

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549
FORM 10-K

(Mark One)

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

For the fiscal year ended December 31, 2023

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 Number 001-39453

Markforged Holding Corporation
(Exact name of Registrant as specified in its Charter)

Delaware
(State or other jurisdiction of
incorporation or organization)

92-3037714
(I.R.S. Employer
Identification No.)

60 Tower Road

Waltham, MA
(Address of principal executive offices)

02451
(Zip Code)

Registrant's telephone number, including area code: (866) 496-1805

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

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, par value \$0.0001 per share	MKFG	New York Stock Exchange
Redeemable Warrants, each whole warrant exercisable for one share of Common Stock, \$0.0001 par value	MKFG.WS	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 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, 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 type="checkbox"/>	Accelerated filer	<input type="checkbox"/>
Non-accelerated filer	<input checked="" type="checkbox"/>	Smaller reporting company	<input checked="" type="checkbox"/>
		Emerging growth company	<input checked="" 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). ☐

Indicate by check mark whether the Registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). YES ☐ NO ☒

Based on the closing price as reported on the New York Stock Exchange, the aggregate market value of the Registrant's Common Stock held by non-affiliates on June 30, 2023 (the last business day of the Registrant's most recently completed second fiscal quarter) was approximately \$148.0 million. Shares of Common Stock held by each executive officer and director and by each shareholder affiliated with a director or an executive officer have been excluded from this calculation because such persons may be deemed to be affiliates. This determination of affiliate status is not necessarily a conclusive determination for other purposes.

The number of shares of Registrant's Common Stock outstanding as of March 14, 2024 was 199,351,300.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's proxy statement for the 2024 annual meeting of stockholders to be filed pursuant to Regulation 14A within 120 days after the registrant's fiscal year ended December 31, 2023, are incorporated by reference in Part III of this Form 10-K, except with respect to information specifically incorporated by reference in this Annual Report on Form 10-K, the proxy statement is not deemed to be filed as part of this Annual Report on Form 10-K.

Risk Factors Summary

The risk factors detailed in Item 1A entitled “Risk Factors” in this Annual Report on Form 10-K are the risks that we believe are material to our investors and a reader should carefully consider them. Those risks are not all of the risks we face and other factors not presently known to us or that we currently believe are immaterial may also affect our business if they occur. The following is a summary of the risk factors detailed in Item 1A:

- We have a history of net losses and may not be able to achieve profitability for any period in the future or sustain cash flow from operating activities. We have a relatively limited operating history and have experienced rapid growth, which makes evaluating our current business and future prospects difficult and may increase the risk of your investment. Our operating results may fluctuate significantly from period-to-period.
- The additive manufacturing industry in which we operate is characterized by rapid technological change, which requires us to continue to develop new products and innovations to meet constantly evolving customer demands and which could adversely affect market adoption of our products.
- Declines in the global economy, geopolitical and social uncertainties, global health crises and difficulties in the markets that we serve may adversely impact our business.
- Adverse developments affecting the financial services industry or other third parties, such as a liquidity crisis, increased levels of defaults or non-performance by financial institutions or transactional counterparties or the perception that any of these events could occur, could adversely affect our current and projected business operations and our financial condition and results of operations.
- We face significant competition in our industry. If we are unable to create new products or meet the demands of our customers, our business could be materially adversely affected.
- We depend on our network of value-added resellers and our business could be materially adversely affected if they do not meet our expectations.
- We depend heavily on third-party suppliers. If they or their facilities become unavailable or inadequate, our business could be adversely affected. We may experience significant delays in the design, production and launch of our additive manufacturing solutions and enhancements to existing products, and we may be unable to successfully commercialize products on our planned timelines.
- We rely on a limited number of third-party logistics providers for distribution of our products, and their failure to effectively distribute our products, including because of delays and disruptions caused by current conditions in global shipping capacity, would adversely affect our sales.
- If demand for our products does not grow as expected, or if market adoption of additive manufacturing does not continue to develop, or develops more slowly than expected, our revenues may stagnate or decline, and our business may be adversely affected.
- Defects in new products or in enhancements to our existing products that give rise to product returns or warranty or other claims could result in material expenses, diversion of management time and attention, and damage to our reputation.
- We may be unable to consistently manufacture our products to the necessary specifications or in quantities necessary to meet demand at an acceptable cost or at an acceptable performance level. As manufacturing becomes a larger part of our operations, we will become exposed to accompanying risks and liabilities. We depend on a limited number of third-party contract manufacturers for a substantial portion of our manufacturing needs and we depend on a number of suppliers for other parts and components; since the second half of 2021, we have increasingly experienced, and expect to continue to experience, price increases, supply shortages and delays and any such delay, disruption or quality control problems in their operations which could cause harm to our operations, including loss of market share, reduced margins and damage to our brand.
- We have experienced, and expect to continue to experience, rapid growth and organizational change since our inception. If we fail to manage our growth effectively, we may be unable to execute our business plan, maintain high levels of service and customer satisfaction or attract new employees and customers.
- A real or perceived defect, security vulnerability, error or performance failure in our software or technical problems or disruptions caused by our third-party service providers could cause us to lose revenue, damage our reputation and expose us to liability.

- Our existing and planned global operations subject us to a variety of risks and uncertainties that could adversely affect our business and operating results. Our business is subject to risks associated with selling machines and other products in non-United States locations. Global economic, political and social conditions and uncertainties in the market that we serve may adversely impact our business.
- A significant portion of our business depends on sales to the public sector, and our failure to receive and maintain government contracts or changes in the contracting or fiscal policies of the public sector could have a material adverse effect on our business.
- We are, and have been in the recent past, subject to business and intellectual property litigation. We could be subject to personal injury, property damage, product liability, warranty and other claims involving allegedly defective products that we supply. We could face liability if our additive manufacturing solutions are used by our customers to print dangerous objects.
- If we are unable to adequately protect our proprietary technology or obtain and maintain patent protection for our technology and products or if the scope of the patent protection obtained is not sufficiently broad, our competitors could develop and commercialize technology and products similar or identical to ours, and our ability to successfully commercialize our technology and products may be impaired.
- If we are unable for any reason to meet the continued listing requirements of the New York Stock Exchange (“NYSE”), such action or inaction could result in a delisting of our securities.
- We have identified material weaknesses in our internal control over financial reporting and may identify additional material weaknesses in the future or fail to maintain effective internal control over financial reporting, which may result in material misstatements of our consolidated financial statements or cause us to fail to meet our periodic reporting obligations.

EXPLANATORY NOTE

On July 14, 2021, we consummated the merger (the "Merger") contemplated by the Agreement and Plan of Merger, dated as of February 23, 2021 (the "Merger Agreement"), by and among one, a Cayman Islands exempted company limited by shares ("one"), Caspian Merger Sub Inc., a Delaware corporation and a wholly owned subsidiary of one ("Merger Sub"), and MarkForged, Inc., a Delaware corporation ("Legacy Markforged"). As a result of the Merger, Legacy Markforged merged with and into Merger Sub with Legacy Markforged surviving as our wholly-owned subsidiary and, following one's filing of a notice of deregistration and necessary accompanying documents with the Cayman Islands Registrar of Companies, and a certificate of incorporation and a certificate of corporate domestication with the Secretary of State of the State of Delaware, under which one was domesticated, one changed its name to "Markforged Holding Corporation."

CAUTIONARY STATEMENT REGARDING FORWARD-LOOKING STATEMENTS

This Annual Report on Form 10-K contains statements that are forward-looking and as such are not historical facts. This includes, without limitation, statements regarding the financial position, business strategy and the plans and objectives of management for our future operations of Markforged Holding Corporation ("Markforged," the "Company," "we," "us"). These statements constitute projections, forecasts and forward-looking statements, and are not guarantees of performance. Such statements can be identified by the fact that they do not relate strictly to historical or current facts. When used in this Annual Report on Form 10-K, words such as "anticipate", "believe", "continue", "could", "estimate", "expect", "intend", "may", "might", "plan", "possible", "potential", "predict", "project", "should", "strive", "would" and similar expressions may identify forward-looking statements, but the absence of these words does not mean that a statement is not forward-looking.

Forward-looking statements in this Annual Report on Form 10-K include, for example, statements about:

- the benefits of the Merger, and other recent acquisitions and our ability to realize such benefits;
- our financial performance;
- the effect of uncertainties related to economic downturns and global supply chain disruptions, or any future pandemics;
- the expected growth of the additive manufacturing industry;
- our anticipated growth and our ability to achieve and maintain profitability in the future;
- the impact of the regulatory environment and complexities with compliance related to such environment on us;
- the effect of and our ability to respond to general economic, political and business conditions, including recent increases in interest rates, rising inflation, foreign exchange fluctuations and risk of recession;
- our ability to access sources of capital, including debt financing and other sources of capital to finance operations and growth;
- the success of our marketing efforts and our ability to expand our customer base;
- our ability to develop and deliver new products, features and functionality that are competitive and meet market needs;
- our ability to maintain an effective system of internal control over financial reporting;
- our ability to remediate our material weaknesses in our internal control of financial reporting;
- our ability to grow and manage growth profitably and retain key employees; and
- the outcome of legal or governmental proceedings that may be instituted against us.

These forward-looking statements are based on information available as of the date of this Annual Report on Form 10-K and current expectations, forecasts and assumptions, and involve a number of judgments, risks and uncertainties. Accordingly, forward-looking statements should not be relied upon as representing our views as of any subsequent date, and we do not undertake any obligation to update forward-looking statements to reflect events or circumstances after the date they were made, whether as a result of new information, future events or otherwise, except as may be required under applicable securities laws.

As a result of a number of known and unknown risks and uncertainties, our actual results or performance may be materially different from those expressed or implied by these forward-looking statements. You should not place undue reliance on these forward-looking statements.

Table of Contents

	<u>Page</u>
PART I	
Item 1. Business	1
Item 1A. Risk Factors	8
Item 1B. Unresolved Staff Comments	44
Item 1C. Cybersecurity	44
Item 2. Properties	44
Item 3. Legal Proceedings	44
Item 4. Mine Safety Disclosures	45
PART II	
Item 5. Market for Registrant’s Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities	46
Item 6. Reserved	46
Item 7. Management’s Discussion and Analysis of Financial Condition and Results of Operations	47
Item 7A. Quantitative and Qualitative Disclosures About Market Risk	58
Item 8. Financial Statements and Supplementary Data	58
Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure	58
Item 9A. Controls and Procedures	58
Item 9B. Other Information	61
Item 9C. Disclosure Regarding Foreign Jurisdictions that Prevent Inspections	61
PART III	
Item 10. Directors, Executive Officers and Corporate Governance	62
Item 11. Executive Compensation	62
Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters	62
Item 13. Certain Relationships and Related Transactions, and Director Independence	62
Item 14. Principal Accounting Fees and Services	62
PART IV	
Item 15. Exhibits, Financial Statement Schedules	63
Item 16. Form 10-K Summary	64

PART I

Item 1. Business

Unless the context otherwise requires, all references in this section to the “company”, “we”, “us”, or “our” refer to the business of MarkForged, Inc. and its subsidiaries prior to the consummation of the Merger and to Markforged Holding Corporation and its subsidiaries after giving effect to the Merger.

Company Overview

Our platform, The Digital Forge, is an easy-to-use, reliable and intelligent additive manufacturing platform powering engineers, designers and manufacturing professionals globally. The Digital Forge combines precise and reliable 3D printers, proprietary metal and composite materials and cloud-based software to empower manufacturers to bring industrial production to the point of need on the factory floor. Markforged is based in greater Boston, Massachusetts, where we have our own in-house manufacturing facility and our headquarters, where we design industrial 3D printers, software and metal and composite proprietary materials. We also have a design and manufacturing facility located in Hoganas, Sweden, and maintain several sales and sales support offices globally.

Our software-enabled platform delivers clear value to thousands of customers around the world, including both direct customers and customers of our value added resellers that have purchased one or more of our products. Our customers have printed tens of millions of parts, primarily for high-value, industrial use cases such as industrial tooling, machinery manufacturing, regulated part production, aftermarket spares and replacement parts as well as low- and mid-volume end use part production and high-volume production parts. Blue chip customers in industries such as food and beverage, aerospace, military and defense, industrial automation, space exploration, healthcare and automotive rely on our platform for mission-critical, industrial parts on-demand and at the point-of-need.

Our portfolio of 3D printers include industrial composite printers that provide powerful, predictable functionality through their software, sensors, materials and print modes and metal printers that can fabricate strong, complex metal parts in a variety of metals both in low volume and in higher volumes utilizing our metal binder jetting solution. Across all our models, our powerful yet easy-to-use platform, and our industrial-grade materials, enable engineers to make functional parts for manufacturing environments and other demanding applications.

Our proprietary software provides a single platform to interact with many of our hardware devices, driving consistent reliability for our customers. From simple file storage and versioning to accessible live telemetry, our products are designed to address the unseen minutiae that can inhibit manufacturers’ productivity. In a manufacturing ecosystem inundated with non-intuitive user experiences, the simplicity and power of our software drives adoption of our platform to empower manufacturing at the point of need.

Our patented Continuous Fiber Reinforcement (“CFR”) process uses continuous strands of composite fibers to make parts as strong as and capable of replacing aluminum. Our Metal X system is capable of printing 17-4 PH Stainless Steel, Copper, H13 Tool Steel, Inconel 625, and A2 and D2 Tool Steel to solve those demanding applications that require metal. These products connect to our secure cloud infrastructure and are controlled via web browser, providing a single, simple digital workflow for printing both carbon fiber and metal for organizations that scale from one user to thousands. We have the ability to leverage data from our existing global fleet of printers connected to cloud architecture to enhance our research and development capabilities for the future benefit of our customers. The data generated by our fleet of thousands of connected printers flows into our AI-powered, closed-loop additive manufacturing solution, which is currently offered as a software subscription.

Industry Background

Traditional Manufacturing Faces Many Limitations.

Engineers and product developers are constrained by the physical parameters of conventional manufacturing processes. These parameters define the design possibilities, adding cost and lead time to manufacturing programs and placing firm boundaries on the performance of parts and products. Additive manufacturing lifts many of these limitations, opening up new design capabilities that allow engineers to harness and sustain measurable advantages in durability, weight and customizability.

More broadly, modern manufacturing equipment and labor require complex supply chains made up of multiple hubs and nodes to function. Failure in any single supply node has the potential to compromise the entire supply chain. Digital manufacturing decouples part production from these complex systems, shortening supply chains by bringing manufacturing production onshore right at the point of need.

Additive Manufacturing has the Potential to Overcome Many of these Limitations.

Additive manufacturing has the potential to overcome many of the limitations of conventional manufacturing. The new design capabilities provide significant possibilities for superior products that drive higher performance and more closely match customer preferences. The easy-to-use interface that operates our printers can be easily learned by factory floor personnel. With additive manufacturing technology, manufacturers may now combat supply chain constraints, allowing them to respond more quickly to sharp changes in demand signals. Machines the size of microwave ovens that require no skilled labor can now help manufacturers circumvent expensive and time-consuming supply chains by printing parts when and where they are needed.

Most 3D Printing Solutions Today are Focused on Design and Prototyping Applications.

Despite the apparent benefits of additive manufacturing relative to conventional manufacturing, it has taken the industry nearly four decades to arrive at a solution that is widely adopted for applications beyond one-offs and prototypes. Part of the reason for such slow adoption is that before Markforged, there were only two limited categories of 3D printers available. Additionally, both categories were engineered as point solutions for a single factory, making distributed digital manufacturing across a network of printers cumbersome or infeasible. For these reasons, neither of these choices was appropriate for the manufacturing floor or distributed manufacturing at scale.

Markforged is Delivering the Promise of Additive Manufacturing Today.

We invented The Digital Forge, a platform designed to overcome both the constraints of conventional manufacturing as well as the limitations of legacy 3D printing solutions. Through The Digital Forge, manufacturers can produce metal and composite parts that are functionally applicable for the most demanding manufacturing applications. The parts printed on The Digital Forge are based in either a variety of metals, or a variety of composites and continuous fibers, each providing high-strength materials for manufacturing applications. Moreover, the software that powers The Digital Forge was designed to be cloud-first. In contrast to legacy additive solutions, Markforged's printers can be accessed and controlled from anywhere in the world and entire libraries of part inventory can be digitized and printed only when needed. This smart, simple and robust platform is designed to give engineers, designers and manufacturing professionals the power to solve their most challenging manufacturing problems.

Our Growth Strategy

Our future growth is driven by five key strategies:

- ***Continue to Fuel Integrated Platform with Software Solutions.*** Our integrated platform is designed to scale in both capability and size over time. As we invest additional resources into the feature set of our platform, we expect to be able to solve more customer problems and applications. As we solve more problems, customers will print more parts. As we print more parts, more data will be generated, making our premium software solutions, including Simulation, Inspection and enterprise-grade fleet management, smarter. As our premium software solutions get smarter, we will be able to print better, more accurate parts. As we print better parts, more customers will adopt our premium software solutions, which will continue to drive this growth and improvement cycle more rapidly.
- ***Expand Customer Use Cases and Applications.*** As we develop printers that are faster, larger and more precise, such as the FX20 and FX10, and add new industrial materials to our capabilities, we continually expand the possible use cases for our customers. We regularly release new printers, software functionality and materials that customers may apply to a variety of new problems and use cases.
- ***Drive Deeper, More Efficient Go-To-Market Coverage.*** As we grow our global distribution footprint and drive optimizations in our go-to-market model, we will grow our sales.
- ***Expand Position as a Trusted Brand.*** Due to the innovative technology that we have invented, which is addressing significant global problems in manufacturing, we have the opportunity to invest resources to build a meaningful industrial technology brand. As our brand grows, we expect to generate more organic interest in our products, lowering our cost-to-acquire customers, which will facilitate our growth and improvement cycle and help expand our business.
- ***Target Strategic M&A Opportunities.*** We expect to continue to grow inorganically by acquiring companies with technologies and people to complement our platform and team.

Our Competitive Strengths

- ***Markforged delivers accessible, industrial-strength parts.*** We offer a range of proprietary composite and metal printers and materials that address numerous industrial applications. We invented and patented the CFR composite

additive manufacturing process. The capabilities that CFR enables are unmatched by our competitors, and a significant portion of our customers use our CFR materials today to replace traditionally manufactured steel and aluminum parts. Because sometimes only metal will suit the application, we offer two different types of metal 3D printers: Fused Filament Fabrication (“FFF”) and metal binder jetting. The Metal X, our FFF solution, is well suited to custom parts which can be too costly and can take too long to obtain with conventional subtractive manufacturing processes. And, once an application is ready for production, our PX100 metal binder jetting solution provides higher-throughput end-use metal parts.

- ***Markforged offers customers a clear and tangible ROI.*** We provide simple, cost-effective and reliable solutions to manufacture mission critical parts. With The Digital Forge platform, our customers can realize significant cost and time savings, relative to conventional manufacturing, which in turn drives purchases of incremental printers and further development of new applications.
- ***Markforged’s integrated, modern software platform drives faster innovation.*** We built our entire platform on cloud-based architecture, bringing benefits traditionally confined to Software as a Service (“SaaS”) space to hardware. This architecture connects us to our customer’s printers in the field, creating a fleet of connected printers generating data to power our AI-learning algorithms that in turn guides the future development of our 3D printers with each part printed.

The Digital Forge

The Digital Forge is the intuitive additive manufacturing platform for modern manufacturers, bringing the power and speed of agile software development to industrial manufacturing. Composed of hardware, software and materials working as a unified platform, it is purpose-built to integrate into our customers’ existing manufacturing ecosystems. The Digital Forge adopters can achieve immediate benefits through savings of time and money on factory line support and end-use parts. Through increased adoption, the platform can drive competitive advantages by making our customers’ entire operations more efficient and responsive.

3D Printers

We offer a reliable line of 3D printers all designed around one goal - empower manufacturers to print industrial-strength parts at the point of need. Our machines combine high build quality, intuitive user experience and broad platform connectivity to produce reliable, repeatable results.

We offer three principal categories of 3D printers and systems:

- ***Desktop:*** Our Desktop 3D Printers are precision-built professional machines designed to reliably print quality parts. These printers deliver precise results with a smaller form factor, making them ideal when space is at a premium.
- ***Industrial:*** Our Industrial 3D Printers provide best-in-class predictability and functionality through sensors, software, materials and print modes.
- ***Metal:*** Our Metal 3D Printers fabricate complex metal parts in a variety of advanced metals.

Materials

We offer the only industrial 3D printing family for fabricating composite, continuous fiber and metal parts on the same platform. All the materials available for printing on The Digital Forge offer a high degree of flexibility for part design and manufacturing. Our 3D printers are simple to use and do not require intensive build outs or trained technicians. We currently offer the following materials:

- Composite: Onyx™, Onyx FR™, Onyx ESD™, ULTEM™ 9085 Filament, Smooth TPU 95a, Precise PLA, Nylon and Vega™.
- Continuous Fiber: Carbon Fiber, Carbon Fiber FR, Aramid Fiber (Kevlar®), HSHF Fiberglass, and Fiberglass.
- Metal: 17-4 PH Stainless Steel, Copper, Inconel 625, H13 Tool Steel, and A2 and D2 Tool Steel.

Our customers can print the right material for the right applications. If a customer requires strength and low weight, composites can replace metal parts and accelerate production times. If customers need something to withstand high temperatures and provide wear resistance, metals can be utilized. In addition, customers can combine parts made of different materials for even higher-performing parts using the CFR process.

CFR augments traditional FFF technology, enabling our printers to reinforce FFF parts with continuous fibers. A CFR-capable machine uses two extrusion systems for two unique materials: one for conventional FFF polymer filament, and a second for long strand continuous fibers. Continuous fibers are laid down in-layer, replacing FFF infill. As a result, a CFR-capable printer can print both traditional FFF-only parts or CFR parts (FFF parts reinforced with continuous fibers).

CFR represents a step-change improvement in part performance for only an incremental increase in effort. CFR parts are significantly stronger (up to 25 times stronger than ABS plastics) and can replace machined aluminum parts. The process is inherently flexible: simple enough for anyone to use and powerful enough to enable deep customization of part mechanical properties. This means that an engineer can reinforce a part with continuous fibers with two clicks of a button and customize reinforcement on a layer-by-layer basis on the same platform. With five available fibers and multiple reinforcement techniques that can be granularly configured, parts can be highly customized for applications. We believe the capabilities that CFR enables are unmatched by current alternatives.

Software

Our software pairs advanced 3D printing software with the first connected additive manufacturing platform. Our software is an integrated platform designed to help customers get from design to part quickly. It empowers users to take control of their manufacturing workflow in four ways:

- **Advanced part slicing and printing.** Our software is an integrated, connected platform designed to take customers from CAD to functional part quickly. The browser-based workflow is secure, fast and intuitive. Users can design parts for printing with a single click, or drill deeply into part settings to specially optimize part properties. Our software enables customers to create builds, print parts, and monitor prints in a seamless workflow.
- **Integrated cloud part repository.** A secure part library enables customers to dynamically manage engineering projects of any size. Our software's part files are securely stored and can be versioned, edited and printed anywhere. Easy-to-use filters and folders enable customers to quickly store and find the parts they need when they need it. With the launch of Digital Source, users can leverage our part library to license and 3D print parts.
- **Enterprise-grade fleet management.** Our software provides a single place to manage our customers' printer fleets in real time, whether in one location or worldwide. Users can benefit from automatic updates while getting analytics, usage data and live telemetry.
- **Analysis.** Incorporating 3D printing into tooling and end-use applications requires confidence in the strength of the parts. By replacing slow and costly design/print/break testing cycles with virtual testing, Markforged Simulation software can enable manufacturers to expand their use of additive manufacturing into production applications. Our Performance Advisor functionality can enable users to explore the best ways to print a part that balances strength, material use and print time.

Customers

We have thousands of customers (including both direct customers and customers of our value added resellers that have purchased one or more of our products) around the world, and have printed millions of parts. Our customers range from small and medium-sized organizations to Fortune 100 manufacturers in leading edge industries such as aerospace, military and defense, food and beverage, industrial automation, space exploration, healthcare and automotive who utilize our platform for mission critical, end-use parts on-demand and at the point-of-need.

Research and Development

Investment in research and development is at the core of our business strategy. Our research and development team is responsible for designing, developing and enhancing our products, as well as performing product testing and quality assurance activities. Members of our research and development team specialize in mechanical engineering, electrical engineering, material science, product realization and software engineering.

Research and development expenses totaled \$40.7 million and \$42.4 million in the years ended December 31, 2023 and 2022, respectively. We expect our research and development expense to remain consistent for the foreseeable future as we continue to enhance existing products, develop new products for current markets and introduce new products in new markets.

The majority of our research and development operations are conducted in our facility in Waltham, Massachusetts. We also maintain a design facility for our binder jetting solution located in Hoganas, Sweden.

Sales and Marketing

We primarily sell our products and services through a global channel of third-party value-added reseller partners (“VARs”). We have approximately 100 VARs spanning the globe with over a thousand full-time employees who market, sell and support our platform. Our VAR channel allows us to have global scale, engage deeply with our customers and provide significant operating leverage to our business. We have and will continue to optimize our VAR network focused on global manufacturing.

Our global marketing team drives new customer acquisition, retention and expansion of existing customers and the demonstration and capabilities set of our products.

Manufacturing and Suppliers

Our goal is to create an excellent customer experience by shipping quality products on time and providing meaningful support after delivery, all while working safely. We work toward this goal by being selective with our resources, dedicating our focus to areas where we see a strategic advantage, and working with high quality outsourced partners to manage the rest. Our printer manufacturing operations include both our internal manufacturing facility in Billerica, Massachusetts as well as third-party contract manufacturers who source materials, manufacture components and assemble products in accordance with our specifications and quality standards. We currently source and manufacture our consumable materials, which provides flexibility, increased responsiveness and a distinct competitive advantage.

Our Competition

The industry in which we operate is fragmented and competitive. We compete for customers with a wide variety of conventional and additive manufacturing solution providers. We believe that the market is in its early phases of adoption of additive manufacturing technology, and that the potential for growth will be significant as our target customers seek more flexible, customized, software-enabled manufacturing processes to shorten their supply chains and compete globally.

We believe we compare favorably to other industry participants on the basis of the following competitive factors applicable to our products:

- cloud-based, AI-learning software platform;
- proprietary CFR process;
- highly accessible metal printing;
- robust intellectual property;
- proven customer adoption in mission critical applications;
- ease of deployment, implementation and use;
- platform scalability; and
- security and reliability.

Human Capital

We consider our employees to be critical to our success. As of December 31, 2023, we had 351 full-time employees based primarily in the greater Boston, Massachusetts area. A majority of our employees are engaged in engineering, operations and related functions. To date, we have not experienced any work stoppages and consider our relationship with our employees to be in good standing. Our employees based in Sweden are subject to one of two current collective bargaining agreements. These agreements apply to 29 of our full-time employees as of December 31, 2023.

Our success depends upon our ability to attract and retain highly qualified employees. We are committed to creating and maintaining an inclusive culture which values equality, opportunity and respect. We expect all of our employees to observe the highest levels of business ethics, integrity, mutual respect, tolerance and inclusivity. Our employee handbook and Code of Conduct and Ethics set forth policies reflecting these values and also provide direction for registering complaints in the event of any violation of our

policies. An “open door” policy is maintained at all levels of the organization and any form of retaliation against an employee is strictly prohibited.

The success of our business is fundamentally connected to the physical and mental well-being of our people. Accordingly, we are committed to the health, safety and wellness of our employees and contractors. We provide our employees with a wide range of benefits, including benefits directed to their health, safety and long-term financial security.

Intellectual Property

Our ability to drive innovation in the additive manufacturing market depends in part upon our ability to protect our core technology and intellectual property. We attempt to protect our intellectual property rights, both in the United States and abroad, through a combination of patent, trademark, copyright and trade secret laws, as well as through contractual provisions and restrictions on access to our proprietary technology which includes nondisclosure and invention assignment agreements with our consultants and employees and through non-disclosure agreements with our vendors and business partners. We further control the use of our proprietary technology and intellectual property through provisions in both general and product-specific terms of use. Unpatented research, development, know-how and engineering skills make an important contribution to our business, but we pursue patent protection when we believe it is possible and consistent with our overall strategy for safeguarding intellectual property.

As of December 31, 2023, we own 71 issued United States patents, 94 issued foreign patents and have 61 pending or allowed patent applications. Our patents and patent applications are directed to, among other things, additive manufacturing and related technologies.

We have 6 issued United States trademarks and 36 issued foreign trademarks, including “Markforged” in the European Union, Australia, Canada, China, Israel, Japan, and the Republic of Korea. We have 1 pending United States trademark applications and 2 pending foreign applications.

Government Regulations

We are subject to various laws, regulations and permitting requirements of federal, state and local authorities, including related to environmental, health and safety; anti-corruption and export controls. We believe that we are in material compliance with all such laws, regulations and permitting requirements.

Environmental Matters

We are subject to domestic and foreign environmental laws and regulations governing our operations, including, but not limited to, emissions into the air and water and the use, handling, disposal and remediation of hazardous substances. A certain risk of environmental liability is inherent in our production activities. These laws and regulations govern, among other things, the generation, use, storage, registration, handling and disposal of chemicals and waste materials, the presence of specified substances in electrical products, the emission and discharge of hazardous materials into the ground, air or water, the cleanup of contaminated sites, including any contamination that results from spills due to our failure to properly dispose of chemicals and other waste materials and the health and safety of our employees. We are required to obtain environmental permits from governmental authorities for certain operations.

The export of our products internationally from our production facilities subjects us to environmental laws and regulations concerning the import and export of chemicals and hazardous substances such as the United States Toxic Substances Control Act (“TSCA”) and the Registration, Evaluation, Authorization and Restriction of Chemical Substances (“REACH”). These laws and regulations require the evaluation and registration of some chemicals that we ship along with, or that form a part of, our systems and other products.

Export and Trade Matters

We are subject to anti-corruption laws and regulations imposed by governments around the world with jurisdiction over our operations, including the U.S. Foreign Corrupt Practices Act and the U.K. Bribery Act 2010, as well as the laws of the countries where we do business. We are also subject to various trade restrictions, including trade and economic sanctions and export controls, imposed by governments around the world with jurisdiction over our operations. For example, in accordance with trade sanctions administered by the Office of Foreign Assets Control and the U.S. Department of Commerce, we are prohibited from engaging in transactions involving certain persons and certain designated countries or territories. In addition, our products are subject to export regulations that can involve significant compliance time and may add additional overhead cost to our products. In recent years, the United States government has a renewed focus on export matters related to additive manufacturing. Some of our products are already more tightly

controlled for export, and other of our products may in the future become more tightly controlled for export. For example, the Export Control Reform Act of 2018 and regulatory guidance thereunder have imposed additional controls and may result in the imposition of further additional controls, on the export of certain “emerging and foundational technologies.” Our current and future products may be subject to these heightened regulations, which could increase our compliance costs.

Corporate Information

Prior to July 14, 2021, we were a blank check company known as one incorporated in the Cayman Islands on June 24, 2020 as a Cayman Islands exempted company for the purpose of effecting a merger, share exchange, asset acquisition, share purchase, reorganization or similar business combination with one or more businesses. Legacy Markforged was formed as a Delaware corporation in 2013.

On July 14, 2021, we completed the Merger. In connection with the completion of the Merger, one was renamed Markforged Holding Corporation. Our website address is www.markforged.com. Our website and the information contained on, or that can be accessed through, the website will not be deemed to be incorporated by reference in, and are not considered part of, this Annual Report on Form 10-K.

We are an “emerging growth company” as defined in the Section 2(a)(19) of the Securities Act. We will remain an emerging growth company until the earlier of: (i) the last day of the fiscal year (a) following the fifth anniversary of the completion of the IPO, (b) in which we have total annual gross revenue of at least \$1.235 billion, or (c) in which we are deemed to be a large accelerated filer, which means the market value of our common stock that is held by non-affiliates exceeds \$700.0 million as of the prior June 30th, and (ii) the date on which we have issued more than \$1.0 billion in non-convertible debt during the prior three-year period.

Available Information

Our website address is www.markforged.com. Our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, including exhibits, proxy and information statements and amendments to those reports filed or furnished pursuant to Sections 13(a), 14, and 15(d) of the Securities Exchange Act of 1934, as amended, or the Exchange Act, are available through the “Investor Relations” portion of our website free of charge as soon as reasonably practicable after we electronically file such material with, or furnish it to, the SEC. Information on our website is not part of this Annual Report on Form 10-K or any of our other securities filings unless specifically incorporated herein by reference. In addition, our filings with the SEC may be accessed through the SEC’s Interactive Data Electronic Applications system at www.sec.gov. All statements made in any of our securities filings, including all forward-looking statements or information, are made as of the date of the document in which the statement is included, and we do not assume or undertake any obligation to update any of those statements or documents unless we are required to do so by law.

Our code of conduct, corporate governance guidelines and the charters of our Audit Committee, Compensation Committee and Nominating and Corporate Governance Committee are available through the “Investor Relations” portion of our website.

Item 1A. Risk Factors.

Risk Factors

A description of the risks and uncertainties associated with our business and industry is set forth below. You should carefully consider the risks and uncertainties described below, together with all of the other information in this Annual Report on Form 10-K, including our consolidated financial statements and notes thereto and the “Management’s discussion and analysis of financial condition and results of operations” section of this Annual Report on Form 10-K before deciding whether to purchase shares of our common stock. If any of the following risks are realized, our business, financial condition, operating results and prospects could be materially and adversely affected. In that event, the price of our common stock could decline, perhaps significantly. Additional risks and uncertainties not presently known to us or that we currently deem immaterial also may impair our business operation.

Risks Related to Our Business and Industry

Risks Related to Our Operating History

We have a history of net losses and may not be able to achieve profitability for any period in the future or sustain cash flow from operating activities.

We had a history of losses since inception in 2013 until 2022 and funded our cash flow deficits primarily through the issuance of capital stock. As of December 31, 2023, we had an accumulated deficit of \$204.7 million, including current year net loss of \$103.6 million. We expect to continue to incur operating losses and negative cash flow as we continue to invest significantly in research and development efforts, sales and marketing and other aspects of our business.

We cannot make any assurances that these investments will result in increased revenue or growth in our business. Furthermore, we may encounter unforeseen issues that require us to incur additional costs. Any such increased expenditures make it harder for us to achieve and maintain future profitability. Revenue growth and growth in our customer base may not be sustainable, and we may not achieve sufficient revenue to achieve or maintain profitability. While we have a revenue history, we expect to bring new additive manufacturing products to market that we anticipate will generate a substantial portion of our future revenue, and it is difficult for us to predict our future operating results. We may incur significant losses in the future for a number of reasons, including due to the other risks described in this Annual Report on Form 10-K, and we may encounter unforeseen expenses, difficulties, complications and delays and other unknown events. As a result, our losses may exceed forecasts, we may incur significant losses for the foreseeable future, and we may not achieve profitability when expected, or at all, and even if we do, we may not be able to maintain or increase profitability. Accordingly, if we are not able to achieve or maintain profitability and we incur significant losses in the future, the market price of our common stock may decline, and you could lose part or all of your investment.

We have a relatively limited operating history and have experienced rapid growth, which makes evaluating our current business and future prospects difficult and may increase the risk of your investment.

Our ability to forecast our future operating results is subject to a number of uncertainties, including our ability to plan for and model future growth. We have encountered, and will continue to encounter, risks and uncertainties frequently experienced by growing companies in rapidly evolving industries, as we continue to grow our business. If our assumptions regarding these uncertainties, which we use to plan our business, are incorrect or change in reaction to changes in our markets, or if we do not address these risks successfully, our operating and financial results could differ materially from our expectations, our business could suffer and the trading price of our stock may decline. We intend to derive a substantial portion of our revenues from sales of new and existing hardware products, which sales are non-recurring and subject to significant risk and fluctuation.

It is difficult to predict our future revenues and appropriately budget for our expenses, and we have limited insight into trends that may emerge and affect our business. If actual results differ from our estimates or we adjust our estimates in future periods, our operating results and financial position could be materially affected.

Our operating results may fluctuate significantly from period-to-period and may fall below expectations in any particular period, which could adversely affect the market price of our common stock.

Our quarterly and annual results of operations may fluctuate significantly from period-to-period. Accordingly, the results of any one quarter or year should not be relied upon as an indication of future performance. If our revenue or operating results fall below the expectations of investors or any securities analysts that follow our company in any period, the price of our common stock would likely decline. Each of the risks described in this section, as well as other factors, may affect our operating results. For example, factors that may cause our operating results to fluctuate include:

- the degree of market acceptance of our products;

- our ability to compete with competitors and new entrants into our markets;
- changes in our pricing policies or those of our competitors, including our response to price competition;
- the effectiveness of our securing new orders and fulfilling existing orders;
- the impact of supply chain disruptions on our customers, suppliers, manufacturers and operations;
- the mix of products that we sell during any period;
- the timing of our sales and deliveries of our products to customers;
- changes in the amount that we spend to develop and manufacture new products or technologies;
- timing of expenditures to develop and bring to market new or enhanced products and the generation of revenue from those products;
- changes in the amounts that we and our VARs spend to promote our products;
- changes in the cost of satisfying our warranty obligations and servicing our products, including with respect to our obligations related to our “success plan” offerings;
- litigation-related expenses and/or liabilities;
- unforeseen liabilities or difficulties in integrating our acquisitions or newly acquired businesses;
- disruptions to our internal and third-party manufacturing facilities and processes;
- disruptions to our information technology systems or our third-party contract manufacturers;
- disruptions to our global supply and distribution chains;
- the geographic distribution of our sales, and any related effects of foreign exchange rate fluctuations for sales and expenses that are not in U.S. dollars;
- general economic and industry conditions that affect our costs and/or customer demand, such as increases inflation and interest rates, general economic slowdown and potential for recession; and
- changes in accounting rules and tax laws.

In addition, sales of our products are subject to the adoption and capital expenditure cycles of our customers' sales cycle, and seasonality among our customers may cause our revenues and operating results to fluctuate from period to period. Accordingly, we typically experience increased sales during the fourth quarter and, to a lesser extent, the third quarter of our fiscal year relative to the first and second quarters. Additionally, for our more complex solutions, which may require additional facilities investment and installation support, potential customers may spend a substantial amount of time performing internal assessments prior to making a purchase decision. This may cause us to devote significant effort in advance of a potential sale without any guarantee of receiving any related revenues. As a result, revenues and operating results for future periods are difficult to predict with any significant degree of certainty, which could lead to adverse effects on our inventory levels and overall financial condition. Accordingly, you should not rely on quarter-over-quarter and year-over-year comparisons of our results as an indicator of our future performance.

Global economic, political and social conditions and uncertainties in the markets that we serve may adversely impact our business.

Our performance depends on the financial health and strength of our customers, which in turn is dependent on the economic conditions of the markets in which we and our customers operate. Declines in the global economy, difficulties in the financial services sector and credit markets, continuing geopolitical uncertainties, global health crises, including COVID-19, and other macroeconomic factors all affect the spending behavior of potential customers. Economic uncertainty in Europe, the United States, India, Japan, China and other countries may cause customers and potential customers to further delay or reduce technology purchases. For example, since the first quarter of 2022, we have experienced reduced demand from European markets, which may be partially attributable to regional energy cost increases and uncertainty.

We also face risks from financial difficulties or other uncertainties experienced by our suppliers, distributors or other third parties on which we rely. If third parties are unable to supply us with required materials or components or otherwise assist us in operating our business, our business could be harmed.

Adverse developments affecting the financial services industry or other third parties, such as a liquidity crisis, increased levels of defaults or non-performance by financial institutions or transactional counterparties or the perception that any of these events

could occur, could adversely affect our current and projected business operations and our financial condition and results of operations.

Adverse developments that affect financial institutions, transactional counterparties or other third parties, or concerns or rumors about any events of these kinds or other similar risks, have in the past and may in the future lead to market-wide liquidity problems. Although we regularly assess and adjust our banking and other financial services relationships as we believe necessary or appropriate, our access to our deposits, investments, funding sources, credit and other arrangements in amounts adequate to maintain our projected business operations could be significantly impaired by factors outside of our control. These factors could include, among others, events such as liquidity constraints or failures, the inability of third parties to meet their obligations under various types of financial arrangements, general disruptions or instability in the financial services industry or financial markets, or concerns or negative expectations about the prospects for companies in the financial services industry. These factors could involve financial institutions or financial services industry companies with which we have financial or business relationships, but could also include factors involving financial markets or the financial services industry generally.

For example, on March 10, 2023, Silicon Valley Bank (“SVB”) was closed by the California Department of Financial Protection and Innovation, which appointed the Federal Deposit Insurance Corporation (“FDIC”) as receiver. Similarly, on March 12, 2023, Signature Bank and Silvergate Capital Corp. were each swept into receivership. Although a statement by the Department of the Treasury, the Federal Reserve and the FDIC stated all depositors of SVB would have access to all of their money after only one business day of closure, including funds held in uninsured deposit accounts, borrowers under credit agreements, letters of credit and certain other financial instruments with SVB, Signature Bank or any other financial institution that is placed into receivership by the FDIC may be unable to access undrawn amounts thereunder. As of the date of this Annual Report on Form 10-K, our exposure to SVB, Signature and Silvergate is immaterial, however, we regularly maintain cash balances at third-party financial institutions in excess of the Federal Deposit Insurance Corporation insurance limit. If any of the financial institutions with which we do business were to be placed into receivership, we may be unable to access our capital or adequately fund our business for a prolonged period of time, or at all. In addition, if any of our customers, suppliers or other parties with whom we conduct business are unable to access funds pursuant to their arrangements with such a financial institution, their ability to pay their obligations to us or to enter into new commercial arrangements requiring additional payments to us could be adversely affected. For example, any company with which we do business that is a counterparty to SVB, may be experiencing direct impacts from the closure of SVB that may in the future impact us and our business indirectly. A customer may fail to make payments when due, default under their agreements with us, become insolvent or declare bankruptcy, or a supplier may determine that it will no longer deal with us as a customer. Any customer or supplier bankruptcy or insolvency, or the failure of any customer to make payments when due, or the loss of any significant supplier relationships, could result in material losses to us and may have material adverse impacts on our business.

In addition, uncertainty remains over liquidity concerns in the broader financial services industry, and there may be additional impacts to our business and our industry that we cannot predict at this time. Inflation and rapid increases in interest rates have led to a decline in the trading value of previously issued government securities with interest rates below current market interest rates. Although the U.S. Department of Treasury, FDIC and Federal Reserve Board have announced a program to provide up to \$25 billion of loans to financial institutions secured by certain of such government securities held by financial institutions to mitigate the risk of potential losses on the sale of such instruments, widespread demands for customer withdrawals or other liquidity needs of financial institutions for immediate liquidity may exceed the capacity of such program. There is no guarantee that the U.S. Department of Treasury, FDIC and Federal Reserve Board will provide access to uninsured funds in the future in the event of the closure of other banks or financial institutions, or that they would do so in a timely fashion.

The results of events or concerns that involve one or more of these factors could include a variety of material and adverse impacts on our current and projected business operations and our financial condition and results of operations. These could include, but may not be limited to, the following:

- Delayed access to deposits or other financial assets or the uninsured loss of deposits or other financial assets;
- Loss of access to certain working capital sources and/or the inability to refund, roll over or extend the maturity of, or enter into new credit facilities or other working capital resources;
- Potential or actual breach of contractual obligations that require us to maintain letters or credit or other credit support arrangements; or
- Termination of cash management arrangements and/or delays in accessing or actual loss of funds subject to cash management arrangements.

In addition, widespread investor concerns regarding the U.S. or international financial systems could result in less favorable commercial financing terms, including higher interest rates or costs and tighter financial and operating covenants, or systemic limitations on access to credit and liquidity sources, thereby making it more difficult for us to acquire financing on acceptable terms or

at all. Any decline in available funding or access to our cash and liquidity resources could, among other risks, adversely impact our ability to meet our operating expenses, financial obligations or fulfill our other obligations, result in breaches of our financial and/or contractual obligations or result in violations of federal or state wage and hour laws. Any of these impacts, or any other impacts resulting from the factors described above or other related or similar factors not described above, could have material adverse impacts on our liquidity and our current and/or projected business operations and financial condition and results of operations.

Risks Related to the Additive Manufacturing Industry

The additive manufacturing industry in which we operate is characterized by rapid technological change, requiring continual innovation and development of new products and innovations to meet constantly evolving customer demands.

Our revenues are derived from the sale of 3D printers, related materials, software, and services. The additive manufacturing market is subject to rapid innovation and technological change and our customers' needs are rapidly evolving. While we intend to invest substantial resources to remain on the forefront of technological development, continuing advances in additive manufacturing technology, changes in customer requirements and preferences and the emergence of new standards, regulations and certifications could adversely affect adoption of our products. Our ability to compete in the additive manufacturing market depends, in large part, on our success in developing and introducing new 3D printers and technology, in improving our existing products and technology and qualifying new materials which our systems can support. We believe that we must continuously enhance and expand the functionality and features of our products and technologies in order to remain competitive. However, we may not be able to:

- predict future customer demand;
- develop cost effective new products and technologies that address the increasingly complex needs of prospective customers;
- enhance our existing products and technologies;
- respond to technological advances and emerging industry standards and certifications on a cost-effective and timely basis;
- adequately protect our intellectual property as we develop new products and technologies;
- identify the appropriate technology or product to which to devote our resources; or
- ensure the availability of cash resources to fund research and development.

Even if we successfully introduce new additive manufacturing products and technologies and enhance our existing products and technologies, it is possible that these will eventually supplant our existing products or that our competitors will develop new products and technologies that will replace our own. As a result, any of our products may be rendered obsolete or uneconomical by our or our competitors' technological advances, leading to a loss in market share, decline in revenue and adverse effects to our business and prospects.

We face intense and growing competition in the additive manufacturing industry. Our inability to compete effectively with our competitors could affect our ability to achieve our anticipated market penetration and achieve or sustain profitability.

The additive manufacturing industry in which we operate is highly competitive. We compete for customers with a wide variety of producers of additive manufacturing equipment that creates 3D objects and end-use parts, as well as with providers of materials and services for this equipment. Some of our existing and potential competitors are researching, designing, developing and marketing other types of products and services that may render our existing or future products obsolete, uneconomical or less competitive. Existing and potential competitors may also have substantially greater financial, technical, marketing and sales, manufacturing, distribution and other resources than us, including name recognition, as well as experience and expertise in intellectual property rights and operating within certain international markets or industry verticals, any of which may enable them to compete effectively against us. Moreover, many of our competitors have more extensive customer and partner relationships than we do, and may therefore be in a better position to identify and respond to market developments or changes in customer demands, including successfully developing technologies that outperform our technologies. Potential customers may also prefer to purchase from their existing suppliers rather than a new supplier regardless of product performance or features. For example, a number of companies that have substantial resources have announced that they are beginning production of 3D printers, which will further enhance the competition we face.

In addition, independent suppliers offer non-original supplies (including imitation, refill and remanufactured alternatives), which are often available for lower prices but which can also offer lower print quality and reliability compared to our supplies. If our customers utilize these non-original supplies with our printers, it could adversely impact our operating results and may have a negative impact on our brand.

Future competition may arise from the development of allied or related techniques for equipment, materials, software and services that are not encompassed by our patents, from the issuance of patents to other companies that may inhibit our ability to develop certain products and from improvements to existing technologies.

We intend to continue to follow a strategy of continuing product development, VAR and distribution network expansion to enhance our competitive position to the extent practicable. But we cannot assure you that we will be able to maintain our current position or continue to compete successfully against current and future sources of competition. If we do not keep pace with technological change and introduce new products and technologies, demand for our products may decline, and our operating results may suffer.

Declines in the prices of our products and services, or in our volume of sales, together with our relatively inflexible cost structure, may adversely affect our financial results.

Our business is subject to price competition. Such price competition may adversely affect our results of operation, especially during periods of decreased demand. Decreased demand also adversely impacts the volume of our sales. If our business is not able to offset price reductions resulting from these pressures, or decreased volume of sales due to contractions in the market, by improved operating efficiencies and reduced expenditures, then our operating results will be adversely affected.

Although we generally do not have long-term supply agreements, certain of our operating costs are fixed and cannot readily be reduced, which has an impact on our operating results. To the extent the demand for our products slows, or the additive manufacturing market contracts, we may be faced with excess manufacturing capacity and related costs that cannot readily be reduced, which will adversely impact our financial condition and results of operations. Conversely, because we generally do not have long-term supply agreements, we have recently experienced and expect to continue to be subject to the risk of significant cost increases and parts shortages by our suppliers, or decisions by our suppliers to cease selling certain parts and materials to us.

Increased consolidation among our customers, suppliers and competitors in the additive manufacturing industry may have an adverse effect on our business and results of operations.

Increased consolidation in the additive manufacturing industry among our customers, suppliers and competitors may adversely affect our business and results of operations. Customer consolidation could lead to changes in buying patterns, slowdowns in spending, and impact our distribution channels. Moreover, the significant purchasing power of these large companies can increase pricing and competitive pressures for us, including the potential for decreases in our average selling prices. If one of our customers is acquired by another company that does not rely on us to provide it with products or relies on another provider of similar products, we may lose that customer's business. Any of the foregoing results will adversely affect our business, financial condition and results of operations.

In addition, supplier consolidation may lead to increased prices of materials for our products, deployment delays and/or a disruption in output. In addition, such consolidation may exacerbate the risks relating to our dependence on a small number of suppliers for certain materials that are required to manufacture our products.

We may experience significant delays in the design, production and launch of our additive manufacturing solutions and enhancements to existing products, and we may be unable to successfully commercialize products on our planned timelines.

We have several additive manufacturing solutions and enhancements to existing products that are still under development. There are often delays in the design, testing, manufacture and commercial release of new products, and any delay in the launch of our products could materially damage our brand, business, growth prospects, financial condition and operating results. For example, we experienced production challenges meeting demand for our FX20 printer, including issues procuring materials and production constraints, which limited revenue during 2022, and initial production costs exceeded targets negatively impacting our gross margin. Even if we successfully complete the design, testing and manufacture for one or all of our products or enhancements under development, we may fail to develop a commercially successful product on the timeline we expect for a number of reasons, including:

- misalignment between the products and customer needs;
- length of sales cycles;
- insufficient product innovation;
- product quality and performance issues;
- insufficient resources or qualified personnel to develop the product;

- failure of the product to perform in accordance with the customer's expectations and industry standards;
- inability to procure parts of adequate quality needed to build the product on commercially acceptable terms, or at all;
- insufficient labor or process stability to build the product to required specifications;
- ineffective distribution, sales and marketing;
- delay in obtaining, or failure to obtain, any required regulatory approvals;
- the impact of future health epidemics on production, distribution and demand for our products;
- increased production costs, including due to general inflationary pressures on the supplies we procure, and unexpected delays; or
- release of competitive products.

Our success in the market for the new products we develop will depend in part on our ability to prove our new products' capabilities in a timely manner. Until demonstration, our customers may not believe that our products and/or technology have the capabilities they were designed to have or that we believe they have. Furthermore, even if we do successfully demonstrate our products' capabilities, potential customers may be more comfortable doing business with a competitor, including another larger and more established company, may take longer than expected to make the decision to order our products, or may not have the budget or decision-making authority to purchase the product. Significant revenue from new product investments may not be achieved for a number of years, if at all. If the timing of our launch of new products and/or of our customers' acceptance of such products is different than our assumptions, our revenue and results of operations may be adversely affected.

Changes in our product mix may impact our gross margins and financial performance.

Our financial performance may be affected by the mix of products and services we sell during a given period. We expect to continue to offer products at a variety of price points. Sales of certain of our products have, or are expected to have, higher gross margin contributions than others. If our product mix shifts too far into lower gross margin products, or we are unable to maintain or increase gross margins, and we are not able to sufficiently reduce the engineering, production and other costs associated with those products or substantially increase the sales of our higher gross margin products, our profitability could be reduced. 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. Relatedly, if our product mix shifts such that our production rates decrease, our product costs and margins may be negatively impacted. 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.

Risks Related to Our Business Operations

Our failure to meet our customers' price expectations would adversely affect our business and results of operations.

Demand for our product lines is sensitive to price. We believe our competitive pricing has been an important factor in our results to date. Therefore, changes in our pricing strategies can have a significant impact on our business and ability to generate revenue. Many factors, including our production and personnel costs, our competitors' pricing and marketing strategies, general inflationary pressures, our customers' budgets, the value our products bring to our customers and our desire to hit revenue goals can significantly impact our pricing strategies. If we fail to meet our customers' price expectations in any given period, demand for our products and product lines could be negatively impacted and our business, results of operations and brand could suffer.

Our revenue model is evolving and we may introduce new revenue models or avenues that may not be accepted by our customers and as such will not materialize.

We depend on our network of VARs and other distribution partners and if we fail to maintain successful relationships, or if they fail to perform, our ability to market, sell and distribute our products will be limited, and our business, financial position and results of operations will be harmed.

We rely heavily on our global network of VARs and other distribution partners to sell our products and to provide installation and support services to customers in their respective geographic regions. These VARs and other distribution partners may not be as effective in selling our products or installing and supporting our customers as we expect. Moreover, a VAR or other distribution partner may misrepresent the capabilities of our products without our knowledge either intentionally or unintentionally due to the inherent complexity of our products. Further, our VARs and other distribution partners can terminate their contracts with us at any

time, and if our contracts with a significant number of VARs and other distribution partners, or with the most effective VARs and other distribution partners, were to terminate or if they would otherwise fail or refuse to sell certain of our products, we may not be able to find replacements that are as qualified or as successful in a timely manner, if at all.

Recruiting and retaining qualified VARs and other distribution partners and training them in our technologies requires significant time and resources. These VARs and other distribution partners may also market, sell and support other technologies in unrelated markets and may devote more resources to the marketing, sales and support of such products.

In addition, if our VARs and other distribution partners do not perform as anticipated, or if we are unable to secure qualified and successful VARs and other distribution partners, our sales will suffer, which would have an adverse effect on our revenues and operating results. Because we also depend upon our VARs and other distribution partners to provide installation and support services for products, if our VAR or distribution partner relationships were terminated or limited to certain products, we may face disruption in providing support for our customers, which would adversely affect our brand, reputation and our results of operations. Any failure to offer high-quality technical support services may adversely affect our relationships with our customers and adversely affect our financial results and brand.

Further, we require that our VARs and other distribution partners adhere to all local laws and regulations, but it is possible that a VAR or other distribution partner could violate such laws or regulations, which could adversely impact our business, reputation and financial results and brand. Our indirect sales and distribution model could subject us to lawsuits, potential liability and brand and reputational harm if, for example, any of our VARs and other distribution partners misrepresent the functionality of our products or services to customers or violate laws or our corporate policies.

Additionally, a default by one or more VARs or other distribution partners with whom we have a significant receivables balance could have an adverse financial impact on our financial results. As of and for the year ended December 31, 2023, no customer represented greater than 10% of the accounts receivable balance or total revenue. As of and for the year ended December 31, 2022, one customer represented greater than 10% of the accounts receivable balance and total revenue. In the event that this customer or any of our large customers do not continue to purchase our products or purchase fewer of our products, our business, results of operations and financial condition could be adversely affected. We have reviewed our policies that govern credit and collections and will continue to monitor them in light of current payment status and economic conditions. In addition, we try to reduce the credit exposures of our accounts receivable by instituting credit limits and additional checks. However, there can be no assurance that our efforts to identify potential credit risks will be successful. Our inability to timely identify VARs and other distribution partners that are credit risks could result in defaults at a time when such VARs and other distribution partners have high accounts receivable balances with us. Any such default would result in a significant charge against our earnings and adversely affect our results of operations and financial condition.

If our suppliers become unavailable or inadequate, our customer relationships, results of operations and financial condition may be adversely affected.

As a result of supply chain disruptions and the rise of inflation, we have experienced increasing costs and supply shortages that have continued into 2023. For example, we recently experienced longer lead times and capacity constraints in connection with the raw resources required to manufacture our printing material and we are also facing increased prices in connection with the procurement of the electronic components and custom metal fabricated parts for our printers, including our FX20 printer. We acquire certain of our materials, which are critical to the ongoing operation and future growth of our business, from several third parties. Generally, our third-party contract manufacturers contract directly with component suppliers with our guidance. We rely on our contract manufacturers to manage their supply chains. If one of our contract manufacturers has supply chain disruptions, or our relationship with our contract manufacturer terminates, we could experience delays. We also source some materials directly from suppliers. While most manufacturing equipment and materials for our products are available from multiple suppliers, certain of those items are only available from limited sources. Should any of these suppliers become unavailable or inadequate, or impose terms unacceptable to us, such as increased pricing terms, we could be required to spend a significant amount of time and expense to develop alternate sources of supply, and we may not be successful in doing so on terms acceptable to us, or at all. As a result, the loss of a limited source supplier could adversely affect our brand and relationship with our customers as well as our results of operations and financial condition.

In the case of certain materials, we have specified a certain grade of a product to be used in our manufacturing process. While there are several potential suppliers of most of these component materials that we use, we currently choose to use only one or a limited number of suppliers for several of these components and materials. For those materials, we could be impacted by any changes our suppliers make to such materials, which could include specification changes, lead time or cancellation of the material. If there is not an alternate product available, replacement thereof would require significant engineering and manufacturing efforts by us to qualify a replacement. Additionally, if a supplier of such materials decided to terminate their relationship with us, we may face delays in our

production as we seek out a replacement supplier. Our reliance on a single or limited number of vendors involves a number of risks, including:

- potential shortages and cost increases of some key components;
- product performance shortfalls, if traceable to particular product components, since the supplier of the faulty component cannot readily be replaced;
- discontinuation of a product or certain materials on which we rely;
- potential insolvency of these vendors;
- vendors may discontinue producing a particular product component, or discontinue selling us particular components; and
- reduced control over delivery schedules, manufacturing capabilities, quality and costs.

In addition, we evaluate new suppliers pursuant to our internal procedures. This process involves evaluations of varying durations, which may cause production delays if we were required to qualify a new supplier unexpectedly. We generally assemble our systems and parts based on our internal forecasts and the availability of raw materials, assemblies, components and finished goods that are supplied to us by third parties, which are subject to various lead times. If certain suppliers were to decide to discontinue production of an assembly, component or raw material that we use, the unanticipated change in the availability of supplies, or unanticipated supply limitations, could cause delays in, or loss of, sales, increased production or related costs and consequently reduced margins, and damage to our reputation. If we were unable to find a suitable supplier for a particular component, material or compound, we could be required to modify our existing products or the end-parts that we offer to accommodate substitute components, material or compounds. While we monitor risk internally related to our sourcing (particularly concerning raw materials), there is no guarantee that will sufficiently protect us if we suddenly lose access to supplies unexpectedly.

Any shortage of a particular component, material or compound could materially and adversely affect our ability to manufacture our products and could lead to increased costs to acquire such resources which could adversely affect our business and financial condition. We have in the past experienced and may in the future experience materials shortages and price fluctuations of certain key components, materials and compounds, and the predictability of the availability and pricing of these components, materials and compounds may be limited. Shortages of components, materials or compounds or pricing fluctuations could be material in the future. In the event of a components, materials or compounds shortage, supply interruption or material pricing change from suppliers of these components, materials or compounds, we may not be able to develop alternate sources in a timely manner or at all in the case of sole or limited sources. Developing alternate sources of supply for these components, materials or compounds may be time-consuming, difficult, and costly and we may not be able to source these components, materials or compounds on terms that are acceptable to us, or at all, which may undermine our ability to meet our requirements or to fill customer orders in a timely manner. Any interruption or delay in the supply of any of these components, materials or compounds, or the inability to obtain these components, materials or compounds from alternate sources at acceptable prices and within a reasonable amount of time, would adversely affect our ability to meet our scheduled product deliveries to our customers. This could adversely affect our relationships with our customers and VARs and could cause delays in shipment of our products and adversely affect our operating results. In addition, increased component, material or compound costs could result in lower gross margins. Even where we are able to pass increased costs along to our customers, there may be a lapse of time before we are able to do so such that we must absorb the increased cost. If we are unable to buy these components, materials or compounds in quantities sufficient to meet our requirements on a timely basis, we will not be able to deliver products to our customers, which may result in such customers using competitive products instead of ours.

We have experienced minor delays on the inbound supply chain at our partners and our own facilities. Additional delays on both inbound and outbound logistics have also created challenges. We have been able to identify alternative solutions such that none of the issues has had a material impact on our ability to fulfill demand. If disruptions to global businesses continue or worsen, our business could face greater supply chain delays and difficulty shipping or receiving products and materials, which could have a material adverse effect on our financial condition and results of operations.

While we believe that, if necessary, we can obtain all the components necessary for our spare parts and materials from other manufacturers, we will need to guide any new manufacturers through evaluation processes of varying durations. Our spare parts and raw materials used in our materials production are subject to various lead times. 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 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.

Our business model is predicated, in part, on developing or expanding recurring revenues through the sale of our hardware, consumables, and services. If that recurring stream of revenues does not develop as expected, or if our business model changes as the industry evolves, our operating results may be adversely affected.

Our business model is dependent, in part, on our ability to develop, maintain and increase sales of our hardware, consumables, and services as they generate recurring revenues. Existing and future customers of our systems may not purchase our consumables and services at the same rate at which customers currently purchase those offerings. If our current and future customers purchase a lower volume of our consumables and services, resulting overall in lower purchases of consumables and services on average than with our current installed customer base, our recurring revenue stream relative to our total revenues would be reduced and our operating results would be adversely affected.

We rely on a limited number of third-party logistics providers for distribution of our products, and their failure to distribute our products effectively and in a cost effective manner would adversely affect our sales.

We rely on a limited number of third-party logistics providers for shipping our products. Each third-party logistics provider stores our products in a limited number of warehouses where they prepare and ship our products based on digital instructions. The use of a limited number of third-party logistics providers increases the risk that a fire or damage from another type of disaster at any of the warehouses may result in a disruption of our commercialization efforts. Additionally, because we use a limited number of third-party logistics providers, if there is a disruption in the distribution channels of such third-party logistics providers, including but not limited to any disruption caused by global shipping capacity, labor shortages, or if these providers continue to increase their rates, our business and financial condition could be adversely impacted.

If our third-party logistics providers do not fulfill their contractual obligations to us, or refuse or fail to adequately distribute our products, such as by shipping our products to the incorrect recipient, or the agreements are terminated without adequate notice, shipments of our products, and associated revenues, would be adversely affected. In addition, we expect that it may take a significant amount of time if we were required to change our third-party logistics providers and would require significant efforts to provide the systems support required for a new provider to effectively support our operations.

If demand for our products does not grow as expected, or if market adoption of additive manufacturing does not continue to develop, or develops more slowly than expected, our revenues may stagnate or decline, and our business may be adversely affected.

We believe that the industrial manufacturing market, which today is dominated by conventional manufacturing processes that do not involve additive manufacturing technology, is undergoing a shift towards additive manufacturing for end-use production as well as factory line support. We may not be able to develop effective strategies to raise awareness among potential customers of the benefits of additive manufacturing technologies or our products may not address the specific needs or provide the level of functionality required by potential customers to encourage the continuation of this shift towards additive manufacturing. We must anticipate, sometimes several years in advance, the direction that the additive market is taking. We may not correctly anticipate the direction, which may lead us to invest in the wrong products, which may adversely affect our results of operation and financial condition. If additive manufacturing technology does not continue to gain broader market acceptance as an alternative to conventional manufacturing processes, or if the marketplace adopts additive manufacturing technologies that differ from our technologies, we may not be able to increase or sustain the level of sales of our products, and our operating results would be adversely affected as a result.

Defects in new products or in enhancements to our existing products that give rise to product returns or warranty or other claims could result in material expenses, diversion of management time and attention and damage to our reputation.

Our additive manufacturing solutions are complex and may contain undetected defects or errors when first introduced or as enhancements are released that, despite testing, are not discovered until after a machine has been used. We may not know which products are affected by defects. These defects could be systemic and could affect all of the products we shipped prior to discovery thereof. It may not be economically feasible to identify, replace or repair all affected products. In the event that the defect is severe enough or impacts customer safety, a product recall may be required. This could result in delayed market acceptance of those products or claims from VARs, customers or others, which may result in litigation, increased customer warranty, support and repair or replacement costs, damage to our reputation and business, or significant costs and diversion of support, management and engineering personnel to correct the defect or error. We may from time to time become subject to warranty or product liability claims related to product quality issues that may require us to take remedial action and could, regardless of merit, lead us to incur significant expenses, result in diversion of management time and attention, damage to our business and reputation and brand, and cause us to fail to retain existing customers or fail to attract new customers.

We attempt to include provisions in our agreements with customers that are designed to manage our exposure to potential liability for damages arising from defects or errors in our products. However, it is possible that these provisions may not be effective as a result of unfavorable judicial decisions or laws enacted in the future.

We may be unable to consistently manufacture our products to the necessary specifications or in quantities necessary to meet demand at an acceptable cost or at an acceptable performance level.

Our products are integrated solutions with many different components that work together. As such, a quality defect in a single component can compromise the performance of the entire solution. As we continue to grow and introduce new products, and as our products incorporate increasingly sophisticated technology, such as our FX20 system, which is the largest and most complex printer we have ever developed, it will be increasingly difficult to ensure our products are produced in the necessary quantities without sacrificing quality. There is no assurance that we or our third-party manufacturers and any component suppliers will be able to continue to manufacture our products so that they consistently achieve the product specifications and quality that our customers expect. Relatedly, certain of our components are sourced by a single supplier and, if the supply were to become disrupted as a result of insufficient quality, service delays or any other factor, our manufacturing efforts could be adversely affected. Any future design issues, unforeseen manufacturing problems, such as contamination of our or such third-party facilities, equipment malfunctions, aging components, component obsolescence, business continuity issues, quality issues with components and materials sourced from third party suppliers, or failures to strictly follow procedures or meet specifications, may have a material adverse effect on our brand, business, financial condition and operating results. Furthermore, we or our third-party manufacturers may not be able to increase manufacturing to meet anticipated demand or may experience downtime.

In order to meet our customers' needs, we attempt to forecast demand for our products and components used for the manufacture of our products. If we fail to accurately forecast this demand, we could incur additional costs or experience manufacturing delays and may experience lost sales or significant inventory carrying costs.

The risk of manufacturing defects or quality control issues is generally higher for new products, whether produced by us or a third-party manufacturer, products that are transitioned from one manufacturer to another, particularly if manufacturing is transitioned or initiated with a manufacturer we have not worked with in the past, and products that are transferred from one manufacturing facility to another. We cannot assure investors that we and our third-party manufacturers will be able to launch new products on time, transition manufacturing of existing products to new manufacturers, transition our manufacturing capabilities to a new location or transition manufacturing of any additional materials in-house without manufacturing defects. An inability to manufacture products and components that consistently meet specifications, in necessary quantities and at commercially acceptable costs will have a negative impact and may have a material adverse effect on our brand, business, financial condition and results of operations.

Our commercial contracts generally contain product warranties and limitations on liability and we carry liability insurance in amounts that we believe are adequate for our risk exposure and commensurate with industry norms. However, commercial terms and our insurance coverage may not be adequate or available to protect our company in all circumstances, and we might not be able to maintain adequate insurance coverage for our business in the future at an acceptable cost. Any liability claim against us that is not covered by adequate insurance could adversely affect our consolidated results of operations and financial condition. Finally, any liability claim against us may cause harm to our brand, reputation and adversely impact our business.

We are dependent on the continued services and performance of our senior management and other key employees, as well as on our ability to successfully hire, train, manage and retain qualified personnel.

Our future performance depends on the continued services and contributions of our executive team and other key employees to execute on our business plan and to identify and pursue new opportunities and product innovations. Such persons may resign at any time and the loss of their services could delay or prevent the successful implementation of our strategy, commercialization of new applications for our systems or other products, or could otherwise adversely affect our ability to manage our company effectively and carry out our business plan. There is no assurance that if any senior executive or other key employee leaves in the future, we will be able to rapidly replace him or her and transition smoothly towards his or her successor, without any adverse impact on our operations.

Our ability to successfully pursue our growth strategy will also depend on our ability to attract, motivate and retain existing and new personnel. We experience intense competition for qualified senior management and other key personnel (including scientific, technical, manufacturing, engineering, financial and sales personnel) in the additive manufacturing industry, especially in the greater Boston area. In addition, we have experienced increased competition and shortages for skilled labor, particularly for the key roles noted above. These risks to attracting and retaining the necessary talent may be exacerbated by recent labor constraints and inflationary pressures on employee wages and benefits. Our personnel are generally employed on an at-will basis, which means that they could terminate their employment with us at any time. There can be no assurance that we will be able to retain our current key personnel or attract new persons to join our organization in the future. 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 our stock does not perform as well as other companies' our equity incentive programs may have reduced retentive value. These pressures could result in increased costs in order to provide competitive compensation packages to attract and retain key personnel. Moreover, new employees may not be as productive as we expect since we may face challenges in adequately integrating them into our workforce and culture. If we cannot attract and retain sufficiently qualified technical employees for our research product development activities, as well as experienced sales and marketing personnel, we may be unable to develop and commercialize new products and enhancements to existing products.

As manufacturing becomes a larger part of our operations, we will become exposed to the accompanying risks and liabilities.

In-house and outsourced manufacturing has been and continues to be a significant part of our business. As a result, we expect to continue to be subject to various risks associated with the manufacturing and supply of products, including the following:

- If we fail to supply products in accordance with contractual terms, including terms related to time of delivery and performance specifications, we may be required to repair or replace defective products and may become liable for direct, special, consequential and other damages, even if manufacturing or delivery was outsourced;
- Raw materials used in the manufacturing process, labor and other key inputs may become scarce, obsolete and expensive, causing our costs to exceed cost projections and associated revenues;
- Manufacturing processes typically involve large machinery, fuels and chemicals, any or all of which may lead to accidents involving bodily harm, destruction of facilities and environmental contamination and associated liabilities;
- As our manufacturing operations expand, we expect that a significant portion of our manufacturing will be done in regions outside the United States, either by third-party contractors or in a plant owned by us. Any manufacturing done in such locations presents risks associated with quality control, currency exchange rates, foreign laws and customs, timing and loss risks associated with international transportation and potential adverse changes in the political, legal and social environment in the host country, including the outbreak of war or sustained armed conflict in such host country or its geographic region;
- We have made, and may be required to make, representations as to our right to supply and/or license intellectual property and to our compliance with laws. Such representations are usually supported by indemnification provisions requiring us to defend our customers and otherwise make them whole if we license or supply products that infringe on third-party technologies or violate government regulations;
- As our manufacturing operations scale, so will our dependence on skilled labor at both in-house and third-party manufacturing facilities. If we are unable to obtain and maintain skilled labor resources, we may be unable to meet customer production demands; and
- With scaling production volume, demand for our products may make up a significant percentage of global volume in select categories or commodities. Such commodities could be subject to large pricing swings due to the global political, legal and social environment and could cause our costs to exceed productions and associated revenues.

Any failure to adequately manage risks associated with the manufacture and supply of materials and products could adversely affect profits from that segment of our business and/or lead to significant liabilities, which would harm our brand, business, operations and financial condition.

Under applicable employment laws, we may not be able to enforce covenants not to compete and therefore may be unable to prevent our competitors from benefiting from the expertise of some of our former employees.

We generally enter into non-competition agreements with our employees. These agreements prohibit our employees from competing directly with us or working for our competitors or clients for a limited period after they cease working for us. We may be unable to enforce these agreements under the laws of the jurisdictions in which our employees work and it may be difficult for us to restrict our competitors from benefiting from the expertise that our former employees or consultants developed while working for us. For example, in Massachusetts, where most of our employees are based, applicable law imposes a number of requirements to enter into a valid non-competition agreement, and in California non-competition agreements with employees are generally unenforceable after termination of employment. Further, in January 2023, the U.S. Federal Trade Commission published a proposed rule that, if finally issued, would generally prohibit post-employment non-compete clauses (or other clauses with comparable effect) in agreements between employers and their employees. We are monitoring the proposed rule and the impact it may have on our ability to enforce non-competition agreements.

We expect to continue to experience rapid growth and organizational change. If we fail to manage our growth effectively, we may be unable to execute our business plan, maintain high levels of service and customer satisfaction or attract new employees and customers.

We expect to continue to experience growth in our number of customers, sales, revenues and headcount. We expect to continue to make significant investments in our business, including investments in our infrastructure, software, technology, personnel headcount, facilities, marketing and sales efforts. If our business does not generate the level of revenue required to support our investment, our net sales and profitability will be adversely affected.

To manage growth in our operations and personnel, we will need to continue to scale and improve our operational, financial, and management controls, and our reporting systems and procedures, which will require significant capital expenditures, increasing our cost of operations and the reallocation of valuable management resources. As we scale, it may become more difficult and will require additional capital expenditures to maintain and increase the productivity of our employees, expand production, to address the needs of our actual and prospective customers, to further develop and enhance our products, and remain competitive against our competitors' products. These enhancements and improvements will require significant capital expenditures, investments in additional headcount and other operating expenditures and allocation of valuable management and employee resources, including but not limited to investments related to our facilities. Our future financial performance and our ability to execute on our business plan will depend, in part, on our ability to effectively manage any future growth and expansion. There are no guarantees we will be able to do so in an efficient or timely manner, or at all.

As we acquire and invest in companies or technologies, we may not realize expected business, technological or financial benefits and the acquisitions or investments could prove difficult to integrate, disrupt our business, dilute stockholder value and adversely affect our business, results of operations, and financial condition.

As part of our business strategy, we may evaluate and make investments in, or acquisitions of, complementary companies, products, software and technologies, to further grow and augment our business and product offerings. The success of any attempts to grow our business through acquisitions to complement our business depends in part on the availability of, our ability to identify, and our ability to engage and pursue suitable acquisition candidates. We may not be able to find suitable acquisition candidates, and we may not be able to complete acquisitions on favorable terms, if at all.

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

- diversion of management's attention from existing operations;
- unanticipated costs or liabilities associated with the acquisition, including risks associated with acquired intellectual property and/or technologies;
- incurrence of acquisition-related costs, which would be recognized as a current period expense;
- difficulties in, and the cost of, integrating personnel and cultures, operations, technologies, products and services which may lead to failure to achieve the expected benefits on a timely basis or at all;
- challenges in achieving strategic objectives, cost savings and other anticipated benefits;
- inability to maintain relationships with key customers, suppliers, vendors and other third parties on which the purchased business relies;
- the difficulty of incorporating acquired technology and rights into our products and product portfolio and of maintaining quality and security standards consistent with our brand;
- ineffective controls, procedures and policies inherited from the acquired company or during the transition and integration;
- inability to generate sufficient revenue to offset acquisition and/or investment costs;
- negative impact to our results of operations because of the depreciation of amounts related to acquired intangible assets, fixed assets, and deferred compensation;
- requirements to record certain acquisition-related costs and other items as current period expenses, which would have the effect of reducing our reported earnings in the period in which an acquisition is consummated;

- recording goodwill or other long-lived asset impairment charges in the periods in which they occur, which could result in a significant charge to our earnings in any such period, such as the goodwill impairment recorded in the third quarter of 2023;
- use of substantial portions of our available cash, issuance of dilutive equity or the incurrence of debt to consummate the acquisition;
- potential write-offs of acquired assets or investments, and potential financial and credit risks associated with acquired customers;
- tax effects and costs of any such acquisitions, including the related integration into our tax structure and assessment of the impact on the realizability of our future tax assets or liabilities;
- the potential entry into new markets in which we have little or no experience or where competitors may have stronger market positions; and
- currency and regulatory risks associated with conducting operations in foreign countries.

We may require additional capital to support business growth, and this capital might not be available on acceptable terms, if at all.

We intend to continue to make investments to support our business growth and may require additional funds to respond to business challenges and opportunities, including the need to develop new features or enhance our products, improve our operating infrastructure or acquire complementary businesses and technologies. Accordingly, we may need to engage in equity or debt financings to secure additional funds if our existing sources of cash and any funds generated from operations do not provide us with sufficient capital. Current capital market conditions, including the impact of inflation, have increased borrowing rates and can be expected to significantly increase our cost of capital as compared to prior periods should we seek additional funding. Moreover, global capital markets have undergone periods of significant volatility and uncertainty in the past, and there can be no assurance that such financing alternatives will be available to us on favorable terms or at all, should we determine it necessary or advisable to seek additional capital. If we raise additional funds through future issuances of equity or convertible debt securities, our existing stockholders could suffer significant dilution, and any new equity securities we issue could have rights, preferences and privileges superior to those of holders of our common stock. Any debt financing that we may secure in the future could involve restrictive covenants relating to our capital raising activities and other financial and operational matters, which may make it more difficult for us to obtain additional capital and to pursue business opportunities, including potential acquisitions, and any new or refinanced debt may be subject to substantially higher interest rates, which could adversely affect our financial condition and impact our business. Recent quantitative tightening by the U.S. Federal Reserve, along with other central banks around the world, may further negatively affect our short-term ability or desire to incur debt. We may not be able to obtain additional financing on terms favorable to us, for example, if interest rates continue to rise and make debt financing prohibitively expensive, or such financing may not be available at all. If we are unable to obtain adequate financing or financing on terms satisfactory to us when we require it, our ability to continue to support our business growth and to respond to business challenges and opportunities could be significantly impaired, and our business may be adversely affected.

Risks Related to Third Parties

A real or perceived defect, security vulnerability, error or performance failure in our software or technical problems or disruptions caused by our third-party service providers could cause us to lose revenue, damage our reputation and expose us to liability.

Our hardware products rely upon our complementary software products which are inherently complex and, despite extensive testing and quality control, have in the past and may in the future contain defects, vulnerabilities, or errors, especially when first introduced, or otherwise not perform as contemplated. As the use of our products, including products that were recently acquired or developed, expands to more sensitive, secure or mission critical uses by our customers, we may be subject to increased scrutiny, potential reputational risk or potential liability should our software fail to perform as contemplated in such deployments. We have in the past and may in the future need to issue corrective releases of our software to fix these defects, vulnerabilities, errors or performance failures and we may encounter technical problems when we attempt to perform routine maintenance or enhance our software, internal applications, and systems, which could require us to allocate significant research and development and customer support resources to address these problems and divert the focus of our management and research and development teams. In addition, our platform may be negatively impacted by technical or security issues experienced by our third-party service providers.

Our business, brands, reputation and ability to attract and retain customers depend upon the satisfactory performance, reliability and availability and security of our software products, which in turn, with respect to our planned software as a service (“SaaS”) offerings depend upon the availability and security of the internet and our third-party service providers. For example, for our SaaS offerings we outsource our cloud infrastructure to Amazon Web Services (“AWS”), our hosting provider, which hosts our software products. Our hosting provider runs its own platforms upon which our products depend, and we are, therefore, vulnerable to service

interruptions at the hosting provider level. We do not control the operation of any of AWS' data center hosting facilities, and they may be subject to damage, compromise, or interruption from earthquakes, floods, fires, power loss, telecommunications failures, terrorist attacks and similar events. They may also be subject to damage, compromise, or interruptions due to system failures, cybersecurity incidents, compromises, or vulnerabilities (including system-encrypting ransomware), software errors or subject to breaches of computer hardware and software security, break-ins, sabotage, intentional acts of vandalism and similar misconduct. And while we rely on service level agreements with our hosting provider, if they do not properly maintain their infrastructure or if they incur unplanned outages, our customers may experience performance issues or unexpected interruptions and we may not meet our service level agreement terms with our customers. We have experienced, and expect that in the future we may experience interruptions, delays and outages in service and availability from time to time due to a variety of factors, including infrastructure changes, human or software errors, website hosting disruptions and capacity constraints.

Any inefficiencies, security vulnerabilities, errors, defects, technical problems or performance failures with our software, internal applications, systems or infrastructure, or those of our third-party providers, could reduce the quality of our products or interfere with our customers' (and their users') use of our products, which could negatively impact our brand and reputation, reduce demand, lead to a loss of customers or revenue, adversely affect our results of operations and financial condition, increase our costs to resolve such issues and subject us to financial penalties and liabilities under our service level agreements. Any limitation of liability provisions that may be contained in our customer agreements may not be effective as a result of existing or future applicable law or unfavorable judicial decisions. The sale and support of our products entail the risk of liability claims, which could be substantial in light of the use of our products in enterprise-wide environments. In addition, our insurance against this liability may not be adequate to cover a potential claim.

We depend on a limited number of third-party contract manufacturers for a substantial portion of all of our manufacturing needs and any delay, disruption or quality control problems in their operations, could cause harm to our operations, including loss of market share and damage to our brand.

We depend on third-party contract manufacturers for the production of our 3D printers and on third-party suppliers for the components and raw materials used in our products. While there are several potential manufacturers for most of these products, all of our products are manufactured, assembled, tested and generally packaged by a limited number of third-party manufacturers and several single source providers of certain supplies. In most cases, we rely on these manufacturers to procure components and, in some cases, subcontract engineering work. Our reliance on a limited number of contract manufacturers involves a number of risks, including:

- unexpected increases in manufacturing and repair costs;
- inability to control the quality and reliability of products;
- inability to control delivery schedules;
- potential liability for expenses incurred by third-party contract manufacturers in reliance on our forecasts that later prove to be inaccurate;
- potential lack of adequate capacity to manufacture all or a part of the products we require;
- potential labor unrest affecting the ability of the third-party manufacturers to produce our products; and
- unexpected component or process obsolescence making key components unavailable.

If any of our third-party contract manufacturers experience a delay, disruption or quality control problems in their operations, including due to global supply chain disruptions, or if a primary third-party contract manufacturer does not renew its agreement with us, our operations could be significantly disrupted and our product shipments could be delayed. Qualifying a new manufacturer and commencing volume production is expensive and time consuming. Ensuring that a contract manufacturer is qualified to manufacture our products to our standards is time consuming. In addition, there is no assurance that a contract manufacturer can scale its production of our products at the volumes and in the quality that we require. If a contract manufacturer is unable to do these things, we may have to move production for the products to a new or existing third-party manufacturer, which would take significant effort and our brand, business, results of operations and financial condition could be materially adversely affected. Finally, if a contract manufacturer producing a highly specified product changes its materials or is unable to meet our production demands, it could lead to specification changes, increased lead time or cancellation of the product.

As we contemplate moving manufacturing into different jurisdictions, we may be subject to additional significant challenges in ensuring that quality, processes, and costs, among other issues, are consistent with our expectations. If such jurisdictions are outside the U.S., we may also face significant challenges regarding compliance with law in such jurisdictions as well as export control laws of such jurisdictions and the U.S., as more fully described in the section "Risk Factors – Risks Related to International Operations" as

well as risks associated with quality control, currency exchange rates, foreign laws and customs, timing and loss risks associated with international transportation and potential adverse changes in the political, legal and social environment in the jurisdiction, including the outbreak of war or sustained armed conflict in such jurisdiction or geographic region.

In addition, because we use a limited number of third-party contract manufacturers, increases in the prices charged may have an adverse effect on our results of operations, as we may be unable to find a contract manufacturer who can supply us at a lower price. As a result, the loss of a limited source supplier could adversely affect our relationships with our customers and our results of operations and financial condition.

All of our products must satisfy safety and regulatory standards and some of our products must also receive government certifications. We rely on third-party providers to conduct the tests that support our applications for most regulatory approvals for our products. As part of the certification process, our third-party contract manufacturers are subject to audit and must receive approvals from third-parties providing such certifications. Failure to meet these certifications by our third-party contract manufacturers could adversely impact our business. Moreover, if our third-party contract manufacturers fail to timely and accurately conduct the tests supporting our applications for regulatory approvals, we may be unable to obtain the necessary domestic or foreign regulatory approvals or certifications to sell our products in certain jurisdictions. As a result, we would be unable to sell our products and our sales and profitability could be reduced, our relationships with our sales channel could be harmed and our reputation and brand would suffer.

Our manufacturing facility and those of our third-party contract manufacturers and suppliers, as well as our customers' facilities and our third-party logistics providers, are vulnerable to disruption due to natural or other disasters, strikes and other events beyond our control.

A major earthquake, fire, tsunami, hurricane, cyclone or other disaster, such as a major flood, seasonal storms, nuclear event, war, sustained armed conflict, such as Russia's invasion of Ukraine, the armed conflict in Israel, Gaza and the Middle East generally or terrorist attack affecting our facilities or the areas in which they are located, or affecting those of our customers or third-party manufacturers, suppliers or fulfillment centers, could significantly disrupt our or their operations and delay or prevent product shipment or installation during the time required to repair, rebuild or replace our or their damaged manufacturing facilities. These delays could be lengthy and costly. In order to maintain our production timelines and supply chains throughout the world, including with our recently added third party manufacturer in Israel, we may be required to develop alternative infrastructure and we may not be able to avoid interruptions or additional costs. If any of our facilities, or those of our third-party contract manufacturers, suppliers, third-party logistics providers or customers are negatively impacted by such a disaster, production, shipment and installation of our additive manufacturing machines could be delayed, which can impact the period in which we recognize the revenue related to that additive manufacturing machine sale. Additionally, customers may delay purchases of our products until operations return to normal. Even if we are able to respond quickly to a disaster, the continued effects of the disaster could create uncertainty in our business operations. We have no way to predict the progress or outcome of these situations, including any impact on the rest of the world, as the conflicts and government reactions are rapidly developing. In addition, concerns about terrorism, the effects of a terrorist attack, political turmoil, labor strikes, war or the outbreak of epidemic or pandemic diseases could have a negative effect on our operations and sales.

Risks Related to International Operations

Our existing and planned global operations subject us to a variety of risks and uncertainties that could adversely affect our business and operating results. Our business is subject to risks associated with selling machines and other products in non-United States locations.

Our products and services are distributed across the world, and we derive a substantial percentage of our sales from these international markets. Accordingly, we face significant operational risks from doing business internationally.

Our operating results may be affected by volatility in currency exchange rates and our ability to effectively manage our currency transaction risks. Although we currently invoice customers in United States dollars, increases in the value of the dollar relative to foreign currencies may make our products less attractive to foreign customers. We may also incur currency transaction risks if we were to enter into either a purchase or a sale transaction using a different currency from the currency in which we report revenues. In such cases we may suffer an exchange loss because we do not currently engage in currency swaps or other currency hedging strategies to address this risk. As we realize our strategy to expand internationally, our exposure to currency risks may increase. Given the volatility of exchange rates, we can give no assurance that we will be able to effectively manage our currency transaction risks or that any volatility in currency exchange rates will not have an adverse effect on our results of operations.

The shipments of our products to foreign customers and/or end-users may be subject to tariffs and other restrictions imposed by the destination countries. As we procure equipment and materials from foreign suppliers, we may be required to pay import duties and comply with regulations imposed by the U.S. Customs and Border Protection. Both the U.S. and foreign tariff rates and import restrictions may change from time to time, which could adversely impact our global operations, for example, by decreasing the price competitiveness of our products in foreign markets and/or by increasing our manufacturing costs.

Other risks and uncertainties we face from our global operations include:

- difficulties in staffing and managing foreign operations;
- limited protection for the enforcement of contract and intellectual property rights in certain countries where we may sell our products or work with suppliers or other third parties;
- potentially longer sales and payment cycles and potentially greater difficulties in collecting accounts receivable;
- costs and difficulties of customizing products for foreign countries;
- challenges in providing solutions across a significant distance, in different languages and among different cultures;
- laws and business practices favoring local competition;
- being subject to a wide variety of complex foreign laws, treaties and regulations and adjusting to any unexpected changes in such laws, treaties and regulations, including local labor laws;
- strict laws and regulations governing privacy and data security, including the European Union's and the United Kingdom's General Data Protection Regulation;
- uncertainty and resultant political, financial and market instability arising from the United Kingdom's exit from the European Union;
- compliance with U.S. laws affecting activities of U.S. companies abroad, including the U.S. Foreign Corrupt Practices Act;
- tariffs, trade barriers and other regulatory or contractual limitations on our ability to sell or develop our products in certain foreign markets;
- operating in countries with a higher incidence of corruption and fraudulent business practices;
- changes in regulatory requirements, including export controls, tariffs and embargoes, other trade restrictions, competition, corporate practices and data privacy concerns;
- failure by our VARs or other distribution partners to comply with local laws or regulations, export controls, tariffs and embargoes or other trade restrictions;
- potential adverse tax consequences arising from global operations;
- seasonal reductions in business activity in certain parts of the world, particularly during the summer months in Europe and at year end globally;
- rapid changes in government, economic and political policies and conditions; and
- political or civil unrest or instability, terrorism or epidemics and other similar outbreaks or events.

In addition, additive manufacturing has been identified by the U.S. government as an emerging technology and is currently being further evaluated for national security impacts. We expect additional regulatory changes to be implemented that will result in increased and/or new export controls related to additive manufacturing technologies, components and related materials and software. These changes, if implemented, may result in our being required to obtain additional approvals and/or licenses to sell 3D printers in the global market.

Our failure to effectively manage the risks and uncertainties associated with our global operations could limit the future growth of our business and adversely affect our business and operating results.

The effects of regulations relating to foreign trade, manufacturing, development and investment may adversely impact our business.

Changes in U.S. social, political, regulatory and economic conditions or in laws and policies governing foreign trade, manufacturing, development and investment could also adversely affect our business. In particular, on June 23, 2016, the U.K. held a

referendum in which a majority of the eligible members of the electorate voted to leave the EU, commonly referred to as Brexit. Pursuant to Article 50 of the Treaty on EU, the U.K. ceased being a member state of the EU on January 31, 2020. The implementation period began February 1, 2020 and continued until December 31, 2020, during which the U.K. continued to follow all of the EU's rules, and the U.K.'s trading relationship remained the same. The U.K. and the EU have signed an EU-UK Trade and Cooperation Agreement, or TCA, which became provisionally applicable on January 1, 2021 and then formally entered into force on May 1, 2021 after being ratified by both the U.K. and the EU. This agreement provides details on how some aspects of the U.K. and EU's relationship will operate going forwards however there are still many uncertainties and how the TCA will take effect in practice is still largely unknown. Additionally, there is a risk that other countries may decide to leave the European Union. This uncertainty surrounding this transition not only potentially affects our business in the United Kingdom and the European Union, but also may have an effect on global economic conditions and the stability of global financial markets, which in turn could have a material adverse effect on our business, financial condition and results of operations. In extreme cases, we could experience interruptions in production due to the processing of customs formalities or reduced customer spending in the wake of weaker economic performance. If global economic conditions remain volatile for a prolonged period or if European economies experience further disruptions, our results of operations could be adversely affected. In addition, the armed conflicts involving Russia and Ukraine may have direct and indirect effects on global economic conditions and the stability of global financial markets, which could also have a material adverse effect on our business, financial condition and results of operations.

Rising inflation rates could negatively impact our revenues and profitability if increases in the prices of our services or a decrease in consumer spending results in lower sales. In addition, if our costs increase and we are not able to pass along these price increases to our customers, our net profit (loss) would be adversely affected, and the adverse impact may be material.

Inflation rates, particularly in the United States, have increased recently to levels not seen in years. Increased inflation may result in decreased demand for our products and services, increased operating costs (including our labor costs), reduced liquidity, and limitations on our ability to access credit or otherwise raise debt and equity capital. In addition, the United States Federal Reserve has raised, and may again raise, interest rates in response to concerns about inflation. Increases in interest rates, especially if coupled with reduced government spending and volatility in financial markets, may have the effect of further increasing economic uncertainty and heightening these risks. In an inflationary environment, we may be unable to raise the sales prices of our products and services at or above the rate at which our costs increase, which could reduce our profit margins and have a material adverse effect on our financial results and net profit (loss). We also may experience lower than expected sales and potential adverse impacts on our competitive position if there is a decrease in consumer spending or a negative reaction to our pricing. A reduction in our revenue would be detrimental to our profitability and financial condition and could also have an adverse impact on our future growth.

The effects of regulations relating to conflict minerals may adversely affect our business.

Pursuant to Section 1502 of the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010, the SEC adopted requirements for companies that use certain minerals and metals, known as conflict minerals, in their products, whether or not these products are manufactured by third parties. These requirements require companies to research, disclose and report whether or not such minerals originate from the Democratic Republic of Congo and adjoining countries. The implementation of these requirements could adversely affect the sourcing, availability and pricing of such minerals if they are found to be used in the manufacture of our products, including our 3D printers or materials. In addition, we expect to continue to incur additional costs to comply with the disclosure requirements, including costs related to determining the source of any of the relevant minerals and metals used in our products. Since our supply chain is complex, we may not be able to sufficiently verify the origins for these minerals and metals used in our products through the due diligence procedures that we implement, which may harm our reputation. In such event, we may also face difficulties in satisfying customers who require that all of the components of our products are certified as conflict mineral free.

Risks Related to Sales of Products to U.S. and Foreign Governments

A significant portion of our business depends on sales to the public sector, and our failure to receive and maintain government contracts or changes in the contracting or fiscal policies of the public sector could have a material adverse effect on our business.

We derive a significant portion of our revenue from contracts that we have, either directly or through distribution partners and VARs, with federal, state, local and foreign governments and government agencies, and we believe that the success and growth of our business will continue to depend on our successful procurement of government contracts. For example, we have historically derived, and expect to continue to derive, a significant portion of our revenue from sales to agencies of the U.S. federal government and governments of other nations, either directly by us or through other distribution partners. Sales to such governments and their agencies are subject to a number of challenges and risks. The procurement process for governments and their agencies is highly competitive, time-consuming, and may, in certain circumstances, be subject to political influence. We incur significant up-front time and expense, which subjects us to additional compliance risks and costs, without any assurance that we (or a third-party distributor or reseller) will win a contract.

Accordingly, our business, financial condition, results of operations, and prospects may be adversely affected by certain events or activities, including, but not limited to:

- changes in fiscal or contracting policies or decrease in available government funding;
- changes in government programs or applicable requirements;
- changes in the political environment, including before or after a change to the leadership within the government administration, and any resulting uncertainty or changes in policy or priorities and resultant funding;
- appeals, disputes or litigation relating to government procurement, including but not limited to bid protests by unsuccessful bidders on potential or actual awards of contracts to us or our partners by the government;
- the adoption of new laws or regulations or changes to existing laws or regulations;
- budgetary constraints, including automatic reductions as a result of “sequestration” or similar measures and constraints imposed by lapses in appropriations for the federal government or certain of its departments and agencies;
- influence by, or competition from, third parties with respect to pending, new or existing contracts with government customers;
- potential delays or changes in the government appropriations or procurement processes, including as a result of events such as war, incidents of terrorism, natural disasters, and public health concerns or epidemics, such as the COVID-19 pandemic; and
- increased or unexpected costs or unanticipated delays caused by other factors outside of our control, such as performance failures of our partners and subcontractors.

Any such event or activity, among others, could cause governments and governmental agencies to delay or refrain from purchasing our products and services in the future, reduce the size or payment amounts of purchases from existing or new government customers, or otherwise have an adverse effect on our business, results of operations, financial condition and prospects.

Government programs are limited by budgetary constraints and political considerations and are subject to uncertain future funding levels that could result in the termination of programs.

Government agency and department purchases are often strategic in nature and large in size. Therefore, reductions in funding levels that impact our customers could negatively affect the size of our customers’ orders or lead to cancellation of orders. Government contracts are often subject to more extensive scrutiny and publicity than commercial contracts. The number and terms of new government contracts signed can be affected significantly by political and economic factors, such as pending elections and revisions to government tax policies. Negative publicity related to our government contracts, regardless of its accuracy, may damage our business by affecting our ability to compete for new contracts. A decline in security-related government spending for any reason, or a shift away from programs that we address, could hurt our sales, put pressure on our prices and reduce our revenue and margins. Relatedly, the use of our products by militaries or other government agencies or departments in a way that is perceived negatively by the public could adversely affect our business and reputation.

A multi-year U.S. government program may be implemented through the award of many different individual contracts, grants, cooperative agreements and subcontracts or other subawards. For U.S. government programs, program funding is subject to congressional appropriations. Congress generally appropriates funds on a fiscal year basis even though a program may continue for several years. Government programs are often only partially funded initially, and additional funds are committed only as Congress makes further appropriations. The termination of a program or failure to commit funds to a program would result in a loss of anticipated future revenue attributable to that program, which could materially harm our business.

We are subject to audits by the U.S. government which could adversely affect our business.

U.S. government agencies routinely audit and investigate government contractors to monitor performance, cost allocations, cost accounting and compliance with applicable laws, regulations and standards. Since some of our contracts provide for cost reimbursement, the U.S. government has the right to audit our costs even after job completion and after we have billed and recognized the corresponding revenue. The U.S. government also may review the adequacy of, and a contractor’s compliance with, its internal control systems and policies, including the contractor’s purchasing, property, estimating, compensation and management information systems. Any costs found to be improperly allowed or improperly allocated to a specific contract will not be reimbursed, and any such costs that have already been reimbursed must be refunded, which would affect associated revenue that had already been recognized. While we intend to implement uniform procurement and compliance programs for all of our business, we may be subject to more risks from these audits until we are able to implement such a program effectively.

Responding to governmental audits, inquiries or investigations may involve significant expense and divert the attention of our management. If a government review or investigation uncovers improper or illegal activities, we may be subject to civil and criminal penalties and administrative sanctions, including termination of contracts, forfeiture of profits, suspension of payments, damages, fines and suspension or debarment from doing business with U.S. government agencies. In addition, our reputation could be seriously harmed by allegations of impropriety, even if unfounded. Our internal controls may not prevent or detect all improper or illegal activities.

Our business is subject to laws and regulations that are more restrictive because we are a contractor and subcontractor to the U.S. government.

As a contractor and subcontractor to the U.S. government, we are subject to various laws and regulations that are more restrictive than those applicable to non-government contractors, including the Federal Acquisition Regulations and its supplements, which comprehensively regulate the formation, administration and performance of U.S. government contracts, and the Truth in Negotiations Act and various other laws, which require certain certifications and disclosures. These laws and regulations, among other things:

- require that we obtain and maintain material governmental authorizations and approvals to conduct our business as it is currently conducted;
- require certification and disclosure of cost and pricing data in connection with certain contract negotiations;
- impose rules that define allowable and unallowable costs and otherwise govern our right to reimbursement under certain cost-based U.S. government contracts;
- restrict the use and dissemination of information classified for national security purposes and the export of certain products and technical data; and
- impose requirements relating to ethics and business practices, which carry penalties for noncompliance ranging from monetary fines and damages to loss of the ability to do business with the U.S. government as a prime contractor or subcontractor.

In addition, we may be subject to industrial security regulations of the U.S. Department of Defense and other federal agencies that are designed to safeguard against unauthorized access by foreigners and others to classified and other sensitive U.S. government information. If we were to come under foreign ownership, control or influence, our U.S. government customers could terminate, or decide not to renew, our contracts, or we may be subjected to burdensome industrial security compliance measures. Such a situation could impair our ability to obtain new contracts and subcontracts. The government may also change its procurement practices or adopt new contracting rules and regulations that could be costly to satisfy or that could impair our ability to obtain new contracts.

Our contracts and those of our VARs with governments may impose requirements that may be unfavorable to us and that may have a material adverse effect on our growth prospects and operating results.

Most of our sales to government entities have been made indirectly through our VARs and other distribution partners. In some cases, we have entered contracts directly with government customers. There are inherent risks in contracting with governments and their agencies. Government customers can typically terminate, reduce orders under or otherwise modify any of its contracts with us or our VARs for its convenience (*i.e.*, without cause) whether or not we have failed to perform under the terms of the applicable contract. In such case, the government would not be required to pay our VARs or us for the lost profits for the unperformed work. A termination arising out of our VARs or our default could expose our VARs or us to liability and harm our VARs or our ability to compete for future contracts and orders. In addition to unfavorable termination provisions, our VARs or our U.S. government contracts and related regulations contain provisions that allow the U.S. government to unilaterally suspend our VARs or us from receiving new contracts pending resolution of alleged violations of procurement laws or regulations, reduce the value of existing contracts, issue modifications to a contract and potentially restrict exports of our products, services and associated materials.

Our VARs or our contracts with government agencies may subject our VARs or us to other risks and give the government additional rights and remedies not typically found in commercial contracts, including rights that allow the government to, for example:

- obtain detailed cost or pricing information;
- receive “most favored customer” pricing;
- require us to prioritize orders from our government customers above our other customers’ existing orders, which we may fail to do and, even if we do prioritize such orders, may impact our relationships with our other customers;
- perform routine audits;

- impose equal employment and hiring standards;
- require products to be manufactured in specified countries;
- restrict non-U.S. ownership or investment in our company; and/or
- pursue administrative, civil or criminal remedies for contractual violations.

These rights and remedies have the potential to limit our VARs or our sales to, and increase our VARs or our costs of, doing business with both government and commercial customers, which could materially adversely affect our growth prospects and operating results.

Additionally, we sometimes rely on our VARs and other distribution partners to satisfy certain regulatory obligations that we would otherwise have to satisfy if we sold directly to the government entities, and our VARs and other distribution partners may be unable or unwilling to satisfy these obligations in the future. In the event of such termination or change, it may be difficult for us to arrange for another VAR or other distribution partner to sell our solutions to these government entities in a timely manner, and we could lose sales opportunities during the transition.

Risks Related to Litigation and Liability

We are, and have been in the recent past, subject to business and intellectual property litigation.

We have been in the recent past involved in litigation, and we could be involved in additional litigation in the future.

In July 2021, Continuous Composites Inc. (“Continuous Composites”), a company based out of Idaho, brought a claim in the United States District Court for the District of Delaware against us regarding patent infringement. We intend to mount a vigorous defense against Continuous Composites in court. However, we can provide no assurance as to the outcome of any such disputes, and any such actions may result in judgments against us for significant damages. Resolution of any such matters can be prolonged and costly, and the ultimate results or judgments are uncertain due to the inherent uncertainty in litigation and other proceedings.

In addition, the additive manufacturing industry has been, and may continue to be, litigious, particularly with respect to intellectual property claims. Moreover, our potential liabilities are subject to change over time due to new developments, changes in settlement strategy or the impact of evidentiary requirements. Regardless of the outcome, litigation has resulted in the past, and may result in the future, in significant legal expenses and require significant attention and resources of management. As a result, any present or future litigation that may be brought against us by any third party could result in reputational harm, losses, damages and expenses that may have a significant adverse effect on our financial condition.

We could be subject to personal injury, property damage, product liability, warranty and other claims involving allegedly defective products that we supply.

The products we supply are sometimes used in potentially hazardous or critical applications, such as the assembled parts of an aircraft, medical device or automobile. The sale of our products and the provision of related services in general, and to customers in the foregoing industries in particular, exposes us to possible claims for property damage and personal injury or death, which may result from the use of these end-use parts.

While we have not experienced any such claims to date, actual or claimed defects in the products we supply could result in our being named as a defendant in lawsuits asserting potentially large claims. We may be potentially liable, in significant amounts, and face significant harm to our reputation if an aircraft, medical or automotive part, component or accessory or any other aviation, medical or automotive product that we have sold, produced or repaired fails due to our fault, in whole or in part, or if an aircraft or automobile for which we have provided services or in which their parts are installed crashes, and the cause can be linked to those parts or cannot be determined. A similar risk arises in connection with sales of our products to customers in the aerospace industry to the extent that the parts produced by those products do not function properly and are responsible for damages. Our commercial contracts generally contain product warranties and limitations on liability and we carry liability insurance in amounts that we believe are adequate for our risk exposure and commensurate with industry norms. While we intend to monitor our insurance coverage as our business continues to grow, claims may arise in the future, and that insurance coverage may not be adequate or available to protect our consolidated company in all circumstances. Additionally, we might not be able to maintain adequate insurance coverage for our business in the future at an acceptable cost. Any liability claim against us that is not covered by adequate insurance could adversely affect our consolidated results of operations and financial condition. Finally, any liability claim against us may cause harm to our brand, reputation and adversely impact our business.

We could face liability if our additive manufacturing solutions are used by our customers to print dangerous objects.

Customers may use our 3D printers to print parts that could be used in a harmful way or could otherwise be dangerous. For example, there have been news reports that additive manufacturing machines were used to print guns or other weapons. We have little, if any, control over what objects our customers print using our products, and it may be difficult, if not impossible, for us to monitor and prevent customers from printing weapons with our products. Additionally, individuals or entities unaffiliated with us could disseminate plans or digital files that could be used with our products to produce parts and items that could be deemed illegal or harmful. While we have never printed weapons on any printers in our offices, there can be no assurance that we will not be held liable if someone were injured or killed by a weapon printed by a third party using one of our products. Additionally, association of such an incident with our products may cause harm to our brand reputation and adversely impact our business.

Third parties may produce or sell counterfeit or imitation versions of our materials or components.

Third parties may sell counterfeit or imitation versions of our materials or components that are inferior or pose safety risks. If consumers confuse these counterfeit products or materials for our products or materials or have a bad experience with the counterfeit products or materials, they might refrain from purchasing our products or materials in the future, which could harm our reputation and sales. Further, if third parties develop materials that compete favorably on price, and/or meet or exceed the quality and performance of our own materials, we may lose recurring revenue from lost sales of our materials. If we do not maintain favorable perceptions of our products and materials, and if we are unable to compete successfully with third party manufacturers of materials, our brand, business, financial condition, results of operations and cash flows could be adversely impacted.

Failure of our global operations to comply with anti-corruption laws and various trade restrictions, such as sanctions and export controls, could have an adverse effect on our business.

We operate in a number of countries throughout the world, including countries known to have a reputation for corruption. Doing business on a global basis requires us to comply with anti-corruption laws and regulations imposed by governments around the world with jurisdiction over our operations, including the U.S. Foreign Corrupt Practices Act and the U.K. Bribery Act 2010, as well as the laws of the countries where we do business.

We are also subject to various trade restrictions, including trade and economic sanctions and export controls, imposed by governments around the world with jurisdiction over our operations. For example, in accordance with trade sanctions administered by the Office of Foreign Assets Control and the U.S. Department of Commerce, we are prohibited from engaging in transactions involving certain persons and certain designated countries or territories, including Cuba, Iran, Syria, North Korea and the Crimea Region of Ukraine. In light of the conflicts between Russia and Ukraine, we may also be prohibited from engaging in transactions involving persons and entities located or headquartered in the so-called Donetsk and Luhansk People's Republics (DNR and LNR). In addition, our products are subject to export regulations that can involve significant compliance time and may add additional overhead cost to our products. In recent years the United States government has a renewed focus on export matters. For example, the Export Control Reform Act of 2018 and regulatory guidance thereunder have imposed additional controls, and may result in the imposition of further additional controls, on the export of certain "emerging and foundational technologies." Our current and future products may be subject to these heightened regulations, which could increase our compliance costs. For instance, recent amendments to the U.S. Export Administration Regulations ("EAR") increased restrictions on exports to certain "military end-users" and for "military end-uses" by certain persons in Burma, Cambodia, China, Iraq, Russia, or Venezuela, which requires us to perform due diligence on customers and end-users in those countries for potential military connections.

We also need to monitor the changes in export-related laws and regulations, such as International Traffic in Arms Regulations ("ITAR"), and their applicability to our products and services. If our products or services become subject to the ITAR, we may be required to obtain licenses, clearances, or authorizations from various regulatory entities. If we are not allowed to export our products or services, or if the clearance process is burdensome, our ability to generate revenue would be adversely affected and our operating costs could increase.

In addition, international sales of certain of our products may be subject to local laws and regulations in foreign jurisdictions which we may not be familiar with. We may not be allowed to ship our products to certain countries without meeting their local laws and regulations. The failure to comply with any of these laws or regulations could adversely affect our ability to conduct our business and generate revenues.

We are committed to doing business in accordance with applicable anti-corruption laws and regulations and with applicable trade restrictions. We are subject, however, to the risk that our affiliated entities or our and our affiliates' respective officers, directors, employees and agents (including distributors and VARs of our products) may take action determined to be in violation of such laws and regulations. Any violation by us or by any of these persons could result in substantial fines, sanctions, civil and/or criminal

penalties, or curtailment of operations in certain jurisdictions, and might adversely affect our operating results. In addition, actual or alleged violations could damage our reputation and ability to do business.

Although we take precautions to prevent violations of applicable anti-corruption laws and regulations and applicable trade restrictions, we may have exported products in the past in apparent violation of the EAR. If we are found to be in violation of U.S. export control laws, it could result in substantial fines and penalties for us and for the individuals working for us. We may also be adversely affected through other penalties, reputational harm, loss of access to certain markets or otherwise.

We are subject to environmental, health and safety laws and regulations related to our operations and the use of our 3D printers and materials, which could subject us to compliance costs and/or potential liability.

We are subject to domestic and foreign environmental, health and safety laws and regulations governing our operations. A certain risk of environmental liability is inherent in our production activities. These laws and regulations govern, among other things, the generation, use, storage, registration, handling, transport and disposal of chemicals and waste materials, the presence of specified substances in electrical products; the emission and discharge of hazardous materials into the ground, air or water; the investigation and cleanup of contaminated sites, including any contamination that results from spills due to our failure to properly dispose of chemicals and other waste materials and the health and safety of our employees. As such, our operations, including our production activities, carry an inherent risk of environmental, health and safety liabilities. Under these laws and regulations, we could be subject to liability for improper disposal of chemicals and waste materials, including those resulting from the use of our systems and accompanying materials by end-users. Accidents or other incidents that occur at our facilities or involve our personnel or operations could result in claims for damages against us. In the event we are found to be financially responsible, as a result of environmental or other laws or by court order, for environmental damages alleged to have been caused by us or occurring on our premises, we could be required to pay substantial monetary damages or undertake expensive remedial obligations. If our operations fail to comply with such laws or regulations, we may be subject to fines and other civil, administrative or criminal sanctions, including the revocation of permits and licenses necessary to continue our business activities, or may be required to make significant expenditures to achieve compliance. In addition, we may be required to pay damages or civil judgments in respect of third-party claims, including those relating to personal injury (including exposure to hazardous substances that we generate, use, store, handle, transport, manufacture or dispose of), property damage or contribution claims. Some environmental laws allow for strict, joint and several liabilities for remediation costs, regardless of fault. We may be identified as a potentially responsible party under such laws. The amount of any costs, including fines or damages payments that we might incur under such circumstances could substantially exceed any insurance we have to cover such losses. Any of these events, alone or in combination, could have a material adverse effect on our business, financial condition and results of operations and could adversely affect our reputation.

We may be subject to environmental laws and regulations including, without limitation, the United States Toxic Substances Control Act (“TSCA”) and the Registration, Evaluation, Authorization and Restriction of Chemical Substances (“REACH”) concerning the use, import and export of chemicals and hazardous substances, such as chlorinated solvents. Other countries may have more stringent requirements that lead to increased costs, which could have material adverse effect on our business, financial conditions, and results of operations. These laws and regulations require the testing and registration of some chemicals that we ship along with, or that form a part of, our systems and other products. If we fail to comply with these or similar laws and regulations, we may be required to make significant expenditures to reformulate the chemicals that we use in our products and materials or incur costs to register such chemicals to gain and/or regain compliance. We could also be subject to significant fines or other civil and criminal penalties should we not achieve such compliance. Additionally, customer sentiment regarding the use of certain chemicals and hazardous substances could negatively impact our ability to sell certain products.

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

Aspects of our business are subject to laws and regulations governing privacy and data security. Changes in laws, regulations, and public perception concerning data protection and privacy, or changes in the interpretation or patterns of enforcement of existing laws and regulations, could impair our efforts to maintain and expand our customer base or the ability of our customers to use our services. Breaches of laws and regulations concerning data protection and privacy could expose us to significant fines and other penalties.

We hold personal information about a variety of individuals, such as our employees, prospects, and our customers. Processing of personal information is increasingly subject to legislation and regulation in numerous jurisdictions around the world.

For example, relevant applicable laws and regulations governing the collection, use, disclosure or other processing of personal information include, in the United States, rules and regulations promulgated under the authority of the Federal Trade Commission, the

California Consumer Privacy Act of 2018 (the “CCPA”) and similar state privacy laws, and state breach notification laws. In particular, the CCPA, among other things, establishes comprehensive data privacy rights for California consumers and imposes certain requirements on how businesses can collect and use personal information about such individuals. The CCPA provides for civil penalties for violations, as well as a private right of action for certain data breaches that result in the loss of personal information. This private right of action may increase the likelihood of, and risks associated with, data breach litigation.

The California Privacy Rights Act (“CPRA”), which became effective on January 1, 2023, significantly modified the CCPA, including by expanding consumers’ rights concerning their personal information, introducing data minimization and retention requirements, and establishing a state agency vested with the authority to enforce the CCPA. It is not yet fully clear how the CCPA (as amended by the CPRA) will be enforced and how it will be interpreted. The evolving nature of the CCPA may require us to modify our data collection or processing practices and policies and to incur substantial costs and expenses in an effort to comply.

Similar laws have been passed in numerous other states and other states have proposed similar new privacy laws, and it is possible that certain of these proposals will pass. Such proposed legislation, if enacted, may add additional complexity, variation in requirements, restrictions and potential legal risk, require additional investment of resources in compliance programs, impact strategies and the availability of previously useful data and could result in increased compliance costs and/or changes in business practices and policies. The existence of privacy laws in different states in the country would make our compliance obligations more complex and costly and may increase the likelihood that we may be subject to enforcement actions or otherwise incur liability for noncompliance. Other states have also proposed and/or passed legislation that regulates the privacy and/or security of certain specific types of information. For example, a small number of states have passed laws that regulate biometric data specifically. The costs associated with these various privacy and security laws may impede our development and could limit the adoption of our services. Further, any failure by our vendors to comply with applicable law or regulations could result in proceedings against us by governmental entities or others. State laws are changing rapidly and there is discussion in the U.S. Congress of a new comprehensive federal data privacy law to which we may likely become subject, if enacted.

Moreover, we maintain offices in the European Union (“EU”), specifically, Ireland, and we have customers located in various countries throughout the EU and the United Kingdom (“UK”). Accordingly, in the EU, we are subject to the General Data Protection Regulation (EU) 2016/679 (the “EU GDPR”), and related member state implementing legislation. The EU GDPR governs the collection, use, disclosure, transfer or other processing of personal data of individuals in the EU. Among other things, the EU GDPR imposes strict requirements regarding the security of personal data and notification of data breaches to the competent national data protection authorities, imposes limitations on retention of personal data, imposes stringent requirements relating to the consent of data subjects or ensuring another appropriate legal basis applies to the processing of personal data, requires us to maintain records of our processing activities and to document data protection impact assessments where there is high risk processing, ensuring certain measures are in place with third-party processors. The EU GDPR is also explicitly extraterritorial in its application, and could affect our business activities in jurisdictions outside the EU. The EU GDPR imposes sanctions for violations up to the greater of €20 million and 4% of worldwide gross annual revenue. Further, the EU GDPR enables individuals to claim damages for violations and introduces the right for non-profit organizations to bring claims on behalf of data subjects. Noncompliance could also result in the imposition of orders to stop data processing activities. Compliance with the EU GDPR is a rigorous and time-intensive process and requires us to allocate substantial legal costs to the development of necessary policies and procedures and overall compliance efforts. We expect to incur continued costs associated with maintaining compliance with EU GDPR into the future.

Additionally, the EU GDPR imposes strict rules on the transfer of personal data outside of the EU to countries that do not ensure an adequate level of protection, like the United States. These transfers are prohibited unless a valid transfer mechanism is implemented, such as the Standard Contractual Clauses (SCCs) published by the EU Commission or binding corporate rules. Transfers made pursuant to the SCCs need to be assessed on a case-by-case basis to ensure the law in the recipient country provides “essentially equivalent” protections to safeguard the transferred data. If the standard is not met, businesses will be required to adopt supplementary measures. Further, the EU and United States have adopted its adequacy decision for the EU-U.S. Data Privacy Framework (“Framework”), which entered into force on July 11, 2023. This Framework provides that the protection of personal data transferred between the EU and the United States is comparable to that offered in the EU. This provides a further avenue to ensuring transfers to the United States are carried out in line with EU GDPR.

Following the withdrawal of the UK from the EU (“Brexit”), the EU GDPR has been incorporated into UK laws (“UK GDPR”). Non-compliance with the UK GDPR may result in monetary penalties of up to £17.5 million or 4% of worldwide revenue, whichever is higher. Despite Brexit, the EU and UK GDPR remain largely aligned. Currently, the most impactful point of divergence relates to transfer mechanisms (i.e., the ability for companies in the EU or the UK to transfer personal information to third countries, including the United States). Like the EU GDPR, the UK GDPR restricts personal data transfers outside the UK to countries not regarded by the UK as providing adequate protection. The UK government has confirmed that personal data transfers from the UK to the EU remain free flowing. The new SCCs do not apply to the UK, but the UK Information Commissioner’s Office has published its own transfer mechanism, the International Data Transfer Agreement (“UK IDTA”), which entered into force on 21 March 2022, and enables data transfers originating from the UK. It requires a similar assessment of the data protection provided in the importer’s country. In addition, there has been an extension to the Framework to cover UK transfers to the United States. The Framework could be

challenged like its predecessor frameworks. There may be further divergence in the future, including with regard to administrative burdens. The UK has announced plans to reform the country's data protection legal framework in its Data Reform Bill, which will introduce changes to the UK GDPR. This may lead to additional compliance costs and could increase our overall risk exposure as we may no longer be able to take a unified approach across the EU and the UK.

We publicly post documentation regarding our privacy practices as needed to address state, federal and foreign privacy laws. Although we endeavor to comply with our published policies and documentation, we may at times fail to do so or be alleged to have failed to do so. Any failure or perceived failure by us to comply with our privacy policies could expose us to costly litigation, significant awards, fines or judgments, civil and/or criminal penalties or negative publicity, and could materially and adversely affect our business, financial condition and results of operations. The publication of our privacy policy and other documentation that provide promises and assurances about privacy and security can subject us to potential state and federal action if they are found to be deceptive, unfair, or misrepresentative of our actual practices, which could, individually or in the aggregate, materially and adversely affect our business, financial condition and results of operations.

The regulatory framework governing the collection, processing, storage, use and sharing of personal information is rapidly evolving and is likely to continue to be subject to uncertainty and varying interpretations at both the domestic and international level. It is possible that these laws, rules and regulations may be interpreted and applied in a manner that is inconsistent with our practices or the features of our services and platform capabilities, and may not be consistent with one another. The lack of a unified approach to data privacy and protection laws in the U.S. and internationally could lead to complicated and potentially conflicting compliance requirements. Complying with these evolving compliance and operational requirements may impose significant costs, such as costs related to organizational changes, implementing additional protection technologies, modifying our data processing practices and policies, training employees and engaging consultants and legal advisors, which are likely to increase over time and may require that we utilize management's time and/or divert resources from other initiatives and projects. We cannot yet fully determine the impact these or future laws, rules, regulations and industry standards may have on our business or operations. Additionally, our customers may be subject to differing privacy laws, rules and legislation, which may mean that they require us to be bound by varying contractual requirements applicable to certain other jurisdictions. Adherence to such contractual requirements may impact our collection, use, processing, storage, sharing and disclosure of personal information and may mean we become bound by, or voluntarily comply with, self-regulatory or other industry standards relating to these matters that may further change as laws, rules and regulations evolve.

We have incurred, and may continue to incur, significant expenses to comply with evolving mandatory privacy and security standards and protocols imposed by law, regulation, industry standards, shifting merchant and customer expectations, or contractual obligations, and we may not be able to respond quickly or effectively to regulatory, legislative and other developments. These changes may in turn impair our ability to offer our existing or planned features, products and services and/or increase our cost of doing business. Any failure or perceived failure by us to comply with any applicable federal, state or foreign laws and regulations relating to data privacy and security could result in damage to our reputation, as well as proceedings or litigation by governmental agencies or other third parties, including class action privacy litigation in certain jurisdictions, which would subject us to significant fines, sanctions, awards, injunctions, penalties or judgments. Any of the foregoing could have a material adverse effect on our business, financial condition, results of operations and prospects.

The use of new and evolving technologies, such as artificial intelligence, in our offerings may result in spending material resources and presents risks and challenges that can impact our business including by posing security and other risks to our confidential information, proprietary information and personal information, and as a result we may be exposed to reputational harm and liability.

We continue to build and integrate artificial intelligence into our offerings, and this innovation presents risks and challenges that could affect its adoption, and therefore our business. If we enable or offer solutions that draw controversy due to perceived or actual negative societal impact, we may experience brand or reputational harm, competitive harm or legal liability. The use of certain artificial intelligence technology can give rise to intellectual property risks, including compromises to proprietary intellectual property and intellectual property infringement. Additionally, we expect to see increasing government and supranational regulation related to artificial intelligence use and ethics, which may also significantly increase the burden and cost of research, development and compliance in this area. For example, the EU's Artificial Intelligence Act ("AI Act") — the world's first comprehensive AI law — is anticipated to enter into force in Spring 2024 and, with some exceptions, become effective 24 months thereafter. This legislation imposes significant obligations on providers and deployers of high risk artificial intelligence systems, and encourages providers and deployers of artificial intelligence systems to account for EU ethical principles in their development and use of these systems. If we develop or use AI systems that are governed by the AI Act, it may necessitate ensuring higher standards of data quality, transparency, and human oversight, as well as adhering to specific and potentially burdensome and costly ethical, accountability, and administrative requirements. The rapid evolution of artificial intelligence will require the application of significant resources to design, develop, test and maintain our products and services to help ensure that artificial intelligence is implemented in accordance with applicable law and regulation and in a socially responsible manner and to minimize any real or perceived unintended harmful impacts. Our vendors may in turn incorporate artificial intelligence tools into their own offerings, and the providers of these artificial intelligence tools may not meet existing or rapidly evolving regulatory or industry standards, including with respect to privacy and data security. Further, bad

actors around the world use increasingly sophisticated methods, including the use of artificial intelligence, to engage in illegal activities involving the theft and misuse of personal information, confidential information and intellectual property. Any of these effects could damage our reputation, result in the loss of valuable property and information, cause us to breach applicable laws and regulations, and adversely impact our business.

We rely on our software and information technology systems to manage numerous aspects of our business and a disruption of these systems could adversely affect our business.

We rely on our information technology systems to manage numerous aspects of our business, including to efficiently purchase products from our suppliers, provide procurement and logistic services, ship products to our customers, receive orders from our customers, manage our accounting and financial functions, including our internal controls, and maintain our research and development data. Our information technology systems are an essential component of our business and any disruption or compromise could significantly limit our ability to manage and operate our business efficiently. A failure of our information technology systems to perform properly could disrupt our supply chain, product development and customer experience, which may lead to increased overhead costs and decreased sales and have an adverse effect on our reputation and our financial condition. In particular, our integrated software platform is an essential system that virtually all of our customers depend on for their design needs. If our integrated software platform were to fail, we could face adverse consequences to our results of operations, financial condition and business reputation.

Although we take steps and incur significant costs to secure our information technology systems, including our computer systems, intranet and internet sites, email and other telecommunications and data networks, our security measures may not be effective and our systems may be vulnerable to damage, compromise, or interruption. Disruption to or compromise of our information technology systems could result from power outages, computer and telecommunications failures, computer viruses, cyber-attack or other security compromises or breaches (including ransomware), catastrophic events such as fires, floods, earthquakes, tornadoes, hurricanes, acts of war, terrorism and usage errors by our employees, wrongful conduct by employees, vendors, or other third parties, hostile foreign governments, industrial espionage, wire fraud and other forms of cyber fraud or cyber-attacks. Attacks on information technology systems are increasing in their frequency, levels of persistence, sophistication and intensity, and they are being conducted by increasingly sophisticated and organized groups and individuals with a wide range of motives and expertise. Such attacks could include the deployment of harmful malware, ransomware, denial-of-service attacks, social engineering and business email compromises, and other means to affect service reliability and threaten or compromise the security, confidentiality, integrity, and availability of systems and information.

Our reputation and financial condition could be adversely affected if, as a result of a significant cyber-event or otherwise:

- our operations are disrupted or shut down;
- our confidential and/or proprietary information or other sensitive information, including customer or employee information, is stolen, disclosed, misappropriated, or otherwise compromised;
- we incur costs or are required to pay fines in connection with a security compromise, including stolen, disclosed, misappropriated, or otherwise compromised confidential information and/or proprietary information or other sensitive information, including customer or employee information; or
- we must dedicate significant resources to system repairs, security incident investigation or remediation, or increase cyber security protection.

In addition, any unauthorized access, disclosure or other loss, compromise, or unauthorized use of information or data could result in legal claims or proceedings, regulatory investigations or actions, and other types of liability under laws that protect the privacy and security of protected information, including personal information, including federal, state and foreign data protection and privacy regulations, violations of which could result in significant penalties and fines. In addition, although we seek to prevent and detect all data security incidents, security compromises or breaches and other malicious cyber activities can be difficult to detect and any delay in identifying or remediating them may lead to increased harm and legal exposure.

The cost of investigating, mitigating and responding to potential data security compromises or breaches and complying with applicable legal obligations, including breach notification obligations to individuals, regulators, partners and others can be significant. Our insurance policies may not be adequate to compensate us for the potential costs and other losses arising from such disruptions, failures or security compromises or breaches. In addition, such insurance may not be available to us in the future on economically reasonable terms, or at all. Further, defending a suit or regulatory inquiry or investigation, regardless of its merit, could be costly, divert management attention and harm our reputation.

If our computer or technology systems are damaged or cease to function properly, or, if we do not replace or upgrade certain systems, we may incur substantial costs to repair or replace them and may experience an interruption of our normal business activities, security compromise, or loss of critical data. Any such disruption or compromise could adversely affect our reputation and financial condition.

We also rely on information technology systems maintained by third parties, including third-party cloud computing services and the computer systems of our suppliers for both our internal operations and our customer-facing infrastructure related to our additive manufacturing solutions. These systems are also vulnerable to the types of interruption, compromise, and damage described above, but we have less ability to take measures to protect against such disruptions or compromises or to resolve them if they were to occur. Information technology problems or security compromises faced by third parties on which we rely could adversely impact our business and financial condition as well as negatively impact our brand reputation.

Any unauthorized control or manipulation of our products' systems could result in loss of confidence in us and our products and harm our business.

Our products contain complex information technology systems and software. For example, our additive manufacturing machines are designed with built-in data connectivity to accept and install periodic remote updates from us to monitor, improve and update their functionality. We have designed, implemented and tested security measures intended to prevent and detect unauthorized access to our information technology networks, our products and their systems. However, hackers may attempt to gain unauthorized access to modify, alter and use such networks, products and systems to gain control of, or to change, our products' functionality, user interface and performance characteristics, or to gain access to data stored in or generated by our products. We encourage reporting of potential vulnerabilities in the security of our products and we aim to remedy any reported and verified vulnerability. Accordingly, we have received reports of potential vulnerabilities in the past and have attempted to remedy them. However, there can be no assurance that vulnerabilities will not be exploited in the future before they can be identified, or that our remediation efforts are or will be successful.

Any unauthorized access to or control of our products or their systems or any loss of data could result in legal claims or proceedings. In addition, regardless of their veracity, reports of unauthorized access to our products, their systems or data, as well as other factors that may result in the perception that our products, their systems or data are capable of being "hacked," could negatively affect our brand and harm our business, prospects, financial condition and operating results.

Our business has risks that may not be adequately covered by insurance or indemnity.

We may face unanticipated risks of legal liability for damages caused by the actual or alleged failure of our products. While we have attempted to secure liability insurance coverage at an appropriate cost, it is impossible to adequately insure against all risks inherent in our industry, nor can we assure you that our insurers will pay a particular claim, or that we will be able to maintain coverage at reasonable rates in the future. Our insurance policies also contain deductibles, limitations and exclusions, which increase our costs in the event of a claim. Even a partially uninsured claim of significant size, if successful, could have an adverse effect on our financial condition. In addition, we may not be able to continue to obtain insurance coverage on commercially reasonable terms, or at all, and our existing policies may be cancelled or otherwise terminated by the insurer. Maintaining adequate insurance and successfully accessing insurance coverage that may be due for a claim can require a significant amount of our management's time, and we may be forced to spend a substantial amount of money in that process. Substantial claims in excess of or not otherwise covered by indemnity or insurance could harm our financial condition and operating results.

Risks Related to Intellectual Property

We may not be able to adequately protect our proprietary and intellectual property rights in our data or technology.

Our success is dependent, in part, upon protecting our proprietary information and technology. Our intellectual property portfolio primarily consists of patents, patent applications, registered and unregistered trademarks, unregistered copyrights, domain names, know-how, and trade secrets. We may be unsuccessful in adequately protecting our intellectual property.

Our trade secrets, know-how and other unregistered proprietary rights are a key aspect of our intellectual property portfolio. While we take reasonable steps to protect our trade secrets and confidential information and enter into confidentiality and invention assignment agreements intended to protect such rights, such agreements can be difficult and costly to enforce or may not provide adequate remedies if violated, and we may not have entered into such agreements with all relevant parties. Such agreements may be breached and trade secrets or confidential information may be willfully or unintentionally disclosed, including by employees who may leave our company and join our competitors, or our competitors or other parties may learn of the information in some other way. Additionally, certain unauthorized use of our intellectual property may go undetected, or we may face legal or practical barriers to enforcing our legal rights even where unauthorized use is detected. The disclosure to, or independent development by, a competitor of

any of our trade secrets, know-how or other technology not protected by a patent or other intellectual property system could materially reduce or eliminate any competitive advantage that we may have over such competitor. This concern could manifest itself in particular with respect to our proprietary materials that are used with our systems. Portions of our proprietary materials may not be afforded patent protection. Our pending patent applications may not be granted, and we may not be able to obtain foreign patents or pending applications corresponding to our U.S. patents. Even if foreign patents are granted, effective enforcement in foreign countries may not be available. If our patents and other intellectual property do not adequately protect our technology, our competitors may be able to offer products similar to ours. Our competitors may also be able to develop similar technology independently or design around our patents and other intellectual property. Any of the foregoing events would lead to increased competition and reduce our revenue or gross margin, which would adversely affect our operating results.

Current laws may not provide for adequate protection of our products, especially in foreign jurisdictions which may have laws that provide insufficient protections to companies. In addition, legal standards relating to the validity, enforceability, and scope of protection of proprietary rights in internet-related businesses are uncertain and evolving, and changes in these standards may adversely impact the viability or value of our proprietary rights. Some license provisions protecting against unauthorized use, copying, transfer, and disclosure of our products, or certain aspects of our products may be unenforceable under the laws of certain jurisdictions. Further, the laws of some countries do not protect proprietary rights to the same extent as the laws of the United States, and the laws and mechanisms for protection and enforcement of intellectual property rights in some foreign countries may be inadequate. As we continue to operate in foreign countries and expand our international activities, we have encountered and may in the future encounter challenges in navigating the laws of foreign countries, which may adversely affect our ability to protect our proprietary rights. Further, competitors, foreign governments, foreign government-backed actors, criminals, or other third parties may gain unauthorized access to our proprietary information and technology. Accordingly, despite our efforts, we may be unable to prevent third parties from infringing upon or misappropriating our technology and intellectual property or claiming that we infringe upon or misappropriate their technology and intellectual property.

To protect our intellectual property rights, we may be required to spend significant resources to monitor, protect, and defend these rights, and we may or may not be able to detect infringement by our customers or third parties. Litigation has been and may be necessary in the future to enforce our intellectual property rights and to protect our trade secrets. Such litigation, regardless of merit, could be costly, time consuming, and distracting to management and key technical personnel, and could result in the impairment or loss of portions of our intellectual property. Furthermore, our efforts to enforce our intellectual property rights may be met with defenses, counterclaims, and countersuits attacking the validity and enforceability of our intellectual property rights. Our inability to protect our proprietary technology against unauthorized copying or use, as well as any costly litigation or diversion of our management's attention and resources, could delay further sales or the implementation of our platform, impair the functionality of our platform, delay introductions of new features, integrations, and capabilities, result in our substituting inferior or more costly technologies into our platform, or injure our reputation. In addition, we may be required to license additional technology from third parties to develop and market new features, integrations, and capabilities, and we cannot be certain that we could license that technology on commercially reasonable terms or at all, and our inability to license this technology could harm our ability to compete.

As part of any settlement or other compromise to avoid complex, protracted litigation, we may agree not to pursue future claims against a third party, including related to alleged infringement of our intellectual property rights. Part of any settlement or other compromise with another party may resolve a potentially costly dispute but may also have future repercussions on our ability to defend and protect our intellectual property rights, which in turn could adversely affect our business.

If third parties claim that we infringe upon or otherwise violate their intellectual property rights, our business could be adversely affected.

We have in the past and may in the future be subject to claims that we have infringed or otherwise violated third parties' intellectual property rights. There is patent, copyright and other intellectual property development and enforcement activity in our industry and relating to the additive manufacturing technology we use in our business. Our future success depends in part on not infringing upon or otherwise violating the intellectual property rights of others. From time to time, our competitors or other third parties (including non-practicing entities and patent holding companies) may claim that we are infringing upon or otherwise violating their intellectual property rights, and we may be found to be infringing upon or otherwise violating such rights. We may be unaware of the intellectual property rights of others that may cover some or all of our current or future technology or conflict with our rights, and the patent, copyright, and other intellectual property rights of others may limit our ability to improve our technology and compete effectively. Any claims of intellectual property infringement or other intellectual property violations, even those without merit, could:

- be expensive and time consuming to defend;
- cause us to cease making, licensing or using our platform or products that incorporate the challenged intellectual property;
- require us to modify, redesign, reengineer or rebrand our platform or products, if feasible;

- divert management’s attention and resources; or
- require us to enter into royalty or licensing agreements to obtain the right to use a third-party’s intellectual property.

Any royalty or licensing agreements, if required, may not be available to us on acceptable terms or at all. A successful claim of infringement against us could result in our being required to pay significant damages, enter into costly settlement agreements, or prevent us from offering our platform or products, any of which could have a negative impact on our operating profits and harm our future prospects. We may also be obligated to indemnify our customers or business partners in connection with any such litigation and to obtain licenses, modify our platform or products, or refund premium subscription fees, which could further exhaust our resources. Such disputes could also disrupt our platform or products, adversely affecting our customer satisfaction and ability to attract customers.

Our additive manufacturing technology contains third-party open-source software components, and failure to comply with the terms of the underlying open-source software licenses could restrict our ability to commercialize our products.

Our additive manufacturing technology contains components that are licensed under so-called “open source,” “free” or other similar licenses. Open source software is made available to the general public on an “as-is” basis under the terms of a non-negotiable license. We currently combine our proprietary software with open source software and intend to continue doing so in the future. Additionally, we make some of our source code available under open source licenses, which may limit our ability to protect our intellectual property rights in our source code and prevent our competitors or others from using such source code. Our use and distribution of open source software may entail greater risks than use of third-party commercial software because open source licensors generally do not provide warranties or other contractual protections regarding infringement claims or the quality of the code. In addition, if we combine our proprietary software with open source software in a certain manner, we could, under certain open source licenses, be required to disclose or make available the source code of our proprietary software to third parties. We may also face claims alleging noncompliance with open source license terms or infringement or misappropriation of third-party intellectual property rights in open source software. These claims could result in litigation, require us to purchase a costly license or remove the software. In addition, if the license terms for open source software that we use change, we may be forced to re-engineer our solutions, incur additional costs or discontinue the sale of our offerings if re-engineering could not be accomplished on a timely basis. Although we monitor our use of open source software to avoid subjecting our offerings to unintended conditions, there is a risk that these licenses could be construed in a way that could impose unanticipated conditions or restrictions on our ability to commercialize our offerings. We cannot guarantee that we have incorporated open source software in our software in a manner that will not subject us to liability or in a manner that is consistent with our current policies and procedures.

General Risk Factors

If we are unable for any reason to meet the continued listing requirements of the New York Stock Exchange (“NYSE”), such action or inaction could result in a delisting of our securities.

On November 17, 2023, we were notified by the NYSE that we are not in compliance with Section 802.01C of the NYSE Listed Company Manual because the average closing price of our common stock was less than \$1.00 over a consecutive 30 trading-day period. The notice had no immediate impact on the listing of our common stock, which will continue to be listed and traded on the NYSE during the period allowed to regain compliance, subject to our compliance with other listing standards. We notified the NYSE that we intend to cure the stock price deficiency and to return to compliance with the NYSE continued listing standard. We can regain compliance at any time within the six-month period following receipt of the NYSE notice if on the last trading day of any calendar month during the cure period our common stock have a closing share price of at least \$1.00 and an average closing share price of at least \$1.00 over the 30 trading-day period ending on the last trading day of that month. Under the NYSE’s rules, if we determine that we will cure the stock price deficiency by taking an action that will require stockholder approval at our next annual meeting of stockholders, the price condition will be deemed cured if the price promptly exceeds \$1.00 per share, and the price remains above that level for at least the following 30 trading days.

The delisting of our common stock from the NYSE could make it more difficult for us to raise capital on favorable terms in the future. Such a delisting would likely have a negative effect on the price of our securities and would impair your ability to sell or purchase our securities when you wish to do so. In the event of a delisting, actions taken by us to restore compliance with listing requirements may not allow our securities to become listed again, stabilize the market price or improve the liquidity of our securities, prevent such securities from dropping below any minimum bid price requirement or prevent future non-compliance with the NYSE listing requirements.

Changes in accounting rules and regulations, or interpretations thereof, could result in unfavorable accounting charges or require us to change our compensation policies.

Accounting methods and policies for public companies are subject to review, interpretation and guidance from our independent registered accounting firm and relevant accounting authorities, including the SEC. Changes to accounting methods or policies, or interpretations thereof, may require us to reclassify, restate or otherwise change or revise our consolidated financial statements.

Our disclosure controls and procedures may not prevent or detect all errors or acts of fraud.

We designed our disclosure controls and procedures to reasonably assure that information we must disclose in reports we file or submit under the Exchange Act is accumulated and communicated to management, and recorded, processed, summarized and reported within the time periods specified in the rules and forms of the SEC. We believe that any disclosure controls and procedures or internal controls and procedures, no matter how well-conceived and operated, can provide only reasonable, not absolute, assurance that the objectives of the control system are met. These inherent limitations include the realities that judgments in decision-making can be faulty, and that breakdowns can occur because of simple error or mistake. Additionally, controls can be circumvented by the individual acts of some persons, by collusion of two or more people or by an unauthorized override of the controls.

Our management team has limited experience managing a public company.

Our management team has limited experience managing a publicly traded company, interacting with public company investors, and complying with the increasingly complex laws, rules and regulations that govern public companies. As a public company, we are subject to significant obligations relating to reporting, procedures and internal controls, and our management team may not successfully or efficiently manage such obligations. These obligations and scrutiny require significant attention from our management and could divert their attention away from the day-to-day management of our business, which could adversely affect our business, financial condition and results of operations.

Our internal controls over financial reporting currently do not meet all of the standards contemplated by Section 404 of the Sarbanes Oxley Act, and failure to achieve and maintain effective internal controls over financial reporting in accordance with Section 404 of the Sarbanes Oxley Act could impair our ability to produce timely and accurate financial statements or comply with applicable regulations and have a material adverse effect on our business.

We operated as a private company until July 2021. Our management has significant requirements for enhanced financial reporting and internal controls as a public company. The process of designing and implementing effective internal controls is a continuous effort that requires us to anticipate and react to changes in our business and the economic and regulatory environments and to expend significant resources to maintain a system of internal controls that is adequate to satisfy our reporting obligations as a public company. If we are unable to establish or maintain appropriate internal financial reporting controls and procedures, it could cause us to fail to meet our reporting obligations on a timely basis or result in material misstatements in our consolidated financial statements, which could harm our operating results. In addition, we are required, pursuant to Section 404 of the Sarbanes Oxley Act of 2002 (the “Sarbanes Oxley Act”), to furnish a report by management on, among other things, the effectiveness of our internal control over financial reporting. This assessment needs to include disclosure of any material weaknesses identified by our management in our internal control over financial reporting.

The rules governing the standards that must be met for our management to assess our internal control over financial reporting are complex and require significant documentation, testing, and possible remediation. Testing and maintaining internal controls may divert management’s attention from other matters that are important to our business. Our independent registered public accounting firm will be required to attest to the effectiveness of our internal control over financial reporting on an annual basis. However, while we remain an emerging growth company, we will not be required to include an attestation report on internal control over financial reporting issued by our independent registered public accounting firm. If we are not able to complete our initial assessment of our internal controls and otherwise implement the requirements of Section 404 of the Sarbanes Oxley Act in a timely manner or with adequate compliance, our independent registered public accounting firm may not be able to certify as to the adequacy of our internal control over financial reporting.

In addition to our results determined in accordance with GAAP, we believe certain non-GAAP measures may be useful in evaluating our operating performance. We present certain non-GAAP financial measures in this Annual Report on Form 10-K and intend to continue to present certain non-GAAP financial measures in future filings with the SEC and other public statements. Any failure to accurately report and present our non-GAAP financial measures could cause investors to lose confidence in our reported financial and other information, which would likely have a negative effect on the trading price of our common stock.

We have identified material weaknesses in our internal control over financial reporting and may identify additional material weaknesses in the future or fail to maintain effective internal control over financial reporting, which may result in material misstatements of our consolidated financial statements or cause us to fail to meet our periodic reporting obligations.

We have identified material weaknesses in our internal control over financial reporting. 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 our annual or interim financial statements will not be prevented or detected on a timely basis. These material weaknesses are as follows:

- We did not design and maintain an effective control environment commensurate with our financial reporting requirements. Specifically, we lacked a sufficient complement of resources with (i) an appropriate level of accounting knowledge, experience and training to appropriately analyze, record and disclose accounting matters timely and accurately, and (ii) an appropriate level of knowledge and experience to establish effective processes and controls. Additionally, the lack of a sufficient number of professionals resulted in an inability to consistently establish appropriate authorities and responsibilities in pursuit of our financial reporting objectives, as demonstrated by, among other things, insufficient segregation of duties in our finance and accounting functions. This material weakness contributed to the following additional material weaknesses:
- We did not design and maintain effective controls related to the period-end financial reporting process, including designing and maintaining formal accounting policies, procedures and controls to achieve complete, accurate and timely financial accounting, reporting and disclosures. Additionally, we did not design and maintain controls over the preparation and review of account reconciliations and journal entries, including maintaining appropriate segregation of duties.
- We did not design and maintain effective controls related to the identification of and accounting for certain non-routine, unusual or complex transactions, including the proper application of U.S. GAAP of such transactions. Specifically, we did not design and maintain controls to timely identify and account for share repurchase transactions, warrant instruments, and performance based stock awards.

These material weaknesses resulted in audit adjustments to the following financial statement line items in the historical Markforged financial statements: operating expense, other expense, interest expense, other assets, other liabilities, additional paid in capital, treasury stock, retained earnings, note receivable—equity, and series D preferred stock. These adjustments were recorded prior to the issuance of the consolidated financial statements as of and for the years ended December 31, 2020 and 2019. Additionally, these material weaknesses resulted in audit adjustments to additional paid in capital and stock-based compensation expense for the quarters ended June 30, 2021, September 30, 2021, December 31, 2021, June 30, 2022, and December 31, 2022. The material weakness related to accounting for warrant instruments resulted in the restatement of the previously issued financial statements of AONE, the entity we merged with as part of the Merger related to warrant liabilities and equity. Additionally, these material weaknesses could result in a misstatement of substantially all of our accounts or disclosures that would result in a material misstatement to the annual or interim consolidated financial statements that would not be prevented or detected.

- We did not design and maintain effective controls over information technology (“IT”) general controls for information systems that are relevant to the preparation of our financial statements. Specifically, we did not design and maintain (i) program change management controls for financial systems to ensure that information technology program and data changes affecting financial IT applications and underlying accounting records are identified, tested, authorized and implemented appropriately; (ii) user access controls to ensure appropriate segregation of duties and that adequately restrict user and privileged access to financial applications, programs, and data to appropriate Company personnel; (iii) computer operations controls to ensure that critical batch jobs are monitored, privileges are appropriately granted, and data backups are authorized and monitored; and (iv) testing and approval controls for program development to ensure that new software development is aligned with business and IT requirements. These IT deficiencies did not result in any misstatements to the financial statements, however, the deficiencies, when aggregated, could impact our ability to maintain effective segregation of duties, as well as the effectiveness of IT-dependent controls (such as automated controls that address the risk of material misstatement to one or more assertions, along with the IT controls and underlying data that support the effectiveness of system-generated data and reports) that could result in misstatements potentially impacting all financial statement accounts and disclosures that would result in a material misstatement to the annual or interim financial statements that would not be prevented or detected. Accordingly, management has determined these deficiencies in the aggregate constitute a material weakness.

We are in the process of designing and implementing controls and taking other actions to remediate the material weaknesses described above, including the following:

- We have hired, and continue to hire, additional accounting and IT personnel to bolster our reporting, technical accounting and IT capabilities. Additionally, we designed and implemented controls to formalize roles and review responsibilities to align with our team’s skills and experience and we are designing and implementing controls over segregation of duties.

- We have designed and implemented controls related to the period-end financial reporting process, including formal accounting policies, procedures and controls to achieve complete, accurate and timely financial accounting, reporting and disclosures. Additionally, we have designed and implemented controls over the preparation and review of account reconciliations and journal entries.
- We have designed and implemented controls to timely identify and account for non-routine, unusual or complex transactions and other technical accounting and financial reporting matters, including controls over the preparation and review of accounting memoranda addressing these matters.
- We have designed and implemented IT general controls, including controls over program change management, the review and update of user access rights and privileges, controls over batch jobs and data backups, and program development approvals and testing.

We have engaged third-party specialists to assist with testing and validating the operating effectiveness of certain controls over financial reporting to gain assurance that such controls are present and operating as designed, as well as to help review and update existing documentation of our internal controls for compliance with the Sarbanes-Oxley Act of 2002.

We are working to remediate the material weaknesses as efficiently and effectively as possible and expect full remediation could potentially go beyond December 31, 2024. At this time, we cannot provide an estimate of costs expected to be incurred in connection with implementing this remediation plan; however, these remediation measures will be time consuming, will result in us incurring significant costs, and will place significant demands on our financial and operational resources.

Our ability to use net operating loss (“NOL”) carryforwards and other tax attributes may be limited.

We have incurred substantial losses during our history and our ability to become profitable in the near future is uncertain. To the extent that we continue to generate taxable losses, unused losses will carry forward to offset future taxable income, if any, until such unused losses expire (if at all). As of December 31, 2023, we had federal NOL carryforwards of approximately \$171.6 million, of which \$15.0 million are subject to expire at various times beginning in 2033, and \$156.6 million that have no expiration date and will be carried forward indefinitely. We also had state NOL carryforwards of approximately \$89.9 million that will begin to expire in 2026, unless previously utilized. On December 31, 2023, we had federal and state research and development credit carryforwards of approximately \$11.0 million and \$5.6 million, respectively. The research and development credit carryforwards will begin expiring in 2033, unless previously utilized.

Federal NOLs incurred in tax years beginning after December 31, 2017 and before January 1, 2021 may be carried back to each of the five tax years preceding such loss, and NOLs arising in tax years beginning after December 31, 2020 may not be carried back. Because we have had no taxable income in prior years, we do not anticipate carrying back any of our net operating losses. Moreover, federal NOLs generated in taxable years ending after December 31, 2017, may be carried forward indefinitely, but the deductibility of such federal NOLs may be limited to 80% of our taxable income annually for tax years beginning after December 31, 2020. Our NOL carryforwards are subject to review and possible adjustment by the IRS, and state tax authorities. In addition, in general, under Sections 382 and 383 of the Code, a corporation that undergoes an “ownership change” is subject to limitations on its ability to utilize its pre-change NOLs or tax credits to offset future taxable income or taxes. For these purposes, an ownership change generally occurs where the aggregate stock ownership of one or more stockholders or groups of stockholders who own at least 5% of a corporation’s stock increases their ownership by more than 50 percentage points over their lowest ownership percentage within a specified testing period. Our existing NOLs or credits may be subject to limitations arising from previous ownership changes, and future changes in our stock ownership, many of which are outside of our control, could result in an ownership change under Sections 382 and 383 of the Code. Our NOLs or credits may also be impaired under state law. Accordingly, we may not be able to utilize a material portion of our NOLs or credits. If we determine that an ownership change has occurred and our ability to use our historical NOLs or credits is materially limited, it will harm our future operating results by effectively increasing our future tax obligations. Section 382 and 383 of the Code would apply to all net operating loss and tax credit carryforwards, whether the carryforward period is indefinite or not. If we earn taxable income, such limitations could result in increased future tax liability to us and our future cash flows could be adversely affected. We have recorded a full valuation allowance related to our NOLs and other deferred tax assets due to the uncertainty of the ultimate realization of the future benefits of those assets.

Comprehensive tax reform legislation could adversely affect our business and financial condition.

The rules dealing with U.S. federal, state and local income taxation are constantly under review by persons involved in the legislative process and by the Internal Revenue Service, or IRS, and the U.S. Treasury Department. Changes to tax laws (which changes may have retroactive application) could adversely affect us or holders of our common stock. In recent years, many changes have been made and changes are likely to continue to occur in the future.

Additional changes to U.S. federal income tax law are currently being contemplated. Future changes in tax laws could have a material adverse effect on our business, cash flow, financial condition or results of operations. It cannot be predicted whether, when, in what form, or with what effective dates, new tax laws may be enacted, or regulations and rulings may be enacted, promulgated or issued under existing or new tax laws, which could result in an increase in our or our stockholders' tax liability or require changes in the manner in which we operate in order to minimize or mitigate any adverse effects of changes in tax law or in the interpretation thereof.

Additional Risks Related to Ownership of Our Common Stock and Us Operating as a Public Company

We will continue to incur increased costs as a result of operating as a public company, and our management are required to devote substantial time to new compliance initiatives.

As a public company, we incur significant legal, accounting and other expenses that we did not incur as a private company. In addition, the Sarbanes Oxley Act of 2002 and rules subsequently implemented by the Securities and Exchange Commission and the NYSE have imposed various requirements on public companies, including establishment and maintenance of effective disclosure and financial controls and corporate governance practices. Our management and other personnel need to devote a substantial amount of time to these compliance initiatives. Moreover, these rules and regulations increase our legal and financial compliance costs and make some activities more time-consuming and costly. For example, we expect that these rules and regulations may make it more difficult and more expensive for us to obtain director and officer liability insurance.

Pursuant to the Sarbanes Oxley Act, we are required to furnish a report by our management on our internal control over financial reporting, including an attestation report on internal control over financial reporting issued by our independent registered public accounting firm. However, while we remain an emerging growth company, we are not required to include an attestation report on internal control over financial reporting issued by our independent registered public accounting firm. To achieve compliance with Section 404 of the Sarbanes Oxley Act within the prescribed period, we are engaged in a process to document and evaluate our internal control over financial reporting, which is both costly and challenging. In this regard, we need to continue to dedicate internal resources, potentially engage outside consultants and adopt a detailed work plan to assess and document the adequacy of internal control over financial reporting, continue steps to improve control processes as appropriate, validate through testing that controls are functioning as documented and implement a continuous reporting and improvement process for internal control over financial reporting. Despite our efforts, there is a risk that neither we nor our independent registered public accounting firm will be able to conclude within the prescribed timeframe that our internal control over financial reporting is effective as required by Section 404 of the Sarbanes Oxley Act. This could result in an adverse reaction in the financial markets due to a loss of confidence in the reliability of our financial statements. In addition, if we are not able to continue to meet these requirements, we may not be able to remain listed on NYSE.

The price of our common stock and warrants may be volatile.

The price of our common stock as well as our common stock warrants may fluctuate due to a variety of factors, including:

- changes in the industries in which we and our customers operate;
- developments involving our competitors;
- changes in laws and regulations affecting our business;
- variations in our operating performance and the performance of our competitors in general;
- actual or anticipated fluctuations in our quarterly or annual operating results;
- publication of research reports by securities analysts about us or our competitors or our industry;
- the public's reaction to our press releases, other public announcements and filings with the SEC;
- actions by stockholders;
- additions and departures of key personnel;
- commencement of, or involvement in, litigation involving the combined company;
- changes in our capital structure, such as future issuances of securities or the incurrence of additional debt;
- the volume of shares of our Common Stock available for public sale; and
- general economic and political conditions, including but not limited to global supply chain disruptions, recessions, interest rates, inflation, local and national elections, fuel prices, international currency fluctuations, corruption, political instability and acts of war or terrorism.

These market and industry factors may materially reduce the market price of our Common Stock and warrants regardless of our operating performance. Stock markets have experienced extreme price and volume fluctuations that have affected and continue to affect the market prices of equity securities of many technology companies. Stock prices of many technology companies, including e-commerce companies, have fluctuated in a manner unrelated or disproportionate to the operating performance of those companies. If the stock prices for technology companies or the broader stock market continue to experience a loss of investor confidence, the trading price of our common stock could decline for reasons unrelated to our business, financial condition or results of operations.

We do not intend to pay cash dividends for the foreseeable future.

We currently intend to retain our future earnings, if any, to finance the further development and expansion of our business and do not intend to pay cash dividends in the foreseeable future. Any future determination to pay dividends will be at the discretion of our board of directors and will depend on our financial condition, results of operations, capital requirements, restrictions contained in future agreements and financing instruments, business prospects and such other factors as its board of directors deems relevant.

If analysts do not continue to publish research about our business or if they publish inaccurate or unfavorable research, our stock price and trading volume could decline.

The trading market for our common stock depends in part on the research and reports that analysts publish about our business. We do not have any control over these analysts. We currently have limited research coverage by securities and industry analysts. If other securities or industry analysts do not commence coverage of our company, the trading price for our stock could be negatively impacted. If one or more of the analysts who cover us downgrade our common stock or publish inaccurate or unfavorable research about our business, the price of our common stock would likely decline. If few analysts cover us, demand for our common stock could decrease and our common stock price and trading volume may decline. Similar results may occur if one or more of these analysts stop covering us in the future or fail to publish reports on us regularly.

We may be subject to securities litigation, which is expensive and could divert management attention.

The market price of our common stock may be volatile and, in the past, companies that have experienced volatility in the market price of their stock have been subject to securities class action litigation. We may be the target of this type of litigation in the future. Securities litigation against us could result in substantial costs and divert management's attention from other business concerns, which could seriously harm our business.

Future issuances and/or resales of our Common Stock may increase the volatility of and/or cause the market price of our securities to drop significantly, even if our business is doing well.

14,666,667 shares of our common stock may be issued (the "Markforged Earnout Shares") upon our achievement of certain Earnout Triggering Events (as described in the Merger Agreement and Note 11 to our consolidated financial statements), and additional shares may be issued upon exercise of the outstanding warrants to purchase shares of our Common Stock. To the extent such additional shares of our Common Stock are issued, it will result in dilution to the holders of our Common Stock and an increase to the number of shares eligible for resale in the public market. Sales, or the potential for sales, of substantial numbers of such shares in the public market could increase the volatility of and/or adversely affect the market price of our Common Stock.

The obligations associated with being a public company involve significant expenses and require significant resources and management attention, which may divert from our business operations.

As a public company, we are subject to the reporting requirements of the Exchange Act and the Sarbanes-Oxley Act. The Exchange Act requires the filing of annual, quarterly and current reports with respect to a public company's business and financial condition. The Sarbanes-Oxley Act requires, among other things, that a public company establish and maintain effective internal control over financial reporting. As a result, we incur significant legal, accounting and other expenses that we did not previously incur. Our entire management team and many of our other employees will need to devote substantial time to compliance.

These rules and regulations result in us incurring substantial legal and financial compliance costs and make some activities more time-consuming and costly. For example, these rules and regulations will likely continue to make it more difficult and more expensive for us to obtain director and officer liability insurance, and it may be required to accept reduced policy limits and coverage or incur substantially higher costs to obtain the same or similar coverage. As a result, it may be difficult for us to attract and retain qualified people to serve on our board of directors, our board committees or as executive officers.

We are currently an emerging growth company within the meaning of the Securities Act, and to the extent we have taken advantage of certain exemptions from disclosure requirements available to emerging growth companies or smaller reporting companies, this could make our securities less attractive to investors and may make it more difficult to compare our performance with other public companies.

We are currently an “emerging growth company” within the meaning of the Securities Act, as modified by the JOBS Act, and we may take advantage of certain exemptions from various reporting requirements that are applicable to other public companies that are not emerging growth companies including, but not limited to, not being required to comply with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act, reduced disclosure obligations regarding executive compensation in our periodic reports and proxy statements, and exemptions from the requirements of holding a nonbinding advisory vote on executive compensation and shareholder approval of any golden parachute payments not previously approved. As a result, our shareholders may not have access to certain information they may deem important. We cannot predict whether investors will find our securities less attractive because we will rely on these exemptions. If some investors find our securities less attractive as a result of our reliance on these exemptions, the trading prices of our securities may be lower than they otherwise would be, there may be a less active trading market for our securities and the trading prices of our securities may be more volatile.

Further, Section 102(b)(1) of the JOBS Act exempts emerging growth companies from being required to comply with new or revised financial accounting standards until private companies (that is, those that have not had a Securities Act registration statement declared effective or do not have a class of securities registered under the Exchange Act) are required to comply with the new or revised financial accounting standards. The JOBS Act provides that a company can elect to opt out of the extended transition period and comply with the requirements that apply to non-emerging growth companies but any such election to opt out is irrevocable. We have elected not to opt out of such extended transition period, which means that when a standard is issued or revised and it has different application dates for public or private companies, we, as an emerging growth company, can adopt the new or revised standard at the time private companies adopt the new or revised standard. This may make comparison of our financial statements with another public company, which is neither an emerging growth company nor an emerging growth company which has opted out of using the extended transition period, difficult or impossible because of the potential differences in accounting standards used.

When we cease to be an emerging growth company, we will no longer be able to take advantage of certain exemptions from reporting, and, absent other exemptions or relief available from the SEC, we will also be required to comply with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act. We will incur additional expenses in connection with such compliance and our management will need to devote additional time and effort to implement and comply with such requirements.

Delaware law and our certificate of incorporation and bylaws contain certain provisions, including anti-takeover provisions that limit the ability of stockholders to take certain actions and could delay or discourage takeover attempts that stockholders may consider favorable.

The DGCL and our certificate of incorporation and bylaws contain provisions that could have the effect of rendering more difficult, delaying, or preventing an acquisition that stockholders may consider favorable, including transactions in which stockholders might otherwise receive a premium for their shares. These provisions could also limit the price that investors might be willing to pay in the future for shares of our common stock, and therefore depress the trading price of our Common Stock. These provisions could also make it difficult for stockholders to take certain actions, including electing directors who are not nominated by the current members of our board of directors or taking other corporate actions, including effecting changes in our management. Among other things, our certificate of incorporation and bylaws include provisions regarding:

- the ability of our board of directors to issue shares of preferred stock, including “blank check” preferred stock and to determine the price and other terms of those shares, including preferences and voting rights, without stockholder approval, which could be used to significantly dilute the ownership of a hostile acquirer;
- the board of directors are classified into three classes, with only one class being elected each year to serve three-year terms. As a result, in most circumstances, a person can gain control of our board only by successfully engaging in a proxy contest at two or more annual stockholders meetings;
- the certificate of incorporation will prohibit cumulative voting in the election of directors, which limits the ability of minority stockholders to elect director candidates;
- the limitation of the liability of, and the indemnification of, our directors and officers;
- the ability of our board of directors to amend the bylaws, which may allow our board of directors to take additional actions to prevent an unsolicited takeover and inhibit the ability of an acquirer to amend the bylaws to facilitate an unsolicited takeover attempt; and

- advance notice procedures with which stockholders must comply to nominate candidates to our board of directors or to propose matters to be acted upon at a stockholders' meeting, which could preclude stockholders from bringing matters before annual or special meetings of stockholders and delay changes in our board of directors and also may discourage or deter a potential acquirer from conducting a solicitation of proxies to elect the acquirer's own slate of directors or otherwise attempting to obtain control of us.

These provisions, alone or together, could delay or prevent hostile takeovers and changes in control or changes in our board of directors or management.

The provisions of our bylaws requiring exclusive forum in the Court of Chancery of the State of Delaware and the federal district courts of the United States for certain types of lawsuits may have the effect of discouraging certain lawsuits, including derivative lawsuits and lawsuits against the directors and officers of us, by limiting plaintiffs' ability to bring a claim in a judicial forum that they find favorable.

Our bylaws provide that, to the fullest extent permitted by law, and unless we consent in writing to the selection of an alternative forum, the Court of Chancery of the State of Delaware (or, in the event that such court does not have jurisdiction, the federal district court for the District of Delaware or other state courts of the State of Delaware) will be the sole and exclusive forum for any state law claims for (i) any derivative action or proceeding brought on behalf of us, (ii) any action asserting a claim for or based on a breach of a fiduciary duty owed by any current or former director, officer or other employee of us to us or our stockholders, (iii) any action asserting a claim arising pursuant to any provision of the DGCL or the Bylaws or Certificate of Incorporation (as either may be amended from time to time) (including the interpretation, validity and enforceability thereof), (iv) any action asserting a claim related to or involving us that is governed by the internal affairs doctrine, and (v) any action asserting an "internal corporate claim" as that term is defined in Section 115 of the DGCL (the "Delaware Forum Provision"). The Delaware Forum Provision, however, does not apply to actions or claims arising under the Exchange Act. The Bylaws also provide that, unless we consent in writing to the selection of an alternate forum, the sole and exclusive forum for the resolution of any complaint asserting a cause of action arising under the Securities Act, and the rules and regulations promulgated thereunder, will be the Federal District Courts of the United States (the "Federal Forum Provision," and with the Delaware Forum Provision, the "Exclusive Forum Provisions"). In addition, the Bylaws provide that any person or entity purchasing or otherwise acquiring any interest in shares of our capital stock is deemed to have notice of and consented to the Delaware Forum Provision and the Federal Forum Provision, provided, however, that stockholders cannot and will not be deemed to have waived compliance with the U.S. federal securities laws and the rules and regulations thereunder.

These provisions may impose additional litigation costs on stockholders in pursuing any such claims and have the effect of discouraging certain lawsuits, including derivative lawsuits and lawsuits against our directors and officers, by limiting plaintiffs' ability to bring a claim in a judicial forum that they find favorable. In addition, while the Delaware Supreme Court and other state courts have upheld the validity of federal forum selection provisions purporting to require claims under the Securities Act be brought in federal court, there is uncertainty as to whether other courts will enforce our Federal Forum Provision. The Federal Forum Provision may also impose additional litigation costs on stockholders who assert that the provision is not enforceable or invalid, and if the Federal Forum Provision is found to be unenforceable, we may incur additional costs associated with resolving such matters. The Court of Chancery of the State of Delaware and the Federal District Courts of the United States may also reach different judgments or results than would other courts, including courts where a stockholder considering an action may be located or would otherwise choose to bring the action, and such judgments may be more or less favorable to us than our stockholders.

The private placement warrants issued to the Sponsor, and the Markforged Earnout Shares, are accounted for as liabilities recorded at fair value upon issuance with changes in fair value each period reported in earnings, which may have an adverse effect on the market price of our Common Stock.

Under U.S. GAAP, we are required to evaluate our warrants to determine whether they should be accounted for as a warrant liability or as equity. We have concluded that the warrants contain provisions requiring liability classification. Therefore, we are accounting for the warrants as a warrant liability and recorded that liability at fair value upon issuance. We will record any subsequent changes in fair value as of the end of each period for which earnings are reported. The impact of changes in fair value on earnings may have an adverse effect on the market price of our common stock and may cause fluctuations in our results of operations based on factors that are outside of our control.

Additionally, the Markforged Earnout Shares are also accounted for as a liability because the triggering events that determine the number of shares to be earned included events that were not indexed to our Common Stock. These liabilities are subject to re-measurement at each balance sheet date. With each such re-measurement, the earnout liability will be adjusted to fair value, with a resulting non-cash gain or loss related to the change in the fair value being recognized in our earnings in the statement of operations. The impact of changes in fair value on earnings may have an adverse effect on the market price of our Common Stock. Due to the

recurring fair value measurement, we expect that we will recognize non-cash gains or losses for each future reporting period and that the amount of such gains or losses could be material.

Item 1B. Unresolved Staff Comments.

Not applicable.

Item 1C. Cybersecurity***Governance Related to Cybersecurity Risks***

Our board of directors holds overall oversight responsibility for the Company's strategy and risk management processes, including in relation to cybersecurity risks. Our board exercises its oversight function through the audit committee, which oversees the assessment and management of risk exposure across various areas, including cybersecurity. Our audit committee receives regular reports from our Chief Financial Officer on significant cybersecurity matters, including, where appropriate, whether any significant incidents have occurred.

Our IT Security Steering Committee, which is led by our Chief Financial Officer, is composed of various members of our organization, including our Chief Human Resources Officer, VP of Software Engineering, and Senior Director of TechOps and Security. The IT Security Steering Committee is involved in oversight of cybersecurity risk. The IT Steering Committee exercises this function through our IT Security Team, which includes our Senior Director of TechOps and Security and our VP of Software Engineering who collectively have over 40 years of experience. The IT Security Team is responsible for the administration of our cyber program and works with various vendors and external providers to test and monitor for vulnerabilities and threats. We also engage our employees in our cybersecurity efforts through a process for employees to complete annual security and awareness training.

Cybersecurity Risk Management and Strategy

Our cybersecurity program is informed by industry standards and includes processes for identification, assessment, and management of cybersecurity risks. With support from external vendors, we conduct internal and external risk assessments to assess our cyber program and develop strategies for the management of cyber risks. We also employ vendors and external partners to monitor for and manage threats, and we engage in testing to identify vulnerabilities and use third-party tools to scan for potential risks.

Our IT Security Team is informed about and monitors the prevention, management, and remediation of cybersecurity risks through various means, including by leveraging a managed security service provider and other third-party security software and technology services. Our managed security service provider is also tasked with testing, auditing, and monitoring the performance of our cybersecurity processes. We also maintain processes for reviewing and assessing vendor security before new engagements as part of our Vendor Advisory Board's function.

We maintain processes to inform and update management and, as needed, the audit committee, about security incidents that may pose a significant risk for the business, as applicable. In accordance with our incident response policies, our IT Security Team and Chief Financial Officer are responsible for establishing incident response teams to manage cybersecurity incidents, should any arise. Although risks from cybersecurity threats have to date not materially affected us, and we do not believe they are reasonably likely to materially affect us, our business strategy, results of operations or financial condition, we have, from time to time, experienced threats and security incidents relating to our and our third party vendors' information systems. For more information, please see "Item 1A, Risk Factors."

Item 2. Properties.

Our corporate headquarters is located in an approximately 120,681 square foot facility located at 60 Tower Road, Waltham, Massachusetts 02451. The lease of this facility began on April 1, 2022 and expires on September 30, 2031. We continue to lease our former headquarters, a 36,000 square foot facility at 480 Pleasant Street, Watertown, Massachusetts 02472. The lease of this facility expires in July 2028. We lease another 32,000 square foot facility at 85 School Street, Watertown, Massachusetts 02472. The lease of that facility expired in January 2024. We lease a 47,000 square foot facility at 4 Suburban Park Drive, Billerica, Massachusetts 01821. The Billerica facility lease expires October 2029. We believe that our facilities are adequate for our current needs and, should the company need additional space, we believe we will be able to obtain additional space on commercially reasonable terms. We are actively engaged in efforts to identify a sublessor for our unoccupied space.

Item 3. Legal Proceedings.

From time to time we are involved in claims that arise during the ordinary course of business. Although the results of litigation and claims cannot be predicted with certainty, we do not currently believe that the outcome of any of these other legal matters (including the matter involving Continuous Composites Inc., which is described in Note 15 to our consolidated financial statements

and incorporated herein by reference) will have a material adverse effect on our results of operation or financial condition. Regardless of the outcome, litigation can be costly and time consuming, as it can divert management's attention from important business matters and initiatives, negatively impacting our overall operations.

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.

Market Information

Our Common Stock and warrants are listed on the New York Stock Exchange under the symbols “MKFG” and “MKFG.WS”, respectively.

Stockholders

As of March 14 2024, there were 83 holders of record of our Common Stock and 1 holder of record of our warrants. The actual number of stockholders of our Common Stock and the actual number of holders of our warrants is greater than the number of record holders and includes stockholders of our warrants whose Common Stock or warrants are held in street name by brokers and other nominees.

Dividend Policy

We have never declared or paid cash dividends on our capital stock. We do not expect to pay dividends on our capital stock for the foreseeable future, instead anticipating that all of our earnings for the foreseeable future will be used for the operation and growth of our business. The payment of any future dividends will be at the discretion of our board of directors and will depend on various factors, including our operating results, financial condition, capital requirements, growth plans, any contractual and legal restrictions on our payment of dividends, and any other factors deemed relevant by our board of directors.

Recent Sales of Unregistered Securities

All sales of unregistered securities by us during the year ended December 31, 2023 have been included previously in an Annual Report on Form 10-K or in a Current Report on Form 8-K.

Issuer Purchases of Equity Securities

None.

Item 6. Reserved

Not applicable.

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

Unless otherwise indicated or the context otherwise requires, references in this section to “Markforged,” “we,” “us,” “our” and other similar terms refer to Markforged Holding Corporation and its subsidiaries after giving effect to the Merger. The following discussion and analysis summarizes the significant factors affecting the consolidated operating results, financial condition, liquidity and cash flows of our company as of and for the periods presented below. The following discussion and analysis should be read in conjunction with our consolidated financial statements and the related notes thereto included elsewhere in this Annual Report on Form 10-K. The discussion contains forward-looking statements that are based on the beliefs of management, as well as assumptions made by, and information currently available to, our management. Actual results could differ materially from those discussed in or implied by forward-looking statements as a result of various factors, including those discussed below and elsewhere in this Annual Report on Form 10-K, particularly in the sections entitled “Risk Factors” and “Cautionary Note Regarding Forward-Looking Statements.”

Business Overview

Our platform, The Digital Forge, is an intuitive additive manufacturing platform powering engineers, designers and manufacturing professionals globally. The Digital Forge combines precise and reliable 3D printers and metal and composite proprietary materials seamlessly with its cloud-based learning software offering to empower manufacturers to create more resilient and agile supply chains. Markforged is based in greater Boston, Massachusetts, where we have our own in-house manufacturing facility and where we design our industrial 3D printers, software and metal and composite proprietary materials.

Since our inception, we have incurred significant operating losses. Our ability to generate revenue sufficient to achieve profitability will depend on the successful further development and commercialization of our products. We generated revenue of \$93.8 million and \$101.0 million for the years ended December 31, 2023 and 2022, respectively, and incurred net losses of \$103.6 million and \$25.4 million, respectively, for those same periods. Net loss for the years ended December 31, 2023 and 2022 is inclusive of non-cash mark-to-market gains of \$0.6 million and \$58.8 million, respectively, and goodwill and long-lived asset impairment of \$33.5 million during 2023. As of December 31, 2023 we had an accumulated deficit of \$204.7 million and cash, cash equivalents, and short term investments of \$116.9 million. We expect to continue to incur operating losses as we focus on growing commercial sales of our products in both the United States and international markets, scaling our manufacturing operations, continuing research and development efforts to develop new products and further enhance our existing products.

Merger agreement

On February 23, 2021, one, a Cayman Islands exempted company (“AONE”), entered into an Agreement and Plan of Merger (the “Merger Agreement”) with Caspian Merger Sub Inc., a wholly owned subsidiary of AONE (“Merger Sub”), and MarkForged, Inc. (“Legacy Markforged”), pursuant to which (i) AONE would deregister as a Cayman Islands company and domesticate as a corporation in the State of Delaware and would be renamed “Markforged Holding Corporation” (the “Domestication”) and (ii) Merger Sub would merge with and into Legacy Markforged with Legacy Markforged surviving as a wholly owned subsidiary of Markforged Holding Corporation (the “Merger”). AONE's shareholders approved the transactions contemplated by the Merger Agreement on July 13, 2021, and the Domestication and the Merger were completed on July 14, 2021.

Cash proceeds of the Merger were funded through a combination of AONE's \$132.5 million of cash held in trust (after redemptions of \$64.2 million) and an aggregate of \$210.0 million in fully committed common stock transactions at \$10.00 per share. Upon closing of the Merger (the “Closing”), Legacy Markforged repurchased shares of common stock from certain of its stockholders, for a total value of \$45.0 million of cash on hand (the “Employee Transactions”). Total net proceeds upon the Closing, net of the Employee Transactions and transaction costs paid at the Closing of \$27.1 million, were \$288.8 million.

Acquisitions

On April 4, 2022, we acquired Teton Simulation Software (“Teton”) for total consideration of \$6.6 million, payable in a combination of cash and equity shares. Teton is a software company whose SmartSlice™ technology automates validation and optimizes part performance for additive manufacturing applications. We have integrated Teton's technology as a feature of our printing software solution, Eiger™, and offer this solution as part of a subscription tier. This solution provides manufacturing customers a streamlined workflow spanning part design, testing, optimization, validation and printing at the point of need, all on a single, cloud-based platform.

On August 31, 2022, we acquired Digital Metal AB, a limited liability company incorporated under the laws of Sweden (“Digital Metal”). At the closing, we issued 4,100,000 shares of our common stock and paid approximately \$33.5 million in cash to the seller. The cash payment was comprised of \$32.0 million related to the purchase price and \$1.5 million to settle certain

intercompany balances between the seller and Digital Metal. The acquisition of Digital Metal, the creator of a precise and reliable binder jetting solution, extends our capabilities into high-throughput production of metal additive parts.

For more information on the acquisitions, please see Note 2 in the Notes to Consolidated Financial Statements of this Annual Report on Form 10-K.

Impact of Macroeconomic Trends

Recent negative macroeconomic factors, such as inflation, high interest rates, and limited credit availability have and could further cause economic uncertainty and volatility, which could harm our business. For more information on operations and risks related to macroeconomic disruptions, please see the section of this Annual Report on Form 10-K titled “Risk Factors — Risks Related to Our Business and Industry”.

Key Factors Affecting Operating Results

We believe that our financial performance has been and in the foreseeable future will continue to be primarily driven by the factors discussed below. While each of these factors presents significant opportunities for our business, they also pose important challenges that we must successfully address in order to sustain our growth and improve our results of operations.

Hardware sales

Our financial performance has largely been driven by, and in the future will continue to be impacted by, the rate of sales of our hardware. Management focuses on hardware sales as an indicator of current business success and a leading indicator of likely future recurring revenue from consumables and subscriptions. We expect our hardware sales to continue to grow as we increase penetration in our existing markets and expand into new markets.

Recurring revenue

We regularly assess trends relating to recurring revenue which includes consumables, services, and subscriptions. The consumables revenue stream includes metals, continuous fiber, and chopped fiber materials used by customers as print media. Our services revenue is made up of revenue generated from hardware maintenance contracts (referred to as success plans), software, and additive manufacturing training and education (which we also refer to as “Subscription Plans,” which we have sold as one package since the beginning of the second quarter of 2023). Our service revenue is generally realized over a period of one to three years. Recurring revenue was 37% and 32% of total revenue for the years ended December 31, 2023 and 2022, respectively. Our recurring revenue as a percentage of total revenue may vary based upon new product placements in the period as well as consumption trends impacted by macroeconomic factors, customer behavior, and the useful life of our hardware. As our cumulative historical hardware sales increase, recurring revenue on an absolute basis is expected to increase and over time should be an increasingly important contributor to our total revenue.

Go to market

We believe that we are in a strong position within the industry with our accessible solutions that offer users design flexibility and industrial strength parts. Accordingly, we continue to invest in marketing, sales, and operations necessary to scale our business and continue to gain market share and open new market opportunities. We have proven an ability to design, manufacture, and distribute products through channels that provide a high value to customers at gross margins higher than many of our competitors. In addition to our go to market strategy, our integrated platform of hardware, software and consumables has been core to our success and we will continue to drive value through research and development as we introduce smarter and more adaptive technology that is expected to improve our integrated platform and, ultimately, the value provided by our 3D printers. We believe these investments are critical to achieve long-term scalability, but expect the near term impacts will be a muting of our short term profitability.

Seasonality

Historically, the sales of our 3D printers have been subject to seasonality and we have seen higher hardware sales in the third and fourth quarters. We believe this trend is likely driven by available funds in federal capital budgets at the end of the third quarter and commercial budgets at year end which they direct towards the evolution of their manufacturing processes through investments in additive manufacturing.

Components of Results of Operations

Revenue

The majority of our revenue results from the sale of hardware, including our additive manufacturing products, and related consumables. We deliver products and services primarily through our value-added reseller ("VAR") network, who purchase and resell our products to end users. Hardware and consumables revenue is recognized upon transfer of control to the customer, which is typically the VAR, and generally takes place at the point of shipment. We also generate a portion of our revenue from hardware maintenance services and our premium software subscriptions. Revenue related to subscriptions is recognized ratably over the term of the subscription. Our VARs may provide installation services, as needed depending on the product.

Cost of revenue

Our cost of revenue consists of the cost of product, software subscriptions, maintenance services, personnel costs, third party logistics, freight, warranty fulfillment costs, and overhead.

Cost of products includes the manufacturing cost of our additive manufacturing products and consumables. We primarily utilize third party manufacturers for the production of our additive manufacturing hardware, and we utilize our own manufacturing facilities and personnel for the production of our consumables. The costs of revenue for internally manufactured products include the cost of raw materials, labor conversion costs, and overhead related to our manufacturing operations, including depreciation and amortization. Overhead costs include shipping, storage, and labor. Cost of services includes personnel-related costs associated with our customer success teams' provision of remote and on-site support services to our customers and the costs of replacement parts, as well as software costs. Our cost of revenue also includes indirect costs of providing our products and services to customers which consist primarily of reserves for excess and obsolete inventory and stock-based compensation.

We expect our cost of revenue to increase in absolute dollars in future periods as we expect our revenues to continue to grow.

Gross profit and gross margin

Our gross profit is calculated based on the difference between our revenues and cost of revenue. Gross margin is the percentage obtained by dividing gross profit by our revenue. Our gross profit and gross margin are, or may be, influenced by a number of factors, including:

- Market conditions and competition that may impact our pricing;
- Product mix changes between our printer product lines and consumables trends;
- The impact of global supply chain disruptions on the cost to both procure materials and ship materials and finished goods;
- Growth in the number of customers utilizing our additive manufacturing products and changes in customer utilization rates, which affects sales of our consumable materials and may result in excess or obsolete inventories;
- Our cost structure for manufacturing operations, including the extent to which we utilize contract manufacturers compared to in-house manufacturing, the ability to achieve economies of scale in our purchase volumes, and any impacts to changes in our manufacturing on our product warranty obligations; and
- Our ability to directly monetize the capabilities of our software solutions in the future.

We expect our gross margins to fluctuate over time, depending on the factors described above.

Research and development

Our research and development expenses represent costs incurred to support activities that advance the development of innovative additive manufacturing technology, new printer products, development of proprietary printing materials, as well as activities that enhance the functionality of our offerings. Our research and development expenses consist primarily of employee-related personnel expenses, prototypes, facilities costs, and engineering services. We believe our research and development department is staffed at a level that enables us to innovate and develop products beyond 2024.

Sales and marketing

Sales and marketing expenses consist primarily of personnel-related costs for our sales and marketing departments, costs related to sales commissions, trade shows, advertising, facilities costs, and other demand generation services. We reorganized our go-to-market team during the fourth quarter of 2022, which led to stabilization of costs as we optimized our team.

General and administrative

General and administrative expenses consist primarily of personnel-related costs for our executive leadership and finance, human resources and IT departments. We believe our general and administrative costs have stabilized as we have completed our investments required to operate as a public company.

Change in fair value of derivative liabilities

Change in fair value of derivative liabilities primarily includes the change in fair value of the contingent earnout liabilities and private placement warrant liability. All were accounted for as liabilities as of the date of the Merger, or acquisition, and remeasured to fair value at the end of the reporting period.

Other expense, net

Other expense includes other non-operating expenses.

Interest income

Interest income includes interest earned on deposits and short-term investments.

Income taxes

We have recorded an immaterial income tax expense (benefit) each year since our inception. We have not realized material income tax benefits from the net operating losses or from the generated research and development tax credits as based upon the weight of available evidence, it is more likely than not that all of our net deferred tax assets will not be realized. We have recorded a valuation allowance against our net deferred tax assets at each balance sheet date.

The enactment of the Tax Cuts and Jobs Act (the “TCJA”) in December 2017 significantly affected U.S. tax law by changing how the United States imposes tax on multinational corporations. For tax years beginning after December 31, 2021, the TCJA requires research and development costs to be capitalized and amortized over five or fifteen years, depending on if the costs are U.S. or foreign, respectively. As of December 31, 2023 and 2022, we have capitalized research and development costs net of amortization, which are maintained with a valuation allowance.

Results of Operations

The results of operations presented below should be reviewed in conjunction with the consolidated financial statements and notes included elsewhere in this Annual Report on Form 10-K. The following tables set forth our results of operations for the periods presented.

Comparison of the years ended December 31, 2023 and 2022

(dollars in thousands)	Year Ended December 31,		\$ Change	% Change
	2023	2022		
Revenue	\$ 93,784	\$ 100,958	(7,174)	(7)%
Cost of revenue	49,370	50,252	(882)	(2)%
Gross profit	44,414	50,706	(6,292)	(12)%
Operating expenses				
Sales and marketing	37,830	44,975	(7,145)	(16)%
Research and development	40,737	42,387	(1,650)	(4)%
General and administrative	47,761	50,428	(2,667)	(5)%
Goodwill impairment	29,467	—	29,467	100%
Total operating expense	155,795	137,790	18,005	
Loss from operations	(111,381)	(87,084)	(24,297)	
Change in fair value of warrant liabilities	472	1,485	(1,013)	(68)%
Change in fair value of contingent earnout liability	1,036	57,307	(56,271)	(98)%
Other expense, net	(307)	(381)	74	(19)%
Interest expense	(373)	(11)	(362)	NM
Interest income	6,400	2,878	3,522	122%
Loss before income taxes	(104,153)	(25,806)	(78,347)	
Income tax (benefit) expense	(586)	(418)	(168)	40%
Net loss	<u>\$ (103,567)</u>	<u>\$ (25,388)</u>	<u>\$ (78,179)</u>	

NM: Not meaningful

Revenue, cost of revenue, and gross margin

We earn revenue from the sale of hardware, consumables, and services contracts. The hardware revenue stream includes 3D metal printers, 3D composite printers, and sintering furnaces. The consumables revenue stream includes metals, continuous fiber, and chopped fiber materials used by customers as print media. The services revenue stream primarily consists of hardware maintenance services and software subscriptions.

The following table sets forth the changes in the components of gross margin for the years ended December 31, 2023 and 2022.

(dollars in thousands)	Year Ended December 31,		\$ Change	% Change
	2023	2022		
Revenue	\$ 93,784	\$ 100,958	(7,174)	(7)%
Cost of revenue	49,370	50,252	(882)	(2)%
Gross profit	44,414	50,706	(6,292)	(12)%
Gross margin	47%	50%	—	3%

Comparison of revenue

The following table disaggregates our revenue based on the nature of the products and services:

(in thousands)	Year Ended December 31,		\$ Change	% Change
	2023	2022		
Hardware)
	\$ 59,287	\$ 69,112	(9,825)	(14)%
Consumables	23,996	23,423	573	2%
Services	10,501	8,423	2,078	25%
Total Revenue)
	<u>\$ 93,784</u>	<u>\$ 100,958</u>	<u>\$ (7,174)</u>	(7)%

Consolidated revenue for the year ended December 31, 2023 was \$93.8 million compared with prior year revenue of \$101.0 million representing a decrease of 7%, driven by a decline in hardware revenue and slightly offset by an increase in service revenue.

Hardware revenue decreased 14% for the year ended December 31, 2023 compared to the year ended December 31, 2022. Overall unit sales decreased driven by macro economic headwinds in the second half of 2023, including the persistent high cost of capital which creates uncertainty and restricts our ability to invest in capital in the short term. Consumables revenue increased approximately 2% for the year ended December 31, 2023 compared to the year ended December 31, 2022. The increase in consumables revenue was due to the increase in active printers being utilized in the field as a result of the incremental volume of new printer sales in the prior year, as well as higher consumption of our next-gen industrial printers. Services revenue increased approximately 25% for the year ended December 31, 2023 compared to the year ended December 31, 2022. The increase in services revenue was driven by the recurring nature of our services business and the launch of subscription offerings on April 1, 2023.

Cost of revenue and gross profit

Consolidated cost of revenue for the year ended December 31, 2023 was \$49.4 million compared to \$50.3 million for the year ended December 31, 2022, representing a decrease of 2%. This was primarily due to the decrease in revenue which was partially offset by higher warranty costs associated with the early production units of our industrial printers over the comparable period. Gross profit for the year ended December 31, 2023 decreased 12% from \$50.7 million during the year ended December 31, 2022 to \$44.4 million. Gross profit margin for the year ended December 31, 2023 was 47% while the gross profit margin for the year ended December 31, 2022 was 50%. The decline in consolidated gross profit is primarily due to the decline in revenue, fixed nature of certain costs of revenue, an increase in warranty costs associated with the early production units of industrial printers over the comparable period, and a full year of amortization of acquired technology.

Operating expenses

The following table sets forth the components of operating expenses for the years ended December 31, 2023 and 2022.

	Year Ended December 31,					
	2023		2022		Change	
		%		%		
(dollars in thousands)	Amount	Revenue	Amount	Revenue	\$	%
Operating expenses						
Sales and marketing	\$ 37,830	40%	\$ 44,975	45%	\$ (7,145)	(16)%
Research and development	40,737	43%	42,387	42%	(1,650)	(4)%
General and administrative	47,761	51%	50,428	50%	(2,667)	(5)%
Goodwill impairment	29,467	31%	—	—	29,467	100%
Total operating expenses.....	<u>\$ 155,795</u>	166%	<u>\$ 137,790</u>	136%	<u>\$ 18,005</u>	13%

Sales and marketing expenses decreased 16% for the year ended December 31, 2023, as compared to the year ended December 31, 2022. This decrease is partially due to a \$4.0 million decrease in headcount and contractor related expenses. Advertising spend decreased \$1.9 million due to optimization efforts and increases in efficiency. Events and travel costs decreased by \$0.6 million and sales commissions decreased by \$0.6 million as fewer sales targets were met during the year ended December 31, 2023, as compared to the year ended December 31, 2022. These decreases were offset by an increase in expense of \$0.9 million related to the Teton business milestone expected achievement fair value being raised to the maximum amount of \$1.5 million.

Research and development expenses decreased 4% for the year ended December 31, 2023, as compared to the year ended December 31, 2022, primarily due to a decrease in headcount and related costs of \$1.2 million, as well as decreases in recruiting costs of \$0.4 million. Prototype research and development decreased \$0.9 million over the prior year due to reaching advanced stages in product development in 2023. These increases were partially offset by an increase in rent expense of \$0.6 million and depreciation of \$0.5 million related to our new headquarters.

General and administrative expenses decreased 5% for the year ended December 31, 2023, as compared to the year ended December 31, 2022, primarily due to a decrease in stock-based compensation expense of \$3.9 million driven by the reversal of the graded vesting impact of forfeitures for the departure of key employees. Bad debt expense decreased by \$1.8 million due to strategic collection efforts. Transaction expenses decreased by \$1.5 million due to all acquisition activity taking place in the prior year. Headcount and contractor related expenses decreased by \$1.3 million. These decreases were partially offset by \$4.0 million of impairment of long-lived assets related to the change in the fair value of the lease asset of our former headquarters, 480 Pleasant Street, recorded in the second quarter of 2023, as well as increases in rent expense of \$1.2 million and depreciation of \$0.8 million related to our new headquarters.

During 2023, we experienced a decline in actual and forecasted operating results prompting an impairment assessment of goodwill. As a result of this assessment, goodwill impairment of \$29.5 million was recorded in the third quarter of 2023.

Change in fair value of derivative liabilities and contingent earnout liability, and other expense

The following table sets forth the fair value changes and other expense for the years ended December 31, 2023 and 2022:

(dollars in thousands)	Year Ended December 31,		\$ Change	% Change
	2023	2022		
Change in fair value of derivative liabilities	\$ 472	\$ 1,485	\$ (1,013)	(68)%
Change in fair value of contingent earnout liability	1,036	57,307	(56,271)	(98)%
Other expense, net	(307)	(381)	74	(19)%
Interest expense	(373)	(11)	(362)	NM
Interest income	6,400	2,878	3,522	122%

The change in the fair value of the derivative and contingent earnout liability in the year ended December 31, 2023 compared to the year ended December 31, 2022 was primarily driven by the change in our common stock price during each period.

The change in interest income is directly correlated to the interest rates during each period, slightly offset by the decrease in the cash balance in short-term investment and money market accounts.

Income tax expense (benefit)

We recorded a \$0.6 million benefit and \$0.4 million expense for income taxes for the years ended December 31, 2023 and 2022, respectively.

Non-GAAP Net Profit (Loss)

In addition to our financial results determined in accordance with U.S. generally accepted accounting principles (“GAAP”), we believe that the below non-GAAP net profit (loss) financial measure, that excludes one-time charges and certain non-cash items, is useful in evaluating the performance of our business. We define non-GAAP net profit (loss) as net profit (loss) less stock-based compensation expense, net change in fair value of derivative liabilities and contingent earnout liabilities, and certain non-recurring expenses.

We monitor non-GAAP net profit (loss) as a measure of our overall business performance, which enables us to analyze our past and future performance without the effects of non-cash items and/or one-time charges. While we believe that non-GAAP net profit (loss) is useful in evaluating our business, non-GAAP net profit (loss) is a non-GAAP financial measure that has limitations as an analytical tool. Non-GAAP net profit (loss) can be useful in evaluating our performance by eliminating the effect of financing and non-cash expenses such as stock-based compensation, however, we may incur such expenses in the future which could impact future results. We also believe that the presentation of the non-GAAP financial measures in this Annual Report on Form 10-K provides an additional tool for investors to use in comparing our core business and results of operations over multiple periods with other companies in our industry, many of which present similar non-GAAP financial measures to investors.

In addition, other companies, including companies in our industry, may calculate non-GAAP metrics differently or not at all, which reduces the usefulness of this measure as a tool for comparison.

We recommend that you review the reconciliation of non-GAAP net profit (loss) to net income (loss), the most directly comparable GAAP financial measure, and that you not rely on any single financial measure to evaluate our business.

Non-GAAP Net Profit (Loss)

(dollars in thousands)	Year Ended December 31,	
	2023	2022
Net loss.....	\$ (103,567)	\$ (25,388)
Stock compensation expense	13,987	18,209
Change in fair value of derivative liabilities.....	426	(1,485)
Change in fair value of contingent earnout liability	(1,036)	(57,307)
Amortization	1,024	146
Goodwill impairment	29,467	—
Non-recurring costs ¹	8,451	5,719
Non-GAAP net loss	\$ (51,248)	\$ (60,106)

¹Non-recurring costs incurred during the year ended December 31, 2023 relate to long-lived asset impairment of \$4.0 million, litigation expenses of \$3.9 million, and one-time restructuring costs of \$0.6 million. Non-recurring costs incurred during the year ended December 31, 2022 relate to litigation expenses of \$3.8 million, transaction costs of \$1.8 million, and \$0.1 million of one-time expense related to the amortization of the fair value step-up of acquired inventory.

Liquidity and Capital Resources

We have historically funded our operations primarily through the sale of convertible preferred stock, the proceeds from the Merger and reverse recapitalization including the sale of common stock, and the sale of our products. Since inception we have focused on growth, which has required ongoing investment to support scaling of our business, research and development efforts, and day to day operations. We had cash and cash equivalents, and short term investments of \$116.9 million as of December 31, 2023. Net loss for the years ended December 31, 2023 and 2022 are inclusive of non-cash mark-to-market net gains of \$0.6 million and \$58.8 million, respectively, and goodwill and long-lived asset impairment of \$33.5 million during 2023.

Our material cash requirements from known contractual and other obligations relate to minimum operating lease obligations as of December 31, 2023 that are as follows: 2024 - \$6.9 million; 2025 - \$7.7 million; 2026- \$7.8 million; 2027 - \$8.0 million; 2028 - 7.4 million and subsequent years - \$16.4 million.

Currently we generate negative operating cash flows as we pursue further business growth. We anticipate our cash and cash equivalents and short-term investments balance as of December 31, 2023 of \$116.9 million will be more than sufficient to meet the working capital and capital expenditure needs for the next 12 months following the filing for this Annual Report on Form 10-K. Our future capital requirements will depend on many factors, including our revenue growth rate, the timing and the amount of cash received from customers, the expansion of sales and marketing activities, the timing and extent of spending to support development efforts, expenses associated with our international expansion, the introduction of platform enhancements, the continuing market adoption of The Digital Forge platform, as well as political and economic conditions outside of our control. In the future, we may enter into arrangements to acquire or invest in complementary businesses, products, and technologies. We may be required to seek additional equity or debt financing. In the event that we require additional financing, we may not be able to raise such financing on terms acceptable to us or at all. If we are unable to raise additional capital or generate cash flows necessary to expand our operations and invest in continued innovation, we may not be able to compete successfully, which would harm our business, results of operations, and financial condition.

Cash flows

For the years ended December 31, 2023 and 2022

The following table sets forth a summary of Markforged's cash flows for the periods indicated:

(dollars in thousands)	Year Ended December 31,		Change	
	2023	2022	\$	%
Net cash used in operating activities.....	\$ (48,900)	\$ (73,521)	\$ 24,621	33%
Net cash provided by (used in) investing activities	42,098	(90,898)	132,996	146%
Net cash provided by (used in) financing activities.....	(520)	1,552	(2,072)	(134)%
Effect of exchange rate changes on cash	(66)	(64)	(2)	3%
Net change in cash and cash equivalents	<u>\$ (7,388)</u>	<u>\$ (162,931)</u>	<u>\$ 155,543</u>	<u>95%</u>

Cash flow from operations

Net cash used in operating activities for the years ended December 31, 2023 and 2022 was \$48.9 million and \$73.5 million, respectively. Operating cash flows and changes in working capital for comparative periods were as follows:

(dollars in thousands)	Year Ended December 31,	
	2023	2022
Operating cash flows before changes in working capital	\$ (46,409)	\$ (55,793)
Changes in working capital.....	(2,491)	(17,728)

Net cash used in operating activities decreased by \$24.6 million for the year ended December 31, 2023 compared to the year ended December 31, 2022. The change in operating cash flows before changes in working capital consists of an increase in net loss of \$78.0 million, adjusted for non-cash items, primarily consisting of lower gains on mark-to-market fair value adjustment of liabilities of \$58.2 million, goodwill impairment of \$29.5 million, long-lived asset impairment of \$4.0 million as well as depreciation, amortization, and non-cash lease interest of \$3.5 million. These adjustments were offset by a decrease in stock-based compensation expense of \$4.2 million.

Cash consumed by working capital decreased \$15.1 million for the year ended December 31, 2023 compared to the year ended December 31, 2022; this is primarily due to cash management resulting in less inventory build in 2023 versus 2022, and increased collection efforts leading to a decrease in accounts receivable. The decrease in operating cash flow changes are a direct result of the tightening of working capital controls leading to an overall decrease in operating expenses.

Cash flow from investing activities

Net cash provided by (used in) investing activities for year ended December 31, 2023 and 2022 was \$42.1 million and (\$90.9 million), respectively. During 2022, we spent approximately \$35.9 million on acquisitions and \$11.4 million on the build-out of our new headquarters. In the fourth quarter of 2022, we began investing in short-term investments which resulted in net purchases of available-for-sale securities of \$43.5 million. In 2023, net proceeds from investments was \$45.7 million as our investments matured. In addition, we invested an additional \$3.6 million in property and equipment, primarily to complete the build-out of our new headquarters in 2023.

Cash flow from financing activities

Net cash provided by (used) in financing activities decreased \$2.1 million during years ended December 31, 2023 and 2022. The change in financing activities was driven by a decrease in proceeds from option exercises in 2023, and the Teton acquisition holdback settled during the second quarter of 2023.

Critical accounting policies and estimates

Our discussion and analysis of our financial condition and results of operations are based on the historical consolidated financial statements included elsewhere herein. We prepared these financial statements in conformity with U.S. GAAP. The preparation of these financial statements requires us to make estimates and assumptions that affect the reported amounts of assets and liabilities at the dates of the financial statements and the reported amounts of revenues and expenses during the reporting periods. We base our estimates on historical experience and on various other assumptions we believe to be reasonable under the circumstances. We routinely evaluate these estimates, utilizing historical experience, consultation with experts and other methods we consider reasonable in the particular circumstances. Our results may differ from these estimates, and any effects on our business, financial position or results of operations resulting from revisions to these estimates are recorded in the period in which the facts that give rise to the revision become known. Changes in these estimates could materially affect our financial position, results of operations or cash flows. See Note 2, "Significant Accounting Policies" in the Notes to Consolidated Financial Statements included herein.

Acquisitions

We account for business combinations using the acquisition method of accounting, which requires that the assets acquired and liabilities assumed be recorded at their respective estimated fair values as of the acquisition date. The excess of the fair value of the purchase consideration over the fair values of these identifiable assets and liabilities is recorded as goodwill. While we use our best estimates and judgments, our estimates are inherently uncertain and subject to refinement. During the measurement period, which may be up to one year from the acquisition date, we may record adjustments to the fair value of these tangible and intangible assets acquired and liabilities assumed, with the corresponding offset to goodwill. We continue to collect information and reevaluate these

estimates and assumptions quarterly and record any adjustments to our preliminary estimates to goodwill provided that we are within the measurement period.

The judgments made in determining the estimated fair value assigned to the assets acquired, as well as the estimated useful life of each asset, can materially impact the consolidated statements of operations of the periods subsequent to the acquisition through depreciation and amortization, and in certain instances through impairment charges, if the asset becomes impaired in the future. In determining the estimated fair value for intangible assets, we typically utilize the income approach, which discounts the projected future net cash flow using a discount rate deemed appropriate by management that reflects the risks associated with such projected future cash flow. Significant estimates and assumptions include revenue growth rates and discount rates. Determining the useful life of an intangible asset also requires judgment, as different types of intangible assets will have different useful lives and certain assets may even be considered to have indefinite useful lives.

Goodwill and Intangible Assets

Goodwill is not amortized, but is reviewed at least annually for impairment or earlier, if an indication of impairment exists. Determining the fair value of a reporting unit is judgmental in nature and involves the use of significant estimates and assumptions. We identify our reporting unit and determine the carrying value of the reporting unit by assigning the assets and liabilities, including the existing goodwill and intangible assets, to the reporting unit. We then determine the fair value of the reporting unit and compare it to the carrying amount of the reporting unit. Operating segments are components of the business for which the chief operating decision maker ("CODM") regularly reviews discrete financial information.

We have the option of first assessing qualitative factors to determine whether it is necessary to perform a quantitative impairment test for goodwill or we can perform the quantitative impairment test without performing the qualitative assessment. In performing the qualitative assessment, we consider prior valuations and certain events and circumstances specific to the reporting unit and to the entity as a whole, such as macroeconomic conditions, industry and market considerations, overall financial performance and cost factors when evaluating whether it is more likely than not that the fair value of the reporting unit is less than its carrying amount. While we believe we have made reasonable estimates and assumptions to calculate the fair value of the reporting unit, it is possible a material change could occur.

If the results of the quantitative test indicate the fair value of a reporting unit exceeds the carrying value of the net assets assigned to a reporting unit, goodwill is considered not impaired and no further testing is required. If the carrying value of the net assets assigned to a reporting unit exceeds the fair value of a reporting unit, goodwill is deemed impaired and is written down to the extent of the difference between the fair value of the reporting unit and the carrying value.

A quantitative goodwill impairment testing process requires valuation of the reporting unit. In the market approach, we can reference our market capitalization as a value indication given our single operating segment and reporting unit. In the income approach, which is based on a discounted forecasted cash flow including a terminal value, we compute the terminal value using the constant growth method, which values the forecasted cash flows in perpetuity. The assumptions about future cash flows and growth rates are based on the reporting unit's long-term forecast and is subject to review and approval by senior management. A reporting unit's discount rate is a significant assumption and is a risk-adjusted weighted average cost of capital, which we believe approximates the rate from a market participant's perspective. The estimated fair value could be impacted by changes in market conditions and various other assumptions, however we consider the discount rate assumption to be the key assumption. We categorize the fair value determination as Level 3 in the fair value hierarchy due to its use of internal projections and unobservable measurement inputs.

We identified a triggering event and recorded goodwill impairment of \$29.5 million, the entirety of the goodwill carrying value, during the quarter ended September 30, 2023 (see Note 7).

Intangible assets consist of identifiable intangible assets acquired, specifically, developed technology, customer relationships, and trade names. We evaluate definite-lived intangible assets for impairment when events or changes in circumstances indicate that the carrying amount of the assets may not be recoverable through future operations. If indicators of impairment are present, we then compare the estimated undiscounted cash flows that the specific asset is expected to generate to its carrying value. If such assets are impaired, the impairment recognized is measured as the amount by which the carrying amount of the asset exceeds its fair value. We experienced a triggering event as of September 30, 2023 prompting impairment assessments of goodwill and long-lived assets, including definite-lived intangibles. The long-lived assets were determined to be recoverable, therefore the assessment did not result in an impairment of definite-lived intangible assets or other long-lived assets.

Revenue

Our customer contracts include multiple products and services. We are required to perform allocations of the contract value to the products and services deemed to be distinct performance obligations by GAAP in order to recognize revenue at the appropriate time. These allocations are based on a relative standalone selling price methodology, which requires us to determine the standalone selling price for each performance obligation. We utilize selling prices from standalone sales of the product or service when available. However, certain products are not sold on a standalone basis or do not have a sufficient history of standalone sales and we are required

to estimate the standalone selling price for the purposes of our allocation. We utilize market information, historical selling practices, and other available information to produce as accurate an estimate as possible. However, to the extent our pricing practices change or estimated selling prices differ from actual standalone sales in the future, the timing of our revenue recognition in contracts with multiple products and services may change.

Inventory

Inventory is stated at average costs subject to impairment when carrying value is in excess of the net realizable value. The costs included materials, labor, and manufacturing overhead related to the acquisition of raw materials and production into finished goods. The net realizable value considers our intent and ability to utilize the inventory prior to perishing as well as the estimated selling price and costs of completion and sale. We regularly review our inventory on hand, product development plans, and sales forecasts to identify carrying values in excess of net realizable value.

Common Stock Warrants Liabilities

We assumed 5,374,984 Public Warrants and 3,150,000 Private Placement Warrants upon the Closing, all of which were issued in connection with AONE's initial public offering and subsequent overallotment and entitle the holder to purchase one share of Common Stock at an exercise price of \$11.50 per share. The Warrants became exercisable at the later of 30 days after Closing or 12 months from the closing of AONE's initial public offering, but can be terminated on the earlier of five years after the Closing, our liquidation, or the redemption date as determined by us.

We evaluated the Warrants and concluded that the Private Placement Warrants do not meet the criteria to be classified within stockholders' equity. The agreement governing the Common Stock Warrants includes a provision that, if applied could result in a different settlement value for the Private Placement Warrants depending on their holder. Because the holder of an instrument is not an input into the pricing of a fixed-for-fixed option on our ordinary shares, the Private Placement Warrants are not considered to be "indexed to the Company's own stock." Such a provision precludes us from classifying the Private Placement Warrants in stockholders' equity. As the Private Placement Warrants meet the definition of a derivative, we recorded these warrants as liabilities on the consolidated balance sheet at fair value, with subsequent changes in their respective fair values recognized in the consolidated statements of operations at each reporting date. The provisions referenced above are not applicable to the Public Warrants which do not have differing settlement provisions based on the warrant holder, and therefore the Public Warrants are not precluded from being considered indexed to our stock and were recognized at fair value in stockholders' equity at Closing.

Contingent Earnout Liability

The contingent obligations to issue Markforged Earnout Shares in respect of Legacy Markforged common stock and release from lock-up Sponsor Earnout Shares, are accounted for as liability classified instruments in accordance with Accounting Standards Codification ("ASC") Topic 815-40, as the Earnout Triggering Events that determine the number of Sponsor and Markforged Earnout Shares required to be released or issued, as the case may be, include events that are not solely indexed to the fair value of our Common Stock. The liability was recognized at the Closing and is subsequently remeasured at each reporting date with changes in fair value recorded in the consolidated statements of operations. The valuation of the Markforged Earnout Shares and the surrendered Sponsor shares is based on a Monte Carlo simulation valuation model using a distribution of potential outcomes on a monthly basis over the Earnout period using the most reliable information available. The fair value of the earnout trends with the current price of our publicly traded common stock.

Markforged Earnout Shares issuable to employees with vested equity awards and Earnout RSUs are considered a separate unit of account from the Markforged Earnout Shares issuable in respect of Legacy Markforged common stock and are accounted for as equity classified stock compensation. The Markforged Earnout Shares issuable to employees with vested equity awards are fully vested upon issuance, thus there is no requisite service period and the value of these shares is recognized as a one-time stock compensation expense for the grant date fair value. Earnout RSUs are contingent upon an employee completing a service vesting condition, and as such, reflect a transaction in which we acquire employee services by offering to issue our shares, the amount of which is based in part on the share price of our Common Stock. Expense related to Earnout RSUs is recognized using the graded vesting method and is recognized as compensation cost over the requisite service period for each separately-vesting tranche for the largest Earnout RSU holders. The remaining awards have expense recognized ratably over the requisite service period for the Earnout RSUs.

Recent accounting pronouncements

Refer to Note 2 of Markforged's consolidated financial statements included elsewhere in this Annual Report on Form 10-K for the recent accounting pronouncements adopted and not yet adopted by the Company.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk.

We are a smaller reporting company as defined by Rule 12b-2 of the Exchange Act and are not required to provide the information otherwise required under this item. As of December 31, 2023, we had \$116.9 million of cash and cash equivalents.

We have not engaged in any hedging activities since our inception and we do not expect to engage in any hedging activities with respect to the market risk to which we are exposed.

Internal control over financial reporting

In connection with the audit of our financial statements for the years ended December 31, 2023 and 2022, Markforged management identified material weaknesses in our internal controls. See the section titled “*Risk Factors, — We have identified material weaknesses in our internal control over financial reporting and may identify additional material weaknesses in the future or fail to maintain effective internal control over financial reporting, which may result in material misstatements of our consolidated financial statements or cause us to fail to meet our periodic reporting obligations.*”

JOBS Act accounting election

Markforged Holding Corporation is an “emerging growth company,” as defined in the Jumpstart Our Business Startups Act of 2012, or the JOBS Act. The JOBS Act permits companies with emerging growth company status to delay adopting new or revised accounting standards until those standards apply to private companies. Markforged Holding Corporation intends to use this extended transition period to enable it to comply with new or revised accounting standards that have different effective dates for public and private companies until the earlier of the date Markforged Holding Corporation (1) is no longer an emerging growth company or (2) affirmatively and irrevocably opts out of the extended transition period provided in the JOBS Act. Accordingly, our financial statements may not be comparable to companies that comply with the new or revised accounting standards as of public company effective dates.

Markforged Holding Corporation intends to rely on the other exemptions and reduced reporting requirements provided by the JOBS Act.

Item 8. Financial Statements and Supplementary Data.

Our consolidated financial statements, together with the report of our independent registered public accounting firm, appear beginning on page F-1 of this Annual Report for the year ended December 31, 2023.

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

None.

Item 9A. Controls and Procedures.

Evaluation of Disclosure Controls and Procedures

Under the supervision and with the participation of our management, including our principal executive officer and principal financial officer, we evaluated the effectiveness of our disclosure controls and procedures as of December 31, 2023, as such term is defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended (the “Exchange Act”). Disclosure controls and procedures are designed to ensure that information required to be disclosed by the issuer in the reports that it files or submits under the Exchange Act is recorded, processed, summarized, and reported within the time periods specified in the rules and forms of the Securities and Exchange Commission (“SEC”), and that such information is accumulated and communicated to management, including the principal executive officer and principal financial officer, as appropriate to allow timely decisions regarding required disclosure. Based upon that evaluation, our principal executive officer and principal financial officer concluded that our disclosure controls and procedures were not effective as of December 31, 2023 because of the material weaknesses in internal control over financial reporting described below.

Management’s Report on Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting, defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act. Internal control over financial reporting is defined as a process designed by, or under the supervision of, our principal executive and principal financial officers and effected by our board of directors, management

and other personnel 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. Our internal control over financial reporting includes those policies and procedures that:

- pertain to the maintenance of records, that in reasonable detail, accurately and fairly reflect the transactions and dispositions of our assets;
- provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that our receipts and expenditures are being made only in accordance with authorizations of our management and directors; and
- provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of our assets that could have a material effect on the financial statements.

We assessed the effectiveness of our internal control over financial reporting as of December 31, 2023 using the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) in *Internal Control-Integrated Framework* (2013). Based on this evaluation, management concluded that the Company's internal control over financial reporting was not effective as of December 31, 2023 as a result of the material weaknesses described below.

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 our annual or interim financial statements will not be prevented or detected on a timely basis. The identified material weaknesses are as follows:

We did not design and maintain an effective control environment commensurate with our financial reporting requirements. Specifically, we lacked a sufficient complement of resources with (i) an appropriate level of accounting knowledge, experience and training to appropriately analyze, record and disclose accounting matters timely and accurately, and (ii) an appropriate level of knowledge and experience to establish effective processes and controls. Additionally, the lack of a sufficient number of professionals resulted in an inability to consistently establish appropriate authorities and responsibilities in pursuit of our financial reporting objectives, as demonstrated by, among other things, insufficient segregation of duties in our finance and accounting functions. This material weakness contributed to the following additional material weaknesses:

We did not design and maintain effective controls related to the period-end financial reporting process, including designing and maintaining formal accounting policies, procedures and controls to achieve complete, accurate and timely financial accounting, reporting and disclosures. Additionally, we did not design and maintain controls over the preparation and review of account reconciliations and journal entries, including maintaining appropriate segregation of duties.

We did not design and maintain effective controls related to the identification of and accounting for certain non-routine, unusual or complex transactions, including the proper application of U.S. GAAP of such transactions. Specifically, we did not design and maintain controls to timely identify and account for share repurchase transactions, warrant instruments, and performance based stock awards.

These material weaknesses resulted in audit adjustments to the following financial statement line items in the historical Markforged financial statements: operating expense, other expense, interest expense, other assets, other liabilities, additional paid in capital, treasury stock, retained earnings, note receivable—equity, and series D preferred stock. These adjustments were recorded prior to the issuance of the consolidated financial statements as of and for the years ended December 31, 2020 and 2019. Additionally, the material weakness related to the accounting for performance based stock awards resulted in audit adjustments to additional paid in capital and stock based compensation expense for the quarters ended June 30, 2021, September 30, 2021, December 31, 2021, and December 31, 2022. The material weakness related to accounting for warrant instruments resulted in the restatement of the previously issued financial statements of AONE, the entity we merged with as part of the Merger related to warrant liabilities and equity. Additionally, these material weaknesses could result in a misstatement of substantially all of our accounts or disclosures that would result in a material misstatement to the annual or interim consolidated financial statements that would not be prevented or detected.

We did not design and maintain effective controls over information technology ("IT") general controls for information systems that are relevant to the preparation of our financial statements. Specifically, we did not design and maintain (i) program change management controls for financial systems to ensure that information technology program and data changes affecting financial IT

applications and underlying accounting records are identified, tested, authorized and implemented appropriately; (ii) user access controls to ensure appropriate segregation of duties and that adequately restrict user and privileged access to financial applications, programs, and data to appropriate Company personnel; (iii) computer operations controls to ensure that critical batch jobs are monitored, privileges are appropriately granted, and data backups are authorized and monitored; and (iv) testing and approval controls for program development to ensure that new software development is aligned with business and IT requirements. These IT deficiencies did not result in any misstatements to the financial statements, however, the deficiencies, when aggregated, could impact our ability to maintain effective segregation of duties, as well as the effectiveness of IT-dependent controls (such as automated controls that address the risk of material misstatement to one or more assertions, along with the IT controls and underlying data that support the effectiveness of system-generated data and reports) that could result in misstatements potentially impacting all financial statement accounts and disclosures that would result in a material misstatement to the annual or interim financial statements that would not be prevented or detected. Accordingly, management has determined these deficiencies in the aggregate constitute a material weakness.

Remediation of Material Weaknesses

Management has been actively engaged in remediation efforts to address the material weaknesses during 2021 through 2023 and these efforts will continue into fiscal year 2024. Our remediation efforts include the following measures:

We have hired additional accounting and IT personnel to bolster our reporting, technical accounting and IT capabilities. Additionally, we continue to design and implement controls to formalize roles and review responsibilities to align with our team's skills and experience and designing and implementing controls over segregation of duties.

We continue to design and implement controls related to the period-end financial reporting process, including formal accounting policies, procedures and controls to achieve complete, accurate and timely financial accounting, reporting and disclosures. Additionally, we continue to design and implement controls over the preparation and review of account reconciliations and journal entries.

We continue to design and implement controls to timely identify and account for non-routine, unusual or complex transactions and other technical accounting and financial reporting matters, including controls over the preparation and review of accounting memoranda addressing these matters.

We continue to design and implement IT general controls, including controls over program change management, the review and update of user access rights and privileges, controls over batch jobs and data backups, and program development approvals and testing.

We have engaged third-party specialists to assist with testing the operating effectiveness of controls over financial reporting to gain assurance that such controls are present and operating as designed, as well as to help review and update existing documentation of our internal controls for compliance with the Sarbanes-Oxley Act of 2002.

While we believe progress was made in 2023 to enhance and strengthen our internal control over financial reporting, management has concluded that the material weaknesses were not remediated as of December 31, 2023.

The material weaknesses will not be considered remediated until management completes the design and implementation of the measures described above and the controls operate for a sufficient period of time and management has concluded, through testing, that these controls are effective.

Limitations on the Effectiveness of Controls

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluations 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.

Changes in Internal Control over Financial Reporting

There were no changes to our internal control over financial reporting (as defined in Rule 13a-15(f) under the Exchange Act) that occurred during the quarter ended December 31, 2023 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Item 9B. Other Information.

Securities Trading Plans of Directors and Executive Officers

During the three months ended December 31, 2023, no director or officer of the Company adopted or terminated a “Rule 10b5-1 trading arrangement” or “non-Rule 10b5-1 trading arrangement,” as each term is defined in Item 408(a) of Regulation S-K.

Item 9C. Disclosure Regarding Foreign Jurisdictions that Prevent Inspections.

Not applicable.

PART III

Item 10. Directors, Executive Officers and Corporate Governance.

The information required under this item is incorporated herein by reference to the Company's definitive proxy statement pursuant to Regulation 14A, which proxy statement will be filed with the Securities and Exchange Commission not later than 120 days after the close of the Company's fiscal year ended December 31, 2023.

We have adopted a code of business conduct and ethics for directors, officers, and employees, known as the Code of Business Conduct and Ethics. The Code of Business Conduct and Ethics is available on our website at www.markforged.com under the Governance section of our Investor Relations page. We will promptly disclose on our website (i) the nature of any amendment to the policy that applies to our principal executive officer, principal financial officer, or controller, or persons performing similar functions and (ii) the nature of any waiver, including an implicit waiver, from a provision of the policy that is granted to one of these specified individuals, the name of such person who is granted the waiver and the date of the waiver. Shareholders may request a free copy of the Code of Business Conduct and Ethics from our Compliance Officer, c/o Markforged Holding Corporation, 60 Tower Road, Waltham, MA 02451.

Item 11. Executive Compensation.

The information required under this item is incorporated herein by reference to the Company's definitive proxy statement pursuant to Regulation 14A, which proxy statement will be filed with the Securities and Exchange Commission not later than 120 days after the close of the Company's fiscal year ended December 31, 2023.

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

The information required under this item is incorporated herein by reference to the Company's definitive proxy statement pursuant to Regulation 14A, which proxy statement will be filed with the Securities and Exchange Commission not later than 120 days after the close of the Company's fiscal year ended December 31, 2023.

Item 13. Certain Relationships and Related Transactions, and Director Independence.

The information required under this item is incorporated herein by reference to the Company's definitive proxy statement pursuant to Regulation 14A, which proxy statement will be filed with the Securities and Exchange Commission not later than 120 days after the close of the Company's fiscal year ended December 31, 2023.

Item 14. Principal Accounting Fees and Services.

The information required under this item is incorporated herein by reference to the Company's definitive proxy statement pursuant to Regulation 14A, which proxy statement will be filed with the Securities and Exchange Commission not later than 120 days after the close of the Company's fiscal year ended December 31, 2023.

PART IV

Item 15. Exhibits, Financial Statement Schedules.

- (1) For a list of the financial statements included herein, see Index to the Consolidated Financial Statements on page F-1 of this Annual Report on Form 10-K, incorporated into this Item by reference.
- (2) Financial statement schedules have been omitted because they are either not required or not applicable or the information is included in the consolidated financial statements or the notes thereto.
- (3) Exhibits: The exhibits required by Item 601 of Regulation S-K and Item 15(b) of this Annual Report are listed in the Exhibit Index below. The exhibits listed in the Exhibits Index are incorporated by reference herein.

Exhibit Number	Description
2.1	Agreement and Plan of Merger, dated as of February 23, 2021, by and among the Company, Caspian Merger Sub Inc., and MarkForged, Inc. (incorporated by reference to Annex A to Markforged Holding Corporation's Form S-4 filed on June 4, 2021).
3.1	Certificate of Incorporation of Markforged Holding Corporation (incorporated by reference to Exhibit 3.1 to Markforged Holding Corporation's Current Report on Form 8-K filed July 20, 2021).
3.2	Bylaws of Markforged Holding Corporation (incorporated by reference to Exhibit 3.2 to Markforged Holding Corporation's Current Report on Form 8-K filed July 20, 2021).
4.1	Warrant Agreement, dated August 17, 2020, between one and Continental Stock Transfer & Trust Company, as warrant agent (incorporated by reference to Exhibit 4.4 to one's Registration Statement on Form S-4/A filed June 4, 2021).
4.2	Specimen Common Stock Certificate of Markforged Holding Corporation (incorporated by reference to Exhibit 4.5 to one's Registration Statement on Form S-4/A filed June 4, 2021).
4.3	Description of Securities (incorporated by reference to Exhibit 4.3 to Markforged Holding Corporation's Current Report on Form 10-K filed March 31, 2022).
10.1	Form of Indemnification Agreement (incorporated by reference to Exhibit 10.1 to Markforged Holding Corporation's Current Report on Form 8-K filed July 20, 2021).
10.2	Registration Rights Agreement, dated as of July 14, 2021, by and among Markforged Holding Corporation, A-star, certain affiliates of A-star and certain former stockholders of MarkForged, Inc. (incorporated by reference to Exhibit 10.5 to Markforged Holding Corporation's Current Report on Form 8-K filed July 20, 2021).
10.3	2021 Stock Option and Incentive Plan of Markforged Holding Corporation and forms of agreement thereunder (incorporated by reference to Exhibit 10.3 to Markforged Holding Corporation's Quarterly Report on Form 10-Q filed November 15, 2021).
10.4	Lock-up Agreement, dated as of July 14, 2021, by and between Markforged Holding Corporation, Inc. and the undersigned parties thereto (incorporated by reference to Exhibit 10.8 to Markforged Holding Corporation's Current Report on Form 8-K filed July 20, 2021).
10.5	Non-Employee Director Compensation Policy (incorporated by referenced to Exhibit 10.9 to Markforged Holding Corporation's Current Report on Form 8-K filed July 20, 2021).
10.6	2021 Employee Stock Purchase Plan (incorporated by referenced to Exhibit 10.10 to Markforged Holding Corporation's Current Report on Form 8-K filed July 20, 2021).
10.7	Senior Executive Cash Incentive Bonus Plan (incorporated by reference to Exhibit 10.11 to Markforged Holding Corporation's Current Report on Form 8-K filed July 20, 2021).
10.8	First Amendment to Lease dated December 7, 2021, by and between 900 Middlesex Property Owner, LLC and MarkForged, Inc. (incorporated by reference to Exhibit 10.11 to Markforged Holding Corporation's Current Report on Form 8-K filed December 13, 2021).
10.9	Consent to Assignment and Fifth Amendment dated as of December 17, 2021 by and Between MarkForged, Inc., 1265 Main Office Subsidiary LLC and Clarks Americas, Inc. (incorporated by reference to Exhibit 10.1 to Markforged Holding Corporation's Current Report on Form 8-K filed December 22, 2021).
10.10	Assignment and Assumption Agreement dated as of December 17, 2021 by and between MarkForged, Inc. and Clarks America's Inc. (incorporated by reference to Exhibit 10.2 to Markforged Holding Corporation's Current Report on Form 8-K filed December 22, 2021).
10.11	Lease dated as of April 30, 2015 by between 1265 Main Office Subsidiary LLC and Clarks Americas, Inc. (including the First Amendment to Lease dated as of July 11, 2016, the Second Amendment to Lease dated as of January 17, 2017, the Third Amendment to Lease dated as of May 21, 2020, and the Fourth Amendment to Lease

	dated as of January 28, 2021) (incorporated by reference to Exhibit 10.3 to Markforged Holding Corporation's Current Report on Form 8-K filed December 22, 2021).
10.12	Second Amendment to Amended and Restated Offer Letter, dated May 10, 2023 between Markforged, Inc. and Shai Terem (incorporated by reference to Exhibit 10.1 to Markforged Holding Corporation's Quarterly Report on Form 10-Q filed May 11, 2023).
21.1*	List of subsidiaries of the Registrant.
23.1*	Consent of PricewaterhouseCoopers LLP, independent registered public accounting firm.
31.1*	Certification of Principal Executive Officer Pursuant to Rules 13a-14(a) and 15d-14(a) under the Securities Exchange Act of 1934, as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
31.2*	Certification of Principal Financial Officer Pursuant to Rules 13a-14(a) and 15d-14(a) under the Securities Exchange Act of 1934, as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
32.1*	Certification of Principal Executive Officer Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
32.2*	Certification of Principal Financial Officer Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
97*	Compensation Clawback Policy effective as of December 1, 2023
101.INS	Inline XBRL Instance Document – the instance document does not appear in the Interactive Data File because XBRL tags are embedded within the Inline XBRL document.
101.SCH	Inline XBRL Taxonomy Extension Schema with Embedded Linkbases document
104	Cover Page Interactive Data File (embedded within the Inline XBRL document)

* 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, as amended, the Registrant has duly caused this Report to be signed on its behalf by the undersigned, thereunto duly authorized.

Markforged Holding Corporation

Date: March 15, 2024

By: /s/ Shai Terem

Shai Terem
Chief Executive Officer
(Principal Executive Officer)

POWER OF ATTORNEY AND SIGNATURES

Each person whose individual signature appears below hereby authorizes and appoints Shai Terem, Assaf Zipori, and Stephen Karp, and each of them, with full power of substitution and resubstitution and full power to act without the other, as his or her true and lawful attorney-in-fact and agent to act in his or her name, place and stead and to execute in the name and on behalf of each person, individually and in each capacity stated below, and to file any and all amendments to this Annual Report on Form 10-K and to file the same, with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing, ratifying and confirming all that said attorneys-in-fact and agents or any of them or their or his or her substitute or substitutes may lawfully do or cause to be done by virtue thereof.

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

Name	Title	Date
/s/ Alan Masarek Alan Masarek	Director and Chairman of the Board	March 15, 2024
/s/ Shai Terem Shai Terem	Chief Executive Officer, Director (<i>Principal Executive Officer</i>)	March 15, 2024
/s/ Assaf Zipori Assaf Zipori	Chief Financial Officer (<i>Principal Financial and Accounting Officer</i>)	March 15, 2024
/s/ Edward T. Anderson Edward T. Anderson	Director	March 15, 2024
/s/ Michael Medici Michael Medici	Director	March 15, 2024
/s/ Paul Milbury Paul Milbury	Director	March 15, 2024
/s/ Carol Meyers Carol Meyers	Director	March 15, 2024
/s/ Antonio Rodriguez Antonio Rodriguez	Director	March 15, 2024
/s/ Aaron VanDevender Aaron VanDevender	Director	March 15, 2024

INDEX TO FINANCIAL STATEMENTS

	<u>Page</u>
<i>Audited Consolidated Financial Statements as of and for the periods ended December 31, 2023 and 2022</i>	
Report of Independent Registered Public Accounting Firm (PCAOB ID 238)	F-2
Consolidated Balance Sheets	F-3
Consolidated Statements of Operations	F-4
Consolidated Statements of Comprehensive Loss	F-5
Consolidated Statement of Changes in Stockholders' Equity	F-6
Consolidated Statements of Cash Flows	F-7
Notes to Consolidated Financial Statements	F-8

Report of Independent Registered Public Accounting Firm

To the Board of Directors and Stockholders of Markforged Holding Corporation

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Markforged Holding Corporation and its subsidiaries (the “Company”) as of December 31, 2023 and 2022, and the related consolidated statements of operations, of comprehensive loss, of changes in stockholders’ equity and of cash flows for the years then ended, including 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 as of December 31, 2023 and 2022, and the results of its operations and its cash flows for the years then ended in conformity with accounting principles generally accepted in the United States of America.

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 Public Company Accounting Oversight Board (United States) (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 of these consolidated financial statements in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. As part of our audits we are required to obtain an understanding of internal control over financial reporting but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control over financial reporting. Accordingly, we express no such opinion.

Our audits included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ PricewaterhouseCoopers LLP
Boston, Massachusetts
March 15, 2024

We have served as the Company’s auditor since 2019.

MARKFORGED HOLDING CORPORATION

CONSOLIDATED BALANCE SHEETS
As of December 31, 2023 and 2022
(In thousands, except share data)

	<u>December 31, 2023</u>	<u>December 31, 2022</u>
Assets		
Current assets		
Cash and cash equivalents	\$ 116,854	\$ 124,242
Short-term investments	—	43,690
Accounts receivable, net of allowance for expected credit losses (\$360 and \$1,559, respectively)	24,059	29,294
Inventory	26,773	26,409
Prepaid expenses	2,756	2,847
Other current assets	<u>2,022</u>	<u>3,334</u>
Total current assets	172,464	229,816
Property and equipment, net	17,713	18,298
Intangible assets, net	17,128	17,626
Goodwill	—	31,116
Right-of-use assets	36,884	45,955
Other assets	3,763	3,130
Total assets	<u>\$ 247,952</u>	<u>\$ 345,941</u>
Liabilities and Stockholders' Equity		
Current liabilities		
Accounts payable	\$ 13,235	\$ 14,425
Accrued expenses	9,840	9,663
Deferred revenue	8,779	8,854
Lease liabilities	7,368	8,022
Other current liabilities	<u>1,526</u>	<u>—</u>
Total current liabilities	40,748	40,964
Long-term deferred revenue	6,083	5,358
Contingent earnout liability	1,379	2,415
Long-term lease liabilities	35,771	40,608
Other liabilities	<u>2,361</u>	<u>4,042</u>
Total liabilities	86,342	93,387
Commitments and contingencies		
Stockholders' equity		
Common stock, \$0.0001 par value; 1,000,000,000 shares authorized at December 31, 2023 and December 31, 2022; 198,581,263 and 194,560,946 shares issued and outstanding at December 31, 2023 and December 31, 2022, respectively	19	19
Additional paid-in capital	366,281	352,564
Accumulated deficit	(204,664)	(101,097)
Accumulated other comprehensive (loss) income	<u>(26)</u>	<u>1,068</u>
Total stockholders' equity	161,610	252,554
Total liabilities and stockholders' equity	<u>\$ 247,952</u>	<u>\$ 345,941</u>

See notes to the consolidated financial statements.

MARKFORGED HOLDING CORPORATION

CONSOLIDATED STATEMENTS OF OPERATIONS

For the Years Ended December 31, 2023 and 2022

(In thousands, except share data)

	Year Ended December 31,	
	2023	2022
Revenue	\$ 93,784	\$ 100,958
Cost of revenue	49,370	50,252
Gross profit.....	44,414	50,706
Operating expenses		
Sales and marketing	37,830	44,975
Research and development	40,737	42,387
General and administrative	47,761	50,428
Goodwill impairment	29,467	—
Total operating expenses	155,795	137,790
Loss from operations	(111,381)	(87,084)
Change in fair value of derivative liabilities	472	1,485
Change in fair value of contingent earnout liability	1,036	57,307
Other expense, net.....	(307)	(381)
Interest expense	(373)	(11)
Interest income	6,400	2,878
Loss before income taxes	(104,153)	(25,806)
Income tax (benefit) expense	(586)	(418)
Net loss	\$ (103,567)	\$ (25,388)
Weighted average shares outstanding - basic and diluted.....	196,896,011	189,747,367
Net loss per share - basic and diluted.....	\$ (0.53)	\$ (0.13)

See notes to the consolidated financial statements.

MARKFORGED HOLDING CORPORATION
CONSOLIDATED STATEMENTS OF COMPREHENSIVE LOSS
For the Years Ended December 31, 2023 and 2022
(In thousands)

	<u>Year Ended December 31,</u>	
	<u>2023</u>	<u>2022</u>
Net loss	\$ (103,567)	\$ (25,388)
Other comprehensive loss, net of taxes:		
Unrealized loss on available-for-sale marketable securities, net	(54)	54
Foreign currency translation adjustment	(1,040)	1,014
Total comprehensive loss	<u>\$ (104,661)</u>	<u>\$ (24,320)</u>

See notes to the consolidated financial statements.

MARKFORGED HOLDING CORPORATION

CONSOLIDATED STATEMENTS OF CHANGES IN STOCKHOLDERS' EQUITY

For the Years Ended December 31, 2023 and 2022

(In thousands, except share data)

	Common Stock		Additional Paid-in Capital	Accumulated Deficit	Accumulated Other Comprehensive Income (Loss)	Total
	Shares	Amount				
December 31, 2022	194,560,946	\$ 19	\$ 352,564	\$ (101,097)	\$ 1,068	\$ 252,554
Exercise of common stock options	510,294	—	187	—	—	187
Stock vested under compensation plan less shares withheld to cover taxes	3,510,023	—	(457)	—	—	(457)
Stock-based compensation expense	—	—	14,039	—	—	14,039
Earnout stock-based compensation expense	—	—	(52)	—	—	(52)
Net loss	—	—	—	(103,567)	—	(103,567)
Other comprehensive loss	—	—	—	—	(1,094)	(1,094)
December 31, 2023	198,581,263	\$ 19	\$ 366,281	\$ (204,664)	\$ (26)	\$ 161,610
December 31, 2021	185,993,058	\$ 19	\$ 319,859	\$ (75,709)	\$ —	\$ 244,169
Exercise of common stock options	1,997,314	—	2,216	—	—	2,216
Stock vested under compensation plan less shares withheld to cover taxes	1,555,988	—	(664)	—	—	(664)
Stock-based compensation expense	—	—	16,607	—	—	16,607
Earnout stock-based compensation expense	—	—	1,602	—	—	1,602
Issuance of Common Stock in connection with acquisitions	4,702,097	—	12,194	—	—	12,194
Issuance of Common Stock in connection with acquisition earnout achievement	312,489	—	750	—	—	750
Net loss	—	—	—	(25,388)	—	(25,388)
Other comprehensive income	—	—	—	—	1,068	1,068
December 31, 2022	194,560,946	\$ 19	\$ 352,564	\$ (101,097)	\$ 1,068	\$ 252,554

See notes to the consolidated financial statements.

MARKFORGED HOLDING CORPORATION
CONSOLIDATED STATEMENTS OF CASH FLOWS
For the Years Ended December 31, 2023 and 2022
(In thousands, except share data)

	For the Year Ended December 31,	
	2023	2022
Operating Activities:		
Net loss.....	\$ (103,567)	\$ (25,388)
Adjustments to reconcile net loss to cash used in operating activities		
Depreciation, amortization, and non-cash lease interest.....	12,670	9,181
Provision for doubtful accounts.....	(688)	545
Provision for excess and obsolete inventory.....	305	544
Change in fair value of derivative liabilities.....	426	(1,485)
Change in fair value of contingent earnout liability.....	(1,036)	(57,307)
Amortization (accretion) of (discounts) premiums on available-for-sale securities.....	(1,913)	(92)
Stock-based compensation expense.....	13,987	18,209
Long-lived asset impairment.....	4,015	—
Goodwill impairment.....	29,467	—
Foreign exchange (gains) losses on intercompany transactions, net.....	(75)	—
Changes in operating assets and liabilities		
Accounts receivable.....	5,967	(2,469)
Inventory.....	(529)	(14,050)
Prepaid expenses.....	107	1,144
Other current assets.....	1,321	(2,604)
Other assets.....	(635)	(922)
Accounts payable and accrued expenses.....	(862)	3,401
Other current liabilities.....	26	(135)
Deferred revenue.....	648	3,756
Other long term liabilities.....	(669)	—
Other non-current lease liabilities.....	(7,865)	(5,849)
Net cash provided by (used in) operating activities.....	(48,900)	(73,521)
Investing Activities:		
Purchases of property and equipment.....	(3,591)	(11,415)
Proceeds from the sale of property, plant and equipment.....	37	—
Cash paid for acquisitions, net of cash acquired.....	—	(35,939)
Purchases of available-for-sale securities.....	(18,950)	(43,544)
Proceeds from sales and maturities of marketable securities.....	64,602	—
Net cash provided by (used in) investing activities.....	42,098	(90,898)
Financing Activities:		
Acquisition holdback payment.....	(250)	—
Proceeds from exercise of common stock options.....	187	2,216
Taxes paid related to net share settlement of equity awards.....	(457)	(664)
Net cash provided by (used in) provided by financing activities.....	(520)	1,552
Effect of exchange rate changes on cash.....	(66)	(64)
Net change in cash, cash equivalents, and restricted cash.....	(7,388)	(162,931)
Cash, cash equivalents, and restricted cash		
Beginning of year.....	125,672	288,603
End of period.....	<u>\$ 118,284</u>	<u>\$ 125,672</u>
Supplemental disclosures of cash flow information		
Cash and cash equivalents.....	\$ 116,854	\$ 124,242
Restricted cash in other non-current assets.....	1,430	1,430
Total cash, cash equivalents and restricted cash shown in the consolidated statements of cash flows.....	<u>\$ 118,284</u>	<u>\$ 125,672</u>
Non cash operating activities		
Additions to right of use assets and liabilities from adoption of ASC 842.....	\$ —	\$ 12,248
Right of use assets obtained in exchange for new lease liabilities.....	—	37,861
Non cash financing and investing activities		
Purchase of property and equipment in accounts payable and accrued expenses.....	\$ 325	\$ 4,347
Common stock issued for acquisitions.....	—	12,194
Common stock issued in connection with acquisition earnout achievement.....	—	750
Common stock disbursed to settle acquisition holdback.....	250	—

See notes to the consolidated financial statements.

MARKFORGED HOLDING CORPORATION

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Note 1. Organization, Nature of the Business, and Risks and Uncertainties

Organization and Nature of Business

Unless otherwise indicated or the context otherwise requires, references to the “Company” and “Markforged” refer to the consolidated operations of Markforged Holding Corporation and its subsidiaries. References to “AONE” refer to the company prior to the consummation of the Merger and references to “Legacy Markforged” refer to MarkForged, Inc. and its consolidated subsidiaries prior to the consummation of the Merger.

Legacy Markforged was founded in 2013 to transform the manufacturing industry with high strength, cost effective parts using additive manufacturing. Markforged produces and sells 3D printers, materials, software, and other related services worldwide to customers who can build parts strong enough for the factory floor with significantly reduced lead time and cost. The printers print in plastic, nylon, metal, and the parts can be reinforced with carbon fiber for industry leading strength at an affordable price point.

On February 23, 2021, one, a Cayman Islands exempted company (“AONE”), entered into an Agreement and Plan of Merger (the “Merger Agreement”) with Caspian Merger Sub Inc., a wholly owned subsidiary of AONE (“Merger Sub”), and Legacy Markforged, pursuant to which (i) AONE would deregister as a Cayman Islands company and domesticate as a corporation in the State of Delaware and would be renamed “Markforged Holding Corporation” (the “Domestication”) and (ii) Merger Sub would merge with and into Legacy Markforged with Legacy Markforged surviving as a wholly owned subsidiary of Markforged Holding Corporation (the “Merger”). AONE’s shareholders approved the transactions contemplated by the Merger Agreement on July 13, 2021, and the Domestication and the Merger were completed on July 14, 2021 (the “Closing”).

Cash proceeds of the merger were funded through a combination of AONE’s \$132.5 million of cash held in trust (after redemptions of \$64.2 million) and an aggregate of \$210.0 million in fully committed common stock transactions at \$10.00 per share. Immediately prior to the Closing, Legacy Markforged repurchased shares of common stock from certain of its stockholders, for a total value of \$45.0 million, referred to as the “Employee Transactions”. Total net proceeds upon Closing, net of the Employee Transactions and transaction costs paid at Closing of \$27.1 million, were \$288.8 million.

Risks and Uncertainties

We continue to monitor, analyze, and respond to evolving developments regarding supply chain disruptions and the economic downturn. The Company is unable to predict the ultimate impact that these factors will have on the business, future results of operations, financial position or cash flows. The potential risks to the Company including certain accounting estimates around its supply chain, accounts receivable, inventory and related provisions, and intangible assets, were assessed and had no material impact as of and for the year ended December 31, 2023. We recorded a \$4.0 million long-lived asset impairment related to our right-of-use assets during the second quarter of 2023 (see Note 2) and \$29.5 million goodwill impairment in the third quarter of 2023 (see Note 7). There may be changes to those estimates in future periods, and actual results could differ from those estimates.

The Company has funded its operations to date primarily through the sale of convertible preferred stock, the proceeds from the Merger, including the sale of common stock, and the sale of its products. Management believes that existing cash will be sufficient to fund operating and capital expenditure requirements through at least one year after the date these consolidated financial statements are issued. The accompanying consolidated financial statements have been prepared on a basis which assumes that the Company will continue as a going concern and contemplates the realization of assets and satisfaction of liabilities and commitments in the normal course of business.

Note 2. Summary of Significant Accounting Policies

The consolidated financial statements include the accounts of the Company and its wholly owned subsidiaries. The Company’s fiscal year end is December 31 and, unless otherwise stated, all years and dates refer to the fiscal year.

Basis of Presentation

The consolidated financial statements of the Company have been prepared in accordance with US GAAP. All significant intercompany accounts and transactions have been eliminated in consolidation.

Reporting Currency

The Company's reporting currency is the U.S. Dollar, while the functional currencies of its foreign subsidiaries are the currencies of the primary economic environment in which each of them operate.

Use of Estimates

The preparation of consolidated financial statements in conformity with US GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Management's significant estimates include allowance for doubtful accounts, provision for excess and obsolete inventory, fair value of contingent earnout liability, fair value of earnout share awards, fair value of the private placement warrant liability, assumptions in revenue recognition, and valuation of intangibles and goodwill. The Company evaluates its estimates based on historical experience, current conditions, and various other assumptions that it believes are reasonable under the circumstances.

Revenue Recognition

The Company recognizes revenue in accordance with Accounting Standards Codification ("ASC") Topic 606, *Revenue from Contracts with Customers* ("ASC Topic 606").

Under ASC Topic 606, revenue is recognized when a customer obtains control of promised goods or services in an amount that reflects the consideration which the entity expects to be entitled to in exchange for those goods or services. To determine revenue recognition for arrangements that an entity determines are within the scope of the new revenue recognition accounting standard, the Company performs the following five steps:

- identifies the contract with a customer;
- identifies the performance obligations in the contract;
- determines the transaction price;
- allocates the transaction price to the performance obligations in the contract; and
- recognizes revenue when (or as) the entity satisfies a performance obligation.

Our customer contracts include multiple products and services. We are required to perform allocations of the contract value to the products and services deemed to be distinct performance obligations by US GAAP in order to recognize revenue at the appropriate time. These allocations are based on a relative standalone selling price methodology, which requires us to determine the standalone selling price for each performance obligation. We utilize selling prices from standalone sales of the product or service when available. However, certain products are not sold on a standalone basis or do not have a sufficient history of standalone sales and we are required to estimate the standalone selling price for the purposes of our allocation. We utilize market information, historical selling practices, and other available information to produce as accurate an estimate as possible.

Cash and Cash Equivalents

The Company considers all highly liquid investments including money market funds, treasury securities, and commercial paper with original maturities of 90 days or less to be cash equivalents.

Restricted Cash

Restricted cash represents cash and cash equivalents that are restricted to withdrawal or use as of the reporting date. Restricted cash as of December 31, 2023 relates to deposits to secure letters of credit. The deposits are related to contracts that have a remaining term greater than twelve months, thus this cash is included in other noncurrent assets.

Short-Term Investments

The Company invests its excess cash in fixed income instruments denominated and payable in U.S. dollars including U.S. treasury securities, commercial paper, corporate bonds and asset-backed securities in accordance with the Company's investment policy that primarily seeks to maintain adequate liquidity and preserve capital. Investments in marketable securities are recorded at fair value, and unrealized gains and losses are reported within accumulated other comprehensive income (loss) as a separate component of stockholders' equity until realized or until a determination is made that an other-than-temporary decline in market value

has occurred. We consider impairments to be other than temporary if they are related to deterioration in credit risk or if it is likely we will sell the securities before the recovery of their cost basis. When such reductions occur, the cost of the investment is adjusted to fair value through recording a loss on investments in the consolidated statements of operations. Realized gains and losses and declines in the value of securities attributable to actual or expected losses are included in other income (expense), net in the consolidated statements of operations. All investments in marketable securities mature within one year.

The Company's cash equivalents and short-term investments are invested in the following:

(in thousands)	December 31, 2023			
	Amortized Cost	Unrealized Gains	Unrealized Losses	Fair Value
Money market funds	\$ 110,775	\$ —	\$ —	\$ 110,775
Total cash equivalents	<u>\$ 110,775</u>	<u>\$ —</u>	<u>\$ —</u>	<u>\$ 110,775</u>

(in thousands)	December 31, 2022			
	Amortized Cost	Unrealized Gains	Unrealized Losses	Fair Value
Money market funds	\$ 119,721	\$ —	\$ —	\$ 119,721
Commercial paper	3,077	—	—	3,077
Total cash equivalents	122,798	—	—	122,798
Government bonds	21,719	51	—	21,770
Commercial paper	12,568	1	—	12,569
Corporate bonds	3,927	—	—	3,927
Asset-backed securities	2,921	—	(1)	2,920
U.S. Treasury bills.....	2,447	3	—	2,450
Total short-term investments.....	<u>\$ 43,582</u>	<u>\$ 55</u>	<u>\$ (1)</u>	<u>\$ 43,636</u>
Total cash equivalents and short-term investments.....	<u>\$ 166,380</u>	<u>\$ 55</u>	<u>\$ (1)</u>	<u>\$ 166,434</u>

Accounts Receivable and Allowance for Doubtful Accounts

Trade accounts receivable are recorded at the invoiced amount and do not bear interest. Credit losses are estimated for accounts receivable considered to be uncollectible based on management's assessment of collectability, which considers specific customers' abilities to meet their financial obligations, the length of time receivables are past due, and historical collection experience. If circumstances related to specific customers change, or economic conditions deteriorate such that past collection experience is no longer relevant, the Company's estimate of the recoverability of accounts receivable could be further reduced from the levels provided for in the consolidated financial statements.

The following presents the changes in the balance of the Company's allowance for doubtful accounts:

(in thousands)	Year Ended December 31,	
	2023	2022
Balance at beginning of period	\$ 1,559	\$ 1,021
Provision adjustment.....	(688)	545
Write – offs	(511)	(7)
Balance at end of period	<u>\$ 360</u>	<u>\$ 1,559</u>

Fair Value of Financial Instruments

The Company is required to provide information according to the fair value hierarchy based on the observability of the inputs used in the valuation techniques. The fair value hierarchy ranks the quality and reliability of the information used to determine fair values. Financial assets and liabilities carried at fair value will be classified and disclosed in one of the following three categories:

Level 1 Quoted prices in active markets for identical assets or liabilities.

Level 2 Inputs other than Level 1 that are observable, either directly or indirectly, such as quoted prices for similar assets or liabilities; quoted prices in markets that are not active; or other inputs that are observable or can be corroborated by observable market data for substantially the full term of the assets or liabilities.

Level 3 Unobservable inputs that are supported by little or no market activity and that are significant to the fair value of the assets or liabilities.

The following table presents information about the Company's assets that are measured at fair value as of December 31, 2023 and 2022, and indicates the fair value hierarchy of the valuation:

Fair Value Measurements				
December 31, 2023				
	Level 1	Level 2	Level 3	Total
Assets:				
Cash equivalents:				
Money market funds included in cash and cash equivalents	\$ 110,775	—	—	\$ 110,775
Total cash and cash equivalents.....	\$ 110,775	\$ —	\$ —	\$ 110,775
Total assets	\$ 110,775	\$ —	\$ —	\$ 110,775
Liabilities:				
Contingent earnout liability	\$ —	\$ —	\$ 1,379	\$ 1,379
Private placement warrant liability	—	—	189	189
Teton acquisition contingent earnout liability	—	—	1,500	1,500
Total liabilities	\$ —	\$ —	\$ 3,068	\$ 3,068

December 31, 2022				
	Level 1	Level 2	Level 3	Total
Assets:				
Cash equivalents:				
Money market funds included in cash and cash equivalents	\$ 119,721	—	—	\$ 119,721
Short-term investments included in cash and cash equivalents	—	3,077	—	3,077
Total cash and cash equivalents.....	\$ 119,721	\$ 3,077	\$ —	\$ 122,798
Government bonds.....	—	21,770	—	21,770
Commercial paper.....	—	12,569	—	12,569
Corporate bonds.....	—	3,927	—	3,927
Asset-backed securities.....	—	2,920	—	2,920
U.S. Treasury bills	2,450	—	—	2,450
Total assets	\$ 122,171	\$ 44,263	\$ —	\$ 166,434
Liabilities:				
Contingent earnout liability	\$ —	\$ —	\$ 2,415	\$ 2,415
Private placement warrant liability	—	—	661	661
Teton acquisition contingent earnout liability	—	—	602	602
Total liabilities	\$ —	\$ —	\$ 3,678	\$ 3,678

The Company remeasures its Private Placement Warrants (as defined below) at fair value at each reporting period using Level 3 inputs via the Binomial Lattice Model. The valuation of the earnout shares is based on a Monte Carlo simulation. The significant assumptions used in preparing the above models are disclosed in Note 12 Stock Warrants and Note 11 Earnout. The Teton Software Simulation ("Teton") contingent earnout is related to development and business milestone metrics estimated using a scenario-based approach discussed in Note 2, Contingent Earnout Liability. The Teton development milestone was met and settled in 2022. The Teton business milestone was determined to have a high probability of attainment and the liability was increased by \$0.9 million to the maximum value of \$1.5 million as of December 31, 2023, the impact of which is recorded within sales and marketing expense. There were no transfers between levels during the periods presented.

(in thousands)	Contingent Earnout Liability	Private Placement Warrant Liability	Teton Acquisition Contingent Earnout Liability	Total
Fair Value as of December 31, 2021	\$ 59,722	\$ 2,646	\$ —	\$ 62,368
Change in fair value	(57,307)	(1,985)	500	(58,792)
Additions	—	—	1,602	1,602
Settlement of liability acquired as part of acquisitions	—	—	(1,500)	(1,500)
Fair Value as of December 31, 2022	<u>\$ 2,415</u>	<u>\$ 661</u>	<u>\$ 602</u>	<u>\$ 3,678</u>
Fair Value as of December 31, 2022	\$ 2,415	\$ 661	\$ 602	\$ 3,678
Change in fair value	(1,036)	(472)	898	(610)
Fair Value as of December 31, 2023	<u>\$ 1,379</u>	<u>\$ 189</u>	<u>\$ 1,500</u>	<u>\$ 3,068</u>

Concentration of Credit Risk

Financial instruments which potentially expose the Company to concentrations of credit risk consist primarily of cash and cash equivalents held on deposit at one financial institution and accounts receivable. The Company does not require collateral from customers for amounts owed. As of and for the year ended December 31, 2023, no customer represented greater than 10% of the accounts receivable balance or total revenue. As of and for the year ended December 31, 2022, one customer represented greater than 10% of the accounts receivable balance and total revenue. Historically, the Company has not experienced any significant credit loss related to any individual customer.

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 profit or loss. Repairs and maintenance costs are expensed as incurred.

The cost of property and equipment is depreciated based upon the following asset lives:

Asset Classification	Estimated Useful Life
Machinery and equipment	5 years
Leasehold improvements	Shorter of estimated useful life or remaining lease term
Computer equipment	3 years
Computer software	3 years
Furniture and fixtures	3 years

Impairment of Long-Lived Assets

The Company evaluates whether events or circumstances have occurred that indicate that the estimated remaining useful life of its long-lived assets may warrant reassessment or that the carrying value of these assets may not be recoverable. When a triggering event is identified, management assesses the recoverability of the asset group, which is the lowest level where identifiable cash flows are largely independent, by comparing the expected undiscounted cash flows of the asset group to the carrying value. When the carrying value is not recoverable and an impairment is determined to exist, the asset group is written down to fair value. The Company exited certain leased facilities during fiscal year 2023 and is in the process of seeking subleases for those properties. The Company recorded a non-cash, pre-tax and after-tax impairment charge of \$4.0 million related to the operating lease right-of-use (“ROU”) asset recorded for 480 Pleasant Street within the general and administrative expense caption of the consolidated statements of operations in the second quarter of 2023. The impairment was determined by comparing the fair value of the impacted ROU asset to the carrying value of the asset as of the impairment measurement date, as required under ASC Topic 360, Property, Plant, and Equipment, using Level 2 inputs. The fair value of the ROU asset was based on the estimated sublease income for certain facilities taking into consideration the time period it will take to obtain a sublessor, the applicable discount rate and the sublease rate.

Inventory

Inventory is stated at lower of cost and net realizable value. Cost is based on a standard costing system which approximates the cost on a first in, first out method. 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 this value. The costs include materials, labor, and manufacturing overhead that relate to the acquisition of raw materials and production into finished goods. The net realizable value considers our intent and ability to utilize the inventory prior to perishing as well as the estimated selling price and costs of completion and sale. We regularly review our inventory on hand, product development plans, and sales forecasts to identify carrying values in excess of net realizable value.

Cost of Revenue

Cost of revenue is primarily comprised of cost of product and software subscriptions, maintenance services, personnel-related costs, third party logistics, warranty and maintenance fulfillment costs, and overhead. For the production of consumables, the Company utilizes its internal manufacturing facilities and personnel, while for the production of the Company's additive manufacturing hardware, third party manufacturers are utilized.

For internally manufactured products, the cost of revenue includes raw material, labor conversion costs, and overhead related to the manufacturing operations, inclusive of associated depreciation. Cost of revenue for maintenance services is comprised of costs associated with the Company's customer success teams' provision of remote and on-site support services to customers in addition to the cost of replacement parts.

The Company's cost of revenue also includes indirect costs of providing products and services to its customers. These indirect costs consist primarily of estimates for excess and obsolete inventory, warranty, and stock-based compensation.

Research and Development

The Company expenses all research and development costs as incurred. These costs consist mainly of employee compensation and other personnel-related costs, product prototypes, facility costs, as well as engineering services.

Sales and Marketing

Sales and marketing costs are expensed as incurred and are primarily comprised of personnel-related costs for the Company's sales and marketing departments, costs related to sales commissions, trades shows, facilities costs, as well as advertising and other demand generating services. Sales and marketing expenses includes advertising costs of \$2.2 million and \$4.1 million during 2023 and 2022, respectively.

Shipping and Handling Costs

The Company recognizes shipping and handling costs in cost of revenue within the consolidated statements of operations. When shipping and handling services are provided subsequent to the point in time control is transferred, the Company accounts for the shipping and handling services as a fulfillment activity and accrues the related costs.

Stock-Based Compensation

The Company recognizes expense for stock-based compensation awards based on the estimated fair value of the award on the date of grant, which is amortized on a straight-line basis over the employee's or director's requisite service period for service based awards, generally the vesting period of the award. Awards containing market and/or performance conditions are recognized using the graded vesting method, which is an accelerated expense attribution method.

The Company used the Black-Scholes pricing model to estimate the fair value of options on the date of grant. The use of a valuation model requires management to make certain assumptions with respect to selected model inputs. The Company grants stock options and restricted stock units at exercise prices determined equal to the fair value of common stock on the date of the grant, as determined by the Board of Directors. The fair value of the Company's common stock at each measurement date prior to the merger was based on a number of factors, including the results of third-party valuations, the Company's historical financial performance, and observable arms-length sales of the Company's capital stock including convertible preferred stock, and the prospects of a liquidity event, among other inputs. The computation of expected option life is based on an average of the vesting term and the maximum contractual life of the Company's stock options, as the Company does not have sufficient history to use an alternative method to the simplified method to calculate an expected life for employees. The Company estimates an expected forfeiture rate for stock options,

which is factored into the determination of stock-based compensation expense. The volatility assumption is based on the historical and implied volatility of the Company's peer group with similar business models. The risk-free interest rate is based on U.S. Treasury zero-coupon issues with a remaining term equal to the expected life assumed at the date of grant. The dividend yield percentage is zero because the Company does not currently pay dividends nor does the Company intend to do so in the future.

These estimates involve inherent uncertainties and the use of different assumptions may have resulted in stock-based compensation expense that was different from the amounts recorded.

Warranty Reserves

Substantially all of the Company's hardware products are covered by a standard assurance warranty of one year. In the event of a failure of a product covered by this warranty, the Company may repair or replace the product, at its option. The Company's warranty reserve reflects estimated material and labor costs for potential or actual product issues for which the Company expects to incur an obligation. The Company periodically assesses the appropriateness of the warranty reserve and adjusts the amount as necessary. If the data used to calculate the appropriateness of the warranty reserve are not indicative of future requirements, additional or reduced warranty reserves may be necessary.

Warranty reserves are included within accrued expenses on the consolidated balance sheets. The following table presents changes in the balance of the Company's warranty reserve:

(in thousands)	Year Ended December 31,	
	2023	2022
Balance at beginning of period	\$ 620	\$ 658
Additions to warranty reserve	1,397	812
Claims fulfilled.....	(1,131)	(850)
Balance at end of period.....	<u>\$ 886</u>	<u>\$ 620</u>

Warranty reserve is recorded through cost of revenue in the consolidated statements of operations.

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, 2023, no dividends had been declared.

Profit (Loss) Per Share

Basic profit (loss) per common share is calculated by dividing net profit (loss) attributable to common stockholders, less any participating dividends, by the weighted average number of common shares outstanding during the applicable period. Diluted profit (loss) per share include shares issuable upon exercise of outstanding stock options and stock-based awards where the conversion of such instruments would be dilutive. See Note 16 for further information.

Income Taxes

The Company files U.S. federal and state tax returns where applicable. The non-U.S. subsidiaries file income tax returns in their respective jurisdictions. The Company accounts for income taxes under the asset and liability method, which recognizes deferred tax assets or liabilities for the expected future tax consequences based on the differences between the financial statement and income tax bases of assets and liabilities using the enacted marginal tax rate, in effect when the differences are expected to reverse. Valuation allowances are provided, if based on the weight of available evidence, it is more likely than not that some or all of the deferred tax assets will not be realized. Management judgment is required in determining the Company's provision for income taxes, the Company's deferred tax assets and liabilities, and any valuation allowance recorded against those net deferred tax assets.

The Company follows the authoritative guidance on accounting for and disclosure of uncertainty in tax positions which requires the Company to determine whether a tax position of the Company is more likely than not to be sustained upon examination, including resolution of any related appeals of litigation processes, based on the technical merits of the position. For tax positions meeting the

more-likely-than-not threshold, the tax amount recognized in the financial statements is reduced to the largest benefit that has a greater than fifty percent likelihood of being realized upon the ultimate settlement with the relevant taxing authority.

Loss Contingencies

Liabilities for loss contingencies arising from claims, assessments, litigation, fines, and penalties and other sources are recorded when it is probable that a liability has been incurred and the amount can be reasonably estimated. Legal costs for loss contingencies are expensed as incurred.

Common Stock Warrant Liabilities

The Company assumed 5,374,984 publicly-traded warrants ("Public Warrants") and 3,150,000 private placement warrants originally issued by AONE ("Private Placement Warrants" and, together with the Public Warrants, the "Common Stock Warrants") upon the Merger, all of which were issued in connection with AONE's initial public offering and subsequent overallotment and entitle the holder to purchase one share of the Common Stock at an exercise price of \$11.50 per share. The Common Stock Warrants became exercisable the later of 30 days after the Company completed the Merger or 12 months from the closing of AONE's initial public offering, but can be terminated on the earlier of 5 years after the Merger, liquidation of the Company, or the Redemption Date as determined by the Company. During the years ended December 31, 2023 and 2022, no Public Warrants or Private Placement Warrants were exercised. The Public Warrants are publicly traded and are exercisable for cash unless certain conditions occur which would permit a cashless exercise, such as the failure to have an effective registration statement related to the shares issuable upon exercise or redemption by the Company under certain conditions. The Private Placement Warrants are not redeemable for cash so long as they are held by the initial purchasers or their permitted transferees but may be redeemable for common stock if certain other conditions are met. If the Private Placement Warrants are held by someone other than the initial purchasers or their permitted transferees, the Private Placement Warrants are redeemable by the Company and exercisable by such holders on the same basis as the Public Warrants.

The Company evaluated the Public Warrants and Private Placement Warrants and concluded that the Private Placement Warrants do not meet the criteria to be classified within stockholders' equity. The agreement governing the Common Stock Warrants includes a provision that, if applied, could result in a different settlement value for the Private Placement Warrants depending on their holder. Because the holder of an instrument is not an input into the pricing of a fixed-for-fixed option on the Company's ordinary shares, the Private Placement Warrants are not considered to be "indexed to the Company's own stock." As the Private Placement Warrants meet the definition of a derivative, the Company recorded these warrants as liabilities on the consolidated balance sheet at fair value, with subsequent changes in their respective fair values recognized in the consolidated statements of operations at each reporting date as part of change in fair value of derivative liabilities, as described in Note 12. The provisions referenced above are not applicable to the Public Warrants which do not have differing settlement provisions based on the warrant holder. The Public Warrants are not precluded from being considered indexed to the Company's stock and were recognized at fair value in stockholders' equity on the closing of the Merger.

Contingent Earnout Liability

In connection with the Reverse Recapitalization and pursuant to the Merger Agreement, A-Star, the sponsor of AONE (the "Sponsor") surrendered 2,610,000 shares ("Sponsor Earnout Shares") and eligible Markforged equity holders were entitled to receive as additional merger consideration 14,666,667 shares of the Company's Common Stock ("Markforged Earnout Shares") upon the Company achieving certain Earnout Triggering Events (as described in the Merger Agreement and Note 11). The contingent obligations to issue Markforged Earnout Shares in respect of Markforged common stock and release from lock-up Sponsor Earnout Shares, are accounted for as liability classified instruments in accordance with Accounting Standards Codification Topic 815-40, as the Earnout Triggering Events that determine the number of Sponsor and Markforged Earnout Shares required to be released or issued, as the case may be, include events that are not solely indexed to the fair value of common stock of Markforged. The liability was recognized at the reverse recapitalization date and is subsequently remeasured at each reporting date with changes in fair value recorded in the consolidated statements of operations.

Markforged Earnout Shares issuable to employees with vested equity awards and Earnout RSUs (as described in the Merger Agreement) issuable to employees with unvested equity awards are considered a separate unit of account from the Markforged Earnout Shares issuable in respect of Markforged common stock and are accounted for as equity classified stock compensation. The Earnout Shares issuable to employees with vested equity awards are fully vested upon issuance, thus there is no requisite service period and the value of these shares is recognized as a one-time stock compensation expense for the grant date fair value. Earnout RSUs are contingent upon an employee completing a service vesting condition, and as such, reflect a transaction in which the Company acquires employee services by offering to issue its shares, the amount of which is based in part on the Company's share price. Expense related to Earnout RSUs is recognized using graded vesting over the requisite service period for the Earnout RSUs.

The estimated fair values of the Sponsor Earnout Shares, Markforged Earnout Shares, and Earnout RSUs were determined by using a Monte Carlo simulation valuation model using a distribution of potential outcomes on a monthly basis over the five-year Earnout Period as defined in Note 11. The preliminary estimated fair values of Sponsor Earnout Shares, Markforged Earnout Shares, and Earnout RSUs were determined using the most reliable information available, including the current Company Common Stock price, expected volatility, risk-free rate, expected term and dividend rate.

The contingent earnout liability is categorized as a Level 3 fair value measurement (see Fair Value of Financial Instruments accounting policy as described above) because the Company estimated projections during the Earnout Period utilizing unobservable inputs. Contingent earnout payments involve certain assumptions requiring significant judgment and actual results can differ from assumed and estimated amounts.

Teton Software Simulation Contingent Earnout

Contingent consideration represents potential future payments that the Company may be required to pay in the event negotiated milestones are met in connection with a business acquisition. Contingent consideration is recorded as a liability at the date of acquisition at fair value. The fair value of contingent consideration related to the development milestone and business milestone metrics is estimated using a scenario-based income approach that uses several possible future scenarios. Under this approach, the value of the milestone payment is calculated as the probability-weighted payment across all scenarios. Significant increases or decreases in any of the probabilities of success or changes in expected timelines for achievement of any of the milestones could result in a significantly higher or lower fair value of the contingent consideration liability. The fair value of the contingent consideration at each reporting date is updated by reflecting the changes in fair value in the Company's consolidated statements of operations. See Note 3 for additional information.

Leases

The Company accounts for leases in accordance with ASC Topic 842, Leases ("ASC 842"). In accordance with ASC 842, the Company determines whether an arrangement is or contains a lease at inception. A contract is or contains a lease if the contract conveys the right to control the use of an identified asset for a period of time in exchange for consideration. The Company classifies leases at the lease commencement date, when control of the underlying asset is transferred from the lessor to the lessee, as operating or finance leases and records a right-of-use ("ROU") asset and a lease liability on the consolidated balance sheet for all leases with an initial lease term of greater than 12 months. The Company has elected to not recognize leases with a lease term of 12 months or less on the balance sheet and will recognize lease payments for such short-term leases as an expense on a straight-line basis over the lease term.

The Company enters into contracts that contain both lease and non-lease components. Non-lease components may include maintenance, utilities, and other operating costs. For leases of real estate, the Company combines the lease and associated non-lease components in its lease arrangements as a single lease component. Variable costs, such as utilities or maintenance costs, are not included in the measurement of right-of-use assets and lease liabilities, but rather are expensed when the event determining the amount of variable consideration to be paid occurs.

Finance and operating lease assets and liabilities are recognized at the lease commencement date based on the present value of the lease payments over the lease term using the discount rate implicit in the lease if readily determinable. If the rate implicit is not readily determinable, the Company utilizes its incremental borrowing rate based upon the available information at the lease commencement date. ROU assets are further adjusted for initial direct costs, prepaid rent, or incentives received. Operating lease payments are expensed using the straight-line method as an operating expense over the lease term. The Company's lease terms may include options to extend or terminate the lease when it is reasonably certain that the Company will exercise that option. Finance lease assets are amortized to depreciation expense using the straight-line method over the shorter of the useful life of the related asset or the lease term. Finance lease payments are bifurcated into (i) a portion that is recorded as interest expense and (ii) a portion that reduces the finance liability associated with the lease. The Company did not have any finance leases during the years ended December 31, 2023 and 2022.

Business Combinations

The Company allocates the purchase price of acquired companies to the tangible and intangible assets acquired and liabilities assumed based on their estimated fair values. The Company generally values the identifiable intangible assets acquired using a discounted cash flow model. The significant estimates used in valuing certain of the intangible assets, include, but are not limited to future expected cash flows of the asset, discount rates to determine the present value of the future cash flows and expected technology life cycles. Intangible assets are amortized over their estimated useful life; the period over which the Company anticipates generating economic benefit from the asset. Fair value adjustments subsequent to the acquisition date, that are not measurement period adjustments, are recognized in earnings.

Goodwill

Goodwill represents the future economic benefits arising from other assets acquired in a business combination that is not individually identified and separately recorded. The excess of the purchase price over the estimated fair value of net assets of businesses acquired in a business combination is recognized as goodwill. Goodwill is not amortized but is tested for impairment at least annually, or as circumstances indicate that the carrying value of the asset may not be recoverable through future operations. Our annual review of goodwill impairment occurs in the fourth quarter.

We review goodwill for impairment utilizing either a qualitative assessment or a quantitative goodwill impairment test. If we choose to perform a qualitative assessment and we determine that the fair value of the reporting unit more likely than not exceeds the carrying value, no further evaluation is necessary. When we perform the quantitative goodwill impairment test, we determine fair value using accepted valuation techniques, which can include the market and discounted cash flow methods. The fair value of the reporting unit is compared to the carrying value, which includes goodwill. If the fair value of the reporting unit exceeds its carrying value, we do not consider the goodwill impaired. If the carrying value is higher than the fair value, we recognize the difference as an impairment loss, limited to the total amount of goodwill.

A quantitative goodwill impairment testing process requires valuation of the reporting unit. In the market approach, we can reference the Company's market capitalization as a value indication given the Company's single operating segment and reporting unit. In the income approach, which is based on a discounted forecasted cash flow including a terminal value, we compute the terminal value using the constant growth method, which values the forecasted cash flows in perpetuity. The assumptions about future cash flows and growth rates are based on the reporting unit's long-term forecast and is subject to review and approval by senior management. A reporting unit's discount rate is a significant assumption and is a risk-adjusted weighted average cost of capital, which we believe approximates the rate from a market participant's perspective. The estimated fair value could be impacted by changes in market conditions and various other assumptions, however we consider the discount rate assumption to be the key assumption. We categorize the fair value determination as Level 3 in the fair value hierarchy due to its use of internal projections and unobservable measurement inputs.

We identified a triggering event and recorded goodwill impairment of \$29.5 million, the entirety of the goodwill carrying value, during the third quarter of 2023 (see Note 7).

Intangible Assets

Intangible assets consist of identifiable intangible assets acquired, specifically, developed technology, customer relationships, and trade names. The Company evaluates definite-lived intangible assets for impairment when events or changes in circumstances indicate that the carrying amount of the assets may not be recoverable through future operations. If indicators of impairment are present, the Company then compares the estimated undiscounted cash flows that the specific asset is expected to generate to its carrying value. If such assets are impaired, the impairment recognized is measured as the amount by which the carrying amount of the asset exceeds its fair value. The Company experienced a triggering event during the third quarter of 2023 prompting impairment assessments of goodwill and long-lived assets, including definite-lived intangibles. The long-lived assets were determined to be recoverable, therefore the assessment did not result in an impairment of definite-lived intangible assets or other long-lived assets.

Capitalized Software

The Company capitalizes qualifying software development costs, primarily related to its cloud platform. The costs consist of personnel costs that are incurred during the application development stage. Capitalization of costs begins when two criteria are met: (1) the preliminary project stage is completed, and (2) it is probable that the software will be completed and used for its intended function. Capitalization ceases when the software is substantially complete and ready for its intended use, including the completion of all significant testing. Costs related to preliminary project activities and post-implementation operating activities are expensed as incurred. The capitalized costs are amortized on a straight-line basis over the estimated useful life of the asset, which is typically 3 years.

As of December 31, 2023 and 2022, capitalized software costs were \$1.3 million and \$0.5 million, respectively, and included in other long-term assets on the balance sheet. Costs related to preliminary project activities and post-implementation operating activities are expensed as incurred. The capitalized costs are amortized on a straight-line basis over the estimated useful life of the asset, which is typically 3 years. For the years ended December 31, 2023 and 2022, amortization expense for capitalized software recorded to cost of revenue was \$0.1 million and \$10 thousand, respectively.

Foreign Currency Translation

The assets and liabilities of our subsidiary, Digital Metal AB ("Digital Metal"), are translated from its functional currency (Swedish Krona) to U.S. dollars at the exchange rate in effect at the end of the period, and the consolidated statements of operations are translated at the average exchange rate each month.

Transactions in foreign currencies are recorded at the approximate rate of exchange at the transaction date. All such differences are recorded in Other expense, net in the consolidated statements of operations. Assets and liabilities resulting from these transactions

are translated at the rate of exchange in effect at the balance sheet date. Differences are recorded in other comprehensive income (loss).

Comprehensive Income (Loss)

The Company follows the requirements of ASC 220, *Income Statement - Reporting Comprehensive Income*, for the reporting and presentation of comprehensive income (loss) and its components. The guidance requires unrealized gains or losses on the Company's foreign currency translation adjustments to be included in other comprehensive income (loss).

Recently Adopted Accounting Pronouncements

In June 2016, the FASB issued ASU 2016-13, Financial Instruments — Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments (“ASU 2016-13”), which requires immediate recognition of expected credit losses for financial assets carried at amortized cost, including trade and other receivables, loans and commitments, held-to-maturity debt securities and other financial assets, held at the reporting date to be measured based on historical experience, current conditions and reasonable supportable forecasts. The new credit loss model does not have a minimum threshold for recognition of impairment losses and entities will need to measure expected credit losses on assets that have a low risk of loss. These changes became effective for the Company on January 1, 2023, which did not have a material effect on the Company’s consolidated financial statements.

Recently Issued Accounting Pronouncements Not Yet Adopted

In December 2023, the FASB issued ASU 2023-09, Income Taxes (Topic 740) Improvements to Income Tax Disclosures, which prescribes standard categories for the components of the effective tax rate reconciliation and requires disclosure of additional information for reconciling items meeting certain quantitative thresholds, requires disclosure of disaggregated income taxes paid, and modifies certain other income tax-related disclosures. ASU 2023-09 is effective for annual periods beginning after December 15, 2024 and allows for adoption on a prospective basis, with a retrospective option. The Company is currently evaluating the potential impact of the adoption of ASU 2023-09 on its consolidated financial statements and related disclosures.

In November 2023, the FASB issued ASU 2023-07, Segment Reporting (Topic 280) Improvements to Reportable Segment Disclosures, which requires disclosure of incremental segment information on an interim and annual basis. ASU 2023-07 is effective for annual periods beginning after December 15, 2023, and interim periods within annual periods beginning after December 15, 2024, and requires retrospective adoption to all prior periods presented in the consolidated financial statements. The Company is currently evaluating the potential impact of the adoption of ASU 2023-07 on its consolidated financial statements and related disclosures.

Note 3. Acquisitions

Teton Simulation Software (“Teton”)

On April 4, 2022, the Company acquired Teton Simulation Software (“Teton”) through a statutory merger in exchange for total consideration of \$6.6 million, payable in a combination of cash and equity shares. Teton is a software company whose SmartSlice™ technology automates validation and optimizes part performance for additive manufacturing application. The Company integrated Teton's technology with its printing software solution, Eiger™, as a subscription add-on that offers manufacturing customers a streamlined workflow spanning part design, testing, optimization, validation and printing at the point of need, all on a single, cloud-based platform.

A portion of the acquisition consideration is contingent on achievement by Teton of certain business and development milestones, with a fair value of \$1.6 million as of the date of acquisition. The Company will pay up to \$1.5 million of business related contingent consideration based on stated sales or usage metrics, which had a fair value of \$0.6 million as of the date of acquisition. The fair value of this milestone was determined to be \$1.5 million as of December 31, 2023, the \$0.9 million increase in fair value is recorded within sales and marketing expense on the statement of operations. The development earnout related to product technical milestones, which had a fair value of \$1.0 million as of the date of acquisition. This milestone was met and \$0.75 million of cash and 312,489 shares were disbursed in 2022. Of the acquisition date cash and equity consideration indicated below, \$0.25 million of the cash consideration and \$0.25 million of the equity consideration was “held-back.” The amount was released 12 months following the Closing Date. The holdback cash and shares were held on Markforged's December 31, 2022 balance sheet within accrued expenses and equity, respectively.

The total purchase price was allocated to the identifiable assets acquired and liabilities assumed based on the Company's estimates of their fair values on the acquisition date. The fair values of intangible assets were based on valuations using an income approach, specifically the multi-period excess earnings method for developed technologies. The process for estimating the fair values of identifiable intangible assets requires the use of significant estimates and assumptions, including revenue growth rates, discount rates, technology obsolescence curves, and EBITDA margins. The excess of the purchase price over the fair values of tangible assets, identifiable intangible assets and assumed liabilities was recorded as goodwill. The Company's estimates and assumptions in determining the estimated fair values of certain assets and liabilities are subject to change within the measurement period (up to one year from the acquisition date) as a result of additional information obtained with regards to facts and circumstances that existed as of the acquisition date. Subsequent to the acquisition date, the Company made a measurement period adjustment to the preliminary purchase price allocation, which resulted in an increase to goodwill of \$0.2 million. The increase was due to an increase in deferred income tax liabilities of \$0.2 million. Goodwill is not deductible for tax purposes.

The acquisition date fair value of the consideration transferred is as follows (in thousands):

Fair value of consideration transferred:

Cash consideration	\$	2,635
Equity consideration		2,354
Development milestone earnout fair value		1,020
Business milestone earnout fair value		582
Total consideration transferred	\$	6,591

The following table summarizes the allocation of the purchase price to the estimated fair values of assets acquired and liabilities assumed (in thousands):

Fair value of assets acquired:

	At April 4, 2022
Cash and cash equivalents	\$ 383
Accounts receivable	5
Other assets	17
Intangible assets	2,220
Goodwill	4,711
Assets acquired:	\$ 7,336

Fair value of liabilities assumed:

Customer payable - cancelled contracts	\$ 38
Accrued expense for pre-acquisition expenses	231
Accrued expense for grant repayment	240
Deferred tax liability	236
Liabilities acquired:	\$ 745

The estimated useful life of the identifiable intangible asset acquired, developed technology, is 7 years.

Supplemental pro forma information and actual revenue and earnings since the acquisition date have not been provided as the acquisition did not have a material impact on the Company's consolidated statements of operations.

Digital Metal AB ("Digital Metal")

On August 31, 2022 (the "Closing Date"), pursuant to a Sale and Purchase Agreement (the "Purchase Agreement") by and between Markforged and Höganäs Aktiebolag, a limited liability company incorporated under the laws of Sweden (the "Seller"), the Company completed its acquisition of all of the outstanding share capital of Digital Metal AB, a limited liability company incorporated under the laws of Sweden ("Digital Metal"). At the closing, the Company issued 4,100,000 shares of common stock of the Company, and paid approximately \$33.5 million in cash. The cash payment was comprised of \$32.0 million related to the purchase price and \$1.5 million to settle certain intercompany balances between the Seller and Digital Metal. The acquisition of Digital Metal, the creator of a precise and reliable binder jetting solution, extends Markforged's capabilities into high-throughput production of metal additive parts.

Digital Metal generated revenues of \$2.0 million and net loss of \$1.4 million during the period between the date of acquisition, August 31, 2022, and December 31, 2022. These amounts are reflected in the consolidated statements of operations for the year ended December 31, 2022.

The total purchase price was allocated to the identifiable assets acquired and liabilities assumed based on the Company's estimates of their fair values on the acquisition date. The fair values of intangible assets were based on valuations using an income approach, specifically the multi-period excess earnings method for acquired technologies, relief-from-royalty method for trade names, and the distributor method for customer relationships. The process for estimating the fair values of identifiable intangible assets requires the use of significant estimates and assumptions, including revenue growth rates, customer attrition rates, royalty rates, discount rates, technology obsolescence curves, and EBITDA margins. The excess of the purchase price over the fair values of tangible assets, identifiable intangible assets and assumed liabilities was recorded as goodwill for the acquisition. The Company's estimates and assumptions in determining the estimated fair values of certain assets and liabilities are subject to change within the measurement period (up to one year from the acquisition date) as a result of additional information obtained with regards to facts and circumstances that existed as of the acquisition date. Subsequent to the acquisition date, the Company made a measurement period adjustment to the preliminary purchase price allocation, which resulted in a decrease to goodwill of \$2.0 million. The change was due to a decrease in deferred income tax liabilities of \$0.5 million and increase of intangible assets of \$1.5 million. Goodwill is not deductible for tax purposes.

The acquisition date fair value of the consideration transferred is as follows (in thousands):

Fair value of consideration transferred:

Cash consideration	\$	33,500
Equity consideration		9,840
Total consideration transferred	\$	<u>43,340</u>

The following table summarizes the allocation of the purchase price to the estimated fair values of assets acquired and liabilities assumed (in thousands):

Fair value of assets acquired:	At August 31, 2022
Cash and cash equivalents.....	\$ 579
Accounts receivable, net	535
Inventory	2,470
Prepaid and other assets.....	265
Fixed assets	2,755
Right-of-use asset	205
Intangible assets.....	15,230
Goodwill.....	25,770
Assets acquired:	<u>\$ 47,809</u>
Fair value of liabilities assumed:	
Accounts payable and accrued expenses.....	\$ 873
Lease liability – short term.....	67
Deferred revenue	392
Deferred tax liability	3,005
Lease liability – long term	132
Liabilities acquired:	<u>\$ 4,469</u>

The estimated useful lives of the identifiable intangible assets acquired is as follows:

	Gross Value	Estimated Useful Life
Acquired technology	\$ 14,580	20 years
Customer relationships	560	9 years
Trade names	90	1 year

Pro Forma Information (Unaudited)

The following unaudited pro forma financial information is based on the historical financial statements of the Company and presents the Company's results as if the acquisition of Digital Metal had occurred on January 1, 2021:

	Years Ended December 31, (Unaudited)	
	2022	2021
Net revenues	\$ 102,739	\$ 95,097
Net profit (loss)	(27,863)	3,858

Although actual results could differ from the pro forma results, the Company believes the pro forma results provide a reasonable basis for presenting the significant effects of the transaction. However, the pro forma results are not necessarily indicative of the results that would have occurred if the transaction had occurred at the beginning of fiscal year 2021, including potential synergies, and therefore does not represent what the actual net revenues and net loss would have been had the companies been combined as of this date.

Note 4. Revenue

The Company derives revenue from the sale of 3D printers, consumable materials, and hardware maintenance agreements, through its global channel of third-party value-added reseller partners (“VARs”). Typically, the VAR is the Company’s customer. Customers are invoiced at the time of shipment or at the beginning of the maintenance term and payment is typically due within 60 days. Contracts primarily contain fixed consideration although certain VAR contracts include performance rebates that may be earned based on sales targets which are accounted for as variable consideration and a reduction of revenue. The Company’s variable consideration is primarily based on performance metrics measured over the fiscal year, thus uncertainties related to variable consideration are resolved as of December 31, 2023 and 2022.

Revenue associated with the Company’s products are generally recognized when the customer obtains control of the Company’s product, which occurs at a point in time, and may be upon shipment or upon delivery based on the contractual shipping terms of a contract. Revenue associated with hardware maintenance arrangements is recognized ratably over the term of the arrangements. For its premium cloud software subscription offering, the Company recognizes revenue ratably over time beginning on the date the customer is capable of accessing the software under “Services” in the revenue disaggregation table.

Significant Judgements

The Company enters into certain contracts that have multiple performance obligations. These performance obligations may include 3D printers, consumables, and premium cloud software subscription offerings. Contracts with more than one performance obligation require the Company to allocate the transaction price to each performance obligation. As the Company’s contracts predominantly contain fixed consideration, the allocation of transaction price is based on a relative standalone selling price method. Certain products are not sold on a standalone basis or do not have a sufficient history of standalone sales and we are required to estimate the standalone selling price for the purposes of our allocation. We utilize market information, historical selling practices, and other available information to produce as accurate an estimate as possible.

Contract Balances

Timing of revenue recognition may differ from the timing of invoicing to customers. The Company has a right to bill when products are shipped, which is often the point in time revenue is recognized. As a result, the Company will have accounts receivable for billings and also deferred revenue for the portion of billings in advance of service in its hardware maintenance agreements.

The Company recognized \$7.5 million of revenue in 2023 from deferred revenue as of December 31, 2022. The Company recognized \$5.9 million of revenue in 2022 from deferred revenue as of December 31, 2021.

Deferred revenue is expected to be recognized when the Company provides hardware maintenance services or contractual performance obligations for which the customer has already provided payment with \$8.8 million to be recognized in 2024, \$4.0 million in 2025, \$1.6 million in 2026, and \$0.5 million thereafter.

Contract Costs

When costs to obtain a contract are incremental and the amortization period is greater than one year, the cost is capitalized and amortized over the period that aligns with the transfer of related goods and services. The amortization period does not extend beyond the initial contract term because there is not a sufficient history of renewals. When the costs to obtain a contract are capitalized for a contract that includes multiple performance obligations, the amortization pattern is consistent with the pattern of revenue recognition for the performance obligations.

The Company expenses sales commissions when incurred when the amortization period is one year or less. These costs are recorded within sales and marketing in the consolidated statement of operations.

Disaggregation of Revenue

The following table disaggregates the Company’s revenue based on the nature of the products and services:

(in thousands)	Year Ended December 31,	
	2023	2022
Hardware.....	\$ 59,287	\$ 69,112
Consumables	23,996	23,423
Services.....	10,501	8,423
Total Revenue	<u>\$ 93,784</u>	<u>\$ 100,958</u>

Note 5. Property and Equipment, net

Property and equipment consist of the following:

(in thousands)	December 31, 2023	December 31, 2022
Machinery and equipment	\$ 11,249	\$ 9,954
Leasehold improvements	12,613	2,432
Computer equipment	3,481	3,532
Furniture and fixtures	438	429
Computer software	242	231
Construction in process	523	9,026
Property and equipment, gross	28,546	25,604
Less: Accumulated depreciation	(10,833)	(7,306)
Property and equipment, net	<u>\$ 17,713</u>	<u>\$ 18,298</u>

Depreciation expense for property and equipment was \$4.2 million and \$2.3 million for the years ended December 31, 2023 and 2022, respectively. Disposal of property and equipment amounted to \$0.8 million of fully depreciated assets for the year ended December 31, 2023 and \$1.2 million for the year ended December 31, 2022.

Note 6. Inventory

Inventory consists of the following:

(in thousands)	December 31, 2023	December 31, 2022
Raw material	\$ 4,324	\$ 4,582
Work in process	555	175
Finished goods	21,894	21,652
Total inventory	<u>\$ 26,773</u>	<u>\$ 26,409</u>

The Company maintained a provision for excess and obsolete inventory of \$1.8 million and \$1.5 million as of December 31, 2023 and 2022, respectively. As of December 31, 2023, excess and obsolete inventory impairment related to finished goods is \$1.3 million and \$0.5 million is related to raw materials. As of December 31, 2022, excess and obsolete inventory impairment related to finished goods is \$1.3 million and \$0.2 million is related to raw materials. The impairment of excess and obsolete inventories is recorded within cost of revenue in the consolidated statements of operations.

Note 7. Goodwill and Intangible Assets

The following tables summarize the Company's goodwill and intangible assets, all of which are related to the acquisitions of Teton Simulation Software in April 2022 and Digital Metal AB in August 2022 (in thousands):

(in thousands)	Goodwill
December 31, 2021	\$ —
Acquisition of Teton Simulation Software	4,711
Acquisition of Digital Metal	25,770
Foreign currency translation	635
December 31, 2022	<u>\$ 31,116</u>
Foreign currency translation	(1,649)
Goodwill impairment	(29,467)
December 31, 2023	<u>\$ —</u>

		December 31, 2023			December 31, 2022		
	Estimated Useful Life	Gross Carrying Value	Accumulated Amortization	Net Book Value	Gross Carrying Value	Accumulated Amortization	Net Book Value
Acquired technology....	7 - 20 years	\$ 16,800	\$ (970)	\$ 15,830	\$ 16,800	\$ (97)	\$ 16,703
Customer relationships	9 years	560	(83)	477	560	(19)	541
Trade names.....	1 year	90	(90)	—	90	(27)	63
Foreign currency translation		848	(27)	821	322	(3)	319
Intangible Assets, net...		<u>\$ 18,298</u>	<u>\$ (1,170)</u>	<u>\$ 17,128</u>	<u>\$ 17,772</u>	<u>\$ (146)</u>	<u>\$ 17,626</u>

The Company recognized the following amortization expense to cost of revenue and operating expense during the years ended December 31, 2023 and 2022.

		Year Ended December 31,	
		2023	2022
Cost of revenue.....	\$	877	\$ 97
Operating expenses.....		147	49
Total.....	\$	<u>1,024</u>	<u>\$ 146</u>

Revenue is the basis for the economic pattern used to determine the amortization schedule of developed technology and customer relationships. Trade name intangible amortization is based on the term in which the Company anticipates using the asset. The estimated future amortization expense for amortizable assets to be recognized is as follows as of December 31, 2023 (in thousands):

2024	\$	1,524
2025		2,071
2026		2,286
2027		2,036
2028		1,655
Thereafter		7,556
Total	\$	<u>17,128</u>

Note 8. Accrued Expenses

The following table summarizes the Company's components of accrued expenses:

(in thousands)	December 31, 2023	December 31, 2022
Warranty reserve	886	\$ 620
Compensation, benefits, and expenses	4,213	4,451
Professional services	2,540	3,166
Marketing and advertising	325	279
Teton acquisition holdback liability	—	250
Accrued taxes	252	392
Accrued freight and duties	594	372
Purchase commitment	700	—
Other	330	133
Total accrued expense	<u>\$ 9,840</u>	<u>\$ 9,663</u>

Note 9. Common Stock and Stockholders' Equity

Common Stock Reserved for Future Issuance

The Company has reserved the following shares of common stock for future issuance:

	December 31, 2023	December 31, 2022
Common stock options outstanding and unvested RSU	26,199,449	22,962,929
Shares available for issuance under the 2021 plan	27,028,491	24,568,036
Common stock warrants outstanding	8,525,000	8,525,000
Shares available for issuance as Earnout RSU	1,400,000	1,400,000
Employee stock purchase plan	8,505,539	6,559,930
Total shares of authorized common stock reserved for future issuance	71,658,479	64,015,895

Note 10. Equity Based Awards

On July 13, 2021, the Company's stockholders approved the Markforged Holding Corporation 2021 Stock Option and Incentive Plan ("2021 Plan") and the Markforged Holding Corporation 2021 Employee Stock Purchase Plan ("2021 ESPP"). As of December 31, 2023, 27,028,491 and 8,505,539 shares of common stock were available for issuance under the 2021 Plan and 2021 ESPP, respectively.

Under the 2021 Plan, the Company can grant stock options, stock appreciation rights, restricted stock awards, restricted stock units ("RSUs"), unrestricted stock awards, cash-based awards, and dividend equivalent rights. The 2021 Plan provides that an additional number of shares of common stock will automatically be added to the shares of common stock authorized for issuance under the 2021 Plan on January 1 of each year. The number of shares of common stock added each year will be equal to (i) 5% of the number of shares of common stock issued and outstanding as of December 31 of the immediately preceding year or (ii) such lesser amount as determined by the Company's Board of Directors. The awards generally vest 25 percent after 12 months, followed by ratable vesting over 36 months. The options granted generally expire 10 years from the date of grant. The grant date fair value of options and RSUs is recognized as expense on a straight-line basis over the requisite service period, which is generally the vesting period.

The 2021 ESPP allows eligible employees to authorize payroll deductions between 1% and 15% of their base salary or wages, up to \$25,000 annually, to be applied toward the purchase of shares of the Company's common stock occurring at offering periods determined by the Company. At each offering period, the eligible employees will have the option to acquire common stock at a discount of up to 15% of the lesser of the Company's common stock price on (i) the first trading day of the offering period or (ii) the last day of the offering period. The offering periods under the 2021 ESPP are not to exceed 27 months between periods. On January 1 of each subsequent year under the plan, the number of shares available for issuance under the plan will be increased by the lesser of (i) 4,700,000 shares of common stock, (ii) one percent of the number of shares of common stock issued and outstanding as of December 31 of the immediately preceding year, or (iii) number of shares of common stock determined by the Company. During the year ended December 31, 2023, the Company did not recognize stock compensation expense related to the 2021 ESPP as there were no grants under the 2021 ESPP.

Legacy Markforged's 2013 Stock Plan (the "2013 Plan") was terminated at the Closing and all outstanding awards became outstanding under the 2021 Plan. No further awards will be granted under the 2013 Plan. Option activity under the 2021 Plan for the year ended December 31, 2023 is as follows:

	Number of Shares	Weighted- Average Exercise Price (Per Share)	Weighted- Average Remaining Contractual Life (in years)
Outstanding at December 31, 2022	11,922,334	\$ 2.00	6.99
Granted	—	—	—
Exercised	(510,294)	0.37	—
Forfeited.....	(523,589)	2.12	—
Outstanding at December 31, 2023	<u>10,888,451</u>	\$ 2.07	6.13
Options exercisable at December 31, 2023	<u>9,948,613</u>	\$ 2.06	6.07

The aggregate intrinsic value of stock options outstanding at December 31, 2023 was \$27 thousand. As of December 31, 2023, the Company had 10,707,785 shares vested and expected to vest.

Additional information regarding the exercise of stock options is as follows:

(in thousands, except weighted average)	Year Ended December 31,	
	2023	2022
Intrinsic value of options exercised.....	\$ 501	\$ 3,525

In the years ended December 31, 2023 and 2022, the Company did not grant any options to purchase shares of Common Stock.

Restricted Stock Units

During the year ended December 31, 2023, the Company awarded RSUs to newly hired and continuing employees, as well as non-employee directors. The fair value per share of these awards was determined based on the fair market value of our stock on the date of the grant and is being recognized as stock-based compensation expense over the requisite service period. Awards containing market and/or performance conditions are recognized using the graded vesting method, which is an accelerated expense attribution method. We have not issued any awards with market and/or performance conditions since the Merger. The RSUs that vested during the year ended December 31, 2023 had a fair value of \$4.5 million. The following table summarizes the RSU activity for the year ended December 31, 2023:

	Number of Shares	Weighted- Average Grant Date Fair Value (Per Share)
Outstanding at December 31, 2022	11,040,595	\$ 3.94
Granted	10,958,347	1.15
Vested	(3,965,864)	3.63
Forfeited	(2,722,080)	3.38
Unvested at December 31, 2023	<u>15,310,998</u>	\$ 2.12

Stock-Based Compensation Expense

The Company recorded compensation expense related to options and RSUs of \$14.0 million and \$16.6 million for the years ended December 31, 2023 and 2022. Total unrecognized stock-based compensation expense for the RSUs outstanding was \$27.4 million at December 31, 2023, which is expected to be recognized over a weighted-average period of 2.5 years. Total unrecognized stock-based compensation expense for the options outstanding was \$1.0 million at December 31, 2023, which is expected to be recognized over a weighted-average period of 0.8 years.

(in thousands)	Year Ended December 31,	
	2023	2022
Stock options	\$ 2,641	\$ 3,493
Restricted stock units.....	11,398	13,114
Stock-based compensation expense for restricted stock units and options	<u>\$ 14,039</u>	<u>\$ 16,607</u>

Markforged Earnout Shares issuable to holders of Legacy Markforged equity interests as of the Merger closing date (“Eligible Markforged Equityholders”) with respect to a Legacy Markforged equity award are accounted for as equity classified stock compensation. Markforged Earnout Shares issuable with respect to a vested Legacy Markforged equity award do not have a requisite service period. To the extent that an Eligible Markforged Equityholder is entitled to receive Markforged Earnout RSUs with respect to an unvested Legacy Markforged equity award, the Earnout RSUs are subject to a service-based vesting condition with a vesting period equivalent to the remaining service period of the holder’s Legacy Markforged equity award as of Closing.

During the year ended December 31, 2023, the Company recognized de minimis stock-based compensation income related to the Markforged Earnout. The unrecognized compensation expense related to the Markforged Earnout is \$0.9 million and recognized over a remaining period of no more than 1.25 years, dependent on when vesting conditions are met.

The stock-based compensation expense for stock-based awards and earnout shares was recognized in the following captions within the consolidated statements of operations:

(in thousands)	Year Ended December 31,	
	2023	2022
Cost of revenue	\$ 259	\$ 354
Sales and marketing	1,851	2,158
Research and development	4,649	4,584
General and administrative	7,228	11,113
Total stock-based compensation expense	<u>\$ 13,987</u>	<u>\$ 18,209</u>

Note 11. Earnout

During the five year period after the Closing (“Earnout Period”), Eligible Markforged Equityholders are entitled to receive up to 14,666,667 Markforged Earnout Shares upon the occurrence of certain triggering events. During the Earnout Period, the Sponsor’s 2,610,000 surrendered shares of common stock will be released from lock-up upon certain triggering events.

On the date when the volume-weighted average trading sale price (“VWAP”) of one share of the Common Stock quoted on the NYSE is greater than or equal to \$12.50 for any twenty trading days within any thirty consecutive trading day period within the Earnout Period (“Triggering Event I”), the Eligible Markforged Equityholders will receive 8,000,000 Markforged Earnout Shares distributed on a pro-rata basis and 50% of the Sponsor’s surrendered shares will be released from lock-up to the Sponsor.

On the date when the VWAP of one share of the Company’s common stock quoted on the NYSE is greater than or equal to \$15.00 for any twenty trading days within any thirty consecutive trading day period within the Earnout Period (“Triggering Event II” and together with Triggering Event I, each a "Triggering Event"), the Eligible Markforged Equityholders will receive the remaining 6,666,667 Markforged Earnout Shares distributed on a pro-rata basis and the remaining 50% of the Sponsor’s surrendered shares will be released from lock-up to the Sponsor.

There are two units of account within the Markforged Earnout Shares depending on whether the Eligible Markforged Equityholder is entitled to receive Markforged Earnout Shares with respect to a Legacy Markforged equity award, in which case the Markforged Earnout Shares are accounted for as equity classified stock compensation, or with respect to Legacy Markforged common stock, in which case the Markforged Earnout Shares are accounted for as a liability classified instrument in accordance with Accounting Standards Codification Topic 815-40. Markforged Earnout Shares issuable with respect to an unvested Legacy Markforged equity award are issued in the form of Earnout RSUs and are subject to forfeiture if the holder does not complete the required service period. Forfeited Markforged Earnout Shares are distributed to the remaining Eligible Markforged Equityholders on a pro-rata basis and are fungible between the two units of account. The following table summarizes the number of Earnout Shares allocated to each unit of account as of December 31, 2023:

	Triggering Event I Earnout Shares	Triggering Event II Earnout Shares
Derivative liability	7,320,502	6,100,415
Stock compensation	679,498	566,252
Total Earnout Shares.....	<u>8,000,000</u>	<u>6,666,667</u>

As of the Closing, the estimated value of the Markforged Earnout Shares and surrendered Sponsor shares was \$8.04 per share issuable upon Triggering Event I and \$7.66 per share issuable upon Triggering Event II. The estimated value of the Markforged Earnout Shares and surrendered Sponsor shares as of December 31, 2023 is \$0.10 per share issuable upon Triggering Event I and \$0.07 per share issuable upon Triggering Event II. The valuation of the Markforged Earnout Shares and surrendered Sponsor shares is based on a Monte Carlo simulation to model a distribution of potential outcomes on a monthly basis over the Earnout period using the most reliable information available. The following table describes the assumptions used in the valuation:

	December 31, 2023	December 31, 2022
Current stock price.....	\$ 0.82	\$ 1.16
Expected volatility.....	85.00%	65.00%
Risk-free interest rate.....	4.07%	4.12%
Dividend rate.....	—%	—%
Expected term (years).....	2.54	3.54

Neither of the Earnout Triggering Events have occurred as of December 31, 2023 and therefore none were distributed.

Note 12. Stock Warrants

Private Placement Warrants and Public Warrants

The Private Placement Warrants were initially recognized as a liability on July 14, 2021 at a fair value of \$5.7 million. The Private Placement Warrants were remeasured to a fair value of \$0.2 million and \$0.6 million as of December 31, 2023 and 2022, respectively. The Company recorded gains of \$0.5 and \$2.0 million for the years ended December 31, 2023 and 2022, which is included in change in fair value of derivative liabilities on the consolidated statements of operations.

The Company benchmarks the change in fair value of the Private Placement Warrants against the market price of the publicly traded warrants at each quarter end, the closing price of which was \$0.06/warrant as of December 31, 2023. The Private Placement Warrants were valued using the following assumptions under the Binomial Lattice Model as of December 31, 2022:

	December 31, 2022
Market price of public stock.....	\$ 1.16
Exercise price.....	\$ 11.50
Expected term (years).....	3.54
Volatility.....	177.0%
Risk-free interest rate.....	4.12%
Dividend rate.....	—%

The Public Warrants were recognized in stockholder's equity at a fair value of \$9.7 million on July 14, 2021.

Note 13. Income Taxes

The components of the Company's profit (loss) before income taxes are as follows:

	Year Ended December 31,	
(in thousands)	2023	2022
Profit (loss) before income taxes:		
Domestic.....	(75,028)	\$ (24,673)
Foreign.....	(29,125)	(1,133)
Total.....	<u>\$ (104,153)</u>	<u>\$ (25,806)</u>

The components of the income tax expense (benefit) are as follows:

(in thousands)	Year Ended December 31,	
	2023	2022
Current Provision		
Federal.....	\$ —	\$ —
State.....	—	3
Foreign	83	69
Total current expense (benefit)	<u>\$ 83</u>	<u>72</u>
Deferred Provision		
Federal.....	—	(136)
State.....	—	(52)
Foreign	(669)	(302)
Total deferred expense (benefit)	<u>(669)</u>	<u>(490)</u>
Total income tax expense (benefit).....	<u><u>\$ (586)</u></u>	<u><u>\$ (418)</u></u>

The income tax expense (benefit) primarily relates to acquired deferred tax liabilities serving as a source of income to support recognition of certain existing deferred tax assets as well as the benefit related to certain foreign losses.

The overall effective tax rate differs from the statutory US federal tax rate as follows:

	Year Ended December 31,	
	% of Pretax Profit (Loss)	
	2023	2022
Statutory US federal tax rate.....	21.00%	21.00%
State income taxes, net of federal benefit	4.04	5.88
Stock-based compensation.....	(2.19)	(8.24)
Nondeductible expenses.....	(0.15)	—
Goodwill impairment.....	(6.06)	—
Fair market value change in warrants and earn out liabilities	—	47.85
Transaction costs.....	—	(1.26)
Officer's compensation	(0.13)	(0.69)
Research and development credits.....	2.56	32.93
Valuation allowance.....	(18.11)	(91.07)
Change in statutory tax rate	(0.04)	(1.05)
Other	(0.36)	(3.80)
Effective tax rate	<u><u>0.56%</u></u>	<u><u>1.55%</u></u>

Significant components of the Company's net deferred tax assets are as follows:

(in thousands)	December 31,	
	2023	2022
Deferred tax assets		
Lease liability	\$ 10,493	\$ 11,220
Capitalized research and development costs	14,596	9,453
Stock compensation	2,175	2,296
Reserves	689	824
Deferred revenue	1,298	778
Accrued expenses	564	509
Amortization	—	200
Inventory reserves	670	—
Net operating losses	42,646	33,690
Research and development credits	15,465	12,260
Other credits	407	254
Gross deferred tax assets	\$ 89,003	\$ 71,484
Less: Valuation allowance	(78,576)	(59,514)
Deferred tax liabilities		
Right-of-use assets	(8,966)	(10,599)
Deferred expenses	(125)	—
Acquired intangible assets	(3,218)	(3,690)
Depreciation	(203)	(464)
Loss on sale of assets	(20)	—
Net deferred tax assets	<u>\$ (2,105)</u>	<u>\$ (2,783)</u>

As of December 31, 2023, the Company had federal net operating loss carryforwards of \$15.0 million that are subject to expire at various dates between 2033 and 2037, and net operating losses of \$156.6 million, that have no expiration date and can be carried forward indefinitely but are limited in their usage to 80% of annual taxable income. As of December 31, 2023, the Company had state tax net operating loss carryforwards of \$89.9 million, that are subject to expire at various dates between 2026 and 2042. At December 31, 2023, the Company had federal and state research and development tax credit carryforwards of \$11.0 million and \$5.6 million, which begin to expire in 2033 and 2038, respectively.

As of December 31, 2023, the Company had foreign net operating loss carryforwards of \$6.1 million, which have an unlimited carryforward period and do not expire.

The federal and state net operating loss and research and development credit carryforwards may be subject to a substantial annual limitation under Section 382 of the Internal Revenue Code of 1986, and similar state provisions, due to ownership change limitations that have occurred previously or that could occur in the future. These ownership changes may limit the amount of net operating loss and research and development credit carryforwards that can be utilized annually to offset future taxable income and tax, respectively. As of December 31, 2023, the Company has not completed a 382 study to assess whether a change of ownership has occurred since its formation.

Uncertain tax positions represent tax positions for which income tax reserves have been established. The Company's policy is to record interest and penalties related to uncertain tax positions as part of income tax expense. Reserves for uncertain tax positions as of December 31, 2023 are not material and would not impact the effective tax rate if recognized due to the valuation allowance maintained against the Company's net deferred tax assets.

The Company files tax returns as prescribed by the tax laws of the jurisdictions in which it operates. In the normal course of business the Company is subject to examination by federal, state and foreign jurisdictions, where applicable. There are currently no pending income tax examinations. The Company is open to federal tax examination under statute from 2020 to present. The Company is open to tax examination in other jurisdictions from 2017 to present. Carryforward attributes from prior years may still be adjusted upon examination by federal, state and/or foreign tax authorities to the extent utilized in an open tax year or in future periods.

As of December 31, 2023, the Company has not provided for deferred income taxes on unremitted earnings of its foreign subsidiaries since these earnings are indefinitely reinvested. Upon distribution of such earnings in the form of dividends or otherwise, the Company could be subject to taxes. The Company's foreign unremitted earnings are not material and, as such, any taxes attributable to such unremitted earnings would not be material.

The Company has evaluated the positive and negative evidence bearing upon the realizability of its deferred tax assets, which are primarily comprised of net operating losses and research and development credits. Management has determined that it is more likely than not that the Company will not recognize the benefits of its federal and state deferred tax assets and, as a result, a valuation allowance of \$78.6 million has been established at December 31, 2023.

The following table presents the changes in the balance of the Company's deferred income tax asset valuation allowance:

(in thousands)	Year Ended December 31,	
	2023	2022
Balance at beginning of year	\$ 59,514	\$ 36,009
Additions charged to expense	19,062	23,505
Balance at end of year	<u>\$ 78,576</u>	<u>\$ 59,514</u>

Note 14. Leases

Rent expense under the Company's operating lease agreements was \$7.9 million and \$6.7 million for the years ended December 31, 2023 and 2022, respectively. There were no financing, variable, or short term leases during the years ended December 31, 2023 and 2022. The Company recorded a non-cash, pre-tax impairment of \$4.0 million related to the operating lease right-of-use ("ROU") asset recorded for 480 Pleasant Street in the second quarter of 2023. See Note 2 for additional information on the impairment.

Future minimum lease payments under our operating leases are as follows as of December 31, 2023:

(in thousands)	Amount
2024	\$ 6,877
2025	7,652
2026	7,777
2027	7,958
2028	7,385
After 2029	16,441
Total future lease payments	<u>\$ 54,090</u>
Less: interest	<u>(10,951)</u>
Present value of lease liabilities	<u>\$ 43,139</u>

	Year Ended December 31, 2023	Year Ended December 31, 2022
Supplemental cash flow information:		
Cash payments for operating leases included in cash flows used in operating activities	7,865	5,849
Other lease information		
Weighted-average remaining lease term - Operating leases	7.1 years	7.9 years
Weighted-average discount rate - Operating leases	6.4%	6.4%

Note 15. Commitments and Contingencies

Minimum Commitment Arrangements

The Company may enter into non-binding purchase agreements with suppliers to acquire inventory and other materials during the normal course of business. The Company did not have any minimum purchase commitment arrangements.

Legal Proceedings

From time to time, the Company may face legal claims or actions in the normal course of business. At each reporting date, the Company evaluates whether a potential loss amount or a potential range of loss is probable and reasonably estimable under the provisions of the authoritative guidance that address accounting for contingencies. The Company expenses as incurred the costs related to its legal proceedings.

In July 2021, Continuous Composites Inc. (“Continuous Composites”), a company based out of Idaho, brought a claim in the United States District Court for the District of Delaware against the Company regarding patent infringement. While the Company takes any claims of infringement seriously, Markforged believes that Continuous Composites’ claims are baseless and without merit. The Company intends to mount a vigorous defense against Continuous Composites in court. However, the Company can provide no assurance as to the outcome of any such disputes, and any such actions may result in judgments against Markforged for significant damages. The Company does not believe that a loss is probable or that the amount of loss is reasonably estimable in this matter at this time.

Note 16. Net Profit (Loss) Per Share

The Company computes basic net profit (loss) per share using net profit (loss) attributable to the Company’s common stockholders and the weighted-average number of common shares outstanding during each period. Diluted earnings per share include shares issuable upon exercise of outstanding stock options and stock-based awards where the conversion of such instruments would be dilutive.

(in thousands, except per share amounts)	Year Ended December 31,	
	2023	2022
<u>Numerator:</u>		
Net loss.....	\$ (103,567)	\$ (25,388)
Net loss attributable to common stockholders - Basic & Diluted.....	<u>(103,567)</u>	<u>(25,388)</u>
<u>Denominator:</u>		
Weighted average shares outstanding - Basic.....	196,896,011	189,747,367
Add: Weighted average unvested options outstanding	—	—
Add: Dilutive effect of restricted units issued.....	—	—
Weighted average shares outstanding - Diluted.....	<u>196,896,011</u>	<u>189,747,367</u>
<u>Net loss per common share:</u>		
Basic.....	\$ (0.53)	\$ (0.13)
Diluted.....	(0.53)	(0.13)

For the years ended December 31, 2023 and 2022, the Company was in a net loss position, thus the effect of potentially dilutive securities, including non-vested stock options, and warrants, was excluded from the denominator for the calculation of diluted net loss per share because the inclusion of such securities would be antidilutive. The following dilutive securities are excluded from the denominator:

	Year Ended December 31,	
	2023	2022
Unvested RSUs	13,075,215	11,040,595
Unvested or unexercised option awards	11,113,273	11,922,334
Warrants	8,524,984	8,524,984
Contingently issuable earnout shares.....	<u>14,666,667</u>	<u>14,666,667</u>
Total	<u>47,380,139</u>	<u>46,154,580</u>

Note 17. Segment Information

In the operation of the business, the Chief Executive Officer, who is the Company's chief operating decision maker ("CODM") is the person responsible for making resource allocation decisions. Operating segments are components of the business for which the CODM regularly reviews discrete financial information. The Company manages its operations as a single segment for the purposes of assessing performance and making operating decisions.

The Company currently sells its product in the Americas, Europe, Middle East and Africa ("EMEA"), and Asia Pacific ("APAC") markets. The Company measures revenue based on the physical location of where the customer who is receiving the promised goods or service is located. Disaggregated revenue data for those markets is as follows:

(in thousands)	Year Ended December 31,	
	2023	2022
Americas	\$ 43,715	\$ 46,638
EMEA	29,744	30,185
APAC	20,325	24,135
Total	<u>\$ 93,784</u>	<u>\$ 100,958</u>

Revenue generated from customers within the Company's country of domicile, the United States, amounted to \$38.2 million and \$43.8 million for the years ended December 31, 2023 and 2022, respectively. The Company's long-lived assets are primarily located in the United States, where the Company's headquarters and primary operations are located. Approximately 17% of our long-lived assets are located in Sweden, where we perform research and development activities related to our binder-jetting technology.