such as shares, bonds, participations in investment funds and investment companies, but also derived products, such as index trackers, turbo’s, real estate certificates and cash. The rate of the annual tax on securities accounts amounts to 0.15% on securities accounts of which the average value exceeds €1 million during a reference period of 12 consecutive months. In order to avoid that the payment of the tax would result in a decrease of the average value below the €1 million threshold, the rate is limited to 10% of the difference between the taxable base and €1 million in those cases. The reference period is a subsequent period of 12 months starting on October 1 and ending September 30 of the subsequent year or (i) any earlier date when the account is closed; or (ii) the moment when the account holder becomes a resident of a state with which Belgium has concluded a tax treaty and the tax treaty allocates the taxing rights to the other state. The average value is calculated by taking the average of the securities accounts values on December 31, March 31, June 30 and September 30.

The tax must be declared and paid by the Belgian resident intermediary with whom the securities account is held. If a securities account is held with a non-resident intermediary, the holder of the securities account itself is responsible for the declaration and the payment of the annual tax on securities accounts. Alternatively, the foreign intermediary could also voluntarily appoint a recognized responsible representative in Belgium to declare and pay the tax.

In case of non-declaration, late, inaccurate or incomplete declaration, as well as non-payment or late payment, a penalty varying from 10% to 200% of the tax due can be imposed. Every holder of the securities account is jointly and severally liable to pay these penalties. The Law

furthermore includes a general anti-abuse provision pursuant to which the following is not allowed: (i) distributing taxable financial instruments over different securities accounts to avoid the threshold of €1 million for an individual account, (ii) converting taxable financial instruments into nominative securities (the latter are out of scope of the tax); (iii) transferring a securities account to a foreign legal entity which then transfers the securities to a foreign securities account, etc. In the aforementioned circumstances, there is a refutable presumption that abuse exists. However, the Law also includes situations in which there is an irrefutable presumption of abuse. As such, the following transactions taking place as of October 30, 2020 onwards will be considered to constitute abuse: (i) splitting of a securities account into multiple securities accounts held by the same intermediary; and (ii) the conversion of taxable financial instruments held in a securities account to nominal financial instruments.

Prospective Holders should consult their own tax advisors as to whether they are subject to the new annual tax on securities accounts.

Proposed Financial Transactions Tax

On February 14, 2013, the European Commission published a proposal for a Directive for a common financial transactions tax ("FTT") in Belgium, Germany, Greece, Spain, France, Italy, Austria, Portugal, Slovenia, Estonia and Slovakia (collectively, the "Participating Member States"). On December 8, 2015, Estonia declared that it will no longer support the FTT.

The proposed FTT has a very broad scope and could, if introduced in its current form, apply to certain dealings in ADSs in certain circumstances. The FTT could apply in certain circumstances to persons both within and outside of the Participating Member States. Generally, it would apply to certain dealings in ADSs where at least one party is a financial institution, and at least one party is established in a Participating Member State.

A financial institution may be, or be deemed to be, "established" in a Participating Member State in a broad range of circumstances, including by transacting with a person established in a Participating Member State.

Currently, the proposed FTT remains subject to further negotiations between the Participating Member States (excluding Estonia). It may therefore be adjusted prior to any implementation, of which the timing and fate remains unclear. Moreover, additional E.U. Member States could decide to participate or drop out of the negotiations. Prospective Holders of ADSs are advised to seek their own professional advice in relation to the FTT.

U.S. Taxation

The following is a discussion of the material U.S. federal income tax considerations to U.S. holders (as defined below) of acquiring, holding and disposing of the ADSs. The following discussion applies only to U.S. holders that purchase ADSs, will hold ADSs as capital assets for U.S. federal income tax purposes (generally, assets held for investment) and that are not residents of, or ordinarily resident in, Belgium for tax purposes nor hold their ADSs as part of a permanent establishment in Belgium. The discussion also does not address any aspect of U.S. federal taxation other than U.S. federal income taxation. In particular, this summary does not address all tax considerations applicable to investors that own (directly or by attribution) 10% or more of our stock by vote or value, nor does this summary discuss all of the tax considerations that may be relevant to certain types of investors subject to special treatment under the U.S. federal income tax laws (such as financial institutions, insurance companies, real estate investment trusts, regulated investment companies, investors liable for the alternative minimum tax, certain U.S. expatriates, individual retirement accounts and other tax-deferred accounts, partnerships or other pass-through entities for U.S. federal income tax purposes, tax-exempt organizations, dealers in securities or currencies, securities traders that elect mark-to-market tax accounting, investors that will hold the ADSs as part of constructive sales, straddles, hedging, integrated or conversion transactions for U.S. federal income tax purposes or investors whose "functional currency" is not the U.S. dollar). Further, this discussion is limited to U.S. holders that hold our ADSs or ordinary shares as "capital assets" within the meaning of Section 1221 of the Code (generally, property held for investment) at all relevant times and does not address all U.S. federal income tax consequences relevant to a U.S. holder's particular circumstances, including the impact of the Medicare tax on net investment income.

The following summary is based on the U.S. Internal Revenue Code of 1986, as amended (the "Code"), U.S. Treasury Regulations thereunder, published rulings of the U.S. Internal Revenue Service (the "IRS"), the Treaty, and judicial and administrative interpretations thereof, in each case as available on the date of this prospectus supplement. Changes to any of the foregoing, or changes in how any of these authorities are interpreted, may affect the tax consequences set out below, possibly retroactively. No ruling will be sought from the IRS with respect to any statement or conclusion in this discussion, and there can be no assurance that the IRS will not challenge such statement or conclusion in the following discussion or, if challenged, a court will uphold such statement or conclusion.

For purposes of the following summary, a "U.S. holder" is a beneficial owner of ADSs that is for U.S. federal income tax purposes: (i) a citizen or individual resident of the United States, (ii) a corporation or other entity treated as a corporation for U.S. federal income tax purposes created or organized in or under the laws of the United States or any state thereof (including the District of Columbia), (iii) an estate, the income of which is subject to U.S. federal income taxation regardless of its source or (iv) a trust if (x) a court within the United States is able to exercise primary supervision over its administration and (y) one or more United States persons (as defined in the Code) have the authority to control all of the substantial decisions of such trust.

If a partnership (including any entity treated as a partnership for U.S. federal income tax purposes) holds ADSs, the U.S. federal income tax consequences to the partners of such partnership will depend on the activities of the partnership and the status of the partners. A partnership considering an investment in ADSs, and partners in such partnership, should consult their own tax advisers about the consequences of the investment.

We do not expect to be a PFIC, and the discussion under "—Distributions by Us" and "—Proceeds from the Sale, Exchange or Retirement of the ADSs" below assumes we will not be a PFIC. See "—Passive Foreign Investment Company" discussion below.

Prospective purchasers of ADSs should consult their own tax advisers with respect to the U.S. federal, state, local and non-U.S. tax consequences to them in their particular circumstances of acquiring, holding, and disposing of, ADSs.

Ownership of ADSs in General

The discussion below is based, in part, on representations by the Depositary and assumes that each obligation under the deposit agreement and any related agreement will be performed in accordance with its terms.

For U.S. federal income tax purposes, an owner of ADSs generally will be treated as the owner of the ordinary shares represented by such ADSs. However, the U.S. Treasury has expressed concerns that parties to whom interests such as the ADSs are delivered in transactions similar to pre-release transactions may be taking actions that are inconsistent with the claiming of foreign tax credits for U.S. holders of ADSs. Accordingly, the analysis of the creditability of Belgian taxes could be affected by actions taken by parties to whom the ADSs are pre-released. No gain or loss will be recognized if you exchange ADSs for the ordinary shares represented by those ADSs. Your tax basis in such ordinary shares will be the same as your tax basis in such ADSs, and the holding period in such ordinary shares will include the holding period in such ADSs.

Distributions by Us

Subject to the application of the PFIC rules discussed below, the U.S. dollar value of distributions paid by us (including the amount of any taxes withheld) out of its earnings and profits, as determined under U.S. federal income tax principles, will be subject to tax as foreign source ordinary dividend income and will be includible in your gross income upon receipt by the Depositary. However, we do not maintain calculations of its earnings and profits in accordance with U.S. federal income tax accounting principles. U.S. holders should therefore assume that any distribution by us with respect to ordinary shares or ADSs will constitute ordinary dividend income. Subject to applicable limitations, so long as the ADSs are regularly traded on the Nasdaq Global Select Market, we expect that dividends paid by us will be classified as "qualified dividend income" generally subject to tax at lower rates than other items of ordinary income when received by individuals and other non-corporate U.S. holders. Any dividends we pay with respect to the ADSs or ordinary shares will constitute foreign source income for foreign tax credit purposes.

The U.S. dollar value of distributions paid by us will be calculated by reference to the exchange rate in effect on the date the dividend distribution is received by the Depositary, regardless of when the Depositary converts the payments into U.S. dollars. If the foreign currency is converted by the Depositary on a later date, a U.S. holder will be required to recognize foreign currency gain or loss in respect of the foreign currency based on the difference between the rate at which it is converted and the rate on the date the dividend was received by the Depositary.

Subject to certain limitations, Belgian withholding tax, if any, paid in connection with any distribution with respect to ordinary shares or ADSs may be claimed as a credit against your U.S. federal income tax liability if you elect not to take a deduction for any non-U.S. income taxes for that taxable year; otherwise, such Belgian withholding tax may be taken as a deduction. If you are eligible for benefits under the Treaty or are otherwise entitled to a refund for the taxes withheld, you will not be entitled to a foreign tax credit or deduction for the amount of any Belgian taxes withheld in excess of the maximum rate under the Treaty or for the taxes with respect to which you can obtain a refund from the Belgian taxing authorities. As the relevant rules are very complex, you should consult your own tax advisor concerning the availability and utilization of the foreign tax credit or deductions for non-U.S. taxes in your particular circumstances.

Proceeds from the Sale, Exchange or Retirement of the ADSs

Upon the sale, exchange or retirement of ADSs, a U.S. holder will generally recognize U.S. source capital gain or loss equal to the difference, if any, between the U.S. dollar amount realized on the sale, exchange or retirement and the U.S. holder's tax basis in the ADSs (generally their cost in U.S. dollars). Any gain or loss generally will be long-term capital gain or loss if the ADSs have been held for more than a year. If you are a non-corporate U.S. holder, including an individual U.S. holder, you may be eligible for reduced U.S. federal income tax rates for long-term capital gains. The deductibility of capital losses is subject to limitations.

Gain or loss you recognize on the sale, exchange or retirement of ADSs will generally be treated as U.S. source income or loss for foreign tax credit purposes.

Passive Foreign Investment Company

We believe that we were not a PFIC for the tax year ended December 31, 2020, and we do not expect to be classified as a PFIC for U.S. federal income tax purposes for the current tax year ending December 31, 2021, or for the foreseeable future. Additionally, PFIC status is a factual determination for each taxable year that cannot be made until after the close of each such year and will depend to a large degree on the market price

of our ADSs, which could fluctuate significantly. Therefore, we cannot assure you that we will not be considered a PFIC for the taxable year ended December 31, 2020 or in any subsequent taxable year. If we are a PFIC at any time during the holding period of a U.S. holder, the U.S. holder would be subject to potentially materially greater amounts of tax and subject to additional U.S. tax form filing requirements. In addition, a non-corporate U.S. holder will not be eligible for qualified dividend income treatment on dividends received from us if we are treated as a PFIC for the taxable year in which the dividends are received or for the preceding taxable year.

A non-U.S. corporation is a PFIC in any taxable year in which, after taking into account certain look-through rules, either (i) at least 75% of its gross income is passive income or (ii) at least 50% of the average value (determined on a quarterly basis) of its assets is attributable to assets that produce or are held to produce passive income. Passive income generally includes dividends, interest, rents, royalties, gross income from certain commodities transactions, and capital gains. If a non-U.S. corporation owns at least 25% by value of the stock of another corporation, the foreign corporation is treated for purposes of the PFIC tests as owning its proportionate share of the assets of the other corporation, and as receiving directly its proportionate share of the other corporation's income. The same general look-through rule applies when a foreign corporation owns at least 25% by value of the partnership (a look-through partnership) – the foreign corporation is treated as owning its share of the partnership's assets and deriving its share of the partnership's income, characterized as passive or active at the partnership level. In the case the foreign corporation satisfies an "active partner" test, the foreign corporation may treat less-than-25% owned partnerships as look-through partnerships, unless the foreign corporation elects otherwise. Although the determination of whether a non-U.S. corporation is a PFIC for a given taxable year is based on its income and assets for that taxable year, as determined under the PFIC rules, once a non-U.S. corporation is a PFIC for any taxable year, it generally remains a PFIC for any investors that owned interests in all or a portion of such taxable year even if it would not otherwise qualify as a PFIC in later taxable years. We do not undertake to monitor our PFIC status on an ongoing basis.

The Code imposes additional taxes on gains from the sale or other disposition of, and "excess distributions" with respect to, shares of a PFIC owned directly (or deemed to be owned directly or indirectly under certain attribution rules) by a U.S. holder. In general, an excess distribution is any distribution to the U.S. holder that is greater than 125% of the average annual distributions received by the U.S. holder (including return of capital distributions) during the three preceding taxable years or, if shorter, the U.S. holder's holding period for the ADSs. If we were a PFIC in any year in which a U.S. holder held the ADSs (i) the gain or excess distribution would be allocated ratably over the U.S. holder's holding period for the ADSs, (ii) the amount allocated to the taxable year in which the gain or excess distribution was realized and to any year before we became a PFIC would be taxable as ordinary income, (iii) the amount allocated to each other prior year would be subject to tax at the highest rate in effect for that year and (iv) the interest charge generally applicable to underpayments of tax would be imposed in respect of the tax allocated to each such year. For these purposes, a U.S. holder who uses the ADSs as collateral for a loan would be treated as having disposed of such ADSs.

The PFIC rules provide for certain elections that can, in certain circumstances, alter the tax consequences of PFIC status as generally described above, thereby mitigating the adverse tax consequences that generally apply under the PFIC rules as described above. One such election, the "qualified electing fund" or "QEF" election, allows a U.S. holder to include in income its share of the corporation's income on a current basis and it requires (among other things) that the U.S. holder include with its U.S. federal income tax return a "PFIC Annual Information Statement" provided by the foreign corporation and disclosing to the U.S. Holder its pro rata share of the corporation's "ordinary earnings" and "net capital gain" as determined under U.S. federal income tax principles. A QEF election also can, in certain circumstances, cause the "excess distribution" regime described above not to apply, generally resulting in more favorable tax consequences upon receipt of PFIC excess distributions or the recognition of gain on sale of PFIC shares (or ADSs). However, we do not intend to calculate our "ordinary earnings" or "net capital gain," nor do we intend to supply U.S. holders with the required "PFIC Annual Information Statement." Therefore, it generally will not be possible for you to make a QEF election if we are, or if we become, a PFIC.

A different election, the "mark-to-market" election could be available if our ADSs or ordinary shares, as applicable, are considered "marketable stock" as defined under applicable U.S. Treasury Regulations. This election can be made if the ADSs are considered to be "marketable securities" for purposes of the PFIC rules. The ADSs should be marketable securities for these purposes to the extent they are "regularly traded" on the Nasdaq Global Select Market. Generally, shares are treated as "regularly traded" in any calendar year in which more than a de minimis quantity of the shares are traded on a qualified exchange on at least 15 days during each calendar quarter. Subject to certain limitations, a U.S. holder that makes a valid mark-to-market election with respect to the ADSs would be required to take into account the difference, if any, between the fair market value at the end of each taxable year and the fair market value at the end of the preceding taxable year (or the acquisition price in the first year the election is in effect) of those ADSs, as ordinary income or ordinary loss (but only to the extent of the net amount previously included as income by the U.S. holder as a result of the mark-to-market election). A U.S. holder's basis in the ADSs will be increased by the amount of any ordinary income inclusion and decreased by the amount of any ordinary loss taken into account under the mark-to-market rules. Gains from an actual sale or other disposition of the ADSs for which this election has been properly made would be treated as ordinary income, any losses incurred on a sale or other disposition of the ADSs would be treated as an ordinary loss to the extent of any net mark-to-market gains for prior years and any additional loss would be capital loss.

Even if a valid mark-to-market election is made with respect to the ADSs, there is a significant risk that indirect interests in any of our subsidiaries that are PFICs will not be covered by this election but will be subject to the excess distribution rules described above. Under these rules, distribution from, and dispositions of interests in, these subsidiaries, as well as certain other transactions, generally will be treated as a distribution or disposition subject to the discussion above regarding excess distributions.

Prospective U.S. holders are urged to consult their own tax advisers about the consequences of holding the ADSs if we are considered a PFIC in any taxable year, including the availability of the mark-to-market election, and whether making the election would be advisable in their particular circumstances. In particular, U.S. holders should consider carefully the impact of a mark-to-market election with respect to their ADSs given that there is a significant risk that we will have subsidiaries that are classified as PFICs.

Medicare Tax

Certain U.S. holders who are individuals, estates and trusts will be required to pay an additional 3.8% tax on some or all their "net investment income," which generally includes its dividend income and net gains from the disposition of the ADSs. U.S. holders should consult their own tax advisors regarding the applicability of this additional tax on their particular situation.

Information Reporting and Backup Withholding

Information returns may be filed with the IRS in connection with distributions on the ADSs and the proceeds from the sale or other disposition of the ADSs unless a U.S. holder establishes that it is exempt from the information reporting rules. A U.S. holder may be subject to backup withholding on these payments if it fails to provide its tax identification number to the paying agent and comply with certain certification procedures. The amount of any backup withholding from a payment to a U.S. holder will be allowed as a credit against its U.S. federal income tax liability and may entitle the U.S. holder to a refund, provided that the required information is timely furnished to the IRS.

Tax Return Disclosure Requirement

U.S. federal income tax law requires certain U.S. investors to disclose information relating to investments in securities of a non-U.S. issuer. Failure to comply with applicable disclosure requirements could result in the imposition of substantial penalties. U.S. holders should consult their own tax advisors regarding any disclosure obligations.

F. Dividends and Paying Agents

Not applicable.

G. Statement by Experts

Not applicable.

H. Documents on Display

We previously filed with the SEC our registration statement on Form F-1 (Registration No. 333-194982), as amended, and our registration statement on Form F-3 (Registration No. 333-213649), including the prospectuses contained therein, to register our ordinary shares. We have also filed with the SEC a related registration statement on F-6 (Registration No. 333-196734) to register the ADSs.

We are subject to the periodic reporting and other informational requirements of the Exchange Act as applicable to foreign private issuers. Our annual reports on Form 20-F are due within four months after each fiscal year end. We are not required to disclose certain other information that is required from U.S. domestic issuers. Also, as a foreign private issuer, we are exempt from the rules of the Exchange Act prescribing the furnishing of proxy statements to shareholders and our directors, senior management and principal shareholders are exempt from the reporting and short-swing profit recovery provisions contained in Section 16 of the Exchange Act.

Our SEC filings, including the registration statement, are available to you on the SEC's website at http://www.sec.gov.

We have filed our restated articles of association and all other deeds that are to be published in the annexes to the Belgian State Gazette with the clerk's office of the Commercial Court of Leuven (Belgium), where they are available to the public. A copy of our a restated articles of association is also publicly available as an exhibit to this annual report, as well as on the website of the Royal Federation of Belgian Notaries (only in Dutch, French or German, https://statuten.notaris.be/costa_v1/enterprises/search). This website address is included in this annual report as an inactive textual reference only, and the information and other content appearing on this website are not incorporated by reference into this annual report. In accordance with Belgian law, we must prepare audited annual statutory and consolidated financial statements. The audited annual statutory and consolidated financial statements and the reports of our board and statutory auditor relating thereto are filed with the Belgian National Bank, where they are available to the public.

I. Subsidiary Information

Not applicable.

ITEM 11. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

We are exposed to market risk from fluctuations in interest rates and foreign currency exchange rates which may adversely affect our results of operations and financial condition. We seek to minimize these risks through regular operating and financing activities.

Interest Rate Risk

Although we mainly have loans outstanding with a fixed interest rate, some of the loans have been contracted with variable interest rates. The most significant loans with variable interest rates have been secured by means of a variable to fixed interest rate swap. We therefore believe that we are not materially affected by changes in interest rates. For information with respect to the interest rate swaps, see Note 20 to our audited consolidated financial statements.

Foreign Exchange Rate Risk

We transact business globally and are subject to risks associated with fluctuating foreign exchange rates. The geographic areas outside of the Eurozone to which we sell our products and services are generally not considered to be highly inflationary. In the years ended December 31, 2020, 2019 and 2018, 35%, 29% and 30% of our revenue, respectively, were derived from sales in a currency different from the euro. Receivables denominated in a foreign currency are initially recorded at the exchange rate at the transaction date and subsequently re-measured in euro based on period-end exchange rates. Transaction gains and losses that arise from exchange rate fluctuations are charged to income. We primarily have exposure to the U.S. dollar, British pound, Japanese yen and Brazilian real as foreign currency.

If the U.S. dollar (rate for €1) would have appreciated by 10%, the net result would have been €1.8 million higher, excluding the effect of the cash and term accounts held in U.S. dollars. If the U.S. dollar (rate for €1) would have depreciated by 10%, the net result would have been €1.7 million lower, excluding the effect of the cash and term accounts held in U.S. dollars.

To limit the exposure to foreign currency rate fluctuations on the British pound and Japanese yen, we have entered into currency rate swaps as of 2017.

Additionally, we are exposed to credit risk, liquidity risk and challenges related to capital management.

Credit Risk

Credit risk is the risk that third parties may not meet their contractual obligations resulting in a loss for us. We are exposed to credit risk from our operating activities and from our financing activities, which are mainly deposits with financial institutions. We limit this exposure by contracting with credit-worthy business partners or with financial institutions which meet high credit rating requirements. In addition, the portfolio of receivables is monitored on a continuous basis.

Customer credit risk is managed by each business unit subject to our established policy, procedures and controls relating to customer credit risk management. An impairment analysis is performed at each reporting date using a provision matrix to measure ECLs. The provision rates are based on days past due for groupings of various customer segments with similar loss patterns (i.e., by legal entity). The calculation reflects the probability-weighted outcome, the time value of money and reasonable and supportable information that is available at the reporting date about past events, current conditions and forecasts of future economic conditions. Generally, trade receivables are written-off if past due for more than one year and are not subject to enforcement activity. The maximum exposure to credit risk at the reporting date is the carrying value of each class of financial assets at amortized cost or fair value through Other Comprehensive Income, or OCI, as disclosed in Note 20 to our consolidated financial statements. We do not hold collateral as security.

We evaluate the concentration of risk with respect to trade receivables as low, as our customers are located in several jurisdictions and industries and operate in largely independent markets.

Liquidity Risk

The liquidity risk is that we may not have sufficient cash to meet our payment obligations. This risk is countered by day-by-day liquidity management at the corporate level. We have historically entered into financing and lease agreements with financial institutions to finance significant projects and certain working capital requirements. We no longer have undrawn lines of credit at December 31, 2020 (our undrawn lines of credit were €0.0 million and €26.0 million as of December 31, 2019 and 2018, respectively). These line of credit arrangements do not contain significant financial covenants.

On December 20, 2017, EIB and Materialise entered into a finance contract to support our ongoing research and development programs for growth from 2017 to 2020. The contract provides a credit of up to €35.0 million drawable in two tranches. The first tranche could not exceed €25.0 million and could be drawn during the first year of the contract. We drew €10.0 million of this first tranche in the course of 2018 and €25.0 million in the second tranche in the course of 2019. The duration of the loan will be between six to eight years starting from the disbursement of the respective tranches, and includes a two-year loan reimbursement grace period. Loans under the contract will be made at a fixed rate, based on the Euribor rate at the time of the borrowing, plus a variable margin. The interest rate for the first tranche is equal to 2.40% and the interest rate for the second tranche is 2.72% and varies in function of certain EBITDA levels and debt ratios. The contract contains customary security, covenants and undertakings. As of December 31, 2019, €35.0 million was drawn in connection with this agreement.

Capital Management

The primary objective of our capital management strategy is to ensure we maintain healthy capital ratios to support our business and maximize shareholder value. Capital is defined as our shareholders' equity.

We consistently review our capital structure and make adjustments in light of changing economic conditions. We made no changes to our capital management objectives, policies or processes during the years ended December 31, 2020, 2019 and 2018.

ITEM 12. DESCRIPTION OF SECURITIES OTHER THAN EQUITY SECURITIES

A. Debt Securities

Not applicable.

B. Warrants and Rights

Not applicable.

C. Other Securities

Not applicable.

D. American Depositary Shares

Bank of New York Mellon serves as the depositary for the ADSs. Each ADS represents one ordinary share (or a right to receive one ordinary share) deposited with the principal Amsterdam office of ING Securities Services, Inc., as custodian for the depositary. Each ADS also represents any other securities, cash or other property which may be held by the depositary. The depositary's corporate trust office at which the ADSs are administered is located at 240 Greenwich Street, New York, New York 10286. The Bank of New York Mellon's principal executive office is located at 240 Greenwich Street, New York, New York 10286.

A deposit agreement among us, the depositary and the ADS holders sets out the ADS holder rights as well as the rights and obligations of the depositary. New York law governs the deposit agreement and the ADSs. A copy of the deposit agreement is incorporated by reference as an exhibit to this annual report on Form 20-F.

Pursuant to the terms of the deposit agreement, you, as an ADS holder, will be required to pay the following fees to the depositary:

Persons depositing or withdrawing ordinary shares or ADS holders must pay to the depositary:	**For:**
$5.00 (or less) per 100 ADSs (or portion of 100 ADSs)	Issuance of ADSs, including issuances resulting from a distribution of ordinary shares or rights or other property
	Cancellation of ADSs for the purpose of withdrawal, including if the deposit agreement terminates
$0.05 (or less) per ADS	Any cash distribution to you
A fee equivalent to the fee that would be payable if securities distributed to you had been ordinary shares and the shares had been deposited for issuance of ADSs	Distribution of securities distributed to holders of deposited securities which are distributed by the depositary to you
$0.05 (or less) per ADS per calendar year	Depositary services
Registration or transfer fees	Transfer and registration of ordinary shares on our share register to or from the name of the depositary or its agent when you deposit or withdraw shares
Expenses of the depositary	Cable, telex and facsimile transmissions (when expressly provided in the deposit agreement) converting foreign currency to U.S. dollars
Taxes and other governmental charges the depositary or the custodian has to pay on any ADS or ordinary shares underlying an ADS, such as share transfer taxes, stamp duty or withholding taxes	As necessary
Any charges incurred by the depositary or its agents for servicing the deposited securities	As necessary

The depositary collects its fees for delivery and surrender of ADSs directly from investors depositing ordinary shares or surrendering ADSs for the purpose of withdrawal or from intermediaries acting for them. The depositary collects fees for making distributions to investors by deducting those fees from the amounts distributed or by selling a portion of distributable property to pay the fees. The depositary may collect its annual fee for depositary services by deduction from cash distributions or by directly billing investors or by charging the book-entry system accounts of participants acting for them. The depositary may collect any of its fees by deduction from any cash distribution payable to ADS holders that are obligated to pay those fees. The depositary may generally refuse to provide fee-based services until its fees for those services are paid.

From time to time, the depositary may make payments to us to reimburse or share revenue from the fees collected from ADS holders, or waive fees and expenses for services provided, generally relating to costs and expenses arising out of establishment and maintenance of the ADS program. In performing its duties under the deposit agreement, the depositary may use brokers, dealers or other service providers that are affiliates of the depositary and that may earn or share fees or commissions.

PART II

ITEM 13. DEFAULTS, DIVIDEND ARREARAGES AND DELINQUENCIES

None.

ITEM 14. MATERIAL MODIFICATIONS TO THE RIGHTS OF SECURITY HOLDERS AND USE OF PROCEEDS

Material Modifications to the Rights of Security Holders

None.

Use of Proceeds

Our Registration Statement on Form F-1 (Registration No. 333-194982), relating to our underwritten initial public offering of ADSs, each representing one ordinary share with no nominal value per share, was declared effective by the SEC on June 24, 2014. On June 30, 2014, we consummated our initial public offering and sold 8,000,000 ADSs at a public offering price of $12.00 per ADS for an aggregate offering price of $96.0 million. We received net proceeds from our initial public offering of approximately $88.3 million, after deducting the underwriting discount of approximately $6.7 million and offering expenses of approximately $2.4 million, and reimbursement by the underwriters of certain offering expenses. On July 7, 2014, certain selling shareholders that participated in our initial public offering sold 1,200,000 ADSs at a public offering price of $12.00 per ADS pursuant to the underwriters' exercise in full of their over-allotment option for an aggregate offering price of $14.4 million. We did not receive any of the proceeds from the sale of ADSs by the selling shareholders. Piper Jaffray & Co. and Credit Suisse Securities (USA) LLC acted as joint book-running managers for the offering.

During the year ended December 31, 2020, the remaining net proceeds from our initial public offering were used and continue to be used as a buffer for our working capital, unfinanced capital expenditures, financing activities (including acquisitions, partnerships) and general corporate purposes.

ITEM 15. CONTROLS AND PROCEDURES

a) Disclosure Controls and Procedures

Our management, with the participation of our Chief Executive Officer and our Chief Financial Officer, evaluated the effectiveness of our disclosure controls and procedures as of December 31, 2020. The term "disclosure controls and procedures," as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act, means controls and other procedures of a company that are designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported, within the time periods specified in the SEC's rules and forms. Disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is accumulated and communicated to the company's management, including its principal executive and principal financial officers, as appropriate to allow timely decisions regarding required disclosure. Management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving their objectives and management necessarily applies its judgment in evaluating the cost benefit relationship of possible controls and procedures. Based on this evaluation, management concluded as of December 31, 2020 that our disclosure controls and procedures were not effective due to the material weaknesses in our internal control over financial reporting, which are described below under "Management's Annual Report on Internal Control Over Financial Reporting."

b) Management's Annual Report on Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act. Our internal control over financial reporting is a process designed by, or under the supervision of, our Chief Executive Officer and Chief Financial Officer and effected by our management and other personnel to provide reasonable assurance regarding the reliability of our financial reporting and the preparation of our financial statements for external reporting purposes in accordance with IFRS. Internal control over financial reporting includes policies and procedures that pertain to the maintenance of records that in reasonable detail accurately and fairly reflect the transactions and dispositions of our assets; provide reasonable assurance that transactions are recorded as necessary to permit preparation of our financial statements in accordance with generally accepted accounting principles, and that our receipts and expenditures are being made only in accordance with the authorization of our board of directors and management; and provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of our assets that could have a material effect on our financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect all misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with our policies and procedures may deteriorate.

A material weakness is a deficiency, or combination of deficiencies, in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of annual or interim financial statements will not be prevented or detected on a timely basis.

Management assessed the effectiveness of our internal control over financial reporting as of December 31, 2020 using the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission in the Internal Control-Integrated Framework, 2013 (the "COSO 2013 Framework").

In accordance with guidance issued by the Securities and Exchange Commission, management's assessment of our internal control over financial reporting did not include the internal controls of RS Print Powered By Materialise NV (RS Print), of which we acquired the remaining 50% shares on November 8, 2020. RS Print's assets and revenues in our consolidated financial statements for the year ended December 31, 2020 amounted to EUR 10.9 million or 3.3% of total assets and EUR 0.7 million or 0.4% of total revenue, respectively.

Based on its assessment, our management, including our Chief Executive Officer and our Chief Financial Officer, has concluded that our internal control over financial reporting was not effective as of December 31, 2020 due to the material weaknesses in our internal control over financial reporting described below.

- We did not have an effective risk assessment processes to identify and assess the risks of misstatement within the financial reporting process and to design and implement controls to mitigate to those risks, in particular in the areas of loans and borrowings, taxes, leases and information produced by the entity (IPE) that is used to operate certain controls over financial reporting.
- We did not have an effective monitoring processes to assess the consistent operation of internal control over financial reporting and to remediate known control deficiencies, including due to a lack of resources.
- We did not have effective processes to ensure the proper review and approval of journal entries prior to posting to the general ledger.
- We did not have effective controls over the completeness and accuracy of information produced by the entity (IPE) that is used to operate certain controls over financial reporting.

These material weaknesses could cause misstatements in any financial statement line items.

Notwithstanding the identified material weaknesses and management's assessment that internal control over financial reporting was not effective as of December 31, 2020, management believes that the audited consolidated financial statements contained in this Annual Report on Form 20-F fairly present, in all material respects, our financial condition, results of operations and cash flows for the fiscal years presented in conformity with IFRS.

The material weaknesses did not result in any identified material misstatements to the financial statements, and there were no changes to previously released financial results.

Remediation Plan

We implemented a remediation plan addressing deficiencies in our internal controls that were previously reported as of December 31, 2019, and we remediated material weaknesses in the areas of IT general controls, revenue recognition and financial reporting and will continue to do so for the deficiencies reported as of December 31, 2020, including in particular:

- For our entity level controls, the risk assessment and monitoring of our internal control system was not effective for the following reasons:
  - the risk assessment procedures necessary to identify process risk points within our control environment did not operate at a sufficient level of precision to identify key risks, in particular in the area of loans and borrowings, taxes, and leases;
  - for controls containing a review element, the definition and documentation of the steps to be performed by the control operator and the criteria for investigation (including the analysis if any thresholds used) was insufficient;
  - there was no sufficiently comprehensive and systematic process for identifying IPE nor for identifying and testing controls over the completeness and accuracy of IPE; and
  - the internal audit department did not perform sufficient independent assessments of internal controls, there were missing self-assessments and not all of the action plans and open matters identified by internal audit reported to the audit committee during the year, could be formally carried out, including due to lack of resources.
- For our process level controls, we have identified gaps in the design of our controls over the completeness and accuracy of IPE used in the execution of some controls. Also, the control over manual journal entries was inappropriately designed due to a lack of clearly defined criteria for investigation in general and in particular the lack of tangible evidence supporting the calculation of required accounts payable accruals and the lack of consistent review and approval of the resulting journal entries by an independent reviewer.

During the year ending December 31, 2021, we plan to continue to enhance our internal controls over financial reporting in an effort to remediate the material weaknesses described in this Item 15 and to enhance our overall control environment. We are committed to ensuring that our internal control over financial reporting is designed and operating effectively. We are addressing all material weaknesses identified. The control coordinators and the accountable executive committee members will explain, in person, to the executive committee or audit committee their action plan (including, where appropriate, remediation) plan during the second quarter of 2021. Meanwhile, management and internal audit personnel will continue to implement a structured approach to evaluate our internal controls and follow-up on action plans.

More particularly, as a result of this ongoing exercise, the following remediation actions are being taken:

- We will strengthen our compliance functions with additional experienced hires to assist in our risk assessment process and the design and implementation of controls responsive to those risks.
- With regard to the material weakness in formal documentation of the monitoring controls that are identified following our risk assessment, we will enhance the documentation of our controls with respect to loans and borrowings, taxes and leases; we will formally validate the important reports used where such formal validation was not yet available and we will increase the number of resources in the internal audit department in order to increase the independent assessment coverage and formal follow-up.
- In the area of process-level controls we will identify and document in a more formal and systematic way the IPE testing performed.
- We will develop a more structured process of reviewing manual journal entries.

Also, as we are upgrading and reviewing our IT systems, particular attention will be given to the possibility to automate a larger portion of our controls.

Although we intend to complete the remediation process as promptly as possible, we cannot at this time estimate how long it will take to remediate these material weaknesses. In addition, we may discover additional material weaknesses that require additional time and resources to remediate and we may decide to take additional measures to address the material weaknesses or modify the remediation steps described above. Until these weaknesses are remediated, we plan to continue to perform additional analyses and other procedures to ensure that our consolidated financial statements are prepared in accordance with IFRS.

c) Changes in Internal Control over Financial Reporting

Other than as discussed above under “Management’s Annual Report on Internal Control Over Financial Reporting,” there were no changes in our internal control over financial reporting that occurred during the period covered by this report that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

d) Attestation Report of the Registered Public Accounting Firm

KPMG Bedrijfsrevisoren - KPMG Réviseurs d’Entreprises BV/SRL (“KPMG”), an independent registered public accounting firm, has issued an adverse report on the effectiveness of our internal control over financial reporting. See the report of KPMG below:

Report of Independent Registered Public Accounting Firm

To the Shareholders and Board of Directors

Materialise NV:

Opinion on Internal Control Over Financial Reporting

We have audited Materialise NV and subsidiaries' (the Company) internal control over financial reporting as of December 31, 2020, based on criteria established in *Internal Control – Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission. In our opinion, because of the effect of the material weaknesses, described below, on the achievement of the objectives of the control criteria, the Company has not maintained effective internal control over financial reporting as of December 31, 2020, based on criteria established in *Internal Control – Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated statement of financial position of the Company as of December 31, 2020, the related consolidated income statement, consolidated statement of comprehensive income, consolidated statement of changes in equity, and consolidated cash flow statement for the year ended December 31, 2020, and the related notes (collectively, the consolidated financial statements), and our report dated April 30, 2021 expressed an unqualified opinion on those consolidated financial statements.

A material weakness is a deficiency, or a combination of deficiencies, in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of the company's annual or interim financial statements will not be prevented or detected on a timely basis. The following material weaknesses have been identified and included in management's assessment:

- Ineffective risk assessment processes to identify and assess the risks of misstatement within the financial reporting process and to design and implement controls to mitigate those risks, in particular in the areas of loans and borrowings, taxes, leases and information produced by the entity that is used to operate certain controls over financial reporting.
- Ineffective monitoring processes to assess the consistent operation of internal control over financial reporting and to remediate known control deficiencies, including due to a lack of resources.
- Ineffective processes to ensure the proper review and approval of journal entries prior to posting to the general ledger.
- Ineffective controls over the completeness and accuracy of information produced by the entity that is used to operate certain controls over financial reporting.

The material weaknesses were considered in determining the nature, timing, and extent of audit tests applied in our audit of the 2020 consolidated financial statements, and this report does not affect our report on those consolidated financial statements.

The Company acquired RS Print Powered By Materialise NV (RS Print) during 2020, and management excluded from its assessment of the effectiveness of the Company's internal control over financial reporting as of December 31, 2020, RS Print's internal control over financial reporting associated with 3.3% of total assets and 0.4% of total revenues included in the consolidated financial statements of the Company as of and for the year ended December 31, 2020. Our audit of internal control over financial reporting of the Company also excluded an evaluation of the internal control over financial reporting of RS Print.

Basis for Opinion

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Management's Annual Report on Internal Control over Financial Reporting in Item 15. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audit also included performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control Over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted

accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Disclaimer on Additional Information in Management's Report

We do not express an opinion or any form of assurance on management's statement referring to remediation efforts taken or planned to be taken by the Company subsequent to December 31, 2020.

KPMG Bedrijfsrevisoren – KPMG Réviseurs d'Entreprises BV/SRL

/s/ G. Jackers

Zaventem, Belgium
April 30, 2021

ITEM 16A. AUDIT COMMITTEE FINANCIAL EXPERT

Our board of directors has determined that each of the members of our audit committee, Johan De Lille, Jürgen Ingels and Lieve Verplancke, is an “audit committee financial expert” as defined in Item 16A of Form 20-F under the Exchange Act and is independent under Rule 10A-3 under the Exchange Act.

ITEM 16B. CODE OF ETHICS

We have adopted a written code of conduct and ethics that outlines the principles of legal and ethical business conduct under which we do business. The code of conduct and ethics applies to all of our directors, senior management, consultants and other employees, including our Chief Executive Officer and Chief Financial Officer. We have posted this code of conduct and ethics on our website at www.materialise.com. This website address is included in this annual report as an inactive textual reference only, and the information and other content appearing on our website are not incorporated by reference into this annual report. We have not granted any waivers from any provision of our code of conduct and ethics since its adoption.

ITEM 16C. PRINCIPAL ACCOUNTANT FEES AND SERVICES

KPMG Bedrijfsrevisoren - KPMG Réviseurs d'Entreprises BV/SRL acted as our independent auditor for the fiscal year ended 31 December 2020. BDO Bedrijfsrevisoren CVBA acted as our independent auditor for the fiscal year ended 31 December 2019. The following table sets forth by category of service the total fees for services provided by KPMG Bedrijfsrevisoren - KPMG Réviseurs d'Entreprises BV/SRL and its affiliates and BDO Bedrijfsrevisoren CVBA and its affiliates to us during 2020 and 2019.

	For the year ended December 31	
in 000€	2020	2019
Audit Fees	1,151	1,220
Audit-Related Fees	43	37
All Other Fees	—	—
Total	**1,194**	**1,257**

Audit Fees

Audit fees consist of the aggregate fees billed in connection with the audit of our annual consolidated and statutory financial statements and internal controls.

Audit-Related Fees

Audit-related fees are fees for services that are traditionally performed by the independent accountants and in the table above primarily related to the quarterly attestation reports for EIB and the consent of BDO Bedrijfsrevisoren CVBA for referring to their audit opinion on the financial statements for RSPrint NV for the year 2017. In addition, KPMG Bedrijfsrevisoren - KPMG Réviseurs d'Entreprises BV/SRL reported on the merger between Materialise NV and Ailanthus NV.

All Other Fees

No other fees were paid to KPMG Bedrijfsrevisoren - KPMG Réviseurs d'Entreprises BV/SRL or its affiliates or to BDO Bedrijfsrevisoren CVBA or to its affiliates for the fiscal years ended December 31, 2020 and 2019.

Audit Committee Pre-Approval Policies and Procedures

The pre-approval of the Audit Committee or member thereof, to whom pre-approval authority has been delegated, is required for the engagement of our independent auditors to render audit or non-audit services. Audit Committee pre-approval of audit and non-audit services will not be required if the engagement for the services is entered into pursuant to pre-approval policies and procedures established by our audit committee regarding our engagement of the independent auditors, provided the policies and procedures are detailed as to the particular service, our audit committee is informed of each service provided and such policies and procedures do not include delegation of the Audit Committee's responsibilities under the Exchange Act to our management. Audit Committee pre-approval of non-audit services (other than review and attest services) also will not be required if such services fall within available exceptions established by the SEC.

All audit fees, audit related fees and tax fees for the fiscal years ended December 31, 2020 and 2019 were pre-approved under the pre-approval policies of the Audit Committee.

ITEM 16D. EXEMPTIONS FROM THE LISTING STANDARDS FOR AUDIT COMMITTEES

None.

ITEM 16E. PURCHASES OF EQUITY SECURITIES BY THE ISSUER AND AFFILIATED PURCHASERS

None.

ITEM 16F. CHANGE IN REGISTRANT'S CERTIFYING ACCOUNTANT

On July 28, 2020, our audit committee considered the dismissal and replacement of BDO Bedrijfsrevisoren CVBA, our prior independent registered public accounting firm, and on September 10, 2020, our board of directors recommended the appointment of KPMG Bedrijfsrevisoren—KPMG Réviseurs d'Entreprises BV/SRL to serve as our new independent registered public accounting firm for the year ending December 31, 2020. On November 5, 2020, at a special and extraordinary general meeting of our shareholders, resolutions were passed to dismiss BDO Bedrijfsrevisoren CVBA and appoint KPMG Bedrijfsrevisoren—KPMG Réviseurs d'Entreprises BV/SRL as our statutory auditor for Belgian company law purposes for a period of three years, charged with the audit of our statutory and consolidated annual accounts.

BDO Bedrijfsrevisoren CVBA's reports on our consolidated statements of financial position as of December 31, 2019 and 2018, the related consolidated income statements, statements of comprehensive income, statements of changes in equity, and cash flow statements for each of the two years in the period ended December 31, 2019, and the related notes, did not contain any adverse opinion or disclaimer of opinion, nor were they qualified or modified as to uncertainty, audit scope, or accounting principles, except as follows:

BDO Bedrijfsrevisoren CVBA's report on the consolidated statements of financial position of Materialise NV and subsidiaries as of December 31, 2019 and 2018, the related consolidated income statements, statements of comprehensive income, statements of changes in equity, and cash flow statements for each of the two years in the period ended December 31, 2019, and the related notes, contained an explanatory paragraph stating that:

"We were not engaged to audit, review, or apply any procedures to the adjustments to retrospectively apply the final accounting for a business combination that occurred in 2019 as described in Notes 2 and 4 to the consolidated financial statements and, accordingly, we do not express an opinion or any other form of assurance about whether such adjustments are appropriate and have been properly applied. Those adjustments were audited by KPMG Bedrijfsrevisoren—KPMG Réviseurs d'Entreprises BV/SRL."

BDO Bedrijfsrevisoren CVBA's report on the consolidated statements of financial position of Materialise NV and subsidiaries as of December 31, 2019, 2018 and 2017, the related consolidated income statements, statements of comprehensive income, statements of changes in equity, and cash flow statements for each of the three years in the period ended December 31, 2019, and the related notes, contained a separate paragraph stating that:

"As discussed in Note 2 to the consolidated financial statements, effective on January 1, 2019, the Company changed its method of accounting for leases due to the adoption of IFRS 16, Leases."

BDO Bedrijfsrevisoren CVBA's audit report on the effectiveness of internal control over financial reporting as of December 31, 2019 contained an adverse opinion as Materialise NV did not maintain, in all material respects, effective internal control over financial reporting as of December 31, 2019 based on the criteria established in *Internal Control – Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission:

"The following material weaknesses have been identified and described in management's assessment:

I. Control Environment

The Company did not maintain an effective control environment to prevent or detect a potential material misstatement in its financial statements primarily attributable to the following factors:

- Not appropriately remediating existing material weaknesses on a timely basis.
- Not having certain policies, procedures and controls, related to their internal control framework implemented or operating effectively on a timely basis.

These deficiencies in the control environment resulted in the following material weaknesses:

- The controls over access to key financial systems were either not implemented or not operating effectively resulting in ineffective controls designed to validate the completeness and accuracy of underlying data and system reports used in controls over the financial reporting.
- Not having appropriate controls designed to detect or prevent a material misstatement related to revenue recognition from non-standard contracts with customers and not having necessary controls to guarantee completeness of the sales contract database.
- Not having an adequate process or appropriate controls in place to support an accurate financial reporting and consolidation process and a financial reporting of the Company's financial results and disclosures on its Form 20-F.

These material weaknesses were considered in determining the nature, timing, and extent of audit tests applied in our audit of the 2019 financial statements, and this report does not affect our report dated April 30, 2020 on those consolidated financial statements.

As indicated in the accompanying "Item 15, Management's Annual Report on Internal Control over Financial Reporting", management's assessment of and conclusion on the effectiveness of internal control over financial reporting did not include the internal controls of Engimplan Engenharia De Implante Indústria E Comércio Ltda ("Engimplan"), which was acquired on August 6, 2019, and which is included in the consolidated statement of financial position of the Company as of December 31, 2019, and the related consolidated statements of income, comprehensive income, changes in equity, and cash flows from August 6, 2019 to December 31, 2019. Engimplan constituted 5% and 10% of total assets and net assets, respectively, as of December 31, 2019, and 1% and 14% of revenues and net profit, respectively, for the year then ended. Management did not assess the effectiveness of internal control over financial reporting of Engimplan because of the timing of the acquisition which was completed on August 6, 2019. Our audit of internal control over financial reporting of the Company also did not include an evaluation of the internal control over financial reporting of Engimplan."

During the two fiscal years ended December 31, 2019 and 2018 and the subsequent interim period through November 5, 2020, there were no disagreements with BDO Bedrijfsrevisoren CVBA on any matter of accounting principles or practices, financial statement disclosure, or auditing scope or procedure, which disagreements if not resolved to BDO Bedrijfsrevisoren CVBA's satisfaction would have caused them to make reference in connection with their opinion to the subject matter of the disagreement, or reportable events as that term is defined in Item 16F(a)(1)(v)(A) through (D) of Form 20-F, except that BDO Bedrijfsrevisoren CVBA advised us of the material weaknesses described above concluding that internal controls over financial reporting were not effective as of December 31, 2019.

During the fiscal year ended December 31, 2019 and 2018 and the subsequent period through November 5, 2020, we did not consult with KPMG Bedrijfsrevisoren—KPMG Réviseurs d'Entreprises BV/SRL regarding the application of accounting principles to a specified transaction or the type of audit opinion that might be rendered by KPMG Bedrijfsrevisoren—KPMG Réviseurs d'Entreprises BV/SRL on our consolidated financial statements or the effectiveness of internal control over financial reporting. Further, KPMG Bedrijfsrevisoren—KPMG Réviseurs d'Entreprises BV/SRL did not provide any written or oral advice that was an important factor considered by us in reaching a decision as to any such accounting, auditing or financial reporting matter or any matter being the subject of disagreement or defined as a reportable event or any other matter as defined in Item 16F(a)(1)(v) of Form 20-F.

We have provided BDO Bedrijfsrevisoren CVBA with a copy of the foregoing disclosure and have requested that BDO Bedrijfsrevisoren CVBA furnish to us a letter addressed to the Securities and Exchange Commission stating whether BDO Bedrijfsrevisoren CVBA agrees with such disclosure. We have included as Exhibit 16.1 to this Form 20-F a copy of the letter from BDO Bedrijfsrevisoren CVBA as required by Item 16F(a)(3) of Form 20-F.

ITEM 16G. CORPORATE GOVERNANCE

The Listing Rules of the Nasdaq Stock Market include certain accommodations in the corporate governance requirements that allow foreign private issuers, such as us, to follow "home country" corporate governance practices in lieu of the otherwise applicable corporate governance standards of the Nasdaq Stock Market. The application of such exceptions requires that we disclose each noncompliance with the Nasdaq Stock Market Listing Rules and describe the Belgian corporate governance practices we do follow in lieu of the relevant Nasdaq Stock Market corporate governance standard. We follow Belgian corporate governance practices in lieu of the corporate governance requirements of the Nasdaq Stock Market in respect of the following:

- **Quorum at Shareholder Meetings**. Nasdaq Stock Market Listing Rule 5620(c) requires that for any meeting of shareholders, the quorum must be no less than 33% or 1/3 of the outstanding ordinary shares. There is no quorum requirement under Belgian law for our shareholders' meetings, except as provided for by law in relation to decisions regarding certain matters.
- **Independent Director Majority on Board/Meetings**. Nasdaq Stock Market Listing Rules 5605(b)(1) and (2) require that a majority of the board of directors must be comprised of independent directors and that independent directors must have regularly scheduled meetings at which only independent directors are present. We are not required under Belgian law to have any independent directors on our board of directors. However, our restated articles of association provide that our board of directors must be comprised of at least seven and no more than 11 directors, of which at least three directors must be independent directors under Belgian law. We do not intend to require our independent directors to meet separately from the full board of directors on a regular basis or at all although the board of directors is supportive of its independent members voluntarily arranging to meet separately from the other members of our board of directors.
- **Director Nominations/Remuneration and Nomination Committee Composition**. Nasdaq Stock Market Listing Rule 5605(d)(2) requires that compensation of officers must be determined by, or recommended to, the board of directors for determination, either by a majority of the independent directors, or a compensation committee comprised solely of independent directors. Nasdaq Stock Market Listing Rule 5605(e) requires that director nominees be selected, or recommended for selection, either by a majority of the independent directors or a nominations committee comprised solely of independent directors. Under Belgian law, we are not subject to any such requirements. In particular, we are not required by Belgian law to set up any compensation or nominations committees within our board of directors, and are therefore not subject to any Belgian legal requirements as to the composition of such committees either. However, our restated articles of association provide that our board of directors may form committees from among its members. See "Item 6. Directors, Senior Management and Employees—C. Board Practices —Board of Directors Practices." Our board of directors has set up and appointed a Remuneration and Nomination Committee. Our Remuneration and Nomination Committee is currently comprised of three directors, one of whom is independent. In addition, as long as the Family Shareholders control, directly or indirectly, in the aggregate at least 20% of the voting rights attached to our ordinary shares, a majority of our directors must be appointed by our shareholders from a list of candidates proposed by the Family Shareholders.
- **Shareholder Approval of Equity Compensation Plans**. Nasdaq Stock Market Listing Rule 5635(c) requires shareholder approval prior to the issuance of securities in connection with equity-based compensation of officers, directors, employees or consultants. On December 18, 2015, our board of directors adopted a stock option plan, the 2015 Warrant Plan. Warrants under the 2015 Warrant Plan may be offered upon decision by our board of directors (or its proxy holder(s)) to employees, consultants and directors of our company and our subsidiaries. In lieu of the Nasdaq Stock Market Listing Rule 5635(c), we followed Belgian law regarding the issuance of shares or securities in connection with the remuneration of the directors and/or the employees of a Belgian company.

Under Belgian company law, a Belgian company may issue shares or grant rights to acquire shares pursuant to a resolution of the general meeting of shareholders or, within certain limits, pursuant to a resolution of the board of directors if so authorized by the shareholders' meeting (the so-called authorized capital). By resolution of our extraordinary shareholders' meeting of April 23, 2014, which entered into force on June 30, 2014, our shareholders authorized our board of directors, for a period of five years from August 18, 2014, to increase our share capital, in one or more transactions (including through the issuance of warrants), up to a maximum amount of €2,714,634.83 (of which €2,710,008.33 remained available prior to the issuance of the warrants under the 2015 Warrant Plan). On December 18, 2015, our board of directors decided, in connection with the adoption of the 2015 Warrant Plan, to increase the share capital with a maximum amount of €80,738 (excluding any issue premium), subject to the exercise of the warrants issued under the 2015 Warrant Plan.

The 2015 Warrant Plan provides the terms and conditions governing the procedures for the granting of the warrants to employees, consultants and directors of our company and of our subsidiaries. These terms and conditions include, among others, the determination of the exercise price and the vesting period. The granting of the warrants, and the determination of the applicable terms and conditions, is entrusted to our board of directors or to one or more proxy holders designated by our board of directors.

More recently, by resolution of our extraordinary shareholders' meeting of November 5, 2020, which entered into force on November 9, 2020, our shareholders authorized our board of directors, for a period of five years from November 9, 2020, to increase our share capital, in one or more transactions (including through the issuance of warrants), up to a maximum amount of €4,067,700.72.

The board of directors is authorized to limit or cancel the preferential subscription right of current shareholders (for example, when it decides to issue warrants), if this is in the interest of our company. The board of directors can do this for the benefit of one or more specific persons, even if these persons are not personnel of our company or our subsidiaries.

Pursuant to this authorization, our board of directors may determine to adopt other equity-based compensation plans for our officers, directors, employees or consultants.

ITEM 16H. MINE SAFETY DISCLOSURE

Not applicable.

PART III

ITEM 17. FINANCIAL STATEMENTS

Not applicable.

ITEM 18. FINANCIAL STATEMENTS

See our consolidated financial statements beginning on page F-1 of this annual report.

ITEM 19. EXHIBITS

1.1	Restated Articles of Association of Materialise NV (English translation)
2.1	Deposit Agreement, dated as of June 24, 2014, among Materialise NV and The Bank of New York Mellon (incorporated by reference to Exhibit 4.1 to the Company's Registration Statement on Form F-1 (File No. 333-194982))
2.2	Form of American Depositary Receipt (included in Exhibit 2.1)
2.3	Description of Securities
4.1	2014 Warrant Plan (English translation) (incorporated by reference to Exhibit 10.3 to the Company's Registration Statement on Form F-1 (No. 333-194982))
4.2	Form of Warrant Agreement under 2014 Warrant Plan (English translation) (incorporated by reference to Exhibit 4.6 to the Company's Registration Statement on Form S-8 (No. 333-197236))
4.3	2015 Warrant Plan (English translation) (incorporated by reference to Exhibit 4.5 to the Company's Annual Report on Form 20-F for the year ended December 31, 2015)
4.4	Form of Warrant Agreement under 2015 Warrant Plan (English translation) (incorporated by reference to Exhibit 4.4 to the Company's Registration Statement on Form S-8 (File No. 333-212445))
4.5	Registration Rights Agreement, dated September 15, 2016, among Materialise NV and the Holders party thereto (incorporated by reference to Exhibit 4.8 to the Company's Registration Statement on Form F-3 (No. 333-213649))
4.6	Share and Loan Purchase and Transfer Agreement, dated October 4, 2017, among Materialise GmbH, Materialise N.V. and the Sellers party thereto (incorporated by reference to Exhibit 4.9 to the Company's Annual Report on Form 20-F for the year ended December 31, 2017)
4.7	Merger Deed (English translation) (incorporated by reference to Exhibit 2.1 to the Company's Report on Form 6-K, furnished to the SEC on January 4, 2021)
4.8	Indemnification Agreement, among Materialize NV, Ailanthus NV, Wilfried Vancraen, Hilde Ingelaere and Lunebeke NV (English translation) (incorporated by reference to Exhibit 10.1 to the Company's Report on Form 6-K, furnished to the SEC on January 4, 2021)
4.9	Letter Agreement Regarding Share Issuance and Registration Rights, dated December 31, 2020, among Materialise NV, Wilfried Vancraen and Hilde Ingelaere (incorporated by reference to Exhibit 10.2 to the Company's Report on Form 6-K, furnished to the SEC on January 4, 2021)
8.1	Subsidiaries of Materialise NV
12.1	Certification of Chief Executive Officer Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
12.2	Certification of Chief Financial Officer Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
13.1	Certification of Chief Executive Officer Pursuant to 18 U.S.C. Section 1350, as adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
13.2	Certification of Chief Financial Officer Pursuant to 18 U.S.C. Section 1350, as adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
16.1	Acknowledgement letter of BDO Bedrijfsrevisoren, CVBA
23.1	Consent of KPMG Bedrijfsrevisoren BV, independent registered public accounting firm
23.2	Consent of BDO Bedrijfsrevisoren. CVBA, independent registered public accounting firm

101.INS	XBRL Instance Document
101.SCH	XBRL Taxonomy Extension Schema
101.CAL	XBRL Taxonomy Extension Calculation Linkbase
101.DEF	XBRL Taxonomy Extension Definition Linkbase
101.LAB	XBRL Taxonomy Extension Label Linkbase
101.PRE	XBRL Taxonomy Extension Presentation Linkbase

+ The registrant has omitted portions of the referenced exhibit pursuant to a request for confidential treatment under Rule 24b-2 promulgated under the Exchange Act.

Signatures

The registrant hereby certifies that it meets all of the requirements for filing on Form 20-F and that it has duly caused and authorized the undersigned to sign this annual report on its behalf.

MATERIALISE NV

By: /s/ Wilfried Vancraen
Name: Wilfried Vancraen
Title: Chief Executive Officer

Date: April 30, 2021

INDEX TO CONSOLIDATED FINANCIAL STATEMENTS

Consolidated Financial Statements for the Years Ended December 31, 2020, 2019 and 2018

Report of Independent Registered Public Accounting Firm

To the Shareholders and Board of Directors

Materialise NV:

Opinion on the Consolidated Financial Statements

We have audited the accompanying consolidated statement of financial position of Materialise NV and subsidiaries (the Company) as of December 31, 2020, the related consolidated income statement, consolidated statement of comprehensive income, consolidated statement of changes in equity, and consolidated cash flow statement for the year then ended and the related notes (collectively, the consolidated financial statements). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2020 and the results of its operations and its cash flows for the year ended December 31, 2020, in conformity with International Financial Reporting Standards as issued by the International Accounting Standards Board.

We also have audited the adjustments to the 2019 consolidated financial statements to retrospectively reflect the final accounting of a business combination as described in Notes 2 and 4 to the consolidated financial statements. In our opinion, such adjustments are appropriate and have been properly applied. We were not engaged to audit, review, or apply any procedures to the 2019 consolidated financial statements of the Company other than with respect to the retrospective adjustments and, accordingly, we do not express an opinion or any other form of assurance on the 2019 consolidated financial statements taken as a whole.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2020, based on criteria established in *Internal Control – Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission, and our report dated April 30, 2021 expressed an adverse opinion on the effectiveness of the Company's internal control over financial reporting.

Basis for Opinion

These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these consolidated financial statements based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. We believe that our audits provide a reasonable basis for our opinion.

Critical Audit Matters

The critical audit matters communicated below are matters arising from the current period audit of the consolidated financial statements that were communicated or required to be communicated to the audit committee and that: (1) relate to accounts or disclosures that are material to the consolidated financial statements and (2) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matters below, providing separate opinions on the critical audit matters or on the accounts or disclosures to which they relate.

Preliminary fair value of developed technology and contracts acquired in the RS Print business combination

As discussed in Note 4 to the consolidated financial statements, the Company acquired the remaining 50% shares of RS Print Powered by Materialise NV (RS Print) on November 9, 2020 for a total purchase price of K€5,220. Concurrently, the Company entered into an asset purchase agreement with RS Scan International NV (RS Scan), the former co-shareholder of RS Print, for the acquisition by RS Print of certain assets of RS Scan for a total purchase price of K€ 3,000. As a result of the transaction, the Company acquired developed technology and certain contracts. The preliminary acquisition-date fair values allocated to the acquired developed technology and the acquired contracts were K€ 4,820 and K€ 2,862, respectively.

We identified the assessment of the preliminary fair value of developed technology and contracts acquired in the RS Print business combination as a critical audit matter. Evaluating the key fair value assumptions, including (1) future revenue growth rates, (2) future earnings before interest and tax (EBIT) margins, (3) developed technology royalty rates, and (4) discount rates involved a high degree of subjective auditor judgment. Changes in these assumptions could have a significant impact on the preliminary fair value of the developed technology and contracts acquired. A high degree of subjective auditor judgment, including the involvement of valuation professionals with specialized skills and knowledge, was required in evaluating the assumptions used in the respective valuation model for the acquired developed technology and the acquired contracts.

The following are the primary procedures we performed to address this critical audit matter. We evaluated the design and tested the operating effectiveness of an internal control related to the Company's acquisition-date fair value measurement of intangible assets, including the development of the key assumptions. We evaluated the future revenue growth rates by comparing them to historical growth rates of RS Print and RS Scan, as well as to certain minimum sales quantities and prices contained in the acquired contracts. We evaluated the future EBIT margins by comparing them to historical EBIT margins of RS Print and RS Scan. In addition, we involved valuation professionals with specialized skills and knowledge, who assisted in:

— Evaluating the Company's developed technology royalty rates assumptions compared to licensing transactions for similar intellectual property; and

— Evaluating the Company's discount rate, by comparing it against a discount rate range that was independently developed using publicly available market data for comparable entities.

Impairment analysis for the Engimplan cash generating unit

As discussed in Note 3 to the consolidated financial statements, the Company performs impairment testing on an annual basis and whenever events or changes in circumstances indicate that the carrying amount of a cash generating unit (CGU) may not be recoverable. As discussed in Note 5 to the consolidated financial statements, the Company determined that the carrying value of the Engimplan CGU exceeded its value-in-use at December 31, 2020, resulting in an impairment charge of K€ 2,516.

We identified the evaluation of the impairment analysis for the Engimplan CGU as a critical audit matter. A high degree of subjective auditor judgment was required to evaluate the CGU's forecasted revenue and gross profit growth rates, perpetual revenue growth rate and the discount rate. Changes in these assumptions could have a significant impact on the fair value of the CGU.

The following are the primary procedures we performed to address this critical audit matter. We evaluated the design and tested the operating effectiveness of an internal control over the Company's goodwill impairment analysis including the evaluation of the forecasted revenue and gross profit growth rates, perpetual revenue growth rate, and discount rate assumptions used to estimate the fair value of the reporting units. We evaluated the revenue and gross profit growth rates by comparing them to the CGU's historical performance. We evaluated the revenue forecasts to revenue forecasts used in the purchase price allocation analysis (PPA) performed by the Company for the CGU in 2019 and completed 2020. We evaluated the perpetual revenue growth rates by comparing them to the CGU's historical

performance, to the PPA, and to external market and industry data. We also involved valuation professionals with specialized skills and knowledge, who assisted in evaluating the Company's discount rate, by comparing it against a discount rate range that was independently developed using publicly available market data for comparable entities.

KPMG Bedrijfsrevisoren – KPMG Réviseurs d'Entreprises BV/SRL

/s/ G. Jackers

We have served as the Company's auditor since 2020.

Zaventem, Belgium
April 30, 2021

Report of Independent Registered Public Accounting Firm

Shareholders and Board of Directors
Materialise NV
Leuven, Belgium

Opinion on the Consolidated Financial Statements

We have audited, before the effects of the adjustments to retrospectively apply the final accounting for a business combination that occurred in 2019 as described in Notes 2 and 4 to the consolidated financial statements, the accompanying consolidated statements of financial position of Materialise NV (the "Company") and subsidiaries as of December 31, 2019 and 2018, the related consolidated income statements, statements of comprehensive income, changes in equity, and cash flows for each of the two years in the period ended December 31, 2019, and the related notes (collectively referred to as the "consolidated financial statements"). In our opinion, the consolidated financial statements, before the effects of the adjustments to retrospectively apply the final accounting for a business combination that occurred in 2019 as described in Notes 2 and 4 to the consolidated financial statements, present fairly, in all material respects, the financial position of the Company and subsidiaries at December 31, 2019 and 2018, and the results of its operations and its cash flows for each of the two years in the period ended December 31, 2019, in conformity with International Financial Reporting Standards as issued by the International Accounting Standards Board.

We were not engaged to audit, review, or apply any procedures to the adjustments to retrospectively apply the final accounting for a business combination that occurred in 2019 as described in Notes 2 and 4 to the consolidated financial statements and, accordingly, we do not express an opinion or any other form of assurance about whether such adjustments are appropriate and have been properly applied. Those adjustments were audited by KPMG Bedrijfsrevisoren—KPMG Réviseurs d'Entreprises BV/SRL.

Basis for Opinion

These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's consolidated financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud.

Our audits included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ Veerle Catry

BDO Bedrijfsrevisoren CVBA
Represented by Veerle Catry

We have served as the Company's auditor from 2014 through 2020.

Zaventem, Belgium
April 30, 2020

Consolidated income statements

in 000€, except per share data	Notes	For the year ended December 31, 2020	2019*	2018
Revenue	22,1	170,449	196,679	184,721
Cost of sales	22,2	(76,446)	(87,052)	(82,299)
Gross profit		**94,003**	**109,627**	**102,422**
Research and development expenses	22,3	(27,104)	(23,348)	(22,416)
Sales and marketing expenses	22,4	(44,636)	(52,989)	(46,303)
General and administrative expenses	22,5	(29,337)	(31,786)	(32,310)
Net other operating income	22,6	2,436	5,432	3,771
Operating profit (loss)		**(4,639)**	**6,936**	**5,164**
Financial expenses	22,8	(5,995)	(3,682)	(4,864)
Financial income	22,9	2,452	1,377	3,627
Share in loss of joint venture, after tax	8	(39)	(392)	(475)
Profit (loss) before taxes		**(8,221)**	**4,239**	**3,452**
Income tax benefit/(expense)	22.10	949	(2,595)	(425)
Net profit (loss) for the year		**(7,272)**	**1,644**	**3,027**
Net profit (loss) attributable to:				
The owners of the parent		(7,124)	1,586	3,027
Non-controlling interest		(148)	58	—
Earnings per share attributable to the owners of the parent				
Basic	23	(0.13)	0.03	0.06
Diluted	23	(0.13)	0.03	0.06

* The year 2019 has been restated to reflect the final accounting of the business combination with Engimplan. See additional information in Notes 2 and 4.

The accompanying notes from page F-10 to page F-74 form an integral part of these consolidated financial statements.

Consolidated statements of comprehensive income

in 000€		For the year ended December 31, 2020	2019*	2018
Net profit (loss) for the year		**(7,272)**	**1,644**	**3,027**
Other comprehensive (loss)/ income				
Recycling				
Exchange differences on translation of foreign operations		(6,176)	244	(47)
Non-recycling				
Fair value adjustment through OCI—Equity instruments	10	489	—	—
Other comprehensive (loss)/ income, net of taxes		**(5,687)**	**244**	**(47)**
Total comprehensive (loss)/ income for the year, net of taxes		**(12,959)**	**1,888**	**2,980**
Total comprehensive (loss)/ income attributable to:				
The owners of the parent		(11,896)	2,041	2,980
Non-controlling interest		(1,063)	(153)	—

* The year 2019 has been restated to reflect the final accounting of the business combination with Engimplan. See additional information in Notes 2 and 4.

The accompanying notes from page F-10 to page F-74 form an integral part of these consolidated financial statements.

Consolidated statements of financial position

in 000€	Notes	As of December 31, 2020	2019*	2018
Assets				
Non-current assets				
Goodwill	5	20,342	19,607	17,491
Intangible assets	6	32,981	27,395	26,326
Property, plant & equipment	7	88,267	91,006	92,537
Right-of-use assets	7	10,996	10,586	—
Investments in joint ventures	8	—	39	—
Deferred tax assets	22.10	201	192	315
Investments in convertible loans	10	6,203	2,750	—
Investments in non-listed equity instruments	10	3,842	3,046	2,701
Other non-current assets	10	4,093	3,594	4,536
Total non-current assets		**166,925**	**158,215**	**143,906**
Current assets				
Inventories and contracts in progress	9	10,043	12,696	9,986
Trade receivables	11	30,871	40,977	36,891
Other current assets	10	8,290	8,616	6,936
Cash and cash equivalents	12	111,538	128,897	115,506
Total current assets		**160,742**	**191,186**	**169,319**
Total assets		**327,667**	**349,401**	**313,225**

* The year 2019 has been restated to reflect the final accounting of the business combination with Engimplan. See additional information in Notes 2 and 4.

The accompanying notes from page F-10 to page F-74 form an integral part of these consolidated financial statements.

Consolidated statements of financial position

in 000€	Notes	As of December 31, 2020	2019*	2018
Equity and liabilities				
Equity				
Share capital	13	4,096	3,066	3,050
Share premium	13	141,274	138,090	136,637
Retained earnings	13	(7,395)	(272)	(1,857)
Other reserves	13	(4,871)	(1,378)	(1,841)
Equity attributable to the owners of the parent		**133,104**	**139,506**	**135,989**
Non-controlling interest	13	—	3,276	—
Total equity		**133,104**	**142,782**	**135,989**
Non-current liabilities				
Loans & borrowings	15	90,502	104,673	92,440
Lease liabilities	15	7,086	6,427	—
Deferred tax liabilities	22.10	6,805	5,747	6,226
Deferred income	18	5,327	5,031	4,587
Other non-current liabilities	16	398	696	868
Total non-current liabilities		**110,118**	**122,574**	**104,121**
Current liabilities				
Loans & borrowings	15	13,984	13,389	13,598
Lease liabilities	15	3,539	3,449	—
Trade payables		17,698	18,517	18,667
Tax payables	17	974	3,363	2,313
Deferred income	18	29,555	27,641	23,195
Other current liabilities	19	18,695	17,686	15,342
Total current liabilities		**84,445**	**84,045**	**73,115**
Total equity and liabilities		**327,667**	**349,401**	**313,225**

* The year 2019 has been restated to reflect the final accounting of the business combination with Engimplan. See additional information in Notes 2 and 4.

The accompanying notes from page F-10 to page F-74 form an integral part of these consolidated financial statements.

Consolidated statements of changes in equity

in 000€	Notes	Attributable to the owners of the parent					Non-controlling interest	Total equity
		Share capital	Share premium	Retained earnings	Other reserves	Total		
At January 1, 2020 as reported*		**3,066**	**138,090**	**(211)**	**(1,378)**	**139,567**	**3,107**	**142,675**
Restatement 2019—Engimplan PPA	4	—	—	(61)	—	(61)	169	107
At January 1, 2020 Restated*	2	**3,066**	**138,090**	**(272)**	**(1,378)**	**139,506**	**3,276**	**142,782**
Net loss for the year		**—**	**—**	(7,124)	—	(7,124)	(148)	(7,272)
Other comprehensive (loss)		—	—	—	(4,772)	(4,772)	(915)	(5,687)
Total comprehensive income (loss)		—	—	**(7,124)**	**(4,772)**	**(11,896)**	**(1,063)**	**(12,959)**
Capital increase through conversion of convertible bonds	13	1,000	—	—	—	1,000	—	1,000
Capital increase through exercise of warrants	13	30	3,082	—	—	3,112	—	3,112
Acquisition NCI Engimplan	13	—	—	—	1,279	1,279	(2,213)	(934)
Equity-settled share-based payment expense	14	—	103	—	—	103	—	103
At December 31, 2020		**4,096**	**141,274**	**(7,395)**	**(4,871)**	**133,104**	**—**	**133,104**

in 000€	Notes	Attributable to the owners of the parent					Non-controlling interest	Total equity
		Share capital	Share premium	Retained earnings	Other reserves	Total		
At January 1, 2019		**3,050**	**136,637**	**(1,857)**	**(1,841)**	**135,989**	**—**	**135,989**
Net profit for the year		—	—	1,646	—	1,646	78	1,724
Other comprehensive loss		—	—	—	456	456	(211)	245
Total comprehensive income (loss)		**—**	**—**	**1,646**	**456**	**2,102**	**(133)**	**1,969**
Capital increase through exercise of warrants	13	16	1,252	—	—	1,268	—	1,268
Acquisition NCI Engimplan		—	—	—	—	—	3,240	3,240
Equity-settled share-based payment expense	14	—	201	—	7	208	—	208
At December 31, 2019 as reported		**3,066**	**138,090**	**(211)**	**(1,378)**	**139,567**	**3,107**	**142,675**

in 000€	Notes	Attributable to the owners of the parent					Non-controlling interest	Total equity
		Share capital	Share premium	Retained earnings	Other reserves	Total		
At January 1, 2018		**2,729**	**79,839**	**(4,884)**	**(1,803)**	**75,881**	**—**	**75,881**
Net profit for the year		—	—	3,027	—	3,027	—	3,027
Other comprehensive income/ (loss)		—	—	—	(47)	(47)	—	(47)
Total comprehensive income (loss)		**—**	**—**	**3,027**	**(47)**	**2,980**	**—**	**2,980**
Capital increase in cash	12	312	59,575	—	—	59,887	—	59,887
Capital increase through exercise of warrants	14	9	593	—	—	602	—	602
Capital increase Rapidfit+	—	—	(4,003)	—	—	(4,003)	—	(4,003)
Equity-settled share-based payment expense	14	—	633	—	9	642	—	642
At December 31, 2018		**3,050**	**136,637**	**(1,857)**	**(1,841)**	**135,989**	**—**	**135,989**

* The year 2019 has been restated to reflect the final accounting of the business combination with Engimplan. See additional information in Notes 2 and 4.

The accompanying notes from page F-10 to page F-74 form an integral part of these consolidated financial statements.

Consolidated cash flow statements

in 000€	Notes	For the year ended December 31, 2020	2019*	2018
Operating activities				
Net profit (loss) for the year*		(7,272)	1,644	3,027
Non-cash and operational adjustments				
Depreciation of property, plant & equipment*	7	14,932	14,419	12,223
Amortization of intangible assets	6	4,742	4,859	5,064
Impairment of goodwill and intangible assets	5; 6	4,606	—	—
Share-based payment expense	14	752	302	1,075
Loss (gain) on disposal of property, plant & equipment	7	10	165	(83)
Movement in provisions		137	138	5
Movement in reserve for bad debt and slow moving inventory		516	121	1,293
Financial income	22.9	(2,300)	(1,377)	(581)
Financial expense	22.8	5,821	3,682	2,172
Impact of foreign currencies		61	(176)	(299)
Share in loss of joint venture (equity method)	8	39	392	475
Income taxes and deferred taxes	22.10	(970)	2,595	425
Fair value adjustment	4; 10	(1,093)	—	(192)
Other		—	(245)	87
Working capital adjustment and income tax paid				
Decrease (increase) in trade receivables and other receivables		9,205	216	(3,156)
Decrease (increase) in inventories and contracts in progress		2,724	(745)	812
Increase in trade payables and other payables		583	4,196	7,341
Income tax paid		(2,618)	(2,139)	(1,368)
Interest received		103	355	—
Net cash flow from operating activities		**29,978**	**28,402**	**28,320**

* The year 2019 has been restated to reflect the final accounting of the business combination with Engimplan. See additional information in Notes 2 and 4.

The accompanying notes from page F-10 to page F-74 form an integral part of these consolidated financial statements.

Consolidated cash flow statements

in 000€	Notes	For the year ended December 31, 2020	2019*	2018
Investing activities				
Purchase of property, plant & equipment	7	(11,032)	(13,472)	(18,270)
Purchase of intangible assets	6	(6,618)	(2,193)	(1,836)
Proceeds from the sale of property, plant, equipment and intangibles (net)		552	278	281
Acquisition of subsidiary (net of cash)	4	(8,031)	(6,331)	—
Investments in joint-ventures / shares	8	—	(875)	—
Convertible loan granted	10	(2,836)	(2,743)	—
Other equity investments in non-listed entities	10	(300)	(281)	(2,671)
Interest received		—	—	363
Net cash flow used in investing activities		**(28,265)**	**(25,617)**	**(22,133)**
Financing activities				
Proceeds from loans & borrowings	15	—	29,000	32,554
Repayment of loans & borrowings	15	(13,736)	(12,126)	(18,820)
Repayment of leases	15	(3,640)	(5,283)	(3,102)
Capital increase in parent company	13	4,112	1,268	60,489
Direct attributable expense capital increase	13	—	—	(4,003)
Interest paid		(2,268)	(2,286)	(1,733)
Other financial income (expense), net		(1,356)	208	(150)
Net cash flow from financing activities		**(16,888)**	**10,781**	**65,235**
Net increase/(decrease) of cash and cash equivalents		**(15,175)**	**13,566**	**71,422**
Cash and cash equivalents at beginning of the year	12	128,897	115,506	43,175
Exchange rate differences on cash and cash equivalents		(2,184)	(175)	908
Cash and cash equivalents at end of the year	12	111,538	128,897	115,506

* The year 2019 has been restated to reflect the final accounting of the business combination with Engimplan. See additional information in Notes 2 and 4.

The accompanying notes from page F-10 to page F-74 form an integral part of these consolidated financial statements.

Notes to the consolidated financial statements

1 Corporate information

Materialise NV is a limited liability company with its registered office at Technologielaan 15, 3001 Leuven, Belgium. The consolidated financial statements comprise Materialise NV (the "Company" or "Parent") and its subsidiaries (collectively, the "Group" or "we," "us" and "our"). See Note 28 for a list of subsidiaries of the Company.

The Group is a leading provider of additive manufacturing (AM) software and of sophisticated 3D printing services. The products and services of the Group are organized in the three segments: Materialise Medical, Materialise Software and Materialise Manufacturing. The Group sells its products in Europe, the Americas, Africa and Asia-Pacific.

The consolidated financial statements of the Group for the year ended December 31, 2020 were approved and authorized for issue on April 28, 2021 in accordance with a resolution of the Parent's Board of Directors.

2 Basis of preparation

The consolidated financial statements of the Group for the three years ended December 31, 2020, 2019 and 2018 were prepared in accordance with the International Financial Reporting Standards (IFRS) as issued by the International Accounting Standards Board (IASB) and as adopted by the EU (collectively "IFRS").

These consolidated financial statements have been prepared on a historical cost basis, except for the assets and liabilities that have been acquired as part of a business combination, which have been initially recognized at fair value, and certain financial assets such as the non-listed equity instruments and the convertible loan receivable which are both included in the other non-current assets, the share appreciation rights, and the written put option of Rapidfit which are measured at fair value.

The financial statements are prepared on a going concern basis.

The consolidated financial statements are presented in thousands of euros (K€ or thousands of €) and all "currency" values are rounded to the nearest thousand (€ 000), except when otherwise indicated.

The preparation of financial statements in compliance with IFRS requires the use of certain critical accounting estimates. It also requires Group management to exercise judgment in applying the Group's accounting policies. The areas where significant judgment and estimates have been made in preparing the financial statements and their effect are disclosed in Note 3.

Impacts of COVID-19 on our Business

The current challenges as a result of the COVID-19 outbreak have impacted our operations. We have been taking, and continue to take, the necessary measures in terms of safety and sanitary health provisions, diverse related risk mitigations, and financial measures to manage the challenges that this Covid-period is imposing on running a business. The coronavirus global health crisis adversely impacted our business and results of operations in 2020 and may have a material adverse impact on our business, results of operations, financial condition, cash flows or liquidity during 2021 and beyond.

During 2020, the coronavirus pandemic negatively affected each of our Materialise Software, Materialise Medical and Materialise Manufacturing segments, and had a major impact on our consolidated results of operations

COVID-19 impact on 2020 results. The economic downturn related to the coronavirus pandemic has caused significant reduction in demand for services, production and investments, and has affected our global operations negatively. With respect to each our market segments, for example:

- Materialise Software: A significant portion of the sales of this segment comes from parties that either sell or use 3D printing systems. During 2020, 3D printing manufacturers suffered from canceled orders due to reduced investments from their customers. In addition, our direct sales suffered from a similar negative customer investment climate.
- Materialise Medical: A significant percentage of this segment's revenue stems, directly or indirectly, from elective surgeries. During the second quarter of 2020 in particular, non-elective surgeries were delayed in order to prioritize COVID-19 treatments. In addition, certain of our customer's investments were delayed or canceled.
- Materialise Manufacturing: This segment operates as part of the overall manufacturing sector in Europe. The manufacturing sector has been severely impacted generally by the pandemic, including the automotive and the aerospace industries in particular. There have been far less co-creation initiatives, as well as lower levels of demand for 3D printing service bureaus.

As a result of the negative effect on all of our segments, the coronavirus pandemic had a major impact on our consolidated results of operations.

We were not impacted in 2020 by an increase of bad trade debt, or major delays in trade payments.

New standards, interpretations and amendments adopted by the Group

The following amendments and interpretations issued by the IASB and IFRIC apply for the first time in 2020, but do not have a significant impact on the consolidated financial statements of the Group.

- Amendments to IAS 1 and IAS 8 Definition of Material
- Amendments to IFRS 3 Business Combinations: Definition of a Business
- Amendments to IFRS 9, IAS 39 and IFRS 7 Interest Rate Benchmark Reform – Phase 1
- Amendments to references to the Conceptual Framework in IFRS standards

The Group has not early adopted any standards, interpretations or amendments that have been issued but are not yet effective.

Restatements in the reporting year 2019

The Group has restated the reporting year 2019 for the following impacts:

- Our consolidated financial statements for the year ended December 31, 2019 appearing in our Annual Report on Form 20-F, as filed with the U.S. Securities and Exchange Commission on April 30, 2020 (the "FY 2019 Form 20-F"), included provisional accounting for the Engimplan business combination. The fair value analysis with respect to the assets and liabilities acquired was not yet finalized as of the reporting date.

  As of July 16th, 2020, we completed the fair value analysis of the Engimplan business combination, with corresponding adjustments to goodwill, property, plant and equipment and non-controlling interest as if the accounting for the business combination had been completed at acquisition date. The impact has been accounted for as retrospective adjustments to our consolidated statement of financial position as of December 31, 2019 and our consolidated income statement for the year ended December 31, 2019. Furthermore it includes an additional depreciation charge resulting from a higher adjustment to PP&E as at December 31, 2019, with a total impact on the consolidated reserves and non-controlling interest for the year ended December 31, 2019 amounting to K€ (61) and K€169 respectively.

  We refer to Note 4 for a detailed discussion of the Engimplan business combination.

The impact of the restatements on the consolidated statement of financial position as of December 31, 2019 and the consolidated income statement for the year ended December 31, 2019 is as follows:

Restatement impact on statement of financial position in 000€	As of December 31, 2019		
	As previously reported	IFRS 3 Engimplan	As restated
Assets			
Non-current assets			
Goodwill	20,174	(567)	19,607
Intangible assets	27,395	—	27,395
Property, plant & equipment	90,331	674	91,005
Right-of-use assets	10,586	—	10,586
Investments in joint ventures	39	—	39
Deferred tax assets	192	—	192
Other non-current assets	9,391	—	9,391
Total non-current assets	**158,108**	**107**	**158,215**
Current assets			
Inventories and contracts in progress	12,696	—	12,696
Trade receivables	40,977	—	40,977
Other current assets	8,616	—	8,616
Cash and cash equivalents	128,897	—	128,897
Total current assets	**191,186**	**—**	**191,186**
Total assets	**349,294**	**107**	**349,401**

Equity and liabilities			
Equity			
Share capital	3,066	—	3,066
Share premium	138,090	—	138,090
Consolidated reserves	(195)	(61)	(256)
Other comprehensive loss	(1,394)	(1)	(1,395)
Equity attributable to the owners of the parent	**139,567**	**(62)**	**139,506**
Non-controlling interest	3,107	169	3,276
Total equity	**142,674**	**107**	**142,782**
Non-current liabilities			
Loans & borrowings	104,673	—	104,673
Lease liabilities	6,427	—	6,427
Deferred tax liabilities	5,747	—	5,747
Deferred income	5,031	—	5,031
Other non-current liabilities	697	—	697
Total non-current liabilities	**122,575**	**—**	**122,575**
Current liabilities			
Loans & borrowings	13,389	—	13,389
Lease liabilities	3,449	—	3,449
Trade payables	18,517	—	18,517
Tax payables	3,363	—	3,363
Deferred income	27,641	—	27,641
Other current liabilities	17,686	—	17,686
Total current liabilities	**84,045**	**—**	**84,045**
Total equity and liabilities	**349,294**	**107**	**349,402**

Restatement impact on income statement in 000€	Notes	For the year ended December 31, 2019		
		As previously reported	IFRS 3 Engimplan	As restated
Revenue		196,679	—	196,679
Cost of sales		(86,972)	(80)	(87,052)
Gross profit		**109,707**	**(80)**	**109,627**
Research and development expenses		(23,348)	—	(23,348)
Sales and marketing expenses		(52,989)	—	(52,989)
General and administrative expenses		(31,786)	—	(31,786)
Net other operating income / (expenses)		5,432	—	5,432
Operating profit (loss)		**7,016**	**(80)**	**6,936**
Financial expenses		(3,682)	—	(3,682)
Financial income		1,377	—	1,377
Share in loss of joint venture		(392)	—	(392)
Loss before taxes		**4,319**	**(80)**	**4,239**
Income taxes		(2,595)	—	(2,595)
Net loss for the year		**1,724**	**(80)**	**1,644**
Net loss attributable to:				
The owners of the parent		1,646	(60)	1,586
Non-controlling interest		78	(20)	58

3 Summary of significant accounting policies

Basis for consolidation

The consolidated financial statements comprise the financial statements of the Group and its subsidiaries.

Entities are fully consolidated from the date of acquisition, which is the date when the Group obtains control, and continue to be consolidated until the date when such control ceases. The financial statements of the entities are prepared for the same reporting period as the parent company, using consistent accounting policies. All intra-Group balances, transactions, unrealized gains and losses resulting from intra-Group transactions and dividends are fully eliminated.

The Group attributes profit or loss and each component of other comprehensive income to the owners of the parent company and to the non-controlling interest based on present ownership interests, even if the results in the non-controlling interest have a negative balance.

A change in the ownership interest of a subsidiary, without a loss of control, is accounted for as an equity transaction. If the Group loses control over the subsidiary, it will derecognize the assets (including goodwill) and liabilities of the subsidiary, any non-controlling interest and the other components of equity related to the subsidiary. Any surplus or deficit arising from the loss of control is recognized in profit or loss. If the Group retains an interest in the previous subsidiary, then such interest is measured at fair value at the date the control is lost.

The proportion allocated to the parent and non-controlling interests in preparing the consolidated financial statements is determined based solely on present ownership interests.

As of 9 November 2020, the Group acquired full control over RS Sprint and RS Sprint entered into fully consolidated scope after having been accounted for as a joint venture under the equity method up to 8 November 2020 – see Note 8.

Non-controlling interests

The Group has the choice, on a transaction by transaction basis, to initially recognize any non-controlling interest in the acquiree which is a present ownership interest and entitles its holders to a proportionate share of the entity's net assets in the event of liquidation at either acquisition date fair value or, at the present ownership instruments' proportionate share in the recognized amounts of the acquiree's identifiable net assets. Other components of non-controlling interest such as outstanding share options are generally measured at fair value. The Group has not elected to take the option to use fair value in acquisitions completed to date. Currently the only non-controlling interest resulting from business combinations resulted from Engimplan up to December 1, 2020 at which date the Group acquired the remaining 25% stake in Engimplan Engenharia de Implante Industria & Comércio Ltda. See also note 4.

Foreign currency translation

The Group's consolidated financial statements are presented in euros, which is also the parent company's functional currency. For each entity, the Group determines the functional currency, and items included in the financial statements of each entity are measured using the functional currency.

Financial statements of foreign subsidiaries

Foreign subsidiaries use the local currencies of the country where they operate. The statement of financial position is translated into euro at the closing rate on the reporting date and their income statement is translated at the average exchange rate at each month-end. Differences resulting from the translation of the financial statements of said subsidiaries are recognized in other comprehensive income as "exchange differences on translation of foreign operations".

Foreign currency transactions

Transactions denominated in foreign currencies are translated into euro at the exchange rate at the end of the previous month-end. Monetary items in the statement of financial position are translated at the closing rate at each reporting date and the relevant translation adjustments are recognized in financial or operating result depending on its nature.

Business combinations and goodwill

Business combinations are accounted for using the acquisition method at the acquisition date, which is the date at which the Group obtains control over the entity. The cost of an acquisition is measured as the amount of the consideration transferred to the seller, measured at the acquisition date fair value, and the amount of any non-controlling interest in the acquiree.

The Group measures goodwill initially at cost at the acquisition date, being:

- the fair value of the consideration transferred to the seller, plus

- the amount of any non-controlling interest in the acquiree, plus
- if the business combination is achieved in stages, the fair value of the existing equity interest in the acquiree re-measured at the acquisition date, less
- the fair value of the net identifiable assets acquired and assumed liabilities

Goodwill is recognized with any impairment in carrying value being charged to the consolidated income statement. Where the fair value of identifiable assets, liabilities and contingent liabilities exceed the fair value of consideration paid, the excess is credited in full to the consolidated income statement on acquisition date.

Acquisition costs incurred are expensed and included in general and administrative expenses.

Any contingent consideration to be transferred by the acquirer will be recognized at fair value at the acquisition date. Subsequent changes to the fair value of the contingent consideration, which is deemed to be an asset or liability, will be recognized in profit or loss. If the contingent consideration is classified as equity, it is not re-measured until it is finally settled within equity.

Acquisition of non-controlling interests are accounted for as an equity transaction.

Investments in joint ventures

The Group carried investment in a joint venture (RS Print NV) up to 8 November 2020, afterwards the Group acquired full control over RS Sprint as of 9 November 2020. We refer to Note 8 on applied accounting treatment in the Group's consolidated financial statements and to Note 4 regarding the accounting treatment applied in acquiring RS Print NV via a business combination in stages.

The Group's investments in its joint venture are accounted for using the equity method up to the moment the Group acquired control. Under the equity method, the investment in the joint venture was initially recognized at cost. The carrying amount of the investment was adjusted to recognize changes in the Group's share of net assets of the joint venture since the acquisition date up to the moment control was obtained after which RS Print NV was fully consolidated.. Goodwill relating to the joint venture was included in the carrying amount of the investment and was not tested for impairment individually.

The income statement reflects the Group's share of the results of operations of the joint venture. Any change in other comprehensive income of the joint venture is presented as part of the Group's other comprehensive income. In addition, when there has been a change recognized directly in the equity of the joint venture, the Group recognizes its share of the change in the statement of changes in equity. If the Group's share of the results in the joint venture equals or exceeds its interest in the joint venture, the Group discontinues recognising its share of further losses. The interest in the joint venture is the carrying amount of the investment in the joint venture together with any long-term interests that in substance form part of the Group's net investment in the joint venture. Unrealized gains and losses resulting from transactions between the Group and the joint venture are eliminated to the extent of the interest in the joint venture. A liability is recognized to the extent that the Group has an obligation to fund the investee's operations or has made payments on behalf of the investee.

After applying equity accounting, the investment is tested for impairment when there is an indication of a possible impairment. At each reporting date, the Group determines whether there is objective evidence that an investment in a joint venture is impaired. If there is such evidence, the Group calculates the amount of impairment as the difference between the recoverable amount of the Group's interest in the joint venture (higher of value in use and fair value less costs to sell), and then recognizes the loss as 'Share of profit or loss of joint ventures' in the income statement.

Property, plant & equipment

Property, plant and equipment is stated at cost, net of accumulated depreciation and/or accumulated impairment losses, if any. Such cost includes borrowing costs directly attributable to construction projects if the asset necessarily takes a substantial period of time to get ready for its intended use, it is probable that they will result in future economic benefits to the Group and the cost can be measured reliably. When significant parts of property, plant and equipment are required to be replaced at intervals, the Group recognizes such parts as individual assets with specific useful lives and depreciates them accordingly. Likewise, when a major inspection is performed, its cost is recognized in the carrying amount of the property, plant and equipment as a replacement if the recognition criteria are satisfied. All other repair and maintenance costs are recognized in the income statement as incurred.

Depreciation is calculated on a straight-line basis over the estimated useful lives of the assets as follows:

- Buildings: 20-30 years
- Machinery: 5-12 years
- IT assets: 3-5 years
- Fixtures & Furniture: 10-15 years
- Vehicles: 2-4 years
- Leasehold Building Improvements: 10 years

Land is not depreciated.

An item of property, plant and equipment and any significant part initially recognized is derecognized upon disposal or when no future economic benefits are expected from its use or disposal. Any gain or loss arising on derecognition of the asset (calculated as the difference between the net disposal proceeds and the carrying amount of the asset) is included in the income statement when the asset is derecognized.

The assets' residual values, useful lives and methods of depreciation are reviewed at each financial year-end and adjusted prospectively, if appropriate.

Right-of-use assets and related liabilities

Right-of-use assets:

The Company recognizes right-of-use assets at the commencement date of the lease (i.e., the date the underlying asset is available for use). Right-of-use assets are measured at cost, less any accumulated depreciation and impairment losses, and adjusted for any remeasurement of lease liabilities. The cost of right-of-use assets includes the amount of lease liabilities recognized, initial direct costs incurred, the estimated cost of any asset retirement obligation and lease payments made at or before the commencement date less any lease incentives received. Unless the Company is reasonably certain to obtain ownership of the leased asset at the end of the lease term, the recognized right-of-use assets are depreciated on a straight-line basis over the shorter of its estimated useful life and the lease term:

- Property leased Assets: Lease terms up to 10 years or useful life of 10-15 years when reasonable certain ownership will be obtained at the end of the lease
- Leased machines: Lease terms up to 10 years or useful life of 5-10 years when reasonable certain ownership will be obtained at the end of the lease
- Leased vehicles: Lease terms up to 4 years or useful life of 4 years when reasonable certain ownership will be obtained at the end of the lease

Right-of-use assets are subject to impairment.

Lease liabilities:

At the commencement date of the lease, the Company recognizes lease liabilities measured at the present value of lease payments to be made over the lease term. The lease payments include fixed payments (including in substance fixed payments) less any lease incentives receivable, variable lease payments that depend on an index or a rate, and amounts expected to be paid under residual value guarantees. The lease payments also include the exercise price of a purchase option reasonably certain to be exercised by the Company and payments of penalties for terminating a lease, if the lease term reflects the Company exercising the option to terminate. The variable lease payments that do not depend on an index or a rate are recognized as expense in the period on which the event or condition that triggers the payment occurs. In calculating the present value of lease payments, the Company uses the incremental borrowing rate at the lease commencement date if the interest rate implicit in the lease is not readily determinable. After the commencement date, the amount of lease liabilities is measured at amortized cost using the effective interest rate method.

In addition, the carrying amount of lease liabilities is remeasured when there is a change in future lease payments arising from a change in an index or rate, if there is a change in the Group's estimate of the amount expected to be payable under a residual value guarantee, if the Group changes its assessment of whether it will exercise a purchase, extension or termination option or if there is a revised in-substance fixed lease payment. When the lease liability is remeasured in this way, a corresponding adjustment is made to the carrying amount of the right-of-use asset, or is recorded in profit or loss if the carrying amount of the right-of-use asset has been reduced to zero.

Short-term leases and leases of low-value assets:

The Company applies the short-term lease recognition exemption to its short-term leases of machinery and equipment (i.e., those leases that have a lease term of 12 months or less from the commencement date and do not contain a purchase option) however this exemption is not applied for property leases. It also applies the lease of low-value assets recognition exemption to leases of office equipment that are considered of low value (i.e., below k€ 5). Lease payments on short-term leases and low-value assets are recognized in the income statement when incurred.

Borrowing costs

Borrowing costs directly attributable to the acquisition, construction or production of a qualified asset that necessarily takes a substantial period of time to prepare for its intended use or sale are capitalized as part of the cost of the respective assets. All other borrowing costs are expensed in the period they occur. Borrowing costs consist of interest and other costs that an entity incurs in connection with the borrowing of funds.

Research and development

Research and development includes the costs incurred by activities related to the development of software solutions (new products, updates and enhancements), guides and other products.

Development activities involve the application of research findings or other knowledge to a plan or a design of new or substantially improved (software) products before the start of the commercial use.

Development expenditures on an individual project are recognized as an intangible asset when the Group can demonstrate:

- the technical feasibility of completing the intangible asset so that the asset will be available for use or sale;
- its intention to complete and its ability to use or sell the asset;
- how the asset will generate future economic benefits;
- the availability of resources to complete the asset; and
- the ability to measure reliably the expenditure during development.

The Group has determined that the conditions for recognizing internally generated intangible assets from proprietary software, guide and other product development activities are not met until shortly before the products are available for sale, unless either (i) the Group has strong evidence that the above criteria are met and a detailed business plan is available showing the asset will on a reasonable basis generate future economic benefits or (ii) the development is done based upon specific request of the customer, it is highly likely that the Group will be able to market the product also to other parties than the customer, the development is subject to an agreement and the substance of the agreement is that the customer reimburses the Group for a significant portion, but not all, of the development expenses incurred. As such, development expenditures not satisfying the above criteria and expenditures on the research phase of internal projects are recognized in the consolidated income statement as incurred. Internally generated intangible assets from proprietary software are amortized over their useful lives, starting from the moment they are ready for use/available for sale.

Following initial recognition of the development expenditure as an asset, the asset is carried at cost less any accumulated amortization and accumulated impairment losses. Amortization of the asset begins when development is complete and the asset is available for use. It is amortized over the period of expected future benefit, which is determined on a project-by-project basis. Amortization is recorded in cost of sales. During the period of development, the asset is tested for impairment at least annually or whenever there is an indication of impairment.

Intangible assets other than goodwill and capitalized development expenditures

Intangible assets comprise acquired technology and customer portfolio, patents and licenses and technology and customers acquired in connection with business combinations. Those intangible assets are measured on initial recognition at cost, except for the acquired technology and customers arising from business combinations, which are measured initially at fair value. Following initial recognition, intangible assets other than goodwill are carried at cost less any accumulated amortization and accumulated impairment losses, if any.

The useful life of the intangible assets is as follows:

- Software: 3 years;
- Perpetual licences for ERP & front end software : 10 years;
- Software with subscription license : subscription term
- Patents and licenses: 10 years;
- Acquired customers and Technology: 5-20 years;
- Order Backlog: Period over which orders will be completed.

The intangible assets with finite lives are amortized over their useful economic life and assessed for impairment whenever there is an indication that the intangible asset may be impaired. The amortization period and the amortization method for an intangible asset with a finite useful life are reviewed at least at the end of each reporting period. The amortization expense on intangible assets with finite lives acquired through business combination is recognized in the consolidated income statement in the line “net other operating income”.

Impairment of goodwill and other non-financial assets (excluding inventories and deferred tax assets)

Impairment tests on goodwill and other intangible assets with indefinite useful economic lives, assets under construction or capitalized development expenses which are not amortized yet, are undertaken annually at the financial year end. Other non-financial assets and goodwill are subject to impairment tests whenever events or changes in circumstances indicate that their carrying amount may not be recoverable. Where the carrying value of an asset exceeds its recoverable amount (i.e. the higher of value in use and fair value less costs to sell), the asset is written down accordingly.

Where it is not possible to estimate the recoverable amount of an individual asset, the impairment test is carried out on the smallest Group of assets to which it belongs for which there are separately identifiable cash flows: its cash generating units (CGUs). Goodwill is allocated on initial recognition to each of the Group’s CGUs that are expected to benefit from the synergies of the combination giving rise to the goodwill.

The Group bases its impairment calculation on detailed budgets and forecast calculations, which are prepared separately for each of the Group’s CGUs to which the individual assets are allocated. These budgets and forecast calculations generally cover a period of five years. For longer periods, a long-term growth rate is calculated and applied to future cash flows projected after the fifth year.

Impairment charges are included in profit or loss, except, where applicable, to the extent they reverse gains previously recognized in other comprehensive income. An impairment loss recognized for goodwill is not reversed.

Where goodwill forms part of a cash-generating unit and part of the operation within that unit is disposed of, the goodwill associated with the operation disposed of is included in the carrying amount of the operation when determining the gain or loss on disposal of the operation. Goodwill disposed of in this circumstance is measured based on the relative values of the operation disposed of and the portion of the cash-generating unit retained.

Inventories and Contracts in progress

Inventories are valued at the lower of cost and net realizable value. Costs incurred in bringing each product to its present location and condition are accounted for as follows:

- Raw materials: purchase cost on a first in, first out basis; and
- Finished goods and work in progress: cost of direct materials and labor and a proportion of manufacturing overheads based on the normal operating capacity, but excluding borrowing costs.

Net realizable value is the estimated selling price in the ordinary course of business, less estimated costs of completion and the estimated costs necessary to make the sale.

A write-off of inventories is estimated based on an ageing or rotation analysis.

Work in progress relates to production of inventory for which a customer has not yet been secured, while contracts in progress are contract assets that relate to production for specific customers in performance of a signed contract. We refer also to the accounting policy on revenue recognition.

Financial assets

Trade receivables and debt instruments issued are initially recognized when they are originated. All other financial assets are initially recognized when the Group become a party of the contractual provisions of the instrument.

Financial assets are classified at initial recognition, and subsequently measured either at amortized cost, either fair value through other comprehensive income (OCI), and fair value through profit or loss. The classification of financial assets at initial recognition depends on the financial asset’s contractual cash flow characteristics and the Group’s business model for managing them.

With the exception of trade receivables that do not contain a significant financing component or for which the Group has applied the practical expedient, the Group initially measures a financial asset at its fair value plus transaction costs, in the case of a financial asset not at fair value through profit or loss. Trade receivables that do not contain a significant financing component or for which the Group has applied the practical expedient are measured at the transaction price.

For purposes of subsequent measurement, financial assets are classified in four categories:

- Financial assets at amortized cost;
- Financial assets at fair value through OCI with recycling of cumulative gains and losses (debt instruments);
- Financial assets designated at fair value through OCI with no recycling of cumulative gains and losses upon derecognition (equity instruments); and
- Financial assets at fair value through profit or loss.

Financial assets measured at amortized cost

This category is the most relevant to the Group. The Group measures financial assets at amortized cost if both of the following conditions are met:

- The financial asset is held within a business model with the objective to hold financial assets in order to collect contractual cash flows; and
- The contractual terms of the financial asset give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding.

Financial assets, trade and other receivables, cash and cash equivalents at amortized cost are subsequently measured using the effective interest rate (EIR) method and are subject to impairment. Gains and losses are recognized in profit or loss when the asset is derecognized, modified or impaired.

Financial assets at fair value through OCI with recycling of cumulative gains and losses (debt instruments)

The Group currently does not have financial assets at fair value through OCI with recycling of cumulative gains and losses.

Financial assets designated at fair value through OCI with no recycling of cumulative gains and losses upon derecognition (equity instruments)

The Group has irrevocably elected at initial recognition to classify the minority equity investments in the non-listed companies Essentium Inc and AM-Flow BV, as disclosed in Note 10 and Note 20, as financial assets designated at fair value through OCI as this measurement is most representative of the business model for these assets. Gain and losses on these financial assets are never recycled to profit and loss. Equity instruments designated at fair value through OCI are not subject to impairment assessment.

Financial assets measured at fair value through profit or loss

The Group does have the following financial assets classified as financial assets at fair value through profit or loss:

- derivatives,
- convertible loans granted to companies Fluidda and Ditto as disclosed in Note 10;.

Those financial assets are carried in the statement of financial position at fair value with changes recognized in the income statement in the lines financial income/expense.

Derecognition

A financial asset is derecognized when:

- The rights to receive cash flows from the asset have expired, or
- The Group has transferred its rights to receive cash flows from the assets.

The Group has a factoring agreement in place with one subsidiary whereby its rights to receive the cash flows from the trade receivables are transferred to the factor on a non-recourse basis. The related trade receivables are derecognized at the moment that the cash is received from the factor.

Impairment of financial assets

Further disclosures relating to impairment of financial assets are also provided in Note 3 Significant accounting judgments, estimates and assumptions.

The Group recognizes an allowance for expected credit losses (ECLs) for all debt instruments not held at fair value through profit or loss.

For trade receivables and contract assets, the Group applies a simplified approach in calculating ECLs. A loss allowance is recognized at each reporting date based on lifetime ECLs. The Group established a provision matrix that is based on its historical loss experience, adjusted for forward-looking factors specific to the debtors and the economic environment.

For all other receivables, ECLs are based on the difference between the contractual cash flows due in accordance with the contract and all the cash flows that the Group expects to receive, discounted at an approximation of the original effective interest rate. The expected cash flows will include cash flows from the sale of collateral held or other credit enhancements that are integral to the contractual terms. ECLs are recognized in two stages. For credit exposures for which there has not been a significant increase in credit risk since initial recognition, ECLs are provided for credit losses that result from default events that are possible within the next 12-months (a 12-month ECL). For those credit exposures for which there has been a significant increase in credit risk since initial recognition, a loss allowance is required for credit losses expected over the remaining life of the exposure, irrespective of the timing of the default (a lifetime ECL). When determining whether the credit risk has increased significantly since initial recognition, the group considers reasonable and supportable information that is relevant and available with undue cost or effort, including both quantitative and qualitative information and analysis, based on the Group’s historical experience and informed credit assessments, that includes

forward-looking information. The Group assumes that the credit risk on a financial asset has increased significantly if it is more than 30 days past due. An event of default takes place when the debtor is unlikely to pay its credit obligations to the Group in full or when the financial asset is more than one year past due.

Financial liabilities

All financial liabilities are recognized initially at fair value and, in the case of loans and borrowings and payables, net of directly attributable transaction costs.

The Group's financial liabilities include trade and other payables, loans and borrowings including bank overdrafts and derivative financial instruments including written put options over non-controlling interests.

Financial liabilities at amortized cost

The trade and other payables, and loans and borrowings are classified as financial liabilities at amortized cost.

Those financial liabilities are measured at amortized cost using the effective interest rate method. Gains and losses are recognized in the income statement when the liabilities are derecognized as well as through the effective interest rate method amortization process.

Financial liabilities at fair value through profit and loss

The derivative financial instruments are classified as financial liabilities at fair value through profit and loss except for the written put options on non-controlling interests which is disclosed below.

Written put options on non-controlling interest

The Group recognizes a financial liability for the written put options on non-controlling interest. The written put options have a variable redemption price based on a formula as specified in the contract (see Note 13).

- The financial liability is initially recognized at fair value and the fair value is reclassified from non-controlling interest and, for any amount higher than the non-controlling interest, from consolidated reserves.
- The fair value is determined as the present value of the redemption amount.
- Any change in the fair value as a result of a change in the estimated redemption price is recognized directly in consolidated reserves. Any unwinding effect of the present value of the redemption price is recognized directly in profit and loss (financial cost).
- No share of profit is allocated to the non-controlling interest.
- Upon exercise of the written put option, the carrying value will be offset with the cash payment received. When the written put option is not exercised, the carrying value of the financial liability is derecognized against non-controlling interest with the difference going to consolidated reserves.

Compound financial instruments

The Group has issued convertible debt which is accounted for as a compound financial instrument. For those instruments, the Group determines the carrying amount of the liability component by measuring the fair value of a similar liability (including any embedded non-equity derivative features) that does not have an associated equity component. The carrying amount of the equity instrument is then determined by deducting the fair value of the financial liability from the fair value of the compound financial instrument as a whole. Directly attributable transaction costs are apportioned between the liability and equity components of the convertible debt instrument, based on the allocation of proceeds to the liability and equity components when the instruments are initially recognized. Subsequent to initial recognition, the liability component of a compound financial instrument, is measured at amortized cost using the effective interest method. The equity component of a compound financial instrument is not remeasured.

Derecognition

A financial liability is derecognized when the obligation under the liability is discharged or cancelled or expires.

Offsetting

Financial assets and financial liabilities are offset and the net amount is reported in the consolidated statement of financial position if there is a currently enforceable legal right to offset the recognized amounts and there is an intention to settle on a net basis, or to realize the assets and settle the liabilities simultaneously.

Share capital

Financial instruments issued by the Group are classified as equity only to the extent that they do not meet the definition of a financial liability or financial asset. The Group's ordinary shares are classified as equity instruments.

Provisions

Provisions are recognized when the Group has a present obligation (legal or constructive) as a result of a past event, it is probable that an outflow of resources embodying economic benefits will be required to settle the obligation and a reliable estimate can be made of the amount of the obligation.

Pensions benefits

The Group has a defined contribution obligation where the Group pays contributions based on salaries to an insurance company, in accordance with the laws and agreements in each country.

The Belgian defined contribution pension plans are by law with variable minimum returns based on the Belgian government bonds, with a minimum of 1.75% and a maximum of 3.75%, effective for contributions paid as from 2016. For contribution paid until 2015, the minimum guaranteed return is 3.25% on employer contributions and 3.75% on employee contributions.

These plans qualify as defined benefit plans. Contributions are recognized as expenses for the period in which employees perform the corresponding services. Outstanding payments at the end of the period are shown as other current liabilities.

Those plans are not accounted for as a defined benefit plan as they are considered to be not material.

Share based payments

Directors and employees (including senior executives) of the Group receive remuneration in the form of share-based payments, whereby employees render services as consideration for equity instruments (equity-settled transactions). The Group currently has only warrants and share-appreciation rights as share-based payments.

Equity-settled transactions

Equity-settled share-based payments to employees and others providing similar services are measured, indirectly, at the fair value of the equity instruments granted. The cost of equity-settled transactions is recognized, together with a corresponding increase in other capital reserves in equity, over the period in which the performance and/or service conditions are fulfilled. The cumulative expense recognized for equity-settled transactions at each reporting date until the vesting date reflects the extent to which the vesting period has expired and the Group's best estimate of the number of equity instruments that will ultimately vest. The income statement expense or credit for a period represents the movement in cumulative expense recognized at the beginning and end of that period and is recognized as employee benefits expense.

The Group does currently only have equity-settled share-based payments that have service-based vesting conditions and no instruments with market vesting conditions.

No expense is recognized for awards that do not ultimately vest.

When the terms of an equity-settled award are modified, the minimum expense recognized is the expense as if the terms had not been modified, if the original terms of the award are met. An additional expense is recognized for any modification that increases the total fair value of the share-based payment transaction, or is otherwise beneficial to the employee as measured at the date of modification.

When an equity-settled award is cancelled, it is treated as if it vested on the date of cancellation, and any expense not yet recognized for the award is recognized immediately. This includes any award where non-vesting conditions within the control of either the entity or the employee are not met. However, if a new award is substituted for the cancelled award, and designated as a replacement award on the date that it is granted, the cancelled and new awards are treated as if they were a modification of the original award, as described in the previous paragraph.

Cash-settled transactions

The Group has cash-settled share-based payment transaction for certain employees in certain countries due to legal requirements (in the form of share-appreciation rights). The cost of cash-settled transactions is measured initially at fair value at the grant date. This fair value is expensed over the period until the vesting date with recognition of a corresponding liability. The liability is remeasured to fair value at each reporting date up to, and including the settlement date, with changes in fair value recognized in employee benefits expense.

Revenue from contracts with customers

The Group's revenue, which is presented net of sales taxes, is primarily generated by the sale of our software and 3D printed products and services. Software revenue is comprised of perpetual and periodic licenses, maintenance revenue and software development service fees. Perpetual license holders may opt to take an annual maintenance contract, which leads to annual fees. Periodic licenses entitle the customer to maintenance, support and product updates without additional charge. Revenue from prototypes and end products involving 3D printing technology is derived from our network of production centers and may include support and services such as pre-production collaboration prior to the actual production.

The Group sells its products and software through its direct sales force and through authorized distributors.

Software license revenue, maintenance and/or software development service fees may be bundled in one arrangement, or may be sold separately.

The Group recognizes revenue for goods including software based on the five-step model as a result of the application of IFRS 15 since January 1, 2018.

- Identify the contract(s) with a customer;
- Identify the performance obligations in the contract;
- Determine the transaction price;
- Allocate the transaction price to the performance obligations in the contract; and
- Recognize revenue when (or as) the entity satisfies a performance obligation.

Revenue from contracts with customers is recognized when control of the goods or services are transferred to the customer at an amount that reflects the consideration to which the Group is expected to be entitled in exchange from those goods and services.

If the consideration in a contract includes a variable amount, the Group estimates the amount of consideration to which it will be entitled in exchange for transferring the goods to the customer. The variable consideration is estimated at contract inception and constrained until it is highly probable that a significant revenue reversal in the amount of cumulative revenue recognized will not occur when the associated uncertainty with the variable consideration is subsequently resolved. Variable consideration is mainly related to quantities sold, volume (step-based) rebates and development time spend.

Prototypes and end products involving 3D printing technology

The Group recognizes revenue on the sale of goods to the customer or distributor at a point in time when control of the asset is transferred, generally upon shipment or delivery taking into account the shipment terms (usually Ex-works or FOB Time of Shipment Incoterms (International Commercial Terms)).

Perpetual licensed software

The sale and/or license of software products is deemed to have occurred at a point in time, i.e. when a customer either has taken possession of or has the ability to take immediate possession of the software and the software key.

Perpetual software licenses can include one year maintenance and support services as a separate performance obligation. The Company sells these maintenance services also on a stand-alone basis and is therefore capable of determining their stand-alone selling price. On this basis, the amount of the embedded maintenance is separated from the fee for the perpetual license and is recognized ratably over the period to which they relate.

Time-based licensed software

The time-based license agreements include the use of a software license for a fixed term and maintenance and support services during the same period. The Company does not sell time-based licenses without maintenance and support services and therefore revenues is satisfied over time for the entire arrangements and is recognized ratably over the term.

Maintenance and support services

Maintenance and support services are satisfied over time and as such, the Group recognizes this revenue ratably on a straight-line basis over the term that the maintenance service is provided. In general, maintenance services are not automatically renewed.

A maintenance and support contract may include a reinstatement for previous years when the customer did not have a maintenance and support contract previously. Revenue from reinstatements are recognized immediately when the maintenance and support services commence.

Software development services (SDS)

SDS include customized development of software components for customers. Revenue from SDS agreements when distinct from other performance obligations is satisfied over time. Revenue is then recognized either on time and material basis or on the stage of completion of each service contract and when the stage of completion can be measured reliably.

The Company determines the percentage-of-completion by comparing labor hours incurred to-date to the estimated total labor hours required to complete the project. The Company considers labor hours to be the most reliable available measure of progress on these projects. Adjustments to the Company's estimates of the time to completion are made when facts resulting in a change become known. When the estimate indicates that a loss will be incurred, such loss is recognized immediately.

Contracts with multiple performance obligations

The Group has entered into a number contracts with multiple performance obligations, such as when selling perpetual licenses that may include maintenance and support (included in price of perpetual licenses) and time-based licenses (that include embedded maintenance and support, both of which may be sold with software development services, training, and other product sales). In some cases, the Group delivers software development services bundled with the sale of the software.

The Group evaluates whether each performance obligation is distinct from each other, i.e. the customer can benefit from the good or service on its own, or with readily available resources. Certain development services significantly modify and/or enhance the software license and as such are not considered distinct and combined with the software license.

In those contracts, whether sold to end-customers or to collaboration partners, the Group uses either price list, historical pricing information or management's best estimate of selling prices (e.g. also using a cost-plus method) to determine the stand-alone selling price for each distinct performance obligation, including software and software-related services such as maintenance and support. In general, elements in such arrangements are also sold on a stand-alone basis and stand-alone selling prices are readily available.

Revenue is allocated to each distinct performance obligation ("PO") based on the relative percentage of the stand-alone selling price for each PO compared to the total of stand-alone selling prices for all PO over the total transaction price and is recognized when the revenue recognition criteria described above are met.

Contracts with collaboration partners in the medical segment also include multiple elements such as software, maintenance and support services, training, software development services, 3D printed products and royalties. Revenue from those contracts is determined and recognized consistent with other multiple element arrangements.

For certain contracts with collaboration partners, the Company also receives up-front fees, paid by customers for certain exclusivity rights granted only on previously acquired perpetual software licenses, which may be bundled with transfer of title, rights and ownership of certain software products and maintenance and support services. In case the up-front fees do not relate to already delivered good or services, the Group include the up-front fees in the total transaction price which is then allocated to all the distinct performance obligations. Other contracts with collaboration partners include prepaid fees to purchase a maximum number of "Plan Only" cases during a 12-month period. In this case, the prepaid fees are recognized over the period of 12 months based on the expected number of "Plan Only" cases that will be purchased.

Contract assets

A contract asset is the right to consideration in exchange for goods or services transferred to the customer. If the Group performs by transferring goods or services to a customer before the customer pays consideration or before payment is due, a contract asset is recognized for the earned consideration that is conditional. Contract assets are only contracts in progress that are disclosed with the line inventory and contracts in progress in the statement of financial position. We refer to our accounting policies regarding Inventories and Contracts in Progress

Contract liabilities

A contract liability is the obligation to transfer goods or services to a customer for which the Group has received consideration (or an amount of consideration is due) from the customer. If a customer pays consideration before the Group transfers goods or services to the customer, a contract liability is recognized when the payment is made or the payment is due (whichever is earlier). Contract liabilities are recognized as revenue when the Group performs under the contract. Contract liabilities are presented as deferred income in the statement of financial position.

Contract costs

The Group does not have significant costs to obtain contracts and those costs are expensed as incurred.

The Group may have costs incurred in fulfilling contracts that are accounted for as intangible assets. When those costs are not in scope of another standards, these costs are accounted for under contracts in progress (see contract assets). For certain contracts, the Group may have significant software development expenses that are not considered a "distinct performance obligation" which are accounted for as an intangible assets. The Group evaluates whether those costs meet the recognition criteria for an intangible assets and when criteria are not met, expenses those costs as incurred.

Government grants

Government grants are recognized when there is reasonable assurance that the grant will be received and all attached conditions will be complied with. When the grant relates to development costs or another expense, it is recognized as income over the grant period necessary to match the income on a systematic basis to the costs that it is intended to compensate. When the grant relates to the construction of buildings, it is recognized as income over the depreciation period of the related building.

Such grants have been received from the federal and regional governments and from the European Union in the forms of grants linked to certain of its research and development programs, reduced payroll taxes and the financing of the construction of an office building in Leuven (Belgium) and in Freiberg (Germany).

Where retention of a government grant related to assets or to income, is dependent on the Company satisfying certain criteria, it is initially recognized as deferred income. When the criteria for retention have been satisfied, the deferred income balance is released to other operating income in the consolidated income statement on a systematic basis over the periods in which the entity recognizes as expenses the related costs for which the grants are intended to compensate.

Other financial income and expenses

Other financial income and expenses include mainly foreign currency gains or losses on financial transactions and bank related expenses.

Taxes

Current income tax

Income tax assets and liabilities for the current period are measured at the amount expected to be recovered from or paid to the taxation authorities. The tax rates and tax laws used to compute the amount are those that are enacted or substantively enacted, at the reporting date.

Current income tax relating to items that are recognized directly in equity is recognized in equity and not in the income statement. Management periodically evaluates positions taken in the tax returns with respect to situations in which applicable tax regulations are subject to interpretation and establishes provisions where appropriate.

Deferred tax

Deferred tax is calculated using the liability method on temporary differences at the reporting date between the tax bases of assets and liabilities and their carrying amounts for financial reporting purposes.

Deferred tax liabilities are recognized for all taxable temporary differences. Deferred tax assets are recognized for all deductible temporary differences, carry forward of unused tax credits and unused tax losses, to the extent that it is probable that taxable profit will be available against which the deductible temporary differences, and the carry forward of unused tax credits and unused tax losses can be utilized.

The carrying amount of deferred tax assets is reviewed at each reporting date and reduced to the extent that it is no longer probable that sufficient taxable profit will be available to allow all or part of the deferred tax asset to be utilized. Unrecognized deferred tax assets are reassessed at each reporting date and are recognized to the extent that it has become probable that future taxable profits will allow the deferred tax asset to be recovered.

Deferred tax assets and liabilities are measured at the tax rates that are expected to apply in the year when the asset is realized or the liability is settled, based on tax rates (and tax laws) that have been enacted or substantively enacted at the reporting date.

Deferred tax assets and deferred tax liabilities are offset, if a legally enforceable right exists to set off current tax assets against current income tax liabilities and the deferred taxes relate to the same taxable entity and the same taxation authority.

Sales tax

Revenue, expenses and assets are recognized net of the amount of VAT, except:

- Where the sales tax incurred on a purchase of assets or services is not recoverable from the taxation authority, in which case the sales tax is recognized as part of the cost of acquisition of the asset or as part of the expense item as applicable; and
- Receivables and payables that are stated with the amount of sales tax included.

The net amount of sales tax recoverable from, or payable to, the taxation authority is included as part of receivables or payables in the statement of financial position.

New and revised standards not yet adopted

The standards, interpretations and amendments issued by the IASB and relevant for the Group, but not yet effective are not expected to have a material impact on the Group's future consolidated financial statements:

- IFRS 17 Insurance Contracts (applicable for annual periods beginning on or after 1 January 2023, but not yet endorsed in the EU).
- Amendments to IAS 1 Presentation of Financial Statements: Classification of Liabilities as Current or Non-current (applicable for annual periods beginning on or after 1 January 2023, but not yet endorsed in the EU).
- Amendments to IAS 16 Property, Plant and Equipment: Proceeds before Intended Use (applicable for annual periods beginning on or after 1 January 2022, but not yet endorsed in the EU).
- Amendments to IAS 37 Provisions, Contingent Liabilities and Contingent Assets: Onerous Contracts — Cost of Fulfilling a Contract (applicable for annual periods beginning on or after 1 January 2022, but not yet endorsed in the EU).
- Amendments to IFRS 3 Business Combinations: Reference to the Conceptual Framework (applicable for annual periods beginning on or after 1 January 2022, but not yet endorsed in the EU).
- Amendment to IFRS 4 Insurance Contracts – deferral of IFRS 9 (applicable for annual periods beginning on or after 1 January 2021).
- Amendments to IFRS 9, IAS 39, IFRS 7, IFRS 4 and IFRS 16 Interest Rate Benchmark Reform – Phase 2 (applicable for annual periods beginning on or after 1 January 2021).
- Annual Improvements to IFRS Standards 2018–2020 (applicable for annual periods beginning on or after 1 January 2022, but not yet endorsed in the EU).

Significant accounting judgments, estimates and assumptions

The preparation of the Group's consolidated financial statements requires management to make judgments, estimates and assumptions that affect the reported amounts of revenue, expenses, assets and liabilities, and the accompanying disclosures. Uncertainty about these assumptions and estimates could result in outcomes that require a material adjustment to the carrying amount of assets or liabilities for future periods.

On an ongoing basis, the Group evaluates its estimates, assumptions and judgments, including those related to revenue recognition, development expenses, share-based payment transactions, income taxes, impairment of goodwill, intangible assets and property, plant & equipment and business combinations, provisions for expected credit losses, convertible loans, equity instruments, useful lives of certain assets and leases.

The Group based its assumptions and estimates on parameters available when the consolidated financial statements were prepared. Existing circumstances and assumptions about future developments, however, may change due to market changes or circumstances arising beyond the control of the Group. Such changes are reflected in the assumptions when they occur.

Revenue recognition

Our revenue recognition policies require management to make significant estimates. Management analyzes various factors, including a review of specific transactions, historical experience, creditworthiness of customers and current market and economic conditions. Changes in judgments based upon these factors could impact the timing and amount of revenue and cost recognized and thus affects our results of operations and financial condition. The significant estimates and judgments relate to:

- The assessment whether a performance obligation is distinct in a bundled sales transactions;
- Estimates of the variable considerations and the assessment of the revenue constraint limitation;
- Estimates of the stand-alone selling prices for each distinct performance obligation; and
- The stage of completion of our customized development of software components for customers when revenue is satisfied over time.

The Group is making significant judgments when performing the assessment of whether a performance obligation is distinct from the other performance obligations in a contract, i.e. whether the good or service has a benefit for the customer in its own or together with readily available resource and/or whether the good or service is highly interrelated or a significant input with another good or service delivered, or whether it significantly modifies or customizes another good or service. The relevant judgments include the following:

- Whether the software license is distinct from the 3D printed guides — in most cases with contracts with collaboration partners in the Materialise Medical segment, the software licenses is combined with the manufacturing of the 3D printed guides as the software license has no benefit for the customer without the manufacturing services.
- Whether the development services are distinct from other performance obligations — in most cases, those performance obligations are distinct however for one contract with a collaboration partner in the Materialise Medical segment, the software license is combined with the license and the 3D printed guides as one "distinct" performance obligation.

For the stand-alone selling prices, the Group is using prices from price list or historical prices for similar transactions. However, in certain cases, such information is not immediately available and in such cases, the Group estimates the stand-alone selling price by using a cost-plus or another estimate. In addition, for certain performance obligations such as development services, stand-alone selling prices also require an estimate of the time to complete the development.

Certain contracts include estimates of variable considerations within the transaction price and assessing the revenue constraint, such as:

- Quantities/volume sold for fixed prices in relation to, but not limited to, manufacturing of 3D printed products, software licenses sold, maintenance renewals;
- Contractual prices may be different based on volume purchased during a certain period;
- FTE spend for development or other services billed on a time and material basis; and
- Volume rebates.

The method applied to estimate the variable consideration is dependent on the number of possible scenarios and the probability of each scenario. In case there are many possible scenarios with a wide range of probabilities (each less than 50%), the Group will use the expected value method while the most likely method is used when there is a scenario with a higher probability (more than 50%).

Variable consideration is not constrained when, based on historical experience, high reliable business forecast and/or the timeframe of the estimates, the Group determines that there is a high probability that this will not result in a future revenue reversal.

We determine the stage of completion for development contracts satisfied over time by comparing labor hours incurred to-date to the estimated total labor hours required to complete the project. We consider labor hours to be the most reliable, available measure of progress on these projects. Adjustments to estimates to complete are made in the periods in which facts resulting in a change become known. When the estimate indicates that a loss will be incurred, such loss is recorded in the period identified. Significant judgments and estimates are involved in determining the percent complete of each contract. Different assumptions could yield materially different results.

Development expenses

Under IAS 38, internally generated intangible assets from the development phase are recognized if certain conditions are met. These conditions include the technical feasibility, intention to complete, the ability to use or sell the asset under development, the availability of adequate technical, financial and other resources to complete the development, the ability to measure reliably the expenditure attributable to the intangible asset during its development and the demonstration of how the asset will generate probable future economic benefits. The cost of a recognized internally generated intangible asset comprises all directly attributable cost necessary to make the asset capable of being used as intended by management. In contrast, all expenditures arising from the research phase are expensed as incurred.

Determining whether internally generated intangible assets from development are to be recognized as intangible assets requires significant judgment, particularly in determining whether the activities are considered research activities or development activities, whether the product enhancement is substantial, whether the completion of the asset is technical feasible considering a company-specific approach, the probability of future economic benefits from the sale or use including an assessment whether FDA approval will be obtained.

The Group has determined that the conditions for recognizing internally generated intangible assets from proprietary software, guide and other product development activities are not met until shortly before the products are available for sale, unless either (i) the Group has strong evidence that the above criteria are met and a detailed business plan is available showing the asset will on a reasonable basis generate future economic benefits or (ii) the development is done based upon specific request of the customer, the Group has the intention to market the product also to other parties than the customer, the development is subject to an agreement and the substance of the agreement is that the customer reimburses the Group for a significant portion of the development expenses incurred. As such, development expenditures not satisfying the above criteria and expenditures on the research phase of internal projects are recognized in the consolidated income statement as incurred. This assessment is monitored by the Group on a regular basis.

The Group has capitalized a total of K€1,135 of internal development expenses during 2020 of which:

- K€702 was related to Tracheal Splint. The total amount capitalized at the end of September 2020 had accumulated to K€2,090 related to the US-market for the Tracheal Splint development project since 2017, based on a positive assessment of all recognition criteria. In September 2020, the FDA however has disapproved the IDE-submission (Investigational Device Exemption submission). An amended IDE submission has been disapproved again on December 17, 2020. Management confirms that the fundamentals of technical feasibility, the IDE approval, successful outcome of the clinical trial and obtaining the FDA's Premarket Approval ("PMA"), remains clearly positive, but will cause a delay of the start of commercialization of approximately 2 years compared to our previous assumptions until commercialization. As a result, the headroom defined as the difference between the development expenses capitalized and to be incurred until PMA and the present value of the expected cash flows until 2030 (the year after which the patent expires) has become negative. The Group concluded that a full impairment of the capitalized expenditures is appropriate for the total amount of K€2,090.
- K€363 relate to capitalized internal development expenses of our digital transformation program for which in total K€2,185 was registered as assets under construction. The balance of K€1,822 consisted of related software arrangements (cloud) for internal use under the form of a perpetual license or subscription agreement. The development expenses related to the implementation of the software meet the criteria for recognition.
- K€70 related to other development programs.

Share-based payment transactions

The Group measures the cost of equity-settled transactions with employees by reference to the fair value of the equity instruments at the date at which they are granted and measured the cost of cash-settled transactions by reference to the fair value of the equity instrument at the date of reporting. The Group has applied the Black-Scholes valuation model to estimate fair value. Using this model requires management to make assumptions with regards to volatility and expected life of the equity instruments. The assumptions used for estimating fair value for share-based payment transactions are disclosed in Note 14 and are estimated as follows:

- Volatility is estimated based on the average annualized volatility of the Group;
- Estimated life of the warrant is estimated to be until the first exercise period which is typically the month after their vesting;
- Fair value of the shares is determined based on the share price of the Group on Nasdaq at the date of issuance. For the grants prior to the initial public offering, the fair value of the shares was estimated based on a discounted cash flow model with 3-year cash flow projections and a multiple of EBITDA determined based on a number quoted peers in the 3D printing industry; and
- The dividend return is estimated by reference to the historical dividend payment of the Group. Currently, this is estimated to be zero as no dividends have been paid since inception.

Income taxes

Deferred tax assets are recognized for unused tax losses to the extent that it is probable that taxable profit will be available against which the losses can be utilized. Significant management judgment is required to determine the amount of deferred tax assets that can be recognized, based upon the likely timing and the level of future taxable profits together with future tax planning strategies.

As at December 31, 2020, the Group had current and non-current receivables related to tax credits for an amount of K€4,647 (2019: K€3,723; 2018: K€3,191)

As at December 31, 2020, the Group had K€50,538 (2019: K€37,440; 2018: K€25,285) of tax losses carried forward and Innovation Income Deductions, of which K€27,878 related to Materialise NV (2019: K€25,172; 2018: K€15,592). These losses relate to the parent and subsidiaries that have a history of losses, in countries where these losses do not expire and may not be used to offset taxable income elsewhere in the Group.

With respect to the unused tax losses of Materialise NV, no deferred tax assets have been recognized in 2020, 2019 and 2018, given that in view of the Belgian Patent Income Deduction and Innovation Income Deduction there is an uncertainty to which extent these tax losses will be used in future years. As from July 1, 2016, the Innovation Income Deduction replaces the former Patent Income Deduction. Under the grandfathering rule the Patent Income Deduction system can still be applied until June 30, 2021. The Belgian Patent Income Deduction allows companies to deduct 80% of the qualifying gross patent income from the taxable basis. Under the Innovation Income Deduction system, companies can deduct up to 85% of their net innovation income from the taxable basis. Based on its analysis in 2018, 2019 and 2020 the Company has assessed that no deferred tax asset should be accounted for with respect to its unused tax losses and unused Innovation Income Deductions carried forward in Belgium.

With respect to the unused tax losses of the other entities, no deferred tax assets have been recognized in 2020 and 2019. The Group has not recognized deferred tax assets on unused tax losses totalling K€22,661 in 2020 (2019: K€10,737; 2018: K€11,906) given that it is not probable that sufficient positive taxable base will be available in the foreseeable future against which these tax losses can be utilized.

If the Group was able to recognize all unrecognized deferred tax assets, the net result would have improved by K€8,705 in 2020 through a deferred tax gain. This would represent the planned recovery of K€36,154 carry forward tax losses in future periods. Further details on taxes are disclosed in Note 22.10.

Impairment of goodwill, intangible assets and property, plant & equipment and determination of the cash-generating-unit.

The Group has goodwill for a total amount of K€20,342 as at December 31, 2020 (2019: K€19,607*; 2018: K€17,491) which has been subject to an impairment test. The goodwill is tested for impairment based on a discounted cash flow model with cash flows for the next five years derived from the budget and a residual value considering a perpetual growth rate. The value in use is sensitive to the discount rate used for the DCF model as well as the expected future cash-inflows and the growth rate used for extrapolation purposes.

Also, as part of the impairment analysis, the Group needs to determine the different CGUs at the lowest non-aggregated level which requires the Group to make judgments about application of the criteria to determine the CGUs based on the facts and circumstances how the entities and business units within the CGU and within the Group operate and are monitored. The level of CGU may also have an impact on certain assumptions to make with regard to transfer pricing.

The key assumptions used to determine the value in use for the different CGUs are disclosed and further explained in Note 5.

The Group capitalized development expenses in 2020 for a total amount K€4,541 (2019: K€1,328; 2018: K€682), including external acquired licences, which as of December 31, 2020 were not yet in the condition as intended by management and as such not amortized. Those development expenses have been subject to an impairment test based on a discounted cash flow model with cash flows derived from the latest business plan. The value in use is sensitive to the discount rate used for the DCF model as well as the expected commercialization date for the products and the expected future cash inflows after commercialization. We refer to the section on development expenses above for further explanations.

When events or changes in circumstances indicate that the carrying amount of the intangible assets and property, plant and equipment may not be recoverable, we estimate the value in use for the individual assets, or when not possible, at the level of CGUs to which the individual assets belong.

During 2020 impairment charges have been recorded for K€4,606 (2019: K€0; 2018: K€0) of which K€2,090 related to capitalized development expenses for the Tracheal Splint and; K€2,516 related to goodwill and intangible assets of the Engimplan CGU.

Business combinations

We determine and allocate the purchase price of an acquired business to the assets acquired and liabilities assumed as of the business combination date. Business combinations are discussed further in Note 4. The purchase price allocation process requires us to use significant estimates and assumptions, including

- estimated fair value of the acquired intangible assets;
- estimated fair value of property, plant and equipment; and
- estimated fair value of the contingent consideration.

The contingent consideration as included in the financial statements is recorded at fair value at the date of acquisition and is reviewed on a regular basis. The fair value of the contingent consideration is based on risk-adjusted future cash flows of different scenarios discounted using appropriate interest rates. The structure of the possible scenarios and the probability assigned to each one of them is reassessed by management at every reporting period and requires judgement from management about the outcome and probability of the different scenarios as well as the evolution of the variables.

While we are using our best estimates and assumptions as part of the purchase price allocation process to accurately value assets acquired and liabilities assumed at the date of acquisition, our estimates and assumptions are inherently uncertain and subject to refinement. Examples of critical estimates in valuing certain of the intangible assets we have acquired or may acquire in the future include but are not limited to:

- future expected cash flows from customer contracts and relationships, software license sales and maintenance agreements;
- the fair value of the plant and equipment
- the fair value of the deferred revenue; and
- discount rates.

Provision for expected credit losses of trade receivables and contract assets

The Group uses a provision matrix to calculate ECLs for trade receivables and contract assets. The provision rates are based on days past due for groupings of various customer segments that have similar loss patterns (i.e., by legal entity).

The provision matrix is initially based on the Group's historical observed default rates. The Group will calibrate the matrix to adjust the historical credit loss experience with forward-looking information. For instance, if forecast economic conditions (i.e., gross domestic product) are expected to deteriorate over the next year which can lead to an increased number of defaults, the historical default rates are adjusted. At every reporting date, the historical observed default rates are updated and changes in the forward-looking estimates are analyzed.

The assessment of the correlation between historical observed default rates, forecast economic conditions and ECLs is a significant estimate. The amount of ECLs is sensitive to changes in circumstances and of forecast economic conditions. The Group's historical credit loss experience and forecast of economic conditions may also not be representative of customer's actual default in the future.

Convertible debt instruments

The Group holds convertible debt instruments issued by Fluidda, Ditto and AM Flow which are measured at fair value through profit & loss. In determining the fair value of those convertible debt instruments, the Group considers different contractual parameters such as the repayment and conversion scenarios and dates. In addition, the Group needs to make significant estimates such as (i) the discount rate, (ii) the probabilities for each repayment and conversion scenario, (iii) the amount of a qualified capital increase that will determine the conversion factor and (iv) the timing for each repayment and conversion scenario.

The Group has the following convertible debt instruments:

- Fluidda: The convertible loan granted to Fluidda in January 2019 has a notional amount of K€2,500. The carrying value of the convertible loan as at December 31, 2020 amounts to K€3,310 which includes a fair value adjustment of K€316 recorded in financial income during 2020. Fluidda is a private start-up company which delivers CRO services for drug development and develops medical devices which require EMA/FDA approvals. Fluidda is currently loss-making. The convertible loan has a duration of 7 years with a 10.0% annual interest rate which are capitalized. The Group has applied a discount factor of 14.44% that is based on the estimated WACC of Fluidda reflecting the uncertainty in relation to the success of the company and the applied estimates by the Group.
- Ditto: The convertible loan granted to Ditto in August 2020 has a notional amount up to K$9,000, which is called-up in periodic tranches when certain milestones are reached or otherwise decided. The carrying value of the portions that were called up as at December 31, 2020 amounts to K€2,892. No fair value adjustment has been recorded as the fair value equals the loan's carrying amount. Ditto is a private technology company which has a software solution for the eyeware industry with iPad app, frame recommendation and virtual try-on technology platform. Ditto is currently loss-making. The convertible loan has a duration of 5 years with a capitalized interest determined at a 8% annual interest rate.
- AM Flow: The Group granted a convertible loan to AM Flow in January 2020 with a notional amount of K€300. The loan was converted into shares of AM Flow in September 2020 at a fair value of K€307.

Equity investment held in Essentium

The Group acquired an equity investment of K$3,300 in Essentium, a non-listed US company during 2018 and 2019. The Group has elected to measure the equity investment at fair value with changes in fair value recognized in OCI. The fair value is estimated based on available information on recent capital increases by Essentium. Based on the valuation of the recent Series B capital round, the Group has estimated that the fair value at December 31, 2020 amounts to K€3,535 with a fair value adjustment recognized in OCI of K€489. No fair value adjustments were recorded in 2019 and 2018.

Fair value measurement of the existing equity interest in RS Print re-measured at the acquisition date 9 November 2020

As explained further in Note 4, the Group entered into a share purchase agreement dated November 9, 2020 and acquired the remaining 50% of the shares of RS Print Powered By Materialise (referred to as "RS Print"). Before this transaction, Materialise NV already had a 50% interest in RS Print. As foreseen by IFRS 3, as part of this step acquisition, the Group remeasured its previously held equity interest to fair value of 9 November 2020, resulting in a fair value of K€770. The fair value was determined based on the consideration paid for the 50% of the shares of the existing shareholders adjusted for certain discounts such as a strategic discount, minority discount and discount for lack of marketability. The strategic discount was estimated based on the synergies expected to be realized by the Group, the Partnership Agreement entered into with Superfeet Inc., the ultimate parent company of the Group's former joint venture partner, and the underlying business plan. The minority discount and discount for lack of marketability were estimated based on available company specific datasets and benchmarks.

Changes in useful life for certain assets

We review the useful life of our definite lived intangible assets and property, plant and equipment on an annual basis considering the current facts and circumstances available. This review resulted in 2019 in a re-assessment of the useful life for certain specific assets in the categories buildings, fixtures, vehicles and machinery. We refer to Note 7 for the impact of the change in useful lives during the year 2019. The intangibles with indefinite useful lives are reviewed each annual reporting to determine whether events and circumstances continue to support an indefinite useful life.

Leases IFRS 16 – estimating the discount rate and probability of exercising extension options/termination options and purchase options

The Group cannot always determine the interest rate implicit in the lease contract and therefore, the Group has to estimate the incremental borrowing rate to measure certain lease liabilities such as buildings. The Group uses for buildings the property yield as reference to determine the incremental borrowing rate. For other assets, the Group generally uses the interest rate implicit in the lease contract or applies the incremental borrowing rate for a portfolio of similar assets. The incremental borrowing rate reflects what the Group "would have to pay", which requires estimation when no observable rates are available or when they need to be adjusted to reflect the terms and conditions of the lease.

In addition, certain lease contracts may have extension options, termination options in case of property leases and/or purchase options in case of leases. The Group estimates whether it is reasonable certain or not, whether those options will be exercised or not, which impact the lease term in case of extension options and termination options and the period over which the lease assets are depreciated in case of purchase options.

4 Business Combinations

Acquisitions in 2020

RS Print

The Group executed a share purchase agreement dated November 9, 2020 and acquired the remaining 50% of the shares of RS Print Powered By Materialise (referred to as "RS Print") for a total purchase consideration in cash of K€5,220. The debt of previous owner of K€655 related to the called unpaid capital is transferred to the Group. Before this transaction, the Group already had a 50% interest in RS Print. The fair value of the previously held equity method investment was valued at K€770. The corresponding gain is presented within net other operating income (Note 22.6).

In determining the fair value of the previously held equity method investment, a strategic discount, a minority discount and a discount for lack of marketability has been considered in relation to the consideration paid for this transaction.

Simultaneously with the share purchase agreement, RS Print and RS Scan International NV ("RS Scan"), the former co-shareholder of RS Print, entered into an asset purchase agreement regarding the acquisition by RS Print of certain assets of RS Scan with closing date on 9 November 2020 for a total purchase consideration in cash of K€3,000.

RS Print is a Belgian-based company that specializes in manufacturing of orthopaedic and medical insoles and the development and commercialization of hardware and software for foot pressure measurement.

The preliminary fair value of the identifiable assets and liabilities at the date of acquisition was assessed at:

in 000€	Carrying value at acquisition date	Fair value adjust-ments	Fair value at acquisi-tion date
Assets			
Developed technology	—	4,820	4,820
Customer relations	—	248	248
Other intangible assets	86	2,862	2,948
Property, plant & equipment	220	—	220
Right-of-use assets	24	—	24
Other non-current financial assets	64	—	64
Inventory	794	265	1,059
Trade receivables	1,096	—	1,096
Other current assets	1,001	—	1,001
Cash & cash equivalents	189	—	189
Total Assets	**3,474**	**8,195**	**11,669**
Liabilities			
Deferred tax liabilities	—	(2,049)	(2,049)
Loans & borrowings	(1,877)	—	(1,877)
Lease liabilities	(24)	—	(24)
Trade payables	(645)	—	(645)
Payroll related payables	(85)	—	(85)
Other liabilities	(262)	—	(262)
Total Liabilities	**(2,893)**	**(2,049)**	**(4,942)**
Total identified assets and liabilities	581	6,146	6,727
Goodwill	—	2,918	2,918
Acquisition price	—	—	9,645

The cash flow from the business combination is as follows:

Cash & cash equivalents acquired	(189)
Acquisition price in cash RS Print shares	5,220
Acquisition price in cash RS Scan assets	3,000
Total cash flow	**8,031**

The preliminary fair value of the identifiable assets and liabilities are included in our consolidated financial statements as per December 31, 2020. We have performed a preliminary fair value analysis of the business combination, with corresponding adjustments to the intangible assets and inventories. The items with the highest likelihood of changing upon the completion of the valuation process include developed technology, customer

relationships, contracts and goodwill.. The accounting for the business combination resulted in fair values at date of acquisition of K€4,820 for developed technology based on the relief-from-royalty valuation method with royalty rates between 8.00% and 10.00% (remaining useful life of 7 years), K€248 for customer relationships based on the multi-period excess earnings method (remaining useful life of 15 years) and K€2,862 for contracts based on the multi-period excess earnings method (remaining useful life of 7 years). A fair value adjustment was identified of K€265 for the inventory. At the same time, a deferred tax liability was recognized of K€ (2,049) on these adjusted fair values. The discount rate (post-tax WACC) used for the valuation was set at 15.80%. The carrying value of the acquired receivables, the trade and other receivables approximate their fair value due to the short term character of these instruments.

There are no contingent considerations payable.

The goodwill recognized is primarily attributable to the trained and knowledgeable workforce and to the expected synergies that will be realized at level of development, manufacturing and existing customer base. The goodwill is not deductible for income tax purposes.

The total acquisition-related costs recognized as an expense in the general & administration costs are K€63.

The contribution of the acquired business to the revenue and net profit (loss) of the Group for the year ended December 31, 2020 were, respectively, K€664 and K€ (520). The pro forma revenue and the pro forma net profit of the acquired business would have been K€1,250 and K€ (1,332), respectively, if the business would have been acquired on January 1, 2020, nevertheless in that case no loss of share in the associate would have been presented of K€ (392). With this business combination, the Group acquired K€1,140 of trade receivables, of which K€44 is estimated not to be collectible.

Acquisitions in 2019

Engimplan

The Group executed a share purchase agreement dated August 6, 2019 and acquired 40% of the shares and voting interest of Engimplan Engenharia de Implante Indústria e Comércio Ltda (referred to as “Engimplan”) for a total purchase consideration in cash of K€6,647.

As part of this transaction, the Group increased its shareholding in Engimplan to 75% with a capital increase of K€5,750 in cash in Engimplan.

The Brazilian-based company is specialist in manufacturing of orthopaedic and cranio-maxillofacial (CMF) implants and instruments. Engimplan will be part of the Medical segment.

The fair value of the identifiable assets and liabilities at the date of acquisition were:

in 000€	Carrying value at acquisition date	Fair value adjust-ments	Fair value at acquisi-tion date
Assets			
Software	214	—	214
Customer relations	—	2,530	2,530
Trademarks	—	556	556
Other intangible assets	9	—	9
Property, plant & equipment	2,268	838	3,106
Right-of-use assets	633	—	633
Other non-current financial assets	3	—	3
Inventory	2,084	96	2,180
Trade receivables	1,802	—	1,802
Other current assets	391	—	391
Cash from capital increase	5,750	—	5,750
Cash & cash equivalents	316	—	316
Total Assets	**13,470**	**4,020**	**17,490**
Liabilities			
Deferred income	(83)	—	(83)
Loans & borrowings	(1,443)	—	(1,443)
Lease liabilities	(633)	—	(633)
Trade payables	(271)	—	(271)
Tax payables	(100)	—	(100)
Payroll related payables	(298)	—	(298)
Other liabilities	(914)	—	(914)
Total Liabilities	**(3,742)**	**—**	**(3,742)**

Total identified assets and liabilities	**9,728**	**4,020**	**13,748**
Goodwill	—	—	2,071
Non-controlling interest	—	—	(3,422)
Acquisition price	—	—	**12,397**

The cash flow from the business combination is as follows:

Cash & cash equivalents acquired	(316)
Cash from capital increase	(5,750)
Acquisition price in cash	12,397
Total cash flow	**6,331**

The fair value of the identifiable assets and liabilities included in our consolidated financial statements per December 31, 2019 were provisional as the final valuation had not been completed by the date these consolidated financial statements were approved for issue by the board of directors. As of July 16th, 2020, we completed the fair value analysis of the Engimplan business combination, which resulted in corresponding adjustments to the goodwill, property, plant and equipment,. The fair value of the identified assets and liabilities were K€736 higher than the provisional value at date of acquisition, with a corresponding reduction in goodwill of K€567 and increase of non-controlling interest of K€169. We refer to Note 2 for the detailed impact of the restatement resulting from the final accounting of the Engimplan business combination.

The accounting for the business combination resulted in fair values at date of acquisition of K€2,530 for customer relationships, K€556 for trademarks; to property, plant and equipment a final fair value of K€3,106 was attributed. A fair value adjustment was identified of K€96 for the inventory. The carrying value of the acquired receivables, the trade and other receivables approximate their fair value due to the short term character of these instruments

There are no contingent considerations payable.

The goodwill recognized is primarily attributable to the trained and knowledgeable workforce and to the expected synergies that will be realized at level of manufacturing and existing customer base. The goodwill is not deductible for income tax purposes.

Acquisitions in 2018

The Group did not complete any Business Combinations during the year 2018.

5 Goodwill

The goodwill has been allocated to the cash generating units ("CGU") as follows:

in 000€	As of December 31, 2020	2019*	2018
CGU: MAT Software	3,241	3,241	3,241
CGU: e-Prototypy	749	800	794
CGU: ACTech	8,812	8,812	8,812
CGU: OrthoView	4,445	4,683	4,467
CGU: MAT NV Manufacturing (Metal)	177	177	177
CGU: Engimplan	—	1,894	—
CGU: RS Print	2,918	—	—
Total	**20,342**	**19,607**	**17,491**

* The year 2019 has been restated to reflect the final accounting of the business combination with Engimplan. See additional information in Notes 2 and 4.

The changes in the carrying value of the goodwill can be presented as follows for the years 2020, 2019 and 2018:

in 000€	Gross	Impair-ment	Total
At January 1, 2018	**17,656**	**(104)**	**17,552**
Additions	—	—	—
Impairment	—	—	—
Currency translation	(61)	—	(61)
At December 31, 2018	**17,595**	**(104)**	**17,491**
Additions	1,864	—	1,864
Currency translation	252	—	252
At December 31, 2019*	**19,711**	**(104)**	**19,607**
Additions	2,918	—	2,918
Impairment	—	(1,367)	(1,367)
Currency translation	(816)	—	(816)
At December 31, 2020	**21,813**	**(1,471)**	**20,342**

The goodwill of Orthoview (UK), e-Prototypy (PL) and Engimplan (BR) include respectively K€ (238), K€ (51) and K€ (527) impact of currency translation in 2020.

The Group has performed an impairment test for all CGUs except RS Print, estimating the Value-in-Use based on a discounted cash flow model with cash flows for the next five years derived from the budget and a residual value considering a perpetual growth rate. Given the recent acquisition of RS Print prior to year-end 31 December 2020, the acquisition price was considered to be representative for the fair value of the CGU RS Print. The MAT NV SAM BE and Cenat are included in the reportable segment "Materialise Software". The CGUs ACTech, e-Prototypy (PL), MAT NV Manufacturing (Metal) and RS Print are included in the reportable segment "Materialise Manufacturing". The CGU Orthoview (UK) and Engimplan (BR) are included in the reportable segment "Materialise Medical".

CGU: MAT Software

The goodwill allocated to the CGU MAT software relates to the goodwill from the acquisition of CENAT in 2015 and the goodwill related to the acquisition of Marcam in 2011 (DE-3D Printing Software).

The impairment test is based on the projected discounted cash flows resulting from the CGU MAT Software, considering a period of five years. The main assumptions for goodwill impairment testing include a discount rate (based on WACC) of 9.86% (11.97% pre-tax) and a perpetual growth rate of 5.00%. Other assumptions include the year-on-year growth rate of the revenue, gross margin and the operating costs which has been determined by management based on past experience. It was concluded that the value in use is higher than the carrying value of the cash generating unit of K€33,625 There are no reasonably possible changes in assumptions that would reduce the value in use below its carrying value of the cash generating unit.

CGU e-Prototypy

The goodwill relates to the acquisition of the Polish entity e-Prototypy . The impairment test on the CGU e-Prototypy is based on the projected discounted cash flows considering a period of five years. The main assumptions include a discount rate (based on WACC) of 11.45% (14.96% pre-tax) and a perpetual growth rate of 2.0%. Other assumptions include the year-on-year growth rate of the revenue, gross margin and the operating costs which has been determined by management based on past experience and continued investments in capex in new 3D printing equipment. It was concluded that the value in use is significantly higher than the carrying value of the cash generating unit K€5,231. Based on the sensitivity analysis where discount rate would increase with 1.0%, the value in use would still be significantly higher than the carrying value of the cash generating units.

CGU Orthoview

The goodwill relates to the acquisition of Orthoview. The impairment test on the CGU Orthoview is based on the projected discounted cash flows considering a period of 5 years.The main assumptions include a discount rate (based on WACC) of 10.25% (13.81% pre-tax) and a perpetual growth rate of 1.00%. Other assumptions include the year-on-year growth rate of the revenue, gross margin and the operating costs which have been determined by management based on past experience. It was concluded that the value in use is higher than the carrying value of the cash generating unit of K€9,672. Based on the sensitivity analysis where discount rate would increase with 1%, the value in use would still be higher than the carrying value of the cash generating unit. No perpetual growth would still result in a value in use that is higher than the carrying value of the cash generating unit.

The Orthoview business is being integrated further in the existing software business within our Materialise Medical segment. Synergies that are expected from joined product lines are not taken into account in the current impairment review as management believes that Orthoview can still be considered a separate cash generating unit in 2020.

CGU ACTECH

The impairment test on the CGU ACTech is based on the projected discounted cash flows, considering a period of 5 years. The main assumptions include a discount rate (based on WACC) of 8.20% (11.46% pre-tax) and a perpetual growth rate of 1.0%. Other assumptions include the year-on-year growth rate of the revenue, gross margin and the operating costs which have been determined by management based on past experience. It was concluded that the value in use is higher than the carrying value of the cash generating unit of K€24,656. Based on the sensitivity analysis where discount rate would increase with 1.0% or other reasonably possible changes in the 5-year projected cash flows (such as lower EBITDA) and perpetual growth rate, the value in use would be € 2.1 million lower than the carrying value of the cash generating unit.

CGU ENGIMPLAN

The impairment test on the CGU Engimplan is based on the projected discounted cash flows, considering a period of 5 years. The main assumptions include a discount rate (based on WACC) of 17.22% (23.43% pre-tax) and a perpetual growth rate of 7.0%, supported by an expected long term inflation rate of 3.50%, continued growth opportunities from the increase of the standard of living in Brazil (including access to medical and health care insurances), a growing population in Brazil and export opportunities in Latin America. Other assumptions include the year-on-year growth rate of the revenue, gross margin and the operating costs which have been determined by local & new management based on past experience. It was concluded that the value in use is lower than the carrying value of the cash generating unit of K€9,292 which has resulted in a full impairment of the goodwill for an amount of K€ (1,367) as well as a partial impairment on intangible assets customer lists and trade marks for respectively K€ (942) and K€ (207) as shown in Note 6. The full impairment charge was recognized in the Consolidated income statement under Net other operating income and are included in the reportable segment ‘Materialise Medical’.

The key events that led to the impairment loss for the CGU Engimplan were

- A loss of business resulting from the Covid 19 pandemic and a slower recovery from this than expected;
- Delay and less advantages of synergies than initially foreseen.

A sensitivity analysis was performed to assess the impact of changes in the key assumptions used on the current estimated value-in-use and can be summarized as follows:

Sensitivity analysis Engimplan impairment	As of December 31,2020		
Relevant assumption	Change applied	Evolution of the value-in-use	in 000€
WACC	1%		630
WACC	-1%		(510)
Perpetual Growth	3.5%		1,340

Perpetual Growth	-3.5%	(655)
Revenue & gross profit growth	5%	1,960
Revenue & gross profit growth	-5%	(1,960)

CGU RS Print

Given the recent acquisition of RS Print prior to year-end 31 December 2020, the acquisition price was considered to be representative for the fair value of the CGU RS Print. As such, the Group considers that no indications existed at 31 December 2020 that the carrying value of the CGU exceeded its fair value.

6 Intangible assets

The changes in the carrying value of the intangible assets can be presented as follows for the years 2020, 2019 and 2018:

in 000€	Patents and licenses	Software	Acquired customers, technology	Developed technology and software under construction	Total
Acquisition value					
At January 1, 2018	**4,497**	**7,638**	**25,595**	**—**	**37,730**
Additions	554	807	32	951	2,344
Acquisition of a subsidiary	—	—	—	—	—
Disposals	(759)	(221)	—	—	(980)
Transfer between accounts	2	—	—	364	366
Currency translation	—	—	(48)	—	(48)
Other	—	17	—	—	17
At December 31, 2018	**4,294**	**8,241**	**25,579**	**1,315**	**39,429**
Additions	209	656	—	1,328	2,193
Acquisition of a subsidiary	38	214	3,048	9	3,309
Disposals	—	(45)	(32)	—	(77)
Transfer between accounts	(109)	1,601	—	(988)	504
Currency translation	1	(10)	86	20	97
Other	3	10	—	(32)	(19)
At December 31, 2019	**4,436**	**10,667**	**28,681**	**1,652**	**45,436**
Additions	378	3,072	—	3,168	6,618
Acquisition of a subsidiary	—	—	7,931	86	8,017
Disposals	(226)	(2,227)	—	(68)	(2,521)
Transfer between accounts	75	47	—	(180)	(58)
Currency translation	(1)	(65)	(1,128)	—	(1,194)
Other	—	—	—	—	—
At December 31, 2020	**4,662**	**11,494**	**35,484**	**4,658**	**56,298**

in 000€	Patents and licenses	Software	Acquired customers, technology and backlogs	Developed technology and software under construction	Total
Amortization & Impairments					
At January 1, 2018	**(2,766)**	**(2,985)**	**(3,379)**	**—**	**(9,130)**
Amortization charge for the year	(749)	(2,310)	(2,005)	—	(5,064)
Disposals	854	206	—	—	1,060
Transfer between accounts	—	—	—	—	—
Currency translation	—	1	22	—	23
Other	—	8	—	—	8
At December 31, 2018	**(2,661)**	**(5,080)**	**(5,362)**	**—**	**(13,103)**
Amortization charge for the year	(246)	(2,582)	(2,031)	—	(4,859)
Disposals	—	23	—	—	23
Transfer between accounts	109	(96)	—	—	13
Currency translation	—	(25)	(126)	—	(151)
Other	—	20	16	—	36
At December 31, 2019	**(2,798)**	**(7,740)**	**(7,503)**	**—**	**(18,041)**
Amortization charge for the year	(465)	(2,223)	(2,021)	—	(4,709)
Impairments	—	—	(1,149)	(2,090)	(3,239)
Disposals	211	2,119	—	(22)	2,308
Transfer between accounts	—	109	—	—	109
Currency translation	1	14	240	—	255
Other	—	—	—	—	—
At December 31, 2020	**(3,051)**	**(7,721)**	**(10,433)**	**(2,112)**	**(23,317)**
Net carrying value					
At December 31, 2020	1,611	3,773	25,051	2,546	32,981
At December 31, 2019	1,638	2,927	21,178	1,652	27,395
At December 31, 2018	1,633	3,161	20,217	1,315	26,326
At January 1, 2018	1,731	4,653	22,216	—	28,600

Patent and licenses include only the directly attributable external costs incurred in registering the patent and obtaining the license. Software relates to purchased software for internal use only except for software development on certain application interfaces that were almost fully funded by a third party. The remaining amortization period is 1.8 years for the main software purchases and 6.4 years for the main patents and licenses.

The ‘Acquired customers and technology’ have been recognized as part of the acquisition of RS Print, Engimplan, ACTech, E-Prototypy, OrthoView, and Cenat (see Note 4). At December 31, 2020, the remaining amortization period for the acquired customers is 14.67 years for RS Print, 8.58 years for Engimplan, 16.75 years for ACTech, 3.75 years for OrthoView, fully amortized for E-Prototypy and 4.25 years for Cenat (2019:9.58 for Engimplan, 17.75 for ACTech, 4.75 years for OrthoView and 5.25 years for Cenat). At December 31, 2020, the remaining amortization period for the acquired technology and contracts is 6.67 years for RS Print.

The net book value of developed technology and software under construction at 31 December 2020 relates primarily to the internal digitalization program. At 31 December 2020, there were no other significant capitalized costs in respect of development activities, following the impairment in the fourth quarter of the year of previously capitalized costs in respect of the Tracheal Splint project. See also Note 3: significant accounting judgments, estimates and assumptions.

The total amortization charge for 2020 is K€4,709 (2019: K€4,859; 2018: K€5,064). As from 2017 the amortization of intangible assets from business combinations is mainly included in the line net operating income of the consolidated income statement.

7 Property, plant & equipment

The changes in the carrying value of the property, plant & equipment can be presented as follows for the year 2020 and 2019:

in 000€	Land and buildings	Plant and equipment	Right-of-use assets	Construction in progress	Total
Acquisition value					
At January 1, 2019	**45,777**	**77,557**	**14,327**	**3,002**	**140,663**
Impact of adoption of IFRS 16	—	—	4,984	—	4,984
Additions	302	7,363	3,429	5,807	16,901
Acquired from business combinations*	61	3,046	633	17	3,757
Disposals	(37)	(6,091)	(753)	—	(6,881)
Transfers	(3,360)	7,077	117	(4,338)	(504)
Currency Translation	150	199	8	6	363
Other**	—	(73)	(1,099)	(80)	(1,252)
At December 31, 2019*	**42,893**	**89,078**	**21,646**	**4,414**	**158,031**
Additions	256	2,600	4,567	8,175	15,598
Acquired from business combinations	—	220	24	—	244
Disposals	—	(2,953)	(1,657)	(38)	(4,648)
Transfers	(15)	7,961	(4,010)	(3,886)	50
Currency Translation	(717)	(2,486)	(423)	(26)	(3,652)
At December 31, 2020	**42,417**	**94,420**	**20,147**	**8,639**	**165,623**
Depreciation					
At January 1, 2019	**(6,071)**	**(33,307)**	**(8,441)**	**(307)**	**(48,126)**
Depreciation charge for the year *	(1,199)	(9,162)	(4,058)	—	(14,419)
Disposals	36	5,704	359	—	6,099
Transfers	200	(1,551)	1,031	307	(13)
Currency Translation	(25)	(190)	(2)	—	(217)
Other	220	(34)	51	—	237
At December 31, 2019*	**(6,839)**	**(38,540)**	**(11,060)**	**—**	**(56,439)**
Depreciation charge for the year	(1,223)	(10,205)	(3,504)	—	(14,932)
Disposals	—	2,632	1,518	—	4,150
Impairment	—	—	—	—	—
Transfers	(11)	(3,961)	3,810	—	(162)
Currency Translation	66	872	85	—	1,023
At December 31, 2020	**(8,007)**	**(49,202)**	**(9,151)**	**—**	**(66,360)**
Net book value					
At December 31, 2020	34,410	45,218	10,996	8,639	99,263
At December 31, 2019*	36,054	50,538	10,586	4,414	101,592
At January 1, 2019	39,706	44,250	5,886	2,695	92,537

* The year 2019 has been restated to reflect the final accounting of the business combination with Engimplan. See additional information in Notes 2 and 4.

** "Other" includes modification of Right-of-use assets for an amount of K€ (554).

The changes in the carrying value of the property, plant and equipment can be presented as follows for the year 2018:

in 000€	Land and buildings	Plant and equipment	Finance leases	Construction in progress	Total
Acquisition value					
At January 1, 2018	**40,184**	**67,117**	**14,303**	**3,754**	**125,358**
Additions	3,079	9,476	792	5,210	18,557
Acquired from business combinations	—	—	—	—	—
Disposals	(99)	(1,882)	(17)	(387)	(2,385)
Transfers	2,728	2,953	(732)	(5,547)	(598)
Currency Translation	(119)	(25)	(19)	(26)	(189)
Other	4	(82)	—	(2)	(80)
At December 31, 2018	**45,777**	**77,557**	**14,327**	**3,002**	**140,663**
Depreciation					
At January 1, 2018	**(4,504)**	**(27,166)**	**(6,623)**	**—**	**(38,293)**
Depreciation charge for the year	(1,560)	(8,010)	(2,346)	(307)	(12,223)
Disposals	26	2,102	6	—	2,134
Transfers	(18)	(253)	514	—	243
Currency Translation	(15)	(53)	8	—	(60)
Other	—	73	—	—	73
At December 31, 2018	**(6,071)**	**(33,307)**	**(8,441)**	**(307)**	**(48,126)**
Net book value					
At December 31, 2018	39,706	44,250	5,886	2,695	92,537
At January 1, 2018	35,680	39,951	7,680	3,754	87,065

The investments in property, plant & equipment and right-of-use assets in 2020 amounted to K€15,598 (2019: K€16,901; 2018: K€18,557). They are mainly related to new machines and installations (K€5,011), land and buildings (K€7,580), IT equipment (K€1,056) and leased vehicles (K€1,714). The investments in 2019 related to new machines and installations (K€7,757), land and buildings (K€4,865), IT equipment (K€1,268) and lease vehicles (K€1,119). The investments in 2018 related to new machines and installations in Belgium and Germany (K€10,747), land and buildings in Germany (K€2,491), IT equipment (K€1,781) and lease vehicles (K€792).

The Group realized a net loss on disposal of property, plant and equipment of K€10 in 2020 (2019: a net loss of K€165; 2018: a net loss of K€83).

No impairment of property, plant and equipment was recorded.

The transfers in 2020 within property, plant and equipment are mainly related to

- the transfers from assets under construction towards plant and equipment of K€3,886, mainly related to the “Green Machine” project;
- the transfer from Right-of-Use of assets to Plant and Equipment due to the obtaining of the ownership for a net book value of K€200;

Assets under construction

Per end of 2020 the main assets under construction are related to our “Green Machine” project for an amount of K€1,998 located in Belgium and buildings located in Germany for an amount of K€6,302.

Changes in useful life for certain assets in 2019

The Group reviews the useful life for the intangible assets and property, plant and equipment on an annual basis considering the current facts and circumstances available. This review resulted in 2019 in a re-assessment of the useful life for certain specific assets in the categories buildings, fixtures, vehicles and machinery. The impact of the change in useful life during the year 2019 resulted in a decrease of the depreciation charges by K€1,147. In 2020 and 2021 the depreciation charge will be less for respectively K€478 and K€276. The effect will be neutralized in 2028 for machines, in 2033 for fixtures and in 2048 for buildings.

The right of use assets can be presented as follows:

The carrying value of Right-of-Use assets at December 31, 2020 was K€10,996 (2019: K€10,586; 2018: K€5,886). Right-of-Use assets are mainly related to 3D printing machines with a carrying value of K€1,480 at December 31, 2020 (2019: K€3,048; 2018: K€4,608) and for which depreciation of K€528 was recorded in 2020 (2019:K€1,045; 2018:K€1,745). New leases in 2020 amount to K€4,567 of which K€1,714 relate to leased motor vehicles (2019:K€1,119; 2018:K€792).

in 000€	Buildings	Vehicles	Equipment	Total
Acquisition value				
At January 1, 2020	6,488	4,275	10,883	21,646
Additions	2,397	1,738	433	4,568
Acquired from business combinations	—	—	24	24
Modifications	—	—	—	—
Disposals	(1,214)	(291)	(152)	(1,657)
Currency Translation	(372)	(10)	(41)	(423)
Transfers	275	(1,157)	(3,129)	(4,011)
Other	—	—	—	—
At December 31, 2020	**7,574**	**4,555**	**8,018**	**20,147**
Depreciation				
At January 1, 2020	**(2,705)**	**(2,030)**	**(6,325)**	**(11,060)**
Depreciation charge for the year	(1,620)	(1,129)	(755)	(3,504)
Acquired from business combinations	—	—	—	—
Modifications	—	—	—	—
Disposals	1,175	272	71	1,518
Currency Translation	47	4	33	84
Transfers	446	992	2,373	3,811
Other	—	—	—	—
At December 31, 2020	**(2,657)**	**(1,891)**	**(4,603)**	**(9,151)**
Net book value				
At December 31, 2020	4,917	2,664	3,415	10,996
At January 1, 2020	3,783	2,245	4,558	10,586

The following amounts related to leases are recognized in profit & loss

(in 000€)	2020
Depreciation expense	(3,504)
Interest expense on lease liabilities	(142)
Expenses related to short-term leases/ low-value assets/ variable lease payments	(554)

The Group has negotiated several contracts with extension and termination options because of common practice in the country or for the asset. Management has exercised significant judgments in determining whether these extension and termination options are reasonably certain to be exercised. The potential future cash flows beyond the period following the exercise of the extension and termination option that are not included in the lease term are presented in the following table:

(in 000€)	2020
Potential (non-discounted) cash flows for terminations options that are not reasonably certain to be exercised:	8
Potential (non-discounted) cash flows for extensions options that are reasonably certain to be exercised	1,293

Pledges

Land and buildings (including buildings under construction) with a carrying amount of K€25,364 (2019: K€26,270; 2018: K€27,319) are subject to pledges to secure several of the Group's bank loans. In addition, pledges have been given on machines with a total carrying amount of K€2,274 (2019: K€2,884; 2018: K€3,533) (Note 24).

8 Investments in joint ventures

The Group has no investments in joint ventures anymore per December 31, 2020.

The Group executed a share purchase agreement dated November 9, 2020 and acquired the remaining 50% of the shares of RS Print Powered By Materialise (referred to as "RS Print"). Before this transaction, Materialise NV had a 50% interest in RS Print. The fair value of the previously held equity method investment was remeasured to fair value at the date of the aforementioned step acquisition, at K€770.

The summarized financial information of RS Print NV of years 2019 and 2018 can be presented as follows:

in 000€	2020	2019	2018
Joint venture's statement of financial position			
Current assets	—	1,546	850
Non-current assets	—	93	114
Goodwill	—	—	—
Current liabilities	—	(1,114)	(756)
Non-current liabilities	—	(448)	(1,096)
Shareholders' deficit (surplus)	—	(77)	888
The joint venture income (loss)			
Revenue	—	1,736	1,186
Profit (loss)	—	(785)	(876)

The Group's share in the loss of the joint venture for 2020 up to the full acquisition as of November 9, 2020 amounted to K€ (39).

The movement of the carrying value of the joint venture is as follows:

in 000€	
Carrying value as of December 31, 2017	**31**
Additional investment	—
Transfer from receivables	444
Share in loss	(475)
Carrying value as of December 31, 2018	**—**
Additional investment	875
Transfer from receivables	(444)
Share in loss	(392)
Carrying value as of December 31, 2019	**39**
Additional investment	—
Transfer to receivables	—
Share in loss of the Joint venture	(39)
Gain from remeasurement previously held equity method investment at fair value	770
Accounted for as Business Combination	(770)
Carrying value as of December 31, 2020	**—**

9 Inventories and contracts in progress

Inventories and contracts in progress include the following:

in 000€	As of December 31, 2020	2019	2018
Raw materials	4,974	7,400	5,616
Work in progress	1,766	2,806	2,151
Finished goods	2,554	1,995	1,390
Contracts in progress	749	495	829
Total inventories and contracts in progress	**10,043**	**12,696**	**9,986**

The amount of the inventory written-off as an expense is K€567 (2019: K€526; 2018: K€229). The expenses are booked in Cost of Sales.

The Group has contracts in progress and advances from customers. The total costs incurred is K€490 and the profit recognized is K€259 as per December 31, 2020. Advances were received for the amount of K€146 with respect to contracts in progress per end of 2020 (2019: K€22; 2018: K€370).

10 Other assets

Other non-current assets

Other non-current assets include the following:

Investments in convertible loans in 000€	As of December 31, 2020	2019	2018
Convertible loan	6,203	2,750	—
Total non-current assets	**6,203**	**2,750**	**—**

The Group has granted a convertible loan to Fluidda in January 2019, with a notional amount of K€2,500. The convertible loan is accounted for as a financial asset measured at fair value with changes in fair value through the income statement. The carrying value of the convertible loan amounts to K€3,310 at 31 December 2020. The convertible loan has a duration of 7 years with a 10.0% annual interest rate which is capitalized. We refer to Note 3 and Note 20.

The convertible loan granted to Ditto in August 2020 has a notional amount up to K$9,000 that will be periodically called-up when certain milestones are reached or otherwise decided. The carrying value of the amount called up as at December 31, 2020 amounts to K€2,892. No fair value adjustment has been recorded as at 31 December 2020, as the fair value equals its carrying amount. We refer to Note 3 and Note 20. The applicable interest rate is 8.0% per annum.

Investments in non-listed equity instruments in 000€	As of December 31, 2020	2019	2018
Non-listed equity investments	3,842	3,046	2,701
Total non-current assets	**3,842**	**3,046**	**2,701**

The non-listed equity investments mainly consist of the investment of K$3,300 in shares of the non-listed company Essentium Inc in 2018 and 2019. The Group holds a non-controlling interest of 5% in this company. The investment in Essentium Inc. is initially recognized at cost and subsequently measured at fair value through OCI. The Group has estimated that the fair value at December 31, 2020 amounts to K€3,535 and consequently, has recognized a fair value adjustment in OCI of K€489. We refer to Note 3 and Note 20.

In addition, the convertible loan granted to AM Flow Holding BV (formerly Borges 3D BV) in January 2020, with a notional amount of K€300, was converted in shares of AM Danube BV (41.70% shares held by Materialise NV) in September 2020 at a fair value of K€307. As such, the Group holds an indirect stake of 8.42% in AM Flow BV (100% owned by AM Flow Holding BV) indirectly through AM Danube BV (41.70% stake held by Materialise NV) and AM Flow Holding BV (20.20% stake held by AM Danube BV). We also refer to Note 3 and Note 20.

Other non-current assets in 000€	As of December 31, 2020	2019	2018
Tax credits	3,381	3,015	3,006
Guarantees and deposits	528	415	405
Non-current receivable on joint venture	—	138	1,096

Other	184	27	29
Total non-current assets	**4,093**	**3,595**	**4,536**

The non-current tax credits relate to tax credits that are not expected to be realized within one year..

Other current assets

Other current assets include the following:

	As of December 31,		
in 000€	2020	2019	2018
Deferred charges	2,841	2,632	2,046
Tax credits	1,243	695	185
Accrued income	260	486	958
Other tax receivables	1,125	3,127	2,286
Grants	1,181	754	687
Other non-trade receivables	1,640	922	774
Total other current assets	**8,290**	**8,616**	**6,936**

The other tax receivables include Value Added Tax (VAT) receivables and corporate tax receivables. The non-trade receivables as at December 31, 2020 include an indemnification asset, related to the AcTech acquisition in 2017, for the amount of K€222.

11 Trade receivables

The trade receivables include the following:

in 000€	As of December 31, 2020	2019	2018
Trade receivables	32,346	42,509	38,764
Allowance for doubtful accounts	(1,475)	(1,532)	(1,873)
Total	**30,871**	**40,977**	**36,891**

Trade receivables are non-interest bearing and are generally on payment terms of 30 to 90 days.

As at December 31, 2020, trade receivables of an initial value of K€1,475 (2019: K€1,532; 2018: K€1,873) were impaired as part of the expected credit losses analysis. Impairment is accounted for under the other operating expenses. See below for changes in the impairment of receivables.

in 000€	
At January 1, 2018	**(990)**
Addition	(1,284)
Usage	182
Reversal	219
At December 31, 2018	**(1,873)**
At January 1, 2019	**(1,873)**
Addition	(141)
Usage	131
Reversal	351
At December 31, 2019	**(1,532)**
Addition	(852)
Usage	301
Reversal	608
At December 31, 2020	**(1,475)**

12 Cash and cash equivalents

Cash and cash equivalents include the following:

in 000€	As of December 31, 2020	2019	2018
Cash at bank	108,399	123,337	105,846
Cash equivalents	3,139	5,560	9,660
Total	**111,538**	**128,897**	**115,506**

Cash at banks earns interest at floating rates based on daily bank deposit rates. Cash equivalents include short-term deposits which are made for varying periods between one day and three months, depending on the immediate cash requirements of the Group, and earn interest at the respective short-term deposit rates.

In connection with the exercise of warrants payments have been received in 2018 from employees for a total amount of K€209, not converted into shares before year-end. In line with regulations the amount of K€209 was posted on a restricted bank account per December 31, 2018. There were no restrictions on cash at December 31, 2020 or 2019.

13 Equity

Share capital

The share capital of the parent company Materialise NV consists of 54,169,257 ordinary nominative shares at December 31, 2020 (2019:53,172,513; 2018:52,890,761) with no nominal but par value of €0.076 in 2020 (2019:€0.058; 2018: €0.058) for a total amount of K€4,096 at December 31, 2020 (2019:K€3,066; 2018:K€3,050).

in 000€, except share data	Total number of ordinary shares	Total share-holders' capital	Total share-premium
Outstanding at January 1, 2018	**47,325,438**	**2,729**	**79,839**
Capital increase in cash—public offering	5,403,125	312	59,575
Expenses directly attributable to public offering	—	—	(4,003)
Capital increase via exercise of warrants	162,198	9	593
Equity settled share-based payments expense	—	—	633
Outstanding at January 1, 2019	**52,890,761**	**3,050**	**136,637**
Capital increase via exercise of warrants	281,752	16	1,252
Equity settled share-based payments expense	—	—	201
Outstanding at January 1, 2020	**53,172,513**	**3,066**	**138,090**
Capital increase via exercise of warrants	487,840	30	3,082
Capital increase via exercise of convertible bonds	508,904	1,000	—
Equity settled share-based payments expense	—	—	103
Merger with Ailanthus NV	13,428,688	1,862	—
Cancellation treasury shares (Ailanthus NV)	(13,428,688)	(1,862)	—
Outstanding on December 31, 2020	**54,169,257**	**4,096**	**141,275**

The shareholders' capital increased by K€30in 2020 as a result of the exercise of warrants outstanding and fully vested. The number of new shares issued was 487,840 at an average price of €6.4 per share, including share premium.

The shareholders' capital increased by K€1,000 in 2020 as a result of the exercise of convertible bonds. The number of new shares issued was 508,904 at an average price of €1.97 per share, including share premium.

On December 31, 2020, the Group has acquired 13,428,688 treasury shares via the merger with the company Ailanthus NV. Ailanthus NV held those shares in the Group. Immediately subsequent the merger, the Group has cancelled all the treasury shares with a corresponding credit to share capital. As part of the merger transaction, the Group issued an equal number of shares to the former shareholders of Ailanthus NV.

Share premium

In Belgium, the portion of the capital increase in excess of par value is typically allocated to share premium.

The carrying value of the share premium is K€141,275 at December 31, 2020 (2019: K€138,090; 2018: K€136,637). The change in 2020 is the result of:

- The capital increase via exercise of warrants of K€3,082; and
- the share-based payment expense of K€103.

The change in 2019 is the result of the share-based payment K€201 and the capital increase via exercise of warrants of K€1,252. The change in 2018 is the result of the share-based payment expense of K€633, the capital increase via exercise of warrants of K€593 and the capital increase in cash-public offering and private placement of K€59,575 minus K€4,003 expenses directly attributable to public offering and private placement.

Other reserves

The nature and purpose of the other reserves is as follows:

in 000€	As of December 31, 2020	2019*	2018
Legal reserve	279	279	279
Other reserves	2,574	(335)	(335)
Equity-settled-based payment expense	72	72	65
Other Comprehensive Income (loss)	(7,796)	(1,394)	(1,850)
Other reserves	**(4,871)**	**(1,378)**	**(1,841)**

Based on the statutory result and after final result allocation approved by the annual shareholders meeting the legal reserve is increased by reserving 5% of the yearly statutory profit until the legal reserve reaches at least 10% of the shareholders' capital. The legal reserve cannot be distributed to the shareholders.

The Group did not pay any dividend during 2020, 2019 and 2018.

Other comprehensive loss

Other comprehensive loss consists of the following:

in '000€	Currency Translation Differences & Other	Fair value adjustment equity investments	Total OCI attributable to the shareholder
At January 1, 2018	**(1,803)**	**—**	**(1,803)**
Currency translation impact	(47)	—	(47)
At December 31, 2018	**(1,850)**	**—**	**(1,850)**
Currency translation impact	456	—	456
At December 31, 2019	**(1,394)**	**—**	**(1,394)**
Currency translation impact	(6,025)	—	(6,025)
Fair value adjustment	—	489	489
Acquisition non-controlling interest—OCI	(866)	—	(866)
At December 31, 2020	**(8,285)**	**489**	**(7,796)**

Non-controlling interest

In 2018 there were no non-controlling interests. In 2019, a non-controlling interest has been recognized for 25% held by third party in Engimplan for an amount of K€3,107 (changed to K€ 3,276*) per end of 2019.

As of December 1, 2020, the Group acquired the remaining 25% non-controlling interest held by a third party in Engimplan in return for the Spine Business. The non-controlling interest with a carrying amount of K€2,213 was derecognized. The gain on the transaction of K€ 1,279 was recognized within other reserves within equity.

No non-controlling interest is recognized for the 17% held by a third party in RapidFit+ as the amount is presented as a financial liability.

RapidFit+

The Group has purchased a call option and written a put-option on the non-controlling interest in Rapidfit+. The call option was accounted for in accordance with IFRS 9 and has an exercise price which is calculated according to a specified contractual formula based on the following parameters: invested capital, multiple of EBITDA minus net financial debt. Based on our analysis the call option remained out of the money at 31 December 2018 and 31 December 2019, and has expired at 31 December 2020. The call option was exercisable between June 30, 2015 and June 27, 2020.

The written put option has been recognized as a financial liability and measured at the fair value of the redemption amount and amounts to K€875 at December 31, 2020 (2019: K€875; 2018 K€845). The undiscounted estimated redemption amount totals K€875 at December 31, 2020 (2019: K€875; 2018: K€875). The redemption price has an exercise price according to a specified contractual formula based on the following parameters: invested capital, multiple of EBITDA minus net financial debt. The initial recognition resulted in a reclassification of K€264 from non-controlling interest and K€64 from consolidated reserves. The written put option is exercisable between June 27, 2019 and June 27, 2021 and it is management's estimate that the put option will be exercised within 12 months. As such, the written put option is presented as an other current liability.

In addition, RapidFit+ has issued K€10 dilution warrants to the non-controlling interest which are exercisable upon occurrence of certain specified events. The fair value of the dilution warrants is K€0 per end of 2020 (2019: K€0; 2018:K€0).

14 Share-based payment plans

Share-based payment plans of the parent

The changes of the year for the warrant plans are as follows:

	2020	2019	2018
Outstanding at January 1*	**965,052**	**1,318,049**	**1,458,360**
Granted	—	—	2,000
Forfeited / Cancelled	(41,443)	(42,952)	(69,104)
Exercised	(515,887)	(310,045)	(73,207)
Outstanding at December 31*	**407,722**	**965,052**	**1,318,049**
Exercisable at December 31	**123,305**	**296,859**	**252,793**

* The Group's share-based payment plans are all equity-settled except for the IPO warrants that have been granted to certain employees in certain countries due to legal requirements which are cash-settled. The outstanding amount includes stock appreciation rights ("SARs") issued under cash-settled share-based payment plans.

The number of outstanding warrants has been adjusted to reflect the 1-to-4 stock split decided in June 2014. The 2013 warrant plan gives a right to four shares for each warrant, whereas under all other warrant plans one warrant gives a right to one share. For presentation purposes the tables reflect the number of shares the warrants give right to across all plans.

Equity-settled share-based payment plans

The Group has several plans in place (2013 warrant plan, IPO warrant plan and 2015 warrant plan) which have similar terms except for the exercise price, except for the 2015 warrant plan.

2013 warrant plan

Each warrant gives the right to the holder to four ordinary shares of the parent Company. The warrants have a contractual term of ten years and vest for 25% in the fourth year; 25% in the fifth year; 25% in the sixth year; and 25% in the seventh year. Warrants are exercisable as from the month after they have vested and in the subsequent exercise periods. There are no cash settlement alternatives and the Group does not have a practice of cash settlement for these warrants. The warrants have a contractual term of ten years.

Under the 2013 warrant plan 301,096 warrants were effectively granted in October 2013 and 166,800 warrants were granted to certain employees and to certain members of our board of directors and senior management on November 28, 2013 with an exercise price ranging from €7.86 to €8.54.

The status of the 2013 warrant plan at December 31 is as follows:

	2020	2019	2018
Outstanding at January 1	**118,376**	**300,040**	**320,640**
Granted	—	—	—
Forfeited / Cancelled	(1,875)	(3,500)	(1,500)
Exercised	(116,501)	(178,164)	(19,100)
Outstanding at December 31	**—**	**118,376**	**300,040**
Exercisable at December 31	**—**	**15,300**	**89,892**

With respect to the warrants exercised in 2020, a total of 29,125 warrants representing 116,501 shares were exercised in the last quarter. The share price at exercise date was $40.21. The 2013 warrant plan prescribes that each warrant gives right to four shares , and the table above presents the impact on the number of shares.

IPO warrant plan

Each warrant gives the right to the holder to one ordinary share of the parent Company. The warrants have a contractual term of 10 years and vest for 25% in the fourth year; 25% in the fifth year; 25% in the sixth year and 25% in the seventh year. Warrants are exercisable as from the month after they have vested and in the subsequent exercise periods. There are no cash settlement alternatives and the Group does not have a practice of cash settlement for these warrants. The warrants have a contractual term of 10 years.

The Group granted 979,898 warrants in July 2014 and 36,151 warrants in November 2014 in the context of the initial public offering to the employees of the Group with an exercise price of €8.81 ("IPO warrant plan"). The Group granted an additional 18,180 warrants to employees in July 2015 under the IPO warrant plan.

The status of the IPO warrant plan at December 31 is as follows:

	2020	2019	2018
Outstanding at January 1	**465,212**	**589,052**	**671,503**
Granted	—	—	—
Forfeited / Cancelled	(27,247)	(20,252)	(42,209)
Exercised	(201,239)	(103,588)	(40,242)
Outstanding at December 31	**236,726**	**465,212**	**589,052**

Exercisable at December 31	**95,575**	**169,071**	**114,012**

With respect to the warrants exercised in 2020, a total of 201,239 warrants representing 201,239 shares were exercised in the last quarter. The share price at exercise date was $ 40.21.

Warrant plan 2015

The board of directors decided on December 18, 2015 on a new plan ("2015 warrant plan") by which it can grant up to 1,400,000 warrants to employees. Each warrant gives the right to the holder to one ordinary share of the parent Company. The warrants vest for 10% on the second anniversary of the granting; 20% on the third anniversary of the granting; 30% on the fourth anniversary of the granting; and 40% on the fifth anniversary of the granting, unless otherwise decided by the board of directors or one or more of its representatives granted powers thereto. Warrants are exercisable only after they have vested and only during a period of (i) four weeks following the publication of the results of the parent Company of the second and fourth quarter, or (ii) if no quarterly results are published, during the month March and the month September of every year. There are no cash settlement alternatives and the Group does not have a practice of cash settlement for these warrants. The warrants have a term of ten years.

The Group granted 350,000 warrants in July 2016 to the employees of the Group with an exercise price of €6.45. The Group granted 2,000 warrants to an employee in May 2018 with an exercise price of €10.08.

The status of the 2015 warrant plan at December 31 is as follows:

	2020	2019	2018
Outstanding at January 1	**310,400**	**325,200**	**329,000**
Granted	—	—	2,000
Forfeited / Cancelled	(6,400)	(14,800)	(5,800)
Exercised	(170,100)	—	—
Outstanding at December 31	**133,900**	**310,400**	**325,200**
Exercisable at December 31	**15,100**	**96,500**	**32,700**

With respect to the warrants exercised in 2020, a total of 170,100 warrants representing 170,100 shares were exercised. The weighted average share price at exercise date was $ 37.60.

Fair value

The fair value of the warrants is estimated at the grant date using the Black-Scholes option pricing model, taking into account the terms and conditions upon which the warrants were granted.

The following table provides the input to the Black-Scholes model for the 2013 warrant plan, IPO warrant plan and 2015 warrant plan:

	2015 (Sept 16)	2015 (Nov)	IPO 2014 (Nov)	IPO 2014 (June)	2013 (Dec) *	2013 (Oct) *
Return dividend	0%	0%	0%	0%	0%	0%
Expected volatility	47%	47%	50%	46%	50%	53%
Risk-free interest rate	0.24%	1.17%	1.12%	1.70%	2.56%	2.43%
Expected life	4.30	5.50	5.50	5.50	5.50	5.50
Exercise price (in €)	6.45	8.81	8.81	8.81	8.54	7.86
Stock price (in €)	6.42	8.08	8.67	8.81	18.09	18.09
Fair value SAR (in €)	2.41	3.30	3.94	3.83	12.23	12.77

(*)Exercise price, stock price and fair value are not adjusted for the 1 to 4 stock-split completed in June 2014.

The above input for the Black-Scholes model have been determined based on the following:

- The dividend return is estimated by reference to the historical dividend payments of the Group. Currently, this is estimated to be zero as no dividends have been paid since inception;
- Expected volatility is estimated based on the average annualized volatility of the volatility of the Group's stock (until September 2016: of a number of quoted peers in the 3D printing industry and the volatility of the Group's stock);
- Risk-free interest rate is based on the interest rate applicable for the 10Y Belgian government bond at the grant date;
- Estimated life of the warrant is determined to be until the first exercise period which is typically the month after vesting; and
- Fair value of the shares is determined based on the share price of the Group on Nasdaq at the date of valuation. For the grants prior to the initial public offering, the fair value of the shares was estimated based on a discounted cash flow model with 3-year cash flow projections and a multiple of EBITDA determined based on a number of quoted peers in the 3D printing industry.

The expense arising from share-based payment transactions for the warrant plans mentioned above was K€102 (2019: K€401; 2018: K€640)

The weighted average remaining estimated life of the warrants outstanding as of December 31, 2020 is 4.31 years (2019: 5.20 years; 2018: 5.95 years). The weighted average fair value for the warrants outstanding at the end of 2020 was €3.29 (2019: €4.48; 2018: €5.62). The weighted average exercise price for the warrants outstanding at the end of 2020 was €7.92 (2019: €7.88; 2018: €7.99).

Cash-settled share-based payment plans

The Group has issued 215,688 SARs in July 2014 towards certain employees in certain countries due to legal requirements with similar terms and conditions as the IPO warrant plan except that the SAR will be settled in cash. The exercise price of the SAR is €8.81.

The status of this plan is as follows:

	2020	2019	2018
Outstanding at January 1	**71,064**	**103,757**	**137,217**
Granted	—	—	—
Forfeited / Cancelled	(5,921)	(4,400)	(19,595)
Exercised	(28,047)	(28,293)	(13,865)
Outstanding at December 31	**37,096**	**71,064**	**103,757**
Exercisable at December 31	**12,630**	**15,988**	**16,189**

The SAR plan grants the bearer the right to a cash payment equal to the difference between the exercise price and the stock price at the exercise date. This plan is considered a cash settled share based payment and is as such recorded as a liability (see Note 16).

The SARs have a contractual term of ten years and vest for 25% in the fourth year; 25% in the fifth year; 25% in the sixth year and 25% in the seventh year. SARs are exercisable as from the month after they have vested and in the subsequent exercise periods.

The fair value of the SAR is estimated at each reporting date using the Black-Scholes option pricing model, taking into account the terms and conditions upon which the warrants were granted.

The following table lists the input used for the Black-Scholes model:

	2020	2019	2018
Return dividend	0%	0%	0%
Expected volatility	84%	49%	49%
Risk-free interest rate	-0.34%	0.10%	0.77%
Expected life	0.25	0.25	1.25
Exercise price (in €)	8.81	8.81	8.81
Stock price (in €)	44.20	16.32	17.49
Fair value SAR (in €)	35.38	7.52	9.09

The expense arising from share-based payment transactions for the SARs plan was K€1,242 in 2020 (2019: K€ (11); 2018: K€435). The carrying value of the liability at December 31, 2020 amounts to K€1,223 (2019: K€574; 2018: K€786). The total intrinsic value of the liability for warrants currently exercisable at December 31, 2020 amounts K€447 (2019: K€120; 2018: K€141).

Share-based payment plans of RapidFit+

The subsidiary RapidFit+ has issued a warrant plan on August 23, 2013 where a maximum of 300 warrants can be offered to management with an exercise price of €553.92. In January 2014, a total of 199 warrants were granted and accepted.

The changes for the year for the RapidFit+ warrant plan are as follows:

	2020	2019	2018
Outstanding at January 1	186	199	199
Granted	—	—	—
Forfeited / Cancelled	—	(13)	—
Exercised	—	—	—
Outstanding at December 31	**186**	**186**	**199**
Exercisable at December 31	**186**	**184**	**—**

The following table lists the input to the Black-Scholes model for the RapidFit+ warrant plan:

	2014
Return dividend	0%
Expected volatility	50%
Risk-free interest rate	2.29%
Expected life	5.5
Exercise price	553.9
Fair value option	262.7

The expense arising from share-based payment transactions for RapidFit+ warrant plan was K€2 in 2020 (2019: K€2; 2018: K€7)

15 Loans and borrowings

The loans and borrowings include the following:

in 000€	As of December 31 2020	2019	2018
K€35,000 EIB bank loan	35,000	35,000	10,000
K€28,000 acquisition bank loan	18,621	21,612	24,576
K€18,000 secured bank loans	17,013	17,429	17,739
K€12,300 bank loans ACTech	10,470	11,850	12,300
K€9,050 other facility loans	2,910	3,599	4,299
Bank investment loans—top 20 outstanding	17,280	22,132	23,801
Bank investment loans—other	2,681	4,429	3,808
Lease liabilities (2018: Finance leases)	10,624	9,876	6,809
Institutional loan	353	824	1,492
Convertible bonds	—	1,000	1,000
Related party loan	158	187	214
Total loans and borrowings	**115,110**	**127,938**	**106,038**
Current	17,523	16,838	13,598
Non-Current	97,588	111,100	92,440

K€35,000 EIB bank loan

On December 20, 2017 the Group entered into a finance contract with the European Investment Bank, or EIB, to finance future research and development programs. As part of a first tranche, an amount of K€10,000 was drawn in the course of 2018. The agreement foresees a first two-year period without loan reimbursements. Loans under the contract are made at a fixed rate, based on the Euribor rate at the time of the borrowing, plus a variable margin. The interest rate for this loan is 2.40%. The contract contains customary security, covenants and undertakings. A second tranche of K€25,000 was drawn in the course of 2019 with an interest rate of 2.72%.

On June 29, 2020, the European Investment Bank has temporarily waived the compliance obligation of the covenants “Total gross Debt to Adjusted EBITDA” (until 31 December 2022), and “Adjusted EBITDA to Net financial charges” (until 31 December 2020) under the condition that the covenant Total net debt to Adjusted EBITDA will be met for the period. In addition, the European Investment Bank agreed not to recalculate the interest rate until 3 January 2022 for the first tranche and until 17 January 2022 for the second tranche. Finally, the European Investment Bank waived “the subsidiary financial indebtedness” for the calculation period ending on 30 June 2020. For the periods thereafter this covenant has been eased. These covenants have been waived in order to allow the Group to continue investing in its growth programs, even under stressed COVID-19 scenarios, without breaching the covenants.

K€28,000 Acquisition loan

This bank loan has been concluded in October 2017 to finance the acquisition of ACTech. The loan includes a portion of K€18,000 reimbursable monthly during seven years, and a bullet portion of K€10,000, reimbursable at once in October 2024. The interest rate is fixed for the duration of the loan, and amounts to 1.1% on average for both portions. The bank loans are secured with a business pledge mandate, a share pledge on Materialise Germany GMBH, and debt covenants.

K€18,000 secured bank loans

The K€18,000 loan has been concluded in 2016 in two agreements to finance the construction of new facilities in Leuven (Belgium) and in Poland, both maturing in 2032. The agreement for the Belgian facility financing amounts to K€12,000; drawn per end 2020: K€11,739 (drawn per end 2019: K€11,739; per end 2018 K€11,739), and with reimbursements only starting in December 2022. The agreement for the Polish facility financing amounts to K€6,000 (fully drawn per end of 2017), and reimbursements have started in June 2019. The average interest rate of both agreements amounts to 1.2%. The bank loan is secured with a mortgage mandate on the Belgian facility buildings.

K€12,300 bank loans

In March 2018, three bank loans originating from the acquired ACTech Group were refinanced entirely for the amount of K€9,300, with adjusted maturity to May 2025 and first reimbursements in August 2020. The interest rate has been fixed at approximately 1.6%, and pledges including a K€4,650 mortgage on ACTech’s facilities and a guarantee of Materialise NV. In addition, a new investment credit of K€3,000 was obtained in June 2018, repayable as from January 2019 and with a fixed interest rate of 1.5%.

K€9,050—Other facility loans

Three facility loans were contracted in 2005, 2006 and 2012 for the construction of Leuven office and production facilities (K€2,000, K€300 and K€5,000, respectively) and another loan for the Czech Republic offices in 2008 (K€1,750). The balance of the four loans amounts to K€2,910 per December 31, 2020. All loans have a repayment schedule of K€15 years and interest rates are fixed between 4.3% and 5.4% for the four loans.

Miscellaneous investment loans

The 20 largest of these loans outstanding as at December 31, 2020 amount to a balance of K€17,280. They have been agreed in 2020 and in the years before to finance various investments in machinery, printers, equipment, and software tools. The vast majority of the loans have a reimbursement period over seven years, and are at fixed interest rates with weighted average below 1%.

K€10,624 Lease liabilities included lease with related party

The Group has several lease obligations mainly with financial institutions and related to the financing of buildings and various other items of plant and equipment such as 3D printers. As at December 31, 2020 the balance of these lease agreements amounts to K€10,624, and are mostly at fixed interest rates with weighted average below 2%. The subsidiary Engimplan rents the office and production building from a related party for an initial term of 10 years, with an extension option for an additional 10 years (assessed not to be reasonably certain to be exercised). The lease has been accounted for under IFRS 16 resulting in a lease liability at December 31, 2020 of K€414.

The total cash outflow from the lease liabilities amounts to K€3,640 in 2020, K€5,283 in 2019 and K€3,102 in 2018.

K€2,000 institutional loan

This loan was contracted with a governmental institution in Germany to finance the production operations of Materialise Germany for a maximum amount of K€2,000. The loan is repayable over a four year period, starting as of September 2017 with a fixed interest rate of 0.25% payable per quarter. As at December 31, 2020 K€2,000 has been drawn with an outstanding balance of K€353.

K€1,000 convertible bond with related party

On October 9, 2020, 1,000 convertible bonds with a related party for a total amount of K€1,000 were converted to 509,904 shares.

Related party loan

Lunebeke NV, a related party of the Group as discussed in Note 26, has granted the Group a loan at fixed interest rate of 4.23% that matures in 2025. The purpose of the loan is to finance the purchase of a building in France. The amount outstanding as of December 31, 2020 is K€158 (2019: K€187; 2018: K€214). The interest expense for the year ended December 31, 2020 is K€7 (2019:K€9; 2018: K€10).

Changes of liabilities for financing activities:

The following table presents the changes of the liabilities for financing activities:

	For the year ended December 31		
in 000€	2020	2019	2018
At January 1,	**127,938**	**106,038**	**94,557**
Proceeds from loans & borrowings	—	29,000	32,554
Repayment of loans & borrowings	(13,736)	(12,126)	(18,820)
New leases	4,626	8,326	792
Repayment of leases	(3,640)	(5,283)	(3,102)
Loans acquired from business combination	—	2,076	—
Net foreign exchange movements	(78)	(92)	57
At December 31,	**115,110**	**127,938**	**106,038**

16 Other non-current liabilities

The other non-current liabilities consist of the following:

in 000€	As of December 31, 2020	2019	2018
Provisions	318	122	82
Other	80	574	786
Total	**398**	**696**	**868**

The increase of the provision relates to a provision of royalties payable to APHP (Assistance Publique – Hôpitaux de Paris), one of the Group's business partners in the Medical segment, for K€220.

The other item doesn't include anymore per December 31, 2020 a long term liability related to the cash settled shared based payment plan as referred to in Note 14 (2019: K€574; 2018: K€786). The amount of K€1,223 is booked on short term.

The impact of the accounting treatment of the Belgian contribution plans with a minimal guarantee are not material as only a limited number of people can benefit. No provisions have been recognized as of December 31, 2020, 2019 and 2018. As such, no further disclosures have been provided.

17 Tax payables

The tax payables amount to K€974as per December 31, 2020 (2019:K€3,363; 2018:K€2,313) and are mainly related to the tax payables of the entities located in Germany. In Germany a tax unity was set-up in 2018 between Materialise Germany and ACTech.

18 Deferred income

Deferred income consists of the following:

in 000€	As of December 31 2020	2019	2018
Deferred maintenance & license	30,242	27,667	22,606
Deferred (project) fees	4,555	4,647	4,838
Deferred government grants	85	358	338
Total	**34,882**	**32,672**	**27,782**
current	29,555	27,641	23,195
non-current	5,327	5,031	4,587

The deferred maintenance and license revenue consist of maintenance and license fees paid up-front which are deferred and recognized in earnings over either the maintenance period or the duration of the license. The deferred (project) fees consist of one-time and advance payments received which are deferred in accordance with the revenue accounting policies. The deferred government grants are recognized as income under “other operating income”.

We refer to Note 22.1.2 for more detail on the contract liabilities.

19 Other current liabilities

Other current liabilities include the following:

in 000€	As of December 31 2020	2019	2018
Payroll-related liabilities	11,152	10,281	10,111
Non-income tax payables	3,018	2,262	2,175
Accrued charges	995	1,080	789
Advances received	404	715	713
RapidFit+ amounts payable to former shareholders	875	875	845
CENAT amounts payable to former shareholders	—	—	450
Derivatives	140	478	—
Cash settled share-based payment plan	1,223	—	—
Other current liabilities	888	1,995	259
Total	**18,695**	**17,686**	**15,342**

The non-income tax payables mainly relate to VAT payables and payroll taxes.

20 Fair value

Financial assets

The carrying value and fair value of the financial assets as of December 31, 2020, 2019 and 2018 are as follows:

	Carrying value			Fair value		
in 000€	2020	2019	2018	2020	2019	2018
Financial assets						
Debt instruments measured at amortized cost						
Trade receivables (current)	30,871	40,977	36,891	30,871	40,977	36,891
Other financial assets (non-current)	712	580	1,530	712	580	1,530
Other current non-trade receivables	1,618	1,676	1,461	1,618	1,676	1,461
Cash & cash equivalents	111,538	128,897	115,506	111,538	128,897	115,506
Total debt instruments	**144,739**	**172,130**	**155,388**	**144,739**	**172,130**	**155,388**
Financial assets at fair value through profit or loss						
Derivatives	23	9	117	—	—	—
Convertible loan	6,203	2,750	—	—	—	—
Total financial assets measured at fair value	**6,226**	**2,759**	**117**	**—**	**—**	**—**
Equity instruments designated at fair value through OCI						
Non-listed equity investments	3,842	3,046	2,701	—	—	—
Total Equity instruments designated at fair value through OCI	**3,842**	**3,046**	**2,701**	**—**	**—**	**—**

The fair value of the financial assets has been determined on the basis of the following methods and assumptions:

- The carrying value of the cash and cash equivalents and the current receivables approximate their fair value due to their short term character;
- The fair value of the derivatives has been determined based on a mark-to-market analysis prepared by the bank based on observable market inputs (level 2 inputs);
- Other current non-trade receivables are being evaluated on the basis of their credit risk and interest rate. Their fair value is not different from their carrying value on December 31, 2020, 2019 and 2018
- The non-listed equity investments, mainly representing the investment in Essentium Inc for K€3,535 and AM Flow (via an investment in AM Danube, one of the shareholders of AM Flow) for K€307, are measured at fair value.
  - For Essentium, as of December 31, 2020, the Group has estimated that the fair value at December 31, 2020 amounts to K€3,535 with a fair value adjustment recognized in OCI of K€489. The fair value of the investment (based upon level 2 inputs) as at December 31, 2020 was based on a recent capital B round in which third parties participated, but the Group not. Furthermore, the followings matters were considered:
    - Essentium is a non-listed entity;
    - The Group only has an insignificant interest in Essentium Inc (5.00% of the shares);
    - The Group has no representatives in the Board of Directors of Essentium Inc.
  - For AM-flow, as of December 31, 2020, management considers that currently the cost is an appropriate estimate of fair value (level 2 input) because a recent capital increase indicated that the market valuation of AM Flow has not changed and because of the followings reasons:
    - AM Flow is a non-listed entity;
    - The Group only has an insignificant interest in AM Flow BV (8.42% of the shares indirectly);
    - The Group has no representatives in the Board of Directors of AM Flow BV; and
    - Insufficient more recent information is available to measure fair value;

The convertible loans granted to Fluidda and Ditto are measured at fair value. As of December 31, 2020, management considered the fair value based upon level 3 inputs as follows:

- Fluidda: The Group assessed the fair value of the convertible loan as at December 31, 2020 amounts to K€3,310 which includes a fair value adjustment of K€316 recorded in financial income during 2020. Fluidda is a private start-up company which delivers CRO services for drug development and develops medical devices which require EMA/FDA approvals. Fluidda is currently loss-making. The convertible loan has a duration of 7 years with a 10.0% annual interest rate which are capitalized. The Group has applied a discount factor of 14.44% that is based on the estimated WACC of Fluidda reflecting the uncertainty in relation to the success of the company and the applied estimates by the Group.
- Ditto: The convertible loan granted to Ditto in August 2020 has a notional amount up to K$9,000 that will be called-up when certain milestones are reached. The Group estimated the fair value of the convertible loan to K€2,892 as of 31 December 2020. No fair value adjustment has been recorded yet as the Group considers fair value equals the loan’s carrying amount as at December 31, 2020. Ditto is a

private technology company which has a software solution for the eyeware industry with iPad app, frame recommendation and virtual try-on technology platform. Ditto is currently loss-making. The convertible loan has a duration of 5 years with a 8% annual interest rate which are capitalized.

In assessing the fair value, the Group has made significant estimates with regard to the discount rate, the probability of each repayment and conversion scenario and related timing, the amount of the qualified capital increase. Changes in the significant assumptions may lead to a significant increase/decrease in the fair value of the convertible loan. A increase/decrease in the applied discount rate for Fluidda by 1% would lead to a change in fair value by K€31 / K€ -31.

Financial liabilities:

The carrying value and fair value of the financial liabilities as of December 31, 2020, 2019 and 2018 can be presented as follows:

	Carrying value			Fair value		
in 000€	2020	2019	2018	2020	2019	2018
Financial liabilities measured at amortized cost						
Loans & Borrowings including lease liabilities	115,110	127,939	106,037	116,843	128,930	105,026
Trade payables	17,698	18,517	18,667	17,698	18,517	18,667
Other liabilities excl. written put option on NCI	1,275	3,187	778	1,275	3,187	778
Total financial liabilities measured at amortized cost	**134,083**	**149,643**	**125,482**	**135,816**	**150,634**	**124,471**
Financial liabilities measured at fair value						
Contingent consideration	—	—	450	—	—	—
Cash settled share based payments	1,223	—	786	—	—	—
Written put option on NCI	875	875	845	—	—	—
Derivatives	140	478	194	—	—	—
Total financial liability measured at fair value	**2,238**	**1,353**	**2,275**	**—**	**—**	**—**
Total non-current	98,543	112,549	94,521	—	—	—
Total current	37,778	38,447	33,236	—	—	—

The fair value of the financial liabilities has been determined on the basis of the following methods and assumptions:

- The carrying value of current liabilities approximates their fair value due to the short term character of these instruments;
- Loans and borrowings are evaluated based on their interest rates and maturity date. Most interest bearing debts have fixed interest rates and their fair value is subject to changes in interest rates and individual creditworthiness. Their carrying value approximates their fair value;
- The fair value of the derivatives has been determined based on a mark-to-market analysis prepared by the bank based on observable market inputs (level 2 inputs);
- The fair value of the written put option on non-controlling interest has been determined based on the present value of the redemption amount (level 3 inputs);
- The fair value of the cash-settled share based payments has been determined based on a Black-Scholes model using inputs that are level 1 (stock-price and risk-free interest rate) as well as level 2 (e.g. volatility). We refer to Note 14.
- The fair value of the (contingent) consideration has been determined based on the latest long-term business plans of the Cenat business (level 3 inputs). Note that the consideration is no longer contingent as per end 2018.

Fair value hierarchy 3 evolution

Convertible Loans Ditto & Fluidda	Fair Value Evolution		
in 000€	2020	2019	2018
As at 1 January	**2,750**	**—**	**—**
Addition	2,830	2,500	—
Remeasurement	316	—	—
Capitalized interests	307	250	—
As at 31 December	**6,203**	**2,750**	**—**

Written Put Option on NCI RapdFit+	Fair Value Evolution		
in 000€	2020	2019	2018
As at 1 January	**875**	**845**	**788**

Remeasurement	—	30	57
As at 31 December	**875**	**875**	**845**

Fair value hierarchy

The Group uses the following hierarchy for determining and disclosing the fair value of financial instruments by valuation technique:

- Level 1: quoted (unadjusted) prices in active markets for identical assets and liabilities;
- Level 2: other techniques for which all inputs which have a significant effect on the recorded fair value are observable, either directly or indirectly; and
- Level 3: techniques which use inputs that have a significant effect on the recorded fair value that are not based on observable market data.

The Group has the following financial instruments carried at fair value in the statement of financial position on December 31, 2020, 2019 and 2018: the derivatives related to interest rate and foreign currency swaps as included in the above tables, a call option and written put option on non-controlling interest, the (contingent) consideration for the acquisition of Cenat and the non-listed equity investments.

21 Segment information

For management purposes, the Group is organized into segments based on their products, services and industry and has the following three reportable segments:

- The Materialise Medical segment, which develops and delivers medical software solutions, medical devices and other related products and services;
- The Materialise Manufacturing segment, which delivers 3D printed products and related services; and
- The Materialise Software segment, which develops and delivers additive manufacturing software solutions and related services.

The measurement principles used by the Group in preparing this segment reporting are also the basis for segment performance assessment and are in conformity with IFRS. The Chief Executive Officer of the Group acts as the chief operating decision maker. As a performance indicator, the chief operating decision maker controls the performance by the Group's revenue and adjusted EBITDA.

The following table summarizes the segment reporting for each of the reportable periods ending December 31. Corporate research and development, headquarters' function, financing and income taxes are managed on a Group basis and are not allocated to operating segments. As management's controlling instrument is mainly revenue-based, the reporting information does not include assets and liabilities by segment and is as such not available per segment.

in 000€	Materialise Software	Materialise Medical	Materialise Manufacturing	Total segments	Unallocated(1)	Consolidated
For the year ended December 31, 2020						
Revenues	39,054	61,729	69,635	170,418	31	170,449
Segment Adjusted EBITDA	13,383	13,915	2,548	29,847	(9,468)	20,378
Segment Adjusted EBITDA %	34.3%	22.5%	3.7%	17.5%	—	12.0%
For the year ended December 31, 2019						
Revenues	41,654	60,808	94,156	196,618	61	196,679
Segment Adjusted EBITDA	13,812	10,774	12,154	36,740	(10,084)	26,656
Segment Adjusted EBITDA %	33.2%	17.7%	12.9%	18.7%	—	13.6%
For the year ended December 31, 2018						
Revenues	37,374	52,252	94,956	184,582	139	184,721
Segment Adjusted EBITDA	11,536	10,252	10,785	32,573	(9,047)	23,526
Segment Adjusted EBITDA %	30.9%	19.6%	11.4%	17.6%	—	12.7%

The segment Adjusted EBITDA is reconciled with the consolidated net profit (loss) for the year as follows:

in 000€	For the year ended December 31, 2020	2019*	2018
Segment Adjusted EBITDA	**29,847**	**36,740**	**32,573**
Depreciation, amortization and impairment	(19,775)	(19,278)	(17,287)
Corporate research and development	(2,824)	(1,859)	(1,913)
Corporate headquarter costs	(11,719)	(11,077)	(10,358)
Other operating income (expense)	3,668	2,410	2,149
Fair value adjustment 50% RS Print	770	—	—
Impairments	(4,606)	—	—
Operating (loss)/ profit	**(4,639)**	**6,936**	**5,164**
Financial expenses	(5,995)	(3,682)	(4,864)
Financial income	2,452	1,377	3,627
Income taxes	949	(2,595)	(425)
Share in loss of joint venture	(39)	(392)	(475)
Net profit (loss) for the year	**(7,272)**	**1,644**	**3,027**

The Group has no customers with individual sales larger than 10% of the total revenue in 2020 (2019: 0%; 2018: 0%).

Entity-wide disclosures

The revenue by geographical area is as follows:

in 000€	As of December 31, 2020	2019	2018
United States of America	47,266	56,235	42,217
Americas other than USA	5,297	3,395	1,700
Belgium	7,048	7,917	9,350
Germany	17,087	31,185	30,436
France	11,586	20,110	22,282
Switzerland	12,587	14,907	13,135
United Kingdom	7,725	13,804	11,946
Italy	5,876	6,707	4,392
Netherlands	6,943	5,825	7,382
Other Europe	31,518	17,329	21,455
Asia Pacific	17,516	19,265	20,426
Total	**170,449**	**196,679**	**184,721**

The total revenue realized in the country of domicile (Belgium) in 2020 amounts to K€7,048 (2019:K€7,917; 2018:K€9,350).

The total non-current assets, other than financial instruments, deferred tax assets, by geographical area are as follows:

in 000€	As of December 31, 2020	2019	2018
United States of America (USA)	3,441	4,194	3,953
Americas other than USA	3,454	8,374	62
Belgium	62,810	49,426	48,873
Germany	58,305	57,918	56,096
Poland	13,437	15,506	16,206
Rest of Europe	9,087	10,410	10,125
Asia-Pacific	2,052	2,658	1,039
Total	**152,586**	**148,486**	**136,354**

The totals of the above table include goodwill, intangible assets and property, plant & equipment and Right-of-Use Assets as disclosed in the consolidated statements of financial position.

22 Income and expenses

22.1 Revenue

22.1.1 Disaggregated revenue information

in 000€	For the year ended December 31, 2020					
	Materialise Software	Materialise Medical	Materialise Manufacturing	Total segments	Unallocated	Consolidated
Geographical markets						
United States of America (USA)	11,939	28,173	7,153	47,265	—	47,265
Americas other than USA	533	4,504	260	5,297	—	5,297
Europe (without Belgium) & Africa	15,702	20,781	56,840	93,323	—	93,323
Belgium	112	2,335	4,570	7,017	31	7,048
Asia Pacific	10,768	5,936	812	17,516	—	17,516
Total revenue from contracts with customers	39,054	61,729	69,635	170,418	31	170,449
Type of goods or service						
Software revenue (non-medical)	39,054	—	—	39,054	—	39,054
Software revenue (medical)	—	19,808	—	19,808	—	19,808
Medical devices and services	—	41,921	—	41,921	—	41,921
Manufacturing	—	—	69,635	69,635	—	69,635
Other	—	—	—	—	31	31
Total revenue from contracts with customers	39,054	61,729	69,635	170,418	31	170,449
Timing of revenue recognition						
Goods/Services transferred at a point in time	15,536	46,286	66,824	128,646	31	128,677
Goods/Services transferred over time	23,518	15,443	2,811	41,772	—	41,772
Total revenue from contracts with customers	39,054	61,729	69,635	170,418	31	170,449

in 000€	For the year ended December 31, 2019					
	Materialise Software	Materialise Medical	Materialise Manufacturing	Total segments	Unallocated	Consolidated
Geographical markets						
United States of America (USA)	11,188	29,100	15,947	56,235	—	56,235
Americas other than USA	487	2,071	837	3,395	—	3,395
Europe (without Belgium) & Africa	18,767	21,356	69,744	109,867	—	109,867
Belgium	183	2,101	5,572	7,856	61	7,917
Asia Pacific	11,029	6,180	2,056	19,265	—	19,265
Total revenue from contracts with customers	41,654	60,808	94,156	196,618	61	196,679
Type of goods or service						
Software revenue (non-medical)	41,654	—	—	41,654	—	41,654
Software revenue (medical)	—	19,407	—	19,407	—	19,407
Medical devices and services	—	41,401	—	41,401	—	41,401
Manufacturing	—	—	94,156	94,156	—	94,156
Other	—	—	—	—	61	61
Total revenue from contracts with customers	41,654	60,808	94,156	196,618	61	196,679
Timing of revenue recognition						
Goods/Services transferred at a point in time	21,190	45,730	88,988	155,908	61	155,969
Goods/Services transferred over time	20,464	15,078	5,168	40,710	—	40,710
Total revenue from contracts with customers	41,654	60,808	94,156	196,618	61	196,679

The revenue per type of good or service including the previous years is as follows:

in 000€	For the year ended December 31 2020	2019	2018
Software revenue (non-medical)	39,054	41,654	37,374
Software revenue (medical)	19,808	19,407	17,045
Medical devices and services	41,921	41,401	35,207
Manufacturing	69,635	94,156	94,956
Other	31	61	139
Total	**170,449**	**196,679**	**184,721**

22.1.2 Contract balances

The following table provides information about receivables, contracts in progress (contract assets) and deferred income (contract liabilities) from contracts with customers.

in 000€	As of December 31, 2020	2019
Trade receivables, included in 'trade and other receivables'	32,345	42,509
Contract assets / contracts in progress	749	495
Contract liabilities / deferred income	34,797	32,314

We refer to note 18 for a detail of the deferred income. Note 18 includes split of the deferred income in current and non-current. Non-current deferred income, representing mainly maintenance contracts with terms more than one year and certain contracts with up-front fees which are allocated to performance obligations that will be satisfied over more than one year, may be recognized as revenue between one to three years. Total revenue recognized during 2020 that was included in the contract liability at the beginning of the year amounts to K€32,314. There is no revenue recognized during 2020 from performance obligations that were satisfied in the previous years.

The relation between the timing of satisfaction of the performance obligations and the timing of billing resulting in contract assets and liabilities is as follows:

- Maintenance services: maintenance services are typically billed at the beginning of the maintenance period resulting in deferred income that is recognized on a straightline basis over the maintenance period.
- Software licenses: certain software licenses may have been billed prior to the delivery of the software key or time-based software licenses may have been billed up-front resulting in a deferred income balance.
- Certain agreements in the medical segment include up-front fees such as step-in fees or milestone payments which are billed at inception of the contract but which are allocated to performance obligations which are satisfied at a later time in the contract term or which have not been recognized considering the revenue contraint (i.e. may have to be credited when customer achieves certain volume targets). In addition, certain contracts include prepaid fees for volume "Plan Only" purchases for which the purchased services are only delivered during a one year period. Those fees result in deferred income which are recognized as revenue when services/products are delivered and revenue is not constrainted.
- Certain development services are satisfied while the services can only billed at certain pre-defined points in time or when the services are fully satisfied resulting in contracts in progress / contract assets.

22.2 Cost of sales

Cost of sales includes the following selected information:

in 000€	For the year ended December 31 2020	2019*	2018
Purchase of goods and services	(31,725)	(37,870)	(39,114)
Amortization and depreciation	(11,788)	(10,917)	(9,910)
Payroll expenses	(32,438)	(37,715)	(33,036)
Other expenses	(495)	(550)	(239)
Total	**(76,446)**	**(87,052)**	**(82,299)**

22.3 Research and development expenses

Research and development expenses include the following selected information:

in 000€	For the year ended December 31 2020	2019	2018
Purchase of goods and services	(2,788)	(2,583)	(3,590)
Amortization and depreciation	(1,746)	(1,483)	(830)
Payroll expenses	(20,368)	(19,219)	(17,935)
Other	(2,202)	(63)	(61)
Total	**(27,104)**	**(23,348)**	**(22,416)**

22.4 Sales and marketing expenses

Sales and marketing expenses include the following selected information:

in 000€	For the year ended December 31 2020	2019	2018
Purchase of goods and services	(5,960)	(9,228)	(9,775)
Amortization and depreciation	(1,946)	(1,346)	(725)
Payroll expenses	(36,521)	(42,055)	(35,585)
Other	(209)	(360)	(218)
Total	**(44,636)**	**(52,989)**	**(46,303)**

22.5 General and administrative expenses

General and administrative expenses include the following selected information:

in 000€	For the year ended December 31 2020	2019	2018
Purchase of goods and services	(8,933)	(9,856)	(9,892)
Amortization and depreciation	(2,437)	(3,630)	(3,828)
Payroll expenses	(18,104)	(18,078)	(18,442)
Other	137	(222)	(148)
Total	**(29,337)**	**(31,786)**	**(32,310)**

22.6 Net other operating income

The net other operating income can be detailed as follows:

in 000€	For the year ended December 31 2020	2019*	2018
Government grants	4,473	5,263	4,658
Amortization intangibles purchase price allocation	(1,857)	(2,013)	(1,994)
Allowance for doubtful debtors	(244)	210	(1,065)
Capitalized expenses (asset construction)	316	166	16
Net foreign currency exchange gains / (losses)	—	—	246
Tax Credits	1,198	665	706
Fair value adjustment Cenat liability	—	—	192
Personnel related income	—	37	168
Fair value adjustment RS Print	770	—	—
Impairment Engimplan	(2,516)	—	—
Other	296	1,104	844
Total	**2,436**	**5,432**	**3,771**

* The year 2019 has been restated to reflect the final accounting of the business combination with Engimplan.

The Company has received government grants from the Belgian federal and regional governments and from the European Community in the forms of grants linked to certain of its research and development programs and reduced payroll taxes.

22.7 Payroll expenses

The following table shows the breakdown of payroll expenses for 2020, 2019 and 2018:

in 000€	For the year ended December 31 2020	2019	2018
Short-term employee benefits	(82,135)	(87,775)	(76,023)
Social security expenses	(15,691)	(15,647)	(14,139)
Expenses defined contribution plans	(1,150)	(1,033)	(936)
Other employee expenses	(8,455)	(12,612)	(13,900)
Total	**(107,431)**	**(117,067)**	**(104,998)**
Total registered employees at the end of the period	2,162	2,177	2,009

22.8 Financial expenses

Financial expenses includes the following selected information:

in 000€	For the year ended December 31 2020	2019	2018
Interest expense	(2,299)	(2,146)	(1,747)
Foreign currency losses	(2,999)	(832)	(2,748)
Other financial expenses	(697)	(704)	(369)
Total	**(5,995)**	**(3,682)**	**(4,864)**

22.9 Financial income

Financial income includes the following selected information:

in 000€	For the year ended December 31 2020	2019	2018
Foreign currency exchange gains	1,668	955	3,047
Other finance income	784	422	580
Total	**2,452**	**1,377**	**3,627**

22.10 Income taxes and deferred taxes

Current income tax

The following table shows the breakdown of the tax expense for 2020, 2019 and 2018:

in 000€	As of December 31, 2020	2019	2018
Estimated tax liability for the year	4	(2,926)	(1,216)
Tax adjustments to the previous year	—	—	—
Deferred income taxes	945	331	791
Total income tax benefit (expense) for the period	**949**	**(2,595)**	**(425)**

The current tax expense is equal to the amount of income tax owed to the tax authorities for the year, under the applicable tax laws and rates in effect in the various countries. The estimated tax liability is mainly due in Germany.

Deferred tax

Deferred tax is presented in the statement of financial position under non-current assets and non-current liabilities, as applicable. The following table shows the breakdown of the deferred tax assets, deferred tax liabilities and the deferred tax expense for 2020, 2019 and 2018:

in 000€	Asset/(liability) 2020	2019	2018	Income/(expense) 2020	2019	2018
Tax losses, notional interest deduction and other tax benefits	—	—	26	—	—	—
Amortization development assets and other intangible assets	75	38	224	—	—	—
Depreciation property, plant & equipment	125	70	30	—	—	—
Other items	1	84	35	—	—	—
Total deferred tax assets	**201**	**192**	**315**	**9**	**(124)**	**11**
Property, plant & equipment	(209)	(403)	(694)	—	**—**	**—**
Intangible assets	(6,414)	(4,937)	(5,370)	—	—	—
Investment grants	(227)	(301)	(312)	—	**—**	**—**
Inventory valuation	(31)	(89)	141	—	**—**	**—**
Other items	76	(17)	9	—	—	—
Total deferred tax liabilities	**(6,805)**	**(5,747)**	**(6,226)**	**(1,058)**	**455**	**780**
Total deferred tax income (expense)	**—**	**—**	**—**	**(1,049)**	**331**	**791**

Deferred tax expense recognized in the current year Income statement was K€945 and the remaining movement of K€104 is related to currency translation adjustments.

The Group has unused tax losses and tax credits in an amount of K€69,031 for 2020 (2019: K€37,440; 2018: K€25,285) of which K€44,600 for 2020 (2019: K€25,172; 2018: K€15,592) relating to Materialise NV.

With respect to the unused tax losses of Materialise NV, no deferred tax assets have been recognized given that in view of the Belgian Patent Income Deduction and Innovation Income Deduction there is an uncertainty to which extent these tax losses will be used in future years. As from July 1, 2016, the Innovation Income Deduction replaces the former Patent Income Deduction. Under the grandfathering rule the Patent Income Deduction system can still be applied until June 30, 2021. The Belgian Patent Income Deduction allows companies to deduct 80% of the qualifying gross patent income from the taxable basis. Under the Innovation Income Deduction system, companies can deduct up to 85% of their net innovation income from the taxable basis. Based on its analysis, in 2020 the Company has assessed that no deferred tax asset and unused Innovation Income Deduction should be accounted for with respect to its unused tax losses and unused Innovation Income Deduction in Belgium.

With respect to the net tax losses of the other entities in the Group no deferred taxes have been recognized in 2020 (2019: K€0; 2018: K€0). The deferred tax liability of K€6,805 as at December 31, 2020 mainly relates to the intangibles that have been recognized in connection with business combinations (ACTech and RSPrint).

Relationship between Tax Expense and Accounting Profit

	For the year ended December 31		
in 000€	2020	2019*	2018
Profit (loss) before taxes	(8,221)	4,239	3,452
Income tax at statutory rate of 25% (2019-2018: 29.58%)	2,045	(1,254)	(1,021)
Effect of different local tax rate	529	63	166
Tax adjustments to the previous period	(231)	(367)	80
Non-deductible expenses	(584)	(554)	(1,141)
Research and development tax credits & patent income deduction	375	179	337
Non recognition of deferred tax asset	(723)	(1,579)	(546)
Recognition of deferred tax assets on previous year's tax losses	—	119	653
Non-taxable income	503	925	606
Use of previous year's tax losses and tax credits for which no deferred tax assets was recognized	135	—	—
Taxes on other basis	(993)	—	280
Other	(107)	(127)	161
Income tax benefit (expense) as reported in the consolidated income statement	**949**	**(2,595)**	**(425)**

* The year 2019 has been restated to reflect the final accounting of the business combination with Engimplan. See additional information in Notes 2 and 4.

23 Earnings per share

Basic earnings per share amounts are calculated by dividing the net profit (loss) for the year attributable to ordinary equity holders of the parent company by the weighted average number of ordinary shares outstanding during the year.

Diluted earnings per share amounts are calculated by dividing the net profit (loss) attributable to ordinary equity holder of the parent company by the weighted average number of ordinary shares outstanding during the year plus the weighted average number of ordinary shares that would be issued on conversion of all warrants and the weighted average number of ordinary shares that would be issued on conversion of the convertible debt. If there is a net loss after taxes, the number of diluted shares is equal to the basic shares.

The net profit (loss) for the year used for the basic and diluted earnings per share are reconciled as follows:

	For the year ended December 31		
in 000€	2020	2019*	2018
Net profit (loss) attributable to ordinary equity holders of the parent for basic earnings	**(7,124)**	**1,586**	**3,027**
Interest on convertible bonds	—	50	50
Net profit (loss) attributable to ordinary equity holders of the parent adjusted for the effect of dilution	**(7,124)**	**1,636**	**3,077**

* The year 2019 has been restated to reflect the final accounting of the business combination with Engimplan. See additional information in Notes 2 and 4.

The warrants are anti-dilutive as per December 31, 2020 given the net loss for the year. The convertible bond has been converted in shares as per October 9, 2020. We refer to Note 13. The convertible bonds and the warrants are dilutive as per December 31, 2019 and 2018. We refer to Notes 14 and 15 for information on the number of instruments that could potentially be dilutive but which were not considered in the calculation above.

The following reflects the share data used in the basic and diluted earnings per share computations:

	For the year ended December 31		
in 000	2020	2019	2018
Weighted average number of ordinary shares for basic earnings per share	**53,364**	**52,915**	**49,806**
Effect of dilution:			
Share options	—	563	382
Convertible loan	—	509	509
Weighted average number of ordinary shares adjusted for effect of dilution	**53,364**	**53,987**	**50,697**

The earnings per share are as follows:

	For the year ended December 31		
	2020	2019	2018
Earnings per share attributable to the owners of the parent			
Basic	(0.13)	0.03	0.06
Diluted	(0.13)	0.03	0.06

24 Commitments and contingent liabilities

Operating lease commitments

The Group had operating lease commitments mainly related to cars and equipment until 2018 which were recognized on the balance sheet as of January 1, 2019 following the adoption of IFRS 16.

	As of December 31,		
in 000€	2020	2019	2018
Within one year	—	—	2,053
Between one and three years	—	—	2,302
Between four and five years	—	—	785
More than five years	—	—	302
Total	**—**	**—**	**5,442**

The total lease payments, which relate to low-value and short term lease as per IFRS 16 for which the exemption was applied as of January 1st, 2019, recognized in the consolidated income statement are K€554 in 2020 (2019: K€725). The total lease payments for 2018 amounted to K€2,956, prior to the adoption of IFRS 16 as from January 1, 2019.

Finance lease commitments (only applicable to 2018)

The Group has finance leases for the building and various other items of plant and equipment. Future minimum lease payments under finance lease with the present value of the net minimum lease payments are as follows:

	December 31, 2020		December 31, 2019		December 31, 2018	
in 000€	Minimum lease payments	Present value of payments	Minimum lease payments	Present value of payments	Minimum lease payments	Present value of payments
Within one year	—	—	—	—	2,876	2,829
Between one and three years	—	—	—	—	3,398	3,236
Between four and five years	—	—	—	—	655	604
More than five years	—	—	—	—	149	140
Total	**—**	**—**	**—**	**—**	**7,078**	**6,809**
Less finance charges	—	—	—	—	(269)	—
Present value of minimum lease payments	—	—	—	—	6,809	6,809

Mortgages and pledges

The Group has several loans secured by a mortgage on the building. The carrying value of related property, plant & equipment (including buildings under construction) is K€27,638 (2019: K€29,154; 2018: K€30,853). The total outstanding mortgages and pledges are K€105,610 in 2020 (2019: K€77,849; 2018: K€21,142).

Included in the above, the Group also has pledges on the business goodwill (“fonds de commerce”) of the Company for a total amount of K€69,300 in 2020 (2019: K€36,992; 2018: K€70,300) and pledges on other fixed assets for a total amount of K€3,290 (2019: K€3,301; 2018: K€21,142).

Other commitments

The Group has outstanding non-cancellable contracts with a future commitment of K€6,384 at December 31, 2020 (2019: K€11,640; 2018: K€6,383), mainly related to purchase commitment for raw materials. For property, plant & equipment, we have no committed expenditures as per December 31, 2020 (2019: K€0; 2018: K€0).

Contingent liabilities

The Group is currently involved in a legal proceeding with Dentsply Implants NV regarding the alleged wrongful termination of a supply agreement we entered into with Dentsply Implants NV in 2010. The court of first instance ruled in favor of Dentsply Implants NV that Materialise has wrongfully terminated the relationship. Materialise has appealed this decision before the court pronounced on the monetary damages. The amount of damages which Dentsply Implants NV is claiming is € 2.7 million. While Materialise is confident that the first instance decision will be overruled, Materialise believes that, in the event that the first instance decision would be confirmed, the amount of monetary damages that Materialise would be exposed to will not have a material adverse effect on our business, financial position or results of operations.

Apart from the case set out below, the Group is currently not a party to any other legal or arbitration proceedings, which, in the opinion of the management, is likely to have or could reasonably possibly have a material adverse effect on the business, financial position or results of operations. As a result management concluded that no provision is required.

In addition, on May 6, 2020, we received a written notice and request for indemnification from Zimmer Biomet, which had been named as a defendant in a patent infringement suit filed by Osteoplastics, LLC on March 20, 2020 in the United States District Court for the District of Delaware. Zimmer Biomet based its request for indemnification on the terms of its license and distribution agreement with us. The complaint alleges infringement by Zimmer Biomet of four U.S. patents. The allegedly infringing products include certain instruments allegedly manufactured with certain of our software. The litigation is currently in the early stages of discovery and the case is scheduled for trial in October 2022. We have entered into a cost-sharing agreement with Zimmer Biomet pursuant to which we have exercised our right to assume and control the defense of the action related to the products covered by our indemnity obligations. We have also filed petitions requesting a review of the patents asserted by Osteoplastics by the U.S. Patent and Trademark Office, as well as other patents asserted by Osteoplastics in certain other actions brought against third party defendants. We believe there are meritorious defenses to the complaint and intend to contest it vigorously. However, an adverse resolution of this litigation could have an adverse effect on our results of operations, financial condition or cash flows in the period in which the litigation is resolved. No amounts have been accrued for this loss contingency.

25 Risks

The Group is mainly exposed to liquidity risk, interest rate risk and credit risk.

Foreign exchange risk

The Group transacts business globally and is subject to risks associated with fluctuating foreign exchange rates. The geographic areas outside of the Eurozone to which it sells its products and services are generally not considered to be highly inflationary. In the years ended December 31, 2020, 2019 and 2018, 35%, 29% and 30% of our revenue, respectively, were derived from sales in a currency different from the euro. Receivables denominated in a foreign currency are initially recorded at the exchange rate at the transaction date and subsequently re-measured in euro based on period-end exchange rates. Transaction gains and losses that arise from exchange rate fluctuations are charged to income.

The Group has primarily exposure to the USD, GBP, BRL, PLN and JPY as foreign currency. The exposure on MYR and CZK is limited. There is only a limited portion of turnover in local currency

If the USD (rate for K€0 EUR) would have appreciated by 10%, the net result would have been K€1,854 higher, excluding the effect of the cash and term accounts held in USD. If the USD (rate for K€0 EUR) would have depreciated by 10%, the net result would have been K€1,686 lower, excluding the effect of the cash and term accounts held in USD.

To limit the exposure to foreign currency rate fluctuations on GBP and JPY, the Group has entered into currency rate swaps as of 2017. As of December 31, 2020 the Group had hedge agreements in place for KGBP700 and million JPY 75 . We refer to note 20 for the related fair value of these derivatives.

Liquidity risk

The liquidity risk is that the Group may not have sufficient cash to meet its payment obligations. This risk is countered by day-by-day liquidity management at the corporate level. The Group has historically entered into financing and lease agreements with financial institutions to finance significant projects and certain working capital requirements. The Group has no longer undrawn lines of credit at December 31, 2020 (2019: K€0; 2018: K€26,040).

On December 20, 2017, the European Investment Bank (EIB) and Materialise entered into a finance contract to support Materialise's ongoing research and development programs for growth from 2017 to 2020. The contract provides a credit of up to € 35.0 million drawable in two tranches. The first tranche could not exceed € 25.0 million and could be drawn during the first year of the contract. The Group actually has drawn € 10.0 million of this first tranche in the course of 2018. The second tranche of € 25.0 million was drawn in July 2019. The duration of the loan will be between six to eight years starting from the disbursement of the respective tranches, and includes a two-year loan reimbursement grace period. Loans under the contract will be made at a fixed rate, based on the Euribor rate at the time of the borrowing, plus a variable margin. The interest rate for the first tranche is initially equal to 2.4% . The interest rate for the second tranche is initially 2.72% and varies in function of certain EBITDA levels and debt ratios. The contract contains customary security, covenants and undertakings.

The range of contracted obligations are as follows (incl. interests) :

in 000€	Less than 1 year	2 to 3 years	4-5 years	More than 5 years	Total
At December 31, 2020					
Loans & borrowings	15,335	36,819	34,928	23,565	110,647
Lease liabilities	3,831	4,850	1,570	1,420	11,671
Trade payables	17,698	—	—	—	17,698
Other current liabilities and advances received	3,798	—	—	—	3,798
Total	**40,662**	**41,669**	**36,498**	**24,985**	**143,814**

	Less than 1 year	2 to 3 years	4-5 years	More than 5 years	Total
At December 31, 2019					
Loans & borrowings	14,300	33,034	41,672	34,447	123,453
Lease liabilities	3,685	4,907	1,040	720	10,352
Trade payables	18,517	—	—	—	18,517
Other current liabilities	4,063	—	—	—	4,063
Total	**40,565**	**37,941**	**42,712**	**35,167**	**156,385**

	Less than 1 year	2 to 3 years	4-5 years	More than 5 years	Total
At December 31, 2018					
Loans & borrowings	14,491	42,100	33,636	23,870	114,097
Trade payables	18,667	—	—	—	18,667
Other current liabilities	2,267	—	—	—	2,267
Total	**35,425**	**42,100**	**33,636**	**23,870**	**135,031**

Interest rate risk

Although the Group mainly has loans outstanding with a fixed interest rate, some of the loans have been contracted with variable interest rates. The most significant loans with variable interest rates have been secured by means of a variable to fixed interest rate swap. We therefore believe that the Group is not subject to immediate changes in interest rates. With respect to the interest rate swaps, we refer to note 20.

Credit risk

Credit risk is the risk that third parties may not meet their contractual obligations resulting in a loss for the Group. The Group is exposed to credit risk from its operating activities (primarily trade receivables) and from its financing activities, which are mainly deposits with financial institutions. The Group limits this exposure by contracting with credit-worthy business partners or with financial institutions which meet high credit rating requirements. In addition, the portfolio of receivables is monitored on a continuous basis.

Trade receivables and contracts in progress

Customer credit risk is managed by each business unit subject to the Group's established policy, procedures and controls relating to customer credit risk management.

An impairment analysis is performed at each reporting date per company and using a provision matrix per company to measure expected credit losses. The provision rates are based on days past due for groupings of various customer segments with similar loss patterns (i.e., by legal entity).

The calculation reflects the probability-weighted outcome, the time value of money and reasonable and supportable information that is available at the reporting date about past events, current conditions and forecasts of future economic conditions. Generally, trade receivables are written-off if past due for more than one year and are not subject to enforcement activity. The maximum exposure to credit risk at the reporting date is the carrying value of each class of financial assets at amortized cost or fair value through OCI as disclosed in Note 20. The Group does not hold collateral as security.

The Group evaluates the concentration of risk with respect to trade receivables as low, as its customers are located in several jurisdictions and industries and operate in largely independent markets.

Set out below is the information about the credit risk exposure on the Group's trade receivables using a provision matrix:

in 000€	Total	Non-due	Less than 30 days	31-60 days	61-90 days	91-180 days	More than 181 days
December 31, 2020	30,871	25,707	3,176	858	423	327	380
December 31, 2019	40,977	31,528	4,924	2,094	733	981	717
December 31, 2018	36,891	26,208	5,395	1,479	931	1,512	1,366

Capital management

The primary objective of the Group's shareholders' capital management strategy is to ensure it maintains healthy capital ratios to support its business and maximize shareholder value. Capital is defined as the Group shareholder's equity.

The Group consistently reviews its capital structure and makes adjustments in light of changing economic conditions. The Group made no changes to its capital management objectives, policies or processes during the years ended December 31, 2020, 2019 and 2018.

26 Related party transactions

The compensation of key management personnel of the Group is as follows:

in 000€	For the year ended December 31 2020	2019	2018
Short-term employee benefits	2,302	2,394	2,334
Post-employment benefits	93	85	80
Total	**2,395**	**2,479**	**2,414**
Warrants granted	—	—	—
Warrants outstanding	108,905	359,266	557,935

The amounts disclosed in the table are the amounts recognized as an expense during the reporting period related to key management personnel (senior management and executive committee members). In the year ending December 31, 2020 the compensation to key management by means of share based payments amounts to K€37.

The following table provides the total amount of transactions that have been entered into with related parties for the relevant financial year:

in 000€	Sale of goods to	Purchases from	Depreciation	Interest expense	Right-of-Use Assets	Receivables	Lease liabilities	Other liabilities
Non-executive directors of the Group								
2020	—	85	—	28	—	—	—	—
2019	—	128	—	37	—	—	—	1,053
2018	—	123	—	51	—	—	—	1,038
Shareholders of the Group								
2020	—	2	—	7	—	29	—	158
2019	—	113	—	9	—	—	—	131
2018	—	123	—	10	—	—	—	261
Joint ventures								
2020	419	—	—	—	—	—	—	—
2019	1,431	—	—	—	—	1,279	—	—
2018	1,156	241	—	—	—	1,281	—	22
Non-controlling interests								
2020	—	—	—	—	—	—	—	—
2019	—	—	26	9	617	—	652	—
2018	—	—	—	—	—	—	—	—

Related party – Lunebeke NV / Ailanthus NV

Lunebeke NV is owned by a shareholder and director of the Group and was established on December 29, 2020 following a partial demerger of Ailanthus NV (a former related party of the Group that merged with Materialise NV subsequent to the partial demerger as explained in Note 13). The activities taken over by Lunebeke NV through the partial demerger of Ailanthus NV were taken over from Ailanthus NV with retro-active effect as of October 1st, 2020. The Group rents apartments on a regular basis from Lunebeke NV (Ailanthus NV up to September 30th, 2020) in order to host our employees from foreign subsidiaries who are visiting our headquarters in Leuven. Due to Covid, the total amount paid to Lunebeke NV (Ailanthus up to September 30th, 2020) for rent in 2020 was K€0 (2019: K€113; 2018: K€123).

Related party – Ex-shareholders of Engimplan (non-controlling interest)

The subsidiary Engimplan rents the office and production building from its ex-shareholders for an initial term of 10 years, with an extension option for an additional 10 years (assessed not to be reasonably certain to be exercised). The monthly lease payment amount to K€7. The lease has been accounted for under IFRS 16 resulting in a lease liability at December 31, 2020 of K€414.

Related party – Convertible debt

The Group has issued on October 28, 2013 1,000 convertible bonds for a total amount of K€1,000. The bonds have been fully subscribed by a member of our senior management. On October 9, 2020, all these convertible bonds were converted in 509,904 shares as explained in Note 13.

Joint ventures

As explained in Note 4, the Group executed a share purchase agreement dated November 9, 2020 and acquired the remaining 50% of the shares of RS Print Powered By Materialise (referred to as “RS Print”). Before this transaction, Materialise NV already had a 50% interest in RS Print.

27 Events subsequent to the statement of financial position date

Impact of coronavirus

As of the date of this report, we are unable to predict the duration and severity of the spread of the coronavirus and the political and economic responses thereto and, as a result, we are unable to assess with certainty its impact on our business and operations, results of operations, financial condition, cash flows and liquidity during 2021 and beyond.

Link3D

On April 9, 2021 Materialise entered into a call option agreement to acquire 100% of equity interests of US based Link3D Inc., an additive workflow and manufacturing execution systems (MES) company. An acquisition would extend Materialise's ability to help companies gain control of their manufacturing floor as they scale up their additive manufacturing (AM) capability into volume production and would allow Materialise to accelerate its roadmap to offer cloud-based access to its integrated software platform. An acquisition would also broaden Materialise's industrial customer base across North America, Europe and Asia Pacific, and offer Link3D customers a seamless connection to Materialise's Magics 3D print suite.

Under the terms of the agreement, the call option purchase price amounts to US$ 2 million. The call option can be exercised during the month of November of 2021. The call option exercise price in exchange for the 100% of the Link3D equity interests, equals the maximum amount of US$ 33.50 million against which the call option purchase price of US$ 2 million will be credited. In case Materialise elects not to exercise the call option, the option purchase price is not reimbursable.

On February 4, 2021 Materialise and Link3D entered into a Working Capital Loan Agreement pursuant to which Materialise loaned an aggregated amount of US$ 0.7 million to Link3D in the first quarter of 2021.

Simultaneously, to the call option agreement, Materialise and Link3D entered in an interim loan agreement, allowing Link3D to borrow additional funds up to US$ 1.8 million.

Ditto

Materialise holds convertible note receivables versus Ditto, a US based developer of virtual eyewear try-on platforms, which was announced in September 2020. We collaborate with Ditto to advance the digital transformation in the eyewear industry. In the frame of this collaboration, we have granted a convertible loan facility, carrying a capitalizing interest of 8%, to Ditto as disclosed under Note 10, of which Ditto drew K€ 2,892 as of December 31, 2020.

Because the business objectives that were defined as a condition for Ditto to continue to draw under the facility no longer met in 2021, we decided in April 2021 to only extend a portion of the remaining amount that was available under the credit facility to Ditto. We estimate that, as a result of the combination of the lower than forecasted revenues and the unavailability of the remaining credit facility, Ditto may need additional funding to finance its operations and we currently have no clear visibility as to whether Ditto will be able to access such additional financing. As a result, uncertainty has arisen about Ditto's capacity to reimburse the loan according to the terms of our agreement with them. Therefore, an impairment has been accounted for in the course of 2021 on our outstanding loan to Ditto including capitalized interest and 2021 fundings for a total amount of K€ 3,790. The amount includes the traches granted as per April 8, 2021. This impairment from an accounting perspective does not impact our continuing belief in the technology platform that Ditto has built and in the potential of the collaboration between Ditto and Materialise.

28 Overview of consolidated entities

Name	Country of incorporation	% equity interest* 2020	2019	2018
Materialise NV	Belgium	100%	100%	100%
Materialise France SAS	France	100%	100%	100%
Materialise GmbH	Germany	100%	100%	100%
Materialise Japan K.K.	Japan	100%	100%	100%
Materialise Czech Republic SRO	Czech Republic	100%	100%	100%
Materialise USA, LLC	United States	99%	99%	99%
Materialise UK Limited	United Kingdom	100%	100%	100%
OBL SAS	France	100%	100%	100%
Materialise Austria GmbH	Austria	100%	100%	100%
Materialise Malaysia SDN. Bhd.	Malaysia	100%	100%	100%
Materialise Ukraine LLC	Ukraine	100%	100%	100%
RapidFit NV	Belgium	83%	83%	83%
Meridian Technique Limited	United Kingdom	100%	100%	100%
OrthoView Holdings Limited	United Kingdom	100%	100%	100%
Materialise SA	Poland	100%	100%	100%
Materialise Colombia SAS	Colombia	100%	100%	100%
RSPRINT powered by Materialise NV	Belgium	100%	50%	50%
Materialise Shanghai Co.Ltd	China	100%	100%	100%
Engimplan Engenharia de Implante Industria & Comércio Ltda	Brazil	100%	75%	—
Engimplan Holding Ltda	Brazil	100%	100%	—
Materialise Limited	South-Korea	100%	—	—
Materialise Australia PTY Ltd	Australia	100%	100%	100%
Materialise S.R.L.	Italy	100%	100%	100%
ACTech GmbH	Germany	100%	100%	100%
ACTech Holding GmbH	Germany	100%	100%	100%
ACTech, Inc	United States	100%	100%	100%

* The overview provides the equity interest held as of 31 December of each respective year.

Materialise Limited (South Korea) was newly established October 30th, 2020.

For increasing equity share in RS Print and Engimplan, we refer to Note 4.

The entities Materialise GmbH, Gilching, Germany, ACTech Holding GmbH, Freiberg / Saxony, Germany and ACTech GmbH, Freiberg / Saxony, Germany, have taken advantage of the exemption regulations of § 264 (3) HGB (German Commercial Code) for the financial year ending December 31, 2019 and December 31, 2020.

29 Non-GAAP Measures

EBITDA and Adjusted EBITDA is used in the Note 21 Segments as one of the basis of the Segments performance measurement. We calculate EBITDA as net profit plus income taxes, financial expenses (less financial income), depreciation and amortization, and share in loss of joint venture. Adjusted EBITDA is determined by adding back share-based compensation expenses, acquisition-related expenses of business combinations, impairments and fair value remeasurements due to business combinations to EBITDA.

Exhibit 1.1

This constitutes an unofficial English translation of the original Dutch document. The Dutch document shall govern in all respects, including interpretation matters.

ARTICLES OF ASSOCIATION

1. Name - duration - registered office - object

ARTICLE 1: Name.

The company has the legal form of a public limited company and is named **"MATERIALISE"**.

ARTICLE 2: Duration.

The company is established for an indefinite period, starting on 28 June 1990.

The company may only be dissolved with respect for the applicable legal provisions on dissolution.

ARTICLE 3: Registered office – E-mail address.

The company's registered office is established in the Flemish Region.

The registered office may be transferred within the Dutch language area or to the Brussels language area of Belgium without any amendment to the articles of association, following a decision by the Board of Directors. Such decision shall be published.

Furthermore, the Board of Directors shall be authorized to record the amendment to the Articles of Association resulting from the transfer of the registered office by notarial deed.

The email address of the company is as follows: investors@materialise.com. Any communication via this address by shareholders, members or holders of securities issued by the Company and holders of certificates issued with the cooperation of the Company shall be deemed to have been validly made.

ARTICLE 4: Object - objectives.

The company's object is as follows: the research, development and commercialisation of additive manufacturing and related technologies and all related service, engineering and holding activities, including but not limited to software, industrial and medical applications. All these activities should be interpreted in the broadest sense and for all business sectors.

The company acts for its own account, on consignment, on commission, as an intermediary or as an agent.

The company also has the following additional object:

- the purchase, sale, exchange, construction, renovation, commercialisation, furnishing, exploitation, letting, sub-letting, management, maintenance, parcelling, horizontal division and placement under compulsory co-ownership, leasing, prospection and promotion in any form of all immovable property or immovable property rights.
- Investing in, subscribing to, taking over, placing, purchasing, selling and trading all securities issued by Belgian or foreign companies, whether or not in the form of commercial companies, administrative offices, institutions and associations, as well as managing these investments and participations;
- providing advice, management and any other services to all affiliated companies or companies in which the company has a participating interest, in its capacity as director, liquidator or otherwise, as well as running or exercising control over these companies.

It may, either in cash or in kind, by means of a merger, subscription, participation, financial intervention or in any other way, acquire an interest in, or grant loans to, all existing companies or companies to be incorporated, whether in Belgium or abroad, with an identical or similar object or an object related to its own, or which is likely to promote the realisation of its object.

In general, the company may perform all acts of any nature whatsoever, which are directly or indirectly, whether in whole or in part, related to its object.

The Company has a profit-sharing object. Besides, the company aims to have a real positive impact on society and the environment in general through its business operations and economic activities.

2. Capital

ARTICLE 5: Capital and shares

The registered capital amounts to four million ninety-six thousand four hundred eighteen euro and seventy-two cents (4,096,418.72 EUR), represented by fifty-four million one hundred sixty-nine thousand two hundred fifty-seven (54,169,257) shares, without designation of nominal value, each representing an equal share in the capital.

The capital has been subscribed to and paid up in full and unconditionally.

ARTICLE 6: Authorized capital

a) By decision of the general meeting of shareholders of 5 November 2020, which will enter into force on the day of publication of the decision in the Annexes to the Belgian Official Gazette, the Board of Directors was granted the authority to increase the share capital in one or more rounds up to a maximum total amount equal to four million sixty-seven thousand seven hundred euro and seventy-two cents (4,067,700.72 EUR).

The Board of Directors may only exercise the powers granted to it for a period of five (5) years from the publication of this authorisation in the Annexes to the Belgian Official Gazette.

This authorisation may be renewed in accordance with the applicable legal conditions.

The Board of Directors has not yet exercised the authority granted to it.

b) The capital increases decided upon pursuant to this authorisation may take place in accordance with the conditions to be determined by the Board of Directors, including:

- by means of contributions in cash or in kind within the limits permitted by the Belgian Companies and Associations Code,
- through a conversion of reserves and share premiums,
- with or without the issue of new securities,
- through the issue of shares, with or without voting rights,
- through the issue of convertible bonds, whether subordinated or not,
- through the issue of subscription rights (free of charge or at a certain issue price),
- through the issue of bonds to which subscription rights or other securities are attached,
- through the issue of other securities, such as shares under a stock option plan,
- through the issuance of shares below fractional value.

c) As far as needed and applicable, in the event of a public takeover bid for securities issued by the company, the Board of Directors shall also have a specific authorisation to increase the capital in any form whatsoever, including a capital increase in which the shareholders' preferential subscription right is restricted or suspended, under the conditions provided for in Article 7:202 of the Belgian Companies and Associations Code.

This authorisation is granted for a period of three (3) years, starting from the extraordinary general meeting of shareholders held on 5 November 2020.

This authorisation may be renewed for the same period by a decision of the general meeting made in accordance with the rules set for the amendment of the articles of association.

The capital increases decided upon in the context of this authorisation shall be imputed to the remaining part of the authorised capital as referred to in paragraph (a).

d) Any issue premiums payable at the time of subscription to a capital increase within the framework of the authorised capital shall be booked to a separate account under shareholders' equity in the liabilities section of the Company's balance sheet and shall be constituted by contributions in cash or in kind, other than contributions in work, actually paid up at the occasion of the issuance of shares.

e) The Board of Directors shall also be authorised to restrict or cancel the preferential subscription right in the interest of the company. It may do this for the benefit of one or more specific persons, even if they are not members of the personnel of the company or its subsidiaries, provided that, including upon the issue of subscription rights, compliance with the relevant legal provisions is ensured. It may also decide, as appropriate, to give priority to the existing shareholders during the allocation of new shares.

f) The Board of Directors has the power, with the possibility of subrogation, to amend the articles of association of the company in order to align them with decisions on capital increases within the framework of the authorised capital.

ARTICLE 7: Capital increase - preferential subscription right.

a) Subject to the possibility of a capital increase within the framework of authorized capital by decision of the Board of Directors, an increase in the share capital can only be decided upon by an extraordinary general meeting before a notary public, in accordance with the provisions of the Belgian Companies and Associations Code.

b) For each capital increase by means of a contribution in cash, the shareholders shall have a preferential subscription right in accordance with Article 7:188 et seq. of the Belgian Companies and Associations Code and the new shares, convertible bonds and subscription rights shall first be offered to the existing shareholders in proportion to the part of the capital represented by their shares.

The period during which the preferential subscription right may be exercised shall be determined by the general meeting of shareholders or, as applicable, by the Board of Directors, and may not be less than fifteen days from the date on which the subscription is opened.

The Board of Directors may decide that the total or partial non-use by the shareholders of their preferential subscription rights shall increase the proportional share of the shareholders who have already exercised their preferential subscription rights; it shall also decide on the subscription procedure. The Board of Directors shall also have the right, upon such terms as it shall determine, to conclude all agreements to ensure the subscription to all or part of the shares to be issued.

If a share is encumbered with a usufruct, the preferential subscription right shall belong to the usufructuary, unless otherwise agreed. The newly acquired shares, convertible bonds and subscription rights shall be fully owned by him, subject to a possible fee paid to the bare owner for exercising the preferential subscription right.

In the case of pledged shares, the preferential subscription right shall exclusively belong to the owner-pledger.

In the interest of the company and with due observance of the relevant legal requirements, the general meeting of shareholders and, within the framework of the authorized capital, the Board of Directors, may restrict or cancel the preferential subscription right.

c) The general meeting of shareholders, or the Board of Directors within the authorized capital, as appropriate, may decide to increase the capital in favour of its employees, subject to the provisions of Article 7:204 of the Belgian Companies and Associations Code.

d) A capital increase can also be realized through the conversion of reserves. The extraordinary general meeting may grant the Board of Directors the power to increase the capital within the limits of the authorized capital through the conversion of reserves.

ARTICLE 8: Capital reduction

A decision to reduce the capital can be made in accordance with the relevant legal provisions.

3. Shares and other securities

ARTICLE 9: Nature of the securities

The shares and other securities of the company are and will always remain registered shares. They shall bear a serial number.

A register is kept at the registered office of the company for each class of registered securities, either in original physical form or in electronic form in accordance with the applicable legislation. The ownership of registered securities is determined by an entry in the register. If so requested, certificates of these subscriptions shall be issued to the holders of the securities.

ARTICLE 10: Unpaid or partially paid shares—obligation to pay up

The obligation to pay up a share is unconditional and indivisible.

If shares which have not been paid up in full are jointly owned by several persons, each one of them shall be liable for the payment of the entire amount of the duly called payments due.

Additional contributions or full payment are requested by the Board of Directors at a time to be determined by the Board of Directors. The shareholders are notified in accordance with article 2:32 of the Belgian Companies and Associations Code, which shall mention the bank account to which payment must be made by wire transfer or deposit, with the exclusion of all other methods of payment. The shareholder shall be deemed in default when the time limit specified in the notice has expired and interest shall be payable to the company at the statutory rate fixed at that time, plus two percentage points.

As long as the called payments due for a share have not been made in accordance with this provision, the exercise of the rights related thereto shall be suspended.

Early payments on shares may not be made without the prior consent of the Board of Directors.

ARTICLE 11: Indivisibility of shares

The securities are indivisible vis-à-vis the company.

If multiple persons have a right in rem to the same security, they may exercise the rights attached to such securities only through a joint representative.

The company may suspend the exercise of the rights attached to it until a single person has been appointed as the owner of the security vis-à-vis the company or as their joint representative.

All convocation notices, notifications and other notices served by the company to the different persons entitled to a single security shall be validly and exclusively given, as the case may be, either to the person designated as the owner vis-à-vis the company or to the designated joint representative.

Unless stipulated otherwise in the articles of association, a will or an agreement, the usufructuary of the securities shall exercise all rights attached to these securities.

ARTICLE 12: Successors

The rights and obligations shall remain attached to a security, regardless of its ownership.

The heirs, creditors or other successors of the shareholder may not interfere with the management of the company, nor cause any seals to be affixed to the goods and valuables of the company, nor claim the liquidation of the company and the distribution of its equity.

They shall act in compliance with the company's financial statements for exercising their rights and shall observe the decisions of the general meeting and the Board of Directors.

ARTICLE 13: Bonds, subscription rights and other financial instruments granting rights to shares

The company may issue bonds by decision of the Board of Directors, which will determine the terms of the issue.

The issue of convertible bonds or bonds redeemable in shares, subscription rights or other financial instruments which will eventually entitle the holder to shares may be decided upon by the general meeting of shareholders or by the Board of Directors within the framework of the authorized capital (subject to compliance with the relevant legal requirements).

The holders of shares without voting rights, profit-sharing certificates without voting rights, convertible bonds, subscription rights or certificates which were issued with the cooperation of the company, may attend the general meeting of shareholders, but only in an advisory capacity.

3. Acquisition and disposal of own securities

ARTICLE 14: Acquisition and disposal of own securities

a) The company may acquire its own shares or profit participation certificates or certificates relating thereto, or subscribe for them, after the issue of the corresponding shares or profit participation certificates, in accordance with the relevant legal provisions.

b) By decision of the general meeting of shareholders of 5 November 2020, the Board of Directors was authorized, in accordance with Article 7:215 et seq. of the Belgian Companies and Associations Code and within the limits specified in this article, to acquire its own shares at a price per share that may not be lower than 80%, and not higher than 120% of the average closing prices of the American Depository Shares representing the shares of the company during a period of 30 calendar days prior to either the date of purchase or the date of announcement thereof.

This authorisation shall also apply to the acquisition of the company's shares by one of its directly controlled subsidiaries, as referred to in and within the limits of Article 7:221 of the Belgian Companies and Associations Code.

Any offer to acquire the company's shares must be made to all shareholders under the same conditions, in accordance with Article 7:215, 1st paragraph, 4th section of the Belgian Companies and Associations Code.

This authorisation shall be valid for a period of five years from the publication of this authorisation in the Annexes to the Belgian official gazette.

This authorisation may be extended by a decision of the general meeting and in accordance with the provisions of the Belgian Companies and Association Code.

c) The Board of Directors may only dispose of its acquired shares, profit participation certificates or certificates relating thereto in accordance with the relevant legal provisions and this at a price determined by the Board of Directors. Without prejudice to the foregoing, the Board of Directors is specially authorised to alienate its acquired shares, profit participation certificates or certificates relating thereto (i) to one or more specific persons other than the personnel (in this case, the directors who in fact represent this person or the persons associated with him, may not participate in the vote of the Board of Directors), and (ii) to the personnel.

The foregoing also applies to the disposal of the shares of the Company by one of its direct subsidiaries in accordance with Article 7:221 of the Companies and Associations Code.

c) By decision of the general meeting of shareholders of 5 November 2020, the Board of Directors was authorised, without further decision by the general meeting of shareholders and in accordance with the provisions of the Belgian Companies and Associations Code, to acquire or dispose of the company's shares, when such acquisition or disposal is necessary to prevent serious imminent harm to the company.

This authorisation is granted for a period of three years, starting from the publication of this authorisation in the Annexes to the Belgian Official Gazette. This authorisation may be extended for periods of three years by a decision of the general meeting and in accordance with the provisions of the Belgian Companies and Associations Code.

4. Management and representation

ARTICLE 15: Appointment—Dismissal—Vacancy—Publication

a) The Board of Directors of the company shall consist of at least seven (7) and no more than eleven (11) directors, and at least three (3) directors must be independent directors (within the meaning of Article 7:87 of the Belgian Companies and Associations Code).

b) As long as all the voting rights attached to the shares controlled by each of the Family Shareholders, whether directly or indirectly and jointly or otherwise, represent 20% or more of all voting rights attached to all outstanding shares of the company, a maximum of six (6) directors shall, if a Family Shareholder makes a simple request to that end, only be appointed on the nomination of a majority of all Family Shareholders who directly or indirectly control at least 3% of the voting rights attached to the shares of the company on the date of the appointment. The number of candidates on the nomination list of the Family Shareholders must be higher than the number of vacancies to be filled which are subject to the nomination right. If a director appointed on the nomination of the Family Shareholders resigns or is dismissed, his vacancy may only be filled by a candidate nominated by the majority of the other directors appointed on the nomination of the Family Shareholders, if any.

For the purposes of this Article, "**Family Shareholders**" shall include the following persons: Wilfried Vancraen, Hilde Ingelaere and their relatives in the first degree in descending line.

c) When a legal entity is appointed as a director, it will appoint a physical person as a permanent representative who will be charged with the execution of the assignment in the name of and on behalf of the legal entity-director.

d) The directors are appointed by the general meeting of shareholders.

In any case, the duration of their assignment may not exceed the maximum legal term of six (6) years.

Their assignment shall end when the general meeting of shareholders or the meeting of the Board of Directors deciding on their replacement is closed.

The directors can be dismissed by the general meeting of shareholders at all times.

Retiring directors are eligible for reappointment.

e) When a director's office becomes vacant, the remaining directors have the right to co-opt a new director under the conditions provided for by law and in compliance with the abovementioned nomination scheme. The subsequent general meeting of shareholders must confirm the mandate of the co-opted director; in case of confirmation, the co-opted director fulfills the mandate of his predecessor, unless the general meeting decides otherwise. In the absence of confirmation, the mandate of the co-opted director ends at the end of the general meeting, without prejudice to the regularity of the composition of the Board of Directors until that time.f) The Chairman of the Board of Directors will be elected by the Board of Directors.

g) The appointment of the members of the board and the termination of their office shall be published by submitting an extract from the decision at the Registrar's Office of the Commercial Court in the company file, and a copy thereof for publication in the Annexes to the Belgian Official Gazette. These documents shall in any event specify whether the persons representing the company each bind the company individually, jointly or as a body.

ARTICLE 16: Convocation of the Board of Directors

a) The Board of Directors shall be convened by its chairman as often as required in the interest of the company, and shall meet within fourteen days following a request to that effect from two directors or from the managing director.

If the Chairman has not convened the Board of Directors within the abovementioned period of fourteen days following the request of the directors or of the managing director to convene the Board of Directors, the requesting directors or the requesting managing director may validly convene the Board of Directors

b) The convocation notices shall state the place, date, time and agenda of the meeting and shall be sent by letter, fax or other written (or electronic) means at least two (2) working days before the meeting.

c) Each general meeting shall be held at the registered office of the company or in any other location in Belgium, as specified in the convocation notice.

d) The regularity of the convocation cannot be disputed if all directors are present or validly represented.

ARTICLE 17: Meeting of the Board of Directors

a) The Board is presided by the Chairman or, in his absence, by the Vice-Chairman (if one has been appointed) or by the oldest of the directors present at the meeting.

b) The Board of Directors may only validly deliberate and decide if at least a majority of its members are present or represented at the meeting.

c) Directors who are unable to be present in person at the meeting may participate in the deliberations and vote through telecommunication tools such as telephone or videoconference, on the condition that all participants in the meeting can communicate directly with all other participants. The persons who participate in a meeting by such technical means shall be considered to be present in person at this meeting.

d) Each director may grant a proxy to another director to represent him at a specific meeting. Such a proxy must be given in the form of a power of attorney bearing the signature of the director (including a digital signature insofar as allowed as written proof by the applicable legislation) and which must be notified to the Board of Directors by simple letter, fax or any other means of written (or electronic) communication. A director may represent several colleagues of the Board of Directors.

e) Decisions are made by a simple majority of the votes.

f) Minutes are kept of the decisions made by the Board of Directors. They are signed by the Chairman and, in his absence, by the director chairing the meeting and at least a majority of the board members present at the meeting.

Copies and extracts shall be signed by two directors or by one managing director.

g) The decisions of the Board of Directors can be taken by unanimous written decisions of all directors in accordance with the relevant legal provisions.

ARTICLE 18: Salary

Without prejudice to the reimbursement of their expenses, the directors may be granted a fixed remuneration, the amount of which shall be determined each year by the general meeting and shall be at the charge of the general budget of the company. In addition, the general meeting may grant them a profit-related directors’ fee from the available profit for the financial year.

ARTICLE 19: Conflicts of interest

a) If a director has a direct or indirect financial interest which conflicts with the interest of the company as a result of a decision or transaction within the authority of the Board of Directors, the requirements of Article 7:96 of the Belgian Companies and Associations Code must be observed by the relevant director, as well as by the Board of Directors in its deliberations and decision-making.

b) If several directors have a conflict of interest, the decision or transaction can be validly made by the remaining directors, even if half of the directors are no longer present or represented in this circumstance.+b) If all directors have a conflict of interest, the decision or transaction shall be submitted to the general meeting of shareholders. If the general shareholders' meeting approves the decision or the transaction, the Board of Directors may execute it.

ARTICLE 20: Internal governance—Restrictions—Delegation of powers

a) The company is managed by a Board of Directors. The Board of Directors is authorized to take any action which is required or useful to pursue the company's object, with the exception of the activities assigned exclusively to the general meeting by law.

b) Without prejudice to the obligations arising from collegial management, in particular with respect to consultation and supervision, the directors may distribute the management tasks among themselves. Such division of tasks shall not be enforceable against third parties.

c) The Board of Directors may establish one or more advisory committees under its responsibility. The Board of Directors shall define their composition, tasks and functioning. The members of such committees are appointed by the Board of Directors, which shall also determine the conditions of their appointment, dismissal, remuneration and the duration of their mandate.

d) The Board of Directors may delegate day-to-day administration of the company to one or more persons.

ARTICLE 21: External powers of representation

a) The Board of Directors shall represent the company as a body in and out of court. It shall act through the majority of its members. Notwithstanding the general representation powers of the Board of Directors as a body, the company shall also be represented in and out of court by two directors acting jointly, of which at least one director is appointed from the list of candidates nominated by the Family Shareholders.

b) The company shall also be represented in day-to-day administration, both in and out of court by one or more representatives entrusted with day-to-day administration, acting individually or jointly in accordance with the delegation decision of the Board of Directors.

ARTICLE 22: Special powers of attorney

The Board of Directors or the directors representing the company may appoint attorneys-in-fact of the company. Only special and limited powers of attorney for a specific legal act or a series of specific legal acts shall be permitted. The proxy holders shall bind the company within the limits of the authority granted to them, without prejudice to the responsibility of the directors in the event of excess of power of attorney.

ARTICLE 23: Responsibility of the directors

a) The directors are not personally bound by the commitments of the company. The directors shall be responsible vis-à-vis the company and vis-à-vis third parties for any shortcomings in their management, in accordance with the applicable provisions of the Belgian Companies and Associations Code.

b) The company and its shareholders ensure that the directors in their decision-making take into account the achievement of a real positive impact through the management and economic activities of the company, in the short term and in the (medium)long term, with regard to (the interests of) third parties such as (i) the employees, the subsidiaries and the suppliers, (ii) the customers of the company and its subsidiaries, (iii) the communities (associations, organisations, etc.) and society in which the company, its subsidiaries and their suppliers develop their activities, (iv) the local and global environment, (v) other potential stakeholders in the activities of the company and its subsidiaries.

None of the aforementioned parties can claim a priority over the others. The directors independently and discretionary weigh the various interests that may serve the realisation of the aforementioned positive impact as part of the corporate interest.

Under no circumstances does this provision confer any right, either explicitly or implicitly, on stakeholders or other third parties. Nor is it intended to infer such a right, or to give rise to stakeholders or other third parties, initiating legal proceedings against the collegial management body, individual directors or the Company.

5. Supervision

ARTICLE 24: Appointment—authority and remuneration of the auditor

If necessary, one or more auditors shall be appointed to audit the company. They are appointed by the general meeting of shareholders for a renewable term of three years. Under penalty of damages, they may only be dismissed for legal cause during their mandate by the general meeting.

If there is no obligation for the company to appoint an auditor, and no auditor is appointed, then each shareholder shall individually have the investigation and audit powers of an auditor.

The remuneration of the auditor shall consist of a fixed amount, which is determined by the general meeting at the start of their mandate, without prejudice to Article 3:65 of the Belgian Companies and Associations Code. It may be amended only by agreement of the Parties. Apart from this remuneration, the auditor may not receive any benefit, in whatever form, from the company.

6. General meeting

ARTICLE 25: Ordinary, special and extraordinary general meetings

a) The ordinary general meeting of shareholders, which is referred to as the annual meeting, shall be convened each year on the first Tuesday of the month of June at 10 am. If this day is a public holiday, the meeting will be held on the subsequent working day (excluding Saturdays) at the same time.

b) A special general meeting may be convened at all times to deliberate and decide on any matter which is within its competence and which does not involve any amendment to the Articles of Association.

c) An extraordinary general meeting may also be convened at all times to deliberate and decide on any amendment to the Articles of Association, in the presence of a notary.

d) The general meetings shall be held at the registered office of the company or in any other location, as specified in the convocation notice.

ARTICLE 26: Convocation

a) The Board of Directors and any possible auditor may convene both an ordinary general meeting (annual meeting) and a special or extraordinary general meeting. They must convene the annual meeting on the date determined by the articles of association. The Board of Directors and any auditor shall be obliged to convene a special or extraordinary meeting if one or more shareholders who individually or jointly represent one tenth of the share capital so request.

Such a request must be sent by registered letter to the registered office of the company; it must state the agenda items on which the general meeting has to deliberate and decide.

The notice convening the general meeting to be held must be given within three weeks of the request.

Other items may be added to the agenda items specified by the shareholders in the notice convening the meeting.

b) The notices convening the general meetings shall state the agenda and shall be published in accordance with the relevant legal provisions at least fifteen (15) days in advance.

c) The agenda must contain the items to be discussed and the proposals for resolutions.

d) Any person may waive this notice and shall in any case be considered as having been invited correctly if he attends the meeting or is represented there.

ARTICLE 27: Admission to general meetings—representation

a) The right to attend the general meetings and to exercise the voting right is determined by the registration of the ownership of the shares in the name of the shareholder on the third (3rd) business day prior to the date of the scheduled meeting by their registration in the company's shareholders' register.

The board of directors may make participation in the general meetings dependent on a requirement of notification by the shareholder to the company, or to the person appointed for this purpose by the company, on a date to be determined by the board of directors before the date of the scheduled meeting, that he intends to attend the meeting, stating the number of shares the shareholder wishes to participate with, in which case this notification must be made as defined in the convocation notice.

b) Any shareholder who has voting rights may either attend the meeting in person or be represented by a proxy, who may or may not be a shareholder.

The power of attorney must be given in writing in the manner specified in the convocation notice.

The company has to receive the power of attorney no later than on the date determined by the Board of Directors as stated in the convocation notice.

c) Before attending the meeting, the shareholders or their proxy holders must sign the attendance list, stating (i) the identity of the shareholder, (ii) if applicable, the identity of the proxy holder, and (iii) the number of shares they represent.

d) The holders of profit-sharing certificates, non-voting shares, bonds, subscription rights, or other securities issued by the company may attend the general meeting of shareholders insofar as the law grants them this right and, as applicable, the right to participate in the vote. If they wish to attend, they shall be bound by the same formalities of admission, access, form and notification for proxies as those imposed on the shareholders.

ARTICLE 28: Chairman—Committee

Each general meeting is presided by the chairman of the Board of Directors or, in his absence, by the vice-chairman (if one has been appointed) or by the oldest member of the Board of Directors.

The chairman shall appoint a secretary and vote counter, who does not have to be a shareholder. Both roles may be performed by one person. The chairman, secretary and vote counter shall together constitute the Committee.

The chairman may form the Committee before opening the session and this Committee may verify the powers of the participants before the opening of the session.

ARTICLE 29: Procedure of the meeting

a) The deliberation and voting shall take place under the supervision of the chairman. The directors and any auditor(s) shall answer questions raised by holders of registered shares, convertible bonds or subscription rights, or of registered certificates issued with the cooperation of the company, before or during the meeting, oral or in writing and which relate to the agenda items. The directors and possible auditor(s) can, in the interest of the company, refuse to answer questions when the communication of certain data or facts could be detrimental to the company or would be in contravention of confidentiality commitments entered into by them or by the company.

As soon as the convocation notice has been published, the shareholders may ask the abovementioned questions (in writing or by e-mail), provided that these shareholders meet the conditions to be admitted to the meeting and that they have submitted their questions to the company at the latest on the third (3rd) business day prior to the date of the scheduled meeting as specified in the convocation notice.

b) During the session, the Board of Directors has the right to postpone each general shareholders' meeting by three weeks. This adjournment shall not affect the other decisions that have been made, unless the general meeting decides otherwise. At the next meeting, the items on the agenda of the first meeting at which no final decision was made, will be discussed.

c) The general meeting may not validly deliberate or decide on items which at are not included in the announced agenda or are not implicitly included therein. Items not included in the agenda may only be discussed at a meeting at which all shareholders are present or represented and on the condition that the decision is made unanimously. The required consent will be assumed if no objection is recorded in the minutes of the meeting.

ARTICLE 30: Voting rights

Every voting share is entitled to one vote.

ARTICLE 31: Decision-making process

a) The general meeting of shareholders may validly deliberate and decide regardless of the number of shares present or represented, except in the cases where the law requires a certain attendance quorum. Resolutions of the general shareholders' meeting may be validly passed by a simple majority of the votes cast, except in cases where the law requires a certain majority.c) Minutes shall be drawn up for each general meeting, and the attendance list and any reports and proxies shall be attached thereto.

The minutes of the general meeting of shareholders are signed by the members of the Committee and by the shareholders requesting them.

Copies and extracts shall be signed by two directors or by one managing director.

d) The shareholders can make all decisions that fall within the competence of the general meeting by unanimous vote and in writing, with the exception of decisions that must be executed by an authentic deed.

7. Inventory—financial statements—reserve—appropriation of profits.

ARTICLE 32: Financial year—financial statements—annual report

a) The financial year of the company shall commence on one January and end on thirty one December of the same calendar year.

At the end of each financial year, the accounts and records are closed and the Board of Directors draws up the inventory and the financial statements, in accordance with the relevant legal requirements.

The directors also draw up an annual report, if applicable, in which they justify their policies.

b) Fifteen days before the ordinary general meeting, which shall meet within six months of the end of the financial year, the shareholders may examine the annual accounts and other documents mentioned in the Belgian Companies and Associations Code at the company's registered office.

c) Following approval of the financial statements, the general meeting shall decide by separate vote on granting discharge to the directors and auditors.

ARTICLE 33: Appropriation of profits—Reserve

The positive balance of the profit and loss account shall constitute the profits of the company.

Of these net profits, at least one twentieth is deducted in advance to constitute the legal reserve until it amounts to one tenth of the share capital.

The general meeting shall decide freely on the further allocation of the balance of the profits by simple majority vote on a proposal from the Board of Directors.

No distribution may be made if the net assets of the company, as reported in the financial statements, have fallen or would fall as a result of the distribution below the highest amount of the paid-up capital or the called capital, plus any reserves which may not be distributed based on a legal provision or on the Articles of Association, and Article 7:212 of the Code of Companies and Associations must be applied in this case.

ARTICLE 34: Payment of dividends—interim dividends

a) The Board of Directors shall determine the place, time and manner in which dividends are paid.

b) The Board of Directors has the authority to pay interim dividends on the profits of the financial year, in accordance with the legal provisions applicable.

8. Dissolution—liquidation

ARTICLE 35: Dissolution

The voluntary dissolution of the company may only be decided upon by an extraordinary general meeting of shareholders, in compliance with the relevant legal requirements.

After its dissolution, the company shall continue to exist as a legal entity until the closure of its liquidation.

ARTICLE 36: Appointment and powers of the liquidators

a) If no liquidators have been appointed, the directors in office at the time of the dissolution shall be considered liquidators by operation of law vis-à-vis third parties, but without the powers that the law and articles of association, with regard to the transactions of the liquidation, confer on the liquidator appointed in the articles of association, by the general meeting of shareholders or by the court.

b) If a legal person is appointed as a liquidator, the natural person representing the liquidator in the liquidation must be specified in the appointment decision. Any change to this appointment must be published in the Annexes to the Belgian Official Gazette.

c) The liquidators shall not assume their office before the Commercial Court has confirmed their appointment following the decision of the general meeting, insofar as the Belgian Companies and Associations Code requires the confirmation of the appointment.

d) The general meeting of the dissolved company may appoint and dismiss one or more liquidators at any time and by a simple majority vote. It shall decide whether the liquidators, if there are several, shall represent the company alone, jointly or as a body.

ARTICLE 37: Powers of the liquidators

a) The liquidators are authorized to carry out all the transactions referred to in articles 2:87 and further of the Belgian Companies and Associations Code without requiring prior authorization from the general meeting, unless the general meeting decides otherwise by simple majority vote.

b) In the seventh and thirteenth month after the start of the liquidation, the liquidators shall submit a detailed statement of the status of the liquidation, drawn up at the end of the sixth and twelfth month of the first year of liquidation, to the registrar’s office of the commercial court, in accordance with the provisions of the Belgian Companies and Associations Code. As from the second year of liquidation, the detailed statement must be submitted only once every year.

c) Each year, the liquidators shall submit the results of the liquidation to the company’s annual general meeting, stating the reasons why the liquidation could not be completed. They will also prepare the financial statements every year.

d) The financial statements shall be published in accordance with the relevant legal provisions.

ARTICLE 38: Liquidation method

After payment of all debts, charges and costs of the liquidation or after consignment of the necessary funds, the liquidators shall distribute the net assets in cash or in securities among the shareholders in proportion to the number of shares they own.

The liquidators may, to the extent authorised in accordance with Article 2:88 of the Belgian Companies and Associations Code, purchase the company's shares, either on the stock exchange or by means of an offer or a price request addressed to the shareholders, who must all be able to participate in the transaction.

9. General provisions

ARTICLE 39: Election of domicile:

Each member of the Board of Directors and the managing director may elect domicile at the registered office of the company for all matters relating to the exercise of his or her mandate.

The directors, auditors and liquidators whose domicile is unknown or who are domiciled abroad, shall be deemed to have elected their domicile at the registered office of the company, where all summons, writs and notices relating to the affairs of the company may be served.

Holders of registered securities are required to notify the company of any change in their choice of domicile. In the absence of such notification, they shall be deemed to have made their choice of domicile at the registered office of the company where all deeds may be validly served or notified to them, while the company has no other obligation than to keep them at the disposal of the addressee.

ARTICLE 40: Applicable law

The provisions of the Belgian Companies and Associations Code and other provisions of Belgian law shall apply to any matters which are not expressly specified in these articles of association, or to the legal provisions from which these articles of association do not include a valid derogation.

ARTICLE 41: Personnel

Unless the context requires otherwise or unless otherwise defined in these articles of association, "personnel" for the purposes of these articles of association has the meaning as defined in article 1:27 of the Belgian Companies and Associations Code.

Exhibit 2.3

DESCRIPTION OF SECURITIES

The following description is a summary of certain information relating to the share capital of Materialise NV, certain provisions of the restated articles of association of Materialise NV, the Belgian Companies and Associations Code and the deposit agreement governing the American Depositary Shares, or ADSs, each representing one ordinary share. For the purposes of the following description, except as otherwise required by the context, references to "Materialise," "Company," "we," "us" and "our" are to Materialise NV, "you" refers to holders of the ADSs and our "articles of association" refers to our restated articles of association. Because this description is a summary, it may not contain all information which is important to you. Accordingly, this description is qualified entirely by reference to our articles of association, the deposit agreement and the form of ADR, copies of which have been publicly filed with the Securities and Exchange Commission, or the SEC.

The following description includes comparisons of certain provisions of our articles of association and the Belgian Companies and Associations Code applicable to us and the Delaware General Corporation Law, or the DGCL, the law under which many publicly listed companies in the United States are incorporated. Because such statements are summaries, they do not address all aspects of Belgian law that may be relevant to us and our shareholders or all aspects of Delaware law which may differ from Belgian law, and are not intended to be a complete discussion of the respective rights.

Share Capital

Share Capital and Ordinary Shares

Our share capital is represented by registered ordinary shares without nominal value. Our share capital is fully paid-up. There are no separate classes of shares. The respective number of our ordinary shares issued and outstanding as of the last day of the fiscal year to which the annual report to which this description is attached or incorporated by reference as an exhibit pertains is given on the cover page of such annual report.

On June 30, 2014, we sold 8,000,000 ADSs in our initial public offering at a price of $12.00 per ADS. In connection with the closing of our initial public offering, we converted our outstanding Class A ordinary shares, Class B ordinary shares and Class C ordinary shares into ordinary shares and effected a stock split of our outstanding ordinary shares, whereby each ordinary share was converted into four ordinary shares.

Form and Transferability of Our Shares

All of our shares belong to the same class of securities and are in registered form.

All of our outstanding shares are fully paid-up and freely transferable, subject to any contractual restrictions.

Currency

Our ordinary share capital, which is represented by our outstanding ordinary shares, is denominated in euro.

Changes to Our Share Capital

In principle, changes to our share capital are decided by our shareholders. Our shareholders may at any time at a shareholders' meeting decide to increase or decrease our share capital. Such resolution must satisfy the quorum and majority requirements that apply to an amendment of the articles of association, as described below in "—Description of the Rights and Benefits Attached To Our Shares—Right to Attend and Vote at Our Shareholders' Meetings—Quorum and Majority Requirements". No shareholder is liable to make any further contribution to our share capital other than with respect to shares held by such shareholder that are not fully paid-up.

Share Capital Increases by Our Board of Directors

Subject to the quorum and majority requirements described below in "—Description of the Rights and Benefits Attached To Our Shares—Right to Attend and Vote at Our Shareholders' Meeting—Quorum and Majority Requirements", our shareholders' meeting may authorize our board of directors, within certain limits, to increase our share capital without any further approval of our shareholders. A capital increase that is authorized in this manner is referred to as authorized capital. This authorization can only be granted for a renewable period of a maximum of five years.

At the special and extraordinary shareholders' meeting of November 5, 2020, our shareholders authorized our board of directors, for a period of five years from November 9, 2020, to increase our share capital, in one or more transactions, up to a maximum amount equal to the amount of our share capital on the date of the special and extraordinary shareholders' meeting.

Preferential Subscription Rights

In the event of a capital increase by means of a contribution in cash or in the event of an issuance of convertible bonds or warrants, the existing shareholders shall have a preferential subscription right in accordance with Article 7:188 et seq. of the Belgian Companies and Associations Code and the new shares, convertible bonds and warrants shall first be offered to the existing shareholders in proportion to the part of the capital represented by their shares. These preferential subscription rights are transferable during the subscription period. The board of directors may decide that the total or partial non-use by the shareholders of their preferential subscription rights shall increase the proportional share of the shareholders who have already exercised their preferential subscription rights; it shall also decide on the procedure to exercise the preferential subscription rights.

Our shareholders may, at a shareholders' meeting, decide to limit or cancel this preferential subscription right, subject to special reporting requirements. Such decision by the shareholders must satisfy the same quorum and majority requirements as the decision to increase our share capital. Shareholders may also decide to authorize our board of directors to limit or cancel the preferential subscription right within the framework of the authorized capital, subject to the terms and conditions set forth in the Belgian Companies and Associations Code. Our board of directors currently has the authority to increase the share capital within the framework of the authorized capital, and the right to limit or cancel the preferential subscription right within the framework of the authorized capital. See also "—Share Capital Increases by Our Board of Directors" above.

Under the DGCL, stockholders of a Delaware corporation have no preemptive rights to subscribe for additional issues of stock or to any security convertible into such stock unless, and to the extent that, such rights are expressly provided for in the corporation's certificate of incorporation.

Purchases and Sales of Our Own Shares

We may only repurchase our own shares pursuant to authorization of our shareholders at a shareholders' meeting taken under the conditions of quorum and majority provided for in the Belgian Companies and Associations Code. Pursuant to the Belgian Companies and Associations Code, such a decision requires a quorum of shareholders holding an aggregate of at least 50% of the share capital and approval by a majority of at least 75% of the of the votes cast (abstentions are not taken into account). If there is no quorum, a second meeting must be convened. No quorum is required at the second meeting, but the relevant resolution must be approved by a majority of at least 75% of the votes cast (abstentions are not taken into account). Within such authorization, we may only repurchase our own ordinary shares if the amount that we would use for repurchase is available for distribution. Any offer by us to purchase our own shares must be made on the same terms and conditions to all of our shareholders.

Under the DGCL, a Delaware corporation may purchase or redeem its own shares unless the capital of the corporation is impaired or the purchase or redemption would cause an impairment of the capital of the corporation.

By decision of the special and extraordinary general meeting of shareholders of November 5, 2020, our board of directors was authorized to acquire, in accordance with Article 7:215 et seq. of the Belgian Companies and Associations Code and within the limits specified in the articles of association, our own shares at a price per share

that may not be lower than 80%, and not be higher than 120% of the average closing prices of the ADSs during a period of 30 calendar days prior to either the date of purchase or the date of announcement thereof. This authorization is granted for a period of five years, starting from November 9, 2020. The authorization is also valid for the sale of our shares by one of our direct subsidiaries, as defined in Article 7:221 of the Belgian Companies and Associations Code.

Our board of directors is also authorized to sell our own shares at a price that it determines. This authorization is valid without restriction in time. The authorization is also valid for the sale of our shares by one of our direct subsidiaries, as defined in Article 7:221 of the Belgian Companies and Associations Code.

In addition to that, by decision of the special and extraordinary general meeting of shareholders of November 5, 2020, the board of directors was authorized, without further decision by the general meeting of shareholders and in accordance with the provisions of the Belgian Companies and Associations Code, to acquire or dispose of the Company's shares, when such acquisition or disposal is necessary to prevent serious imminent harm to the Company. This authorization is granted for a period of three years, starting from November 9, 2020.

Exchange Controls and Limitations Affecting Shareholders

There are no Belgian exchange control regulations that impose limitations on our ability to make, or the amount of, cash payments to residents of the United States.

We are in principle under an obligation to report to the National Bank of Belgium certain cross-border payments, transfers of funds, investments and other transactions in accordance with applicable balance-of-payments statistical reporting obligations. Where a cross-border transaction is carried out by a Belgian credit institution on our behalf, the credit institution will in certain circumstances be responsible for the reporting obligations.

Belgian Legislation

Disclosure of Significant Shareholdings

The Belgian Law of May 2, 2007 on the disclosure of significant shareholdings in issuers whose securities are admitted to trading on a regulated market and containing various provisions does not apply to us. However, in accordance with U.S. federal securities laws, holders of our ordinary shares and holders of ADSs representing our ordinary shares will be required to comply with disclosure requirements relating to their ownership of our securities. Any person who, after acquiring beneficial ownership of our ordinary shares or ADSs representing our ordinary shares, is the beneficial owners of more than 5% of our outstanding ordinary shares or ordinary shares underlying ADSs must file with the Securities and Exchange Commission a Schedule 13D or Schedule 13G, as applicable, disclosing the information required by such schedules, including the number of our ordinary shares or ordinary shares underlying ADSs that such person has acquired (whether alone or jointly with one or more other persons). In addition, if any material change occurs in the facts set forth in the report filed on Schedule 13D (including a more than 1% increase or decrease in the percentage of the total shares beneficially owned), the beneficial owner must promptly file an amendment disclosing such change.

Public Takeover Bids

Public takeover bids in Belgium for our shares or other securities giving access to voting rights are subject to supervision by the FSMA. Public takeover bids must be extended to all of the voting securities, as well as all other securities giving access to voting rights. Prior to making a bid, a bidder must publish a prospectus which has been approved by the FSMA prior to publication.

However, the Belgian rules on mandatory takeover bids, which provide that a mandatory bid must be launched if a person, as a result of its own acquisition or the acquisition by persons acting in concert with it or by persons acting for their account, directly or indirectly holds more than 30% of the voting securities in a Belgian listed company, are not applicable to us.

Squeeze-out

Pursuant to Article 7:82, §2 of the Belgian Companies and Associations Code and the regulations promulgated thereunder, any person or legal entity who, acting alone or in concert, directly or indirectly, owns 95% of the securities with voting rights in a Belgian non-listed public limited liability company such as the Company is entitled to acquire the totality of the securities with voting rights in that company following a squeeze-out offer. With the exception of those securities of which the owners have expressly stated in writing that they do not wish to relinquish them, the securities that are not voluntarily tendered in response to such an offer are deemed to be automatically transferred to the bidder at the end of the procedure. The consideration for the securities must be in cash and must be determined taking into account the interests of the security holders.

The DGCL provides for stockholder appraisal rights, or the right to demand payment in cash of the judicially determined fair value of the stockholder's shares, in connection with certain mergers and consolidations.

Limitations on the Right to Own Securities

Neither Belgian law nor our articles of association impose any general limitation on the right of non-residents or foreign persons to hold our securities or exercise voting rights on our securities other than those limitations that would generally apply to all shareholders.

Description of the Rights and Benefits Attached To Our Shares

Right to Attend and Vote at Our Shareholders' Meetings

Annual Shareholders' Meeting

Our annual shareholders' meeting will be held on the first Tuesday in June of each year, at 10 a.m. (Belgian time), or at any other time, at our registered office or at any other place in Belgium mentioned in the notice of the meeting. If this date falls on a legal holiday in Belgium, the meeting is held on the next business day in Belgium (excluding Saturday) at the same time.

Special and Extraordinary Shareholders' Meetings

Our board of directors or the statutory auditor (or the liquidators, if appropriate) may, whenever our interests so require, convene a special or extraordinary shareholders' meeting. Such shareholders' meeting must also be convened when one or more shareholders holding at least 10% of our share capital so demands.

Under the DGCL, special meetings of the stockholders of a Delaware corporation may be called by such person or persons as may be authorized by the certificate of incorporation or by the bylaws of the corporation, or if not so designated, as determined by the board of directors. Stockholders generally do not have the right to call meetings of stockholders unless that right is granted in the certificate of incorporation or the bylaws.

Notices Convening Shareholders' Meetings

Notices of our shareholders' meetings contain the agenda of the meeting indicating the items to be discussed as well as any proposed resolutions that will be submitted at the meeting. Other than in connection with a demand to convene a special or extraordinary shareholders' meeting as described above, shareholders may not submit matters to be voted upon at our shareholders' meetings.

Notices are sent 15 days prior to the date of our shareholders' meeting to the holders of our registered shares, holders of our registered warrants and convertible bonds, and to our directors and our statutory auditor. In the event a second convening notice is necessary as a result of an applicable attendance quorum not being met at the first shareholders' meeting, and the date of the second meeting is mentioned in the first convening notice, such period is ten days prior to the second shareholders meeting, provided that no additional item has been added to the agenda.

We publish on our website the notices of all our shareholders' meetings and all related documents, such as specific board and auditor's reports.

Under the DGCL, unless otherwise provided in the certificate of incorporation or by-laws, written notice of any meeting of the stockholders of a Delaware corporation must be given to each stockholder entitled to vote at the meeting not less than 10 nor more than 60 days before the date of the meeting and shall specify the place, date, hour, and, in the case of a special meeting, the purpose of the meeting.

Admission to Meetings

All holders of our shares are entitled to attend our shareholders' meeting, take part in the deliberations and, within the limits prescribed by the Belgian Companies and Associations Code, vote.

Shareholders wishing to attend and participate in the shareholders' meeting must have the ownership of their shares recorded in their names on the third business day preceding the day of the meeting through registration in the shareholders' register. Our board of directors may make attendance and participation in the shareholders' meeting subject to a requirement for shareholders to express, on a date prior to the meeting to be determined by our board of directors, their intention to attend the meeting and the number of shares in respect of which they intend to exercise voting rights.

Votes

Each of our ordinary shares is entitled to one vote except for shares owned by us, or by any of our subsidiaries, the voting rights of which are suspended.

Voting rights can also be suspended in relation to shares:

- which are not fully paid-up, notwithstanding the request thereto of our board of directors;
- to which more than one person has rights *in rem*, except in the event a single representative is appointed for the exercise of the voting rights; and
- for which the voting rights were suspended by a competent court.

The ordinary shares held by our principal shareholders do not entitle such shareholders to different voting rights, except that as long as Wilfried Vancraen, our founder and Chief Executive Officer, Hilde Ingelaere, an Executive Vice President of our company who is also Mr. Vancraen's spouse, and their three children, Linde, Sander and Jeroen Vancraen, or collectively, the Family Shareholders, control, directly or indirectly, in the aggregate at least 20% of the voting rights attached to our ordinary shares, and if so requested by a Family Shareholder, a maximum of six directors must be appointed by our shareholders from a list of candidates proposed by a majority of all Family Shareholders who, at the date of the appointment, control, directly or indirectly, at least 3% of the voting rights attached to our ordinary shares.

Any shareholder with the right to vote may either personally participate in the meeting or give a proxy to another person, who need not be a shareholder, to represent such shareholder at the meeting. All proxies must be in writing in accordance with the form prescribed by us and must be received by us no later than the date determined by our board of directors.

Quorum and Majority Requirements

Generally, there is no quorum requirement for our shareholders' meetings, except as provided for by law in relation to decisions regarding certain matters. Decisions are made by a simple majority, except where the law provides for a special majority.

Under the DGCL, the certificate of incorporation or bylaws of a Delaware corporation may specify the number of shares required to constitute a quorum but in no event shall a quorum consist of less than one-third of shares entitled to vote at a meeting. In the absence of such specifications, a majority of shares entitled to vote shall constitute a quorum.

Matters involving special legal quorum and majority requirements include, among others, amendment to the articles of association, issues of new shares, convertible bonds or warrants and decisions regarding mergers and demergers, which require at least 50% of the share capital to be present or represented and the affirmative vote of the holders of at least 75% of the votes cast (abstentions are not taken into account). If the quorum is not reached, a second meeting may be convened at which no quorum requirement applies. The special majority requirement for voting, however, remains applicable.

Any modification of our corporate purpose or legal form requires a quorum of shareholders holding an aggregate of at least 50% of the share capital and approval by a majority of at least 80% of the votes cast (abstentions are not taken into account). If there is no quorum, a second meeting must be convened. At the second meeting, no quorum is required, but the relevant resolution must be approved by a majority of at least 80% of votes cast (abstentions are not taken into account).

Right to Ask Questions at our Shareholders' Meeting

Within the limits of Article 7:139 of the Belgian Companies and Associations Code, members of the board of directors and the statutory auditor will answer, during the shareholders' meeting, the questions raised by shareholders or holders of warrants. Shareholders can ask questions either during the meeting or in writing, provided that we receive the written questions at the latest on the third business day preceding the shareholders' meeting.

Dividends

All shares participate equally in our profits (if any) as of and for the entire fiscal year starting on January 1. In general, we may only pay dividends if approved at our shareholders' meeting, although our board of directors may, subject to certain conditions, pay an interim dividend without shareholder approval in accordance with the provisions of the Belgian Companies and Associations Code. Dividends are paid on the dates determined by our board of directors.

Dividends can only be distributed if following the declaration and issuance of the dividends the amount of the company's net assets on the date of the closing of the last financial year according to the non-consolidated statutory annual accounts (i.e., the amount of the assets as shown in the balance sheet, decreased with provisions and liabilities, all as prepared in accordance with Belgian GAAP), decreased with the non-amortized costs of incorporation and expansion and the non-amortized costs for research and development, does not fall below the amount of the paid-up capital (or, if higher, the called capital), increased with the amount of reserves that are non-distributable according to the law or the articles of association (the non-amortized part of revaluation surpluses are treated as reserves that are non-distributable according to the law).

Under Belgian law and our articles of association, we must allocate at least 5% of our annual net profit under our statutory non-consolidated accounts (prepared in accordance with Belgian GAAP) to a legal reserve until the reserve equals 10% of our share capital. Our legal reserve currently does not meet this requirement.

Under the DGCL, a Delaware corporation may pay dividends out of its surplus (the excess of net assets over capital), or in case there is no surplus, out of its net profits for the fiscal year in which the dividend is declared and/or the preceding fiscal year (provided that the amount of the capital of the corporation is not less than the aggregate amount of the capital represented by the issued and outstanding stock of all classes having a preference upon the distribution of assets). Dividends may be paid in the form of shares, property or cash.

Appointment of Directors

Our articles of association provide that our board of directors shall be composed of no less than seven and no more than eleven members, of which at least three members shall qualify as "independent directors" within the meaning of article 7:87 of the Belgian Companies and Associations Code. The directors are appointed with a simple majority by the shareholders meeting, except in the case of co-optation, which means that the board of directors is permitted, subject to the conditions provided for by the Belgian Companies and Associations Code, to fill a vacancy, when a mandate of a director becomes vacant by reasons of death, dismissal or for any other reason. In such case, the first following general shareholders meeting shall resolve on the definitive appointment and the newly appointed director shall continue the term of office of the director he/she replaces.

Our articles of association provide that, as long as the Family Shareholders control, directly or indirectly, in the aggregate at least 20% of the voting rights attached to our ordinary shares, and if so requested by a Family Shareholder, a maximum of six directors must be appointed by our shareholders from a list of candidates proposed by a majority of all Family Shareholders who, at the date of the appointment, control, directly or indirectly, at least 3% of the voting rights attached to our ordinary shares.

Liquidation Rights

Our company can only be dissolved voluntarily by a shareholders' resolution passed with a majority of at least 75% of the votes cast at an extraordinary shareholders' meeting where at least 50% of the share capital is present or represented. If there is no quorum, a second meeting must be convened. No quorum is required at the second meeting, but the relevant resolution must be approved by a majority of at least 75% of the votes cast.

Under the DGCL, unless the board of directors approves the proposal to dissolve, dissolution of a Delaware corporation must be approved by stockholders holding 100% of the total voting power of the corporation. Only if the dissolution is initiated by the board of directors may it be approved by a simple majority of the corporation's outstanding shares. The DGCL allows a Delaware corporation to include in its certificate of incorporation a supermajority voting requirement in connection with dissolutions initiated by the board.

In the event of the dissolution and liquidation of our company, the assets remaining after payment of all debts and liquidation expenses will be distributed to the holders of our shares, each receiving a sum on a pro rata basis.

If, as a result of losses incurred, the ratio of our net assets (determined in accordance with Belgian legal and accounting rules) to share capital is less than 50%, our board of directors must convene a general shareholders' meeting within two months of the date upon which our board of directors discovered or should have discovered this undercapitalization. At this shareholders' meeting our board of directors needs to propose either our dissolution or our continuation, in which case our board of directors must propose measures to address our financial situation. If our board of directors proposed our continuation, our board of directors must explain its proposed measures in a special report to the shareholders. Shareholders representing at least 75% of the votes validly cast at this meeting (abstentions are not taken into account) have the right to dissolve us, provided that at least 50% of our share capital is present or represented at the meeting. If there is no quorum, a second meeting must be convened. At the second meeting, no quorum is required, but the relevant resolution must be approved by a majority of at least 80% of votes cast (abstentions are not taken into account).

If, as a result of losses incurred, the ratio of our net assets to share capital is less than 25%, the same procedure must be followed, it being understood, however, that shareholders representing 25% of the votes validly cast at the meeting (abstentions are not taken into account) can decide to dissolve us. If the amount of our net assets has dropped below €61,500 (the minimum amount of share capital of a Belgian public limited liability company), any interested party is entitled to request the competent court to dissolve us. The court can order our dissolution or grant a grace period during which time we must remedy the situation.

Holders of ordinary shares have no sinking fund, redemption or appraisal rights.

American Depositary Shares Representing Our Ordinary Shares

The Bank of New York Mellon serves as the depositary for the ADSs. Each ADS represents one ordinary share (or a right to receive one ordinary share) deposited with the principal Amsterdam office of ING Securities Services, Inc., as custodian for the depositary. Each ADS also represents any other securities, cash or other property which may be held by the depositary. The depositary's corporate trust office at which the ADSs are administered is located at 240 Greenwich Street, New York, New York 10286. The Bank of New York Mellon's principal executive office is located at 240 Greenwich Street, New York, New York 10286.

You may hold ADSs either (i) directly (x) by having an American Depositary Receipt, or ADR, which is a certificate evidencing a specific number of ADSs, registered in your name, or (y) by having ADSs registered in your name in the Direct Registration System, or (ii) indirectly by holding a security entitlement in ADSs through your broker or other financial institution. If you hold ADSs directly, you are a registered ADS holder, or ADS holder. This description assumes you are an ADS holder. If you hold the ADSs indirectly, you must rely on the procedures of your broker or other financial institution to assert the rights of ADS holders described in this section. You should consult with your broker or financial institution to find out what those procedures are.

The Direct Registration System, or DRS, is a system administered by The Depository Trust Company, or DTC, pursuant to which the depositary may register the ownership of uncertificated ADSs, which ownership is evidenced by periodic statements sent by the depositary to the registered holders of uncertificated ADSs.

As an ADS holder, we will not treat you as one of our shareholders and you will not have shareholder rights. Belgian law governs shareholder rights. The depositary will be the holder of the ordinary shares underlying your ADSs. As a registered holder of ADSs, you will have the rights of an ADS holder. A deposit agreement among us, the depositary and the ADS holders sets out the ADS holder rights as well as the rights and obligations of the depositary. New York law governs the deposit agreement and the ADSs.

Dividends and Other Distributions

How will you receive dividends and other distributions on the ordinary shares?

The depositary has agreed to pay to ADS holders the cash dividends or other distributions it or the custodian receives on ordinary shares or other deposited securities, after deducting its fees and expenses. You will receive these distributions in proportion to the number of ordinary shares your ADSs represent.

Cash. We have no present intention of declaring or paying any cash dividends or cash distributions on our ordinary shares in the foreseeable future. In the event we do declare or pay any cash dividends or cash distributions, the depositary will convert any cash dividend or other cash distribution we pay on the ordinary shares into U.S. dollars, if it can do so on a reasonable basis and can transfer the U.S. dollars to the United States. If it is not possible and lawful to do so on a reasonable basis, or if any government approval is needed and cannot be obtained, the deposit agreement allows the depositary to distribute the foreign currency only to those ADS holders to whom it is possible to do so. It will hold the foreign currency it cannot convert for the account of the ADS holders who have not been paid. It will not invest the foreign currency and it will not be liable for any interest.

Before making a distribution, any taxes or other governmental charges, together with fees and expenses of the depositary that must be paid will be deducted. It will distribute only whole U.S. dollars and cents and will round fractional cents to the nearest whole cent. If the exchange rates fluctuate during a time when the depositary cannot convert the foreign currency, you may lose some or all of the value of the distribution.

Shares. We have no present intention of declaring or paying any share dividends or other distributions of our ordinary shares in the foreseeable future. In the event of a share dividend or other distribution of ordinary shares, the depositary may distribute additional ADSs representing such ordinary shares. The depositary will only distribute whole ADSs. It will sell shares which would require it to deliver a fractional ADS and distribute the net proceeds in the same way as it does with cash. If the depositary does not distribute additional ADSs, the Depositary will consult with us in good faith concerning the appropriate treatment of such additional ordinary shares. The depositary may sell a portion of the distributed ordinary shares sufficient to pay its fees and expenses in connection with that distribution.

Rights to Purchase Additional Ordinary Shares. If we offer holders of our securities any rights to subscribe for additional ordinary shares or any other rights, the depositary may make these rights available to ADS holders. If the depositary decides it is not legal and practical to make the rights available but that it is practical to sell the rights, the depositary will use reasonable efforts to sell the rights and distribute the proceeds in the same way as it does with cash. The depositary will allow rights that are not distributed or sold to lapse. In that case, you will receive no value for them.

If the depositary makes rights available to ADS holders, it will exercise the rights and purchase the ordinary shares on your behalf. The depositary will then deposit the ordinary shares and deliver ADSs to the persons entitled to them. It will only exercise rights if you pay the exercise price and any other charges required to be paid in order to exercise the rights.

U.S. securities laws may restrict transfers or the cancellation of the ADSs representing ordinary shares purchased upon the exercise of rights. For example, you may not be able to trade these ADSs freely in the United States. In this case, the depositary may deliver restricted depositary shares that have the same terms as the ADSs described in this section except for changes needed to put the necessary restrictions in place.

Other Distributions. The depositary will send to ADS holders anything else we distribute on deposited securities by any means it determines is legal, fair and practical. If it cannot make the distribution in that way, the depositary has a choice. It may decide to sell what we distributed and distribute the net proceeds, in the same way as it does with cash. Or, it may decide to hold what we distributed, in which case ADSs will also represent the newly distributed property. However, the depositary is not required to distribute any securities (other than ADSs) to ADS holders unless it receives satisfactory evidence from us that it is legal to make that distribution. The depositary may sell a portion of the distributed securities or property sufficient to pay its fees and expenses in connection with that distribution.

The depositary is not responsible if it decides that it is unlawful or impractical to make a distribution available to any ADS holders. We have no obligation to register ADSs, ordinary shares, rights or other securities under the Securities Act. We also have no obligation to take any other action to permit the distribution of ADSs, ordinary shares, rights or anything else to ADS holders. This means that ADS holders may not receive the distributions we make on our ordinary shares or any value for them if it is illegal or impractical for us to make them available to ADS holders.

Deposit, Withdrawal and Cancellation

How are ADSs issued?

The depositary will deliver ADSs if you or your broker deposit ordinary shares or evidence of rights to receive ordinary shares with the custodian. Upon payment of its fees and expenses and of any taxes or charges, such as stamp taxes or share transfer taxes or fees, and delivery of any required endorsements, certifications or other instruments of transfer required by the depositary, the depositary will register the appropriate number of ADSs in the names you request and will deliver the ADSs to or upon the order of the person or persons that made the deposit.

How can you withdraw the deposited securities?

You may surrender your ADSs at the depositary's corporate trust office. Upon payment of its fees and expenses and of any taxes or charges, such as stamp taxes or share transfer taxes or fees, the depositary will deliver the ordinary shares and any other deposited securities underlying the ADSs to you or a person designated by you at the office of the custodian. Or, at your request, risk and expense, the depositary will deliver the deposited securities at its corporate trust office, if feasible.

How can you interchange between certificated ADSs and uncertificated ADSs?

You may surrender your ADR to the depositary for the purpose of exchanging your ADR for uncertificated ADSs. The depositary will cancel that ADR and will send to you a statement confirming that you are the registered holder of uncertificated ADSs. Alternatively, upon receipt by the depositary of a proper instruction from a registered holder of uncertificated ADSs requesting the exchange of uncertificated ADSs for certificated ADSs, the depositary will execute and deliver to you an ADR evidencing those ADSs.

Voting Rights

How do you vote?

You may instruct the depositary how to vote the number of deposited ordinary shares your ADSs represent. The depositary will notify you of shareholders' meetings and arrange to deliver our voting materials to you if we ask it to. Those materials will describe the matters to be voted on and explain how you may instruct the depositary how to vote. For instructions to be valid, they must reach the depositary by a date set by the depositary.

Otherwise, you will not be able to exercise your right to vote unless you withdraw the ordinary shares. However, you may not know about the meeting with sufficient advance notice to withdraw the ordinary shares.

The depositary will try, to the extent practicable, and subject to the laws of Belgium and to our articles of association, bylaws or similar documents, to vote or to have its agents vote the ordinary shares or other deposited securities as instructed by you. If we requested the depositary to act at least 30 days prior to the meeting date and the depositary does not receive voting instructions from you by the specified date, it will consider you to have instructed it to give a discretionary proxy to a person designated by us with respect to the number of deposited securities represented by your ADSs, provided that no such instruction will be deemed given with respect to any matter as to which we inform the depositary (and we will provide such information as promptly as practicable, if applicable) that substantial opposition exists or such matter materially and adversely affects the rights of holders of ordinary shares. The depositary will only vote or attempt to vote as instructed or as described above. The depositary, as a shareholder on record, may either personally participate in the meeting or give a proxy to another person to represent it at the meeting.

We cannot assure you that you will receive the voting materials in time to ensure that you can instruct the depositary to vote your ordinary shares. In addition, the depositary and its agents are not responsible for failing to carry out voting instructions or for the manner of carrying out voting instructions. This means that you may not be able to exercise your right to vote and there may be nothing you can do if your ordinary shares are not voted as you requested.

In order to give you a reasonable opportunity to instruct the depositary as to the exercise of voting rights relating to deposited securities, if we request the depositary to act, we agree to give the depositary notice of any such meeting and details concerning the matters to be voted upon at least 15 days in advance of the meeting date.

Fees and Expenses

What fees and expenses will you be responsible for paying?

Pursuant to the terms of the deposit agreement, you will be required to pay the following fees to the depositary:

Persons depositing or withdrawing ordinary shares or ADS holders must pay to the depositary:	**For:**
$5.00 (or less) per 100 ADSs (or portion of 100 ADSs)	Issuance of ADSs, including issuances resulting from a distribution of ordinary shares or rights or other property
	Cancellation of ADSs for the purpose of withdrawal, including if the deposit agreement terminates
$0.05 (or less) per ADS	Any cash distribution to you
A fee equivalent to the fee that would be payable if securities distributed to you had been ordinary shares and the shares had been deposited for issuance of ADSs	Distribution of securities distributed to holders of deposited securities which are distributed by the depositary to you
$0.05 (or less) per ADS per calendar year	Depositary services
Registration or transfer fees	Transfer and registration of ordinary shares on our share register to or from the name of the depositary or its agent when you deposit or withdraw shares

Expenses of the depositary	Cable, telex and facsimile transmissions (when expressly provided in the deposit agreement) converting foreign currency to U.S. dollars
Taxes and other governmental charges the depositary or the custodian has to pay on any ADS or ordinary shares underlying an ADS, such as share transfer taxes, stamp duty or withholding taxes	As necessary
Any charges incurred by the depositary or its agents for servicing the deposited securities	As necessary

The depositary collects its fees for delivery and surrender of ADSs directly from investors depositing ordinary shares or surrendering ADSs for the purpose of withdrawal or from intermediaries acting for them. The depositary collects fees for making distributions to investors by deducting those fees from the amounts distributed or by selling a portion of distributable property to pay the fees. The depositary may collect its annual fee for depositary services by deduction from cash distributions or by directly billing investors or by charging the book-entry system accounts of participants acting for them. The depositary may collect any of its fees by deduction from any cash distribution payable to ADS holders that are obligated to pay those fees. The depositary may generally refuse to provide fee-based services until its fees for those services are paid.

From time to time, the depositary may make payments to us to reimburse or share revenue from the fees collected from ADS holders, or waive fees and expenses for services provided, generally relating to costs and expenses arising out of establishment and maintenance of the ADS program. In performing its duties under the deposit agreement, the depositary may use brokers, dealers or other service providers that are affiliates of the depositary and that may earn or share fees or commissions.

Payment of Taxes

You will be responsible for any taxes or other governmental charges payable on your ADSs or on the deposited securities represented by any of your ADSs. The depositary may refuse to register any transfer of your ADSs or allow you to withdraw the deposited securities represented by your ADSs until such taxes or other charges are paid. It may apply payments owed to you or sell deposited securities represented by your ADSs to pay any taxes owed and you will remain liable for any deficiency. If the depositary sells deposited securities, it will, if appropriate, reduce the number of ADSs to reflect the sale and pay to ADS holders any proceeds, or send to ADS holders any property, remaining after it has paid the taxes.

Reclassifications, Recapitalizations and Mergers

If we:	**Then:**
• Change the nominal or par value of our ordinary shares • Reclassify, split up or consolidate any of the deposited securities • Distribute securities on the ordinary shares that are not distributed to you • Recapitalize, reorganize, merge, liquidate, sell all or substantially all of our assets, or take any similar action	The cash, ordinary shares or other securities received by the depositary will become deposited securities. Each ADS will automatically represent its equal share of the new deposited securities. The depositary may distribute new ADSs representing the new deposited securities or ask you to surrender your outstanding ADRs in exchange for new ADRs identifying the new deposited securities.

Amendment and Termination

How may the deposit agreement be amended?

We may agree with the depositary to amend the deposit agreement and the ADRs without your consent for any reason. If an amendment adds or increases fees or charges, except for taxes and other governmental charges or expenses of the depositary for registration fees, facsimile costs, delivery charges or similar items, or materially prejudices a substantial right of ADS holders, it will not become effective for outstanding ADSs until 30 days after the depositary notifies ADS holders of the amendment. At the time an amendment becomes effective, you are considered, by continuing to hold your ADSs, to agree to the amendment and to be bound by the ADRs and the deposit agreement as amended.

How may the deposit agreement be terminated?

The depositary will terminate the deposit agreement at our direction by mailing notice of termination to the ADS holders then outstanding at least 30 days prior to the date fixed in such notice for such termination. The depositary may also terminate the deposit agreement by mailing notice of termination to us and the ADS holders if 60 days have passed since the depositary told us it wants to resign but a successor depositary has not been appointed and accepted its appointment.

After termination, the depositary and its agents will do the following under the deposit agreement but nothing else: collect distributions on the deposited securities, sell rights and other property, and deliver ordinary shares and other deposited securities upon cancellation of ADSs. Four months after termination, the depositary may sell any remaining deposited securities by public or private sale. After that, the depositary will hold the money it received on the sale, as well as any other cash it is holding under the deposit agreement for the pro rata benefit of the ADS holders that have not surrendered their ADSs. It will not invest the money and has no liability for interest. The depositary's only obligations will be to account for the money and other cash. After termination our only obligations will be to indemnify the depositary and to pay fees and expenses of the depositary that we agreed to pay.

Limitations on Obligations and Liability

Limits on our obligations and the obligations of the depositary; limits on liability to holders of ADSs

The deposit agreement expressly limits our obligations and the obligations of the depositary. It also limits our liability and the liability of the depositary or any of our respective directors, officers, employees, agents or affiliates. We and the depositary and our respective directors, officers, employees, agents or affiliates:

- are only obligated to take the actions specifically set forth in the deposit agreement without negligence or bad faith;
- are not liable if we are or it is prevented or delayed by law or circumstances beyond our control from performing our or its obligations under the deposit agreement;
- are not liable if we or it exercises discretion permitted under the deposit agreement;
- are not liable for the inability of any holder of ADSs to benefit from any distribution on deposited securities that is not made available to holders of ADSs under the terms of the deposit agreement, or for any special, consequential or punitive damages for any breach of the terms of the deposit agreement;
- are not liable for any tax consequences to any holders of ADSs on account of their ownership of ADSs;
- have no obligation to become involved in a lawsuit or other proceeding related to the ADSs or the deposit agreement on your behalf or on behalf of any other person; and
- may rely upon any documents we believe or it believes in good faith to be genuine and to have been signed or presented by the proper person.

In the deposit agreement, we and the depositary agree to indemnify each other under certain circumstances. Additionally, we, the depositary and each owner and holder of ADSs waives the right to a jury trial in an action against us or the depositary arising out of or relating to the ordinary shares or other deposited securities, ADSs, ADRs or the deposit agreement.

Requirements for Depositary Actions

Before the depositary will deliver or register a transfer of an ADS, make a distribution on an ADS, or permit withdrawal of ordinary shares, the depositary may require:

- payment of share transfer or other taxes or other governmental charges and transfer or registration fees charged by third parties for the transfer of any ordinary shares or other deposited securities;
- satisfactory proof of the identity and genuineness of any signature or other information it deems necessary; and
- compliance with regulations it may establish, from time to time, consistent with the deposit agreement, including presentation of transfer documents.

The depositary may refuse to deliver ADSs or register transfers of ADSs when the transfer books of the depositary or our transfer books are closed or at any time if the depositary or we think it advisable to do so.

Your Right to Receive the Ordinary Shares Underlying Your ADSs

ADS holders have the right to cancel their ADSs and withdraw the underlying ordinary shares at any time except:

- when temporary delays arise because: (i) the depositary has closed its transfer books or we have closed our transfer books; (ii) the transfer of ordinary shares is blocked to permit voting at a shareholders' meeting; or (iii) we are paying a dividend on our ordinary shares;
- when you owe money to pay fees, taxes and similar charges; and
- when it is necessary to prohibit withdrawals in order to comply with any laws or governmental regulations that apply to ADSs or to the withdrawal of ordinary shares or other deposited securities.

This right of withdrawal may not be limited by any other provision of the deposit agreement.

Pre-release of ADSs

The deposit agreement permits the depositary to deliver ADSs before deposit of the underlying ordinary shares. This is called a pre-release of the ADSs. The depositary may also deliver ordinary shares upon surrender and cancellation of pre-released ADSs (even if the ADSs are cancelled before the pre-release transaction has been closed out). A pre-release is closed out as soon as the underlying ordinary shares are delivered to the depositary. The depositary may accept ADSs instead of ordinary shares to close out a pre-release. The depositary may pre-release ADSs only under the following conditions: (1) before or at the time of the pre-release, the person to whom the pre-release is being made represents to the depositary and agrees in writing that it or its customer (i) owns or represents the owner of the shares to be deposited (ii) assigns all beneficial right, title and interest in such shares to the depositary in its capacity as such and for the benefit of the ADS holders, and (iii) will not take any action with respect to such shares that is inconsistent with the transfer of beneficial ownership (including without the consent of the depositary, disposing of such shares), other than in satisfaction of such pre-release; (2) the pre-release is fully collateralized with cash or other collateral that the depositary considers appropriate; and (3) the depositary must be able to close out the pre-release on not more than five business days' notice. In addition, the depositary will limit the number of ADSs that may be outstanding at any time as a result of pre-release, which limit will normally be 30% of the ordinary shares deposited under the deposit agreement, although the depositary may disregard the limit from time to time if it thinks it is appropriate to do so.

Direct Registration System

In the deposit agreement, all parties to the deposit agreement acknowledge that the DRS and Profile Modification System, or Profile, will apply to uncertificated ADSs upon acceptance thereof to DRS by DTC. DRS is the system administered by DTC under which the depositary may register the ownership of uncertificated ADSs, which ownership will be confirmed by periodic statements sent by the depositary to the registered holders of uncertificated ADSs. Profile is a required feature of DRS that allows a DTC participant, claiming to act on behalf of a registered holder of ADSs, to direct the depositary to register a transfer of those ADSs to DTC or its nominee and to deliver those ADSs to the DTC account of that DTC participant without receipt by the depositary of prior authorization from the ADS holder to register that transfer.

In connection with and in accordance with the arrangements and procedures relating to DRS and Profile, the parties to the deposit agreement understand that the depositary will not verify, determine or otherwise ascertain whether the DTC participant that is claiming to be acting on behalf of an ADS holder in requesting registration of transfer and delivery described in the paragraph above has the actual authority to act on behalf of the ADS holder (notwithstanding any requirements under the Uniform Commercial Code). In the deposit agreement, the parties agree that the depositary's reliance on and compliance with instructions received by the depositary through the DRS/Profile system and in accordance with the deposit agreement will not constitute negligence or bad faith on the part of the depositary.

Shareholder Communications; Inspection of Register of Holders of ADSs; ADS Holder Information

The depositary will make available for your inspection at its office all communications that it receives from us as a holder of deposited securities that we make generally available to holders of deposited securities. The depositary will send you copies of those communications if we ask it to. You have a right to inspect the register of holders of ADSs, but not for the purpose of contacting those holders about a matter unrelated to our business or the ADSs.

Each holder of ADSs will be required to provide such information as from time to time may be requested by us or as may otherwise be required to be disclosed, in accordance with applicable law, the rules and requirements of any stock exchange or clearing system on which the ADSs are traded or our articles of association.

EXHIBIT 8.1

SUBSIDIARIES OF MATERIALISE NV

Name	Jurisdiction of Incorporation
Materialise France SAS	France
Materialise GmbH	Germany
Materialise Japan K.K.	Japan
Materialise SRO	The Czech Republic
Materialise USA, LLC	United States
Materialise UK Limited	United Kingdom
OBL SAS	France
Materialise Austria GmbH	Austria
Materialise SDN. Bhd.	Malaysia
Materialise Ukraine LLC	Ukraine
RapidFit NV	Belgium
Materialise SA	Poland
Meridian Technique Limited	United Kingdom
OrthoView Holdings Limited	United Kingdom
Materialise Colombia SAS	Colombia
RSPRINT powered by Materialise NV	Belgium
Materialise Shanghai Co. Ltd.	China
Materialise Australia PTY Ltd	Australia
Materialise S.R.L.	Italy
ACTech Holding GmbH	Germany
ACTech GmbH	Germany
ACTech North America Inc.	United States
Engimplan Engenharia de Implante Industria E Comércio Ltda.	Brazil
Engimplan Holding Ltda.	Brazil
Materialise Limited	South Korea

EXHIBIT 12.1

CERTIFICATION

I, Wilfried Vancraen, certify that:

1. I have reviewed this annual report on Form 20-F of MATERIALISE NV (the "company");

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the company as of, and for, the periods presented in this report;

4. The company's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the company and have:

   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the company, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   (c) Evaluated the effectiveness of the company's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   (d) Disclosed in this report any change in the company's internal control over financial reporting that occurred during the period covered by the annual report that has materially affected, or is reasonably likely to materially affect, the company's internal control over financial reporting; and

5. The company's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the company's auditors and the audit committee of the company's board of directors (or persons performing the equivalent functions):

   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the company's ability to record, process, summarize and report financial information; and

   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the company's internal control over financial reporting.

Date: April 30, 2021

By: /s/ Wilfried Vancraen
Wilfried Vancraen
Chief Executive Officer

EXHIBIT 12.2

CERTIFICATION

I, Johan Albrecht, certify that:

1. I have reviewed this annual report on Form 20-F of MATERIALISE NV (the "company");

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the company as of, and for, the periods presented in this report;

4. The company's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the company and have:

   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the company, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   (c) Evaluated the effectiveness of the company's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   (d) Disclosed in this report any change in the company's internal control over financial reporting that occurred during the period covered by the annual report that has materially affected, or is reasonably likely to materially affect, the company's internal control over financial reporting; and

5. The company's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the company's auditors and the audit committee of the company's board of directors (or persons performing the equivalent functions):

   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the company's ability to record, process, summarize and report financial information; and

   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the company's internal control over financial reporting.

Date: April 30, 2021

By: /s/ Johan Albrecht
Johan Albrecht
Alfinco BV
Chief Financial Officer

EXHIBIT 13.1

CERTIFICATION PURSUANT TO 18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE U.S. SARBANES-OXLEY ACT OF 2002

In connection with the Annual Report of MATERIALISE NV (the "Company") on Form 20-F for the fiscal year ended December 31, 2020, as filed with the U.S. Securities and Exchange Commission on the date hereof (the "Report"), I, Wilfried Vancraen, certify, pursuant to 18 U.S.C. section 1350, as adopted pursuant to section 906 of the U.S. Sarbanes-Oxley Act of 2002, that to the best of my knowledge:

(i) the Report fully complies with the requirements of section 13(a) or 15(d) of the U.S. Securities Exchange Act of 1934, as amended; and

(ii) the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: April 30, 2021

By: /s/ Wilfried Vancraen
Wilfried Vancraen
Chief Executive Officer

EXHIBIT 13.2

CERTIFICATION PURSUANT TO 18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE U.S. SARBANES-OXLEY ACT OF 2002

In connection with the Annual Report of MATERIALISE NV (the "Company") on Form 20-F for the fiscal year ended December 31, 2020, as filed with the U.S. Securities and Exchange Commission on the date hereof (the "Report"), I, Johan Albrecht, certify, pursuant to 18 U.S.C. section 1350, as adopted pursuant to section 906 of the U.S. Sarbanes-Oxley Act of 2002, that to the best of my knowledge:

(i) the Report fully complies with the requirements of section 13(a) or 15(d) of the U.S. Securities Exchange Act of 1934, as amended; and

(ii) the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: April 30, 2021

By: /s/ Johan Albrecht
Johan Albrecht
Alfinco BV
Chief Financial Officer

Exhibit 16.1

April 30, 2021

Securities and Exchange Commission
100 F Street N.E.
Washington, D.C. 20549
United States of America

We have been furnished with a copy of the response to Item 16F of Form 20-F for the event that occurred on November 5, 2020, to be filed by our former client, Materialise NV. We agree with the statements made in response to that Item insofar as they relate to our Firm.

Very truly yours,

/s/ Veerle Catry
BDO Bedrijfsrevisoren CVBA
Represented by Veerle Catry

Exhibit 23.1

Consent of Independent Registered Public Accounting Firm

To the Board of Directors

Materialise NV:

We consent to the incorporation by reference in the registration statements on Form S-8 (No. 333-197236 and No. 333-212445) and Form F-3 (No. 333-213649 and No. 333-226006) of Materialise NV (the Company), of our reports dated April 30, 2021, with respect to the consolidated statement of financial position of the Company as of December 31, 2020, the related consolidated income statement, consolidated statement of comprehensive income, consolidated statement of changes in equity, and consolidated cash flow statement for the year ended December 31, 2020, and the related notes (collectively, the consolidated financial statements), and the effectiveness of internal control over financial reporting as of December 31, 2020, which reports appear in the December 31, 2020 annual report on Form 20-F of Materialise NV.

Our report dated April 30, 2021 on the consolidated financial statements, refers to our audit of the adjustments that were applied to revise the 2019 consolidated financial statements to retrospectively reflect the final accounting of a business combination, as more fully described in Notes 2 and 4 to the consolidated financial statements. However, we were not engaged to audit, review, or apply any procedures to the 2019 consolidated financial statements of the Company other than with respect to such adjustments.

Our report dated April 30, 2021, on the effectiveness of internal control over financial reporting as of December 31, 2020, expresses our opinion that Materialise NV did not maintain effective internal control over financial reporting as of December 31, 2020 because of the effect of material weaknesses on the achievement of the objectives of the control criteria and contains an explanatory paragraph that states that the following material weaknesses have been identified:

— Ineffective risk assessment processes to identify and assess the risks of misstatement within the financial reporting process and to design and implement controls to mitigate those risks, in particular in the areas of loans and borrowings, taxes, leases and information produced by the entity that is used to operate certain controls over financial reporting..

— Ineffective monitoring processes to assess the consistent operation of internal control over financial reporting and to remediate known control deficiencies, including due to a lack of resources.

— Ineffective processes to ensure the proper review and approval of journal entries prior to posting to the general ledger.

— Ineffective controls over the completeness and accuracy of information produced by the entity that is used to operate certain controls over financial reporting.

Our report dated April 30, 2021 on the effectiveness of internal control over financial reporting as of December 31, 2020, contains an emphasis of matters paragraph that states that we do not express an opinion or any form of assurance on management’s statement referring to remediation efforts taken or planned to be taken by the Company subsequent to December 31, 2020.

Our report dated April 30, 2021 on the effectiveness of internal control over financial reporting as of December 31, 2020 contains an explanatory paragraph that states that management excluded from its assessment of the effectiveness of the Company's internal control over financial reporting as of December 31, 2020, internal control over financial reporting of RS Print Powered By Materialise NV, which the Company acquired during 2020, associated with 3.3 % of total assets and 0.4% of total revenues included in the consolidated financial statements of the Company as of and for the year ended December 31, 2020.

KPMG Bedrijfsrevisoren – KPMG Réviseurs d'Entreprises BV/SRL

/s/ G. Jackers

Zaventem, Belgium
April 30, 2021

Exhibit 23.2

Consent of Independent Registered Public Accounting Firm

Materialise NV
Leuven, Belgium

We hereby consent to the incorporation by reference in the Registration Statements on Form S-8 (No. 333-197236 and No. 333-212445) and Form F-3 (No. 333-213649 and No. 333-226006) of Materialise NV, of our report dated April 30, 2020, relating to the consolidated financial statements which appears in this Annual Report on Form 20-F.

BDO Bedrijfsrevisoren CVBA
On behalf of it,

/s/ Veerle Catry

Zaventem, Belgium
April 30, 2021