

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

FORM 10-K

- ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**
For the fiscal year ended December 31, 2022
OR
 TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the transition period from _____ to _____

Commission File No. 001-34220



3D SYSTEMS CORPORATION

(Exact name of Registrant as Specified in its Charter)

Delaware **95-4431352**
(State or Other Jurisdiction of (I.R.S. Employer
Incorporation or Organization) Identification No.)

333 Three D Systems Circle
Rock Hill, South Carolina 29730
(Address of Principal Executive Offices and Zip Code)

(Registrant's Telephone Number, Including Area Code): (803) 326-3900

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

Title of each class	Trading Symbol	Name of each exchange on which registered
Common Stock, par value \$0.001 per share	DDD	New York Stock Exchange

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

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

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes No

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, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer	<input checked="" type="checkbox"/>	Accelerated filer	<input type="checkbox"/>
Non-accelerated filer	<input type="checkbox"/>	Smaller reporting company	<input type="checkbox"/>
Emerging growth company	<input type="checkbox"/>		

If an emerging growth company, 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.

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.

If securities are registered pursuant to Section 12(b) of the Act, indicate by check mark whether the financial statements of the registrant included in the filing reflect the correction of an error to previously issued financial statements.

Indicate by check mark whether any of those error corrections are restatements that required a recovery analysis of incentive-based-compensation received by any of the registrant's executive officers during the relevant recovery period pursuant to §240.10D-1(b). Yes No

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act.) Yes No

The aggregate market value of the registrant's Common Stock held by non-affiliates of the registrant on June 30, 2022 was \$1,223,082,545. For purposes of this computation, it has been assumed that the shares beneficially held by directors and executive officers of the registrant were "held by affiliates." This assumption is not to be deemed an admission by these persons that they are affiliates of the registrant.

The number of shares of the registrant's Common Stock outstanding as of March 7, 2023: 131,155,200.

DOCUMENTS INCORPORATED BY REFERENCE: Portions of the registrant's definitive proxy statement for its 2023 Annual Meeting of Stockholders are incorporated by reference into Part III of this Form 10-K.

3D SYSTEMS CORPORATION
Annual Report on Form 10-K
For the Year Ended December 31, 2022

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This Annual Report on Form 10-K (“Form 10-K”) contains forward-looking statements, within the meaning of the Private Securities Litigation Reform Act of 1995, that involve risks and uncertainties. Many of the forward-looking statements are located in Part II, Item 7 of this Form 10-K under the heading “Management’s Discussion and Analysis of Financial Condition and Results of Operations.” Forward-looking statements involve known and unknown risks, uncertainties and other factors that may cause our actual results, performance or achievements to be materially different from historical results or from any future results expressed or implied by such forward-looking statements. In many cases, you can identify forward-looking statements by terms such as “believes,” “belief,” “expects,” “may,” “will,” “estimates,” “intends,” “anticipates,” or “plans” or the negative of these terms or other comparable terminology. Forward-looking statements are based upon management’s beliefs, assumptions and current expectations concerning future events and trends, using information currently available, and are necessarily subject to uncertainties, many of which are outside our control. Although we believe that the expectations reflected in the forward-looking statements are reasonable, forward-looking statements are not, and should not be relied upon as a guarantee of future performance or results, nor will they necessarily prove to be accurate indications of the times at or by which any such performance or results will be achieved. A number of important factors could cause actual results to differ materially from those expressed in or implied by the forward-looking statements. Factors that could cause such differences include, but are not limited to, those discussed in Part I, Item 1A of this Form 10-K under the heading “Risk Factors.” All subsequent written and oral forward-looking statements attributable to the Company or to individuals acting on our behalf are expressly qualified in their entirety by this discussion. The Company assumes no obligation to revise or update any forward-looking statements for any reason, except as required by law.

PART I

Item 1. Business

General

3D Systems Corporation (“3D Systems” or the “Company” or “we,” “our” or “us”) markets our products and services through subsidiaries in North America and South America (collectively referred to as “Americas”), Europe and the Middle East (collectively referred to as “EMEA”) and the Asia Pacific and Oceania region (collectively referred to as “APAC”). We provide comprehensive 3D printing and digital manufacturing solutions, including 3D printers for plastics and metals, materials, software, and digital design tools. Our solutions support advanced applications in two key industry verticals: Healthcare Solutions (which includes dental, medical devices, personalized health services and regenerative medicine) and Industrial Solutions (which includes aerospace, defense, transportation and general manufacturing). We have over 35 years of experience and expertise which have proven vital to our development of an ecosystem and end-to-end digital workflow solutions that enable customers to optimize product designs, transform workflows, bring innovative products to market and drive new business models.

Business Strategy

Accelerating Additive Manufacturing Adoption

We partner with customers to enable them to adopt and scale additive manufacturing in their production environments. We believe that our additive manufacturing capabilities can help customers solve a number of design and manufacturing challenges – such as improved lead times, enhanced design freedom, part consolidation and the ability for mass customization. We believe that we have both the scale and the breadth of technologies, encompassing hardware platforms, materials and software, that our customers require for the successful implementation of additive manufacturing into their design and manufacturing processes. Using a strong application focus in each of our two business segments, our Applications Innovation Group integrates our printer hardware, materials, software and professional and technical services in unique combinations to solve a customer’s product need. Once complete, we can scale the process for the customer to a certain production level through our Advanced Manufacturing solutions, and, with increasing demand, we can enable a customer to continue scaling to high volumes within their own production facilities. This transfer of the workflow involves providing the printing systems, materials and software, along with the process definition and other technical expertise, that enables a seamless transfer of capability to the manufacturer. We expect the result of this approach to drive recurring revenue streams as customers adopt additive manufacturing solutions and consume materials to produce parts, utilize software to manage the print process and manufacturing operations, and make use of our service offerings for application development, maintenance and upgrades. Our proficiency in providing industry focused application and solution development for customers includes a number of internal assets and capabilities, including:

- a. A full range of additive manufacturing hardware technologies and materials to address needs in metals and plastics (including biocompatible materials for medical use), wax and bioprinting

- b. An Application Innovation Group that includes industry and technology application experts, customer innovation and advanced manufacturing centers and post-sale service and support
- c. A software suite that enables end-to-end additive manufacturing including design, simulation, process management and manufacturing execution
- d. Scale that includes significant and diverse experience in production parts and applications combined with a global reach to service our customers worldwide

As part of our strategy to enable customers to adopt additive manufacturing in production environments, during 2022 we made a number of targeted investments and entered into partnership arrangements designed to broaden and enhance our product offering of 3D printing solutions and to expand addressable markets for our Industrial Solutions and Healthcare Solutions segments. Among these investments were the acquisitions of Titan Additive LLC (“Titan”), Kumovis GmbH (“Kumovis”), and dp polar GmbH (“dp polar”). Titan is a pellet-based extrusion platform that addresses customer applications requiring large build volumes at a significantly lower cost. Kumovis is an extrusion platform that utilizes medical-grade, high-performance polymers such as PEEK (polyether ether ketone) to print implantable medical devices and surgical instruments with attractive performance qualities. dp polar has designed a 3D printing platform that utilizes a unique rotating build platform to enable true high-speed mass production of customized polymer components. Also during 2022, we signed a joint venture agreement with the Saudi Arabian Industrial Investments company (“Dussur”) with the goal of expanding the use of additive manufacturing within the Kingdom of Saudi Arabia and surrounding geographies. We also acquired a minority ownership interest in Enhatch Inc. (“Enhatch”) during 2022. As part of this relationship, 3D Systems and Enhatch will incorporate the automation and artificial intelligence capabilities of Enhatch’s Intelligent Surgery Ecosystem into 3D Systems’ proven workflow for patient-specific surgical planning solutions.

In addition, we believe that developing our software capabilities is an important driver of our future growth. We made significant internal investments during 2022 to further enhance our capability to offer a comprehensive suite of 3D printing software applications. We are working to integrate 3D System’s legacy stand-alone software applications such as Geomagic, 3D Sprint, and 3DXpert into the Oqton Manufacturing Operating System (“MOS”) that we acquired in 2021. The goal of this effort is to create a unified cloud-based software solution that will enable users to automate and control their entire digital manufacturing workflow from order to delivery. We are making our new software platform available to the entire additive industry, including both customers and competitors, as a means to accelerate the adoption of additive manufacturing in high-volume production applications across multiple industry segments.

We believe that the above-described acquisitions, partnerships, and software development efforts, as well as other initiatives begun during 2022, will accelerate the adoption of additive manufacturing in our target industrial and healthcare end-markets and open up profitable future growth opportunities for our company. Realizing the full benefit of these growth-oriented initiatives will require us to make additional investments in operations and development activities during 2023 and beyond.

Investing in Regenerative Medicine

As an early and continuing innovator in additive manufacturing, we have significant experience in bringing this technology to new markets. In 2022, we continued to expand our focus and investments in the application of additive manufacturing for regenerative medicine. Currently, our efforts in the area of regenerative medicine consist mainly of pre-commercial research and development (“R&D”) and involve three strategies.

The first strategy is the use of additive manufacturing for human organ transplantation. Each year, end-stage organ failure kills millions of people. However, the supply of donated organs is insufficient to meet the needs of patients seeking transplantation. During 2022, we made significant progress in our organ printing development program, which we are conducting together with a key strategic partner. This program was first established in 2017 and combines our legacy 3D printing expertise, as well as new capabilities in human tissue engineering from our acquisition of Volumetric Biotechnologies, Inc. (“Volumetric”) in 2021, with the regenerative medicine and biotechnology expertise of our partner. To date, our program has focused on developing the capability to print scaffolds for human lungs, with a long-term goal of allowing all patients with end-stage lung disease to receive transplants which will enable them to enjoy long and active lives. Based upon the progress made toward this goal, the program has been expanded to include two additional human organs.

Our second strategy involves utilizing our bio-printing technology to manufacture non-organ human tissue scaffolds for use in transplantation and surgical reconstruction applications. We believe that continued progress in this area could result in significantly improved health outcomes for patients as well as open up attractive new growth markets and therapeutic applications for 3D printed, vascularized soft-tissue scaffolds. During 2022, we pursued this strategy as an internal development program that combines our legacy 3D printing capabilities with bio-printing and materials expertise that we have gained through our Volumetric acquisition, as well as through our work on the human lung program with our development partner.

Our third regenerative medicine strategy seeks to utilize our bio-printing capabilities to design and manufacture 3D-printed vascularized “organs-on-chips” for use in drug development by pharmaceutical industry customers. Currently, drug development is an expensive and time-consuming process, and many drug therapies that appear promising during pre-clinical trials fail during human clinical trials. We believe that “organs-on-chips” can accelerate the drug development process and reduce the cost of pre-clinical drug testing, as well as reduce the pharmaceutical industry’s reliance on animal testing. During 2022, we formed a new wholly-owned biotech company called Systemic Bio in order to accelerate our progress in this area. Systemic Bio will combine 3D Systems’ legacy expertise in high-resolution 3D printing with advanced capabilities in bioprinting and biomaterials gained from our 2021 acquisition of Allevi, Inc. to design and market 3D-printed, vascularized “organs-on-chips” for sale to pharmaceutical industry customers. We plan to provide internal funding to support Systemic Bio during the early stages of its growth, including for activities such as R&D facility expansion, product development and customer acquisition.

Products

We offer our customers a comprehensive range of 3D printers, materials, software, and digital design tools.

3D Printers and Materials

Our 3D printers transform digital data input generated by 3D design software, Computer Aided Design (“CAD”) software or other 3D design tools, into printed parts using several unique print engines that employ proprietary, additive layer by layer building processes with a variety of materials. As part of our solutions-oriented strategy, we offer a broad range of 3D printing technologies including Stereolithography (SLA), Selective Laser Sintering, Direct Metal Printing, MultiJet Printing, ColorJet Printing, polymer extrusion, and extrusion and SLA based bioprinting. Our printers utilize a wide range of materials, the majority of which are proprietary materials that we develop, blend, and market. Our comprehensive range of materials includes plastic, nylon, metal, composite, elastomeric, wax, polymeric dental materials and biocompatible materials. We augment and complement our portfolio of engineered materials with materials that we purchase or develop with third parties under private label and distribution arrangements.

We work closely with our customers to optimize the performance of our materials in their applications. Our expertise in materials science and formulation, combined with our processes, software and equipment, enables us to provide unique solutions and help our customers select the material that best meets their needs with optimal cost and performance results.

As part of our solutions approach, our currently offered printers, with the exception of direct metal printers and bioprinters, have built-in intelligence to make them integrated, closed systems. For these integrated printers, we furnish materials specifically designed for use in those printers, which are packaged in smart cartridges and utilize material delivery systems. These integrated materials are designed to enhance system functionality, productivity, reliability and materials' shelf life, in addition to providing our customers with a built-in quality management system and a fully integrated workflow solution.

For our bio-printing solutions, we also offer research protocols that include bio-ink, consumable and reagent recommendations. These protocols cover pre-print preparation of cells and biomaterials, 3D printing parameter setting, and post-print processes. Our protocols are utilized by research organizations to run experiments, share research findings, and enhance the utilization of our bioprinters.

Software and Related Products

We provide digital design tools, including software, scanners and haptic devices. We offer solutions for product design, simulation, mold and die design, 3D scan-to-print, reverse engineering, production machining, metrology, inspection and manufacturing workflows. These products are designed to enable a seamless workflow for customers and are marketed under brand names such as Geomagic®. We also offer 3D Sprint and 3DXpert, proprietary software to prepare and optimize CAD data and manage the additive manufacturing processes. These software products provide automated support building and placement, build platform management, print simulation and print queue management capabilities. The outcome is the ability to improve the quality of prints, optimize design structure, shorten design to manufacturing lead time and minimize manufacturing costs.

Since the acquisition of Oqton, Inc. ("Oqton") in 2021, we have also offered an intelligent, cloud-based MOS platform to customers that need to integrate a broad range of advanced manufacturing and automation technologies, including additive manufacturing (AM) solutions, in their production workflows. As part of our broader software strategy, we are working to integrate 3D System's legacy stand-alone software applications into Oqton's legacy MOS, so that we can offer our customers a complete cloud-based software solution to automate and control their entire digital manufacturing process from order to delivery.

For our bioprinters, we offer Bioprint Pro as a software solution that allows researchers to design and bioprint repeatable experiments. Bioprint Pro includes experiment-based workflows, basic CAD modeling, and optimized biomaterial presets.

Services

Maintenance and Training Services

We provide a variety of customer services, local application support and field support on a worldwide basis for our products, including installation of new printers at customers' sites, maintenance agreements, periodic hardware upgrades and software updates. We also provide services to assist our customers and partners in developing new applications for our technologies to facilitate the use of our technology for specific applications, to train customers on the use of our printers and to maintain our printers at customers' sites. We provide these services, spare parts and field support either directly or through a network of reseller partners. We employ customer-support sales engineers to support our worldwide customer base, and we seek to continue to strengthen and enhance our partner network and service offerings.

Our 3D printers are sold with a warranty period ranging from 90 days to one year. After the warranty period, we generally offer service contracts that enable our customers to continue service and maintenance coverage. These service contracts are offered with various levels of support and options, and are priced accordingly. One entitlement of our service contracts is our service engineers provide regularly scheduled preventive maintenance visits to customer sites. Additionally, we provide training to our partners to enable them to also perform these services. Another contract entitlement on select printer models is proactive remote troubleshooting capability through our 3DConnect Service IoT platform. From time to time, we also offer upgrade kits for certain of our printers that enable our existing customers to take advantage of new or enhanced printer capabilities. In some cases, we have discontinued upgrade support and maintenance agreements for certain of our older legacy printers.

Advanced Manufacturing

As part of our strategy to help customers adopt additive manufacturing, we offer advanced manufacturing services through facilities in the Americas and EMEA regions. These facilities supplement customer manufacturing environments by allowing them to test and ramp production using our solutions before transitioning production to their environment and also providing them with flexible manufacturing capacity on an as-needed basis. This allows us to provide application and production expertise and refine the production process as part of our solutions approach. As the process is validated and volumes ramp, customers may choose to move production to their facilities using equipment, materials, software and services that they purchase from us. These facilities operate under stringent quality systems and are also utilized by customers in regulated industries such as healthcare and aerospace & defense for sustained outsourced production of hundreds of thousands of parts per year.

Software Services

In addition to our software license products, we offer software maintenance and cloud-software subscriptions, which includes updates and support for our licensed software products. Our licensed software is sold with a maintenance service that generally covers a period of one year. After this initial period, we offer single and multi-year maintenance contracts that enable our customers to continue coverage. These software service contracts typically include free software updates and various levels of technical support. In addition, we offer Oqton's legacy MOS as a cloud based-manufacturing operating system designed to automate digital production workflows and to enable machine monitoring, end-to-end manufacturing visibility and production traceability. For our cloud subscription solutions, customer support and software updates are included as part of the solution.

Healthcare Solutions Services

As part of our precision healthcare solutions services, we provide surgical planning, modeling, prototyping and manufacturing services. We offer printing and finishing of medical and dental devices, anatomical models and surgical guides and tools, as well as modeling, design and planning services, including VSP™ surgical planning solutions.

Global Operations

We operate in the Americas, EMEA and APAC regions, and market our products and services in those areas as well as to other parts of the world.

In maintaining operations outside the United States (the “U.S.”), we expose our business to risks inherent in such operations, including currency exchange rate fluctuations. Information on foreign exchange risk appears in Part I, Item 1A, “Risk Factors,” Part II, Item 7A, “Quantitative and Qualitative Disclosures about Market Risk” and Part II, Item 8, “Financial Statements and Supplementary Data” of this Form 10-K.

Marketing and Customers

Our Go-to-Market strategy focuses on an integrated approach that is directed at providing comprehensive design to manufacturing solutions meeting the broad spectrum of our customer needs. We utilize a wide range of marketing tools to generate demand and create awareness for our products and services worldwide. Our marketing and communications teams support our demand generation activities by providing marketing campaigns, digital presence and outreach, and event and targeted vertical seminar engagements.

We promote and sell our solutions globally through a direct sales force, channel partners and, in certain geographies, appointed distributors. Our customer success organization includes sales professionals, application engineers, vertical specialists, and other support teams throughout the Americas, EMEA and APAC regions. These teams are responsible for providing complete service to our customers and channel partners from a technical consultation to the sale of our software, printer, and services products.

Our application engineers collaborate closely with our customers to solve complex design and additive manufacturing challenges, leveraging our technology, software, materials and services to develop advanced applications across our Healthcare Solutions and Industrial Solutions segments. Additionally, our Customer Innovation Centers provide access to the resources necessary to develop, validate, and commercialize customer applications.

We sell our software solutions, including our Oqton MOS software, through a dedicated software sales team. Our software may be sold to customers with 3D printing equipment from competitive equipment manufacturers and, in some cases, we resell our software through these manufacturers.

Our customers include major companies as well as small and midsize businesses in a broad range of industries, including medical, dental, automotive, aerospace, durable goods, government, defense, technology, jewelry, electronics, education, consumer goods, energy, biotechnology and others. For the years ended December 31, 2022, 2021, and 2020, one customer accounted for approximately 23%, 22% and 13% of our consolidated revenue, respectively. We expect to maintain our relationship with this customer.

Production and Suppliers

In order to carry out the assembly and refurbishment of our 3D printer hardware, we utilize a combination of in-house operations as well as outsourcing arrangements with selected design, engineering and contract manufacturing companies in the U.S., Switzerland and Belgium. In cases where we utilize outsourcing partners, we purchase finished printers from these suppliers pursuant to forecasts and customer orders that we supply to them. These suppliers also carry out quality control procedures on our printers prior to their shipment to customers. As part of these activities, these suppliers have responsibility for procuring the components and sub-assemblies either from us or third-party suppliers, which are sourced from a geographically diverse mix of countries. While the outsourced suppliers of our printers have responsibility for the supply chain and inventory of components for the printers they assemble, the components, parts and sub-assemblies that are used in our printers are generally available from several potential suppliers. During 2022, we in-sourced the manufacturing of multiple printing platforms from contract manufacturing partners in order to realize improvements in production quality, cost efficiency, and inventory management.

We produce materials at our facilities in Rock Hill, South Carolina, Marly, Switzerland and Soesterberg, Netherlands. We also have arrangements with third parties who blend certain materials according to our specifications that we sell under our own brand names, and we purchase certain complementary materials from third parties for resale to our customers.

Our equipment assembly and materials blending activities, advanced manufacturing services and certain R&D activities are subject to compliance with applicable federal, state and local provisions regulating the storage, use and discharge of materials into the environment. Our facilities engaged in such activities are subject to periodic compliance audits by applicable regulatory authorities. We believe that we are in compliance, in all material respects, with such regulations as currently in effect, and we expect continued compliance with them will not have a material adverse effect on our capital expenditures, results of operations or financial position.

As a company with global operations, we are subject to the laws of the U.S. and multiple foreign jurisdictions in which we operate and the rules and regulations of various governing bodies, which may differ among jurisdictions. Compliance with these laws, rules and regulations has not had, and is not expected to have, a material effect on our capital expenditures, results of operations or competitive position.

Research and Development

The 3D printing industry continues to experience rapid technological change and developments in hardware, software and materials. Consequently, we have ongoing R&D programs to develop new products and to enhance our portfolio of products and services, as well as to improve and expand the capabilities of our solutions. Our efforts are often augmented by development arrangements with research institutions, including universities, customers, suppliers, assembly and design firms, engineering companies, materials companies, governments and other partners.

We are also engaged in various R&D efforts related to regenerative medicine. These efforts include the application of 3D printing technologies to the development of transplantable organs and non-organ human applications. These efforts are expected to result in new products that we will market directly or in conjunction with development or channel partners.

In addition to our internally developed technology platforms, we have acquired products and technologies developed by others by acquiring business entities that held ownership rights to such products and technologies. In other instances, we have licensed or purchased the intellectual property rights of technologies developed by third parties through agreements that may obligate us to pay a license fee or royalty, typically based upon a dollar amount per unit or a percentage of the revenue generated by such products.

Intellectual Property

We regard our technology platforms and materials as proprietary and seek to protect them through copyrights, patents, trademarks and trade secrets. At December 31, 2022 and 2021 we held 1,358 and 1,332 patents worldwide, respectively. At December 31, 2022 and 2021, we had 360 and 261 pending patent applications worldwide, respectively. The principal issued patents covering aspects of our various technologies will expire at varying times through the year 2034.

In addition, we are a party to various licenses that have had the effect of broadening the range of the patents, patent applications and other intellectual property available to us.

We have also entered into licensing or cross-licensing arrangements with various companies in the U.S. and other countries that enable those companies to utilize our technologies in their products or that enable us to use their technologies in our products. Under certain of these licenses, we are entitled to receive, or we are obligated to pay, royalties for the sale of licensed products in the U.S. or in other countries. The amount of such royalties was not material to any of our annual results of operations or financial position for the three-year period ended December 31, 2022.

We believe that, while our patents and licenses provide us with a competitive advantage, our success also depends on our marketing, business development, applications know-how and ongoing R&D efforts. Accordingly, we believe the expiration of any of the patents, patent applications, or licenses discussed above would not be material to our business or financial position.

Competition

We compete with other suppliers of 3D printers, materials, software and healthcare solutions as well as with suppliers of conventional manufacturing solutions. We compete with these suppliers for customers as well as channel partners for certain of our products. Development of new technologies or techniques not encompassed by the patents that we own or license may result in additional future competition.

Our competitors operate both globally and regionally, and many of them have well-recognized brands and product lines.

We believe principal competitive factors include the functionality and breadth of our technology and materials, process and application know-how, total cost of operation of the solution, product reliability and the ability to provide a complete solution to meet customer needs. We believe that our future success depends on our ability to provide high-quality solutions, introduce new products and services to meet evolving customer needs and market opportunities, and to extend our technologies to new applications. Accordingly, our ongoing R&D programs are intended to enable us to continue technology advancement and develop innovative new solutions for the marketplace.

Human Capital

At 3D Systems, our mission is to deliver leading additive solutions for industrial and healthcare applications. In support of this purpose, our priority is to invest in our people by focusing on bringing in top talent, providing development and engagement opportunities to enable a culture of innovation, and ensuring a safe and healthy work environment. As of December 31, 2022, we had 2,032 full-time and part-time employees, compared to 1,721 full-time and part-time employees as of December 31, 2021. None of our U.S. employees are covered by collective bargaining agreements; however, some employees outside the U.S. are subject to local statutory employment and labor arrangements. We have not experienced any material work stoppages and believe that our relations with our employees are satisfactory.

Talent Development & Engagement

Through our operating history and experience with technological innovation, we appreciate the importance of retention, growth, and development of our employees – our employees are key to achieving long-term success. Our goal is to foster a workplace culture and employee experience that drives innovation with purpose, profitable growth, and delivers ‘extraordinary’ to our customers. To do so, we have programs for acquiring strategic talent, developing our teams to build key capabilities and skills, and engaging, motivating, and retaining our employees to do their best work. We regularly survey our employees to seek their feedback in areas such as culture, career development, inclusivity, integrity, and employee success. To address the evolving needs of our business, we perform strategic workforce and succession planning as well as ongoing evaluation of our organizational design, culture, and values.

Diversity, Equity & Inclusion

Employees span the Americas (57%), EMEA (34%), and APAC (9%) with approximately 879 employees located outside the U.S. This global representation promotes diversity of thought, experiences, culture, and backgrounds that enhances our ability to deliver innovative solutions to our customers, in support of our company value to ‘build great teams.’ Our talent acquisition, outreach, and community engagement activities focus on attracting top, diverse talent. Upon hire, we are committed to fostering an engaged, inclusive, and purpose-driven culture where employees have equitable opportunities for success and feel a sense of belonging. As we execute our talent management strategy, diversity, equity, and inclusion are key elements that influence our measures of success.

Compensation & Benefits

We design our compensation programs to be competitive and equitable to support employees in sharing in the success of 3D Systems. We tailor our compensation programs to attract and retain top talent to drive success in our current business priorities and emerging strategies. Additionally, we recognize that employees thrive when they have the resources to meet their needs and the time and support to succeed in their professional and personal lives. In support of this, we offer a wide variety of market competitive benefits to employees around the world. The Compensation Committee of the Board of Directors oversees the design of executive compensation and equity plans, which are designed to align executive pay to the delivery of long-term shareholder value.

Workplace Health & Safety

We are committed to creating a safe, secure, healthy, and injury-free work environment for our employees, customers, partners, and visitors. Our focus is on reducing significant safety risks and driving a strong safety culture through communication, awareness, and visible leadership. To assist in achieving this commitment, we provide substantial safety trainings and necessary equipment at all facilities, educating and encouraging our employees to proactively identify and eliminate unsafe actions and conditions. We have specific safety programs in place for those working in potentially high-hazard environments. We monitor injury and illness health and safety metrics across our organization to continually evaluate our safety programs to meet the needs of our teams.

COVID-19

Our top priority is protecting the health and safety of our employees and their families and communities. Throughout the COVID-19 pandemic, our leadership regularly reviewed and adapted our COVID-19 protocols to keep our employees safe. We continue to offer a hybrid-work program globally, providing more flexibility for employees to work remotely. As we manage our operations, we continue to monitor the ongoing impacts of COVID-19, and regularly review guidance from international and domestic authorities.

Available Information

Refer to our website to learn more about our company culture, code of conduct, values, and sustainability initiatives. Our website address is www.3DSystems.com. The information contained on our website is neither a part of, nor incorporated by reference into, this Form 10-K or any other document that we file with or furnish to the Securities and Exchange Commission ("SEC"). We make available, free of charge through our website, our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, amendments to those reports and other documents that we file with the SEC, as soon as reasonably practicable after we electronically file them with, or furnish them to, the SEC.

Many of our corporate governance materials, including our Code of Conduct, Code of Ethics for Senior Financial Executives and Directors, Corporate Governance Guidelines, current charters of each of the standing committees of the Board of Directors and our corporate charter documents and by-laws are available on our website.

Information about our Executive Officers

The information appearing in the table below sets forth the position or positions held by each of our executive officers and his or her age as of March 16, 2023. All of our executive officers serve at the pleasure of the Board of Directors. There are no family relationships among any of our executive officers or directors.

Name and Current Position	Age as of March 16, 2023
Jeffrey A. Graves President and Chief Executive Officer	61
Michael Turner Executive Vice President and Chief Financial Officer	47
Charles W. Hull Executive Vice President and Chief Technology Officer for Regenerative Medicine	83
Andrew M. Johnson Executive Vice President, Chief Corporate Development Officer, Chief Legal Officer and Secretary	48
Menno Ellis Executive Vice President, Healthcare Solutions	50
Reji Puthenveetil Executive Vice President, Industrial Solutions	54
Phyllis Nordstrom Executive Vice President, Chief People and Culture Officer and Chief Administrative Officer	44
Joseph Zuiker Executive Vice President of Engineering and Operations	58

Jeffrey A. Graves, President and Chief Executive Officer. Dr. Graves was appointed the Company's President and Chief Executive Officer in May 2020. Prior to joining the Company, from 2012 to May 2020, Dr. Graves served as Chief Executive Officer, President and Director of MTS Systems Corporation, a global supplier of test, simulation, and measurement systems. From 2005 until 2012, Dr. Graves served as President and Chief Executive Officer of C&D Technologies, Inc., a technology company that produces and markets systems for the power conversion and storage of electrical power. Dr. Graves also held leadership roles with Kemet Corporation, an electronic component manufacturing company, as Chief Operating Officer from 2001 to 2003 and Chief Executive Officer from 2003 to 2005. Previously, he held a number of leadership and technical roles with General Electric, Rockwell Automation and Howmet Corporation. In addition to serving on the Company's Board of Directors, Dr. Graves serves on the board of directors of Hexcel Corporation.

Michael Turner, *Executive Vice President and Chief Financial Officer*. Mr. Turner was appointed Executive Vice President and Chief Financial Officer in August 2022. Mr. Turner served as the Chief Financial Officer of Innovative Chemical Products, a leading formulator and manufacturer of specialty coatings, adhesives, and sealants serving the construction and industrial markets, from May 2021 until August 2022. Prior to joining Innovative Chemical Products, he was a finance executive at the publicly traded chemical company Albemarle Corporation from April 2015 to May 2021. At Albemarle Corporation, Mr. Turner's roles included business unit Chief Financial Officer, Finance leader for the Company's Enterprise Resource Planning implementation, and Vice President of Corporate FP&A. Mr. Turner's 20-plus year finance career also includes financial leadership positions as divisional and corporate controller at FMC Corporation and Polypore International, respectively.

Charles W. Hull, *Executive Vice President, Chief Technology Officer for Regenerative Medicine*. Mr. Hull is a founder of the Company and served as a member of our Board of Directors from 1993 to May 2022 when he was designated Director Emeritus. He has served as Chief Technology Officer since 1997, as Executive Vice President since 2000 and as Chief Technology Officer for Regenerative Medicine since 2021. Mr. Hull has also previously served in various other executive capacities at the Company since 1986, including Chief Executive Officer, Vice Chairman of the Board of Directors and President and Chief Operating Officer.

Andrew M. Johnson, *Executive Vice President, Chief Corporate Development Officer & Chief Legal Officer and Secretary*. Mr. Johnson has served as Executive Vice President, Chief Legal Officer and Secretary since November 2014 and as Chief Corporate Development Officer since September 2022. He served as Interim President and Chief Executive Officer, Chief Legal Officer and Secretary from October 2015 to April 2016 and as Vice President, General Counsel and Secretary from April 2012 to November 2014. Previously, he served as Assistant General Counsel and Assistant Secretary.

Menno Ellis, *Executive Vice President, Healthcare Solutions*. Mr. Ellis has served as Executive Vice President, Healthcare Solutions since July 2020. He joined the Company in December 2016 as Senior Vice President, Strategy and Vertical Markets. He served as Senior Vice President and General Manager of the Plastics Business Unit and is now responsible for the Healthcare Solutions group, which encompasses the Dental, Medical and Simulations businesses. Prior to joining the Company, he spent 20 years in management and business consulting services with an emphasis on sustainable, long-term revenue growth.

Reji Puthenveetil, *Executive Vice President, Industrial Solutions*. Mr. Puthenveetil has served as Executive Vice President, Industrial Solutions since July 2020. Prior to joining the Company, Mr. Puthenveetil spent 25 years as a management consultant for Group Newhouse helping companies, such as Lockheed Martin, Xcel Energy, Kia Motors, and Thales Group. Mr. Puthenveetil's work across multiple industries led to the design of a clear strategy for growth and ensuring organizational capability and alignment for execution.

Phyllis Nordstrom, *Executive Vice President, Chief People and Culture Officer and Chief Administrative Officer*. Ms. Nordstrom has served as Executive Vice President, Chief People and Culture Officer and Chief Compliance Officer since August 2021. Effective December 2022, she was further appointed as the Company's Chief Administrative Officer. Prior to joining 3D Systems, from May 2016 to July 2021, Ms. Nordstrom was Senior Vice President and Chief Risk & Compliance Officer at MTS Systems Corporation, where she was the leader of business ethics, corporate compliance, corporate sustainability, and internal audit and risk management. Over her 22-year career, Ms. Nordstrom has also held multiple leadership roles at PricewaterhouseCoopers, Target, and US Bank.

Joseph Zuiker, *Executive Vice President of Engineering and Operations*. Dr. Zuiker has served as Executive Vice President of Engineering and Operations since December 2022. Prior to joining 3D Systems, Dr. Zuiker served as Vice President of Engineering, Operations, and Order Fulfillment for MTS Systems Corporation where he worked from July 2017 until December 2022. Prior to joining MTS Systems, he was Senior Director of Technology for Halliburton Corporation's Sperry Drilling from September 2011 to July 2016. Dr. Zuiker also worked for General Electric from December 1995 to August 2011 in various roles of increasing responsibility, including General Manager of GE Gasification Technology, General Manager of GE Hydro Technology, and Six Sigma Master Black Belt. He holds a Doctorate in Mechanical Engineering from Rensselaer Polytechnic Institute, a Master of Science degree in Aerospace Engineering from the University of Cincinnati, and a Bachelor of Science degree in Mechanical Engineering from the University of Illinois at Urbana-Champaign.

Item 1A. Risk Factors

You should carefully read the following discussion of significant factors, events and uncertainties when evaluating our business and the forward-looking information contained in this Form 10-K. The events and consequences discussed in these risk factors could materially and adversely affect our business, operating results, liquidity and financial condition. While we believe we have identified and discussed below the key risk factors affecting our business, these risk factors do not identify all the risks we face, and there may be additional risks and uncertainties that we do not presently know or that we do not currently believe to be significant that may have a material adverse effect on our business, performance or financial condition in the future.

Operational & Financial Risk Factors

Our uneven sales cycle makes planning and inventory management difficult and future financial results less predictable.

Our quarterly sales often have reflected a pattern in which a disproportionate percentage of each quarter's total sales occur towards the end of the quarter, in particular for sales of hardware and software products. This uneven sales pattern makes predicting net revenue, earnings, cash flow from operations and working capital for each financial period difficult, increases the risk of unanticipated variations in our quarterly results and financial condition and places pressure on our inventory management and logistics systems. If predicted demand is substantially greater than orders, there may be excess inventory. Alternatively, if orders substantially exceed predicted demand, we may not be able to fulfill all of the orders received in each quarter and such orders may be canceled. Depending on when they occur in a quarter, developments such as an information systems failure, component pricing movements, component shortages or global logistics disruptions could adversely impact our inventory levels and results of operations in a manner that is disproportionate to the number of days in the quarter affected.

The variety of products that we sell could cause significant quarterly fluctuations in our gross profit margins, and those fluctuations in margins could cause fluctuations in operating income or loss and net income or loss.

We continuously work to expand and improve our products, materials and services offerings, geographic areas in which we operate and the distribution channels we use to reach various target product applications and customers. This variety of products, applications, channels and regions involves a range of gross profit margins that can cause substantial quarterly fluctuations in gross profit and gross profit margins depending upon the mix of product shipments from quarter to quarter. Additionally, the introduction of new products or services may further heighten quarterly fluctuations in gross profit and gross profit margins due to manufacturing ramp-up and start-up costs. We may experience significant quarterly fluctuations in gross profit margins or operating income or loss due to the impact of the mix of products, channels or geographic areas in which we sell our products from period to period.

Our products and services may experience quality problems from time to time that can result in decreased sales and operating margin, product returns, product liability, warranty or other claims that could result in significant expenses and harm to our reputation.

We sell complex hardware and software products, materials and services that can contain undetected design and manufacturing defects or errors when first introduced or as enhancements are released that, despite testing, are not discovered until after the product has been installed and used by customers. Sophisticated software and applications, such as those sold by us, may contain "bugs" that can unexpectedly interfere with the software's intended operation. Defects may also occur in components and products we purchase from third parties. There can be no assurance we will be able to detect and fix all defects in the hardware, software, materials and services we sell. Failure to do so could result in lost revenue, product returns, product liability, delayed market acceptance of those products and services, claims from distributors, end-users or others, increased end-user service and support costs, and significant warranty claims and other expenses to correct the defects, diversion of management time and attention and harm to our reputation.

Changes in, or interpretation of, tax rules and regulations may impact our effective tax rate and future profitability.

We are a U.S. based, multinational company subject to taxation in multiple U.S. and foreign tax jurisdictions. Our future effective tax rates could be adversely affected by changes in statutory tax rates or interpretation of tax rules and regulations in jurisdictions in which we do business, changes in the amount of revenue or earnings in the countries with varying statutory tax rates, or by changes in the valuation of deferred tax assets and liabilities.

In addition, we are subject to audits and examinations of previously filed income tax returns by the Internal Revenue Service and other domestic and foreign tax authorities. We regularly assess the potential impact of such examinations to determine the adequacy of our provision for income taxes and have reserved for potential adjustments that we expect may result from the current examinations. We believe such estimates to be reasonable; however, there is no assurance that the final determination of any examination will not have an adverse effect on our operating results and financial position.

Changes in business conditions may cause goodwill and other intangible assets to become impaired.

Goodwill and other intangible assets are subject to an impairment test on an annual basis and when circumstances indicate that an impairment is more likely than not. Such circumstances include a significant adverse change in the business climate or a decision to dispose of a business or product line. We face some uncertainty in our business environment due to a variety of challenges, including changes in customer demand. While we have not recorded an impairment to our goodwill since the third quarter of 2020, we may experience additional unforeseen circumstances that adversely affect the value of our goodwill or intangible assets and trigger an evaluation of the amount of the recorded goodwill and intangible assets. Future write-offs of goodwill or other intangible assets as a result of an impairment in the business could materially adversely affect our results of operations and financial condition.

We depend on external vendors and suppliers for the components and spare parts for our 3D printers and for chemicals and packaging used in our materials. Supply and logistical disruptions that began during the COVID-19 pandemic continue for many of our supply chain partners. If these relationships were to terminate or these disruptions worsen, our business could be disrupted while we locate alternative sources of supply and our expenses may increase.

We purchase components and sub-assemblies for our printers from third-party suppliers that we provide to our customers as spare parts. Additionally, we purchase raw chemicals and packaging that are used in our materials, as well as certain of those materials, from third-party suppliers.

While there are typically several potential suppliers of parts for our products, we currently choose to use only one or a limited number of suppliers for several of these items, including our lasers, materials and certain jetting components. Our reliance on a single or limited number of suppliers involves many risks, including, among others, the following:

- Potential shortages of some key components;
- Disruptions in the operations of these suppliers;
- Product performance shortfalls; and
- Reduced control over delivery schedules, assembly capabilities, quality and costs.

The COVID-19 pandemic created sporadic delays on the inbound supply chain at our partners and our own facilities that have not been fully resolved. Continued delays on both inbound and outbound logistics have also created challenges. We continue to identify alternative solutions, but an inability to source from alternative suppliers in a timely manner could impact on our ability to fulfill demand.

While we believe that, if necessary, we can obtain all the components necessary for our spare parts and materials from other manufacturers, we require any new supplier to become “qualified” pursuant to our internal procedures, which could involve evaluation processes of varying durations. Our spare parts and raw chemicals used in our materials production are subject to various lead times. In addition, at any time, certain suppliers may decide to discontinue production of a part or raw material that we use. Any unanticipated change in the sources of our supplies, or unanticipated supply limitations, could increase production or related costs and consequently reduce margins.

If our forecasts exceed actual orders, we may hold large inventories of slow-moving or unusable parts, which could have an adverse effect on our cash flow, profitability and results of operations. Inversely, we may lose orders if our forecast is low and we are unable to meet demand. There is considerable uncertainty on the business impact from labor and supply limitations on our vendors, suppliers, and partners. If disruptions to global businesses continue or worsen it could have a material adverse effect on our financial condition and results of operations.

The loss of, continued reduction or substantial decline in revenue from larger clients could have a material adverse effect on our revenues, profitability and liquidity.

We experience revenue concentration with a large customer that represents over 20% of our consolidated revenue. Generally, our contracts do not contain guarantees of minimum duration, revenue levels, or profitability. This customer may terminate its contracts or materially reduce its requested levels of products or services at any time. The loss of, deterioration of the financial condition of, or a significant change to the business of this customer could have a material adverse effect on our business, financial condition, and results of operations. Additionally, this concentration exposes us to concentrated credit risk, as a significant portion of our accounts receivable may be from a single customer. If we are unable to collect our receivables, or are required to take additional reserves, our results of operations and cash flow from operations will be adversely affected.

If we do not generate net cash flow from operations and if we are unable to raise additional capital, our financial condition could be adversely affected and we may not be able to execute our growth strategy.

We cannot assure you that we will generate cash from operations or identify and secure other potential sources to fund future working capital needs and meet capital expenditure requirements.

If we are unable to generate such cash flow, we may be required to adopt one or more alternatives, such as selling assets, restructuring or incurring additional debt or obtaining additional equity capital on terms that may be onerous or highly dilutive. Our ability to obtain additional capital or refinance any indebtedness will depend on, among other things, the capital markets, our financial condition at such time and the terms and conditions of any such financing or indebtedness. We may not be able to engage in any of these activities or engage in these activities on desirable terms.

The lack of additional capital resulting from any inability to generate cash flow from operations or to raise equity or debt financing could force us to substantially curtail or cease operations and would, therefore, have an adverse effect on our business and financial condition. Furthermore, we cannot assure you that any necessary funds, if available, would be available on attractive terms or that they would not have a significantly dilutive effect on our existing stockholders. If our financial condition were to worsen and we become unable to attract additional equity or debt financing or enter into other strategic transactions, we would not be able to execute our growth strategy and we could default on our debt obligations, become insolvent or be forced to declare bankruptcy.

Our business could be adversely impacted in the event of a failure of our information technology infrastructure or adversely impacted by a successful cyber-attack.

We have experienced cyber security threats, threats to our information technology infrastructure and unauthorized attempts to gain access to our sensitive information. Prior cyber-attacks directed at us have not had a material impact on our business or financial results; however, this may not continue to be the case in the future. Cyber security assessment analyses undertaken by us have identified and prioritized steps to fortify our cyber security safeguards. We have and will continue to implement additional security measures and processes which enhance our ability to detect and respond to a cyber-attack. We have increased our cyber breach insurance and implemented company-wide cyber security awareness training as well as dedicated certain personnel to address this threat. Despite the implementation of these safeguards, there can be no assurance that we will adequately protect our information or that we will not experience any future successful attacks. The threats we face vary from attacks common to most industries to more advanced and persistent, highly organized adversaries who target us because of the products and services we provide. If we are unable to protect sensitive information, our customers or governmental authorities could question the adequacy of our threat mitigation and detection processes and procedures. Due to the evolving nature of these security threats, however, the impact of any future incident cannot be predicted.

We may need to expend significant additional resources to modify our cyber security protective measures, to investigate and remediate vulnerabilities or other exposures or to make required notifications, and we may be subject to litigation and financial losses. These costs related to cyber or other security threats or disruptions may not be fully insured or indemnified by other means. Occurrence of any of these events could adversely affect our internal operations, the services we provide to our customers, our financial results or our reputation; or such events could result in the loss of competitive advantages derived from our research and development efforts or other intellectual property or early obsolescence of our products and services.

Our operations could suffer if we are unable to attract and retain key management or other key employees.

Our success depends upon the performance of our senior management and other key personnel. Our senior executive team is critical to the management of our business and operations, as well as to the development and execution of our strategy. When changes occur at our senior management level, as well as for key personnel, we typically incur incremental costs including search costs and relocation costs. High demand exists for senior management and other key personnel (including scientific, technical and sales personnel) in the 3D printing industry, and there can be no assurance that we will be able to attract and retain such personnel. We experience intense competition for qualified personnel.

While we intend to continue to provide competitive compensation packages to attract and retain key personnel and engage in regular succession planning for these positions, some of our competitors for these employees have greater resources and more experience, making it difficult for us to compete successfully for key personnel. If we cannot attract and retain sufficiently qualified technical employees for our research and development and manufacturing operations, we may be unable to develop and commercialize new products or new applications for existing products. Furthermore, possible shortages of key personnel, including engineers, in the regions surrounding our facilities could require us to pay more to hire and retain key personnel, thereby increasing our costs.

Servicing our debt may require a significant amount of cash, and we may not have sufficient cash or the ability to raise the funds necessary to settle conversions of the 0% convertible senior notes due 2026 ("the Notes") in cash, repay the Notes at maturity, or repurchase the Notes as required following a fundamental change.

As of December 31, 2022, we had \$460 million outstanding of the Notes. Our ability to refinance our indebtedness, including the Notes, or to make cash payments in connection with any conversions of the Notes, depends on our future performance, which is subject to economic, financial, competitive, and other factors beyond our control. Our business may not generate cash flow from operations in the future sufficient to service our debt and make necessary capital expenditures. If we are unable to generate such cash flow, we may be required to adopt one or more alternatives, such as selling assets, restructuring debt, or obtaining additional debt financing or equity capital on terms that may be onerous or highly dilutive. Our ability to refinance our indebtedness will depend on the capital markets and our financial condition at such time. We may not be able to engage in any of these activities or engage in these activities on desirable terms, which could result in a default on our debt obligations. In addition, any of our future debt agreements may contain restrictive covenants that may prohibit us from adopting any of these alternatives. Our failure to comply with these covenants could result in an event of default which, if not cured or waived, could result in the acceleration of our debt.

In the event the conditional conversion feature of the Notes is triggered, holders of Notes will be entitled to convert the Notes at any time during specified periods at their option. If one or more holders elect to convert their Notes, we would be required to settle any converted principal through the payment of cash, which could adversely affect our liquidity. In addition, even if holders do not elect to convert their Notes, we could be required under applicable accounting rules to reclassify all or a portion of the outstanding principal of the Notes as a current rather than long-term liability, which would result in a material reduction of our net working capital.

In addition, holders of the Notes have the right to require us to repurchase all or a portion of their Notes upon the occurrence of a fundamental change (as defined in the applicable indenture governing the Notes) at a repurchase price equal to 100% of the principal amount of the Notes to be repurchased. If the Notes have not previously been converted or repurchased, we will be required to repay such Notes in cash at maturity.

Our ability to make required cash payments in connection with conversions of the Notes, repurchase the Notes in the event of a fundamental change, or to repay or refinance the Notes at maturity will depend on market conditions and our future performance, which is subject to economic, financial, competitive, and other factors beyond our control. We also may not use the cash proceeds we raised through the issuance of the Notes in an optimally productive and profitable manner. As a result, we may not have enough available cash or be able to obtain financing at the time we are required to repurchase or repay the Notes or pay cash with respect to Notes being converted.

Business Strategy Risk Factors

We have made, and may make in the future, strategic acquisitions and divestitures that may involve significant risks and uncertainties. We may not realize the anticipated benefits of past or future acquisitions and integration of these acquisitions may disrupt our business and divert management attention. Likewise, our potential future divestitures may be unsuccessful and negatively impact our business.

From time to time, we evaluate acquisition candidates that fit our business objectives. Acquisitions involve certain risks and uncertainties, including, among others, the following:

- Difficulty in integrating newly acquired businesses and operations in an efficient and cost-effective manner, which may also impact our ability to realize the potential benefits associated with the acquisition;
- The risk that significant unanticipated costs or other problems associated with integration may be encountered;
- The challenges in achieving strategic objectives, cost savings and other anticipated benefits;
- The risk that our marketplaces do not evolve as anticipated and that the technologies acquired do not prove to be those needed to be successful in the marketplaces that we serve;
- The risk that we assume significant liabilities that exceed the limitations of any applicable indemnification provisions or the financial resources of any indemnifying party;
- The inability to maintain a relationship with key customers, vendors and other business partners of the acquired businesses;
- The difficulty in maintaining controls, procedures and policies during the transition and integration;
- The potential loss of key employees of the acquired businesses;
- The risk of diverting management attention from our existing operations;

- Difficulties in coordinating geographically disparate organizations and corporate cultures and integrating management personnel with different business backgrounds;
- The potential failure of the due diligence process to identify significant problems, liabilities or other challenges of an acquired company or technology;
- The risk that we incur significant costs associated with such acquisition activity that may negatively impact our operating results before the benefits of such acquisitions are realized, if at all;
- The entry into marketplaces where we have no or limited direct prior experience and where competitors have stronger marketplace positions;
- The exposure to litigation or other claims in connection with our assuming claims or litigation risks from terminated employees, customers, former shareholders or other third parties; and
- The risk that historical financial information may not be representative or indicative of our results as a combined company.

Historically, we have grown organically and from acquisitions, and we intend to continue to grow in such manner. Our infrastructure will require, among other things, continued development of our financial and management controls and management information systems, management of our sales channel, continued capital expenditures, the ability to attract and retain qualified management personnel and the training of new personnel. We cannot be sure that our infrastructure, systems, procedures, business processes and managerial controls will be adequate to support the growth in our operations. Any delays in, or problems associated with, implementing, or transitioning to, new or enhanced systems, procedures, or controls to accommodate and support the requirements of our business and operations and to effectively and efficiently integrate acquired operations may adversely affect our ability to meet customer requirements, manage our product inventory, and record and report financial and management information on a timely and accurate basis. These potential negative effects could prevent us from realizing the benefits of an acquisition transaction or other growth opportunity.

Likewise, we have in the past, and may in the future, divest certain business operations. Divestitures involve a number of risks, including the diversion of management's attention, significant costs and expenses, goodwill and other intangible asset impairment charges, the loss of customer relationships and cash flow, and the disruption of operations in the affected business. Failure to timely complete or consummate a divestiture may negatively affect valuation of the affected business or result in restructuring charges.

In the event of an unsuccessful acquisition or divestiture, our competitive position, revenues, results of operations and financial condition could be adversely affected.

We believe that our future success depends on our ability to deliver products and services that meet changing technology and customer needs.

Our business may be affected by rapid technological change, changes in user and customer requirements and preferences, frequent new product and service introductions embodying new technologies and the emergence of new standards and practices, any of which could render our existing products and proprietary technology obsolete. Accordingly, our ongoing research and development programs are intended to enable us to maintain technological leadership. We believe that to remain competitive we must continually enhance and improve the functionality and features of our products, services and technologies. However, there is a risk that we may not be able to:

- Develop or obtain leading technologies useful in our business;
- Enhance our existing products;
- Develop new products, services and technologies that address the increasingly sophisticated and varied needs of prospective customers, particularly in the area of printer speeds and materials functionality;
- Respond to technological advances and emerging industry standards and practices on a cost-effective and timely basis;
- or
- Recruit or retain key technology employees.

If we are unable to meet changing technology and customer needs, our competitive position, revenue, results of operations and financial condition could be adversely affected.

The success of our regenerative medicine efforts depends on developing and commercializing products, either ourselves or in conjunction with development partners, that are subject to technical and market risks.

Our regenerative medicine business requires us to develop products that enable the application of additive manufacturing to human organ transplantation and other non-organ human applications. These initiatives may require significant investment and technical achievement of viable product candidates may not be achieved. Our development efforts remain subject to risks including but not limited to unanticipated technical or other hurdles to commercialization. Any products developed through our research efforts are subject to safety, regulatory and efficacy risks that may result in delays to commercialization, cause us to incur additional expenses or fail to achieve commercialization. In addition, any products that achieve commercialization and regulatory approval are subject to market risks including reimbursement from third-party payers and competition from existing or new products that aim to address similar indications.

Regulatory, Legislative and Legal Risk Factors

We are subject to U.S. and other anti-corruption laws, trade controls, economic sanctions and similar laws and regulations. Our failure to comply with these laws and regulations could subject us to civil, criminal and administrative penalties and harm our reputation.

Doing business on a worldwide basis requires us to comply with the laws and regulations of the U.S. government and various foreign jurisdictions. These laws and regulations place restrictions on our operations, trade practices, partners and investments.

In particular, our operations are subject to U.S. and foreign anti-corruption and trade control laws and regulations, such as the Foreign Corrupt Practices Act (“FCPA”) and United Kingdom Bribery Act (the “Bribery Act”), export controls and economic sanctions programs, including those administered by the U.S. Treasury Department’s Office of Foreign Assets Control (“OFAC”), the State Department’s Directorate of Defense Trade Controls (“DDTC”) and the Bureau of Industry and Security (“BIS”) of the Department of Commerce. As a result of doing business in foreign countries and with foreign customers, we are exposed to a heightened risk of violating anti-corruption and trade control laws and sanctions regulations.

As part of our business, we may deal with state-owned business enterprises, the employees of which are considered foreign officials for purposes of the FCPA’s prohibition on providing anything of value to foreign officials for the purposes of obtaining or retaining business or securing any improper business advantage. In addition, the provisions of the Bribery Act extend beyond bribery of foreign public officials and also apply to transactions with individuals that a government does not employ. Some of the international locations in which we operate lack a developed legal system and have higher than normal levels of corruption. Our continued expansion outside the U.S., including in Brazil, China, India and developing countries, and our development of new partnerships worldwide, could increase the risk of FCPA, OFAC or Bribery Act violations in the future.

As an exporter, we must comply with various laws and regulations relating to the export of products and technology from the U.S. and other countries having jurisdiction over our operations. In the U.S., these laws include the International Traffic in Arms Regulations (“ITAR”) administered by the DDTC, the Export Administration Regulations (“EAR”) administered by the BIS and trade sanctions against embargoed countries and destinations administered by OFAC. The EAR governs products, parts, technology and software which present military or weapons proliferation concerns, so-called “dual use” items, and ITAR governs military items listed on the United States Munitions List. Prior to shipping certain items, we must obtain an export license or verify that license exemptions are available. Any failures to comply with these laws and regulations could result in fines, adverse publicity and restrictions on our ability to export our products, and repeat failures could carry more significant penalties.

Violations of anti-corruption and trade control laws and sanction regulations are punishable by civil penalties, including fines, denial of export privileges, injunctions, asset seizures, debarment from government contracts and revocations or restrictions of licenses, as well as criminal fines and imprisonment and could harm our reputation, create negative shareholder sentiment and affect our share value. We have established policies and procedures designed to assist our compliance with applicable U.S. and international anti-corruption and trade control laws and regulations, including the FCPA, the Bribery Act and trade controls and sanctions programs administered by OFAC, the DDTC and BIS, and have trained our employees to comply with these laws and regulations. However, there can be no assurance that all of our employees, consultants, agents or other associated persons will not take actions in violation of our policies and these laws and regulations. Additionally, there can be no assurance that our policies and procedures will effectively prevent us from violating these regulations in every transaction in which we may engage or provide a defense to any alleged violation. In particular, we may be held liable for the actions that our joint venture partners take inside or outside of the United States, even though our partners may not be subject to these laws. Such a violation, even if our policies prohibit it, could have an adverse effect on our reputation, business, financial condition and results of operations. In addition, various state and municipal governments, universities and other investors maintain prohibitions or restrictions on investments in companies that do business with sanctioned countries, persons and entities, which could adversely affect our reputation, business, financial condition and results of operations.

Failure to comply with the terms of our settlement agreements with the U.S. Departments of State, Commerce, and Justice could have a material and adverse impact on our business, results of operations and financial condition, and, even if we comply with those settlement agreements, the costs and burdens of compliance could be significant, and we may face additional investigations and proceedings from other governmental entities or third parties related to the same or similar conduct underlying the agreements.

In October 2017, we received an administrative subpoena from the Bureau of Industry and Security of the Department of Commerce (“BIS”) requesting the production of records in connection with possible violations of U.S. export control laws, including with regard to our former Quickparts.com, Inc. subsidiary. In addition, while collecting information responsive to the above-referenced subpoena, our internal investigation identified potential violations of the International Traffic in Arms Regulations administered by the Directorate of Defense Trade Controls of the Department of State (“DDTC”) and potential violations of the Export Administration Regulations administered by the BIS. On June 8, 2018 and thereafter, we submitted voluntary disclosures to BIS and DDTC identifying potentially unauthorized exports between 2012 and 2017, including to China, of controlled items including technical data. In connection with these matters, in August 2020, we received two federal grand jury subpoenas issued by the U.S. District Court for the Northern District of Texas. The Company responded to these two subpoenas and will continue to fully cooperate with the U.S. Department of Justice (“DOJ”) in the related investigation.

Over the past several months, the Company engaged in settlement discussions with DDTC, BIS, and DOJ to settle the potential export control violations described above. On February 27, 2023, the Company settled these matters with all three agencies. See Note 23, “Commitments and Contingencies,” to our consolidated financial statements included in Part II, Item 8, “Financial Statements and Supplementary Data” of this Form 10-K for additional information.

Compliance with the terms of these agreements, which impose remedial measures such as a Special Compliance Officer to monitor the Company’s export compliance programs, could continue to impose significant costs and burdens on us. If we fail to comply with the terms of these agreements, DDTC, BIS and/or DOJ may impose substantial monetary penalties, which could have a material adverse effect on our business, financial condition and results of operations.

Since 2018, we have implemented new compliance procedures to identify and prevent potential violations of export controls laws, trade sanctions, and government contracting laws and regulations and created a Compliance Committee of the Board of Directors to further enhance board oversight of compliance risks. As we continue to implement additional compliance enhancements, we may discover additional potential violations of export controls laws, trade sanctions, and/or government contracting laws in the future. If we identify any additional potential violations, we will submit voluntary disclosures to the relevant agencies and cooperate with such agencies on any related investigations. However, if we have additional violations of one or more export control laws, trade sanctions, or government contracting laws, we could be subject to various civil or criminal penalties, significant compliance, litigation or settlement costs, other losses, or a diversion of management’s attention from other business concerns and have a material adverse effect on our business, results of operations and financial condition. We may also be subject to negative publicity related to these matters that could harm our reputation, reduce demand for our solutions and services, result in employee attrition and negatively impact our stock price.

We derive a significant portion of our revenue from business conducted outside the U.S. and are subject to the risks of doing business outside the U.S.

We face many risks inherent in conducting business activities outside the U.S. that, unless managed properly, may adversely affect our profitability, including our ability to collect amounts due from customers. While most of our operations outside the U.S. are conducted in highly developed countries, our operations could be adversely affected by, among others, the following:

- Unexpected changes in laws, regulations and policies of non-U.S. governments relating to investments and operations, as well as U.S. laws affecting the activities of U.S. companies abroad;
- Changes in regulatory requirements, including export controls, tariffs and embargoes, other trade restrictions, competition, corporate practices and data privacy concerns;
- Political policies, political or civil unrest, terrorism or epidemics and other similar outbreaks;
- Fluctuations in currency exchange rates;
- Limited protection for the enforcement of contract and intellectual property rights in some countries;
- Difficulties in staffing and managing foreign operations;
- Operating in countries with a higher incidence of corruption and fraudulent business practices;
- Potentially adverse changes in taxation;
- The impact of public health epidemics on employees and the global economy; and
- Other factors, depending upon the specific country in which we conduct business.

These uncertainties may make it difficult for us and our customers to accurately plan future business activities and may lead our customers in certain countries to delay purchases of our products and services. More generally, these geopolitical, social and economic conditions could result in increased volatility in global financial markets and economies.

The consequences of terrorism or armed conflicts are unpredictable, and we may not be able to foresee events that could have an adverse effect on our market opportunities or our business. We are uninsured for losses and interruptions caused by terrorism, acts of war and similar events.

While the geographic areas outside the U.S. in which we operate are generally not considered to be highly inflationary, our foreign operations are sensitive to fluctuations in currency exchange rates arising from, among other things, certain intercompany transactions that are generally denominated, for example, in U.S. dollars rather than their respective functional currencies.

Moreover, our operations are exposed to market risk from changes in interest rates and foreign currency exchange rates and commodity prices, which may adversely affect our results of operations and financial condition. We seek to minimize these risks through regular operating and financing activities and, when we consider it to be appropriate, through the use of derivative financial instruments. However, our efforts to minimize our exposure to market risks from changes in interest rates, foreign currency exchange rates and commodity prices may prove to be insufficient or unsuccessful.

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 own intellectual property rights, the acquisition of third-party intellectual property rights or disputes related to the validity or alleged infringement of third-party intellectual property rights, including patent rights, we have been, and may in the future be, subject to claims, negotiations or complex, protracted litigation. Intellectual property disputes and litigation may be costly and can be disruptive to our business operations by diverting attention and energies of management and key technical personnel, and by increasing our costs of doing business. Although we have successfully defended or resolved past litigation and disputes, we may not prevail in any ongoing or future litigation and disputes, which could adversely affect our results of operations and financial condition.

Third-party intellectual property claims asserted against us could subject us to significant liabilities, require us to enter into royalty and licensing arrangements on unfavorable terms, prevent us from assembling or licensing certain of our products, subject us to injunctions restricting our sale of products, cause severe disruptions to our operations or the marketplaces in which we compete or require us to satisfy indemnification commitments with our customers, including contractual provisions under various license arrangements. In addition, we may incur significant costs in acquiring the necessary third-party intellectual property rights for use in our products. Any of these could seriously harm our business.

We may not be able to protect our intellectual property rights and confidential information, including our digital content, from third-party infringers or unauthorized copying, use or disclosure.

Although we defend our intellectual property rights and endeavor to combat unlicensed copying and use of our digital content and intellectual property rights through a variety of techniques, preventing unauthorized use or infringement of our rights (“piracy attacks”) is inherently difficult. If our intellectual property becomes subject to piracy attacks, our business may be harmed.

Additionally, we endeavor to protect the secrecy of our digital content, confidential information and trade secrets. If unauthorized disclosure of our trade secrets occurs, we could potentially lose trade secret protection. The loss of trade secret protection could make it easier for third parties to compete with our products by copying previously confidential features, which could adversely affect our business, results of operations, revenue and operating margins. We also seek to protect our confidential information and trade secrets through the use of non-disclosure agreements. However, there is a risk that our confidential information and trade secrets may be disclosed or published without our authorization, and in these situations it may be difficult and/or costly for us to enforce our rights.

Material weaknesses in our internal control over financial reporting could result in material misstatements in our financial statements not being prevented or detected, which could affect investor confidence in the accuracy and completeness of our financial statements and could negatively impact our stock price and financial condition.

As a public company, we are required to comply with Section 404 of the Sarbanes-Oxley Act. If we fail to abide by the applicable requirements of Section 404, regulatory authorities, such as the SEC, could subject us to sanctions or investigation, and our independent registered public accounting firm may not be able to certify as to the effectiveness of our internal control over financial reporting pursuant to an audit of our internal controls. Even effective internal controls can provide only reasonable assurance with respect to the preparation and fair presentation of financial statements. Accordingly, our internal control over financial reporting may not prevent or detect misstatements because of their inherent limitations, including the possibility of human error, the circumvention or overriding of controls, or fraud.

Management, including our Chief Executive Officer and Chief Financial Officer, assessed the effectiveness of the Company’s internal control over financial reporting as of December 31, 2022. Based on its assessment, management has concluded that the Company did not maintain effective internal control over financial reporting as of December 31, 2022, due to the following two material weaknesses.

We did not design or maintain effective controls in response to the risks of material misstatement, including designing and maintaining formal accounting policies, procedures, and controls over significant accounts and disclosures to achieve complete, accurate and timely financial accounting, reporting and disclosures, with respect to: (1) revenue, receivables and deferred revenue, including the input of executed contract terms into the Company’s information systems that perform revenue recognition and (2) the review of internally prepared reports and analyses utilized in the financial closing process. Although these material weaknesses did not result in a material misstatement of our consolidated financial statements for the periods presented, there is a possibility they could lead to a material misstatement of account balances or disclosures. Accordingly, management has concluded that these control deficiencies constitute material weaknesses.

The material weaknesses described above were initially identified at December 31, 2020 and continued to exist at December 31, 2022. As further described in Item 9A, Management's Report on Internal Control over Financial Reporting, we began implementing a remediation plan in January 2021 designed to improve our internal control over financial reporting through the development and implementation of more formal policies, processes and documentation procedures relating to our financial reporting, the hiring of additional accounting personnel, and the training of personnel on proper execution of designed control procedures.

While we believe our remediation plans should remediate the material weaknesses, we cannot provide assurance of when the material weaknesses will be remediated, nor can we be certain of whether additional actions will be required or the costs of any such actions. Moreover, we cannot provide assurance that additional material weaknesses will not arise in the future. While the material weaknesses discussed in Item 9A, Management's Report on Internal Control over Financial Reporting, did not result in material misstatements of our annual or interim consolidated financial statements, any failure to remediate the material weaknesses, or the identification of new material weaknesses in our internal control over financial reporting, could result in material misstatements in our financial statements that may continue undetected, negatively impacting the public perception of the Company and our securities and cause us to fail to meet our reporting and financial obligations or incur significant additional costs to remediate the material weaknesses, each of which could negatively affect our stock price, harm our ability to raise capital on favorable terms in the future or otherwise have a negative impact on our financial condition.

Item 1B. Unresolved Staff Comments

None.

Item 2. Properties

Our headquarters are located in Rock Hill, South Carolina. As of December 31, 2022, we own minimal facilities and we lease approximately 1.1 million square feet, in the U.S (725 thousand square feet), EMEA (311 thousand square feet) and APAC (47 thousand square feet). The Healthcare Solutions segment accounted for approximately 198 thousand square feet, while the Industrial Solutions segment accounted for approximately 223 thousand square feet. Approximately 662 thousand square feet are mixed use facilities.

Item 3. Legal Proceedings

Information relating to legal proceedings is included under the header "Litigation" in Note 23 to the consolidated financial statements in Item 8 of this Form 10-K, which is incorporated by reference into this Item 3.

Item 4. Mine Safety Disclosures

Not applicable.

PART II

Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities

Our common stock is listed on the New York Stock Exchange ("NYSE") under the trading symbol "DDD."

As of March 7, 2023, our outstanding common stock was held by approximately 1,523 stockholders of record. This figure does not reflect the beneficial ownership of shares held in a nominee's name.

Dividends

We do not currently pay, and have not paid, any dividends on our common stock, and we currently intend to retain any future earnings for use in our business. Any future determination as to the declaration of dividends on our common stock will be made at the discretion of the Board of Directors and will depend on our earnings, operating and financial condition, capital requirements, and other factors deemed relevant by the Board of Directors, including the applicable requirements of the Delaware General Corporation Law, which provides that dividends are payable only out of surplus or current net profits.

The payment of dividends on our common stock may be restricted by the provisions of credit agreements or other financing documents that we may enter into or the terms of securities that we may issue from time to time. Currently, no such agreements or documents limit our declaration of dividends or payments of dividends.

Issuance of Unregistered Securities and Issuer Purchases of Equity Securities

We did not repurchase any of our equity securities in the open market during 2022; however, shares of common stock were surrendered to us for payment of tax withholding obligations in connection with the vesting of restricted stock awards and units pursuant to our Amended and Restated 2015 Incentive Stock Plan. For information regarding the securities authorized for issuance under our equity compensation plans, see "Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters—Equity Compensation Plans" in Item 12 of this Form 10-K. Also, see Note 18 to the consolidated financial statements in Item 8 of this Form 10-K.

Issuer purchases of equity securities

	Total number of shares (or units) purchased	Average price paid per share (or unit)
October 1, 2022 - October 31, 2022	12,470	\$ 8.53
November 1, 2022 - November 30, 2022	6,401	10.56
December 1, 2022 - December 31, 2022	67,575	7.92
Total	86,446 ^a	\$ 8.20 ^b

- Represents shares of common stock surrendered to us for payment of tax withholding obligations in connection with the vesting of restricted stock awards and units.
- The average price paid reflects the average market value of shares withheld for tax purposes.

Issuances of Unregistered Securities

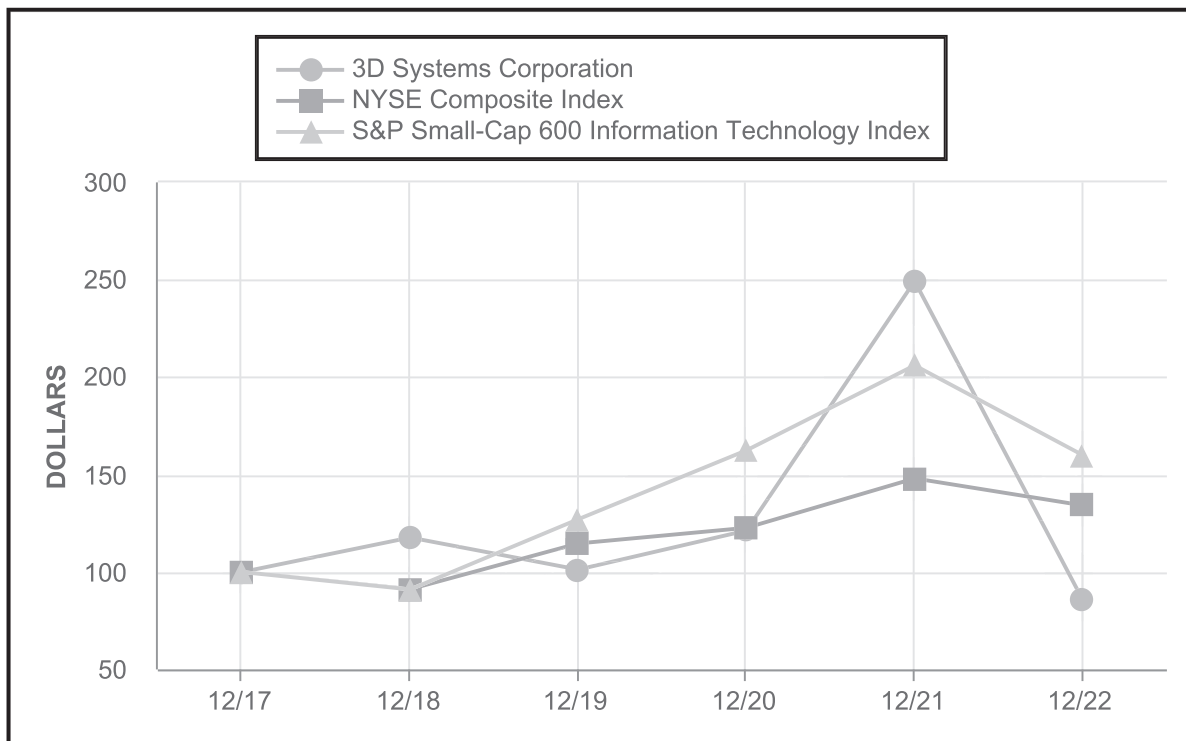
On October 4, 2022, we completed the acquisition of dp polar GmbH, a German corporation (“dp polar”), pursuant to a Stock Purchase Agreement, dated as of August 5, 2022, between the Company and the shareholders of dp polar. As part of the consideration with respect to the closing of the acquisition, after customary closing adjustments, the Company issued 794,988 shares of the Company’s Common Stock to shareholders of dp polar for an aggregate stock consideration value of \$7.3 million. The shares of Common Stock were issued in a transaction undertaken in reliance on Section 4(a)(2) of Securities Act of 1933, as amended (the “Securities Act”), and/or Rule 506 of Regulation D promulgated under the Securities Act. An additional payment of \$2.2 million via the issuance of 249,865 shares of Common Stock is possible upon the continued employment of a certain key individual from dp polar through October 4, 2024. The issuance of the shares of the Company’s Common Stock was exempt from registration because the issuance did not involve a public offering and each shareholder of dp polar that received shares of Common Stock in the transaction agreed to lock-up provisions of at least one year and acknowledged that such shares of Common Stock may not be offered, sold, pledged, assigned or transferred unless a registration statement with respect thereto is effective under the Securities Act and applicable state securities laws or an exemption from registration exists.

Stock Performance Graph

The graph below shows, for the five years ended December 31, 2022, the cumulative total return on an investment of \$100 assumed to have been made on December 31, 2017 in our common stock. For purposes of the graph, cumulative total return assumes the reinvestment of all dividends. The graph compares such return with those of comparable investments assumed to have been made on the same date in (a) the NYSE Composite Index, and (b) the S&P Small-Cap 600 Information Technology Index, which are published market indices with which we are sometimes compared.

Although total return for the assumed investment assumes the reinvestment of all dividends on December 31 of the year in which such dividends were paid, we paid no cash dividends on our common stock during the periods presented.

COMPARISON OF 5-YEAR CUMULATIVE TOTAL RETURN



	December 31, 2017	December 31, 2018	December 31, 2019	December 31, 2020	December 31, 2021	December 31, 2022
3D Systems Corporation	\$ 100	\$ 118	\$ 101	\$ 121	\$ 249	\$ 86
NYSE Composite Index	100	91	115	123	148	134
S&P Small-Cap 600 Information Technology Index	100	91	127	162	206	160

Item 6. Reserved

Item 7. Management’s Discussion and Analysis of Financial Condition and Results of Operations

The following discussion and analysis should be read together with our consolidated financial statements and notes thereto included in Item 8 of this Form 10-K. Certain statements contained in this discussion may constitute forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. These statements involve a number of risks, uncertainties and other factors that could cause actual results to differ materially from those reflected in any forward-looking statements, as discussed more fully in this Form 10-K. See “Risk Factors” in Part I, Item 1A and “Forward-Looking Statements”. All amounts are in thousands, except share and per share amounts, or as otherwise indicated.

For discussion related to the results of operations and changes in financial condition for fiscal 2021 compared to fiscal 2020, refer to Part II, Item 7. Management’s Discussion and Analysis of Financial Condition and Results of Operations in our fiscal 2021 Form 10-K. Our fiscal 2021 Form 10-K was filed with the SEC on March 1, 2022.

Business Overview

3D Systems Corporation (“3D Systems” or the “Company” or “we,” “our” or “us”) markets our products and services through subsidiaries in North America and South America (collectively referred to as “Americas”), Europe and the Middle East (collectively referred to as “EMEA”) and the Asia Pacific and Oceania region (collectively referred to as “APAC”). We provide comprehensive 3D printing and digital manufacturing solutions, including 3D printers for plastics and metals, materials, software, and digital design tools. Our solutions support advanced applications in two key industry verticals: Healthcare Solutions and Industrial Solutions. We have over 35 years of experience and expertise, which have proven vital to our development of an ecosystem and end-to-end digital workflow solutions that enable customers to optimize product designs, transform workflows, bring innovative products to market and drive new business models.

The Company has two reportable segments, Healthcare Solutions and Industrial Solutions.

Overview and Strategy

In May 2020, our Chief Executive Officer and President, Dr. Jeffrey Graves, was hired. Dr. Graves undertook an initial assessment of the Company and developed the purpose statement to be the leader in enabling additive manufacturing solutions for applications in growing markets that demand high reliability products. He announced a four-phased plan to enable this vision: reorganize into two key industry verticals (Healthcare Solutions and Industrial Solutions), restructure to gain efficiencies, divest non-core assets, and invest for future growth.

As part of our strategic plan, we have organized into two key verticals. This structure allows us to align our application-oriented approach with deep industry and customer knowledge. Our two key verticals span a range of industries. Healthcare Solutions includes dental, medical devices, personalized health services and regenerative medicine. Our Industrial Solutions vertical includes aerospace, defense, transportation and general manufacturing. We architect solutions specific to customers’ needs through a combination of materials, hardware platforms, software, professional services and advanced manufacturing – creating a path to integrating additive manufacturing into traditional production environments. As a result, manufacturers achieve design freedom, increase agility, scale production and improve overall total cost of operation. Our technologies and process knowledge enable hundreds of thousands of production parts to be made through additive manufacturing each day.

In conjunction with our four-phased plan, we completed our initial restructuring efforts in the second quarter of 2021. Cost reduction efforts included reducing the number of facilities and examining every aspect of our manufacturing and operating costs. However, given the current macroeconomic challenges, we continue to look for ways to manage costs. In the second quarter of 2022, we notified one of our printer assembly outsourcing partners of our intent to terminate the manufacturing services arrangement and in-source our printer assembly and production process, as we believe this is an opportunity to improve customer delivery and reduce costs. The exit agreement was finalized in July 2022 and resulted in a \$1.7 million exit fee that we paid in the third quarter of 2022, as well as the purchase of \$23.9 million of inventory and \$0.4 million of fixed assets from the assembly manufacturer. Part of the inventory purchased was prepaid during previous quarters for \$8.9 million, resulting in a net payment of \$17.1 million in July 2022.

Divestitures (see Note 4 to the Consolidated Financial Statements for further details)

In conjunction with our four-phased plan, we divested parts of our business that did not align with our strategic focus on additive manufacturing. The divestitures were completed in 2021, with net proceeds totaling \$451.2 million. In January 2021, we sold Cimatron Ltd., which operated our Cimatron integrated CAD/CAM software for the tooling business and its GibbsCAM CNC programming software business. In August 2021, we sold our Symbionix line of surgical simulators. In September 2021, we sold our On Demand Manufacturing ("ODM") business. These divestitures represent the completion of our planned divestitures of non-core assets as part of the strategic plan noted above.

Acquisitions/Investments (See Note 3 to the Consolidated Financial Statements for further details)

The last phase of the plan is to invest in growth. Once the restructuring phase and the divestitures of non-core assets were complete, the Company made several acquisitions and investments.

On October 4, 2022, we completed the acquisition of dp polar, a German-based designer and manufacturer of the industry's first additive manufacturing system designed for true high-speed mass production of customized components, for \$26.7 million, of which \$19.6 million was paid in cash and the remainder was paid via the issuance of the Company's common stock. An additional payment of \$2.2 million via the issuance of 249,865 shares of the Company's common stock is possible upon the continued employment of a certain key individual from dp polar through October 4, 2024. Central to dp polar's patented continuous printing process is a large-scale, segmented, rotating print platform that eliminates the start/stop operations of virtually all additive manufacturing platforms. With dp polar's technology and patented polar coordinate control, the print heads remain stationary above the rotating platform, providing a continuous print process. The acquisition's near-term impact on the Company's results of operations and cash flows is expected to be dilutive.

On April 1, 2022, we completed the acquisition of 93.75% of Kumovis for an all-cash purchase price of \$37.7 million. \$3.6 million of the purchase price is deferred for up to fifteen months from the closing date. Kumovis, which is part of the Healthcare Solutions segment, utilizes polyether ether keton or "PEEK" materials, which have properties that lend it to many medical applications, including many implant applications, that fit into our personalized healthcare solutions operations. The acquisition's near-term impact on the Company's results of operations and cash flows is expected to be dilutive.

On April 1, 2022, we completed the acquisition of 100% of Titan for an all-cash purchase price of \$39.0 million. Titan, which is part of the Industrial Solutions segment, is a pellet-based extrusion platform that addresses customer applications requiring large build volumes, superior performance, and improved productivity at significantly lower cost. We believe the acquisition of Titan will open up new markets in the Industrial Solutions segment. The acquisition's near-term impact on the Company's results of operations and cash flows is expected to be dilutive.

In March 2022, the Saudi Arabian Industrial Investments Company ("Dussur") and 3D Systems signed an agreement to form a joint venture intended to expand the use of additive manufacturing within the Kingdom of Saudi Arabia and surrounding geographies, including the Middle East and North Africa. The joint venture is to enable the development of Saudi Arabia's domestic additive manufacturing production capabilities, consistent with the Kingdom's 'Vision 2030,' which is focused on diversification of the economy and long-term sustainability. Once the joint venture is formed, 3D Systems will own approximately 49% and is committed to an initial investment of about \$6.5 million, of which \$3.4 million has been deposited in an escrow account and is reported as restricted cash within other assets on the balance sheet as of December 31, 2022. Use of the amount deposited in escrow is limited to funding the Company's initial investment in the joint venture, and such amount is expected to be deposited into a bank account of the joint venture for use in its operations or to pay outstanding liabilities upon legal formation. Additional future investments are contingent upon the achievement of certain milestones by the joint venture. The impact on the Company's financial position, results of operations and cash flows is not expected to be material other than the cash outflow(s) related to the initial and contingent investments.

In March 2022, we made a \$10.0 million investment for an approximate 26.6% ownership interest in Enhatch, the developer of the Intelligent Surgery Ecosystem. We simultaneously entered into a collaboration and supply agreement with Enhatch. We also obtained warrants to purchase additional shares of Enhatch and the right to purchase, in the future, the remaining shares of Enhatch that 3D Systems does not own if certain revenue targets are achieved. Enhatch's Intelligent Surgery Ecosystem provides technologies which streamline and scale the design and delivery of patient-specific medical devices by automating the process. Incorporating these capabilities into 3D Systems' workflow for patient-specific solutions, which includes advanced software, expert treatment planning services, custom implants, instrumentation design, and industry-leading production processes, will help more efficiently meet the growing demand for personalized medical devices.

During the third quarter of 2022, the Company recorded an impairment charge of \$2.8 million related to the carrying value of its investment in Enhatch. This impairment charge was the result of lower than projected revenues recognized by Enhatch during the quarter, as well as a reduction to near-term forecasted revenues due to a delay in receiving certain regulatory approvals. In addition, the carrying value of the Enhatch warrants, which are required to be recorded at their fair value as of the end of each quarter, was reduced from \$0.3 million to \$0.2 million. The Company has recorded the impairment charge related to its Enhatch investment, as well as the change in the value of the Enhatch warrants, within interest and other income (expense), net on the statement of operations for the year ended December 31, 2022.

On December 1, 2021, we acquired Volumetric for \$40.2 million. Additional payments of up to \$355.0 million are possible upon (1) the attainment of seven non-financial milestones, each of which requires achievement prior to either December 31, 2030 or December 31, 2035, and (2) the continued employment of certain key individuals from Volumetric. Volumetric's mission is to develop the ability to manufacture human organs using bioprinting methods and the underlying technologies required to create these highly complex biological structures. With this acquisition, we expanded our capabilities and capacity in 3D printing related to bio-printing and regenerative medicine. Combining 3D Systems' regenerative medicine group with Volumetric's highly complementary skill sets of biological expertise and cellular engineering is expected to accelerate our core regenerative medicine strategies which include the bio-printing of human organs, additional non-organ applications and bio-printing technologies for research labs. The acquisition's near-term impact on the Company's results of operations and cash flows has been dilutive. Volumetric's operating results are reported in the Healthcare Solutions segment.

On November 1, 2021, we acquired Oqton for \$187.8 million. Oqton is a software company that creates an intelligent, cloud-based MOS platform tailored for flexible production environments that increasingly utilize a range of advanced manufacturing and automation technologies, including additive manufacturing solutions, in their production workflows. The cloud-based solution leverages the Industrial Internet of Things, artificial intelligence, and machine learning technologies to deliver a solution for customers to automate their digital manufacturing workflows, scale their operations and enhance their competitive position. The Oqton acquisition will allow the Company to expand its existing additive manufacturing software suite to the entire additive industry. Oqton's operating results are reported in the Industrial Solutions segment and the acquisition's impact on the Company's financial position, results of operations and cash flows has been dilutive.

In May 2021, we purchased Allevi, Inc. to expand regenerative medicine initiatives into medical and pharmaceutical research and development laboratories. Additionally, in June 2021, we closed the acquisition of a German software firm, Additive Works GmbH ("Additive"). Additive expands the simulation capabilities for rapid optimization of industrial-scale 3D printing processes. The purchase price for both acquisitions, individually and combined, and the impacts to the Company's financial position, results of operations and cash flows are not material.

COVID-19 Pandemic

Our offices are currently open and business travel has resumed, with safety measures in place and in accordance with local guidance. However, we continue to monitor and review guidance from international and domestic authorities regarding COVID-19 and remain committed to protecting our employees, delivering for our customers, and supporting our communities. If the COVID-19 pandemic resurges, governmental authorities may reimpose health and safety requirements that could restrict or prevent normal business activities. Refer to "Risk Factors" in Part I, Item 1A for a discussion of the risks to our business if the COVID-19 pandemic was to resurge.

Background

We earn revenue from the sale of products and services through our Healthcare Solutions and Industrial Solutions segments. The product categories include 3D printers and corresponding materials, healthcare simulators (which was divested in third quarter of 2021), digitizers, software licenses, 3D scanners and haptic devices. The majority of materials used in our 3D printers are proprietary. The services category includes maintenance contracts and services on 3D printers and simulators, software maintenance, software as a service subscriptions, on-demand solutions (which was divested in the third quarter of 2021) and healthcare solutions services.

Given the relatively high price of certain 3D printers and a corresponding lengthy selling cycle, as well as relatively low unit volume of the higher-priced printers in any particular period, a shift in the timing and concentration of orders and shipments from one period to another can materially affect reported revenue in any given period.

In addition to changes in sales volumes, there are three other primary drivers of changes in revenue from one period to another: (1) divestitures, (2) the combined effect of changes in product mix and average selling prices and (3) the impact of fluctuations in foreign currencies. As used in this Management's Discussion and Analysis, the price and mix effects relate to changes in revenue that are not able to be specifically related to changes in unit volume, divestitures or foreign exchange.

Summary of Financial Results for the Years Ended December 31, 2022 and 2021

<i>(in thousands)</i>	Year Ended December 31,	
	2022	2021
Revenue:		
Products	\$ 395,396	\$ 428,742
Services	142,635	186,897
Total revenue	538,031	615,639
Cost of sales:		
Products	237,386	245,169
Services	86,412	106,692
Total cost of sales	323,798	351,861
Gross profit	214,233	263,778
Operating expenses:		
Selling, general and administrative	244,181	227,697
Research and development	87,071	69,150
Total operating expenses	331,252	296,847
Loss from operations	(117,019)	(33,069)
Interest and other (expense) income, net	(3,790)	352,609
(Loss) income before income taxes	(120,809)	319,540
(Provision) benefit for income taxes	(2,140)	2,512
Net (loss) income before redeemable non-controlling interest	(122,949)	322,052
Less: net (loss) attributable to redeemable non-controlling interest	(238)	—
Net (loss) income attributable to 3D Systems Corporation	\$ (122,711)	\$ 322,052

Consolidated revenue

Total consolidated revenue for the year ended December 31, 2022 decreased \$77.6 million or 12.6% to \$538.0 million, compared to \$615.6 million for the same period last year, primarily driven by divestitures of non-core businesses and the negative impacts of foreign exchange, partially offset by higher sales volumes. Revenue from divested businesses for the year ended December 31, 2021 was \$71.7 million, foreign exchange negatively impacted revenue in the year ended December 31, 2022 by \$24.1 million, and higher sales volumes resulted in a \$17.0 million increase in revenue.

Consolidated gross profit

Gross profit for the year ended December 31, 2022 decreased \$49.5 million, or 18.8%, to \$214.2 million, compared to \$263.8 million for the same period last year. Gross profit margin for the year ended December 31, 2022 and 2021 was 39.8% and 42.8%, respectively. The decrease in gross profit is primarily a result of divestitures of \$33.5 million, cost inflation, and supply chain pressures.

Consolidated selling, general and administrative expense

Selling, general and administrative ("SG&A") expense for the year ended December 31, 2022 increased \$16.5 million, or 7.2%, to \$244.2 million, compared to \$227.7 million for the same period last year. SG&A expense was impacted by the Company's acquisitions of Titan, Kumovis, and dp polar during fiscal year 2022, as well as the Company's acquisitions of Volumetric and Oqton during the fourth quarter of 2021, each of which was consolidated for the full year ended December 31, 2022. Collectively, these acquisitions resulted in the recognition of incremental SG&A expense of \$28.7 million for fiscal year 2022. This increase in SG&A expense due to acquisitions was partially offset by a \$22.9 million decrease in SG&A expense driven by the Company's divestitures of Symbionix and ODM during fiscal year 2021.

The primary drivers of the \$16.5 million increase in SG&A expense for fiscal year 2022 – inclusive of the \$5.8 million net increase due to the impacts of the Company's recent acquisitions and divestitures – include:

Primary drivers (in thousands)	Increase / (Decrease)
Corporate litigation and settlement costs	\$19,888
Volumetric earnout	14,592
Amortization	5,116
Stock compensation and incentive compensation	(30,280)
Other	7,168

Corporate litigation and settlement costs increased during fiscal year 2022 primarily due to non-recurring settlement accruals related to various compliance and litigation matters discussed in Note 23 to the consolidated financial statements included in Item 8 of this Form 10-K, as well as the incremental legal costs incurred to address those compliance and litigation matters.

The expense attributable to the Volumetric earnout increased during fiscal year 2022 due to the recognition of a full year of expense in fiscal year 2022 versus a partial year of expense in fiscal year 2021, as the acquisition of Volumetric occurred on December 2021.

Amortization expense increased during fiscal year 2022 due to the recognition of a partial year of amortization related to intangible assets resulting from the fiscal year 2022 acquisitions and the recognition of a full year of amortization related to intangible assets resulting from the fiscal year 2021 acquisitions.

Compensation and other labor costs decreased during fiscal year 2022 primarily due to lower incentive compensation consisting of bonuses and stock-based compensation.

Other drivers of the increase in total SG&A expense for fiscal year 2022 include increased marketing, travel, software and hardware costs.

Consolidated research and development expense

Research and development ("R&D") expense for the year ended December 31, 2022 increased \$17.9 million, or 25.9%, to \$87.1 million, as compared to \$69.2 million for the same period last year. R&D expense was impacted by the Company's acquisitions of Titan, Kumovis, and dp polar during fiscal year 2022, as well as the Company's acquisitions of Volumetric and Oqton during the fourth quarter of 2021, each of which was consolidated for the full year ended December 31, 2022. Collectively, these acquisitions resulted in the recognition of incremental R&D expense of \$11.4 million for fiscal year 2022. This increase in R&D expense due to acquisitions was partially offset by a \$6.9 million decrease in R&D expense driven by the Company's divestiture of Symbionix during fiscal year 2021.

The primary drivers of the \$17.9 million increase in R&D expense for fiscal year 2022 – inclusive of the \$4.5 million net increase due to the impacts of the Company’s recent acquisitions and divestitures – include:

Primary drivers (in thousands)	Increase / (Decrease)
Compensation and other labor costs	\$10,954
Operating supplies	4,784
Other	2,183

The increases during fiscal year 2022 for compensation and other labor costs and operating supplies are primarily due to expenses from acquired businesses with significant R&D activities, partly offset by the absence of expenses from the divestiture of Symbionix.

Consolidated operating loss

Our operating loss for the year ended December 31, 2022 was \$117.0 million, compared to a \$33.1 million operating loss for the same period last year, due to lower gross profit and higher SG&A and R&D expenses as discussed above.

Results of Operations for 2022 and 2021

Segments income statements

The following table sets forth our operating results by segment for the years ended December 31, 2022 and 2021:

	Year Ended December 31,					
	2022			2021		
	Healthcare	Industrial	Consolidated	Healthcare	Industrial	Consolidated
<i>(in thousands)</i>						
Revenue	\$ 260,988	\$ 277,043	\$ 538,031	\$ 306,184	\$ 309,455	\$ 615,639
Cost of sales	162,222	161,576	323,798	170,434	181,427	351,861
Gross profit	98,766	115,467	214,233	135,750	128,028	263,778
Less:						
Segment operating expenses	72,954	92,630	165,584	66,392	79,473	145,865
Segment operating income	\$ 25,812	\$ 22,837	48,649	\$ 69,358	\$ 48,555	117,913
General corporate expense, net ^(a)			165,668			150,982
Operating (loss)			\$ (117,019)			\$ (33,069)

(a) - General corporate expense, net includes expenses not specifically attributable to our segments for functions such as human resources, finance, legal and information technology, including salaries, benefits, and other related costs, company-wide incentive compensation and stock-based compensation.

Revenue

The following table sets forth our revenue by segment for the years ended December 31, 2022 and 2021:

<i>(Dollars in thousands)</i>	Year Ended December 31,					
	2022		2021		Change in revenue	
	Revenue	% Revenue	Revenue	% Revenue	\$	%
Healthcare	\$ 260,988	48.5 %	\$ 306,184	49.7 %	\$ (45,196)	(14.8)%
Industrial	277,043	51.5 %	309,455	50.3 %	(32,412)	(10.5)%
Total	<u>\$ 538,031</u>	100.0 %	<u>\$ 615,639</u>	100.0 %	<u>\$ (77,608)</u>	(12.6)%

For the year ended December 31, 2022, Healthcare Solutions revenue decreased \$45.2 million, or 14.8%, to \$261.0 million, as compared to \$306.2 million for the same period last year primarily due to divestitures, the negative impacts of foreign exchange, and lower sales volumes in the dental market, partially offset by higher volumes and favorable sales price/mix in other markets. For the years ended December 31, 2022 and 2021, products revenue from Healthcare Solutions contributed \$179.4 million and \$217.7 million, respectively. The decreased products revenue in Healthcare Solutions is primarily due to the impact of divestitures of \$23.0 million, and lower sales volumes in the dental market, partially offset by higher volumes and favorable sales price/mix in other markets. For the years ended December 31, 2022 and 2021, services revenue from Healthcare Solutions contributed \$81.6 million and \$88.4 million, respectively. The decreased services revenue in Healthcare Solutions is primarily due to the impact of divestitures of \$8.8 million, partially offset by favorable sales price/mix.

For the year ended December 31, 2022, Industrial Solutions revenue decreased \$32.4 million, or 10.5%, to \$277.0 million as compared to \$309.5 million in the same period last year primarily due to divestitures and the negative impacts of foreign exchange partially offset by higher sales volumes. For the years ended December 31, 2022 and 2021, products revenue from Industrial Solutions contributed \$216.0 million and \$211.0 million, respectively. The increased Industrial Solutions products revenue was primarily due to higher sales volumes, partially offset by the negative impact of foreign exchange. For the years ended December 31, 2022 and 2021, services revenue from Industrial Solutions contributed \$61.1 million and \$98.5 million, respectively. The decreased services revenue in Industrial Solutions is primarily due to divestitures and the negative impacts of foreign exchange partially offset by higher sales volumes.

The following table sets forth changes in our products and services revenue for the years ended December 31, 2022 and 2021.

<i>(Dollars in thousands)</i>	Products		Services		Total	
Revenue — 2021	\$ 428,742	69.6 %	\$ 186,897	30.4 %	\$ 615,639	100.0 %
Change in revenue:						
Volume	6,120	1.4 %	10,888	5.8 %	17,008	2.8 %
Divestitures	(22,965)	(5.4)%	(48,707)	(26.1)%	(71,672)	(11.6)%
Price/mix	1,187	0.3 %	—	— %	1,187	0.2 %
Foreign currency translation	(17,688)	(4.1)%	(6,443)	(3.4)%	(24,131)	(3.9)%
Net change	<u>(33,346)</u>	(7.8)%	<u>(44,262)</u>	(23.7)%	<u>(77,608)</u>	(12.6)%
Revenue — 2022	<u>\$ 395,396</u>	73.5 %	<u>\$ 142,635</u>	100.0 %	<u>\$ 538,031</u>	100.0 %

For the year ended December 31, 2022, the decrease in products revenue was due to divestitures, and the negative impacts of foreign exchange, partially offset by higher sales volumes and favorable sales price/mix. The decrease in services revenue was due to divestitures and the negative impact of foreign exchange, partially offset by higher sales volumes.

Gross profit and gross profit margins

The following table sets forth our gross profit and gross profit margins by segment:

<i>(Dollars in thousands)</i>	Year Ended December 31,							
	2022		2021		Change in Gross Profit		Change in Gross Profit Margin	
	Gross Profit	Gross Profit Margin	Gross Profit	Gross Profit Margin	\$	%	Percentage Points	%
Healthcare	\$ 98,766	37.8 %	\$ 135,750	44.3 %	\$ (36,984)	(27.2)%	(6.5)	(14.7)%
Industrial	115,467	41.7 %	128,028	41.4 %	(12,561)	(9.8)%	0.3	0.7 %
Total	<u>\$ 214,233</u>	<u>39.8 %</u>	<u>\$ 263,778</u>	<u>42.8 %</u>	<u>\$ (49,545)</u>	<u>(18.8)%</u>	<u>(3.0)</u>	<u>(7.0)%</u>

For the year ended December 31, 2022, Healthcare Solutions gross profit and gross profit margin decreased compared to the same period last year primarily due to lower sales volumes in the dental market, divestitures of \$16.7 million and inflationary cost pressures.

For the year ended December 31, 2022, Industrial Solutions gross profit decreased compared to the same period last year primarily due to divestitures of \$16.8 million and inflationary cost pressures, partially offset by an increase in sales volumes.

The following table sets forth our products and services gross profit and gross profit margins for the years ended December 31, 2022 and 2021.

<i>(Dollars in thousands)</i>	Year Ended December 31,							
	2022		2021		Change in Gross Profit		Change in Gross Profit Margin	
	Gross Profit	Gross Profit Margin	Gross Profit	Gross Profit Margin	\$	%	Percentage Points	%
Products	\$ 158,010	40.0 %	\$ 183,573	42.8 %	\$ (25,563)	(13.9)%	(2.8)	(6.5)%
Services	56,223	39.4 %	80,205	42.9 %	(23,982)	(29.9)%	(3.5)	(8.2)%
Total	<u>\$ 214,233</u>	<u>39.8 %</u>	<u>\$ 263,778</u>	<u>42.8 %</u>	<u>\$ (49,545)</u>	<u>(18.8)%</u>	<u>(3.0)</u>	<u>(7.0)%</u>

For the year ended December 31, 2022, the decrease in products and services gross profit and gross profit margin compared to the same period last year is primarily a result of divestitures of \$33.5 million, lower sales volumes in the dental market and inflationary cost pressures partially offset by higher sales volumes in non-dental markets.

Operating expenses

The following table sets forth our operating expenses by segment for the years ended December 31, 2022 and 2021:

<i>(Dollars in thousands)</i>	Year Ended December 31,					
	2022		2021		Change	
	Segment operating expenses ^(a)	% Revenue	Segment operating expenses ^(a)	% Revenue	\$	%
Healthcare	\$ 72,954	28.0 %	\$ 66,392	21.7 %	\$ 6,562	9.9 %
Industrial	92,630	33.4 %	79,473	25.7 %	13,157	16.6 %
Segment operating expenses	165,584	30.8 %	145,865	23.7 %	19,719	13.5 %
General corporate expense, net	165,668	30.8 %	150,982	24.5 %	14,686	9.7 %
Total operating expenses	<u>\$ 331,252</u>		<u>\$ 296,847</u>		<u>\$ 34,405</u>	

(a) Segment operating expenses exclude expenses not specifically attributable to our segments for functions such as human resources, finance, legal and information technology, including salaries, benefits, and other related costs, company-wide incentive compensation and stock-based compensation.

For the year ended December 31, 2022, Healthcare Solutions' operating expenses increased by \$6.6 million compared to the same period last year. The increase was primarily due to the continued investments in growth initiatives. The impact of acquisitions was materially offset by divestitures.

For the year ended December 31, 2022, Industrial Solutions' operating expenses increased by \$13.2 million primarily due to a \$18.9 million related to acquisitions and continued investments in growth initiatives, partially offset by the impact of divestitures of \$8.4 million.

For the year ended December 31, 2022, Corporate operating expenses increased by 14.7 million compared to the same period last year. This increase was primarily driven by an increase of \$19.9 million attributable to legal costs and the accrual of estimated settlements, an increase of \$5.9 million of amortization expense attributable to the Company's fiscal year 2021 and fiscal year 2022 acquisitions, and an increase of \$5.0 million attributable to consulting and other professional services costs. The primary offset to the increases in Corporate operating expenses was a \$21.1 million decrease in incentive compensation costs that are not allocated to the Company's reportable segments.

Interest and other (expense) income, net

The following table sets forth the components of interest and other (expense) income, net for the years ended December 31, 2022 and 2021.

<i>(in thousands)</i>	Year Ended December 31,	
	2022	2021
Interest and other (expense) income, net		
Foreign exchange (loss) gain, net	\$ (4,424)	\$ 1,681
Interest income (expense), net	6,541	(1,902)
Other (expense) income, net	(5,907)	352,830
Total interest and other (expense) income, net	<u>\$ (3,790)</u>	<u>\$ 352,609</u>

For the year ended December 31, 2022, foreign exchange (loss) gain, net, as compared to the same period last year, reported a loss due to the strengthening of the U.S. Dollar relative to the Euro, British Pound and other currencies, which negatively impacted non-U.S. Dollar denominated assets held by U.S. Dollar functional currency entities and U.S. Dollar liabilities held by non-U.S. Dollar functional currency entities.

For the year ended December 31, 2022, interest income (expense), net increase as compared to the same period last year due to net interest earned on short-term investments made using the cash proceeds from the 2021 divestitures and convertible debt issuance, partially offset by non-cash interest expense related to the convertible notes.

For the year ended December 31, 2022, other income decreased, as compared to the same period last year, due to: (1) the \$2.8 million impairment loss related to the Company's investment in Enhatch being recognized during the year ended December 31, 2022 and (2) the gain on sale of ODM of \$38.5 million, the gain on sale of Symbionix of \$273.8 million and the gain on sale of Cimatron of \$38.5 million being recognized during the year ended December 31, 2021.

Net (loss) income

The following table sets forth the net (loss) income for the years ended December 31, 2022, and 2021.

<i>(in thousands, except per share amounts)</i>	Year Ended December 31,	
	2022	2021
(Loss) income before income taxes	\$ (120,809)	\$ 319,540
(Provision) benefit for income taxes	(2,140)	2,512
Net (loss) income before redeemable non-controlling interest	(122,949)	322,052
Less: net (loss) attributable to redeemable non-controlling interest	(238)	—
Net (loss) income attributable to 3D Systems Corporation	<u>\$ (122,711)</u>	<u>\$ 322,052</u>
Net (loss) income per common share:		
Basic	\$ (0.96)	\$ 2.62
Diluted	<u>\$ (0.96)</u>	<u>\$ 2.55</u>

We recorded a \$2.1 million tax provision and a \$2.5 million tax benefit for the years ended December 31, 2022 and 2021, respectively.

In 2022, our provision reflected \$0.4 million in U.S. tax benefit and \$2.5 million of tax expense in foreign jurisdictions. In 2021, our provision reflected \$6.6 million in U.S. tax benefit and \$4.1 million of tax expense in foreign jurisdictions.

During 2022 and 2021, we concluded that it is more likely than not that our deferred tax assets will not be realized in certain jurisdictions, including the U.S. and certain foreign jurisdictions; therefore, we have a valuation allowance recorded against our deferred tax assets on our consolidated balance sheets totaling \$100.7 million and \$91.2 million as of December 31, 2022 and 2021, respectively.

For further discussion, regarding our provision/benefit for income taxes see Note 2 and Note 22 to the consolidated financial statements in Item 8 of this Form 10-K.

The net loss attributable to 3D Systems for the year ended December 31, 2022, as compared to the net income attributable to 3D Systems for the year ended December 31, 2021, was primarily driven by an increase in our loss from operations and the 2021 gains on the divestitures of Cimatron, ODM and Simbionix, as previously discussed.

Liquidity and Capital Resources

The following table sets forth the net liquidity and capital resources at December 31, 2022, and 2021.

<i>(Dollars in thousands)</i>	December 31, 2022	December 31, 2021	Change	
			\$	%
Cash and cash equivalents	\$ 388,134	\$ 789,657	\$ (401,523)	(50.8)%
Short-term investments	180,603	—	180,603	— %
Accounts receivable, net	93,886	106,540	(12,654)	(11.9)%
Inventories	137,832	92,887	44,945	48.4 %
	<u>800,455</u>	<u>989,084</u>	<u>(188,629)</u>	<u>(19.1)%</u>
Less:				
Current lease liabilities	9,036	8,344	692	8.3 %
Accounts payable	53,826	57,366	(3,540)	(6.2)%
Accrued and other liabilities	55,571	76,994	(21,423)	(27.8)%
	<u>118,433</u>	<u>142,704</u>	<u>(24,271)</u>	
Operating working capital	<u>\$ 682,022</u>	<u>\$ 846,380</u>	<u>\$ (164,358)</u>	<u>(19.4)%</u>

We assess our liquidity in terms of our ability to generate cash to fund our operating, investing and financing activities. In doing so, we review and analyze our current cash on hand, the number of days our sales are outstanding, inventory turns, capital expenditure commitments and accounts payable turns. Our cash requirements, excluding acquisitions, primarily consist of funding working capital and capital expenditures.

At December 31, 2022, cash and cash equivalents and short-term investments totaled \$568.7 million and decreased \$220.9 million since December 31, 2021. This decrease resulted primarily from cash paid for acquisitions and other investments of \$103.7 million, cash used in operations of \$70.0 million, capital expenditures of \$20.9 million, and taxes paid related to net-share settlement of equity awards of \$10.9 million.

At December 31, 2021, cash and cash equivalents totaled \$789.7 million and increased \$705.3 million since December 31, 2020. The higher cash balance resulted from proceeds of \$421.1 million from the Cimatron, ODM, and Symbionix divestitures, \$446.5 million of proceeds from the issuance of convertible notes, and \$48.1 million of cash flow from operations, partially offset by \$21.4 million for repayments of debt, \$18.8 million for capital expenditures, \$139.7 million for current acquisitions, \$12.6 million related to net settlement of stock-based compensation, and \$6.3 million of payments related to previously purchased non-controlling interests. Cash flow from operations was negatively impacted by withholding taxes of \$6.6 million related to the Cimatron divestiture.

We expect that cash flow from operations, cash and cash equivalents, short-term investments, and other sources of liquidity, such as issuing equity or debt securities subject to market conditions, will be available and sufficient to meet all foreseeable cash requirements.

Cash held outside the U.S. at December 31, 2022 was \$58.4 million, or 15.0% of total cash and cash equivalents, compared to \$62.7 million, or 7.9% of total cash and cash equivalents at December 31, 2021. As our previously unremitted earnings have been subjected to U.S. federal income tax, we expect any repatriation of these earnings to the U.S. would not incur significant federal and state taxes. However, these dividends are subject to foreign withholding taxes that are estimated to result in the Company incurring tax costs in excess of the cost to obtain cash through other means. Cash equivalents are comprised of funds held in money market instruments and are reported at their current carrying value, which approximates fair value due to the short-term nature of these instruments. We strive to minimize our credit risk by investing primarily in investment grade, liquid instruments and limit exposure to any one issuer depending upon credit quality. See “*Cash flow*” discussion below.

The changes that make up the other components of working capital not discussed above resulted from the ordinary course of business. Differences between the amounts of working capital item changes in the cash flow statement and the balance sheet changes for the corresponding items are primarily the result of foreign currency translation adjustments, acquisitions and divestitures.

Cash flow

Cash flow from operations

For the year ended December 31, 2022, cash used in operating activities was \$70.0 million and cash provided by operating activities for the year ended December 31, 2021 was \$48.1 million. The \$118.1 million decrease in cash flow from operating activities during the year ended December 31, 2022, as compared to the prior year, is primarily due to the \$84.0 million increase in losses from operations and the \$49.6 million increase in working capital (excluding cash, cash equivalents and short-term investments). The higher working capital primarily related to an increase in inventory balances to manage supply chain challenges and as a result of the purchase of \$23.9 million of inventory from a contract manufacturer in connection with our decision to terminate the manufacturing services arrangement. In addition, there was a decrease in accrued liabilities primarily due to lower incentive compensation accruals, partially offset by a reduction in accounts receivable due to lower revenue.

Cash provided by operating activities for the year ended December 31, 2021 was \$48.1 million. Working capital used cash of \$0.7 million for the year ended December 31, 2021. For the year ended December 31, 2021, working capital changes related to cash inflows were a decrease in inventory and an increase in accounts payable, partially offset by an increase in accounts receivable, and prepaid expenses and other current assets, and a decrease in deferred revenue, and other liabilities.

Cash flow from investing activities

For the year ended December 31, 2022, cash used in investing activities was \$308.4 million compared to \$260.6 million of cash provided by investing activities for the year ended December 31, 2021. The investing cash outflows in 2022 included investments of \$384.4 million of excess cash in short-term investments offset by \$200.3 million proceeds from the sales and maturities of such investments, the cash used for acquisitions of \$103.7 million, and capital expenditures of \$20.9 million.

For the year ended December 31, 2021, cash provided by investing activities was \$260.6 million, which included \$421.5 million of proceeds from the sales of businesses, partially offset by cash used for acquisitions and other investments of \$139.7 million and capital expenditures of \$18.8 million.

Cash flow from financing activities

For the year ended December 31, 2022, the cash flow used in financing activities was \$13.8 million primarily due to taxes paid related to the net-share settlement of equity awards of \$10.9 million and the \$2.3 million payment for the acquisition of a non-controlling interest.

For the year ended December 31, 2021, the cash flow provided by financing activities was \$405.8 million due to net cash proceeds from the issuance of the convertible note of \$446.5 million, the repayment of the remaining balance of the outstanding 5-year \$100.0 million secured term loan facility of \$21.4 million, the taxes paid related to net-share settlement of equity awards of \$12.6 million and the payment for the acquisition of a non-controlling interest of \$6.3 million.

Off-Balance Sheet Arrangements

We have no off-balance sheet arrangements and do not utilize any “structured debt,” “special purpose” or similar unconsolidated entities for liquidity or financing purposes.

Material Cash Requirements

The Company's material cash requirements consist of the following contractual and other obligations:

Indebtedness

At December 31, 2022, we had \$460 million of outstanding 0% convertible notes which mature in November of 2026. Management may consider pursuing additional long-term financing when it is appropriate in light of cash requirements for operations or other strategic opportunities, which could result in higher financing costs.

Purchase Commitments

We have purchase commitments under legally enforceable agreements for goods and services with defined terms as to quantity, price and timing of delivery.

Leases

The Company had operating and financing lease obligations (inclusive of interest) of \$65.3 million at December 31, 2022, primarily related to real estate and equipment leases, of which approximately \$11.6 million in payments are expected over the next twelve months. Additionally, at December 31, 2022, the Company had \$33.4 million in lease obligations for which the leases have not commenced as the facilities are under construction by the landlord. For more information on the Company's leases, refer to Note 7 to the consolidated financial statements in Item 8 of this Form 10-K.

Dussur

In March 2022, we and the Saudi Arabian Industrial Investments Company ("Dussur") signed an agreement to form a joint venture intended to expand the use of additive manufacturing within the Kingdom of Saudi Arabia and surrounding geographies, including the Middle East and North Africa. The joint venture is to enable the development of Saudi Arabia's domestic additive manufacturing production capabilities, consistent with the Kingdom's 'Vision 2030,' which is focused on diversification of the economy and long-term sustainability. Once the joint venture is formed, 3D Systems will own approximately 49% and is committed to an initial investment of about \$6.5 million, of which \$3.4 million has been deposited in an escrow account and is reported as restricted cash within other assets on the balance sheet as of December 31, 2022. Use of the amount deposited in escrow is limited to funding the Company's initial investment in the joint venture, and such amount is expected to be deposited into a bank account of the joint venture for use in its operations or to pay outstanding liabilities upon legal formation. Additional future investments are contingent upon achievement of certain milestones by the joint venture. The impact on the Company's financial position, results of operations and cash flows is not expected to be material other than the cash outflow(s) related to the initial and contingent investments.

Sources of Funding to Satisfy Material Cash Requirements

The Company believes that it has the financial resources needed to meet its cash requirements. Cash requirements for periods beyond the next twelve months will depend, among other things, on the Company's profitability and its ability to manage working capital requirements. The Company may also borrow from various sources as described above.

Other Contractual Commitments

Convertible Note

We were in compliance with all covenants of the outstanding 0% convertible notes due November 2026 as of December 31, 2022.

Indemnification

In the normal course of business we periodically enter into agreements to indemnify customers or suppliers against claims of intellectual property infringement made by third parties arising from the use of our products. Historically, costs related to these indemnification provisions have not been significant. We are unable to estimate the maximum potential impact of these indemnification provisions on our future results of operations.

To the extent permitted under Delaware law, we indemnify our directors and officers for certain events or occurrences while the director or officer is, or was, serving at our request in such capacity, subject to limited exceptions. The maximum potential amount of future payments we could be required to make under these indemnification obligations is unlimited; however, we have directors' and officers' insurance coverage that may enable us to recover future amounts paid, subject to a deductible and to the policy limits.

Financial Instruments

We conduct business in various countries using both the functional currencies of those countries and other currencies to effect cross-border transactions. As a result, we are subject to the risk that fluctuations in foreign exchange rates between the dates that those transactions are entered into and their respective settlement dates will result in a foreign exchange gain or loss. When practicable, we endeavor to match assets and liabilities in the same currency on our U.S. balance sheet and those of our subsidiaries in order to reduce these risks. We also, when we consider it appropriate, enter into foreign currency contracts to hedge exposures arising from those transactions. We had \$0 and \$43.0 million in notional foreign exchange contracts outstanding as of December 31, 2022 and 2021, respectively. The fair value of these contracts was not material. We have elected not to prepare and maintain the documentation to qualify for hedge accounting treatment under ASC 815, "Derivatives and Hedging," and therefore, all gains and losses (realized or unrealized) are recognized in interest and other expense, net in the consolidated statements of operations and comprehensive income (loss). Depending on the fair value at the end of the reporting period, derivatives are recorded either in prepaid and other current assets or in accrued liabilities in the consolidated balance sheets.

We do not hedge for trading or speculative purposes, and our foreign currency contracts are generally short-term in nature, typically maturing in 90 days or less. See Note 15 to the consolidated financial statements in Item 8 of this Form 10-K for further discussion.

Critical Accounting Policies and Significant Estimates

We prepare our consolidated financial statements in accordance with U.S. Generally Accepted Accounting Principles ("GAAP"). In doing so, we have to make estimates and assumptions that affect our reported amounts of assets, liabilities, revenues, expenses, gains and losses, as well as related disclosure of contingent assets and liabilities. In some cases, we could reasonably have used different accounting policies and estimates. In some cases, changes in our accounting estimates are reasonably likely to occur from period to period. Accordingly, actual results could differ materially from our estimates. To the extent that there are material differences between our estimates and actual results, our financial condition or results of operations will be affected. We base our estimates on past experience and other assumptions that we believe are reasonable under the circumstances, and we evaluate these estimates on an ongoing basis. We refer to accounting estimates of this type as critical accounting policies and estimates, which we discuss further below. We have reviewed our critical accounting policies and estimates with the audit committee of our board of directors.

See Note 2 to the consolidated financial statements in Item 8 of this Form 10-K for a summary of significant accounting policies.

Revenue recognition

Revenue is recognized for the amount of consideration we expect to receive in exchange for products or services when control of those promised products or services is transferred to customers, which generally occurs when the goods have been shipped or delivered to the customer, risk of loss has transferred to the customer, and we have a present right to payment.

We enter into contracts that include various combinations of products and services that are generally capable of being distinct and are accounted for as separate performance obligations. For such arrangements, we allocate revenue to each performance obligation based on its relative standalone selling price ("SSP"). Judgment is required to determine the SSP for each distinct performance obligation in a contract. For the majority of items, we estimate SSP using historical transaction data. We use a range of amounts to estimate SSP when we sell each of the products and services separately and need to determine whether there is a discount to be allocated based on the relative SSP of the various products and services. In instances where SSP is not directly observable, such as when the product or service is not sold separately, we determine the SSP using information that may include market conditions and other observable inputs.

In some circumstances, we have more than one SSP for individual products and services due to the stratification of those products and services by customers, geographic region or other factors. In these instances, we may use information such as the size of the customer and geographic region in determining the SSP. The determination of SSP is an ongoing process, and information is reviewed regularly in order to ensure SSP reflects the most current information or trends.

The nature of our marketing incentives may lead to consideration that is variable. Judgment is exercised at contract inception to determine the expected value of the contract and resulting transaction price. Ongoing assessments are performed to determine if updates are needed to the original estimates.

See Note 2 and Note 5 to the consolidated financial statements in Item 8 of this Form 10-K for further discussion.

Allowance for doubtful accounts

In evaluating the collectability of our accounts receivable, we assess a number of factors, including specific customers' abilities to meet their financial obligations to us, the length of time receivables are past due, historical collection experience, current economic conditions, and reasonable and supportable forecasts. Based on these assessments, we may record a reserve for specific customers, as well as a general reserve and allowance for returns and discounts. If circumstances related to specific customers change, or economic conditions deteriorate such that our past collection experience is no longer relevant, our estimate of the recoverability of our accounts receivable could be further reduced from the levels provided for in the consolidated financial statements.

We evaluate specific accounts for which we believe a customer may have an inability to meet their financial obligations (for example, aging over 90 days past due or bankruptcy). In these cases, we use our judgment, based on available facts and circumstances, and record a specific reserve for that customer to reduce the receivable to an amount we expect to collect. These specific reserves are re-evaluated and adjusted as additional information is received that impacts the amount reserved.

Income taxes

We are subject to income taxes in the U.S. and foreign jurisdictions. Significant judgment is required in evaluating our uncertain tax positions and determining our provision for income taxes.

Although we believe we have adequately reserved for our uncertain tax positions, no assurance can be given that the final tax outcome of these matters will not be different. We adjust these reserves in light of changing facts and circumstances, such as the closing of a tax audit or the refinement of an estimate. To the extent that the final tax outcome of these matters is different than the amounts recorded, such differences will affect the provision for income taxes and the effective tax rate in the period in which such determination is made.

The provision for income taxes includes the effect of reserve provisions and changes to reserves that are considered appropriate, as well as the related net interest and penalties. In addition, we are subject to the continuous examination of our income tax returns by the Internal Revenue Service (“IRS”) and other tax authorities which may assert assessments against us. We regularly assess the likelihood of adverse outcomes resulting from these examinations and assessments to determine the adequacy of our provision for income taxes.

Inventories

Inventories are stated at the lower of cost or net realizable value, with cost being determined using standard costing, which approximates the first-in, first-out method.

The inventory reserve is a critical estimate as there is rapid technological change in our industry impacting the market for our products and there is significant judgment in estimating the amount of spare parts to keep on hand to service previously sold printers for periods of up to 10 or more years.

See Note 8 to the consolidated financial statements in Item 8 of this Form 10-K for further discussion.

Business combinations and purchase accounting

We apply purchase accounting to transactions that meet the definition of business combinations. When applying purchase accounting, we are required to estimate the fair value of the assets acquired and liabilities assumed in a business combination as of the acquisition date, for which the Company engages a third-party valuation specialist to assist. The application of purchase price accounting oftentimes results in the identification and valuation of intangible assets that may not have been previously recognized on the balance sheet of the acquired company. The amount of purchase price paid in excess of the net assets acquired is recorded as goodwill.

The fair values of acquired assets and assumed liabilities are estimated in accordance with accounting standards which define fair value as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants. Management must apply judgment when identifying the intangible assets acquired as part of a business combination, as well as when determining the appropriate valuation technique to be applied to all acquired assets and assumed liabilities. Management also must make significant estimates and assumptions when determining the inputs for inclusion in the related valuation models. The fair values of the net assets acquired are determined primarily using Level 3 inputs (inputs that are unobservable to the marketplace participant).

The most significant estimates and assumptions relate to the determination of (1) the fair values of identified intangible assets (e.g., developed technology, trade names) and (2) the period and pattern of amortization for intangible assets that are assigned a definite life. The fair values of acquired intangible assets primarily have been determined based on projected cash flows attributable to the operations of the acquiree. The projected cash flows include various assumptions, including estimated revenue growth rates, operating margins, R&D expenditures, capital expenditures, royalty rates, and appropriate risk-adjusted discount rates used to discount the projected cash flows. The usage of different assumptions would result in the assignment of different fair values to the acquired identifiable intangible assets and the resulting assignment of purchase consideration to goodwill. Similarly, changes in the planned usage of the acquired identifiable intangible assets and/or their estimated economic lives, if any, could impact the recoverability of the assets and/or amortization period and expense attributable to the assets in the future.

Goodwill & other long-lived assets, including intangible assets

We review long-lived assets, including intangible assets subject to amortization, for impairment whenever events or changes in circumstances indicate that the carrying value of the asset may not be recoverable. We assess the recoverability of the carrying value of assets held for use based on a review of undiscounted projected cash flows. Impairment losses, where identified, are measured as the excess of the carrying value of the long-lived asset over its estimated fair value, as determined by discounted projected cash flows.

Goodwill represents the purchase price paid in excess of the fair value of net tangible and intangible assets acquired in a business combination. We review goodwill for impairment annually and, between annual impairment assessments, when circumstances indicate that the likelihood of an impairment is greater than 50%. Such circumstances may include a significant adverse change in the business climate for one of our reporting units or a decision to dispose of a reporting unit or a significant portion of a reporting unit. The test for goodwill impairment compares the fair value of each of reporting unit to its respective carrying value. The process requires a significant level of estimation and use of judgment by management, particularly to estimate the fair value of our reporting units.

We estimate the fair value of our reporting units based primarily on the discounted projected cash flows of the underlying operations, which requires us to make assumptions about estimated cash flows, including long-term revenue and expense forecasts, profit margins, discount rates and terminal growth rates. We developed these assumptions based on the market risks unique to each reporting unit.

We conducted our annual goodwill impairment test for the years ended December 31, 2022 and 2021 as of November 30, 2022 and 2021, respectively, and concluded there was no goodwill impairment.

Regenerative Medicine earnout payments and performance-based stock units

In connection with the acquisition of Volumetric on December 1, 2021, the Company could be required to pay up to \$355.0 million in earnout payments to Volumetric's former owners ("Sellers") based upon the achievement of up to seven non-financial milestones. Each of the non-financial milestones, which individually triggers a specific earnout payment if achieved prior to an agreed upon date of either December 31, 2030 or December 31, 2035, is based upon specific advances in regenerative medicine related to lungs or tissue organs. For each milestone, payment is only due to the extent that the Sellers continue to be employed by the Company at the time that a milestone is achieved. As the earnout payments require the continued employment of Volumetric's Sellers, the Company recognizes each individual earnout payment as compensation expense over the period commencing on the date that the related milestone is deemed probable of achievement through the anticipated date of achievement.

In addition, the Company has granted performance-based stock units ("PSUs") with vesting terms that are based upon four individually-measured, non-financial milestones to other employees who work on advancements in regenerative medicine related to lungs and tissue organs. The PSUs associated with each individual milestone are recognized as compensation expense over the period commencing on the date that the respective milestone is deemed probable of being met through the anticipated date of achievement.

As the milestones that trigger the Volumetric earnout payments and the vesting of the PSUs are (1) based upon scientific and technological advancements that are expected to require multiple years of R&D to achieve and (2) subject to significant known and unknown risks and uncertainties, management must apply significant assumptions and judgment at each balance sheet date to assess both the probability of achievement and expected timing of achievement. A change in management's assumptions or estimates regarding the probability and/or timing of achievement of a milestone in connection with management's quarterly reassessment can materially impact the amount of compensation expense recognized for the respective and future periods as follows:

- A change in assumptions that results in a milestone first being deemed probable of achievement will result in the recognition of incremental compensation expense in the Company's consolidated statement of operations;
- A change in assumption regarding the timing of achievement of a milestone will result in the acceleration or deceleration of the recognition of future compensation expense, as well as the potential recognition of an expense catch-up or reversal adjustment in the period of change; and/or
- A change in assumption that results in a milestone no longer being deemed probable of achievement will result in a full reversal of previously recognized expense.

The Company is currently recognizing compensation expense based upon the assumed achievement of one Volumetric earnout payment milestone for which the potential amount due to the Sellers will be \$65 million and one PSU milestone for which the aggregate grant date fair value of the outstanding and unvested awards is \$4.5 million. Achievement of each milestone is anticipated to occur as of the end of fiscal year 2025. As of December 31, 2022, unrecognized compensation expense attributable to the Volumetric earnout payment and PSUs deemed probable of being earned was \$47.8 million and \$3.4 million, respectively. Changes in management's assumptions regarding the probability and/or timing of achievement of these respective milestones could directly affect the amount of future compensation expense recognized for the reasons described above.

In addition, the Company has not commenced the recognition of compensation expense related to (1) \$290 million of Volumetric earnout payments and (2) outstanding PSUs with an aggregate grant date fair value of \$13.6 million because the related milestones were not deemed probable of achievement as of December 31, 2022. Changes to management's assumptions regarding the probability and/or timing of achievement of these remaining milestones could significantly increase the amount of compensation expense recognized by the Company.

Loss contingencies

We record an estimated loss from a contingency when information indicates that it is probable that a liability has been incurred at the date of the financial statements and the amount of the loss can be reasonably estimated. Accounting for contingencies requires us to use our judgment and the ultimate resolution of our exposure related to these matters may change as further facts and circumstances become known.

See Note 23 to the consolidated financial statements in Item 8 of this Form 10-K for further discussion.

Recent Accounting Pronouncements

See Note 2 to the consolidated financial statements in Item 8 of this Form 10-K for a discussion of recent accounting pronouncements.

Item 7A. Quantitative and Qualitative Disclosures about Market Risk

We are exposed to market risks related to fluctuations in foreign currency exchange rates and commodity prices, each of which may adversely affect our results of operations and financial condition. We seek to minimize these risks through regular operating and financing activities and, when we consider it to be appropriate, through the use of derivative financial instruments. We do not purchase, hold or sell derivative financial instruments for trading or speculative purposes.

Foreign exchange rates

Because we conduct our operations in many areas of the world and our transactions are denominated in a variety of currencies, our results of operations, as reported in U.S. dollars, may be significantly affected by fluctuations in rates of exchange between currencies. These fluctuations could be significant. In 2022, approximately 39.4% of our net sales and a significant portion of our costs are attributable to entities with functional currencies other than the U.S. dollar. We generally are unable to adjust our non-dollar local currency sales prices to reflect changes in exchange rates between the dollar and the relevant local currency. As a result, changes in exchange rates between the U.S. Dollar and the Euro, Japanese Yen, British Pound, South Korean Won or other currencies in which we receive sale proceeds have a direct impact on our reported operating results. These impacts are partially offset by expenses incurred in the same currency as the sales. There is normally a time lag between our sales and collection of the related sales proceeds, exposing us to additional currency exchange rate risk.

When practicable, we endeavor to match assets and liabilities in the same currency on our U.S. balance sheet, as well as the balance sheets of our subsidiaries, in order to reduce the risks attributable to conducting transactions in a variety of currencies. We also, when we consider it appropriate, enter into foreign currency contracts to hedge exposures arising from these transactions. We had \$0 and \$43.0 million in notional foreign currency exchange contracts outstanding as of December 31, 2022 and 2021, respectively. The fair value of the contracts outstanding at December 31, 2021 was not material.

For the year ended December 31, 2022, a hypothetical change of 10% in foreign currency exchange rates would have caused changes in revenue and total operating expenses of approximately \$21.2 million and \$22.0 million, respectively, assuming all other variables remained constant.

For the year ended December 31, 2022, the aggregate foreign currency loss included in net income was \$4.4 million. For the year ended December 31, 2021, the aggregate foreign currency gain included in net income was \$1.7 million.

Commodity prices

We are exposed to price volatility related to raw materials and energy products used in conjunction with our printer assembly and print materials blending processes. Generally, we acquire such components at market prices and do not use financial instruments to hedge commodity prices. For the year ended December 31, 2022, a hypothetical 10% change in commodity prices for raw materials would have caused a change to cost of sales of approximately \$20.2 million.

Item 8. Financial Statements and Supplementary Data

Our consolidated financial statements and the related notes, together with the Report of Independent Registered Public Accounting Firm thereon, are set forth below beginning on page F-1 and are incorporated herein by reference.

Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure

Not applicable.

Item 9A. Controls and Procedures

Evaluation of Disclosure Controls and Procedures

Under the supervision and with the participation of our management, including our Chief Executive Officer and Chief Financial Officer, we evaluated the effectiveness of our disclosure controls and procedures (as that term is defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended (the “Exchange Act”)) as of December 31, 2022, which is the end of the period covered by this Annual Report. Based on this evaluation, our Chief Executive Officer and Chief Financial Officer concluded that the Company’s disclosure controls and procedures were not effective as of December 31, 2022 to ensure that information required to be disclosed by the Company in reports we file or submit under the Exchange Act is (i) recorded, processed, summarized, evaluated and reported, as applicable, within the time periods specified in the United States Securities and Exchange Commission’s rules and forms and (ii) accumulated and communicated to the Company’s management, including the Company’s Chief Executive Officer and Chief Financial Officer, as appropriate to allow timely decisions regarding required disclosures.

Notwithstanding the existence of the material weakness described below, management believes that the consolidated financial statements included in this Annual Report on Form 10-K fairly present, in all material respects, our financial position, results of operations and cash flows as of and for the periods presented, in conformity with GAAP.

Management’s Report on Internal Control over Financial Reporting

Management of the Company is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Exchange Act Rules 13a-15(f) and 15d-15(f), and for performing an assessment of the effectiveness of internal control over financial reporting as of December 31, 2022. The Company’s internal control over financial reporting is a process designed by, or under the supervision of, our Chief Executive Officer and Chief Financial Officer, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with GAAP. The Company’s internal control over financial reporting includes those policies and procedures that (i) pertain to assets of the Company; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with GAAP, and that receipts and expenditures of the Company are being made only in accordance with authorizations of management and directors of the Company; and (iii) 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.

Management’s assessment of and conclusion on the effectiveness of internal control over financial reporting did not include the internal controls of Kumovis GmbH (“Kumovis”) and Titan Additives LLC (“Titan”) which were acquired on April 1, 2022, or dp polar GmbH (“dp polar”) which was acquired on October 4, 2022. We began consolidating the results of Kumovis, Titan, and dp polar in the 2022 consolidated financial statements of the Company as a result of the acquisitions, which represented approximately 3.2%, 2.8%, and 2.2%, respectively, of the Company’s total assets as of December 31, 2022 and 0.1%, 0.2%, and 0.0%, respectively, of the Company’s total revenue for the year ended December 31, 2022. Due to the timing of these acquisitions and as permitted by SEC guidance, management excluded Kumovis, Titan, and dp polar from its December 31, 2022 assessment of internal control over financial reporting.

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 the policies or procedures may deteriorate.

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 a company's annual or interim consolidated financial statements will not be prevented or detected on a timely basis.

Management, including our Chief Executive Officer and Chief Financial Officer, assessed the effectiveness of the Company's internal control over financial reporting as of December 31, 2022. In making this assessment, management used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) the Internal Control - Integrated Framework (2013). Based on its assessment, management has concluded that the Company did not maintain effective internal control over financial reporting as of December 31, 2022, due to the following two material weaknesses:

- We did not design or maintain effective controls in response to the risks of material misstatement, including designing and maintaining formal accounting policies, procedures, and controls over significant accounts and disclosures to achieve complete, accurate and timely financial accounting, reporting and disclosures, with respect to: (1) revenue, receivables and deferred revenue, including the input of executed contract terms into the Company's information systems that perform revenue recognition; and (2) the review of internally prepared reports and analyses utilized in the financial closing process.

Although these material weaknesses did not result in a material misstatement of our consolidated financial statements for the periods presented, there is a possibility they could lead to a material misstatement of account balances or disclosures. Accordingly, management has concluded that these control deficiencies constitute material weaknesses.

Management's Plan for Remediation

The material weaknesses described above were initially identified at December 31, 2020 and continued to exist at December 31, 2022. However, as a result of the remediation plan we commenced in January 2021, the number of control deficiencies that aggregated into the material weaknesses at December 31, 2022 were significantly reduced as compared to December 31, 2020. The remediation plan we began in January 2021 is designed to improve our internal control over financial reporting and remediate the related control deficiencies that led to these material weaknesses. In response to these deficiencies, management, with the oversight of the Audit Committee of the Board of Directors, has identified and implemented steps to remediate the material weaknesses.

During the year ended December 31, 2022, the Company completed the implementation of the following remedial measures designed to address the material weaknesses and to continue to improve our internal control over financial reporting.

- Established a formal controls governance committee in the first quarter of 2022 to manage and enhance the oversight and execution of internal controls. The controls governance committee consists of members of senior leadership, which meets monthly or more frequently as needed.
- Retained an outside firm with expertise in the design and execution of internal controls over financial reporting to examine our control design, perform a root cause analysis as to why certain controls have not been and continue to not be properly executed, and to advise on changes in the design of our controls and procedures and implementation of our remediation activities.
- Enhanced the global control environment, including testing in 2022 of a significant number of additional business process and information technology controls.
- Implemented software to manage and administer account reconciliations.
- Revamped and expanded our internal disclosure processes to provide greater representation across functions and improve opportunities to identify matters requiring accounting disposition or disclosures.
- Implemented software enhancements, including a tax reporting solution for our tax provision process.
- Redesigned controls related to the accounting for the income tax process.
- Engaged a third party to review our quarterly and annual tax calculations.
- Hired additional experienced resources with backgrounds in income tax accounting.

Our remaining internal control remediation efforts are expected to include the following:

- Design and implementation of enhanced policies, procedures and controls relating to our revenue recognition and our closing and financial reporting process.
- Redesign of existing management review controls, including the input of executed contract terms into the Company's information systems that perform revenue recognition.

- Hire and retain additional staff with sufficient experience and knowledge in GAAP financial reporting matters and internal control over financial reporting.
- Train appropriate personnel in the effective design and execution of our enhanced policies, procedures and controls, including the importance of the ongoing, consistent effective execution of such procedures and controls.
- Initiation of a robust finance transformation initiative with dedicated resources tasked to create a more efficient close process and implement key technologies to enable a more mature and automated control environment.

We are committed to the remediation of all material weaknesses and expect to successfully implement enhanced control processes. However, as we continue to evaluate, and work to improve our internal control over financial reporting, management may determine that additional measures to address control deficiencies or modifications to the remediation plan are necessary. Therefore, we cannot assure you when we will remediate such weaknesses, nor can we be certain that additional actions will not be required or the costs of any such additional actions. Moreover, we cannot assure you that additional material weaknesses will not arise in the future.

Attestation Report of Independent Registered Public Accounting Firm

The effectiveness of our internal control over financial reporting as of December 31, 2022 has been audited by BDO USA, LLP, an independent registered public accounting firm, as stated in their report included in Item 8 of this Form 10-K.

Changes in Internal Control Over Financial Reporting

The Company has concluded that the following material weakness, which was described in the 2021 Form 10-K, has been remediated as of December 31, 2022 (the “Remediated Material Weakness”): a lack of certain controls, or improper execution of designed control procedures, for the calculation of the Company’s provision for income taxes including for material non-routine transactions.

Except for the Remediated Material Weakness, and the management remediation plan described above, there were no changes in the Company’s internal controls over financial reporting during the quarter ended December 31, 2022 that have materially affected, or are reasonably likely to materially affect, the Company’s internal control over financial reporting.

Item 9B. Other Information

None.

Item 9C. Disclosure Regarding Foreign Jurisdictions that Prevent Inspections

None.

PART III

Item 10. Directors, Executive Officers and Corporate Governance

The information required in response to this Item will be set forth in our Proxy Statement for our 2023 Annual Meeting of Stockholders (“Proxy Statement”) under the captions “Proposal One: Election of Directors,” “Corporate Governance at 3D Systems,” “Delinquent Section 16(a) Reports,” “Corporate Governance at 3D Systems—Code of Conduct and Code of Ethics,” “Corporate Governance at 3D Systems—Corporate Governance and Sustainability Committee,” and “Corporate Governance at 3D Systems—Audit Committee.”

Item 11. Executive Compensation

The information in response to this Item will be set forth in our Proxy Statement under the captions “Director Compensation,” “Executive Compensation,” “Corporate Governance at 3D Systems—Compensation Committee,” and “Executive Compensation—Compensation Committee Report.”

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters

Except as set forth below, the information required in response to this Item will be set forth in our Proxy Statement under the caption “Security Ownership of Certain Beneficial Owners and Management.”

Equity Compensation Plans

The following table summarizes information about the equity securities authorized for issuance under our compensation plans as of December 31, 2022. For a description of these plans, see Note 18 to the consolidated financial statements in Item 8 of this Form 10-K.

<i>(in thousands, except exercise price)</i>	Number of securities to be issued upon exercise of outstanding stock options, warrants and rights	Weighted average exercise price of outstanding options, warrants and rights ^a	Number of securities remaining available for future issuance under equity compensation plans ^b
Equity compensation plans approved by stockholders:			
Stock options	420	\$ 13.26	
Restricted stock units	2,818		
Total	3,238		7,568

- The weighted-average exercise price is only applicable to stock options.
- The number of securities remaining available for future issuance for stock options, restricted stock units, and stock awards for non-employee directors is approved in total and not individually with respect to these items.

Item 13. Certain Relationships and Related Transactions and Director Independence

The information required in response to this Item will be set forth in our Proxy Statement under the captions “Corporate Governance at 3D Systems—Director Independence” and “Corporate Governance at 3D Systems—Related Party Transaction Policy and Procedures.”

Item 14. Principal Accounting Fees and Services

The information in response to this Item will be set forth in our Proxy Statement under the caption “Proposal Four: Ratification of the Appointment of Independent Registered Public Accounting Firm—Fees of Independent Registered Public Accounting Firm.”

PART IV

Item 15. Exhibits, Financial Statement Schedules

(a)(3) Exhibits

The following exhibits are included as part of this filing and incorporated herein by this reference:

- 2.1 Share Purchase Agreement, dated November 2, 2020, by and among 3D Systems, Inc., 3D Systems Corporation and ST Acquisition Co. (Incorporated by reference to Exhibit 2.1 of the Registrant's Current Report on Form 8-K, filed November 4, 2020.)
- 2.2 First Amendment to Share Purchase Agreement, dated December 31, 2020, by and among ST Acquisition Co., 3D Systems, Inc. and 3D Systems Corporation. (Incorporated by reference to Exhibit 2.1 to Registrant's Current Report on Form 8-K, filed January 4, 2021.)
- 2.3 Asset Purchase Agreement, dated June 1, 2021, by and among 3D Systems, Inc., Quickparts.com, Inc., 3D Systems Italia Srl, 3D Systems France Sarl, 3D Systems Europe Limited, 3D Systems GmbH, QP 3D Acquisition, Inc., and 3D Systems Corporation. (Incorporated by reference to Exhibit 2.1 of the Registrant's Current Report on Form 8-K, filed on June 2, 2021.)
- 2.4 First Amendment to the Asset Purchase Agreement, dated June 1, 2021, by and among 3D Systems, Inc., Quickparts.com Inc., 3D Systems Italia Srl, Sd Systems France Sarl, 3D Systems Europe Limited, 3D Systems GmbH, QP 3D Acquisition, Inc., and 3D Systems Corporation. (Incorporated by reference Exhibit 2.5 to Registrant's Quarterly Report on Form 10-Q for the quarter ended September 30, 2021, filed November 8, 2021.)
- 2.5 Second Amendment to the Asset Purchase Agreement, dated June 1, 2021, by and among 3D Systems, Inc., Quickparts.com Inc., 3D Systems Italia Srl, Sd Systems France Sarl, 3D Systems Europe Limited, 3D Systems GmbH, QP 3D Acquisition, Inc., and 3D Systems Corporation. (Incorporated by reference to Exhibit 2.5 of the Registrant's Annual Report on Form 10-K for the year ended December 31, 2021, filed on March 1, 2022.)

- 2.6 Stock Purchase Agreement, dated July 28, 2021, by and between 3D Systems, Inc. and Surgical Science Sweden AB. (Incorporated by reference to Exhibit 2.1 of the Registrant's Current Report on Form 8-K, filed on July 30, 2021.)
- 2.7 Agreement and Plan of Merger, dated September 8, 2021, by and among 3D Systems Corporation, Oqton, Inc., 3DS Merger Sub 1, Inc., 3DS Merger Sub 2 Inc., and Shareholder Representative Services LLC, solely in its capacity as the representative, agent and attorney-in-fact of the Sellers. (Incorporated by reference to the Exhibit 2.1 of the Registrant's Current Report on Form 8-K filed, on September 9, 2021.)
- 2.8 First Amendment to the Agreement and Plan of Merger, dated October 29, 2021, by and among 3D Systems Corporation, Oqton, Inc., 3DS Merger Sub 1, Inc., 3DS Merger Sub 2 Inc., and Shareholder Representative Services LLC, solely in its capacity as the representative, agent and attorney-in-fact of the Sellers. (Incorporated by reference to Exhibit 2.3 of the Registrant's Quarterly Report on Form 10-Q for the quarter ended September 30, 2021, filed on November 8, 2021.)
- 2.9 Agreement and Plan of Merger, dated October 27, 2021, by and among 3D Systems Corporation, Volumetric Biotechnologies, Inc., Texans Merger Sub I, Inc., Texans Merger Sub II, Inc., and Fortis Advisors LLC, solely in its capacity as the Stockholders' Representative. (Incorporated by reference to Exhibit 2.1 of the Registrant's Current Report on Form 8-K, filed on October 28, 2021.)
- 3.1 Certificate of Incorporation of Registrant. (Incorporated by reference to Exhibit 3.1 to Registrant's Form 8-B filed on August 16, 1993, and the amendment thereto, filed on Form 8-B/A on February 4, 1994.)
- 3.2 Amendment to Certificate of Incorporation filed on May 23, 1995. (Incorporated by reference to Exhibit 3.2 to Registrant's Registration Statement on Form S-2/A, filed on May 25, 1995.)
- 3.3 Certificate of Amendment of Certificate of Incorporation filed with Secretary of State of Delaware on May 19, 2004. (Incorporated by reference to Exhibit 3.1 to Registrant's Quarterly Report on Form 10-Q for the quarterly period ended June 30, 2004, filed on August 5, 2004.)
- 3.4 Certificate of Amendment of Certificate of Incorporation filed with Secretary of State of Delaware on May 17, 2005. (Incorporated by reference to Exhibit 3.1 to Registrant's Quarterly Report on Form 10-Q for the quarterly period ended June 30, 2005, filed on August 1, 2005.)
- 3.5 Certificate of Amendment of Certificate of Incorporation filed with the Secretary of State of Delaware on October 7, 2011. (Incorporated by reference to Exhibit 3.1 to Registrant's Current Report on Form 8-K, filed on October 7, 2011.)
- 3.6 Certificate of Amendment of Certificate of Incorporation filed with the Secretary of State of Delaware on May 21, 2013. (Incorporated by reference to Exhibit 3.1 to Registrant's Current Report on Form 8-K, filed on May 22, 2013.)
- 3.7 Amended and Restated By-Laws. (Incorporated by reference to Exhibit 3.1 to Registrant's Current Report on Form 8-K, filed on March 15, 2018.)
- 4.1 Specimen Common Stock Certificate. (Incorporated by reference to Exhibit 4.1 to Registrant's Registration Statement on Form S-3 (Registration No. 333-182065), filed on June 12, 2012.)
- 4.2 Description of Common Stock. (Incorporated by reference to Exhibit 4.2 to Registrant's Annual Report on Form 10-K for the year ended December 31, 2019, filed on February 26, 2020.)
- 4.3 Indenture, dated as of November 16, 2021, between 3D Systems Corporation and The Bank of New York Mellon Trust Company, N.A., as trustee. (Incorporated by reference to the Exhibit 4.1 of the Registrant's Current Report on Form 8-K filed on November 17, 2021.)
- 4.4 Form of 0% Convertible Notes due 2026 (included in Exhibit 4.3). (Incorporated by reference to the Exhibit 4.2 of the Registrant's Current Report on Form 8-K filed on November 17, 2021.)
- 10.1 Lease Agreement dated February 8, 2006 between the Registrant and KDC-Carolina Investments 3, LP. (Incorporated by reference to Exhibit 99.1 to Registrant's Current Report on Form 8-K, filed on February 10, 2006.)
- 10.2 First Amendment to Lease Agreement dated August 7, 2006 between the Registrant and KDC-Carolina Investments 3, LP. (Incorporated by reference to Exhibit 10.1 to Registrant's Current Report on Form 8-K, filed on August 14, 2006.)
- 10.3 Second Amendment to Lease Agreement effective as of October 6, 2006 to Lease Agreement dated February 8, 2006 between 3D Systems Corporation and KDC-Carolina Investments 3, LP. (Incorporated by reference to Exhibit 10.1 to Registrant's Current Report on Form 8-K, filed on October 10, 2006.)

- 10.4 Third Amendment to Lease Agreement effective as of December 18, 2006 to Lease Agreement dated February 8, 2006 between 3D Systems Corporation and KDC-Carolina Investments 3, LP. (Incorporated by reference to Exhibit 10.1 to Registrant's Current Report on Form 8-K, filed on December 20, 2006.)
- 10.5 Fourth Amendment to Lease Agreement effective as of February 26, 2007 to Lease Agreement dated February 8, 2006 between 3D Systems Corporation and KDC-Carolina Investments 3, LP. (Incorporated by reference to Exhibit 10.1 to Registrant's Current Report on Form 8-K, filed on March 1, 2007.)
- 10.6 Fifth Amendment to Lease Agreement effective as of March 17, 2011 to Lease Agreement dated February 8, 2006 between 3D Systems Corporation and KDC-Carolina Investments 3, LP. (Incorporated by reference to Exhibit 10.1 to Registrant's Form 8-K, filed on March 21, 2011.)
- 10.7 Amended and Restated Lease Agreement dated February 25, 2021 between 3D Systems Corporation and 3D Fields, LLC. (Incorporated by reference to Exhibit 10.7 to Registrant's Annual Report on Form 10-K for the year ended December 31, 2020, filed on March 5, 2021.)
- 10.8† Amendment No. 1, dated July 9, 2021, to the Amended and Restated Lease Agreement, dated February 25, 2021, between 3D Systems Corporation and 3D Fields, LLC.
- 10.9† Amendment No. 2, dated July 13, 2022, to the Amended and Restated Lease Agreement dated February 25, 2021 between 3D Systems Corporation and 3D Fields, LLC.
- 10.10 Credit Agreement, dated February 27, 2019, among 3D Systems Corporation, HSBC Bank USA, National Association, as Administrative Agent, Sole Lead Arranger and Sole Bookrunner, the guarantors party thereto, and the other lenders party thereto. (Incorporated by reference to Exhibit 10.10 of the Registrant's Annual Report on Form 10-K for the year ended December 31, 2018, filed on February 28, 2019).
- 10.11 Security Agreement, dated February 27, 2019, among 3D Systems Corporation, 3D Holdings, LLC, 3D Systems, Inc., and HSBC Bank USA, National Association, as Administrative Agent. (Incorporated by reference to Exhibit 10.11 of the Registrant's Annual Report on Form 10-K for the year ended December 31, 2018, filed on February 28, 2019).
- 10.12 First Amendment, dated September 30, 2019, to the Credit Agreement, dated February 27, 2019, among 3D Systems Corporation, HSBC Bank USA, National Association, as Administrative Agent, Sole Lead Arranger and Sole Bookrunner, the guarantors party thereto, and the other lenders party thereto. (Incorporated by reference to Exhibit 10.2 of the Registrant's Annual Report on Form 10-Q for the quarter ended September 30, 2019, filed on October 30, 2019).
- 10.13 Second Amendment, dated October 9, 2020, to the Credit Agreement, dated February 27, 2019, among 3D Systems Corporation, HSBC Bank USA, National Association, as Administrative Agent, Swing Loan Lender and Issuing Lender, the guarantors party thereto, and the other lenders party thereto. (Incorporated by reference to Exhibit 10.1 of the Registrant's Current Report on Form 8-K, filed October 14, 2020.)
- 10.14* Amended and Restated 2015 Incentive Plan of 3D Systems Corporation. (Incorporated by reference to Exhibit 10.1 to Registrants Current Report on Form 8-K, filed on May 26, 2022.)
- 10.15* Appendix A to the 2015 Incentive Plan of 3D Systems Corporation effective May 19, 2015. (Incorporated by reference to Exhibit 10.3 to Registrant's Quarterly Report on Form 10-Q for the quarter ended June 30, 2015, filed on August 6, 2015.)
- 10.16* Form of Restricted Stock Award Agreement under the Amended and Restated 2015 Incentive Plan. (Incorporated by reference to Exhibit 4.5 to Registrant's Annual Report on Form 10-K for the year ended December 31, 2020, filed on March 5, 2021.)
- 10.17* Form of Restricted Stock Unit Award Agreement under the Amended and Restated 2015 Incentive Plan. (Incorporated by reference to Exhibit 4.6 to Registrant's Annual Report on Form 10-K for the year ended December 31, 2020, filed on March 5, 2021.)
- 10.18* Form of Stock Option Award Agreement under the Amended and Restated 2015 Incentive Plan. (Incorporated by reference to Exhibit 4.10 to Registrant's Annual Report on Form 10-K for the year ended December 31, 2019, filed on February 26, 2020.)
- 10.19* Form of Restricted Stock Award Agreement with Share Price Vesting Conditions. (Incorporated by reference to Exhibit 4.17 to Registrant's Annual Report on Form 10-K for the year ended December 31, 2016, filed on February 28, 2017.)

- 10.20* Revised Form of Performance-Based Restricted Stock Unit Award Agreement under the Amended and Restated 2015 Incentive Plan. (Incorporated by reference to Exhibit 4.10 to Registrant’s Annual Report on Form 10-K for the year ended December 31, 2020, filed on March 5, 2021.)
- 10.21* Charles W. Hull Consulting Arrangement. (Incorporated by reference to Exhibit 10.1 of the Registrant’s Quarterly Report on Form 10-Q for the quarter ended June 30, 2010, filed on July 29, 2010.)
- 10.22* Employment Agreement, dated August 4, 2016, between 3D Systems Corporation and Charles W. Hull. (Incorporated by reference to Exhibit 10.1 to Registrant’s Current Report on Form 8-K, filed August 8, 2016.)
- 10.23* Employment Agreement, dated June 15, 2016, between 3D Systems Corporation and Andrew M. Johnson. (Incorporated by reference to Exhibit 10.2 to Registrant’s Current Report on Form 8-K, filed on June 16, 2016.)
- 10.24* 3D Systems Corporation Change of Control Severance Policy. (Incorporated by reference to Exhibit 10.1 to the Registrant’s Current Report on Form 8-K, filed February 23, 2018.)
- 10.25* Employment Agreement, dated May 11, 2020, between 3D Systems Corporation and Dr. Jeffrey A. Graves. (Incorporated by reference to Exhibit 10.1 of the Registrant’s Current Report on Form 8-K, filed May 14, 2020.)
- 10.26* Employment Agreement, dated August 21, 2020, between 3D Systems Corporation and Jagtar Narula. (Incorporated by reference to Exhibit 10.1 to the Registrant’s Current Report on Form 8-K, filed August 26, 2020.)
- 10.27* Employment Agreement, dated November 21, 2016, between 3D Systems Corporation and Menno Ellis. (Incorporated by reference to Exhibit 10.3 to the Registrant’s Quarterly Report on Form 10-Q for the quarter ended September 30, 2020, filed November 5, 2020.)
- 10.28* Employment Agreement, dated October 1, 2020, between 3D Systems Corporation and Reji Puthenveetil. (Incorporated by reference to Exhibit 10.4 to the Registrant’s Quarterly Report on Form 10-Q for the quarter ended September 30, 2020, filed November 5, 2020.)
- 10.29* Amendment No. 1 to the Employment Agreement, dated February 22, 2021, between 3D Systems Corporation and Reji Puthenveetil. (Incorporated by reference to Exhibit 10.30 to Registrant’s Annual Report on Form 10-K for the year ended December 31, 2020, filed on May 5, 2021.)
- 10.30* Consulting Agreement, dated October 1, 2020, between 3D Systems Corporation and Reji Puthenveetil. (Incorporated by reference to Exhibit 10.5 to the Registrant’s Quarterly Report on Form 10-Q for the quarter ended September 30, 2020, filed November 5, 2020.)
- 10.31* Employment Agreement, dated June 28, 2021, between 3D Systems Corporation and David K. Leigh. (Incorporated by reference to Exhibit 10.1 to the Registrant’s Quarterly Report on Form 10-Q for the quarter ended June 30, 2021, filed August 9, 2021.)
- 10.32* Employment Agreement, dated August 30, 2021, by and between 3D Systems Corporation and Phyllis Nordstrom. (Incorporated by reference to Exhibit 10.1 to the Registrant’s Quarterly Report on Form 10-Q for the quarter ended September 30, 2021, filed November 8, 2021.)
- 10.33 Equity Distribution Agreement, dated August 5, 2020, by and among 3D Systems Corporation and Truist Securities, Inc. and HSBC Securities (USA) Inc. (Incorporated by reference to Exhibit 1.1 of Registrant’s Current Report on Form 8-K, filed on August 5, 2020.)
- 10.34 Executive Services Agreement, dated April 22, 2022, by and between 3D Systems Corporation and Wayne Pensky. (Incorporated by reference to Exhibit 10.1 of the Registrants Current Report on Form 8-K, filed on April 26, 2022.)
- 10.35* Executive Employment Agreement dated August 4, 2022, by and between 3D Systems Corporation and Michael Turner. (Incorporated by reference to Exhibit 10.1 of the Registrant’s Current Report on Form 8-K, filed on August 5, 2022.)
- 10.36* Executive Employment Agreement dated December 7, 2022, by and between 3D Systems Corporation and Joseph Zuiker. (Incorporated by reference to Exhibit 10.1 of the Registrant’s Current Report on Form 8-K, filed on December 9, 2022.)
- 10.37† 3D Systems Corporation Non-Employee Director Deferred Compensation Plan, dated December 14, 2022.
- 21.1† Subsidiaries of Registrant.
- 23.1† Consent of Independent Registered Public Accounting Firm.

- 31.1† Certification of Principal Executive Officer filed pursuant to Section 302 of the Sarbanes-Oxley Act of 2002, dated March 16, 2023.
- 31.2† Certification of Principal Financial Officer filed pursuant to Section 302 of the Sarbanes-Oxley Act of 2002, dated March 16, 2023.
- 32.1† Certification of Principal Executive Officer filed pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, dated March 16, 2023.
- 32.2† Certification of Principal Financial Officer filed pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, dated March 16, 2023.
- 101.INS† Inline XBRL Instance Document - the instance document does not appear in the Interactive Data file because the its XBRL tags are embedded within the Inline XBRL document.In
- 101.SCH† Inline XBRL Taxonomy Extension Scheme Document
- 101.CAL† Inline XBRL Taxonomy Extension Calculation Linkbase Document
- 101.DEF† Inline XBRL Taxonomy Extension Definition Linkbase Document
- 101.LAB† Inline XBRL Taxonomy Extension Label Linkbase Document
- 101.PRE† XBRL Taxonomy Extension Presentation Linkbase Document
- 104 Cover Page Interactive Data File - this data file does not appear in the Interactive Data file because its XBRL tags are embedded within the Inline XBRL document.

* Management contract or compensatory plan or arrangement

† Exhibits filed herein. All exhibits not so designated are incorporated by reference to a prior filing, as indicated.

Item 16. Form 10-K Summary

None.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the Registrant has duly caused this report to be signed on our behalf by the undersigned, thereunto duly authorized.

3D Systems Corporation

By: /s/ DR. JEFFREY A. GRAVES

Dr. Jeffrey A. Graves

President, Chief Executive Officer and
Director

Date: March 16, 2023

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of registrant and in the capacities and on the dates indicated.

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ DR. JEFFREY A. GRAVES</u> Dr. Jeffrey A. Graves	Chief Executive Officer, President and Director (principal executive officer)	March 16, 2023
<u>/s/ MICHAEL TURNER</u> Michael Turner	Executive Vice President and Chief Financial Officer (principal financial officer)	March 16, 2023
<u>/s/ CHARLES W. HULL</u> Charles W. Hull	Executive Vice President, Chief Technology Officer and Director Emeritus	March 16, 2023
<u>/s/ CHARLES G. MCCLURE, JR</u> Charles G. McClure, Jr.	Chairman of the Board of Directors	March 16, 2023
<u>/s/ MALISSIA R. CLINTON</u> Malissia R. Clinton	Director	March 16, 2023
<u>/s/ WILLIAM E. CURRAN</u> William E. Curran	Director	March 16, 2023
<u>/s/ CLAUDIA N. DRAYTON</u> Claudia N. Drayton	Director	March 16, 2023
<u>/s/ THOMAS W. ERICKSON</u> Thomas W. Erickson	Director	March 16, 2023
<u>/s/ JIM D. KEVER</u> Jim D. Kever	Director	March 16, 2023
<u>/s/ KEVIN S. MOORE</u> Kevin S. Moore	Director	March 16, 2023
<u>/s/ DR. VASANT PADMANABHAN</u> Dr. Vasant Padmanabhan	Director	March 16, 2023
<u>/s/ JOHN J. TRACY</u> Dr. John J. Tracy	Director	March 16, 2023

3D Systems Corporation
Index to Consolidated Financial Statements

Consolidated Financial Statements

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Report of Independent Registered Public Accounting Firm

Report of Independent Registered Public Accounting Firm

Shareholders and Board of Directors
3D Systems Corporation
Rock Hill, South Carolina

Opinion on the Consolidated Financial Statements

We have audited the accompanying consolidated balance sheets of 3D Systems Corporation (the “Company”) as of December 31, 2022 and 2021, the related consolidated statements of operations, comprehensive (loss) income, stockholders’ equity, and cash flows for each of the three years in the period ended December 31, 2022, and the related notes (collectively referred to as the “consolidated financial statements”). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company at December 31, 2022 and 2021, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2022, in conformity with accounting principles generally accepted in the United States of America.

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, 2022, based on criteria established in Internal Control – Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (“COSO”) and our report dated March 16, 2023 expressed an adverse opinion thereon.

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.

Critical Audit Matter

The critical audit matter communicated below is a matter arising from the current period audit of the consolidated financial statements that was communicated or required to be communicated to the audit committee and that: (1) relates 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 the critical audit matter 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 matter below, providing separate opinions on the critical audit matter or on the accounts or disclosures to which it relates.

Revenue from Collaboration Agreements

As described in Note 5 to the consolidated financial statements, the Company recognizes revenue when control of the promised products or services is transferred to customers in an amount that reflects the consideration the Company expects to receive in exchange for those products or services. The Company recognized revenue of approximately \$13.5 million related to collaboration agreements with customers for the year ended December 31, 2022. The Company's collaboration agreements may contain multiple performance obligations and may contain fees for licensing, research and development services, contingent milestone payments upon achievement of developmental contractual criteria, and/or royalty fees based on the licensees' product revenue.

We identified revenue recognition from collaboration agreements with customers as a critical audit matter. Management makes significant judgments in estimating variable consideration to determine appropriate revenue recognition for its collaboration agreements with customers. Auditing management's judgments and estimates required significant audit effort and auditor subjectivity.

The primary procedures we performed to address this critical audit matter included:

- Testing the design and operating effectiveness of internal controls relating to the estimation of variable consideration and the appropriateness of the inputs and assumptions to the revenue recognition calculations.
- Evaluating the reasonableness of management's judgments and estimates to calculate variable consideration, and the timing of recognizing the related revenue subject to any constraints.
- Testing the relevant inputs and assumptions to the revenue recognition calculations.
- Confirming relevant terms of the agreements, including the absence of side agreements, directly with the customer.

/s/ BDO USA, LLP

We have served as the Company's auditor since 2003.

Charlotte, North Carolina

March 16, 2023

Report of Independent Registered Public Accounting Firm

Report of Independent Registered Public Accounting Firm

Shareholders and Board of Directors
3D Systems Corporation
Rock Hill, South Carolina

Opinion on Internal Control over Financial Reporting

We have audited 3D System Corporation's (the "Company's") internal control over financial reporting as of December 31, 2022, based on criteria established in Internal Control – Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (the "COSO criteria"). In our opinion, the Company did not maintain, in all material respects, effective internal control over financial reporting as of December 31, 2022, based on the COSO criteria.

We do not express an opinion or any other form of assurance on management's statements referring to any corrective actions taken by the Company after the date of management's assessment.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) ("PCAOB"), the consolidated balance sheets of the Company as of December 31, 2022 and 2021, the related consolidated statements of operations, comprehensive (loss) income, stockholders' equity, and cash flows for each of the three years in the period ended December 31, 2022, and the related notes (collectively referred to as "the consolidated financial statements") and our report dated March 16, 2023 expressed an unqualified opinion thereon.

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 "Item 9A, Management's Report on Internal Control over Financial Reporting". 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 U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit of internal control over financial reporting 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 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.

As indicated in the accompanying Item 9A, Management's 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 Kumovis GmbH "Kumovis" and Titan Additives LLC "Titan" which were acquired on April 1, 2022 and dp polar GmbH "dp polar" which was acquired on October 4, 2022, and which is included in the consolidated balance sheet of the Company as of December 31, 2022, the related consolidated statements of operations, comprehensive (loss) income, stockholders' equity, and cash flows for the year ended December 31, 2022, and the related notes. Kumovis, Titan, and dp polar constituted 3.2%, 2.8%, and 2.2% of total assets, respectively, as of December 31, 2022, and 0.1%, 0.2%, and 0.0% of revenues, respectively, for the year then ended. Management did not assess the effectiveness of internal control over financial reporting of Kumovis, Titan, and dp polar because of the timing of the acquisitions which were completed on April 1, 2022, and October 4, 2022. 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 Kumovis, Titan, and dp polar.

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. Material weaknesses regarding management's failure to design and maintain controls over revenue, receivables and deferred revenue, including the input of executed contract terms into the Company's information systems that perform revenue recognition and the review of internally prepared reports and analyses utilized in the financial closing process have been identified and described in management's assessment. These material weaknesses were considered in determining the nature, timing, and extent of audit tests applied in our audit of the 2022 consolidated financial statements, and this report does not affect our report dated March 16, 2023 on those financial statements.

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.

/s/ BDO USA, LLP

Charlotte, North Carolina

March 16, 2023

3D SYSTEMS CORPORATION
CONSOLIDATED BALANCE SHEETS

<i>(in thousands, except par value)</i>	<u>December 31, 2022</u>	<u>December 31, 2021</u>
ASSETS		
Current assets:		
Cash and cash equivalents	\$ 388,134	\$ 789,657
Short-term investments	180,603	—
Accounts receivable, net of reserves — \$3,114 and \$2,445	93,886	106,540
Inventories	137,832	92,887
Prepaid expenses and other current assets	33,790	42,653
Total current assets	834,245	1,031,737
Property and equipment, net	58,072	57,257
Intangible assets, net	90,230	45,835
Goodwill	385,312	345,588
Right-of-use assets	42,746	46,356
Deferred income tax asset	7,038	5,054
Other assets	28,970	17,272
Total assets	<u>\$ 1,446,613</u>	<u>\$ 1,549,099</u>
LIABILITIES, REDEEMABLE NON-CONTROLLING INTEREST AND EQUITY		
Current liabilities:		
Current lease liabilities	\$ 9,036	\$ 8,344
Accounts payable	53,826	57,366
Accrued and other liabilities	55,571	76,994
Customer deposits	6,911	7,281
Deferred revenue	26,464	28,027
Total current liabilities	151,808	178,012
Long-term debt, net of deferred financing costs	449,510	446,859
Long-term lease liabilities	41,779	47,420
Deferred income tax liability	7,631	2,173
Other liabilities	44,181	32,254
Total liabilities	694,909	706,718
Commitments and contingencies (Note 23)		
Redeemable non-controlling interest	1,760	—
Stockholders' equity:		
Common stock, \$0.001 par value, authorized 220,000 shares; shares issued 131,207 and 128,375 as of December 31, 2022 and 2021, respectively	131	128
Additional paid-in capital	1,547,597	1,501,210
Accumulated deficit	(743,962)	(621,251)
Accumulated other comprehensive loss	(53,822)	(37,706)
Total stockholders' equity	749,944	842,381
Total liabilities, redeemable non-controlling interest and stockholders' equity	<u>\$ 1,446,613</u>	<u>\$ 1,549,099</u>

See accompanying notes to consolidated financial statements.

3D SYSTEMS CORPORATION
CONSOLIDATED STATEMENTS OF OPERATIONS

<i>(in thousands, except per share amounts)</i>	Year Ended December 31,		
	2022	2021	2020
Revenue:			
Products	\$ 395,396	\$ 428,742	\$ 332,799
Services	142,635	186,897	224,441
Total revenue	538,031	615,639	557,240
Cost of sales:			
Products	237,386	245,169	220,415
Services	86,412	106,692	113,450
Total cost of sales	323,798	351,861	333,865
Gross profit	214,233	263,778	223,375
Operating expenses:			
Selling, general and administrative	244,181	227,697	219,895
Research and development	87,071	69,150	74,143
Impairment of goodwill	—	—	48,300
Total operating expenses	331,252	296,847	342,338
Loss from operations	(117,019)	(33,069)	(118,963)
Interest and other (expense) income, net	(3,790)	352,609	(24,447)
(Loss) income before income taxes	(120,809)	319,540	(143,410)
(Provision) benefit for income taxes	(2,140)	2,512	(6,184)
Net (loss) income before redeemable non-controlling interest	(122,949)	322,052	(149,594)
Less: net (loss) attributable to redeemable non-controlling interest	(238)	—	—
Net (loss) income attributable to 3D Systems Corporation	<u>\$ (122,711)</u>	<u>\$ 322,052</u>	<u>\$ (149,594)</u>
Net (loss) income per common share:			
Basic	<u>\$ (0.96)</u>	<u>\$ 2.62</u>	<u>\$ (1.27)</u>
Diluted	<u>\$ (0.96)</u>	<u>\$ 2.55</u>	<u>\$ (1.27)</u>
Weighted average shares outstanding:			
Basic	127,818	122,867	117,579
Diluted	127,818	126,334	117,579

See accompanying notes to consolidated financial statements.

3D SYSTEMS CORPORATION
CONSOLIDATED STATEMENTS OF COMPREHENSIVE (LOSS) INCOME

<i>(in thousands)</i>	Year Ended December 31,		
	2022	2021	2020
Net (loss) income before redeemable non-controlling interest	\$ (122,949)	\$ 322,052	\$ (149,594)
Other comprehensive (loss) income, net of taxes:			
Pension plan adjustments	2,942	682	783
Derivative financial instruments	—	721	(403)
Foreign currency translation	(18,730)	(39,546)	28,752
Unrealized loss on short-term investments	(328)	—	—
Foreign currency translation reclassification - sales of businesses	—	8,912	—
Total other comprehensive (loss) income, net of taxes:	(16,116)	(29,231)	29,132
Total comprehensive (loss) income, net of taxes	(139,065)	292,821	(120,462)
Less: comprehensive loss attributable to redeemable non-controlling interest	(238)	—	—
Comprehensive (loss) income attributable to 3D Systems Corporation	\$ (138,827)	\$ 292,821	\$ (120,462)

See accompanying notes to consolidated financial statements.

3D SYSTEMS CORPORATION
CONSOLIDATED STATEMENTS OF CASH FLOWS

Year Ended December 31,

<i>(in thousands)</i>	Year Ended December 31,		
	2022	2021	2020
Cash flows from operating activities:			
Net (loss) income before redeemable non-controlling interest	\$ (122,949)	\$ 322,052	\$ (149,594)
Adjustments to reconcile net (loss) income to net cash (used in) provided by operating activities:			
Depreciation, amortization and accretion of debt discount	38,686	34,623	44,595
Stock-based compensation	42,415	55,153	17,725
Loss on short-term investments	3,146	—	—
Non-cash operating lease expense	6,366	5,681	—
Provision for inventory obsolescence and revaluation	2,586	(2,909)	12,373
Loss on hedge accounting de-designation and termination	—	721	1,235
Provision for bad debts	562	232	457
Loss (gain) on the disposition of businesses, property, equipment and other assets	104	(350,846)	5,274
Benefit for deferred income taxes and reserve adjustments	(2,518)	(11,679)	(1,206)
Asset impairment	4,095	1,676	55,484
Changes in operating accounts:			
Accounts receivable	8,144	(11,912)	(6,052)
Inventories	(51,082)	7,866	(9,901)
Prepaid expenses and other current assets	8,229	(8,106)	(16,218)
Accounts payable	(3,787)	27,159	(6,653)
Deferred revenue and customer deposits	(6,947)	(3,325)	3,231
Accrued and other liabilities	10,702	(12,389)	28,286
All other operating activities	(7,773)	(5,850)	843
Net cash (used in) provided by operating activities	(70,021)	48,147	(20,121)
Cash flows from investing activities:			
Purchases of property and equipment	(20,907)	(18,791)	(13,643)
Purchases of short-term investments	(384,388)	—	—
Sales and maturities of short-term investments	200,314	—	—
Proceeds from sale of assets and businesses, net of cash sold	325	421,485	1,554
Acquisitions and other investments, net of cash acquired	(103,699)	(139,685)	—
Other investing activities	—	(2,454)	356
Net cash (used in) provided by investing activities	(308,355)	260,555	(11,733)
Cash flows from financing activities:			
Proceeds from revolving credit facilities	—	—	20,000
Payments on revolving credit facilities	—	—	(20,000)
Proceeds from borrowings	—	460,000	—
Debt issuance costs	—	(13,466)	—
Repayment of borrowings/long-term debt	—	(21,392)	(26,840)
Proceeds from issuance of common stock	—	—	24,702
Purchase of non-controlling interests	(2,300)	(6,300)	(12,500)
Taxes paid related to net-share settlement of equity awards	(10,864)	(12,619)	(5,138)
Other financing activities	(651)	(423)	296
Net cash (used in) provided by financing activities	(13,815)	405,800	(19,480)
Effect of exchange rate changes on cash, cash equivalents and restricted cash	(5,804)	(9,243)	1,428
Net (decrease) increase in cash, cash equivalents and restricted cash	(397,995)	705,259	(49,906)
Cash, cash equivalents and restricted cash at the beginning of the year ^a	789,970	84,711	134,617
Cash, cash equivalents and restricted cash at the end of the year ^a	\$ 391,975	\$ 789,970	\$ 84,711

Supplemental cash flow information

Lease assets obtained in exchange for new lease liabilities	\$	6,037	\$	4,502	\$	23,309
Cash interest payments		196		1,138		2,109
Cash income tax payments, net		5,330		4,709		3,706
Transfer of equipment from inventory to property and equipment, net ^b		(2,004)		1,738		1,055
Stock issued for acquisition		7,091		99,044		—

- (a) The amounts for cash and cash equivalents shown above include restricted cash of \$114, \$313 and \$540 as of December 31, 2022, 2021 and 2020, respectively, which are included in prepaid expenses and other current assets. In addition, included in cash and cash equivalents above as of December 31, 2022 is \$3,727 of restricted cash, which is included in other non-current assets. Finally, included in cash and cash equivalents above as of December 31, 2020 is \$9,161, which was included in current assets held for sale.
- (b) Inventory is transferred to property and equipment at cost when we require additional machines for training or demonstration or for placement into on demand manufacturing services locations.

See accompanying notes to consolidated financial statements.

3D SYSTEMS CORPORATION
CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY
Years Ended December 31, 2022, 2021 and 2020

	Common Stock		Par Value \$0.001	Additional Paid-in Capital	Treasury Stock	Accumulated Deficit	Accumulated Other Comprehensive Income (Loss)	Total 3D Systems Corporation Stockholders' Equity	Equity Attributable to Non-controlling Interests	Total Stockholders' Equity
<i>(in thousands, except par value)</i>	Shares	Par Value \$0.001								
December 31, 2019	121,266	\$	120	\$ 1,371,564	\$ (18,769)	\$ (793,709)	\$ (37,047)	\$ 522,159	\$ (8,263)	\$ 513,896
Issuance (repurchase) of stock	6,360	8	—	23,377	(3,821)	—	—	19,564	—	19,564
Acquisition of non-controlling interest	—	—	—	(7,702)	—	—	(561)	(8,263)	8,263	—
Stock-based compensation expense	—	—	—	17,725	—	—	—	17,725	—	17,725
Net (loss) attributable to 3D Systems Corp.	—	—	—	—	—	(149,594)	—	(149,594)	—	(149,594)
Pension plan adjustment	—	—	—	—	—	—	783	783	—	783
Derivative financial instrument adjustment	—	—	—	—	—	—	(1,638)	(1,638)	—	(1,638)
De-designation of derivative instrument	—	—	—	—	—	—	1,235	1,235	—	1,235
Foreign currency translation adjustment	—	—	—	—	—	—	28,752	28,752	—	28,752
December 31, 2020	127,626	128	—	1,404,964	(22,590)	(943,303)	(8,476)	430,723	—	430,723
Issuance (repurchase) of stock	813	—	—	(12,620)	—	—	—	(12,620)	—	(12,620)
Shares issued to acquire assets and businesses	3,430	3	—	99,041	—	—	—	99,044	—	99,044
Stock-based compensation expense	—	—	—	32,412	—	—	—	32,412	—	32,412
Net income attributable to 3D Systems Corp.	—	—	—	—	—	322,052	—	322,052	—	322,052
Pension plan adjustment	—	—	—	—	—	—	181	181	—	181
Gain on pension plan - unrealized	—	—	—	—	—	—	501	501	—	501
De-designation of derivative instrument	—	—	—	—	—	—	721	721	—	721
Retirement of treasury shares	(3,494)	(3)	—	(22,587)	22,590	—	—	—	—	—
Foreign currency translation adjustment	—	—	—	—	—	—	(30,633)	(30,633)	—	(30,633)
December 31, 2021	128,375	128	—	1,501,210	—	(621,251)	(37,706)	842,381	—	842,381
Shares issued, vested & expired under equity incentive plans	2,783	3	—	—	—	—	—	3	—	3
Shares withheld related to net-share settlement of equity awards	(746)	(1)	—	(10,863)	—	—	—	(10,864)	—	(10,864)
Shares issued to acquire assets and businesses	795	1	—	7,090	—	—	—	7,091	—	7,091
Stock-based compensation expense	—	—	—	50,756	—	—	—	50,756	—	50,756
Net (loss) attributable to 3D Systems Corp.	—	—	—	—	—	(122,711)	—	(122,711)	—	(122,711)
Pension plan adjustment	—	—	—	—	—	—	2,942	2,942	—	2,942
Unrealized loss on short-term investments	—	—	—	—	—	—	(328)	(328)	—	(328)
Redeemable non-controlling interest redemption value in excess of carrying value	—	—	—	(596)	—	—	—	(596)	—	(596)
Foreign currency translation adjustment	—	—	—	—	—	—	(18,730)	(18,730)	—	(18,730)
December 31, 2022	131,207	131	\$	\$ 1,547,597	\$	\$ (743,962)	\$ (53,822)	\$ 749,944	\$	\$ 749,944

See accompanying notes to consolidated financial statements.

3D SYSTEMS CORPORATION
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

(1) Basis of Presentation

The consolidated financial statements include the accounts of 3D Systems Corporation and all majority and wholly-owned subsidiaries and entities in which a controlling interest is maintained (“3D Systems” or the “Company” or “we” or “our” or “us”). A non-controlling interest in a subsidiary is considered an ownership interest in a majority-owned subsidiary that is not attributable to the parent. We include redeemable non-controlling interests in temporary equity, and non-controlling interests as a component of total equity, in the consolidated balance sheets. The net income (loss) attributable to non-controlling interests is presented as an adjustment to the Company's consolidated net income (loss) to arrive at net income (loss) attributable to 3D Systems Corporation in the consolidated statements of operations and consolidated statements of comprehensive income (loss). Our annual reporting period is the calendar year.

The consolidated financial statements have been prepared in accordance with accounting principles generally accepted in the United States (“GAAP”). All significant intercompany accounts and transactions have been eliminated in consolidation. Certain prior period amounts have been reclassified to conform to the current year presentation. All dollar and share amounts and other amounts presented in the accompanying footnotes are presented in thousands, except for per share information.

Reportable Segments

As of January 1, 2021, we determined that the Company had two reportable segments: Healthcare Solutions (“Healthcare”) and Industrial Solutions (“Industrial”). The Company previously only reported its consolidated results in one segment. This change in segment reporting as of January 1, 2021 was the result of changes to how the chief operating decision maker (“CODM”) assesses the financial performance of the Company and in the decision-making process driving future operating performance. As a result of this re-segmentation, we performed a quantitative analysis to test for potential impairment of our goodwill immediately following the re-segmentation, and we concluded that the fair values of both our Healthcare Solutions and Industrial Solutions reportable segments, which also comprised our reporting units for purposes of the goodwill impairment test, exceeded their respective carrying values.

At the time of our re-segmentation, the fair value of each of our reporting units was determined using a combination of an (1) income approach, which estimates fair value based upon projections of future revenues, expenses, and cash flows discounted to their present value, and (2) a market approach. The valuation methodologies and underlying financial information included in the Company's determination of fair value required significant judgments by management. The principal assumptions used in the Company's discounted cash flow analysis consisted of (a) the long-term projections of future financial performance and (b) the weighted-average cost of capital of market participants, adjusted for the risk attributable to the Company and the industry in which it operates. Under the market approach, the principal assumptions included estimates of multiples of various financial metrics of comparable companies.

See Note 6 for details regarding the operating results of our reportable segments.

(2) Significant Accounting Policies

Use of Estimates

The preparation of financial statements in conformity with GAAP requires us to make estimates and assumptions that affect (1) the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities as of the balance sheet date and (2) the reported amounts of revenues and expenses during the reporting period. We base our estimates on historical experience, currently available information and various other assumptions that we believe are reasonable under the circumstances. Actual results could differ from these estimates.

Revenue Recognition

We account for revenue in accordance with Accounting Standard Codification (“ASC”) Topic 606, “*Revenue from Contracts with Customers*.” Collaborative revenue contracts, for which the collaboration partner meets the definition of a customer, are recorded in accordance with ASC Topic 606; otherwise, the collaborative arrangements are recorded in accordance with ASC 808, “Collaborative Arrangements”. See Note 5 for further discussion.

3D SYSTEMS CORPORATION
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

Cash and Cash Equivalents

Cash and cash equivalents consist of cash and highly liquid investments with maturities of three months or less when acquired. At times, cash and cash equivalents balances may be in excess of FDIC insurance limits.

Short-Term Investments

A portion of the company's excess cash is invested in short-term investments. The company's short-term investment accounting policy is that securities with maturities greater than 90 days at the time of purchase that are available for operations in the next 12 months are classified as short-term investments. The Company's short-term investments primarily consist of investment grade bonds, certificates of deposit, commercial paper, and short maturity bond funds, all with a remaining maturity of generally less than twelve months at the date of purchase and classified as available-for-sale. Interest and dividends on these investments are recorded into income when earned.

Available-for-sale securities, which consist of debt securities, are carried at fair value, with unrealized gains and losses, net of related tax, reported in accumulated other comprehensive (loss) income. Adjustments to the fair value of investments classified as available-for-sale are recorded as an increase or decrease in accumulated other comprehensive (loss) income in shareholders' equity, unless the adjustment is considered an other-than-temporary impairment, in which case the adjustment is recorded to interest and other income (expense), net, in the period in which they become impaired. The Company periodically evaluates its investments for impairment. There were no other-than-temporary impairments of investments recognized in any of the fiscal years presented.

Accounts Receivable and Allowance for Doubtful Accounts

Trade accounts receivable are recorded at the invoiced amount and do not bear interest. In evaluating the collectability of accounts receivable, we assess a number of factors, including specific customers' ability to meet their financial obligations to us, the length of time receivables are past due, historical collection experience, current economic conditions, and reasonable and supportable forecasts. Based on these assessments, we may record a reserve for specific customers, as well as a general reserve and allowance for returns and discounts. If circumstances related to specific customers change, or economic conditions deteriorate such that our past collection experience is no longer relevant, our estimate of the recoverability of accounts receivable could be further reduced from the levels provided for in the consolidated financial statements. One customer represents a significant concentration of credit risk, as they represent greater than 10% of our total accounts receivable.

The following presents the changes in the balance of our allowance for doubtful accounts:

Year	Item	Balance at beginning of year	Additions charged to expense	Other ^(a)	Balance at end of year
2022	Allowance for doubtful accounts	\$ 2,445	\$ 562	\$ 107	\$ 3,114
2021	Allowance for doubtful accounts	4,392	232	(2,179)	2,445
2020	Allowance for doubtful accounts	8,762	457	(4,827)	4,392

^(a)Other includes the impact of write-offs, recoveries, divestitures and foreign currency translation adjustments.

Inventories

Inventories are stated at the lower of cost or net realizable value, with cost reflecting standard cost, which approximates the first-in, first-out method. Capitalized inventory costs include materials, labor, and manufacturing overhead that relate to the acquisition of raw materials and production into finished goods. The Company regularly reviews inventory for excess and obsolescence and records a provision to write down inventory to its net realizable value when carrying value is in excess of such value.

Property and Equipment

Property and equipment are recorded at cost and are depreciated over their estimated useful lives using the straight-line method. Upon retirement or sale, the cost of assets disposed of and the related accumulated depreciation are removed from the accounts and any resulting gain or loss is included in the determination of net income or loss. Repairs and maintenance costs are expensed as incurred.

3D SYSTEMS CORPORATION
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

Long-Lived Assets and Goodwill

Long-Lived Assets

We review long-lived assets for impairment whenever events or changes in circumstances indicate that the carrying value of the asset may not be recoverable. Recoverability is assessed for the carrying value of assets held for use based on a review of undiscounted projected cash flows. Impairment losses, where identified, are measured as the excess of the carrying value of the long-lived asset over its estimated fair value as determined by discounted projected cash flows. No impairment charges were recorded for tangible assets with finite lives for the years ended December 31, 2022, 2021, and 2020.

Intangible Assets (Excluding Goodwill)

Intangible assets include patents, trade names, customer relationships, purchased technology, and in-process research and development (IPR&D). Intangible assets with a finite life are amortized on a straight-line basis with estimated useful lives typically ranging from 2 to 20 years and are assessed for impairment whenever events or changes in circumstances indicate that the carrying value of the asset may not be recoverable, consistent with the Company's accounting policy for other long-lived assets with a finite life. Amortization is recognized within selling, general and administrative expenses in the consolidated statements of operations.

Acquired IPR&D represents the fair value assigned to those research and development projects that were acquired in a business combination for which the related products have not received regulatory approval or commercial viability and have no alternative future use. IPR&D is capitalized at its fair value as an indefinite-lived intangible asset, and any development costs incurred after the acquisition are expensed as incurred. The fair value of IPR&D is determined by estimating the future cash flows of each project and discounting the net cash flows back to their present values. Upon achieving regulatory approval or commercial viability for the related product, the indefinite-lived intangible asset is accounted for as a finite-lived asset and is amortized on a straight-line basis over the estimated useful life. If the project is not completed or is terminated or abandoned, the Company may have an impairment related to the IPR&D, which is charged to expense. Indefinite-lived intangible assets are tested for impairment annually in the fourth quarter of the fiscal year and whenever events or changes in circumstances indicate that the carrying amount may be impaired. Impairment is calculated as the excess of the asset's carrying value over its fair value. Fair value is generally determined using a discounted future cash flow analysis. IPR&D with no alternative future use acquired outside of a business combination is expensed immediately.

Goodwill

Goodwill is the excess of the cost of an acquired entity over the amounts assigned to the assets acquired and liabilities assumed in a business combination. Goodwill is not amortized. Goodwill is tested for impairment annually on November 30 of each year, and is tested for impairment between annual tests if an event occurs or circumstances change that would indicate the carrying amount may be impaired. Impairment testing for goodwill is done at a reporting unit level, with all goodwill assigned to a reporting unit.

The test for impairment of goodwill requires the Company to make several estimates related to projected future cash flows to determine the fair value of the goodwill reporting units. The Company calculates the excess of each reporting unit's fair value over its carrying amount, including goodwill, utilizing a discounted cash flow analysis and other valuation techniques, as deemed appropriate. Internal operational budgets and long-range strategic plans are used as a basis for the cash flow analysis. The Company also utilizes assumptions for working capital, capital expenditures, and terminal growth rates. The discount rate applied to the cash flow analysis is based on the weighted average cost of capital ("WACC") for each reporting unit. An impairment is recognized when the carrying amount of the reporting unit's net assets exceeds the estimated fair value of the reporting unit.

For a summary of our goodwill by reporting unit and discussion of goodwill impairment, see Note 11.

Non-Current Investments

We recognize investments in equity securities without a readily determinable fair value at cost minus impairment. We assess these investments for potential impairment if an event occurs or circumstances change that would indicate the carrying amount may be impaired. We assess declines in the fair value of investments in debt securities to determine whether such declines are other-than-temporary. Impairments of non-current investments are recorded to interest and other income (expense), net in the consolidated statements of operations in the period in which they become impaired.

3D SYSTEMS CORPORATION
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

For the years ended December 31, 2022, 2021, and 2020, we recorded impairment charges of \$2,900, \$0 and \$2,361, respectively, related to non-current investments. The aggregate carrying amount of all non-current investments totaled \$13,668 and \$5,632 at December 31, 2022 and 2021, respectively, and is included in other assets on our consolidated balance sheets.

Contingencies

We follow the provisions of ASC 450, "*Contingencies*," which requires that an estimated loss from a loss contingency be accrued by a charge to income if (1) it is probable that an asset has been impaired or that a liability has been incurred and (2) the amount of the loss can be reasonably estimated. Legal costs related to the defense or settlement of a loss contingency are expensed when such costs are incurred and, accordingly, future legal costs expected to be incurred are not accrued as part of the liability recorded when a loss contingency has been deemed probable and estimable.

Redeemable Non-controlling Interest

In connection with the acquisition of 93.75% of Kumovis on April 1, 2022, as discussed in Note 3, the Company recorded a redeemable non-controlling interest (RNCI). The RNCI represents non-controlling shareholders' interest in Kumovis, which is controlled by, but not wholly owned by, 3D Systems, and for which 3D Systems' obligation to redeem the minority shareholders' interest is governed by a put/call relationship. Subsequent to the initial fair value measurement, the RNCI is recorded at the greater of its redemption value or its carrying value at the end of each reporting period. If the RNCI is carried at its redemption value, the difference between the redemption value and the carrying value is adjusted at the end of each reporting period through additional paid-in capital, and the excess redemption value is recognized as a reduction to the net income, or increase to the net loss, attributable to 3D Systems' shareholders for purposes of reporting earnings or loss per share. See Note 20.

Foreign Currency Translation and Transactions

The local currency in which a subsidiary operates is generally considered its functional currency for those subsidiaries domiciled outside the United States ("foreign subsidiaries"). The functional currency financial statements of foreign subsidiaries are translated to U.S. dollars ("USD") in connection with the preparation of the Company's consolidated financial statements. Assets and liabilities of foreign subsidiaries are translated to USD at month-end exchange rates of the period reported. Income and expense items are translated monthly using the monthly average exchange rate. The effects of translating a foreign subsidiary's financial statements are recorded as cumulative translation adjustments and reported as a component of accumulated other comprehensive income (loss) in shareholders' equity.

Foreign currency transactions are those transactions whose terms are denominated in a currency other than an entity's functional currency. Foreign currency transactions that remain unsettled as of the end of a reporting period must be remeasured into the entity's functional currency, resulting in the recognition of a gain or loss when a change in exchange rate has occurred subsequent to the date on which the transaction was originally recognized or was most recently remeasured. The Company recognizes foreign currency transaction gains and losses within interest and other income (expense), net in its consolidated statements of operations. See Note 16.

Derivative Financial Instruments

We are exposed to market risk from changes in interest rates, foreign currency exchange rates and commodity prices, which may adversely affect our results of operations and financial condition. We seek to minimize these risks through regular operating and financing activities and, when we consider it to be appropriate, through the use of derivative financial instruments. We do not purchase, hold or sell derivative financial instruments for trading or speculative purposes.

We may use derivative financial instruments to manage our exposure to changes in interest rates on outstanding debt instruments. For those instruments that qualify and where we elect to prepare and maintain the documentation to qualify for cash flow hedge accounting treatment under ASC 815, "*Derivatives and Hedging*," gains and losses (realized or unrealized) related to derivative instruments are recognized in accumulated other comprehensive income (loss) and are reclassified into earnings when the underlying transaction is recognized in net earnings. Depending on the fair value at the end of the reporting period, derivatives are recorded either in prepaid and other current assets or in accrued and other liabilities in the consolidated balance sheets.

3D SYSTEMS CORPORATION
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

We and our subsidiaries conduct business in various countries using both their functional currencies and other currencies to effect cross-border transactions. As a result, we and our subsidiaries are subject to the risk that fluctuations in foreign currency exchange rates between the dates that non-functional currency transactions are entered into and their respective settlement dates will result in a foreign currency exchange gain or loss. When practicable, we endeavor to match assets and liabilities in the same currency on our U.S. balance sheet and those of our subsidiaries in order to reduce these risks. If appropriate, we enter into foreign currency exchange contracts to hedge the exposure arising from foreign currency transactions. See Note 15.

For our hedges of foreign currency exchange rates and commodity prices, we have elected to not prepare and maintain the documentation to qualify for hedge accounting treatment under ASC 815, “*Derivatives and Hedging*.” Accordingly, changes in fair value are recognized in interest and other income (expense), net in the consolidated statements of operations and, depending on the fair value at the end of the reporting period, derivatives are recorded either in prepaid expenses and other current assets or in accrued and other liabilities in the consolidated balance sheets.

We are exposed to credit risk if the counterparties to our derivative transactions are unable to perform their obligations. However, we seek to minimize such risk by entering into transactions with counterparties that are believed to be creditworthy financial institutions.

Research and Development Costs

Research and development costs, consisting primarily of employee compensation, operating supplies, facility costs and depreciation, are expensed as incurred. When the Company is reimbursed by a collaboration partner for work the Company performs, it records the costs incurred as research and development expense and the related reimbursement as a reduction to research and development expense in its consolidated statements of operations.

Earnings (Loss) Per Share

Basic earnings (loss) per share is calculated using the weighted-average number of common shares outstanding during each period. Diluted earnings per share is calculated based upon the inclusion of additional dilutive and potentially dilutive shares, which include shares issuable upon exercise of outstanding stock options, upon vesting of employee restricted stock-based awards, upon the accrual of incentive compensation to be paid in shares (if any performance-based conditions have been satisfied as of the end of the reporting period), and to settle the portion of the convertible notes that may be settled in shares (where the conversion of such instruments would be dilutive). See Note 19.

Advertising Costs

Advertising costs are expensed as incurred and recorded in selling, general and administrative expenses. Advertising costs, including trade shows, were \$7,255, \$5,486 and \$7,561 for the years ended December 31, 2022, 2021 and 2020, respectively.

Pension Costs

We sponsor a retirement benefit for one of our non-U.S. subsidiaries in the form of a defined benefit pension plan. Accounting standards require the cost of providing this pension benefit be measured on an actuarial basis. Actuarial gains and losses resulting from both normal year-to-year changes in valuation assumptions and differences from actual experience are deferred and amortized. The application of these accounting standards require us to make assumptions and judgements that can significantly affect these measurements. Our critical assumptions in performing these actuarial valuations include the selection of the discount rate to determine the present value of the pension obligations that affects the amount of pension expense recorded in any given period. Changes in the discount rate could have a material effect on our reported pension obligations and related pension expense. See Note 12.

Equity Compensation Plans

We recognize compensation expense for our stock-based compensation programs, which include stock options, restricted stock, restricted stock units (“RSU”), performance shares and market-based awards. The fair value for service-based awards is estimated at the grant date and recognized as expense ratably over the requisite service period of the award.

3D SYSTEMS CORPORATION
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

The fair value of performance-based awards is estimated on the grant date and expensed over an implicit or explicit service period when the performance condition is deemed probable of achievement. Performance-based awards that cliff vest are expensed ratably using the straight-line method; whereas, performance-based awards with graded vesting features are expensed using the graded vesting method. Stock compensation expense recorded for performance-based awards is reversed if the performance condition is no longer deemed probable of achievement or ultimately is not met. Some RSUs are granted with a performance measure derived from non-GAAP-based management targets or non-financial targets. Depending on our performance with respect to these metrics, the number of RSUs earned may be less than, equal to or greater than the original number of RSUs awarded, subject to a payout range.

The fair value of awards with market conditions ("market-based awards") is determined using a Monte Carlo valuation model and is expensed over an implicit or explicit service period regardless of whether the market condition is probable of achievement or not. Market-based awards that cliff vest are expensed ratably using the straight-line method; whereas, market-based awards with graded vesting features are expensed using the graded vesting method. Stock compensation expense is not reversed if the market condition is not met.

For all share-based payment awards, we recognize forfeitures when they occur.

Income Taxes

We and the majority of our domestic subsidiaries file a consolidated U.S. federal income tax return, while three of our domestic entities file separate U.S. federal income tax returns. Our non-U.S. subsidiaries file income tax returns in their respective jurisdictions.

Income taxes are accounted for under the asset and liability method. Deferred income tax assets and liabilities are recognized for the future tax consequences attributable to differences between the financial statement carrying amounts of existing assets and liabilities and their respective tax bases and for tax benefit carryforwards. Deferred income tax liabilities and assets at the end of each period are determined using enacted tax rates.

We establish a valuation allowance for those jurisdictions in which the expiration date of tax benefit carryforwards or projected taxable earnings leads us to conclude that it is "more likely than not" that a deferred tax asset will not be realized. The evaluation process includes the consideration of all available evidence regarding historical results and future projections, including the estimated timing of reversals of existing taxable temporary differences and potential tax planning strategies. Once a valuation allowance is established, it is maintained until a change in factual circumstances gives rise to sufficient income of the appropriate character and timing that will allow a partial or full utilization of the deferred tax asset.

In accordance with ASC 740, "Income Taxes," the impact of an uncertain tax position on our income tax returns is recognized at the largest amount that is more likely than not to be required to be recognized upon audit by the relevant taxing authority.

We include interest and penalties accrued in the consolidated financial statements as a component of income tax expense. These amounts were immaterial for 2022, 2021 and 2020.

See Note 22 for further discussion.

Operating and Finance Leases

We determine if an arrangement contains a lease at inception. We record both operating leases and finance leases on our balance sheet and do not separate non-lease components from our real estate leases. We exclude leases with a term of one year or less from our balance sheet.

Some leases include the options to purchase the leased asset, terminate the lease or extend the lease for one or more years. These options are considered in the determination of the estimated lease term when it is reasonably certain an option will be exercised. Our leases do not contain any material residual value guarantees or material restrictive covenants.

Most of our leases do not provide an implicit rate, therefore we use our incremental borrowing rate based on the information available at the commencement date to determine the present value of the future lease payments.

3D SYSTEMS CORPORATION
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

Certain of our leases include variable costs. Variable costs include non-lease components that are incurred based upon actual terms, rather than contractually fixed amounts. In addition, variable costs are incurred for lease payments that are indexed to a change in rate or index. Because the right-of-use ("ROU") assets recorded on the balance sheet are determined based upon factors considered at the commencement date, subsequent changes in the rate or index that were not contemplated in the ROU asset balances at commencement result in variable expenses being recorded when these expenses are incurred during the lease term. See Note 7.

Recent Accounting Pronouncements

Recently Adopted Accounting Standards

In October 2021, the Financial Accounting Standard Board ("FASB") issued Accounting Standard Update ("ASU") 2021-08, "*Business Combinations (Topic 805) - Accounting for Contract Assets and Contract Liabilities from Contracts with Customers*", which amends ASC 805 to add contract assets and contract liabilities to the list of exceptions to the recognition and measurement principles that apply to business combinations and to "require that an entity (acquirer) recognize and measure contract assets and contract liabilities acquired in a business combination in accordance with ASC 606." While primarily related to contract assets and contract liabilities that were accounted for by the acquiree in accordance with ASC 606, "the amendments also apply to contract assets and contract liabilities from other contracts to which the provisions of ASC 606 apply, such as contract liabilities from the sale of nonfinancial assets within the scope of Subtopic 610-20." For public business entities, the amendments in this ASU are effective for fiscal years beginning after December 15, 2022, including interim periods within those fiscal years. Early adoption of the amendments is permitted. The Company early adopted this standard in the first quarter of 2022, and it did not have an impact on its results of operations, cash flows or financial position.

In August 2020, the FASB issued ASU 2020-06, "*Debt - Debt with Conversion and Other Options (Subtopic 470-20)*," and "*Derivatives and Hedging - Contracts in Entity's Own Equity (Subtopic 815-40)*," which simplifies the accounting for convertible instruments by reducing the number of accounting models available for convertible instruments. This guidance also eliminates the treasury stock method to calculate diluted earnings per share for convertible instruments and requires the use of the if-converted method. For public companies, this guidance is effective for fiscal years beginning after December 15, 2021 and interim periods within those fiscal years. Early adoption is permitted. The Company early adopted the standard as of January 1, 2021 and applied this guidance to the convertible senior notes issued in November 2021. See Note 14.

In December 2019, the FASB issued ASU 2019-12, "*Income Taxes (Topic 740) - Simplifying the Accounting for Income Taxes*," which simplifies the accounting for income taxes by eliminating some exceptions to the general approach in ASC 740, "*Income Taxes*." It also clarifies certain aspects of the existing guidance to promote more consistent application. This standard is effective for calendar-year public business entities in 2021 and interim periods within that year, and early adoption is permitted. The Company adopted this guidance during the first quarter of 2021. The implementation did not have a material effect on our financial position, results of operations or cash flows.

In November 2018, the FASB issued ASU 2018-18, "*Collaborative Arrangements (ASC 808), Clarifying the Interaction between ASC 808 and ASC 606*" ("ASU 2018-18"). This ASU clarified when transactions between collaborative participants are in the scope of ASC 606. The ASU also provides some guidance on presentation of transactions not in the scope of ASC 606. After adoption during the fourth quarter of 2020, the Company determined it was appropriate to recast the presentation of our previously reported statement of operations for the year ended December 31, 2019. The Company acknowledges this standard should have been adopted as of January 1, 2020. The adoption of this standard did not change the Company's previously reported net loss or loss from operations for the year ended December 31, 2019 or any individual quarter therein, and the effect on the individual quarters in 2020 was immaterial.

In January 2017, the FASB issued ASU No. 2017-04, "*Intangibles - Goodwill and Other (Topic 350), Simplifying the Test for Goodwill Impairment*" ("ASU 2017-04"), which eliminates the performance of Step 2 from the goodwill impairment test. In performing its annual or interim impairment testing, an entity will instead compare the fair value of the reporting unit with its carrying amount and recognize any impairment charge for the amount by which the carrying amount exceeds the reporting unit's fair value. Additionally, an entity should consider income tax effects from any tax-deductible goodwill on the carrying amount of the reporting unit when measuring the goodwill impairment loss. The Company adopted this guidance during the first quarter of 2020. The implementation did not have a material effect on our financial position, results of operations or cash flows.

In June 2016, the FASB issued ASU 2016-13, "*Measurement of Credit Losses on Financial Instruments*" ("ASU 2016-13"), as revised in July 2018, which provides guidance regarding the measurement of credit losses for financial assets and certain other instruments that are not accounted for at fair value through net income, including trade and other receivables, debt securities,

3D SYSTEMS CORPORATION
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net investment in sales type and direct financing leases, and off-balance sheet credit exposures. The new guidance requires companies to replace the current incurred loss impairment methodology with a methodology that measures all expected credit losses for financial assets based on historical experience, current conditions, and reasonable and supportable forecasts. The Company adopted this guidance during the first quarter of 2020. The implementation did not have a material effect on our financial position, results of operations or cash flows.

No other new accounting pronouncements, issued or effective during 2022, have had or are expected to have a significant impact on our consolidated financial statements.

(3) Acquisitions/Investments

dp polar

On October 4, 2022, we completed the acquisition of 100% of dp polar GmbH ("dp polar"), a German-based designer and manufacturer of the industry's first additive manufacturing system designed for true high-speed mass production of customized components, for \$26,695 (excluding customary post-closing adjustments), of which \$19,604 was paid in cash, and the remaining \$7,091 was paid via the issuance of the Company's common stock. An additional payment of \$2,229, to be settled via the issuance of 249,865 shares of the Company's common stock, is possible upon the continued employment of a certain key individual from dp polar through October 4, 2024. Upon assessment, management concluded that this potential obligation for the payment of an additional 249,865 in shares of common stock should be accounted for as compensation expense recognized over the required service period of the individual to whom the amount will potentially be paid and, accordingly, the related \$2,229 has been excluded from purchase consideration attributable to the acquisition.

The Company acquired dp polar for access to dp polar's patented continuous printing process. This business and its technology are expected to contribute to the operations of the Company's Healthcare Solutions and Industrial Solutions segments. Central to dp polar's patented continuous printing process is a large-scale, segmented, rotating print platform that eliminates the start/stop operations of virtually all additive manufacturing platforms. With dp polar's technology and patented polar coordinate control, the print heads remain stationary above the rotating platform, providing a continuous print process. The revenue generated from the acquisition date through December 31, 2022 was immaterial and the acquisition's near-term impact on the Company's results of operations and cash flows is expected to be dilutive. In addition, the Company incurred \$165 of acquisition-related expenses that are reported in selling, general and administrative expenses in the consolidated statements of operations.

We accounted for the acquisition of dp polar using the acquisition method, as prescribed by ASC 805, "Business Combinations" ("ASC 805"). In accordance with valuation methodologies described in ASC 820, "Fair Value Measurement" ("ASC 820"), the acquired assets and assumed liabilities were recorded at their estimated fair values as of the date of the dp polar acquisition.

Shown below is the preliminary purchase price allocation, which summarizes the fair values of the assets acquired and liabilities assumed at the date of acquisition:

<i>(in thousands)</i>	
Current assets, including cash acquired of \$243	\$ 302
Intangible assets:	
In-process research and development	\$ 5,014
Trade name	3,930
Total intangible assets	8,944
Goodwill	15,350
Other assets	2,376
Liabilities:	
Accounts payable and accrued liabilities	\$ 277
Total liabilities	277
Net assets acquired	<u>\$ 26,695</u>

The goodwill recognized is attributable to synergies which are expected to enhance and expand the Company's overall product portfolio and opportunities in new and existing markets, future products that have yet to be determined and dp polar's

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assembled workforce. This goodwill is not expected to be deductible for tax purposes.

As of December 31, 2022, the purchase price allocation for dp polar is preliminary. The Company continues to review the final closing balance sheet of dp polar and may further adjust the acquisition-date fair values of acquired assets and assumed liabilities based on this review. The Company also continues to review dp polar's pre-acquisition tax returns to determine the final tax positions, including net operating losses and any required valuation allowance. The final purchase price allocations will be completed when the Company has finished its valuation activities and the review of dp polar's closing balance sheet and the pre-acquisition tax returns. These final allocations could differ materially from the current preliminary allocations. The final allocations may include (1) changes in the preliminary allocations to acquired intangible assets and goodwill and (2) changes in the preliminary allocations to other assets and liabilities, including but not limited to tax assets and liabilities, inclusive of deferred taxes. The estimated useful lives of acquired intangible assets are also preliminary.

Kumovis

On April 1, 2022, we completed the acquisition of 93.75% of Kumovis GmbH ("Kumovis") for an all-cash purchase price of \$37,726, plus an estimated RNCI of \$1,559. \$3,628 of the cash payment is deferred for up to fifteen months from the closing date. Kumovis, which is part of the Healthcare Solutions segment and reporting unit, utilizes polyether ether keton or "PEEK" materials, which has properties that lend it to many medical applications that fit into our personalized healthcare solutions operations, including many implant applications. The revenue generated from the acquisition date through December 31, 2022 was immaterial and the acquisition's near-term impact on the Company's results of operations and cash flows is expected to be dilutive. In addition, the Company incurred \$126 of acquisition-related expenses that are reported in selling, general and administrative expenses in the consolidated statements of operations.

In conjunction with the Kumovis acquisition, the Company and the non-controlling shareholders entered into a put/call option agreement, whereby, at a later date, the Company has the option to purchase from the non-controlling shareholders, and the non-controlling shareholders have the option to sell to the Company, the remaining 6.25% ownership interest in Kumovis for an exercise price calculated based on the achievement of pre-determined revenue and gross profit targets. Fifty percent of the Kumovis common shares related to the put/call can be exercised upon the achievement of an initial revenue and gross profit target, while the remaining 50% can be exercised upon the achievement of a second revenue and gross profit target. If one or both sets of targets have not been met within 5.75 years from the acquisition date, there is a floor strike price that must be exercised. Up to 50% of the exercise price can be paid in Company common stock at the election of 3D Systems. This arrangement results in the recognition of RNCI, for which an estimated fair value of \$1,559 was recorded as of the acquisition date.

We accounted for the acquisition of Kumovis using the acquisition method, as prescribed by ASC 805. In accordance with valuation methodologies described in ASC 820, the acquired assets and assumed liabilities were recorded at their estimated fair values as of the date of the Kumovis acquisition. The table below reflects the fair value of both the consideration transferred and the RNCI.

<i>(in thousands)</i>	
Cash paid at acquisition	\$ 34,098
Deferred cash consideration	3,628
Estimated fair value of RNCI	1,559
Total fair value of consideration transferred	<u>\$ 39,285</u>

Shown below is the current preliminary purchase price allocation, which summarizes the fair values of the assets acquired and liabilities assumed at the date of acquisition:

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<i>(in thousands)</i>	
Current assets, including cash acquired of \$125	\$ 1,407
Intangible assets:	
Product technology	\$ 20,770
Trade name	5,802
Total intangible assets	26,572
Goodwill	17,469
Other assets	705
Liabilities:	
Accounts payable and accrued liabilities	\$ 332
Deferred revenue	70
Deferred tax liability	6,466
Total liabilities	6,868
Net assets acquired	<u>\$ 39,285</u>

The goodwill recognized is attributable to synergies which are expected to enhance and expand the Company's overall product portfolio and opportunities in new and existing markets, future products that have yet to be determined and Kumovis's assembled workforce. This goodwill is not expected to be deductible for tax purposes.

The Company continues to review the final closing balance sheet of Kumovis and may further adjust the acquisition-date fair values of acquired assets and assumed liabilities based on this review. The Company also continues to review Kumovis's pre-acquisition tax returns to determine the final tax positions, including net operating losses and any required valuation allowance. The final purchase price allocations will be completed when the Company has finished its valuation activities and the review of Kumovis's closing balance sheet and the pre-acquisition tax returns. The final allocations could differ materially from the current preliminary allocations. The final allocations may include (1) changes in allocations to acquired intangible assets and goodwill, (2) changes to other assets and liabilities, including but not limited to tax assets and liabilities, inclusive of deferred taxes, and (3) changes to the initial acquisition-date RNCI balance. The estimated useful lives of acquired intangible assets are also preliminary.

Titan

On April 1, 2022, we completed the acquisition of 100% of Titan Additive LLC ("Titan") for an all-cash purchase price of \$39,040. Titan, which is part of the Industrial Solutions segment and reporting unit, is a pellet-based extrusion platform that addresses customer applications requiring large build volumes, superior performance, and improved productivity at significantly lower cost. We believe the acquisition of Titan will open up new markets in the Industrial Solutions segment. The revenue generated from the acquisition date through December 31, 2022 was immaterial and the acquisition's near-term impact on the Company's results of operations and cash flows is expected to be dilutive. In addition, the Company incurred \$612 of acquisition-related expenses that are reported in Selling, general and administrative expenses in the consolidated statements of operations.

We accounted for the acquisition of Titan using the acquisition method, as prescribed by ASC 805. In accordance with valuation methodologies described in ASC 820, the acquired assets and assumed liabilities were recorded at their estimated fair values as of the date of the Titan acquisition.

Shown below is the current preliminary purchase price allocation, which summarizes the fair values of the assets acquired and liabilities assumed at the date of acquisition:

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<i>(in thousands)</i>	
Current assets	\$ 661
Intangible assets:	
Product technology	\$ 15,940
Trade name	5,580
Total intangible assets	21,520
Goodwill	17,430
Other assets	68
Liabilities:	
Accounts payable and accrued liabilities	\$ 229
Deferred revenue	410
Total liabilities	639
Net assets acquired	<u>\$ 39,040</u>

The goodwill recognized is attributable to synergies which are expected to enhance and expand the Company's overall product portfolio and opportunities in new and existing markets, future products that have yet to be determined and Titan's assembled workforce. This goodwill is expected to be deductible for tax purposes.

The Company continues to review the final closing balance sheet of Titan and may further adjust the acquisition-date fair values of acquired assets and assumed liabilities based on this review. The Company also continues to review Titan's pre-acquisition tax returns in order to determine the final tax positions, including net operating losses and any required valuation allowance. The final purchase price allocations will be completed when the Company has finished its valuation activities and the review of Titan's closing balance sheet and the pre-acquisition tax returns. The final allocations could differ materially from the current preliminary allocations. The final allocations may include (1) changes in allocations to acquired intangible assets and goodwill and (2) changes to other assets and liabilities, including but not limited to tax assets and liabilities, inclusive of deferred taxes. The estimated useful lives of acquired intangible assets are also preliminary.

Dussur

In March 2022, we and the Saudi Arabian Industrial Investments Company ("Dussur") signed an agreement to form a joint venture intended to expand the use of additive manufacturing within the Kingdom of Saudi Arabia and surrounding geographies, including the Middle East and North Africa. The joint venture is to enable the development of Saudi Arabia's domestic additive manufacturing production capabilities, consistent with the Kingdom's 'Vision 2030,' which is focused on diversification of the economy and long-term sustainability. Once the joint venture is formed, 3D Systems will own approximately 49% and is committed to an initial investment of about \$6,500, of which \$3,435 has been deposited in an escrow account and is reported as restricted cash within other assets on the balance sheet as of December 31, 2022. Use of the amount deposited in escrow is limited to funding the Company's initial investment in the joint venture, and such amount is expected to be deposited into a bank account of the joint venture for use in its operations or to pay outstanding liabilities upon legal formation. Additional future investments are contingent upon achievement of certain milestones by the joint venture. The impact on the Company's financial position, results of operations and cash flows is not expected to be material other than the cash outflow(s) related to the initial and contingent investments.

Enhatch

In March 2022, we made a \$10,000 investment in convertible preferred shares for an approximate 26.6% ownership interest in Enhatch Inc. ("Enhatch"), the developer of the Intelligent Surgery Ecosystem. We simultaneously entered into a supply agreement with Enhatch. We also obtained warrants to purchase additional shares of Enhatch, as well as the right to purchase in the future ("call option") the remaining shares of Enhatch that 3D Systems does not own if certain revenue targets are achieved. The investment, including the embedded call option and the warrants, are recorded in other assets on the consolidated balance sheet.

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Enhatch's Intelligent Surgery Ecosystem provides technologies which streamline and scale the design and delivery of patient-specific medical devices by automating the process. Incorporating these capabilities into 3D Systems' workflow for patient-specific solutions, which includes advanced software, expert treatment planning services, custom implants and instrumentation design, and industry-leading production processes, will help more efficiently meet the growing demand for personalized medical devices.

As of the investment date, a fair value was determined for each element of the Enhatch transaction, including the convertible preferred shares, inclusive of the embedded call option, and the warrants, for which the total fair value was \$10,000. As of the investment date, the fair values of the convertible preferred shares, inclusive of the embedded call option, and warrants were \$9,670 and \$330, respectively. The convertible preferred shares and call option were recorded at their initial fair value and are subsequently evaluated for impairment or the existence of an orderly and observable transaction indicating that a change in carrying value is appropriate, for which any adjustment will be recorded through the statement of operations. The warrants are marked to market on a quarterly basis, with the changes in fair value recorded through the statement of operations.

During the third quarter of 2022, the Company recorded an impairment charge of \$2,770 related to the carrying value of the convertible preferred stock, inclusive of the embedded call option, held in Enhatch. This impairment charge was the result of lower than projected revenues recognized by Enhatch during the third quarter of 2022, as well as a reduction to near-term forecasted revenues due to a delay in receiving certain regulatory approvals. In addition, the carrying value of the Enhatch warrants, which are required to be recorded at their fair value as of the end of each quarter, has been reduced from their initial fair value of \$330 to \$200 during the year ended December 31, 2022. The Company has recorded the impairment charge related to its Enhatch investment, as well as the change in the fair value of the Enhatch warrants, within interest and other income (expense), net on the statement of operations for the year ended December 31, 2022.

See Note 21 for additional information related to Enhatch.

Volumetric

On December 1, 2021, we acquired Volumetric Biotechnologies, Inc. ("Volumetric") for \$40,173, of which \$24,814 was paid in cash, and the remainder was paid via the issuance of 720 shares of the Company's common stock having a fair value on the date of issuance of \$15,359. We also incurred approximately \$1,306 of acquisition-related expenses during the year ended December 31, 2021, which are reported in selling, general and administrative expenses in the consolidated statements of operations. Additional payments of up to \$355,000 are possible upon (1) the attainment of seven non-financial milestones, each of which requires achievement prior to either December 31, 2030 or December 31, 2035, and (2) the continued employment of certain key individuals from Volumetric. Any additional payments made will be paid approximately half in cash and half in shares of the Company's common stock. The additional payments are considered compensation expense, which will be recorded ratably from the time a milestone is deemed probable of achievement through the estimated time of achievement. Any compensation expense recorded will be reversed if the milestone is no longer deemed probable of achievement. As of December 31, 2022 and 2021, one of the seven milestones was considered probable of achievement, resulting in the recognition of \$15,918 and \$1,326 of expense during the years ended December 31, 2022 and 2021, respectively. The impact of potential share issuances related to the achievement of milestones is not included in dilutive shares for purposes of calculating diluted earnings per share until the milestone is met.

Volumetric's mission is to develop the ability to manufacture human organs using bioprinting methods and the underlying technologies required to create these highly complex biological structures. With this acquisition, 3D Systems seeks to expand our capabilities and capacity in 3D printing related to bio-printing and regenerative medicine. Combining 3D Systems' regenerative medicine group with Volumetric's highly complementary skill sets of biological expertise and cellular engineering is expected to accelerate our core regenerative medicine strategies which include the bio-printing of human organs, additional non-organ applications and bio-printing technologies for research labs.

We accounted for the acquisition of Volumetric using the acquisition method, as prescribed by ASC 805. In accordance with valuation methodologies described in ASC 820, the acquired assets and assumed liabilities were recorded at their estimated fair values as of the date of acquisition.

Shown below is the final purchase price allocation, which summarizes the fair values of the acquired assets and liabilities assumed at the date of acquisition:

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<i>(in thousands)</i>	
Current assets, including cash acquired of \$389	\$ 3,143
Intangible assets:	
Product technology	\$ 1,100
Distributor relationship	400
Total intangible assets	1,500
Goodwill	37,492
Other assets	1,194
Liabilities:	
Accounts payable and accrued liabilities	\$ 3,156
Total liabilities	3,156
Net assets acquired	<u>\$ 40,173</u>

During the year ended December 31, 2022, the Company updated its preliminary valuation of the fair value of acquired assets and assumed liabilities. As a result of the incremental valuation procedures performed during the current year, the preliminary acquisition-date fair value assigned to the acquired intangible assets increased by \$861. This increase in fair value was offset by a corresponding decrease in the acquisition-date fair value of goodwill and resulted in an immaterial cumulative catch-up adjustment to amortization expense.

The goodwill recognized is attributable to synergies which are expected to enhance and expand the Company's overall product portfolio and opportunities in new and existing markets, future products that have yet to be determined and Volumetric's assembled workforce. Goodwill is not expected to be deductible for tax purposes.

Volumetric is part of the Healthcare Solutions reporting unit and segment. The acquisition's impact on the Company's results of operations and cash flows has been dilutive.

Oqton

On November 1, 2021, we acquired Oqton, Inc. ("Oqton") for \$187,775, of which \$107,078 was paid in cash, and the remainder was paid via the issuance of 2,553 shares of the Company's common stock having a fair value at the date of issuance of \$80,697. We also incurred approximately \$1,780 of acquisition related expenses during the year ended December 31, 2021, which are reported in selling, general and administrative expenses in the consolidated statements of operations.

Oqton is a software company that creates an intelligent, cloud-based Manufacturing Operating System ("MOS") platform tailored for flexible production environments that increasingly utilize a range of advanced manufacturing and automation technologies, including additive manufacturing solutions, in their production workflows. The cloud-based solution leverages the Industrial Internet of Things, artificial intelligence, and machine learning technologies to deliver a solution for customers to automate their digital manufacturing workflows, scale their operations and enhance their competitive position. The Oqton acquisition will allow the Company to expand its existing additive manufacturing software suite to the entire additive industry.

We accounted for the acquisition of Oqton using the acquisition method, as prescribed by ASC 805. In accordance with valuation methodologies described in ASC 820, the acquired assets and assumed liabilities were recorded at their estimated fair values as of the date of the Oqton acquisition.

Shown below is the final purchase price allocation, which summarizes the fair values of the assets acquired and liabilities assumed at the date of acquisition:

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<i>(in thousands)</i>	
Current assets, including cash acquired of \$7,603	\$ 8,344
Intangible assets:	
Product technology	\$ 12,600
Trade name	7,300
Total intangible assets	19,900
Goodwill	165,904
Other assets	760
Liabilities:	
Accounts payable and accrued liabilities	\$ 6,643
Deferred revenue	490
Total liabilities	7,133
Net assets acquired	<u>\$ 187,775</u>

During the year ended December 31, 2022, the Company updated its preliminary valuation of the fair value of acquired assets and assumed liabilities. As a result of the incremental valuation procedures performed during the current year, the preliminary acquisition-date fair value assigned to the acquired product technology and trade name increased by \$1,400 and \$500, respectively. These increases in fair value were primarily offset by a corresponding decrease in the acquisition-date fair value of goodwill and resulted in an immaterial cumulative catch-up adjustment to amortization expense.

The goodwill recognized is attributable to synergies which are expected to enhance and expand the Company's overall product portfolio and opportunities in new and existing markets, future products that have yet to be determined and Oqton's assembled workforce. Goodwill is non-deductible for tax purposes.

Oqton's operating results are reported in the Industrial Solutions segment. The acquisition's impact on the Company's results of operations and cash flows has been dilutive.

Other

In May 2021, we purchased Allevi, Inc. ("Allevi") to expand regenerative medicine initiatives into medical and pharmaceutical research and development laboratories. Additionally, in June 2021, we closed the acquisition of a German software firm, Additive Work s GmbH ("Additive"). Additive expands the simulation capabilities for rapid optimization of industrial-scale 3D printing processes. The purchase price for both acquisitions, individually and combined, as well as the impacts to the Company's financial position, results of operations and cash flows, are not material.

Acquisitions of Non-controlling Interests

We own 100% of the capital and voting rights of Robtec, a service bureau and distributor of 3D printing and scanning products in Brazil. Approximately 70% of the capital and voting rights of Robtec were acquired on November 25, 2014. On January 7, 2020, we made a payment equal to the redemption price of \$10,000 and acquired the remaining 30% of the capital and voting rights.

As of December 31, 2018, the Company owned approximately 70% of the capital and voting rights of Easyway, a service bureau and distributor of 3D printing and scanning products in China. The remaining 30% of the capital and voting rights of Easyway were acquired on January 21, 2019 for \$13,500, which has been paid in installments. Of the total installment payments made, \$2,300, \$6,300, and \$2,500 were paid during the years ended December 31, 2022, 2021 and 2020, respectively. As of December 31, 2022, there are no more installments due.

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(4) Divestitures

ODM

In September 2021, we completed the sale of the Company's On Demand Manufacturing business ("ODM") for \$82,000, excluding certain customary closing adjustments. We recorded a gain on the sale of \$38,490 within interest and other income (expense), net on the accompanying consolidated statements of operations for the year ended December 31, 2021. ODM was primarily included within the Industrial Solutions segment. At closing, the Company and the purchaser entered into a supply agreement and a transition services agreement pursuant to which the Company agreed to provide certain information technology, corporate finance, tax, treasury, accounting, human resources and payroll, sales and marketing, operations, facilities and other customary services to support the purchaser in the ongoing operation of ODM for a period of time post-closing. At December 31, 2022 only the supply agreement was active.

Simbionix

On August 24, 2021, we completed the sale of 100% of the issued and outstanding equity interests of Simbionix USA Corporation, which owned our global medical simulation business, for \$305,000, excluding certain closing adjustments and excluding \$6,794 of cash transferred to the purchaser. We recorded a gain on the sale of \$271,404 within interest and other income (expense), net on the accompanying consolidated statement of operations for the year ended December 31, 2021. Additionally, we recognized a gain of \$2,431 upon the reclassification of accumulated foreign currency translation gains previously included in accumulated other comprehensive loss ("AOCL"), which is included within interest and other income (expense), net for the year ended December 31, 2021. Simbionix was included within the Healthcare Solutions segment.

Cimatron

On January 1, 2021, we completed the sale of 100% of the issued and outstanding equity interests of Cimatron Ltd. ("Cimatron"), the subsidiary that operated the Company's Cimatron integrated CAD/CAM software for tooling business and its GibbsCAM CNC programming software business, for approximately \$64,173, after certain adjustments and excluding \$9,476 of cash amounts transferred to the purchaser. We recorded a gain on the sale of \$32,047 within interest and other income (expense), net on the accompanying consolidated statement of operations for the year ended December 31, 2021. Additionally, at the time of the sale, we recognized a gain of \$6,481 upon the reclassification of accumulated foreign currency translation gains previously included in AOCL, which is included within interest and other income (expense), net for the year ended December 31, 2021. Cimatron was included within the Industrial Solutions segment.

Other

In November 2020, we sold our Australia ODM business in an asset sale for \$685. The carrying value of the net assets disposed, including net working capital and allocable goodwill, was \$1,482. In December 2020, we sold our Wuxi Easyway business in an asset sale for \$79. The carrying value of the net assets disposed, including net working capital and allocable goodwill, was \$3,806. Recognized losses of \$4,524 were included within interest and other income (expense), net on the consolidated statement of operations for the year ended December 31, 2020.

(5) Revenue

We account for revenue in accordance with ASC 606.

Performance Obligations

A performance obligation is a promise in a contract to transfer a distinct good or service to the customer, and is the unit of account in ASC 606. A contract's transaction price is allocated to each distinct performance obligation and recognized as revenue when, or as, the performance obligation is satisfied.

At December 31, 2022, we had \$80,639 of outstanding performance obligations, comprised of deferred revenue, customer order backlog and customer deposits. We expect to recognize approximately 89.4% of the \$38,348 of deferred revenue and customer deposits as revenue within the next twelve months, an additional 6.0% by the end of 2024 and the remaining balance thereafter.

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Revenue Recognition

Revenue is recognized when control of the promised products or services is transferred to customers. Revenue is recognized in an amount that reflects the consideration we expect to receive in exchange for those products or services. We enter into contracts that can include various combinations of products and services, which are generally capable of being distinct and, accordingly, are accounted for as separate performance obligations. For such arrangements, we allocate revenue to each performance obligation based upon its relative stand-alone selling price (“SSP”). Revenue is recognized net of allowances for returns and any taxes collected from customers that are subsequently remitted to governmental authorities. The amount of consideration received and revenue recognized may vary based on changes in marketing incentive programs offered to our customers. Our marketing incentive programs take many forms, including volume discounts, trade-in allowances, rebates and other discounts.

A majority of our revenue is recognized at the point in time when products are shipped or services are delivered to customers.

Hardware and Materials

Revenue from hardware and material sales is recognized when control has transferred to the customer, which generally occurs when the goods have been shipped or delivered to the customer, risk of loss has transferred to the customer, and we have a present right to payment. In limited circumstances, when printer or other hardware sales include substantive customer acceptance provisions, revenue is recognized either when customer acceptance has been obtained, customer acceptance provisions have lapsed, or we have objective evidence that the criteria specified in the customer acceptance provisions have been satisfied.

Printers and certain other products include a warranty under which we provide maintenance for periods up to one year. For these initial product warranties, estimated costs are accrued at the time of the sale of the product. These cost estimates are established using historical information regarding the nature, frequency and average cost of claims for each type of printer or other product, as well as assumptions about future activity and events. Revisions to expense accruals are made as necessary based on changes in these historical and future factors.

Software

We also market and sell software tools that enable our customers to capture and customize content using our printers, design optimization and simulation software, and reverse engineering and inspection software. Our software does not require significant modification or customization, and the license provides the customer with a right to use the software as it exists when made available. Revenue from these software licenses is recognized either upon delivery of the product or of a key code which allows the customer to download the software. Customers may purchase post-sale support. Generally, the first year of support is included, but subsequent years are optional. This optional support is considered a separate obligation from the software. Accordingly, revenue is deferred at the time of sale and subsequently recognized ratably over future periods.

Services

We offer training, installation and non-contract maintenance services for our products. Additionally, we offer maintenance contracts customers can purchase at their option. For maintenance contracts, revenue is deferred at the time of sale based on the stand-alone selling prices of these services. Deferred revenue is recognized ratably over the term of the maintenance period on a straight-line basis and costs are expensed as incurred. Revenue from training, installation and non-contract maintenance services is recognized at the time of performance of the service.

We have also recently commenced selling software as a service, whereby the customer has the right to access the software. Revenue is recognized ratably over the related subscription period, as our performance obligation to provide access to the software is progressively fulfilled over the stated term of the contract.

On demand manufacturing and Healthcare Solutions service sales are included within services revenue, and revenue is recognized upon shipment or delivery of the parts or performance of the service, based on the terms of the arrangement. We disposed of the majority of our service revenue businesses including Cimatron, Symbionix, and ODM, which were minimally offset by the purchase of Oqton. See Note 3 and Note 4.

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Collaboration and Licensing Agreements

We enter into collaboration and licensing agreements with third parties. The nature of the activities to be performed and the consideration exchanged under the agreements varies on a contract-by-contract basis. We evaluate these agreements to determine whether they meet the definition of a customer relationship for which revenue is recorded. These contracts may contain multiple performance obligations and may contain fees for licensing, research and development services, contingent milestone payments upon the achievement of developmental contractual criteria and/or royalty fees based on the licensee's product revenue. We determine the revenue to be recognized for these agreements based on an evaluation of the distinct performance obligations, the identification and evaluation of material rights, the estimation of variable consideration and the determination of the pattern of transfer of control for each distinct performance obligation. The Company recognized \$13,497, \$6,804 and \$6,953 in revenue related to collaboration arrangements with customers for the years ended December 31, 2022, 2021 and 2020, respectively.

Terms of Sale

Shipping and handling activities are treated as fulfillment costs rather than as an additional promised service. We accrue the costs of shipping and handling when the related revenue is recognized. Our incurred costs associated with shipping and handling are included in product cost of sales.

Creditworthiness is determined, and credit is extended, based upon an evaluation of each customer's financial condition. New customers are generally required to complete a credit application and provide references and bank information to facilitate an analysis of creditworthiness.

Our terms of sale generally provide payment terms that are customary in the countries where we transact business. To reduce credit risk in connection with certain sales, we may, depending upon the circumstances, require significant deposits or payment in full prior to shipment. For maintenance services, we either bill customers on a time-and-materials basis or sell maintenance contracts that provide for payment in advance on either an annual or other periodic basis.

Significant Judgments

Our contracts with customers often include promises to transfer multiple products and services to a customer. For such arrangements, we allocate revenue to each performance obligation based on its relative SSP.

Judgment is required to determine the SSP for each distinct performance obligation in a contract. For the majority of items, we estimate SSP using historical transaction data. We use a range of amounts to estimate SSP when we sell each of the products and services separately and need to determine whether there is a discount to be allocated based on the relative SSP of the various products and services. In instances where SSP is not directly observable, such as when the product or service is not sold separately, we determine the SSP using information that may include market conditions and other observable inputs.

In some circumstances, we have more than one SSP for individual products and services due to the stratification of those products and services by customers, geographic region or other factors. In these instances, we may use information such as the size of the customer and geographic region in determining the SSP.

The determination of SSP is an ongoing process, and information is reviewed regularly in order to ensure SSP reflects the most current information or trends.

The nature of our marketing incentives may lead to consideration that is variable. Judgment is exercised at contract inception to determine the most likely outcome of the contract and resulting transaction price. Ongoing assessments are performed to determine if updates are needed to the original estimates.

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Contract Balances

The timing of revenue recognition, billings and cash collections results in the recognition of billed accounts receivable and unbilled receivables (contract assets) and customer deposits and deferred revenue (contract liabilities) on our consolidated balance sheets. Timing of revenue recognition may differ from the timing of invoicing to customers. We record accounts receivable when revenue is recognized at the time of invoicing, and unbilled receivables when revenue is recognized prior to invoicing. For most of our contracts, customers are invoiced when products are shipped or when services are performed resulting in billed accounts receivables for the remainder of the owed contract price. Unbilled receivables generally result from items being shipped where the customer has not been charged, but for which revenue has been recognized or when certain performance milestones are deemed probable of achievement. In our on demand manufacturing business, which was sold in September of 2021, customers may be required to pay in full before work begins on their orders, resulting in customer deposits. We typically bill in advance for installation, training and maintenance contracts, as well as for extended warranties, resulting in deferred revenue. Changes in contract asset and liability balances were not materially impacted by any other factors for the year ended December 31, 2022.

During the year ended December 31, 2022, we recognized revenue of \$31,038 related to our contract liabilities at December 31, 2021. During the year ended December 31, 2021, we recognized revenue of \$30,302 related to our contract liabilities at December 31, 2020. During the year ended December 31, 2020, we recognized revenue of \$30,635 related to our contract liabilities at December 31, 2019.

Practical Expedients and Exemptions

We generally expense sales commissions when incurred because the amortization period would be one year or less. These costs are recorded within selling, general and administrative expenses.

Revenue Concentrations

For the years ended December 31, 2022, 2021, and 2020, one customer accounted for approximately 23%, 22% and 13% of our consolidated revenue, respectively. We expect to maintain our relationship with this customer.

Revenue by geographic region for the years ended December 31, 2022, 2021, and 2020 was as follows:

<i>(in thousands)</i>	Year Ended December 31,		
	2022	2021	2020
Americas	\$ 308,516	\$ 344,619	\$ 280,028
EMEA	167,114	201,684	213,575
APAC	62,401	69,336	63,637
Total	<u>\$ 538,031</u>	<u>\$ 615,639</u>	<u>\$ 557,240</u>
United States (included in Americas above)	\$ 304,503	\$ 341,123	\$ 275,145

(6) Segment Information

Effective January 1, 2021, we identified two reportable segments: Healthcare Solutions and Industrial Solutions.

This change in reportable segments was necessitated as a result of changes to our enterprise-wide financial reporting to reflect the re-organization of the business into the Healthcare Solutions and Industrial Solutions verticals that were launched January 1, 2021 at the request of our CODM. These changes resulted in revisions to the financial information provided to the CODM on a recurring basis in his evaluation of the financial performance of the Company and in the decision-making process driving future operating performance. However, the CODM does not review disaggregated asset information on the basis of the Company's segments; therefore, such information is not presented. In addition, our results for the fiscal year ended December 31, 2020 have not been presented on the basis of our revised segmentation as the Company did not report those results internally or externally on the basis of Healthcare versus Industrial. Accordingly, restating our results for the period based upon our revised segmentation was not practicable.

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The following tables set forth our operating results by segment for the years ended December 31, 2022 and 2021:

	Year Ended December 31,					
	2022			2021		
	Healthcare	Industrial	Consolidated	Healthcare	Industrial	Consolidated
<i>(in thousands)</i>						
Revenue	\$ 260,988	\$ 277,043	\$ 538,031	\$ 306,184	\$ 309,455	\$ 615,639
Cost of sales	162,222	161,576	323,798	170,434	181,427	351,861
Gross profit	98,766	115,467	214,233	135,750	128,028	263,778
Less:						
Segment operating expenses	72,954	92,630	165,584	66,392	79,473	145,865
Segment operating income	<u>\$ 25,812</u>	<u>\$ 22,837</u>	48,649	<u>\$ 69,358</u>	<u>\$ 48,555</u>	117,913
General corporate expense, net ^(a)			165,668			150,982
Operating (loss)			<u><u>\$(117,019)</u></u>			<u><u>\$ (33,069)</u></u>

(a) General corporate expense, net includes expenses not specifically attributable to our segments for functions such as corporate human resources, finance, and legal, including salaries, benefits, and other related costs.

For the year ended December 31, 2022, depreciation and amortization expense was \$6,450 for Healthcare Solutions, \$10,472 for Industrial Solutions, and \$19,650 for corporate. For the year ended December 31, 2021, depreciation and amortization expense was \$7,355 for Healthcare Solutions, \$13,713 for Industrial Solutions, and \$13,643 for corporate.

As of December 31, 2022, and 2021, long-lived assets in the United States totaled \$67,334 and \$71,611, respectively, and long-lived assets outside of the United States totaled \$33,484 and \$32,002 respectively.

(7) Leases

We have various lease agreements for our facilities, equipment and vehicles with remaining lease terms ranging from one to fifteen years.

On February 25, 2021, the Company entered into an agreement to amend its lease for its corporate office and extended the term. As part of this agreement, the Company sold land owned adjacent to our corporate office for \$389 and entered into a lease with the buyer of the land for a new building containing approximately 100,000 rentable square feet, to be constructed and funded by the lessor up to a certain amount. The lease terms, as amended, extend through March 31, 2038 for both the existing building and the expansion site. Lease payments for the new building started during December 2022 upon construction becoming substantially complete. The total estimated base rent lease payments as of December 31, 2022 are \$19,142, which are not included in the lease information below as the lease did not commence until February 2023 upon our receipt of the certificate of occupancy and, as a result, the building becoming available for use by the Company.

Additionally, we entered into a lease for a new building in Littleton, CO, which will contain approximately 50,000 rentable square feet, and will be constructed and funded by the lessor up to a certain amount. The lease term is for ten years upon commencement, which is when construction is substantially complete. The total estimated base rent lease payments at December 31, 2022 are \$14,233, which are not included in the lease information below as the lease has not yet commenced.

Components of lease cost (income) for the years ended December 31, 2022, 2021, and 2020 were as follows:

<i>(in thousands)</i>	2022	2021	2020
Operating lease cost	\$ 9,135	\$ 10,226	\$ 13,937
Finance lease cost - amortization expense	621	714	937
Finance lease cost - interest expense	196	238	664
Short-term lease cost	705	76	159
Variable lease cost	764	3,163	1,363
Sublease income	(158)	(569)	(615)
Total	<u><u>\$ 11,263</u></u>	<u><u>\$ 13,848</u></u>	<u><u>\$ 16,445</u></u>

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Balance sheet classifications at December 31, 2022 and 2021 are summarized below:

<i>(in thousands)</i>	2022			2021		
	Right-of-use assets	Current lease liabilities	Long-term lease liabilities	Right-of-use assets	Current lease liabilities	Long-term lease liabilities
Operating leases	\$ 39,502	\$ 8,343	\$ 38,499	\$ 42,502	\$ 7,711	\$ 43,359
Finance leases	3,244	693	3,280	3,854	633	4,061
Total	<u>\$ 42,746</u>	<u>\$ 9,036</u>	<u>\$ 41,779</u>	<u>\$ 46,356</u>	<u>\$ 8,344</u>	<u>\$ 47,420</u>

On September 1, 2020, we closed two facilities in connection with our restructuring plan. These facilities occupied leased office space that terminates in 2024. In conjunction with these closings, we recorded impairment charges totaling \$1,627 related to our ROU assets and impairment charges totaling \$1,953 related to leasehold improvements.

As of December 31, 2022, our future minimum lease payments under operating leases and finance leases with initial or remaining lease terms in excess of one year were as follows:

<i>(in thousands)</i>	Finance Leases		Operating Leases	
Years ending December 31:				
2023	\$	823	\$	10,780
2024		800		9,322
2025		743		7,194
2026		605		5,867
2027		578		5,458
Thereafter		1,012		22,077
Total lease payments (undiscounted)		4,561		60,698
Less: imputed interest		(588)		(13,856)
Present value of lease liabilities	<u>\$</u>	<u>3,973</u>	<u>\$</u>	<u>46,842</u>

Supplemental cash flow information related to our leases for the years ending December 31, 2022, 2021 and 2020 was as follows:

<i>(in thousands)</i>	2022		2021		2020	
Cash paid for amounts included in the measurement of lease liabilities:						
Operating cash outflow for operating leases	\$	10,268	\$	11,108	\$	13,151
Operating cash outflow for finance leases	\$	196	\$	238	\$	661
Financing cash outflow for finance leases	\$	652	\$	721	\$	496

The weighted-average remaining lease term and discount rate for our finance and operating leases as of December 31, 2022 and 2021 were as follows:

	2022		2021	
	Finance	Operating	Finance	Operating
Weighted-average remaining lease term (in years)	6.2	7.7	7.4	8.7
Weighted-average discount rate	4.83%	6.49%	4.63%	5.45%

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(8) Inventories

Components of inventories at December 31, 2022 and 2021 are summarized as follows:

<i>(in thousands)</i>	<u>2022</u>	<u>2021</u>
Raw materials	\$ 59,907	\$ 23,530
Work in process	4,972	5,173
Finished goods and parts	72,953	64,184
Total inventories	<u>\$ 137,832</u>	<u>\$ 92,887</u>

The inventory reserve was \$15,550 and \$16,509 as of December 31, 2022 and 2021, respectively.

In the second quarter of 2022, we notified one of our contract manufacturers of our intent to terminate our manufacturing services arrangement and in-source the assembly and production process. The exit agreement was finalized in July 2022 and resulted in a \$1,670 exit fee that we paid in third quarter of 2022, as well as the purchase of \$23,913 of inventory and \$369 of fixed assets from the assembly manufacturer in the third quarter of 2022. Part of the inventory purchased was prepaid during previous quarters for \$8,892, resulting in a net payment of \$17,060 in July 2022.

In June 2020, as part of our assessment of prospective sales and evaluation of inventory, we determined the end-of-life for certain product lines. The end-of-life determination for these products reflects management's plans to focus our resources that are better aligned with our new strategic focus, as further discussed in Note 25. As a result, for the year ended December 31, 2020, we recorded a charge of \$10,894 to products costs of sales, primarily attributable to inventory, accessories and inventory commitments for these products. We have ceased production for these items. There was no material product line life ended during the years ended December 31, 2022 or 2021.

(9) Property and Equipment

Property and equipment at December 31, 2022 and 2021 are summarized as follows:

<i>(in thousands)</i>	<u>2022</u>	<u>2021</u>	<u>Useful Life (in years)</u>
Building	\$ 94	\$ 84	25-30
Machinery and equipment	130,874	117,446	2-5
Capitalized software	25,952	24,149	3-5
Office furniture and equipment	5,540	5,188	1-5
Leasehold improvements	34,567	32,200	Life of lease ^a
Construction in progress	9,175	12,051	N/A
Total property and equipment	<u>206,202</u>	<u>191,118</u>	
Less: Accumulated depreciation and amortization	<u>(148,130)</u>	<u>(133,861)</u>	
Total property and equipment, net	<u>\$ 58,072</u>	<u>\$ 57,257</u>	

- a. Leasehold improvements are amortized on a straight-line basis over the shorter of (i) their estimated useful life or (ii) the estimated or contractual life of the related lease.

We include all depreciation from assets attributable to the generation of revenue in cost of sales on the statements of operations. Depreciation related to assets that are not attributable to the generation of revenue is included in the research and development and selling, general and administrative expense line items on the statements of operations. Depreciation on property and equipment is calculated on a straight-line basis. Depreciation expense on property and equipment for the years ended December 31, 2022, 2021 and 2020 was \$21,096, \$24,242 and \$28,397, respectively.

For the years ended December 31, 2022, 2021 and 2020, we recognized impairment charges of \$18, \$788 and \$3,406, respectively, on property and equipment, net in the selling, general and administrative expense line item on the statements of operations.

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(10) Intangible Assets

Intangible assets at December 31, 2022 and 2021 are summarized as follows:

<i>(in thousands)</i>	2022			2021			Weighted Average Useful Life Remaining (in years)
	Gross	Accumulated Amortization	Net	Gross	Accumulated Amortization	Net	
Intangible assets with finite lives:							
Customer relationships	\$ 51,137	\$ (48,695)	\$ 2,442	\$ 53,062	\$ (45,613)	\$ 7,449	3.7
Acquired technology	55,480	(10,707)	44,773	17,518	(5,430)	12,088	8.3
Trade names	35,930	(12,455)	23,475	20,448	(10,438)	10,010	9.3
Patent costs	18,673	(10,909)	7,764	21,852	(11,812)	10,040	9.5
Trade secrets	19,828	(19,828)	—	19,924	(18,971)	953	—
Acquired patents	17,499	(15,661)	1,838	16,257	(15,945)	312	12.7
Other	13,255	(8,765)	4,490	12,982	(7,999)	4,983	8.6
Total intangible assets	<u>\$211,802</u>	<u>\$ (127,020)</u>	<u>\$ 84,782</u>	<u>\$162,043</u>	<u>\$ (116,208)</u>	<u>\$ 45,835</u>	8.7

The Company's total intangible assets reported on the balance sheet include an indefinite-life intangible asset related to dp polar IPR&D. The carrying value of the Company's indefinite-lived intangible assets was \$5,448 and \$0 as of December 31, 2022 and 2021, respectively.

Amortization expense related to intangible assets was \$15,480, \$10,469 and \$15,810 for the years ended December 31, 2022, 2021 and 2020, respectively.

Annual amortization expense for intangible assets is estimated to be \$10,528 in 2023, \$10,504 in 2024, \$10,229 in 2025, \$7,324 in 2026 and \$6,843 in 2027.

(11) Goodwill

The following table reflects the changes in the carrying amount of goodwill by reporting unit for the year ended December 31, 2022:

<i>(in thousands)</i>	Year Ended December 31, 2022								
	Healthcare			Industrial			Consolidated		
	Gross Goodwill	Impairments	Net Goodwill	Gross Goodwill	Impairments	Net Goodwill	Gross Goodwill	Impairments	Net Goodwill
Balance at beginning of year	\$121,970	\$(32,055)	\$89,915	\$298,002	\$(42,329)	\$255,673	\$419,972	\$(74,384)	\$345,588
Acquisitions	25,378	—	25,378	23,433	—	23,433	48,811	—	48,811
Foreign currency translation adjustments	(3,917)	—	(3,917)	(5,170)	—	(5,170)	(9,087)	—	(9,087)
Balance at end of year	<u>\$143,431</u>	<u>\$(32,055)</u>	<u>\$111,376</u>	<u>\$316,265</u>	<u>\$(42,329)</u>	<u>\$273,936</u>	<u>\$459,696</u>	<u>\$(74,384)</u>	<u>\$385,312</u>

The effect of foreign currency exchange in the table above reflects the impact on goodwill of amounts recorded in currencies other than the U.S. dollar on the financial statements of foreign subsidiaries and the resulting effect of foreign currency translation between the applicable functional currency and the U.S. dollar.

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Our reporting units are Healthcare Solutions and Industrial Solutions. We completed the required annual goodwill impairment tests as of November 30, 2022 and 2021. The goodwill impairment tests compared the fair value of each reporting unit to its carrying value. We estimated the fair value of our reporting units based primarily on projections of future revenues, expenses, and cash flows discounted to their present value, and a market approach. The valuation methodology and underlying financial information included in the Company's determination of fair value required significant judgment by management. The principal assumptions used in the Company's discounted cash flow analysis consisted of (a) the long-term projections of future financial performance and (b) the weighted-average cost of capital of market participants, adjusted for the risk attributable to the Company and the industry in which it operates. Under the market approach, the principal assumptions included estimates of multiples for various financial metrics of comparable companies. The estimated fair value for each of our reporting units was in excess of their respective carrying values as of November 30, 2022 and 2021.

Goodwill Impairment Prior to Change in Segments

Prior to identifying Healthcare Solutions and Industrial Solutions as the Company's reportable segments, which took effect as of January 1, 2021, the reporting units at which goodwill was tested for impairment were based upon geographic regions. As of September 30, 2020, we experienced a goodwill valuation triggering event due to a drop in our stock price, which was negatively impacted by the business environment as a result of the COVID-19 pandemic. Accordingly, we performed a quantitative analysis for potential impairment of our goodwill and long-lived asset balances. Based on available information and analysis as of September 30, 2020, we determined the carrying value of the EMEA reporting unit exceeded its fair value and recorded a non-cash goodwill impairment charge of \$48,300. We also determined that, as of September 30, 2020, the fair values of the Americas and APAC reporting units exceeded their carrying values, and the carrying values of our long-lived assets were recoverable for all reporting units.

(12) Employee Benefits

We sponsor a Section 401(k) plan (the "Plan") covering substantially all of our eligible U.S. employees. The Plan entitles eligible employees to make contributions to the Plan after meeting certain eligibility requirements. Contributions are limited to the maximum contribution allowances permitted under the Internal Revenue Code. We match 50.0% of contributions on the first 6.0% of the participant's eligible compensation.

For the years ended December 31, 2022, 2021 and 2020, we expensed \$2,254, \$2,039 and \$2,456, respectively, for matching contributions related to the defined contribution plan.

International Retirement Plan

We sponsor a non-contributory defined benefit pension plan for certain employees of a non-U.S. subsidiary. We maintain insurance contracts that provide an annuity that is used to fund the current obligations under this plan. The following table provides a reconciliation of the changes in the projected benefit obligation for the years ended December 31, 2022 and 2021:

<i>(in thousands)</i>	<u>2022</u>	<u>2021</u>
Reconciliation of benefit obligation:		
Obligation as of January 1	\$ 9,074	\$ 10,391
Service cost	103	187
Interest cost	99	130
Actuarial (gain) loss	(3,387)	(234)
Benefit payments	(162)	(627)
Effect of foreign currency exchange rate changes	(512)	(773)
Benefit obligation as of December 31	<u>5,215</u>	<u>9,074</u>
Fair value of assets as of December 31	<u>3,463</u>	<u>3,577</u>
Funded status as of December 31	<u>\$ (1,752)</u>	<u>\$ (5,497)</u>

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We recognized the following amounts in the consolidated balance sheets at December 31, 2022 and 2021:

<i>(in thousands)</i>	2022	2021
Other assets	\$ 3,463	\$ 3,577
Accrued and other liabilities	(165)	(163)
Other liabilities	(5,050)	(8,911)
Net liability	<u>\$ (1,752)</u>	<u>\$ (5,497)</u>

Following are the projected benefit obligation and accumulated benefit obligation at December 31, 2022 and 2021:

<i>(in thousands)</i>	2022	2021
Projected benefit obligation	\$ 5,215	\$ 9,074
Accumulated benefit obligation	\$ 4,984	\$ 8,635

The following table shows the components of net periodic benefit costs and the amounts recognized in accumulated other comprehensive income (loss) for the years ended December 31, 2022, 2021 and 2020:

<i>(in thousands)</i>	2022	2021	2020
Net periodic benefit cost:			
Service cost	\$ 103	\$ 187	\$ 204
Interest cost	99	130	84
Amortization of actuarial loss	45	259	351
Total net periodic pension cost	<u>247</u>	<u>576</u>	<u>639</u>
Other changes in plan assets and benefit obligations recognized in other comprehensive income (loss):			
Net (gain) loss	(3,387)	(234)	(1,223)
Amortization of prior years' unrecognized loss	(45)	(259)	(351)
Total recognized as other comprehensive income (loss), excluding tax	<u>(3,432)</u>	<u>(493)</u>	<u>(1,574)</u>
Total (gain) expense recognized in net periodic benefit cost and other comprehensive income (loss)	<u>\$ (3,185)</u>	<u>\$ 83</u>	<u>\$ (935)</u>

The following assumptions are used to determine the benefit obligations as of December 31, 2022 and 2021:

	2022	2021
Discount rate	4.2%	1.2%
Rate of compensation	3.0%	3.0%

The following benefit payments, including expected future service cost, are expected to be paid:

<i>(in thousands)</i>	
Estimated future benefit payments for the years ending December 31:	
2023	\$ 174
2024	\$ 176
2025	\$ 177
2026	\$ 208
2027	\$ 234
2028 through 2032	\$ 1,578

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(13) Accrued and Other Liabilities

Accrued and other liabilities at December 31, 2022 and 2021 are summarized as follows:

<i>(in thousands)</i>	2022	2021
Compensation and benefits	\$ 19,814	\$ 39,846
Accrued taxes	10,694	19,836
Vendor accruals	6,920	9,045
Legal contingencies	9,948	—
Product warranty liability	3,677	3,585
Accrued professional fees	2,405	2,263
Accrued other	1,488	1,593
Royalties payable	625	826
Total	<u>\$ 55,571</u>	<u>\$ 76,994</u>

Other liabilities at December 31, 2022 and 2021 are summarized as follows:

<i>(in thousands)</i>	2022	2021
Long-term employee indemnity	\$ 4,817	\$ 5,237
Long-term tax liability	5,711	6,099
Defined benefit pension obligation	5,050	8,911
Long-term deferred revenue	4,974	10,244
Earnout liability	17,244	1,327
Legal contingencies	6,096	—
Other long-term liabilities	289	436
Total	<u>\$ 44,181</u>	<u>\$ 32,254</u>

Changes in the product warranty obligation for the years ended December 31, 2022, 2021 and 2020 are summarized below:

<i>(in thousands)</i>	Beginning Balance	Settlements made	Accruals for warranties issued	Ending Balance
Year ended December 31,				
2022	\$ 3,585	\$ (5,961)	\$ 6,053	\$ 3,677
2021	\$ 2,348	\$ (7,547)	\$ 8,784	\$ 3,585
2020	\$ 2,908	\$ (6,826)	\$ 6,266	\$ 2,348

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(14) Borrowings

Convertible Notes

On November 16, 2021, the Company issued \$460,000 in aggregate principal amount of 0% Convertible Senior Notes due November 15, 2026 (the “Notes”), pursuant to an Indenture dated November 16, 2021 (the “Indenture”) between the Company and The Bank of New York Mellon, N.A., as trustee. The net proceeds from the offering of the Notes were \$446,534 after deducting the initial purchasers’ discounts and commissions and offering expenses payable by the Company in the amount of \$13,466, of which \$10,490 is unamortized at December 31, 2022. The annual effective interest rate of the Notes is 0.594% when including purchasers’ discounts and commissions and offering expenses incurred by the Company. The Notes are senior, unsecured obligations of the Company, will not bear regular interest, and the principal amount of the Notes will not accrete. The Notes will mature on November 15, 2026, unless earlier redeemed, repurchased or converted in accordance with their terms. The Notes will be convertible at the option of the holders at any time prior to the close of business on the business day immediately preceding August 15, 2026, only under the following circumstances: (1) during any calendar quarter commencing after the calendar quarter ending on March 31, 2022 (and only during such quarter), if the last reported sale price of the Company’s common stock, par value \$0.001 per share (the “Common Stock”), is equal to or greater than 130% of the conversion price for each of at least 20 trading days (whether or not consecutive) during a period of 30 consecutive trading days ending on, and including, the last trading day of the immediately preceding calendar quarter on each applicable trading day; (2) during the five business day period after any five consecutive trading day period (the “measurement period”) in which the trading price (as defined in the Indenture) per \$1 principal amount of Notes for each trading day of the measurement period was less than 98% of the product of the last reported sale price per share of the Common Stock and the conversion rate on each such trading day; (3) if the Company calls such Notes for redemption at any time prior to the close of business on the second scheduled trading day immediately preceding the redemption date; and (4) upon the occurrence of specified corporate events, including a Fundamental Change (as defined in the Indenture), or distributions of the Common Stock. On or after August 15, 2026, until the close of business on the second scheduled trading day immediately preceding the maturity date, holders may convert all or any portion of their Notes at any time, at the option of the holder, regardless of the foregoing circumstances. Upon conversion, the Company will pay cash up to the aggregate principal amount of the Notes to be converted and pay or deliver, as the case may be, cash, shares of Common Stock, or a combination of cash and shares of Common Stock, at the Company’s election, in respect of the remainder, if any, of the Company’s conversion obligation in excess of the aggregate principal amount of the Notes being converted. The Notes have an initial conversion rate of 27.8364 shares of Common Stock per \$1 principal amount of Notes (which is subject to adjustment in certain circumstances). This is equivalent to an initial conversion price of approximately \$35.92 per share. The conversion rate is subject to customary adjustments under certain circumstances in accordance with the terms of the Indenture. Holders of the Notes have the right to require the Company to repurchase for cash all or a portion of their Notes at 100% of their principal amount, plus any accrued and unpaid special interest, upon the occurrence of a Fundamental Change. The Company is also required to increase the conversion rate for holders who convert their Notes in connection with a Fundamental Change or convert their Notes that are called for redemption, as the case may be, prior to the maturity date. The Company may not redeem the Notes prior to November 20, 2024. The Notes are redeemable, in whole or in part, for cash at the Company’s option at any time, and from time to time, on or after November 20, 2024 and before the 41st scheduled trading day immediately preceding the maturity date, but only if the last reported sale price per share of the Common Stock has been at least 130% of the conversion price then in effect for a specified period of time. The Notes are the Company’s senior unsecured obligations and will rank senior in right of payment to any of the Company’s existing and future indebtedness that is expressly subordinated in right of payment to the Notes; rank equal in right of payment to any of the Company’s future unsecured indebtedness that is not so subordinated; be effectively subordinated in right of payment to any of the Company’s existing and future secured indebtedness to the extent of the value of the collateral securing such indebtedness; and structurally subordinated to all existing and future indebtedness and other liabilities (including trade payables) of current or future subsidiaries of the Company. The Indenture also contains covenants, events of default and other provisions which are customary for offerings of convertible notes. We are in compliance with all covenants. At December 31, 2022, the fair value of the Notes is \$315,592. This is based on the quoted market price where the volume of activity is limited and not active and, thus, this is deemed a Level 2 fair value measurement.

The Company incurred \$2,652 of debt issuance cost accretion for the twelve months ended December 31, 2022 and \$324 for the period between the date of the Notes issuance and December 31, 2021. Debt issuance cost accretion of \$2,683, \$2,698, \$2,714, and \$2,395 is expected to be incurred in 2023, 2024, 2025 and 2026, respectively.

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Credit Facility

We had a 5-year \$100,000 senior secured revolving credit facility (the “Senior Credit Facility”) to support working capital and general corporate purposes. Effective August 24, 2021, we terminated this 5-year \$100,000 Senior Credit Facility. The Senior Credit Facility also included a 5-year \$100,000 senior secured term loan facility (the “Term Facility”) that was fully repaid and terminated in the first quarter of 2021. Concurrent with the repayment of the Term Facility, we terminated the related interest rate swap. See Note 15 for additional information.

(15) Hedging Activities and Financial Instruments

Derivatives Designated as Hedging Instruments

On July 8, 2019, we entered into a \$50,000 interest rate swap contract, designated as a cash flow hedge, to minimize the risk associated with the variability of cash flows related to interest payments from variable-rate debt due to fluctuations in the one-month USD-LIBOR, subject to a 0% floor, through February 26, 2024. Changes in the interest rate swap were expected to offset the changes in cash flows attributable to fluctuations in the one-month USD-LIBOR rate upon which the interest payments associated with our Term Facility were based prior to repayment. On June 30, 2020, we executed an amendment to the swap which reduced the notional amount to \$15,000 and resulted in de-designation as a cash flow hedge. The reduction required a mark-to-market settlement of \$1,253 paid in July 2020. Subsequent to June 2020, changes in the swap’s fair value were recognized in earnings and included in interest and other income (expense), net. The Company terminated this contract in connection with repayment of the Term Facility. See Note 14 for additional information.

During the years ended December 31, 2022, 2021 and 2020, we recognized losses of \$0, \$711, and \$1,513, respectively, on interest rate swap contracts. There were no derivatives designated as hedging instruments on our balance sheets at December 31, 2022 and 2021.

Derivatives Not Designated as Hedging Instruments

We conduct business in various countries using both the functional currencies of those countries and other currencies to effect cross-border transactions. As a result, we are subject to the risk that fluctuations in foreign currency exchange rates between the dates that non-functional currency transactions are entered into and their respective settlement dates will result in a foreign currency exchange gain or loss. When practicable, we endeavor to match assets and liabilities in the same currency on our balance sheet and those of our subsidiaries in order to reduce these risks. When appropriate, we enter into foreign currency exchange contracts to hedge exposures arising from foreign currency transactions. We have elected not to prepare and maintain the documentation required to qualify for hedge accounting treatment under ASC 815, “*Derivatives and Hedging*” and, therefore, all gains and losses (realized or unrealized) on our foreign currency contracts are recognized in interest and other income (expense), net on the consolidated statements of operations. Depending on their fair value at the end of the reporting period, derivatives are recorded either in prepaid expenses and other current assets or in accrued and other liabilities on the consolidated balance sheets.

We had \$0 and \$43,000 in notional foreign currency exchange contracts outstanding as of December 31, 2022 and 2021, respectively. The fair values of these contracts were not material.

During the years ended December 31, 2022, 2021 and 2020, we recognized losses (gain) related to foreign exchange hedging activities of \$2,322, \$335, and \$(608), respectively.

(16) Interest income (expense)

<i>(in thousands)</i>	Year Ended December 31,		
	2022	2021	2020
Interest and other income (expense), net			
Foreign exchange (loss) gain, net	\$ (4,424)	\$ 1,681	\$ (4,762)
Interest income (expense), net	6,541	(1,902)	(3,991)
Other (expense) income, net	(5,907)	352,830	(15,694)
Total interest and other (expense) income, net	\$ (3,790)	\$ 352,609	\$ (24,447)

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Interest income (expense), net includes (1) interest income of \$9,352, \$438, and \$400 for the years ended December 31, 2022, 2021, and 2020, respectively, and (2) interest expense of \$2,811, \$2,340, and \$4,391 for the years ended December 31, 2022, 2021, and 2020, respectively. Other income (expense), net for the year ended December 31, 2021 includes \$350,853 of gains on the sales of ODM, Simbionix and Cimatron. See Note 4 for additional information.

(17) Common Stock and Preferred Stock

Common Stock

The Company is authorized to issue 220,000 shares of common stock. The holders of the common stock are entitled to one vote for each share held at all meetings of stockholders (and written actions in lieu of meetings).

Dividends may be declared and paid on common stock from funds lawfully available as and when determined by the Board of Directors and subject to any preferential dividend rights of any then outstanding preferred stock. Through the year ended December 31, 2022, no dividends had been declared.

Preferred Stock

The Company is authorized to issue 5,000 shares of preferred stock, all of which remained unissued at December 31, 2022 and 2021.

(18) Stock-Based Compensation

The Company maintains the 2015 Incentive Plan. The 2015 Incentive Plan was amended and restated in May 2022 to, among other things, increase the number of shares reserved for issuance by 6,935 shares (as amended and restated, the "2015 Plan"). The total number of shares of common stock reserved and available for distribution under the 2015 Plan and the total number of shares of common stock that can be issued pursuant to stock options is 25,235 shares.

The 2015 Plan authorizes the granting of shares of restricted stock, restricted stock units ("RSUs"), stock appreciation rights, cash incentive awards and options to purchase shares of our common stock. The 2015 Plan also designates measures that may be used for performance awards and market-based awards. The Director Plan authorizes the granting of shares of restricted stock to our non-employee directors.

The vesting period for awards under the stock plans is generally determined by the Board of Directors at the date of the grant, and generally the awards vest one third each year, over 3 years. Stock-based compensation expense is included in selling, general and administrative expenses in the consolidated statements of operations.

The following table shows the stock-based compensation expense recognized during the years ended December 31, 2022, 2021, and 2020:

<i>(in thousands)</i>	<u>2022</u>	<u>2021</u>	<u>2020</u>
Stock-based compensation expense	\$ 42,415	\$ 55,153	\$ 17,725
Tax benefit	\$ —	\$ —	\$ —

Included in the above expenses for the years ended December 31, 2022, 2021, 2020 are \$4,030, \$22,057, and \$0 of expense, respectively, pertaining to annual incentive compensation which is paid in Company shares of common stock. Also, included in the above expenses for the years ended December 31, 2022, 2021, and 2020 are \$7,959, \$683, and \$0, respectively, of expense related to the Volumetric earnout arrangement discussed in Note 3. Finally, the above expenses for the years ended December 31, 2022, 2021 and 2020 include \$268, \$0 and \$0, respectively, of expense related to the dp polar earnout arrangement discussed in Note 3.

Restricted Stock and Restricted Stock Units

A summary of our restricted stock and RSU activity for the year ended December 31, 2022 is as follows:

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<i>(in thousands, except per share amounts)</i>	Number of Shares/Units	Weighted Average Grant Date Fair Value
Outstanding at beginning of year — unvested	3,980	\$ 19.72
Granted	4,422	\$ 15.23
Canceled	(700)	\$ 16.90
Vested	(2,687)	\$ 15.92
Outstanding at end of year — unvested	<u>5,015</u>	<u>\$ 18.19</u>

Included in the above outstanding balance as of December 31, 2022 are 834 shares of restricted stock that vest under specified market conditions and 1,215 shares of restricted stock that vest under specified Company performance measures. Awards with specified market conditions were awarded to certain employees in 2022, 2021, and 2020.

Included in the above granted and vested activity for the year ended December 31, 2022 are 1,286 shares of stock related to the Company's annual incentive plan that were granted under the 2015 Plan in lieu of cash and immediately vested in the first quarter of 2022.

On December 1, 2021, we issued Performance Share Units (PSUs) to employees of Volumetric as part of the acquisition agreement. Vesting of these shares is based on four non-financial milestones that involve various medical achievements. These awards were divided into four tranches, one tranche per milestone, and compensation expense is recognized only when a milestone is probable of achievement. During the year ended December 31, 2022, an additional 213 PSUs with corresponding milestones were issued to employees. As of December 31, 2022 and 2021, one of the four milestones was deemed probable of achievement and, accordingly, the company recognized expense related to these awards of \$1,031 and \$81 for the years ended December 31, 2022 and 2021, respectively.

At December 31, 2022, there was \$46,601 of unrecognized stock-based compensation expense related to all unvested restricted stock and RSUs, which we expect to recognize over a weighted-average period of 1.9 years.

Stock Options

During the year ended December 31, 2016, we awarded certain employees market condition stock options under the 2015 Plan that vest under specified market conditions. Each employee was generally awarded two equal tranches of market condition stock options that immediately vest when our common stock trades at either \$30 or \$40 per share for ninety consecutive calendar days.

We recognize compensation expense related to stock options on a straight-line basis over the derived term of the awards. The fair value of stock options with market conditions is estimated using a binomial lattice Monte Carlo simulation model. Expense for awards with a market condition is not reversed if the market condition is not met.

Stock option activity for the year ended December 31, 2022 was as follows:

<i>(in thousands, except per share amounts)</i>	Year Ended December 31, 2022			
	Number of Shares	Weighted Average Exercise	Weighted Average Remaining Contractual Term (in years)	Aggregate Intrinsic Value
Stock option activity:				
Outstanding at beginning of year	420	\$ 13.26	4.7	\$ 3,479
Granted	—	—	—	—
Exercised	—	—	—	—
Forfeited and expired	—	—	—	—
Outstanding at end of year	<u>420</u>	<u>\$ 13.26</u>	<u>3.7</u>	<u>\$ —</u>

As of December 31, 2022 and 2021, none of the 420 outstanding stock options were exercisable, and there was no unrecognized stock-based compensation expense related to stock options.

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(19) Net Income (Loss) Per Share

Basic net income (loss) per share is calculated by dividing net income (loss) attributable to 3D Systems' common stock shareholders by the weighted average number of common shares outstanding during the applicable period. Diluted net income (loss) per share incorporates the additional shares issuable upon the assumed exercise of stock options, the vesting of restricted stock and restricted stock units, and the assumed conversion of debt, except in such case when (1) the inclusion of such shares or potential shares would be anti-dilutive or (2) when the vesting of restricted stock or restricted stock units is contingent upon one or more performance conditions that have not been met as of the balance sheet date.

<i>(in thousands, except per share amounts)</i>	Year Ended December 31,		
	2022	2021	2020
Numerator for basic and diluted net (loss) income per share:			
Net (loss) income attributable to 3D Systems Corporation	\$ (122,711)	\$ 322,052	\$ (149,594)
Redeemable non-controlling interest redemption value in excess of carrying value	(596)	—	—
Net (loss) income attributable to common stock shareholders	<u>\$ (123,307)</u>	<u>\$ 322,052</u>	<u>\$ (149,594)</u>
Denominator for net (loss) income per share:			
Weighted average shares – basic	127,818	122,867	117,579
Dilutive effect of shares issuable under stock based compensation and other plans ⁽¹⁾	—	3,467	—
Weighted average shares – diluted	<u>127,818</u>	<u>126,334</u>	<u>117,579</u>
Net income (loss) per share – basic	<u>\$ (0.96)</u>	<u>\$ 2.62</u>	<u>\$ (1.27)</u>
Net income (loss) per share – diluted	<u>\$ (0.96)</u>	<u>\$ 2.55</u>	<u>\$ (1.27)</u>

(1) Equity awards for the years ended December 31, 2022 and 2020 are deemed anti-dilutive because we reported a net loss for these periods. The dilutive impact of equity awards for December 31, 2021 is 2,755 shares, for which the calculation requires certain assumptions regarding assumed proceeds that would hypothetically repurchase common shares upon the conversion and exercise of restricted shares and outstanding stock options, respectively, and an estimate of 712 shares for the payment of accrued incentive compensation that was to be settled in shares. The share estimate is based on the accrued incentive compensation balance at the end of 2021 divided by the 2021 average share price.

The following table presents the potentially dilutive shares that were excluded from the computation of diluted earnings (loss) per share attributable to common stockholders because their effect was considered anti-dilutive for the years ended December 31, 2022, 2021 and 2020, respectively.

<i>(in thousands)</i>	Year Ended December 31,		
	2022	2021	2020
Restricted stock and restricted stock units	5,015	1,779	3,540
Stock options	420	—	420
Total	<u>5,435</u>	<u>1,779</u>	<u>3,960</u>

For the year ended December 31, 2022, the table above excludes the following: (1) an estimate of 718 shares contingently issuable upon the achievement of certain milestones in the Volumetric earnout arrangement discussed in Note 3; (2) an estimate of 341 shares for the payment of accrued incentive compensation that is expected to be settled in shares during the first quarter of 2023; and (3) an estimate of 22 shares related to the dp polar earnout arrangement discussed in Note 3 that are contingently issuable. These share estimates are based on the expense recognized through December 31, 2022 divided by the 2022 average share price of \$12 per share.

On November 16, 2021, the Company issued \$460.0 million in aggregate principal amount of 0% Convertible Senior Notes due November 15, 2026, as discussed in Note 14. The Notes' impact to diluted shares will be calculated using the if-converted method as prescribed in ASU 2020-06. The Notes will increase the diluted share count when the average share price over a quarterly or annual reporting period is greater than \$35.92 per share, the conversion price of the Notes. For the years ended December 31, 2022 and 2021, the Notes were anti-dilutive on a stand-alone basis because the average share price during these periods did not exceed the conversion price, and because we had a net loss for the year ended December 31, 2022.

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On August 5, 2020, we entered into an Equity Distribution Agreement for an At-The-Market equity offering program (“ATM Program”) where we may issue and sell, from time to time, shares of our common stock. Our ATM Program allowed for an aggregate gross sales price of up to a total of \$150,000, depending upon market conditions and our liquidity requirements, through Truist Securities, Inc. and HSBC Securities (USA) Inc. For the year ended December 31, 2020, we sold 4,616 shares of our common stock under our ATM Program for net proceeds of \$24,664, net of \$849 in fees, commissions and other costs. As of December 31, 2020, we had \$124,487 in availability remaining under the ATM Program. On January 6, 2021, we terminated the ATM Program.

(20) Redeemable Non-controlling Interest

The following table shows changes in the RNCI related to Kumovis:

	Year Ended December 31,
<i>(in thousands)</i>	2022
Balance at January 1, 2022	\$ —
Fair value at the date of acquisition	1,559
Net loss	(238)
Redemption value in excess of carrying value	596
Translation adjustments	(157)
Balance at December 31, 2022	<u>\$ 1,760</u>

(21) Fair Value Measurements

Fair value is the exchange price to sell an asset or transfer a liability (an exit price) in an orderly transaction between market participants at the measurement date. Fair value measurements use market data or assumptions market participants would use in pricing the asset or liability, including assumptions about risk and the risks inherent in the inputs to the valuation technique. These inputs may be readily observable, corroborated by market data, or generally unobservable. Valuation techniques maximize the use of observable inputs and minimize use of unobservable inputs. The accounting guidance for fair value measurements and disclosures establishes a three-level fair value hierarchy:

- Level 1 - Inputs are based on quoted prices in active markets for identical assets and liabilities.
- Level 2 - Inputs are based on observable inputs other than quoted prices in active markets for identical or similar assets and liabilities.
- Level 3 - One or more inputs are unobservable and significant.

Financial and nonfinancial assets and liabilities are classified in their entirety based on the lowest level of input that is significant to the fair value measurement.

Cash equivalents and short-term investments are valued utilizing the market approach to measure fair value for financial assets and liabilities. The market approach uses prices and other relevant information generated by market transactions involving identical or comparable assets or liabilities. The carrying amounts of our cash and cash equivalents, accounts receivable, accounts payable, and accrued liabilities approximate fair value as of December 31, 2022 and 2021 because of the relatively short duration of these instruments.

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Assets measured at fair value on a recurring basis are summarized below:

<i>(in thousands)</i>	Fair Value Measurement as of December 31, 2022					
	Fair Value Measurement				Balance Sheet Classification	
	Fair Value Level	Cost Basis	Unrealized Gains (Losses)	Fair Value	Cash and Cash Equivalents ^(b)	Short-term Investments and Marketable Securities
Money market funds	Level 1	\$ 232,018	\$ —	\$ 232,018	\$ 232,018	\$ —
Certificates of deposit	Level 2	990	6	996	—	996
Commercial paper	Level 2	1,281	6	1,287	—	1,287
Short-term bond mutual funds	Level 2	100,242	(99)	100,143	—	100,143
Corporate bonds ^(a)	Level 2	78,418	(241)	78,177	—	78,177
Total		<u>\$ 412,949</u>	<u>\$ (328)</u>	<u>\$ 412,621</u>	<u>\$ 232,018</u>	<u>\$ 180,603</u>

(a) Includes \$745 and \$743 of cost basis and fair market value, respectively, with a weighted average maturity of 1.3 years.

As of December 31, 2021, financial instruments measured at fair value on a recurring basis consisted of \$485,521 of money market funds classified as Level 1 within the fair value hierarchy and reported within cash and cash equivalents on the consolidated balance sheet.

We did not have any transfers of assets and liabilities between Level 1, Level 2 and Level 3 of the fair value measurement hierarchy during the years ended December 31, 2022 and 2021.

Enhatch

As discussed in Note 3, the Enhatch warrants are measured at fair value on a recurring basis and are considered Level 3 in the fair value hierarchy. The fair value of these warrants at December 31, 2022 was \$200. This balance is recorded in other non-current assets. The fair value of the warrants was determined via a valuation as of December 31, 2022 using a Monte Carlo simulation which applied a number of assumptions including, but not limited to, financial projections, equity and revenue volatility estimates, risk free rates, comparable company financial metrics, correlations, risk factors and rates of returns.

In addition, as a result of a decline in the estimated enterprise value of Enhatch as of September 30, 2022, as determined in connection with the measurement of the fair value of the Enhatch warrants, the Company recorded a non-recurring impairment charge of \$2,770 as of September 30, 2022, which relates to its investment interest held in Enhatch in the form of preferred stock, inclusive of an embedded call option. The decline in the estimated enterprise value of Enhatch was the result of lower than projected revenues recognized by Enhatch during the third quarter of 2022, as well as a reduction to near-term forecasted revenues due to a delay in receiving certain regulatory approvals. The recognition of lower than projected revenues and the reduction to near-term forecasted revenues directly impacted the estimated fair value of the Company's investment in Enhatch, as Enhatch's enterprise value was estimated using a discounted cash flow model. As the discounted cash flow model applied relied upon significant unobservable inputs related to Enhatch's future performance, capital expenditures, working capital needs, and the required rate of return, the valuation of the Company's investment in Enhatch and the resulting impairment charge are deemed to be based upon Level 3 assumptions and a Level 3 valuation approach within the fair value hierarchy.

(22) Income Taxes

The components of our income before income taxes for the years ended December 31, 2022, 2021 and 2020 are as follows:

<i>(in thousands)</i>	2022	2021	2020
Income (loss) before income taxes:			
Domestic	\$ (110,610)	\$ 308,514	\$ (45,973)
Foreign	(10,199)	11,026	(97,437)
Total	<u>\$ (120,809)</u>	<u>\$ 319,540</u>	<u>\$ (143,410)</u>

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The components of income tax provision for the years ended December 31, 2022, 2021 and 2020 are as follows:

<i>(in thousands)</i>	<u>2022</u>	<u>2021</u>	<u>2020</u>
Current:			
U.S. federal	\$ 119	\$ (8,675)	\$ 1,294
State	(498)	2,097	451
Foreign	5,037	6,861	5,645
Total	<u>4,658</u>	<u>283</u>	<u>7,390</u>
Deferred:			
U.S. federal	—	—	67
State	—	—	—
Foreign	(2,518)	(2,795)	(1,273)
Total	<u>(2,518)</u>	<u>(2,795)</u>	<u>(1,206)</u>
Total income tax (benefit) provision	<u>\$ 2,140</u>	<u>\$ (2,512)</u>	<u>\$ 6,184</u>

The overall effective tax rate differs from the statutory federal tax rate for the years ended December 31, 2022, 2021 and 2020 as follows:

	<u>% of Pretax (Loss) Income</u>		
	<u>2022</u>	<u>2021</u>	<u>2020</u>
Tax provision based on the federal statutory rate	21.0 %	21.0 %	21.0 %
Increase in valuation allowances	(10.7)	(10.4)	(8.5)
Dividends not taxable	—	—	9.5
Net operating loss carryback claim	—	—	6.2
Change in carryforward attributes	(1.9)	(0.7)	(3.2)
Global intangible low-taxed income inclusion	(0.5)	1.2	(0.3)
Non-deductible expenses	(1.6)	1.4	(13.5)
Non-deductible earnout expense	(2.8)	—	—
Foreign income tax rate differential	(0.3)	—	(3.3)
Deemed income related to foreign operations	(0.2)	—	(1.6)
Tax rate change	(1.2)	(0.7)	(0.3)
Employee share-based payments	(1.6)	(1.3)	(1.4)
Other	0.4	—	(0.4)
Deferred and payable adjustments	(1.7)	1.4	(2.6)
Non-deductible penalties	(2.5)	—	—
State taxes, net of federal benefit, before valuation allowance	1.4	1.0	0.5
Return-to-provision adjustments	(0.2)	(0.1)	0.9
Other tax credits	0.8	(0.5)	0.2
Uncertain tax positions and audit settlements	(0.2)	(3.0)	(7.5)
Divestitures	—	(10.1)	—
Effective tax rate	<u>(1.8)%</u>	<u>(0.8)%</u>	<u>(4.3)%</u>

The difference between our effective tax rate for 2022 and the federal statutory rate was 22.8 percentage points. The difference in the effective rate is primarily due to valuation allowance changes and non-deductible expenses, including earnout expense and penalties.

The difference between our effective tax rate for 2021 and the federal statutory rate was 21.8 percentage points. The difference in the effective rate is primarily due to differences in book and stock bases related to the divestitures of Cimatron and Symbionix, valuation allowance changes, and adjustments to uncertain tax positions, provisions for GILTI, and non-deductible expenses.

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The difference between our effective tax rate for 2020 and the federal statutory rate was 25.3 percentage points. The difference in the effective rate is primarily due to valuation allowance changes, nondeductible impairment charges, dividends not taxable, net operating loss carryback claim, and adjustments to uncertain tax positions.

In 2022, 2021 and 2020, there were no significant changes to our valuation allowance assertions. We continue to review results of operations and forecast estimates to determine if it is more likely than not that the deferred tax assets will be realized.

The components of our net deferred income tax assets and net deferred income tax (liabilities) at December 31, 2022 and 2021 are as follows:

<i>(in thousands)</i>	<u>2022</u>	<u>2021</u>
Deferred income tax assets:		
Intangible assets	\$ 8,601	\$ 10,950
Stock options and restricted stock awards	6,091	8,005
Reserves and allowances	6,145	8,692
Net operating loss carryforwards	51,845	38,394
Tax credit carryforwards	19,649	19,967
Accrued liabilities	2,518	2,893
Deferred revenue	5,502	8,141
Lease tax assets	9,589	10,362
Research expenditures capitalization	11,140	—
Other	1,180	—
Valuation allowance	(100,694)	(91,165)
Total deferred income tax assets	21,566	16,239
Deferred income tax liabilities:		
Intangible assets	9,090	2,356
Property and equipment	4,477	2,110
Lease tax liabilities	7,785	8,458
Other	807	434
Total deferred income tax liabilities	22,159	13,358
Net deferred income tax (liabilities) assets	\$ (593)	\$ 2,881

At December 31, 2022, \$51,845 of our deferred income tax assets was attributable to \$367,611 of gross net operating loss carryforwards, which consisted of \$120,659 of loss carryforwards for U.S. federal income tax purposes, \$168,364 of loss carryforwards for U.S. state income tax purposes and \$78,587 of loss carryforwards for foreign income tax purposes. \$11,128 of gross net operating loss carryforwards for U.S. federal income tax purposes are acquisition related and are subject to potential measurement period adjustments under ASC 805.

The net operating loss carryforwards for U.S. federal income tax purposes do not expire. The net operating loss carryforwards for U.S. state income tax purposes begin to expire in 2023. In addition, certain net loss carryforwards for foreign income tax purposes begin to expire in 2024 and certain other loss carryforwards for foreign purposes do not expire.

At December 31, 2022, tax credit carryforwards included in our deferred income tax assets consisted of \$9,090 of research and experimentation credit carryforwards for U.S. federal income tax purposes, \$4,975 of research and experimentation tax credit carryforwards for U.S. state income tax purposes, and \$6,629 of foreign tax credits for U.S. federal income tax purposes. Certain state research and experimentation and other state credits begin to expire in 2023. We have recorded a valuation allowance related to the U.S. federal and state tax credits.

Due to the one time transition tax, our previously unremitted earnings have been subjected to U.S. federal income tax, although, other additional taxes such as, withholding tax, could be applicable. We intend to permanently reinvest our earnings outside the U.S. and as such, have not provided for any additional taxes on approximately \$122,732 of unremitted earnings. We believe the unrecognized deferred tax liability related to these earnings is approximately \$5,761.

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Including interest and penalties, we decreased our unrecognized benefits by \$691 for the year ended December 31, 2022 and increased our unrecognized tax benefits by \$580 for the year ended December 31, 2022. The decrease was primarily related to the release of unrecognized tax benefits due to the receipt of two favorable U.S. private letter rulings and the settlement of an audit in a foreign jurisdiction. We do not anticipate any additional unrecognized tax benefits during the next 12 months that would result in a material change to our consolidated financial position. The total amount of unrecognized tax benefits that, if recognized, would affect the effective tax rate is \$5,710. We include interest and penalties in the consolidated financial statements as a component of income tax expense.

<i>(in thousands)</i>	Unrecognized Tax Benefits*		
	2022	2021	2020
Balance at January 1	\$ (17,261)	\$ (25,902)	\$ (15,467)
Increases related to prior year tax positions	(192)	(467)	(10,426)
Decreases related to prior year tax positions	508	8,886	788
Decreases related to prior year tax positions as a result of lapse of statute	145	371	—
Decreases related to settlement	—	1,043	—
Increases related to current year tax positions	(269)	(553)	(797)
Increases related to acquired tax positions	(119)	(639)	—
Decreases related to acquired tax positions	38	—	—
Balance at December 31	\$ (17,150)	\$ (17,261)	\$ (25,902)

* The unrecognized tax benefit balance includes an insignificant amount of interest and penalties.

Tax years 2013 through 2021 remain subject to examination by the U.S. Internal Revenue Service (“IRS”). State income tax returns are generally subject to examination for a period of three to four years after filing the respective tax returns. The tax years 2017 through 2021 remain open to examination by the various foreign taxing jurisdictions to which the Company is subject.

The following presents the changes in the balance of our deferred income tax asset valuation allowance:

Year Ended	Item	Balance at beginning of year	Additions (reductions) charged to expense	Other	Balance at end of year
2022	Deferred income tax asset valuation allowance	\$ 91,165	\$ 12,848	\$ (3,319)	\$ 100,694
2021	Deferred income tax asset valuation allowance	\$ 123,113	\$ (31,948)	\$ —	\$ 91,165
2020	Deferred income tax asset valuation allowance	\$ 109,643	\$ 13,470	\$ —	\$ 123,113

(23) Commitments and Contingencies

We lease certain of our facilities and equipment under non-cancelable operating and finance leases. See Note 7.

The Company has purchase commitments in excess of a year related to printer assemblies, inventory, and capital expenditures. As of December 31, 2022, purchase commitments totaled \$4,051.

Indemnification

In the normal course of business, we periodically enter into agreements to indemnify customers or suppliers against claims of intellectual property infringement made by third parties arising from the use of our products. Historically, costs related to these indemnification provisions have not been significant, and we are unable to estimate the maximum potential impact of these indemnification provisions on our future results of operations.

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To the extent permitted under Delaware law, we indemnify our directors and officers for certain events or occurrences while the director or officer is, or was, serving at our request in such capacity, subject to limited exceptions. The maximum potential amount of future payments we could be required to make under these indemnification obligations is unlimited; however, we have directors and officers insurance coverage that may enable us to recover future amounts paid, subject to a deductible and the policy limits. There is no assurance that the policy limits will be sufficient to cover all damages, if any.

Litigation

Export Controls and Government Contracts Compliance Matter

In October 2017, we received an administrative subpoena from the Bureau of Industry and Security of the Department of Commerce (“BIS”) requesting the production of records in connection with possible violations of U.S. export control laws, including with regard to our former Quickparts.com, Inc. subsidiary. In addition, while collecting information responsive to the above-referenced subpoena, our internal investigation identified potential violations of the International Traffic in Arms Regulations administered by the Directorate of Defense Trade Controls of the Department of State (“DDTC”) and potential violations of the Export Administration Regulations administered by the BIS. On June 8, 2018 and thereafter, we submitted voluntary disclosures to BIS and DDTC identifying potentially unauthorized exports between 2012 and 2017, including to China, of controlled items including technical data. In connection with these matters, in August 2020, we received two federal grand jury subpoenas issued by the U.S. District Court for the Northern District of Texas. The Company responded to these two subpoenas and will continue to fully cooperate with the U.S. Department of Justice (“DOJ”) in the related investigation.

Over the past several months, the Company engaged in settlement discussions with DDTC, BIS, and DOJ to settle the potential export control violations described above. On February 27, 2023, the Company settled these matters with all three agencies.

As a part of these settlement agreements, the Company agreed to pay \$15,048 in civil monetary penalties to these agencies. The penalties are broken down as follows: The Company will pay DDTC \$10,000 (in three installments over a three-year period), BIS \$2,778, and DOJ \$2,270, with an additional \$10,000 in suspended penalty amounts to be allocated to remedial compliance measures required by DDTC. DDTC and BIS are further imposing remedial compliance measures in their agreements, including a Special Compliance Officer to monitor the company’s export compliance (DDTC only), additional processes, procedures, and training related to export control compliance (DDTC only), and external audit requirements (DDTC and BIS). To the extent any portion of the \$10,000 suspended penalty is not expended on required remedial compliance measures by the end of the three-year term of the settlement agreement, then such shortfall shall be paid by the Company to DDTC. Accordingly, the \$10,000 suspended penalty has not been recognized as a liability as of December 31, 2022 and will be recognized as incurred during the three-year term of the settlement agreement. The agencies are not criminally prosecuting the Company, nor anyone associated with the Company, and the Company is not subject to any administrative debarment. Over the course of our internal investigation, we have made meaningful improvements to our compliance program and will continue to further enhance export compliance going forward.

In cooperation with the government on our export controls investigation, on November 20, 2019, we submitted to the U.S. Treasury Department’s Office of Foreign Assets Control (“OFAC”) an initial notice of voluntary self-disclosure regarding potential violations of economic sanctions related to Iran. As part of our ongoing review of trade compliance risks and our cooperation with the government, we filed a final self-disclosure report with OFAC on May 20, 2020 and a supplemental report December 21, 2021.

On December 22, 2022, we filed an initial notice with OFAC to further supplement the report. We continue to investigate the matter in support of a final supplemental self-disclosure report. OFAC is not a party to the DDTC, BIS and DOJ settlements discussed above, and we will continue to cooperate with OFAC in this matter.

3D SYSTEMS CORPORATION
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

Shareholder Suits

The Company and certain of its current and former executive officers have been named as defendants in a consolidated putative stockholder class action lawsuit pending in the United States District Court for the Eastern District of New York. The action is styled In re 3D Systems Securities Litigation, No. 1:21-cv-01920-NGG-TAM (E.D.N.Y.) (the “Securities Class Action”). On July 14, 2021, the Court appointed a Lead Plaintiff for the putative class and approved his choice of Lead Counsel. Lead Plaintiff filed his Consolidated Amended Complaint (the “Amended Complaint”) on September 13, 2021, alleging that defendants violated the Securities Exchange Act of 1934, as amended (the “Exchange Act”), and SEC Rule 10b-5 promulgated thereunder by making false and misleading statements and omissions, and that the current and former executive officers named as defendants are control persons under Section 20(a) of the Exchange Act. The Amended Complaint was filed on behalf of stockholders who purchased shares of the Company’s common stock between May 6, 2020 and March 5, 2021, and seeks monetary damages on behalf of the purported class. The defendants moved to dismiss the Amended Complaint on February 15, 2022, and the motion was fully briefed in May 2022. On October 28, 2022, the parties notified the District Court that they reached an agreement in principle resolving this action, and on December 19, 2022, Lead Plaintiff filed a motion seeking entry of an order preliminary approving the settlement and establishing notice procedures. The settlement is subject to both preliminary and final approval by the District Court. On April 15, 2022, the Company was informed the SEC is conducting a formal investigation of the Company related to, among other things, the allegations in the Securities Class Action and the Company received a subpoena from the SEC for the production of documents and information related to its investigation as a follow on to a previous voluntary request for documents. The Company is cooperating with the SEC.

The Company has been named as a nominal defendant and certain of its current and former executive officers and directors have been named as defendants in derivative lawsuits pending in the United States District Court for the Eastern District of New York and the South Carolina Court of Common Pleas for the 16th Circuit, York County, and the Supreme Court of the State of New York, Kings County. The actions are styled Nguyen v. Joshi, et al., No. 21-cv-03389-NGG-TAM (E.D.N.Y.) (the “Nguyen Action”), Lesar v. Graves, et al., No. 2021CP4602308 (S.C., Ct. of Common Pleas for the 16th Judicial Cir., Cty. of York) (the “Lesar Action”), Scanlon v. Graves, et al., No. 2021CP4602312 (S.C., Ct. of Common Pleas for the 16th Judicial Cir., Cty. of York) (the “Scanlon Action”), Bohus v. Joshi, et al., No. 22-cv-2203-CBA-RML (E.D.N.Y.) (the “Bohus Action”), and Fernicola v. Clinton, et. al., No. 512613/2022 (N.Y., Kings County Supreme Court) (the “Fernicola Action”). The Complaints in the Nguyen and Bohus Actions, which were filed on June 15, 2021 and April 18, 2022, respectively, assert breach of fiduciary duty claims against all defendants and claims for contribution under the federal securities laws against certain of the defendants. The Complaints in the Lesar and Scanlon Actions, which were filed on July 26, 2021, assert breach of fiduciary duty and unjust enrichment claims against the defendants. The Complaint in the Fernicola Action was filed on May 2, 2022, and asserts claims for breach of fiduciary duty and waste of corporate assets against the director defendants. On August 27, 2021, the Nguyen Action was stayed until 30 days after the earlier of: (i) the close of discovery in the Securities Class Action, or (ii) the deadline for appealing a dismissal of the Securities Class Action with prejudice. On October 26, 2021, the Lesar Action and the Scanlon Action were consolidated into a single stockholder derivative action, styled as In Re 3D Systems Corp. Shareholder Derivative Litigation, No. 2021CP4602308 (S.C., Ct. of Common Pleas for the 16th Judicial Cir., Cty. of York) (the “South Carolina Derivative Action”). On March 3, 2022, the South Carolina Derivative Action was stayed until 30 days after the earlier of: (i) the close of discovery in the Securities Class Action, or (ii) the deadline for appealing a dismissal of the Securities Class Action with prejudice. On June 16, 2022, the Bohus Action was consolidated with the Nguyen Action (the “E.D.N.Y. Derivative Action”). The E.D.N.Y. Derivative Action is stayed until 30 days after the earlier of: (i) the close of discovery in the Securities Class Action, or (ii) the deadline for appealing a dismissal of the Securities Class Action with prejudice. On August 15, 2022, the Fernicola Action was voluntarily dismissed without prejudice.

The Company believes the claims alleged in the putative securities class action and derivative lawsuits are without merit and the Company intends to defend itself and its current and former officers vigorously.

Other

We are involved in various other legal matters incidental to our business. Although we cannot predict the results of the litigation with certainty, we believe that the disposition of all these various other legal matters will not have a material adverse effect, individually or in the aggregate, on our consolidated results of operations, consolidated cash flows or consolidated financial position.

In connection with the foregoing matters, we have recognized a liability of \$16,044 as of December 31, 2022, which includes the \$10,000 DDTC civil monetary penalty being recognized at a discount using the risk-free interest rate.

3D SYSTEMS CORPORATION
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

(24) Accumulated Other Comprehensive Loss

The changes in the balances of accumulated other comprehensive loss by component are as follows:

<i>(in thousands)</i>	Foreign currency translation adjustment	Defined benefit pension plan	Derivative financial instruments	Unrealized loss on short-term investments	Total
Balance at December 31, 2019	\$ (33,022)	\$ (3,707)	\$ (318)	\$ —	\$ (37,047)
Other comprehensive income (loss)	28,191	783	(1,638)	—	27,336
Amounts reclassified from accumulated other comprehensive income (loss) ^a	—	—	1,235	—	1,235
Balance at December 31, 2020	(4,831)	(2,924)	(721)	—	(8,476)
Other comprehensive income (loss)	(30,633)	682	—	—	(29,951)
Amounts reclassified from accumulated other comprehensive income (loss) ^a	—	—	721	—	721
Balance at December 31, 2021	(35,464)	(2,242)	—	—	(37,706)
Other comprehensive income (loss)	(18,730)	2,777	—	(3,557)	(19,510)
Amounts reclassified from accumulated other comprehensive income (loss) ^a	—	165	—	3,229	3,394
Balance at December 31, 2022	<u>\$ (54,194)</u>	<u>\$ 700</u>	<u>\$ —</u>	<u>\$ (328)</u>	<u>\$ (53,822)</u>

a. Amount reclassified into interest and other income (expense), net on the statement of operations. See Note 15.

The amounts presented in the table above are net of income taxes. For additional information about foreign currency translation and derivative financial instruments, see Notes 2 and 15. For additional information about the defined benefit pension plan, see Note 12.

(25) Restructuring and Exit Activity Costs

On August 5, 2020, we announced, in connection with the new strategic focus, a restructuring plan intended to align our operating costs with current revenue levels and better position the Company for future sustainable and profitable growth. The restructuring plan included a reduction of nearly 20% of our workforce, with the majority of the workforce reduction completed by December 31, 2020. Cost reduction efforts included reducing the number of facilities and examining every aspect of our manufacturing and operating costs. We incurred cash charges for severance, facility closing and other costs, primarily in the second half of 2020, and continued to incur additional charges through the second quarter of 2021, when we finalized all the actions to be taken. Non-cash charges related to these actions were \$6,400 and are included in facility closing costs. We also divested parts of the business that did not align with this strategic focus. See Note 4.

In connection with the restructuring plan, we recorded pre-tax costs during the years ended December 31, 2021 and 2020, included within selling, general and administrative in the consolidated statements of operations as follows:

<i>(in thousands)</i>	Costs Incurred during 2020	Costs Incurred during 2021	Total Costs Incurred
Severance, termination benefits and other employee costs	\$ 12,914	\$ 660	\$ 13,574
Facility closing costs	6,470	640	7,110
Other costs	668	(179)	489
Total	<u>\$ 20,052</u>	<u>\$ 1,121</u>	<u>\$ 21,173</u>

There were no liabilities recorded at December 31, 2022 and 2021.

(26) Subsequent Events

There are no subsequent events except as disclosed within Note 7 and Note 23.

