

**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 October 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 0-19807**

synopsyslogoa21.jpg

SYNOPSYS, INC.

(Exact name of registrant as specified in its charter)

Delaware

(State or other jurisdiction of
incorporation or organization)

675 Almanor Avenue

Sunnyvale, California

(Address of principal executive offices)

56-1546236

(I.R.S. Employer
Identification No.)

94085

(Zip Code)

(650) 584-5000

(Registrant's telephone number, including area code)

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 of \$0.01 per share)	SNPS	Nasdaq Global Select Market

Securities Registered Pursuant to Section 12(g) of the Act: **None**

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

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

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

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

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

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

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

Indicate by check mark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its

internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report. ☐

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

Indicate by check mark whether any of those error corrections are restatements that required a recovery analysis of incentive-based compensation received by any of the registrant's executive officers during the relevant recovery period pursuant to § 240.10D-1(b). ☐

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

The aggregate market value of the voting and non-voting common equity held by non-affiliates computed by reference to the price at which the common equity was last sold as of the last business day of the registrant's most recently completed second fiscal quarter was approximately \$46.4 billion. Aggregate market value excludes an aggregate of approximately 27.3 million shares of the registrant's common stock, par value of \$0.01 per share (Common Stock) held by the registrant's executive officers and directors and by each person known by the registrant to own 5% or more of the outstanding common stock on such date. Exclusion of shares held by any of these persons should not be construed to indicate that such person possesses the power, direct or indirect, to direct or cause the direction of the management or policies of the registrant, or that such person is controlled by or under common control with the registrant.

On December 6, 2023, 151,986,878 shares of Common Stock were outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's definitive Proxy Statement relating to the registrant's 2024 Annual Meeting of Stockholders, scheduled to be held on April 10, 2024, are incorporated by reference into Part III of this Annual Report on Form 10-K where indicated. Except as expressly incorporated by reference, the registrant's Proxy Statement shall not be deemed to be part of this report.

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Cautionary Note Regarding Forward-Looking Statements

This Annual Report on Form 10-K (this Form 10-K or the Annual Report) contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended (the Securities Act), Section 21E of the Securities Exchange Act of 1934, as amended (the Exchange Act), and the Private Securities Litigation Reform Act of 1995. Any statements herein that are not statements of historical fact are forward-looking statements. Words such as “may,” “will,” “could,” “would,” “can,” “should,” “anticipate,” “expect,” “intend,” “believe,” “estimate,” “project,” “continue,” “forecast,” “likely,” “potential,” “seek,” or the negatives of such terms and similar expressions are intended to identify forward-looking statements. This Form 10-K includes, among others, forward-looking statements regarding:

- our business, product and platform strategies and business outlook;
- the impact of macroeconomic conditions, increased global inflationary pressures and interest rates, potential economic slowdowns or recessions, legislative developments, trade disruptions, including export control restrictions, geopolitical pressures and conflicts, supply chain disruptions and fluctuations in foreign exchange rates on our business and our customers’ businesses;
- the exploration of strategic alternatives for our Software Integrity segment;
- regulatory changes in the United States and other regions in which we operate;
- demand for our products and our customers’ products;
- the expected realization of our contracted but unsatisfied or partially unsatisfied performance obligations (backlog);
- customer license renewals;
- our ability to successfully compete in the markets in which we serve;
- our license mix, business model and variability in our revenue;
- the continuation of current industry trends towards customer and vendor consolidation, and the impact of such consolidation;
- prior and future acquisitions, including the expected benefits and risks of completed acquisitions;
- the completion of development of our unfinished products, or further development or integration of our existing products;
- technological trends in integrated circuit design;
- the status of litigation and/or regulatory investigations;
- our ability to protect our intellectual property;
- our ability to attract and retain senior management and key employees worldwide;
- the impact of tax laws and changes in such laws on our business;
- our cash, cash equivalents and cash generated from operations; and

- our future liquidity requirements.

These statements are based on our current expectations about future events and involve certain known and unknown risks, uncertainties and other factors that could cause our actual results, time frames or achievements to differ materially from those expressed or implied in our forward-looking statements. Accordingly, we caution readers not to place undue reliance on these statements. Such risks and uncertainties include, among others, those listed in Part I, Item 1A, Risk Factors and Item 3, Legal Proceedings; and Part II, Item 7, Management's Discussion and Analysis of Financial Condition and Results of Operations, Item 7A, Quantitative and Qualitative Disclosures About Market Risk and Item 9A, Controls and Procedures of this Annual Report on Form 10-K. The information included herein represents our estimates and assumptions as of the date of this filing. Unless required by law, we undertake no obligation to update publicly any forward-looking statements, or to update the reasons actual results could differ materially from those anticipated in these forward-looking statements, even if new information becomes available in

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the future. All subsequent written or oral forward-looking statements attributable to Synopsys, Inc. or persons acting on our behalf are expressly qualified in their entirety by these cautionary statements. Readers are urged to carefully review and consider the various disclosures made in this report and in other documents we file from time to time with the Securities and Exchange Commission (SEC) that attempt to advise interested parties of the risks and factors that may affect our business.

Fiscal Year End

Our fiscal year ends on the Saturday nearest to October 31 and consists of 52 weeks, with the exception that approximately every five years, we have a 53-week year. When a 53-week year occurs, we include the additional week in the first quarter to realign fiscal quarters with calendar quarters. Fiscal 2023, 2022 and 2021 were 52-week years and ended on October 28, 2023, October 29, 2022, and October 30, 2021, respectively. Fiscal 2024 will be a 53-week year.

For presentation purposes, this Annual Report on Form 10-K refers to the closest calendar month end.

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PART I

Item 1. Business

Company and Segment Overview

Synopsys, Inc. (Synopsys, we, our or us) provides products and services used across the entire Silicon to Software spectrum to bring Smart Everything to life. From engineers creating advanced semiconductors to product teams developing advanced electronic systems to software developers seeking to ensure the security and quality of their code, our customers trust that our technologies will enable them to meet new requirements for energy efficiency, reliability, mobility, security and more.

We are a global leader in supplying the electronic design automation (EDA) software that engineers use to design and test integrated circuits (ICs), also known as chips or silicon. We provide software and hardware used to validate the electronic systems that incorporate chips and the software that runs on them, including cloud-based digital design flow to boost chip-design development productivity. We also provide technical services and support to help our customers develop advanced chips and electronic systems. These products and services are part of our Design Automation segment.

We also offer a broad and comprehensive portfolio of semiconductor intellectual property (IP) products, which are pre-designed circuits that engineers use as components of larger chip designs rather than designing those circuits themselves. These products and services are part of our Design IP segment.

We are also a leading provider of software tools and services that improve the security, quality and compliance of software in a wide variety of industries, including electronics, financial services, automotive, medicine, energy and industrials. These tools and services are part of our Software Integrity segment.

Corporate Information

We incorporated in 1986 in North Carolina and reincorporated in 1987 in Delaware. Our headquarters are located at 675 Almanor Avenue, Sunnyvale, California 94085, and our headquarters' telephone number is (650) 584-5000. Our website is <https://www.synopsys.com/>. We have approximately 122 offices worldwide.

Our Annual Report on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, Proxy Statements, including those relating to our Annual Meeting of Stockholders, and any amendments to such reports or other information filed or furnished pursuant to Section 13(a) or 15(d) of the Exchange Act are available through the Investor Relations page of our website (<https://investor.synopsys.com/overview/default.aspx>) free of charge as soon as reasonably practicable after we file them with, or furnish them to, the SEC (www.sec.gov). We use our Investor Relations page as a routine channel for distribution of important information, including, among other things, news releases, investor presentations and financial information and to comply with our disclosure obligations under Regulation Fair Disclosure. The contents of our website are not part of this Annual Report on Form 10-K and shall not be deemed incorporated by reference.

Background

In this era of Smart Everything, we have seen a remarkable proliferation of consumer and wireless electronic products, particularly mobile devices. The growth of the Internet and cloud computing has provided people with new ways to create, store, and share information. At the same time, the increasing use of electronics in cars, buildings, appliances, and other consumer products is creating a connected landscape of smart devices. Numerous software applications have been developed to expand the potential of these connected devices. The increasing impact of artificial intelligence (AI) and machine learning is driving an increase in the activity of new and existing chip and system design companies around the world.

These developments have been enabled by innovation in the semiconductor and software industries. It is now common for a single chip to combine many components (processor, communications, memory, custom logic, input/output) and embedded software into a single system-on-chip (SoC), necessitating highly complex chip designs. The most complex chips today contain more than a billion transistors. Transistors are the basic building blocks for ICs, each of which may have features that are less than 1/1,000th the diameter of a human hair.

These devices are manufactured using masks to direct beams of light onto a wafer of silicon. At such small dimensions, the wavelength of light itself can become an obstacle to production, proving too big to create such

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dense features and requiring creative and complicated new approaches. Designers have turned to new manufacturing techniques to solve these problems, such as multiple-patterning lithography, FinFET 3D transistors and Gate-All-Around Field-Effect transistor structures, which in turn have introduced new challenges to design and production.

The popularity of mobile devices and other electronic products has increased demand for chips and systems with greater functionality and performance, reduced size, and lower power consumption. Our customers, who design those products, are facing intense pressure to deliver innovative offerings in shorter timeframes and at lower prices. In other words, innovation in chip and systems design often hinges on providing products “better,” “sooner,” and “cheaper” than competitors. The design of these chips and systems is extremely complex and necessitates state-of-the-art solutions. Over the past several years, market verticals including AI, 5G, automotive and cloud computing infrastructure have contributed to the ongoing demand for our products and services.

A similar dynamic is at work in the software arena, whether the software is embedded on a chip or used in other applications. The pace of innovation often requires developers to deliver more secure, high-quality software, which can include millions of lines of code, in increasingly frequent release cycles. Bugs, defects and security vulnerabilities in code can be difficult to detect and expensive to fix. Despite these challenges, it is crucial to have high-quality, secure code to ensure consumers' privacy and safety, especially at a time when software is critical in many industries across a growing array of smart devices.

Our Role—As the Silicon to Software Partner

Synopsys' Silicon to Software technologies and services are designed to help our customers—chip and system engineers and software developers—speed up time to market, achieve the highest quality of results, mitigate risk, and maximize profitability.

Chip and systems designers must determine how best to design, locate and connect the building blocks of chips, and to verify that the resulting design behaves as intended and can be manufactured efficiently and cost-effectively. This is a complex, multi-step process that is expensive and time-consuming. Our wide range of products help at different steps in the overall design process, from the design of individual ICs to the design of larger systems. Our products increase designer productivity and efficiency by automating tasks, keeping track of large amounts of data, adding intelligence to the design process, facilitating reuse of past designs and reducing errors. Our IP products offer proven, high-quality pre-configured circuits that are ready to use in a chip design, saving customers time and enabling them to direct resources to features that differentiate their products. Our global service and support engineers provide expert technical support and design assistance to our customers.

Software developers are responsible for writing code that not only accomplishes its goals as efficiently as possible but also runs securely and is free of defects. We offer products that can help developers write higher quality, more secure code by analyzing code for quality defects and known security vulnerabilities, adding intelligence and automation to the software testing process, and helping to eliminate defects in a systematic manner. As developers make use of open source software in their code, our products can help developers better manage the composition and security of the code. Our products enable software developers to catch flaws earlier in the development cycle, when they are less costly to fix.

Products and Services

Design Automation Segment

Our Design Automation segment includes the EDA and Other revenue groups.

EDA

Designing ICs involves many complex steps, including, among others architecture definition, register transfer level (RTL) design, functional/RTL verification, logic design or synthesis, gate-level verification, floorplanning, place and route, and physical verification. Designers use our EDA products to automate the IC design process, reduce errors and enable more powerful and robust designs.

As the availability and amount of cloud-based data storage grows, customer interest in accessing EDA on the cloud is also increasing as customers seek to benefit from the scalability and flexibility that cloud computing can offer to their flows and engineering teams. While many of our solutions have been used in cloud-based environments for years, such as in a customer's own server and/or cloud environment, in fiscal 2022 we launched a Synopsys Cloud

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offering that provides customers additional options for accessing our EDA products in their own cloud environments and in the industry's first EDA Software-as-a-Service solution developed in partnership with Microsoft Azure.

Our solutions comprehensively address the design process, featuring a large number of EDA products that generally fall into the following categories:

- Digital and custom IC design and field programmable gate array (FPGA) design, which includes software tools to design, verify, implement and prepare an IC for manufacturing;
- Verification, which includes technology to verify that an IC design behaves as intended;
- Manufacturing, which includes products that both enable early manufacturing process development and convert IC design layouts into the masks used to manufacture the chips; and
- AI driven EDA solutions, which include AI and machine learning tools to complement our EDA software stack.

Digital and Custom IC Design

Our Digital Design Family provides customers with a comprehensive digital design implementation solution that includes industry-leading products and redefines conventional design tool boundaries to deliver a more integrated flow than ever before, with better quality and time to results. The platform gives designers the flexibility to integrate internally developed tools as well as those from third parties. With innovative technologies, a common foundation, and flexibility, our Digital Design Family helps reduce design times, decrease uncertainties in design steps, and minimize the risks inherent in advanced, complex IC design. The platform supports multiple technology nodes, including advanced nodes at 12nm, 10nm, 8/7nm, 6 nm, 5/4nm, and 3nm, with technology collaborations on next-generation process technologies.

Key design products are available as part of the Digital Design Family and include Fusion Compiler RTL to GDSII design implementation, Design Compiler® logic synthesis, IC Compiler II physical design, Synopsys TestMAX test and diagnosis, PrimeTime® static timing analysis, StarRC parasitic extraction, IC Validator physical verification and 3DIC Compiler, the industry's first next-generation chip packaging solution, aimed at enabling customers to combine or stack multiple dice on a single chip. Many of our EDA solutions are bolstered by AI and machine learning capabilities. In addition, we offer Synopsys.ai™, the first product in the market that brings AI to the entire design process. This groundbreaking solution handles design complexity and takes over repetitive tasks such as design space exploration, verification coverage and regression analytics, as well as test program generation, while helping to optimize power, performance, and area. This frees up engineers to focus on chip quality and differentiation and enables them to quickly migrate their chip designs from foundry to foundry or from process node to process node.

Our Custom Design Family is a unified suite of design and verification tools that accelerates the transistor-level design of robust analog, mixed-signal, and custom-digital ICs. The platform features visually assisted layout automation, high-performance circuit simulation,

reliability-aware verification, and natively integrated StarRC extraction and physical verification. This product family includes Custom Compiler layout and schematic editor, StarRC parasitic extraction, IC Validator physical verification and PrimeSim. The PrimeSim solution integrates PrimeSim SPICE, PrimeSim HSPICE, PrimeSim Pro and PrimeSim XA. The PrimeWave design environment is also included and provides comprehensive analysis and improved productivity and ease of use across all tools in PrimeSim.

Our Silicon Lifecycle Management (SLM) Family is a data analytics-driven platform that uses in-chip monitoring and sensing to optimize all phases of the silicon lifecycle—from design and manufacturing to in-field deployment and maintenance. The solution is integrated with the Digital Design Family for design calibration and analytics and includes Yield Explorer® for product ramp analytics, SiliconDash for test and production analytics, TestMAX ALE (adaptive learning engine) for intelligent data extraction and communication to the SLM database and DesignWare PVT IP for in-chip monitoring and sensing.

FPGA Design

FPGAs are complex chips that can be customized or programmed to perform a specific function after they are manufactured. For FPGA design, we offer Synplify® implementation software.

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Verification

Our Verification Family is built from our industry-leading verification technologies, providing virtual prototyping, static and formal verification, simulation, emulation, FPGA-based prototyping, and debug in a unified environment with verification IP, planning, and coverage technology. By providing consistent compile, runtime and debug environments across the flow of verification tasks and by enabling seamless transitions across functions, the platform helps our customers accelerate chip verification, bring up software earlier, and get to market sooner with advanced SoCs.

The individual products and solutions included in the Verification Family include the following:

- VC SpyGlass family of static verification technologies including lint, CDC (clock domain crossing), RDC (reset domain crossing), Constraint Checking, Synopsys TestMAX Advisor, and low-power analysis and verification;
- VCS[®] functional verification solution, our comprehensive RTL and gate-level simulation technology, including Fine-Grained Parallelism;
- Verdi[®] automated debug system, the industry's most comprehensive SoC debug;
- VC Formal, our next-generation formal verification product;
- ZeBu[®] emulation systems, which use high-performance hardware to emulate SoC designs so that designers can accelerate hardware, software and power verification of large complex SoCs and perform earlier verification and optimization of the SoC together with software;
- HAPS[®] FPGA-based prototyping systems, which are integrated and scalable hardware-software solutions for early software development and faster time to market;
- Virtualizer virtual prototyping solution, which addresses the increasing development challenges associated with software-rich semiconductor and electronic products by accelerating both the development and deployment of virtual prototypes; and
- Platform Architect solution, which provides for early analysis and optimization of multi-core SoC architectures for performance and power; and
- Other principal individual verification solutions, including the PrimeSim solution and the PrimeWave design environment.

Manufacturing

Our manufacturing solutions include Sentaurus technology computer-aided design device and process simulation products, Proteus mask synthesis tools, CATS[®] mask data preparation software, Yield Explorer[®] Odyssey, Yield-Manager[®] yield management solutions and QuantumATK atomic-scale modeling software.

We also provide consulting and design services that address all phases of the SoC development process, as well as a broad range of expert training and workshops on our latest tools and methodologies.

AI Driven EDA Stack

Our EDA software stack spanning design, verification, and manufacturing is augmented with AI and machine learning through our Synopsys.ai suite of complementary solutions. Starting in design with design space optimization that autonomously learns through quickly exploring potential design alternatives, enabling engineers to develop superior design outcomes with significantly reduced effort as well as learning-based design retargeting to derivative processes, improved test coverage through AI-driven models while reducing test vectors and tester time, and analysis of silicon performance and quality that is leveraged for optimizing next-generation revisions of design. The Synopsys.ai solutions include:

- DSO.ai – Design Space Optimization for best quality of results and productivity with scaling of exploration design workflows;

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- VSO.ai – Verification Space Optimization for improved functional verification coverage & faster turnaround time;
- TSO.ai – Test Space Optimization for reduced pattern count, turnaround time and higher coverage;
- ASO.ai – Analog Space Optimization for analog layout optimization & migration;
- Design.da – Design data analytics for actionable insights to unlock untapped power, performance, and area;
- Silicon.da – Silicon data analytics for root-cause analysis and part-level traceability of failures; and
- Fab.da – Manufacturing data analytics for improved process control, time-to-market, and user productivity.

Other

Our Other product group includes revenue from sales of products to university programs as well as our optical products, mechatronic simulation, and the impact of gains and losses from foreign currency hedges.

Design IP Segment

Our Design IP segment includes our Design IP products, which service companies primarily in the semiconductor and electronics industry.

Design IP Products

As more functionality converges into a single chip or even a multi-die system, the number of third-party IP blocks incorporated into designs is rapidly increasing. We provide the broadest, most comprehensive portfolio of high-quality, silicon-proven IP solutions for SoCs. Our broad Synopsys IP portfolio includes:

- High-quality solutions for widely used wired and wireless interfaces such as USB, PCI Express, DDR, Ethernet, MIPI, HDMI, and Bluetooth Low Energy;
- Logic libraries and embedded memories, including memory compilers, non-volatile memory, and standard cells with integrated test and repair;
- Processor solutions, including configurable ARC® processors, Neural Network processors, Digital Signal Processor cores, and software and application-specific instruction-set processor tools for embedded applications;
- Security IP solutions, including cryptographic cores and software, security subsystems, platform security and secured interface IP;
- An industry-leading IP offering for the automotive market, optimized for strict functional safety and reliability standards such as ISO 26262; and
- SoC infrastructure IP, datapath and building block IP, mathematical and floating-point components, Arm® AMBA® interconnect fabric and peripherals, and verification IP.

Our IP Accelerated initiative augments our established, broad portfolio of silicon-proven Synopsys IP with IP Prototyping Kits and customized IP subsystems to accelerate prototyping, software development, and integration of IP into SoCs.

We offer a broad portfolio of IP that has been optimized to address specific application requirements for the mobile, automotive, digital home, Internet of things, and cloud computing markets, enabling designers to quickly develop SoCs in these areas.

Software Integrity Segment

Our Software Integrity segment helps organizations align people, processes and technology to intelligently address software risks across their portfolio and at all stages of the application lifecycle. The testing tools, services, and programs enable our customers to manage open source license compliance and detect, prioritize, and remediate security vulnerabilities and defects across their entire software development lifecycle. Our offerings include security

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and quality testing products, managed services, programs and professional services, and training offered as on-premises and cloud-based delivery.

The Polaris Software Integrity Platform is designed to bring our products and services together into an integrated, easy-to-use solution that enables security and development teams to build secure, high-quality software faster.

Key offerings in this space include:

- Intelligent Orchestration solution, which enables DevOps to build a testing pipeline that enables a company to define—within its particular policy guidelines—the rules to determine which tests to run, including the Synopsys portfolio tests, third party products, or open source tests;
- Software Risk Manager, which correlates and prioritizes findings from the Synopsys portfolio, third party products, and open source tools, providing a comprehensive view of software security risk;
- Coverity® static analysis tools, which analyze software code to find crash-causing bugs, incorrect program behavior, the latest security vulnerabilities, memory leaks and other performance-degrading flaws;
- Black Duck software composition analysis tools, which scan binary and source code for license and compliance issues and other known security vulnerabilities stemming from incorporated third-party and open source code;
- WhiteHat® Dynamic, our latest dynamic application security testing solution, which rapidly and accurately finds vulnerabilities in websites and applications;
- Seeker® IAST tool, which identifies exploitable security vulnerabilities while web applications are running, thereby verifying results and eliminating false positives; and
- Defensics® fuzz testing tools, which examine security vulnerabilities in software binaries and libraries, particularly network protocols and file formats, by systematically sending invalid or unexpected inputs to the system under test.

Managed services allow developers to test code across many dimensions, and to rapidly respond to changing testing requirements and evolving threats. This includes mobile application security testing services to find vulnerabilities in mobile applications as well as dynamic application security testing services, which identify security vulnerabilities while web applications are running, without the need for source code.

Programs and professional services address unique security and quality needs with specialized consulting by skilled experts, including the Building Security in Maturity Mode, which measures the effectiveness of software security initiatives by assessing the current state as compared to industry benchmarks, and the Black Duck on demand audit services, which provides open source compliance and software vulnerability assessments as part of the due diligence process for mergers and acquisitions.

Finally, training includes eLearning and instructor-led training that prepares developers and security professionals to build security and quality into their software development process and remediate found vulnerabilities and defects.

Customer Service and Technical Support

A high level of customer service and support is critical to the adoption and successful use of our products. We provide technical support for our products through application engineering teams.

Post-contract customer support includes providing frequent updates to maintain the utilization of the software due to rapid changes in technology. In our Design Automation and Design IP segments, post-contract customer support for our EDA and IP products also includes access to the SolvNet® Plus portal, where customers can explore our complete design knowledge database, get self-help and get support. Updated regularly, the SolvNet Plus portal includes technical documentation, design tips and answers to user questions. Customers can also engage, for additional charges, with our worldwide network of applications consultants for additional support needs.

In our Software Integrity segment, post-contract customer support for our products includes access to our support community portal, where customers can access our product documentation, self-service training materials, customer forums and our product knowledge base. Customers can also raise support tickets, request replacement license keys and validate the terms of their active license keys through the portal. Our support community portal is

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frequently updated with new and supplemental materials on a variety of topics. Customers may engage dedicated support engineers for an additional charge.

In addition, we offer training workshops designed to increase customer design proficiency and productivity with our products. Workshops cover our EDA products and methodologies used in our design and verification flows, as well as specialized modules addressing systems design, logic design, physical design, simulation and testing. We offer regularly scheduled public and private courses in a variety of locations worldwide, as well as online training (live or on-demand) through our Virtual Classrooms.

Product Warranties

We generally warrant our products to be free from defects in media and to substantially conform to material specifications for a period of 90 days for our software products and for up to six months for our hardware products. In certain cases, we also provide our customers with limited indemnification with respect to claims that their use of our software products infringes on patents, copyrights, trademarks or trade secrets. We have not experienced material warranty or indemnity claims to date.

Support for Industry Standards

We actively create and support standards that help our EDA and IP customers increase productivity, facilitate efficient design flows, improve interoperability of tools from different vendors and ensure connectivity, functionality and interoperability of IP building blocks. Standards in the electronic design industry can be established by formal accredited organizations, industry consortia, company licensing made available to all, de facto usage, or through open source licensing.

In our Design Automation segment, our EDA products support many standards, including the most commonly used hardware description languages: SystemVerilog, Verilog, VHDL and SystemC. Our products utilize numerous industry-standard data formats, APIs and databases for the exchange of design data among our tools, other EDA vendors' products and applications that customers develop internally.

In our Design IP segment, we comply with a wide range of industry standards within our IP product family to ensure usability and interconnectivity.

In our Software Integrity segment, our solutions support several existing and emerging industry standards for software coding and security, such as the Motor Industry Software Reliability Association coding standards for the automotive industry. In addition, our products support multiple major programming languages, including C/C++, Objective C, C#, JavaScript (including many commonly used frameworks), and others. In addition, we support many common compilers, development environments, frameworks, and data and file formats.

Sales and Distribution

Our Design Automation and Design IP segment customers are primarily semiconductor and electronics systems companies. The customers for products in our Software Integrity segment include many of these companies as well as companies from a wider array of industries, including electronics, financial services, automotive, medicine, energy and industrials.

We market our products and services principally through direct sales in the United States and our principal foreign markets. Our Software Integrity segment continues to grow its indirect sales partner program, enabling our Software Integrity segment to engage geographies beyond the reach of our direct sales force and opening opportunities in targeted vertical markets. We typically distribute our software products and documentation to customers electronically, but provide physical media (e.g., DVD-ROMs) when requested by the customer.

We maintain sales and support centers throughout the United States. Outside the United States, we maintain sales, support or service offices in Canada, multiple countries in Europe, Israel and throughout Asia, including Japan, China, Korea, India and Taiwan. Our offices are further described under Part I, Item 2, Properties of this Annual Report on Form 10-K.

Information relating to domestic and foreign operations, including revenue and long-lived assets by geographic area, is contained in Part II, Item 8, Financial Statements and Supplementary Data of this Annual Report on Form 10-K. Risks related to our foreign operations are described in Part I, Item 1A, Risk Factors of this Annual Report on Form 10-K.

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Revenue Attributable to Product Groups

Revenue from our products and services is categorized into four groups:

- EDA, which includes digital and custom IC design software, verification hardware and software products, manufacturing-related design products, FPGA design software, AI driven EDA solutions, and professional services;
- Design IP, which includes our Synopsys IP portfolio;
- Software Integrity, which includes solutions that test software code for security vulnerabilities and quality defects, as well as professional and managed services; and
- Other, which includes university programs, optical products, mechatronic simulation, and the impact of gains and losses from foreign currency hedges.

Revenue attributable to each of our four product groups is shown below as a percentage of our total revenue for those fiscal years.

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Aggregate revenue derived from one of our customers and its subsidiaries through multiple agreements accounted for 12.4%, 11.7% and 10.6% of our total revenue in fiscal 2023, 2022 and 2021, respectively.

Product Sales and Licensing Agreements

We typically license our software to customers under non-exclusive license agreements that restrict use of our software to specified purposes within specified geographical areas. The majority of licenses to our EDA products are network licenses that allow a number of individual users to access the software on a defined network, including, in some cases, regional or global networks. The majority of licenses to our Software Integrity products are capacity or user licenses that allow a number of users to access the software based on a specified number of team members or specified code-bases in a defined territory. License fees depend on the type of license, product mix, and number of copies of each product licensed.

For a full discussion of our software product offerings, see Part II, Item 7, Management's Discussion and Analysis of Financial Condition and Results of Operations of this Annual Report on Form 10-K.

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We typically license Synopsys IP products under nonexclusive license agreements that provide usage rights for specific designs. Fees under these licenses are typically charged on a per design basis plus, in some cases, royalties. See Note 2. Significant Accounting Policies and Bases of Presentation of the Notes to Consolidated Financial Statements for further information.

Our hardware products, which principally consist of our prototyping and emulation systems, are either sold or leased to our customers. Risks related to disruptions in our supply chain affecting our business are described in Part I, Item 1A, Risk Factors of this Annual Report on Form 10-K.

Our professional services team typically provides design consulting services to our customers under consulting agreements with statements of work specific to each project.

Competition

Within our Design Automation segment, we compete against other EDA vendors and against our customers' own design tools and internal design capabilities. The EDA industry is highly competitive. In general, we compete principally on technology leadership, product quality and features (including ease-of-use), license terms, price and payment terms, post-contract customer support, flexibility of tool use, and interoperability with our own and other vendors' products. We also deliver a significant amount of engineering and design consulting for our products. No single factor drives an EDA customer's buying decision, and we compete on all fronts to capture a higher portion of our customers' budgets. Our competitors include EDA vendors that offer varying ranges of products and services, such as Cadence Design Systems, Inc. and Siemens EDA. We also compete with other EDA vendors, including new entrants to the marketplace, that offer products focused on one or more discrete phases of the IC design process, as well as with customers' internally developed design tools and capabilities.

Within our Design IP segment, Synopsys competes against numerous other IP providers, including Cadence Design Systems, Inc., and our customers' internally developed IP. We generally compete on the basis of product quality, reliability, features, availability of titles for new manufacturing processes, ease of integration with customer designs, compatibility with design tools, license terms, price and payment terms, and customer support.

Our Software Integrity segment competes with numerous solution providers, many of which focus on specific aspects of software security or quality analysis. We also compete with frequent new entrants, which include start-up companies and more established software companies. For example, competitors named in the Gartner Magic Quadrant for Application Security Testing include Checkmarx Ltd., Veracode, Inc., Open Text Corporation, GitHub, Inc. and Snyk Ltd.

Risks related to competitive factors affecting our business are described in Part I, Item 1A, Risk Factors of this Annual Report on Form 10-K.

Proprietary Rights

We primarily rely upon a combination of copyright, patent, trademark, and trade secret laws and license and non-disclosure agreements to establish and protect our proprietary rights. We have a diversified portfolio of more than 3,300 United States and foreign patents issued,

and we will continue to pursue additional patents in the future. Our issued patents have expiration dates through 2044 and generally have a term of twenty years from filing. Our patents primarily relate to our products and the technology used in connection with our products. Our source code is protected both as a trade secret and as an unpublished copyrighted work. However, third parties may independently develop similar technology. In addition, effective copyright and trade secret protection may be unavailable or limited in some foreign countries. While protecting our proprietary technology is important to our success, our business as a whole is not significantly dependent upon any single patent, copyright, trademark, or license.

In many cases, under our customer agreements and other license agreements, we offer to indemnify our customers if the licensed products infringe on a third party's intellectual property rights. As a result, we may from time to time need to defend claims that our customers' use of our products infringes on these third-party rights. We license software and other intellectual property from third parties, including, in several instances, for inclusion in our products. Risks related to our use of third-party technology are described in Part I, Item 1A, Risk Factors of this Annual Report on Form 10-K.

Environment, Social and Governance Matters

At Synopsys, our Smart Future Environment, Social and Governance (ESG) strategy provides a framework for how we manage our own operational impact on the world and our ability to influence others to do the same, as we

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believe this approach supports the success of the business. We leverage our strategy and our corporate governance processes to assess and manage the ESG matters that are relevant to our business as part of our efforts to operate in a sustainable manner.

We aim to influence positive social and environmental change across our ecosystem by applying our resources, competencies, and team-based problem-solving approach. Our technology is in action in countless ways, from bringing safety and security to the driverless car revolution to enabling the technologies that are an increasingly vital component of protecting human health and well-being.

The Corporate Governance and Nominating Committee of our Board of Directors is responsible for overseeing policies; practices; priority and risk assessments; risk management initiatives, goals and progress toward goals; and public disclosures relating to ESG matters, except to the extent delegated to other committees of our Board of Directors, such as matters related to human capital management and diversity, equity and inclusion.

Additional information about our approach to our ESG priorities is available on our ESG website, including our Environmental Policy and our ESG Report. The contents of our website and ESG Report are referenced for general information only and are not incorporated into this Annual Report on Form 10-K.

Human Capital Resources

At Synopsys, we are committed to empowering our employees to pursue their passion, challenge themselves and their peers, and make their mark on the world. We believe this creates value for us, our stockholders, and the lives of the people we impact every day. Our commitment to attracting, developing and retaining top talent makes this goal possible and our constant pursuit of improving our employees' experience promotes a culture where employees can thrive in their career. As of our fiscal 2023 year-end, Synopsys had approximately 20,300 employees, with approximately 24% in the United States and 76% in other locations around the world. Approximately 80% of our employees are engineers, and over half of those employees hold Masters' or PhD degrees. The human capital measures and objectives that we focus on include recruitment and retention; diversity, equity and inclusion; total rewards; employee health, safety, and wellbeing; employee engagement and development; and succession planning.

Risks related to our human capital are described in Part I, Item 1A, Risk Factors of this Annual Report on Form 10-K.

Recruitment and Retention

Our workforce is representative of the industry we serve. In fiscal 2023, we increased our employee headcount by approximately 7%, with a continued focus on promoting gender diversity with respect to those in technical and senior level positions and ensuring a vibrant talent pipeline with early career hiring and investment in training and development. As of our fiscal 2023 year-end, our undesired turnover rate was 2.7%.¹ We attribute the strong retention of our talented workforce to a number of factors, including exciting and challenging assignments; growth opportunities; strong leadership and management; a culture of integrity; our commitment to diversity, equity and inclusion; competitive and equitable compensation and benefits; our leading products and technology; and the strength of our customer relationships.

Diversity, Equity and Inclusion

We seek to integrate diversity, equity and inclusion into our corporate values at every level—from our foundation of integrity to our execution excellence and from our dedicated leadership to our united passion for a better tomorrow. We strive to maintain a culture that values different perspectives and backgrounds, where everyone is treated with respect for who they are, and where people feel a sense of belonging. We believe this is not only essential for our success as a global leader in innovation, but also for the success of our employees in their own careers. We value the diversity of our teams, talent pipelines and pay and development programs, with a goal to ensure inclusive, equitable practices. We carefully study retention trends and feedback from diverse groups to identify areas where we can improve.

¹ We calculate undesired turnover rate by dividing the number of undesired exits from Synopsys by the average headcount for fiscal 2023, and we define undesired turnover as exits by high-performing employees who resigned from Synopsys (or its subsidiaries) to pursue other work opportunities. Undesired turnover does not include employees with low performance, mutual resignations, or resignations due to personal reasons (e.g., retirement or returning to school).

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As of our fiscal 2023 year-end:

- Women comprised 25.4% of our global workforce;
- Women in senior level positions comprised 13.1% of all senior level positions at the company; and
- U.S. Black, Latinx, and Indigenous persons comprised 5.8% of our U.S. workforce.

We provide training designed to encourage equitable and inclusive behavior to attract, retain and develop our workforce. In addition, our Employee Resource Groups, which are vital to our Synopsys community, host events and implement actions to attract and engage diverse talent and foster an inclusive workplace.

In fiscal 2023, we included workforce metrics such as diversity, employee retention and employee engagement as incentive plan goals for our executive officers to advance key diversity and human capital initiatives. We believe these initiatives help to ensure that we continue to seek out strong, diverse, qualified candidates, and that we develop and retain key talent.

Total Rewards

Our Total Rewards are designed to offer meaningful benefits and compensation for the time, energy, commitment, skills, and expertise employees bring to the company every day. We have practices in place that are intended to deliver fair and equitable compensation for employees based on their contribution and performance. We benchmark market practices and regularly review our compensation and benefits against the market to help ensure that it is competitive. We also offer a comprehensive set of benefits for employees and their families, focused on physical, mental and financial health and wellbeing. Our compensation and benefit programs are tailored to the various geographies in which we operate, and for eligible employees may include:

- Market-competitive salary and cash bonus opportunity;
- Employee Stock Purchase Plan;
- Equity compensation;
- Robust medical, dental, vision, and wellness benefits;
- Comprehensive leave plans;
- Life insurance options;
- Retirement plans and associated benefits;
- Financial planning tools and employee assistance plans;
- Student loan repayment assistance;
- Cancer-specific prevention, early detection, treatment and support programs; and
- Parental resources and adoption benefits.

Health, Safety and Wellbeing

Our commitment to health, safety, and wellness was underscored this year by the support and resources we offered to help employees thrive in a hybrid work environment while balancing their personal lives. Through our Stronger Through Wellbeing campaign, our leaders and managers are encouraged to model the importance of health and wellbeing, and many create opportunities to engage in wellness-related activities as a team. We also offer a variety of programs and resources at no cost to employees and their family members to support their mental, emotional, and financial wellbeing.

Employee Engagement

We have a comprehensive employee feedback program, and we use the feedback to gain an understanding of the employee experience and to make improvements in a variety of areas—from how we interact with customers to how we share best practices, and more. Through our semi-annual SHAPE Synopsys surveys, we obtain employee insight into our values, manager effectiveness, ability to innovate, perceptions on diversity, inclusion and belonging,

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and other critical factors. We also use the surveys to create space for important conversations about who we are, where we are going, and how we can connect with each other and our work.

Approximately 94% of our employees participated in our SHAPE survey in May 2023. We received an engagement score of 82, which is calculated by computing the average score set to a 100-point scale, for all employee responses to the questions pertaining to employee satisfaction and job satisfaction. These results demonstrate Synopsys' stability, resiliency, and a global workforce that is highly engaged. We saw strong scores from our employees regarding their connection to our culture, their personal investment in Synopsys' strategies and objectives, and their team's ability to innovate. As we grow, we aspire to maintain our results-oriented culture by balancing productivity with smart investments in our employees' development, while also supporting individual wellbeing—two key drivers of the overall employee experience.

We believe ongoing performance feedback encourages greater engagement in our business and improved individual performance. Each year, our employees participate in our performance development process that summarizes key accomplishments for the preceding year, establishes new stretch goals, and identifies critical capabilities for development. As part of this process, we encourage managers to solicit and share supportive multi-rater feedback, further strengthening the focus on teamwork and team success.

Talent Development and Succession Planning

We offer several programs to support the career advancement of our employees. Through our digital learning platform, we foster and support an “always learning” culture where employees can access training, external articles, videos, and blogs. In addition, we host a series of in-person and on-demand learning sessions designed to build capability and adaptability required for the future. As employees advance in their careers, our training framework is intended to build new capabilities on established foundational skills.

Based upon the belief that our employees deserve great managers, our management training is designed to increase capability in the areas of communication, engagement, coaching, diversity, equity, and inclusion, hiring and on-boarding, and business skills and help promote an ethical and supportive work environment free from bias and harassment. In fiscal 2023, we introduced a new leadership training, and focused on helping our many managers thrive in connecting team work to company priorities while giving them the tools to be great coaches and leaders. In addition, our regions and business teams customize development programs for their specific needs.

Information about our Executive Officers

The executive officers of Synopsys and their ages as of December 12, 2023 were as follows:

Name	Age	Position
Aart J. de Geus	69	Chief Executive Officer and Chair of the Board of Directors
Sassine Ghazi	53	President and Chief Operating Officer
Shelagh Glaser	59	Chief Financial Officer
Richard Mahoney	61	Chief Revenue Officer
John F. Runkel, Jr.	68	General Counsel and Corporate Secretary

Aart J. de Geus co-founded Synopsys and has served as Chair of our Board of Directors since February 1998 and Chief Executive Officer since January 1994. He served as Co-Chief Executive Officer with Dr. Chi-Foon Chan from May 2012 until April 2022. Effective January 1, 2024, Dr. de Geus will transition into the role of Executive Chair of our Board of Directors. Since the inception of Synopsys in December 1986, Dr. de Geus has held a variety of positions, including President, Senior Vice President of Engineering and Senior Vice President of Marketing. He has served as a member of our Board of Directors since 1986, and as Chair of our Board of Directors from 1986 to 1992 and again from 1998 until his upcoming transition to Executive Chair on January 1, 2024. Dr. de Geus has also served on the board of directors of Applied Materials, Inc. since July 2007. Dr. de Geus holds an M.S.E.E. from the Swiss Federal Institute of Technology in Lausanne, Switzerland and a Ph.D. in Electrical Engineering from Southern Methodist University.

Sassine Ghazi has served as our Chief Operating Officer since August 2020, became our President in November 2021 and joined our Board of Directors in August 2023. Effective January 1, 2024, Mr. Ghazi will assume the role of President and Chief Executive Officer. Mr. Ghazi joined Synopsys in March 1998 as an Application Engineer and served as General Manager of the Design Group. Prior to joining Synopsys, Mr. Ghazi was a design engineer at Intel Corporation. Mr. Ghazi received his bachelor's degree in Business Administration from Lebanese American

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University; a B.S.E.E from the Georgia Institute of Technology in 1993; and an M.S.E.E. from the University of Tennessee in 1995.

Shelagh Glaser has served as our Chief Financial Officer since December 2022. Prior to joining Synopsys, Ms. Glaser served as Chief Financial Officer of Zendesk, Inc. from May 2021 to November 2022. Ms. Glaser previously served in senior finance roles at Intel Corporation, a multinational technology company, including serving as its Corporate Vice President and Chief Financial Officer and Chief Operating Officer for its Data Platform Group from July 2019 to May 2021 and serving as its Corporate Vice President and Chief Financial Officer and in various other senior roles in its Client Computing Group from December 2013 to July 2019. Ms. Glaser has served as a director and member of the Audit Committee at PubMatic, Inc. since June 2022. Ms. Glaser holds a B.A. in Economics from the University of Michigan and an M.B.A. in Finance from Carnegie Mellon University.

Richard Mahoney has served as our Chief Revenue Officer since November 2022. Mr. Mahoney joined Synopsys as a Special Projects Advisor in May 2022. Prior to joining Synopsys, Mr. Mahoney held several senior management positions with Ansys, Inc. from 2016 to 2022, including most recently as Senior Vice President of Worldwide Sales, Marketing and Customer Excellence from December 2016 to May 2022. Prior to joining Ansys, from 2014 to 2016, Mr. Mahoney was Senior Vice President, Design Enablement and International Sales, at Global Foundries, a semiconductor manufacturing company. Mr. Mahoney holds an A.S. in Computer Science from the Maxwell Institute of Technology.

John F. Runkel, Jr. has served as our General Counsel and Corporate Secretary since May 2014. From October 2008 to March 2013, he was Executive Vice President, General Counsel, and Corporate Secretary of Affymetrix, Inc. He served as Senior Vice President, General Counsel and Corporate Secretary of Intuitive Surgical, Inc. from 2006 to 2007. Mr. Runkel served in several roles at VISX, Inc. from 2001 to 2005, most recently as Senior Vice President of Business Development and General Counsel. Mr. Runkel was also a partner at the law firm of Sheppard, Mullin, Richter & Hampton LLP for 11 years. Mr. Runkel holds a Bachelor of Arts and a Juris Doctorate from the University of California, Los Angeles.

There are no family relationships among any Synopsys executive officers or directors.

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Item 1A. Risk Factors

A description of the risk factors associated with our business is set forth below. Some of these risks are highlighted in the following discussion, and in Management's Discussion and Analysis of Financial Condition and Results of Operations, Legal Proceedings, and Quantitative and Qualitative Disclosures About Market Risk. The occurrence of any of these risks or additional risks and uncertainties not presently known to us or that we currently believe to be immaterial could materially and adversely affect our business, operating results, financial condition, and stock price. These risks and uncertainties could cause our actual results to differ materially from the results contemplated by the forward-looking statements contained in this report. Investors should carefully consider all relevant risks and uncertainties before investing in our common stock.

Industry Risks

Uncertainty in the macroeconomic environment, and its potential impact on the semiconductor and electronics industries, may negatively affect our business, operating results and financial condition.

Uncertainty in the macroeconomic environment, including the effects of, among other things, increased global inflationary pressures and interest rates, potential economic slowdowns or recessions, supply chain disruptions, geopolitical pressures, fluctuations in foreign exchange rates and associated global economic conditions have resulted in volatility in credit, equity and foreign currency markets. This uncertain macroeconomic environment could lead some of our customers to postpone their decision-making, decrease their spending and/or delay their payments to us. Such caution by customers could, among other things, limit our ability to maintain or increase our sales or recognize revenue from committed contracts.

For example, we continue to experience an impact from the current macroeconomic environment in our Software Integrity segment as customers have applied elevated levels of scrutiny to purchasing decisions due in part to their own budget uncertainty, which has, in some cases, affected customer order size, pricing and/or contract duration. On November 29, 2023, we announced that we have decided to explore strategic alternatives for our Software Integrity segment. As a part of this process, our management is considering a full range of strategic opportunities. At this time we cannot predict the impact that such strategic alternatives might have on our business, operations or financial condition. This announcement and uncertainty could have a number of negative effects on our current business, including potentially disrupting our regular operations, diverting the attention of our workforce and management team and increasing undesired workforce turnover. It could also disrupt existing business relationships, make it harder to develop new business relationships, or otherwise negatively impact the way that we operate our business, which could negatively impact our business, operating results or financial condition.

If these macroeconomic uncertainties persist and economic conditions continue to deteriorate, then the semiconductor and electronics industries could fail to grow. Additionally, uncertain macroeconomic conditions could also have the effect of increasing other risks and uncertainties facing our business, which could have a material adverse effect on our operating results and financial condition. Such risks that may be heightened by uncertain macroeconomic conditions could include China's stated policy of becoming a global

leader in the semiconductor industry may lead to increased competition or further disruption of international trade relationships, including, but not limited to, additional government trade restrictions. For more on risks related to government export and import restrictions such as the U.S. government's Entity List and Export Regulations (as defined below), see "Industry Risks – We are subject to governmental export and import requirements that could subject us to liability and restrict our ability to sell our products and services, which could impair our ability to compete in international markets."

Adverse economic conditions affect demand for devices that our products help create, such as the ICs incorporated in personal computers, smartphones, automobiles and servers. Longer-term reduced demand for these or other products could result in reduced demand for design solutions and significant decreases in our average selling prices and product sales over time. Future economic downturns could also adversely affect our business, operating results and financial condition. In addition, if our customers or distributors build elevated inventory levels, we could experience a decrease in short-term and/or long-term demand for our products. If any of these events or disruptions were to occur, the demand for our products and services could be adversely affected along with our business, operating results and financial condition. Further, the negative impact of these events or disruptions may be deferred due to our business model.

Further economic instability could also adversely affect the banking and financial services industry and result in bank failures or credit downgrades of the banks we rely on for foreign currency forward contracts, credit and banking transactions, and deposit services, or cause them to default on their obligations. Additionally, the banking

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and financial services industries are subject to complex laws and are heavily regulated. There is uncertainty regarding how proposed, contemplated or future changes to the laws, policies and regulations governing our industry, the banking and financial services industry and the economy could affect our business, including increased global interest rates and global inflationary pressure. A deterioration of conditions in worldwide credit markets could limit our ability to obtain external financing to fund our operations and capital expenditures. In addition, difficult economic conditions may also result in a higher rate of losses on our accounts receivable due to credit defaults. Any of the foregoing could cause adverse effects on our business, operating results and financial condition, and could cause our stock price to decline.

The growth of our business depends primarily on the semiconductor and electronics industries.

The growth of the EDA industry as a whole, sales in our Design Automation and Design IP segments, and, to some extent, our Software Integrity segment sales are dependent on the semiconductor and electronics industries. A substantial portion of our business and revenue depends upon the commencement of new design projects by semiconductor manufacturers, systems companies and their customers. The increasing complexity of designs of SoCs, ICs, electronic systems and customers' concerns about managing costs have previously led to, and in the future could lead to, a decrease in design starts and design activity in general. For example, in response to this increasing complexity, some customers may choose to focus on one discrete phase of the design process or opt for less advanced, but less risky, manufacturing processes that may not require the most advanced EDA products. Demand for our products and services could decrease and our business, financial condition and operating results could be adversely affected if growth in the semiconductor and electronics industries slows or stalls, including due to increased global inflationary pressures and interest rates, a continued or worsening global supply chain disruption, geopolitical pressures or economic slowdowns or recessions. Additionally, as the EDA industry has matured, consolidation has resulted in stronger competition from companies better able to compete as sole source vendors. This increased competition may cause our revenue growth rate to decline and exert downward pressure on our operating margins, which would have an adverse effect on our business and financial condition.

Furthermore, the semiconductor and electronics industries have become increasingly complex and interconnected ecosystems. Many of our customers outsource the manufacturing of their semiconductor designs to foundries. Our customers also frequently incorporate third-party IP, whether provided by us or other vendors, into their designs to improve the efficiency of their design process. We work closely with major foundries to ensure that our EDA, IP and manufacturing solutions are compatible with their manufacturing processes. Similarly, we work closely with other major providers of semiconductor IP, particularly microprocessor IP, to optimize our EDA tools for use with their IP designs and to assure that their IP and our own IP products work effectively together, as we may each provide for the design of separate components on the same chip. If we fail to optimize our EDA and IP solutions for use with major foundries' manufacturing processes or major IP providers' products, or if our access to such foundry processes or third-party IP products is hampered, then our solutions may become less desirable to our customers, resulting in an adverse effect on our business and financial condition.

We operate in highly competitive industries, and if we do not continue to meet our customers' demand for innovative technology at lower costs, our products may not be competitive or may become obsolete.

In our Design Automation segment, we compete against EDA vendors that offer a variety of products and services, such as Cadence Design Systems, Inc. and Siemens EDA. We also compete with other EDA vendors, including new entrants to the marketplace, that offer products focused on one or more discrete phases of the IC design process. Moreover, our customers internally develop design tools and capabilities that compete with our products. In our Design IP segment, we compete against a growing number of silicon IP providers as well as our customers' internally developed IP. In our Software Integrity segment, we compete with other solution providers, many of which focus on specific aspects of software security or quality analysis. We also compete with frequent new entrants, which include start-up companies and more established software companies.

The industries in which we operate are highly competitive, with new competitors entering these markets both domestically and internationally. For example, China has implemented national policies favoring Chinese companies and has formed government-backed investment funds as it seeks to build independent EDA capabilities and compete internationally in the semiconductor industry. The demand for our products and services is dynamic and depends on a number of factors, including, among other things, demand for our customers' products, design starts and our customers' budgetary constraints. Technology in these industries evolves rapidly and is characterized by frequent product introductions and improvements as well as changes in industry standards and customer requirements. For example, the adoption of cloud computing and artificial intelligence (AI) technologies can bring new demand and also challenges in terms of disruption to both business models and our existing technology

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offerings. Our efforts in developing such new technology solutions, including, for example, our current efforts in creating cloud computing and AI solutions, may not succeed. Semiconductor device functionality requirements continually increase while feature widths decrease, which substantially increases the complexity, cost and risk of chip design and manufacturing. At the same time, our customers and potential customers continue to demand a lower total cost of design, which can lead to the consolidation of their purchases from one vendor. In order to succeed in this environment, we must successfully meet our customers' technology requirements and increase the value of our products, while also striving to reduce their overall costs and our own operating costs.

We compete principally on the basis of technology, product quality and features (including ease-of-use), license or usage terms, post-contract customer support, interoperability among products, and price and payment terms. Specifically, we believe the following competitive factors affect our success:

- Our ability to anticipate and lead critical development cycles and technological shifts, innovate rapidly and efficiently, improve our existing software and hardware products, and successfully develop or acquire such new products;
- Our ability to offer products that provide both a high level of integration into a comprehensive platform and a high level of individual product performance;
- Our ability to enhance the value of our offerings through more favorable terms such as expanded license usage, future purchase rights, price discounts and other differentiating rights, such as multiple tool copies, post-contract customer support, "re-mix" rights that allow customers to exchange the software they initially licensed for other Synopsys products, and the ability to purchase pools of technology;
- Our ability to manage an efficient supply chain to ensure hardware product availability;
- Our ability to compete on the basis of payment terms; and
- Our ability to provide engineering and design consulting for our products.

If we fail to successfully manage any of these competitive factors, fail to successfully balance the conflicting demands for innovative technology and lower overall costs, or fail to address new competitive forces, our business, operating results and financial condition will be adversely affected.

We are subject to governmental export and import requirements that could subject us to liability and restrict our ability to sell our products and services, which could impair our ability to compete in international markets.

We are subject to export controls, laws and regulations that restrict selling, shipping or transmitting certain of our products and services and transferring certain of our technology outside the United States. These requirements also restrict domestic release of software and technology to certain foreign nationals. In addition, we are subject to customs and other import requirements that regulate imports that may be important for our business.

If we fail to comply with the U.S. Export Administration Regulations or other U.S. or non-U.S. export requirements (collectively, the Export Regulations), we could be subject to substantial civil and criminal penalties, including fines for the company and the possible loss of the ability to engage in exporting and other international transactions. Due to the nature of our business and technology, the Export Regulations may also subject us to governmental inquiries regarding transactions between us and certain foreign entities. For example, we have received administrative subpoenas from the U.S. Bureau of Industry and Security (the BIS) requesting production of information and documentation relating to transactions with certain Chinese entities. We believe that we are in full compliance with all applicable regulations and are working with the BIS to respond to its subpoenas. However, we cannot predict the outcome of the inquiries or their potential effect on our operations or financial condition.

We believe that the Export Regulations do not materially impact our business at this time, but we cannot predict the impact that additional regulatory changes may have on our business in the future. The United States has published significant changes to the Export Regulations with respect to Russia and China, and we anticipate additional changes to the Export Regulations in the future. For example, the United States government has implemented controls on advanced computing ICs, computer commodities that contain such ICs, and certain semiconductor manufacturing items, as well as controls on transactions involving items for supercomputer and semiconductor manufacturing end-users. The controls expand the scope of foreign-produced items subject to license requirements for certain entities on the U.S. government's Entity List. Future changes to the Export Regulations, including

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changes in the enforcement and scope of such regulations, may create delays in the introduction of our products or services in international markets or could prevent our customers with international operations from deploying our products or services globally. In some cases, such changes could prevent the export or import of our products.

Consolidation among our customers and within the industries in which we operate, as well as our dependence on a relatively small number of large customers, may negatively impact our operating results.

A number of business combinations and strategic partnerships among our customers in the semiconductor and electronics industries have occurred over the last several years, and more could occur in the future. Consolidation among our customers could lead to fewer customers or the loss of customers, increased customer bargaining power or reduced customer spending on software and services. Further, we depend on a relatively small number of large customers, and on such customers continuing to renew licenses and purchase additional products from us, for a large portion of our revenues. Consolidation among our customers could also reduce demand for our products and services if customers streamline research and development or operations, or reduce or delay purchasing decisions. Reduced customer spending or the loss of customers, particularly our large customers, could adversely affect our business, operating results and financial condition.

In addition, we and our competitors may acquire businesses and technologies to complement and expand our respective product offerings. Consolidated competitors could have considerable financial resources and channel influence as well as broad geographic reach, which may enable them to be more competitive in, among other things, product differentiation, breadth of technology portfolio, pricing, marketing, services or support. Such consolidations or acquisitions could negatively impact our business, operating results and financial condition.

Business Operations Risks

The global nature of our operations exposes us to increased risks and compliance obligations.

We derive roughly half of our revenue from sales outside the United States, and we expect our orders and revenue to continue to depend on sales to customers outside the U.S. We have also continually expanded our non-U.S. operations. This strategy requires us to recruit and retain qualified technical and managerial employees, manage multiple remote locations performing complex software development projects, and ensure intellectual property protection outside of the U.S. Our international operations and sales subject us to a number of increased risks, including:

- Economic slowdowns, recessions or uncertainty in financial markets, including, among other things, the impact of increased global inflationary pressures and interest rates;
- Uncertain economic, legal and political conditions in China, Europe and other regions where we do business, including, for example, changes in China-Taiwan relations, regional or global military conflicts, and related sanctions and financial penalties imposed on participants in such conflicts;

- Government trade restrictions, including tariffs, export controls or other trade barriers, and changes to existing trade arrangements, including the unknown impact of current and future U.S. and Chinese trade regulations;
- Ineffective or weaker legal protection of intellectual property rights;
- Difficulties in adapting to cultural differences in the conduct of business, which may include business practices in which we are prohibited from engaging by the Foreign Corrupt Practices Act or other anti-corruption laws;
- Financial risks such as longer payment cycles, changes in currency exchange rates and difficulty in collecting accounts receivable;
- Inadequate local infrastructure that could result in business disruptions;
- Additional taxes, interest and potential penalties and uncertainty around changes in tax laws of various countries; and
- Other factors beyond our control such as natural disasters, terrorism, civil unrest, war and infectious diseases and pandemics, such as the COVID-19 pandemic.

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Furthermore, if any of the foreign economies in which we do business deteriorate or if we fail to effectively manage our global operations, our business and operating results will be harmed.

There is inherent risk, based on the complex relationships between certain Asian countries such as China, where we derive a growing percentage of our revenue, and the United States, that political, diplomatic or military events could result in trade disruptions, including tariffs, trade embargoes, export restrictions and other trade barriers. A significant trade disruption, export restriction, or the establishment or increase of any trade barrier in any area where we do business could reduce customer demand and cause customers to search for substitute products and services, make our products and services more expensive or unavailable for customers, increase the cost of our products and services, have a negative impact on customer confidence and spending, make our products less competitive, or otherwise have a materially adverse impact on our backlog, future revenue and profits, our customers' and suppliers' business, operating results and financial condition. For example and as described above, the ongoing geopolitical and economic uncertainty between the U.S. and China, the unknown impact of current and future U.S. and Chinese trade regulations, and other geopolitical risks with respect to China and Taiwan may cause disruptions in the markets and industries we serve and our supply chain, decreased demand from customers for products using our solutions or other disruptions, which could, directly or indirectly, materially harm our business, operating results and financial condition. For more on risks related to government export and import restrictions such as the U.S. government's Entity List and the Export Regulations see "Industry Risks – We are subject to governmental export and import requirements that could subject us to liability and restrict our ability to sell our products and services, which could impair our ability to compete in international markets."

In response to the U.S. adopting tariffs and trade barriers or taking other actions, other countries may also adopt tariffs and trade barriers that could limit our ability to offer our products and services. Current and potential customers who are concerned or affected by such tariffs or restrictions may respond by developing their own products or replacing our solutions, which would have an adverse effect on our business. In addition, government or customer efforts, attitudes, laws or policies regarding technology independence may lead to non-U.S. customers favoring their domestic technology solutions that could compete with or replace our products, which would also have an adverse effect on our business.

In addition to tariffs and other trade barriers, our global operations are subject to numerous U.S. and foreign laws and regulations such as those related to anti-corruption, tax, corporate governance, imports and exports, financial and other disclosures, privacy and labor relations. These laws and regulations are complex and may have differing or conflicting legal standards, making compliance difficult and costly. In addition, there is uncertainty regarding how proposed, contemplated or future changes to these complex laws and regulations could affect our business. We may incur substantial expense in complying with the new obligations to be imposed by these laws and regulations, and we may be required to make significant changes in our business operations, all of which may adversely affect our revenues and our business overall. If we violate these laws and regulations, we could be subject to fines, penalties or criminal sanctions, and may be prohibited from conducting business in one or more countries. Any violation individually or in the aggregate could have a material adverse effect on our operations and financial condition.

Our financial results are also affected by fluctuations in foreign currency exchange rates. A weakening U.S. dollar relative to other currencies increases expenses of our foreign subsidiaries when they are translated into U.S. dollars in our consolidated statements of income. Likewise, a strengthening U.S. dollar relative to other currencies, including the renminbi or Yen, reduces revenue of our foreign subsidiaries upon translation and consolidation. Exchange rates are subject to significant and rapid fluctuations due to a number of factors, including interest rate changes and political and economic uncertainty. Therefore, we cannot predict the prospective impact of exchange rate fluctuations. We may be unable to hedge all of our foreign currency risk, which could have a negative impact on our operating results.

Our operating results may fluctuate in the future, which may adversely affect our stock price.

Our operating results are subject to quarterly and annual fluctuations, which may adversely affect our stock price. Our historical results should not be viewed as indicative of our future performance due to these periodic fluctuations.

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Many factors may cause our backlog, revenue or earnings to fluctuate, including, among other things:

- Changes in demand for our products—especially products, such as hardware, generating upfront revenue—due to fluctuations in demand for our customers' products and due to constraints in our customers' budgets for research and development and EDA products and services;
- Changes in demand for our products due to customers reducing their expenditures, whether as a cost-cutting measure or a result of their insolvency or bankruptcy, and whether due to increased global inflationary pressures and interest rates and a sustained global semiconductor shortage or other reasons;
- Product competition in the EDA industry, which can change rapidly due to industry or customer consolidation and technological innovation;
- Our ability to innovate and introduce new products and services or effectively integrate products and technologies that we acquire;
- Failures or delays in completing sales due to our lengthy sales cycle, which often includes a substantial customer evaluation and approval process because of the complexity of our products and services;
- Our ability to implement effective cost control measures;
- Our dependence on a relatively small number of large customers, and on such customers continuing to renew licenses and purchase additional products from us, for a large portion of our revenue;
- Changes to the amount, composition and valuation of, and any impairments to or write-offs of, our assets or strategic investments;
- Changes in the mix of our products sold, as increased sales of our products with lower gross margins, such as our hardware products, may reduce our overall margins;
- Expenses related to our acquisition and integration of businesses and technologies;
- Changes in tax rules, as well as changes to our effective tax rate, including the tax effects of infrequent or unusual transactions and tax audit settlements;
- Delays, increased costs or quality issues resulting from our reliance on third parties to manufacture our hardware products, which includes a sole supplier for certain hardware components;
- Natural variability in the timing of IP drawdowns, which can be difficult to predict;
- General economic and political conditions that affect the semiconductor and electronics industries, such as disruptions to international trade relationships, including tariffs, export licenses, or other trade barriers affecting our or our suppliers' products; and

- Changes in accounting standards, which may impact the way we recognize our revenue and costs and impact our earnings.

The timing of revenue recognition may also cause our revenue and earnings to fluctuate. The timing of revenue recognition is affected by factors that include:

- Cancellations or changes in levels of orders or the mix between upfront products revenue and time-based products revenue;
- Delay of one or more orders for a particular period, particularly orders generating upfront products revenue, such as hardware;
- Delay in the completion of professional services projects that require significant modification or customization and are accounted for using the percentage of completion method;
- Delay in the completion and delivery of IP products in development as to which customers have paid for early access;

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- Customer contract amendments or renewals that provide discounts or defer revenue to later periods; and
- The levels of our hardware and IP revenues, which are recognized upfront and are primarily dependent upon our ability to provide the latest technology and meet customer requirements.

These factors, or any other factors or risks discussed herein, could negatively impact our backlog, revenue or earnings and cause our stock price to decline. Additionally, our results may fail to meet or exceed the expectations of securities analysts and investors, or such analysts may change their recommendation regarding our stock, which could cause our stock price to decline. Our stock price has been, and may continue to be, volatile, which may make it more difficult for our stockholders to sell their shares at a time or a price that is favorable to them.

Cybersecurity threats or other security breaches could compromise sensitive information belonging to us or our customers and could harm our business and our reputation, particularly that of our security testing solutions.

We store sensitive data, including intellectual property, our proprietary business information and that of our customers, and personal information, in our data centers, on our networks or on the cloud. In addition, our operations depend upon our information technology (IT) systems. We maintain a variety of information security policies, procedures, and controls to protect our business and proprietary information, prevent data loss and other security breaches and incidents, keep our IT systems operational and reduce the impact of a security breach or incident, but these securities measures cannot provide and have not provided absolute security. In the normal course of business, our systems are and have been the target of malicious cyber attack attempts and have been and may be subject to compromise due to employee error, malfeasance or other disruptions that have and could result in unauthorized disclosure or loss of sensitive information. To date, we have not identified material cyber security incidents or incurred any material expenses with any incidents. However, any breach or compromise could adversely impact our business and operations, expose us or our customers to litigation, investigations, loss of data, increase costs, or result in loss of customer confidence and damage to our reputation, any of which could adversely affect our business and our ability to sell our products and services.

Industry incidences of cyberattacks and other cybersecurity breaches have increased and are likely to continue to increase. We are using an increasing number of third-party software solutions, including cloud-based solutions, which increase potential threat vectors, such as by exploitation of misconfigurations or vulnerabilities. We also use third-party vendors that provide software or hardware, have access to our network, and/or store sensitive data, and these third parties are subject to their own cybersecurity threats. Our standard vendor terms and conditions include provisions requiring the use of appropriate security measures to prevent unauthorized use or disclosure of our data, as well as other safeguards. Despite these measures, there is no guarantee that a compromise of our third-party vendors will not occur and in turn result in a compromise of our own IT systems or data. In addition, if we select a vendor that uses cloud storage as part of their service or product offerings, or if we are selected as a vendor for our cloud-based solutions, our proprietary information could be misappropriated by third parties despite our attempts to validate the security of such services. Many employees continue to work remotely based on a hybrid work model, which

magnifies the importance of maintaining the integrity of our remote access security measures. We also periodically acquire new businesses with less mature security programs, and it takes time to align their security practices to meet our information security policies, procedures and controls.

The techniques used to obtain unauthorized access to networks or to sabotage systems of companies such as ours change frequently and generally are not recognized until launched against a target. We may be unable to anticipate these emerging techniques, react in a timely manner, or implement adequate preventative measures, or we may not have sufficient logging available to fully investigate the incident. Our security measures vary in maturity across the business and may be and have been circumvented. For example, we have identified instances where employees have used non-approved applications for business purposes, some of which do not meet our security standards. In addition, we discovered unauthorized third-party access to our products and product license files hosted on our SolvNet Plus customer license and product delivery system in 2015. Any security breach of our own or a third-party vendor's systems could cause us to be non-compliant with applicable laws or regulations, subject us to legal claims or proceedings, disrupt our operations, damage our reputation, and cause a loss of confidence in our products and services, any of which could adversely affect our business and our ability to sell our products and services.

Our software products, hosted solutions and software security and quality testing solutions are also targeted by hackers and may be compromised by, among other things, phishing, exploits of our code or our system configurations, malicious code (such as viruses and worms), distributed denial-of-service attacks, sophisticated

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attacks conducted or sponsored by nation-states, advanced persistent threat intrusions, ransomware and other malware. We leverage many security best practices throughout the software development lifecycle, but our security development practices vary in maturity across the business and may not be effective against all cybersecurity threats. Furthermore, due to geopolitical incidents, including regional military conflicts, state-supported and geopolitical-related cybersecurity incidents against companies such as ours may increase. Attacks on our products could potentially disrupt the proper functioning of our software, cause errors in the output of our customers' work, allow unauthorized access to our or our customers' proprietary information or cause other destructive outcomes.

We also offer software security and quality testing solutions. If we fail to identify new and increasingly sophisticated methods of cyber attacks or fail to invest sufficient resources in research and development regarding new threat vectors, our security testing products and services may not detect vulnerabilities in our customers' software code. An actual or perceived failure to detect security flaws may negatively impact the perceived reliability of our security testing products and services, and could result in a loss of customers or sales, or an increased cost to remedy a problem. Furthermore, our growth and recent acquisitions in the software security and quality testing space may increase our visibility as a security-focused company and may make us a more attractive target for attacks on our own IT infrastructure. As a result, we could experience negative publicity and our reputation could suffer, customers could stop buying our products, we could face lawsuits and potential liability, and our business, operating results and financial condition could be negatively impacted.

If we fail to protect our proprietary technology, our business will be harmed.

Our success depends in part upon protecting our proprietary technology. Our efforts to protect our technology may be costly and unsuccessful. We rely on agreements with customers, employees and other third parties as well as intellectual property laws worldwide to protect our proprietary technology. These agreements may be breached, and we may not have adequate remedies for any breach. Additionally, despite our measures to prevent piracy, other parties may attempt to illegally copy or use our products, which could result in lost revenue if their efforts are successful. Some foreign countries do not currently provide effective legal protection for intellectual property and our ability to prevent the unauthorized use of our products in those countries is therefore limited. Our trade secrets may also be stolen, otherwise become known, or be independently developed by competitors.

From time to time, we may need to commence litigation or other legal proceedings in order to assert claims of infringement of our intellectual property; defend our products from piracy; protect our trade secrets or know-how; or determine the enforceability, scope and validity of the propriety rights of others.

If we do not obtain or maintain appropriate patent, copyright or trade secret protection for any reason, or cannot fully defend our intellectual property rights in certain jurisdictions, our business and operating results would be harmed. In addition, intellectual property litigation is lengthy, expensive and uncertain. Legal fees related to such litigation will increase our operating expenses and may reduce our net income.

We may not be able to realize the potential financial or strategic benefits of the transactions we complete, or find suitable target businesses and technology to

acquire, which could hurt our ability to grow our business, develop new products or sell our products and services.

Acquisitions and strategic investments are an important part of our growth strategy. We have completed a significant number of acquisitions in recent years. We expect to make additional acquisitions and strategic investments in the future, but we may not find suitable acquisition or investment targets, or we may not be able to consummate desired acquisitions or investments due to unfavorable credit markets, commercially unacceptable terms, failure to obtain regulatory approvals, competitive bid dynamics or other risks, which could harm our operating results.

Acquisitions and strategic investments are difficult, time-consuming, and pose a number of risks, including, but not limited to:

- Potential negative impact on our earnings per share;
- Failure of acquired products to achieve projected sales;
- Problems in integrating the acquired products with our products;
- Difficulties entering into new markets in which we are not experienced or where competitors may have stronger positions;

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- Potential downward pressure on operating margins due to lower operating margins of acquired businesses, increased headcount costs, and other expenses associated with adding and supporting new products;
- Difficulties in retaining and integrating key employees;
- Substantial reductions of our cash resources and/or the incurrence of debt, which may be at higher than anticipated interest rates;
- Failure to realize expected synergies or cost savings;
- Difficulties in integrating or expanding sales, marketing and distribution functions and administrative systems, including IT and human resources systems;
- Dilution of our current stockholders through the issuance of common stock as a part of transaction consideration;
- Difficulties in negotiating, governing and realizing value from strategic investments;
- Assumption of unknown liabilities, including tax, litigation, cybersecurity and commercial-related risks, and the related expenses and diversion of resources;
- Incurrence of costs and use of additional resources to remedy issues identified prior to or after an acquisition;
- Disruption of ongoing business operations, including diversion of management's attention and uncertainty for employees and customers, particularly during the post-acquisition integration process;
- Potential negative impacts on our relationships with customers, distributors and business partners;
- Exposure to new operational risks, regulations and business customs to the extent acquired businesses are located in regions where we are not currently conducting business;
- The need to implement controls, processes and policies appropriate for a public company at acquired companies that may have previously lacked such controls, processes and policies in areas such as cybersecurity, IT, privacy and more;
- Negative impact on our net income resulting from acquisition or investment-related costs; and
- Requirements imposed by government regulators in connection with their review of an acquisition, including required divestitures or restrictions on the conduct of our business or the acquired business.

Additionally, we have divested and may in the future divest certain product lines or technologies that no longer fit our long-term strategies. Divestitures may adversely impact our business, operating results and financial condition if we are unable to achieve the anticipated benefits or cost savings from such divestitures, or if we are unable to offset impacts from the loss of revenue associated with the divested product lines or technologies.

For example, if we decide to sell or otherwise dispose of certain product lines or assets, we may be unable to do so on satisfactory terms within our anticipated timeframe or at all. Further, whether such divestitures are ultimately consummated or not, their pendency could have a number of negative effects on our current business, including potentially disrupting our regular operations, diverting the attention of our workforce and management team and increasing undesired workforce turnover. It could also disrupt existing business relationships, make it harder to develop new business relationships, or otherwise negatively impact the way that we operate our business.

If we do not manage the foregoing risks, the transactions that we complete or are unable to complete may have an adverse effect on our business, operating results and financial condition.

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If we fail to timely recruit and/or retain senior management and key employees globally, our business may be harmed.

We depend in large part upon the services of our senior management team and key employees to drive our future success, and certain of such personnel depart our company from time to time, with the frequency and number of such departures varying widely. For example, we have recently experienced significant changes to our executive leadership team due to planned succession and other departures. The departure of key employees could result in significant disruptions to our operations, including adversely affecting the timeliness of our product releases, the successful implementation and completion of our initiatives, the adequacy of our internal control over financial reporting, and our business, operating results and financial condition.

To be successful, we must also attract senior management and key employees who join us organically and through acquisitions. There are a limited number of qualified engineers. Competition for these individuals and other qualified employees is intense and has increased globally, including in major markets such as Asia. Our employees are often recruited aggressively by our competitors and our customers worldwide. Any failure to recruit and/or retain senior management and key employees could harm our business, operating results and financial condition. Additionally, efforts to recruit such employees could be costly and negatively impact our operating expenses.

We issue equity awards from employee equity plans as a key component of our overall compensation. We face pressure to limit the use of such equity-based compensation due to dilutive effects on stockholders. If we are unable to offer attractive compensation packages in the future, it could limit our ability to attract and retain key employees.

We may pursue new product and technology initiatives, and if we fail to successfully carry out these initiatives, we could be adversely impacted.

As part of the evolution of our business, we have made substantial investments to develop new products and enhancements to existing products through our acquisitions and research and development efforts. If we are unable to anticipate technological changes in our industry by introducing new or enhanced products in a timely and cost-effective manner, or if we fail to introduce products that meet market demand, we may lose our competitive position, our products may become obsolete, and our business, operating results and financial condition or results of operations could be adversely affected.

Additionally, from time to time, we may invest in efforts to expand into adjacent markets, including, for example, software security, quality testing solutions and AI. Although we believe these solutions are complementary to our EDA tools, we have less experience and a more limited operating history in offering software quality testing and security products and services, and our efforts in creating AI technology solutions such as Synopsys.ai may not be successful. Our success in these and other new markets depends on a variety of factors, including, but not limited to, the following:

- Our ability to attract a new customer base, including in industries in which we have less experience;
- Our successful development of new sales and marketing strategies to meet customer requirements;

- Our ability to accurately predict, prepare for and promptly respond to technological developments in new fields, including, in the case of our software quality testing and security tools and services, identifying new security vulnerabilities in software code and ensuring support for a growing number of programming languages;
- Our ability to compete with new and existing competitors in these new industries, many of which may have more financial resources, industry experience, brand recognition, relevant intellectual property rights or established customer relationships than we currently do, and could include free and open source solutions that provide similar software quality testing, security tools and AI solutions without fees;
- Our ability to skillfully balance our investment in adjacent markets with investment in our existing products and services;
- Our ability to attract and retain employees with expertise in new fields;
- Our ability to sell and support consulting services at profitable margins; and

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- Our ability to manage our revenue model in connection with hybrid sales of licensed products and consulting services.

Difficulties in any of our new product development efforts or our efforts to enter adjacent markets, including as a result of delays or disruptions, or export control restrictions, could adversely affect our business, operating results and financial condition.

We may have to invest more resources in research and development than anticipated, which could increase our operating expenses and negatively affect our operating results.

We devote substantial resources to research and development. New competitors, technological advances in the semiconductor industry or by competitors, our acquisitions, our entry into new markets or other competitive factors may require us to invest significantly greater resources than we anticipate. If we are required to invest significantly greater resources than anticipated without a corresponding increase in revenue, our operating results could decline. If customers reduce or slow the need to upgrade or enhance their product offerings, our revenue and operating results may be adversely affected. Additionally, our periodic research and development expenses may be independent of our level of revenue, which could negatively impact our financial results. New products may not adequately address the changing needs of the marketplace. New software products may contain undetected errors, defects or vulnerabilities. The occurrence of any defects or errors in our products could result in lost or delayed market acceptance and sales of our products, delays in payment by customers, loss of customers or market share, product returns, damage to our reputation, diversion of our resources, increased service and warranty expenses or financial concessions, increased insurance costs and potential liability for damages. Finally, there can be no guarantee that our research and development investments will result in products that create additional revenue.

Product errors or defects could expose us to liability and harm our reputation and we could lose market share.

Software products frequently contain errors or defects, especially when first introduced, when new versions are released, or when integrated with technologies developed by acquired companies. Product errors, including those resulting from third-party suppliers, could affect the performance or interoperability of our products, could delay the development or release of new products or new versions of products and could adversely affect market acceptance or perception of our products. In addition, any allegations of manufacturability issues resulting from use of our IP products could, even if untrue, adversely affect our reputation and our customers' willingness to license IP products from us. Any such errors or delays in releasing new products or new versions of products or allegations of unsatisfactory performance could cause us to lose customers, increase our service costs, subject us to liability for damages and divert our resources from other tasks, any one of which could materially and adversely affect our business, operating results and financial condition.

Our hardware products, which primarily consist of prototyping and emulation systems, subject us to distinct risks.

The growth in sales of our hardware products subjects us to several risks, including, but not limited to:

- Increased dependence on a sole supplier for certain hardware components, which may reduce our control over product quality and pricing and may lead to delays in production and delivery of our hardware products, should our supplier fail to deliver sufficient quantities of acceptable components in a timely fashion;
- Increasingly variable revenue and less predictable revenue forecasts, due to fluctuations in hardware revenue, which is recognized upfront upon shipment, as opposed to most sales of software products for which revenue is recognized over time;
- Potential reductions in overall margins, as the gross margin for our hardware products, is typically lower than those of our software products;
- Longer sales cycles, which create risks of insufficient, excess or obsolete inventory and variations in inventory valuation, which can adversely affect our business, operating results and financial condition;
- Decreases or delays in customer purchases in favor of next-generation releases or competitive products, which may lead to excess or obsolete inventory or require us to discount our older hardware products;

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- Longer warranty periods than those of our software products, which may require us to replace hardware components under warranty, thus increasing our costs; and
- Potential impacts on our supply chain, including the effects of increased global inflationary pressures and interest rates, and a sustained global semiconductor shortage.

From time to time, we are subject to claims that our products infringe on third-party intellectual property rights.

We are from time to time subject to claims alleging our infringement of third-party intellectual property rights, including patent rights. Under our customer agreements and other license agreements, we agree in many cases to indemnify our customers if our products are alleged to infringe on a third party's intellectual property rights. Infringement claims can result in costly and time-consuming litigation, require us to enter into royalty arrangements, subject us to damages or injunctions restricting our sale of products, invalidate a patent or family of patents, require us to refund license fees to our customers or to forgo future payments, or require us to redesign certain of our products, any one of which could harm our business and operating results. For example, some customers have requested we defend and indemnify them against claims for patent infringement asserted in various district courts and at the U.S. International Trade Commission by Bell Semiconductor LLC (Bell Semic), a patent monetization entity, based on Bell Semic's allegation that the customers' use of one or more features of certain of our products infringes one or more of six patents held by Bell Semic. We are defending some of our customers consistent with the terms of our End User License Agreement. Further information regarding Bell Semic is contained in Part I, Item 3, Legal Proceedings of this Annual Report on Form 10-K.

We may not be able to continue to obtain licenses to third-party software and intellectual property on reasonable terms or at all, which may disrupt our business and harm our financial results.

We license third-party software and other intellectual property for use in product research and development and, in several instances, for inclusion in our products. We also license third-party software, including the software of our competitors, to test the interoperability of our products with other industry products and in connection with our professional services. These licenses may need to be renegotiated or renewed from time to time, or we may need to obtain new licenses in the future. Third parties may stop adequately supporting or maintaining their technology, or they or their technology may be acquired by our competitors. If we are unable to obtain licenses to these third-party software and intellectual property on reasonable terms or at all, we may not be able to sell the affected products, our customers' use of the products may be interrupted, or our product development processes and professional services offerings may be disrupted, which could in turn harm our financial results, our customers, and our reputation.

The inclusion of third-party intellectual property in our products can also subject us and our customers to infringement claims. We may not be able to sufficiently limit our potential liability contractually. Regardless of outcome, infringement claims may require us to use significant resources and may divert management's attention from the operation of our business.

Some of our products and technology, including those we acquire, may include software licensed under open source licenses. Some open source licenses could require us, under certain circumstances, to make available or grant licenses to any modifications or derivative works we create based on the open source software. The risks associated with open source usage may not be eliminated despite our best efforts and may, if not properly addressed, result in unanticipated obligations that harm our business.

In preparing our financial statements we make certain assumptions, judgments and estimates that affect amounts reported in our consolidated financial statements, which, if not accurate, may significantly impact our financial results.

We make assumptions, judgments and estimates for a number of items, including the fair value of financial instruments, goodwill, long-lived assets and other intangible assets, the realizability of deferred tax assets, the recognition of revenue and the fair value of stock awards. We also make assumptions, judgments and estimates in determining the accruals for employee-related liabilities, including commissions and variable compensation, and in determining the accruals for uncertain tax positions, valuation allowances on deferred tax assets, allowances for credit losses, and legal contingencies. These assumptions, judgments and estimates are drawn from historical experience and various other factors that we believe are reasonable under the circumstances as of the date of the consolidated financial statements. Actual results could differ materially from our estimates, and such differences could significantly impact our financial results.

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Liquidity requirements in our U.S. operations may require us to raise cash in uncertain capital markets, which could negatively affect our financial condition.

As of October 31, 2023, approximately 52% of our worldwide cash and cash equivalents balance is held by our international subsidiaries. We intend to meet our U.S. cash spending needs primarily through our existing U.S. cash balances, ongoing U.S. cash flows, and available credit under our term loan and revolving credit facilities. Should our cash spending needs in the U.S. rise and exceed these liquidity sources, we may be required to incur additional debt at higher than anticipated interest rates or access other funding sources, which could negatively affect our operating results, capital structure or the market price of our common stock.

Legal and Regulatory Risks

Our results could be adversely affected by a change in our effective tax rate, changes in our geographical earnings mix, unfavorable government reviews of our tax returns, material differences between our forecasted and actual annual effective tax rates, or future changes to our tax structure.

Our operations are subject to income and transaction taxes in the U.S. and in multiple foreign jurisdictions. Because we have a wide range of statutory tax rates in the multiple jurisdictions in which we operate, any changes in our geographical earnings mix, including those resulting from our intercompany transfer pricing or from changes in the rules governing transfer pricing, could materially impact our effective tax rate. Furthermore, a change in the tax law of the jurisdictions where we do business, including an increase in tax rates, an adverse change in the treatment of an item of income or expense, or limitations on our ability to utilize tax credits, could result in a material increase in our tax expense and impact our financial position and cash flows.

On December 22, 2017, the Tax Cuts and Jobs Act (the Tax Act) was enacted, which significantly changed prior U.S. tax law and includes numerous provisions that affect our business. The Tax Act includes certain provisions that began to affect our income in the first quarter of fiscal 2019, while other sections of the Tax Act and related regulations began to affect our business in the first quarter of fiscal 2023. One of these provisions includes the requirement to capitalize and amortize research and development expenditures instead of expensing such expenditures as incurred. This results in a significant increase to our cash tax liability and also decreases our effective tax rate due to increasing the foreign derived intangible income deduction. On September 8, 2023, the Internal Revenue Service issued initial guidance for the Tax Act in Notice 2023-63 and indicated regulatory guidance will follow. Future regulatory guidance remains uncertain and may materially affect our financial position.

On August 16, 2022, the Inflation Reduction Act of 2022 (the IR Act) was enacted in the U.S. The IR Act includes a 15% minimum tax rate, as well as tax credit incentives for reductions in greenhouse gas emissions. The details of the computation of the tax and implementation of the incentives will be subject to regulations to be issued by the U.S. Department of the Treasury. On August 9, 2022, the CHIPS and Science Act of 2022 (CHIPS Act) was enacted in the U.S. to provide certain financial incentives to the semiconductor industry, primarily for manufacturing activities within the U.S. We are continuing to monitor the IR Act and CHIPS

Act and related regulatory developments to evaluate their potential impact on our business and operating results.

On October 8, 2021, the Organization for Economic Co-operation and Development (OECD) announced the OECD/G20 Inclusive Framework on Base Erosion and Profit Shifting (Framework) which agreed to a two-pillar solution to address tax challenges arising from digitalization of the economy. On December 20, 2021, the OECD released Pillar Two Model Rules (Pillar Two) defining the global minimum tax rules, which contemplate a 15% minimum tax rate. The OECD continues to release additional guidance, including Administrative Guidance on how the Pillar Two rules should be interpreted and applied and many countries are passing legislation to comply with Pillar Two. The Framework calls for law enactment by OECD and G20 members to take effect in 2024 and 2025. These changes, when enacted by various countries in which we do business, may increase our taxes in these countries. Changes to these and other areas in relation to international tax reform, including future actions taken by foreign governments in response to the Tax Act, could increase uncertainty and may adversely affect our tax rate and cash flow in future years.

Our income and non-income tax filings are subject to review or audit by the Internal Revenue Service and state, local and foreign taxing authorities. We exercise significant judgment in determining our worldwide provision for income taxes and, in the ordinary course of our business, there may be transactions and calculations where the ultimate tax determination is uncertain. We may also be liable for potential tax liabilities of businesses we acquire. The final determination in an audit may be materially different than the treatment reflected in our historical income tax provisions and accruals. An assessment of additional taxes because of an audit could adversely affect our income tax provision and net income in the periods for which that determination is made. For further discussion on

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our ongoing audits, see Note 15. Income Taxes of the Notes to Consolidated Financial Statements in this Annual Report under the heading "Non-U.S. Examinations."

We maintain significant deferred tax assets related to certain tax credits and capitalized research and development expenditures. Our ability to use these deferred tax assets is dependent upon having sufficient future taxable income in the relevant jurisdiction and in the case of foreign tax credits, how such credits are treated under current and potential future tax law. Changes to tax laws and regulations, and changes in our forecasts of future income could result in an adjustment to the deferred tax asset and a related charge to earnings that could materially affect our financial results.

Our business is subject to evolving corporate governance and public disclosure regulations and expectations, including with respect to environmental, social and governance matters, that could expose us to numerous risks.

We are subject to changing rules and regulations promulgated by a number of governmental and self-regulatory organizations, including, among others, the SEC, the Nasdaq Stock Market and the Financial Accounting Standards Board (FASB). These rules and regulations continue to evolve in scope and complexity and many new requirements have been created in response to laws enacted by Congress, making compliance difficult and uncertain. In addition, regulators, customers, investors, employees and other stakeholders are increasingly focused on environmental, social and governance (ESG) matters and related disclosures. These changing rules, regulations and stakeholder expectations have resulted in, and are likely to continue to result in, increased general and administrative expenses and increased management time and attention spent complying with or meeting such regulations and expectations. For example, developing and acting on ESG initiatives, and collecting, measuring, and reporting ESG information and metrics can be costly, difficult and time consuming and is subject to evolving reporting standards, including the SEC's proposed climate-related reporting requirements. We may also communicate certain initiatives and goals regarding environmental matters, diversity, responsible sourcing, social investments and other ESG matters in our SEC filings or in other public disclosures. These initiatives and goals could be difficult and expensive to implement, the technologies needed to implement them may not be cost effective and may not advance at a sufficient pace, and ensuring the accuracy, adequacy, or completeness of the disclosure of our ESG initiatives can be costly, difficult and time consuming. Further, statements about our ESG initiatives and goals, and progress against those goals, may be based on standards for measuring progress that are still developing, internal controls and processes that continue to evolve, and assumptions that are subject to change. We could also face scrutiny from certain stakeholders for the scope or nature of such initiatives or goals, or for any revisions to these goals. If our ESG-related data, processes and reporting are incomplete or inaccurate, or if we fail to achieve progress with respect to our ESG goals on a timely basis, or at all, our business, financial performance and growth could be adversely affected.

Changes in the U.S. generally accepted accounting principles (U.S. GAAP) could adversely affect our financial results and may require significant changes to our internal accounting systems and processes.

We prepare our consolidated financial statements in conformity with U.S. GAAP. These principles are subject to interpretation by the FASB, the SEC and various bodies formed to interpret and create appropriate accounting principles and guidance. The FASB periodically

issues new accounting standards on a variety of topics, including, for example, revenue recognition and accounting for leases. These and other such standards generally result in different accounting principles, which may significantly impact our reported results or could result in variability of our financial results.

We may be subject to litigation proceedings that could harm our business.

We may be subject to legal claims or regulatory matters involving stockholder, consumer, employment, customer, supplier, competition and other issues on a global basis. Litigation is subject to inherent uncertainties, and unfavorable rulings could occur. An unfavorable ruling could include monetary damages or, in cases for which injunctive relief is sought, an injunction prohibiting us from manufacturing or selling one or more products. If we were to receive an unfavorable ruling on a matter, our business and operating results could be materially harmed. Further information regarding certain of these matters is contained in Part I, Item 3, Legal Proceedings of this Annual Report on Form 10-K.

There are inherent limitations on the effectiveness of our controls and compliance programs.

Regardless of how well designed and operated it is, a control system can provide only reasonable assurance that its objectives will be met. Further, the design of a control system must reflect the fact that there are resource constraints, and the benefits of controls must be considered relative to their costs. Because of the inherent

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limitations in all control systems, no evaluation of controls can provide absolute assurance that all control issues and instances of fraud, if any, have been detected. Our compliance programs and compliance training for employees may not prevent our employees, contractors or agents from breaching or circumventing our policies or violating applicable laws and regulations. Failure of our control systems and compliance programs to prevent error, fraud or violations of law could have a material adverse impact on our business.

General Risks

Our investment portfolio may be impaired by any deterioration of capital markets.

From time to time, our cash equivalent and short-term investment portfolio consists of investment-grade U.S. government agency securities, asset-backed securities, corporate debt securities, commercial paper, certificates of deposit, money market funds, municipal securities and other securities and bank deposits. Our investment portfolio carries both interest rate risk and credit risk and may be negatively impacted by deteriorating economic conditions, increased global inflationary pressures and interest rates and bank failures. Fixed rate debt securities may have their market value adversely impacted due to a credit downgrade or a rise in interest rates, while floating rate securities may produce less income than expected if interest rates fall or a credit downgrade occurs.

Our future investment income may fall short of expectations due to changes in interest rates or if the decline in fair value of investments held by us is judged to be other-than-temporary. In addition, we may suffer losses in principal if we are forced to sell securities that decline in market value due to changes in the issuer's credit quality or changes in interest rates.

Catastrophic events and the effects of climate change, pandemics or other unexpected events may disrupt our business and harm our operating results.

Due to the global nature of our business, our operating results may be negatively impacted by catastrophic events and the effects of climate change, pandemics, such as the recent COVID-19 pandemic, or other unexpected events throughout the world. We rely on a global network of infrastructure applications, enterprise applications and technology systems for our development, marketing, operational, support and sales activities. A disruption or failure of these systems in the event of a major earthquake, fire, extreme temperatures, drought, flood, telecommunications failure, cybersecurity attack, terrorist attack, epidemic or pandemic, or other catastrophic events or climate change-related events could cause system interruptions, delays in our product development and loss of critical data and could prevent us from fulfilling our customers' orders. In particular, our sales and infrastructure are vulnerable to regional or worldwide health conditions, including the effects of the outbreak of contagious diseases, such as the government-imposed restrictions that curtailed global economic activity and caused substantial volatility in global financial markets during the COVID-19 pandemic. Moreover, our corporate headquarters, a significant portion of our research and development activities, our data centers, and certain other critical business operations are located in California, near major earthquake faults and sites of recent wildfires, which may become more frequent, along with other extreme weather events, due to climate change. A catastrophic event or other extreme weather event that results in the destruction or disruption of our data centers or our critical business or IT systems would severely affect our ability to conduct normal business operations and, as a result, our operating results would be adversely affected.

Item 1B. Unresolved Staff Comments

None.

Item 1C. Cybersecurity

Not applicable.

Item 2. Properties

Our principal offices are currently located in Sunnyvale, California. We currently lease approximately 1.2 million square feet of space in 28 offices throughout the United States, of which we sublet 340,000 square feet to third parties. We currently own 357,000 square feet, of which we lease 238,000 square feet to third parties. We own buildings in Oregon and California. These offices are used primarily for sales and support, marketing, and administrative activities as well as research and development for our business segments.

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We currently lease approximately 2.9 million square feet of space in 30 countries other than the United States, and own buildings in Wuhan, China and Hsinchu, Taiwan as well as office space in Xiamen, China and Yongin-si, South Korea. These offices are used primarily for sales and support, service, and research and development activities for our business segments.

As our needs change, from time to time, we may relocate, expand, and/or otherwise increase or decrease the size of our operations, offices or personnel. We believe that our existing facilities, including both owned and leased properties, are in good condition and suitable for our current needs and that suitable additional or substitute space will be available on commercially reasonable terms as needed to accommodate any expansion of our operations.

Item 3. Legal Proceedings

We are subject to routine legal proceedings, as well as demands, claims and threatened litigation that arise in the normal course of our business. The ultimate outcome of any litigation is often uncertain and unfavorable outcomes could have a negative impact on our results of operations and financial condition. Regardless of outcome, litigation can have an adverse impact on Synopsys because of the defense costs, diversion of management resources and other factors.

We regularly review the status of each significant matter and assess its potential financial exposure. If the potential loss from any claim or legal proceeding is considered probable and the amount is estimable, we accrue a liability for the estimated loss. Legal proceedings are inherently uncertain and as circumstances change, it is possible that the amount of any accrued liability may increase, decrease or be eliminated.

Hungarian Tax Matter

See Note 15. Income Taxes of the Notes to Consolidated Financial Statements in this Annual Report for a discussion of our Hungary audit under the heading “Non-U.S. Examinations.”

Bell Semic Actions

On April 27, 2022, Bell Semiconductor LLC (Bell Semic), a patent monetization entity, began filing a series of patent infringement lawsuits against certain technology companies alleging that certain semiconductor devices designed using certain design tools offered by electronic design automation (EDA) vendors, including Synopsys, infringe upon one or more patents held by Bell Semic. Bell Semic seeks money damages, attorneys’ fees and costs, and a permanent injunction prohibiting the defendants from using allegedly infringing EDA design tools.

On April 29, 2022, Bell Semic also began filing a series of complaints with the U.S. International Trade Commission (ITC) alleging violations of Section 337 of the Tariff Act of 1930 and seeking limited exclusion orders preventing the respondents from importing into the United States semiconductor devices designed using certain design tools offered by EDA vendors, including Synopsys, and cease-and-desist orders prohibiting respondents from importing, selling, offering for sale, advertising, or transferring products made using certain design tools offered by EDA vendors, including Synopsys. On November 8, 2022, the ITC

instituted the investigations. On May 8, 2023, Bell Semic filed motions to voluntarily withdraw the pending ITC investigations.

Synopsys is not named as a respondent or defendant in any of the aforementioned actions; however, certain of the respondents and defendants are Synopsys customers and have sought defense and indemnity from Synopsys under their End User License Agreements in response to Bell Semic's allegations. Synopsys is defending some of its customers consistent with the terms of its End User License Agreement.

In November and December 2022, Synopsys and other EDA vendors filed actions for Declaratory Judgment of invalidity and/or non-infringement as to each of the six patents asserted by Bell Semic in the aforementioned actions. Bell Semic's motion to dismiss the Declaratory Judgment actions was denied on April 27, 2023. Synopsys and other EDA vendors also filed Motions for Preliminary Injunction seeking to enjoin Bell Semic from proceeding with the ITC investigations and patent infringement lawsuits. The Motions for Preliminary Injunction were denied without prejudice on April 27, 2023. Bell Semic responded to the Declaratory Judgment complaint on May 11, 2023, asserting counterclaims for patent infringement against the EDA vendors. On December 6, the Court granted Synopsys' Motion for Summary Judgment of No Indirect Infringement of the Asserted Claims and stated it would entertain a motion for attorneys fees. The other EDA vendors settled with Bell Semic. The actions for Declaratory Judgment is set for trial on January 16, 2024.

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Item 4. Mine Safety Disclosures

Not applicable.

PART II

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

Our common stock trades on the Nasdaq Global Select Market under the symbol “SNPS.” As of December 6, 2023, we had 219 stockholders of record.

Performance Graph

The following graph compares the five-year total return to stockholders of our common stock relative to the cumulative total returns of the S&P 500 Index, the S&P Information Technology Index and the Nasdaq Composite Index. The graph assumes that \$100 was invested in Synopsys common stock on November 2, 2018 (the last trading day before the beginning of our fifth preceding fiscal year) and in each of the indexes on October 31, 2018 (the closest month end) and that all dividends were reinvested. No cash dividends were declared on our common stock during such time. The comparisons in the table are not intended to forecast or be indicative of possible future performance of our common stock.

COMPARISON OF 5 YEAR CUMULATIVE TOTAL RETURN* 909

*\$100 invested on November 2, 2018 in stock or October 31, 2018 in index, including reinvestment of dividends. Fiscal year ending October 28.

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The information presented above in the stock performance graph shall not be deemed to be “soliciting material” or to be “filed” with the SEC or subject to Regulation 14A or 14C, except to the extent that we subsequently specifically request that such information be treated as soliciting material or specifically incorporate it by reference into a filing under the Securities Act or Exchange Act.

Dividends

We have not paid cash dividends on our common stock.

Stock Repurchase Program

In fiscal 2022, our Board of Directors approved a stock repurchase program (the Program) with authorization to purchase up to \$1.5 billion of our common stock. As of October 31, 2023, \$194.3 million remained available for future repurchases under the Program.

In August 2023, we entered into an accelerated share repurchase agreement (the August 2023 ASR) to repurchase an aggregate of \$300.0 million of our common stock. Pursuant to the August 2023 ASR, we made a prepayment of \$300.0 million to receive initial deliveries of shares valued at \$255.0 million. The remaining balance of \$45.0 million was settled in November 2023. Total shares purchased under the August 2023 ASR were approximately 0.6 million shares, at an average purchase price of \$466.71 per share.

The table below sets forth information regarding our repurchases of our common stock during the three months ended October 28, 2023:

Period	Total number of shares purchased ⁽¹⁾	Average price paid per share ⁽¹⁾	Total number of shares purchased as part of publicly announced programs	Maximum dollar value of shares that may yet be purchased under the programs
Month #1				
July 30, 2023 through September 2, 2023	610,574	\$ 491.34	610,574	\$194,276,393
Month #2				
September 3, 2023 through September 30, 2023				\$194,276,393
Month #3				
October 1, 2023 through October 28, 2023				\$194,276,393
Total	610,574		610,574	\$194,276,393

⁽¹⁾ Amounts are calculated based on the settlement date.

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

Overview

The following overview is qualified in its entirety by the more complete discussion contained in this Item 7, the risk factors set forth in Item 1A of this Form 10-K, and our consolidated financial statements and the notes thereto set forth in Item 8 of this Form 10-K. Please also see the cautionary language at the beginning of Part I of this Annual Report on Form 10-K regarding forward-looking statements.

Fiscal 2023 Financial Performance Summary

The following table sets forth some of our key consolidated financial information for each of our last three fiscal years:

	Year Ended October 31,		
	2023	2022	2021
	(in millions, except per share amounts)		
Revenue	\$ 5,842.6	\$ 5,081.5	\$ 4,204.2
Cost of revenue	\$ 1,222.2	\$ 1,063.7	\$ 861.8
Operating expenses	\$ 3,351.2	\$ 2,855.8	\$ 2,607.6
Operating income	\$ 1,269.3	\$ 1,162.0	\$ 734.8
Net income attributed to Synopsys	\$ 1,229.9	\$ 984.6	\$ 757.5
Diluted net income per share attributed to Synopsys	\$ 7.92	\$ 6.29	\$ 4.81

Fiscal 2023 compared to fiscal 2022 financial performance summary

- Revenues were \$5.8 billion, an increase of \$761.1 million or 15%, primarily due to revenue growth across all products and geographies.
- Total cost of revenue and operating expenses was \$4.6 billion, an increase of \$653.9 million or 17%, primarily due to an increase of \$287.7 million in employee-related costs resulting from headcount increases through organic growth and acquisitions.
- Operating income was \$1.3 billion, an increase of \$107.2 million or 9%.

For a summary of fiscal 2022 comparison to fiscal 2021, see the discussion in Item 7, Management's Discussion and Analysis of Financial Condition and Results of Operations in our Annual Report on Form 10-K for the fiscal year ended October 31, 2022, filed on December 12, 2022.

Business Summary

Synopsys provides products and services used across the entire Silicon to Software spectrum to bring Smart Everything to life. From engineers creating advanced semiconductors to product teams developing advanced electronic systems to software developers seeking to ensure the security and quality of their code, our customers trust that our technologies will

enable them to meet new requirements for energy efficiency, reliability, mobility, security and more. For more information about our business segments and product groups, see Part I, Item 1 Business of this Annual Report on Form 10-K.

We have consistently grown our revenue since 2005, despite periods of global economic uncertainty. We achieved these results because of our solid execution, leading technologies and strong customer relationships, and because we generally recognize our revenue for software licenses over the arrangement period, which typically approximates three years. See Note 2. Summary of Significant Accounting Policies and Basis of Presentation of the Notes to Consolidated Financial Statements in this Annual Report on Form 10-K for a discussion on our revenue recognition policy. The revenue we recognize in a particular period generally results from selling efforts in prior periods rather than the current period. As a result, decreases as well as increases in customer spending do not immediately affect our revenues in a significant way.

Our growth strategy is based on maintaining and building on our leadership in our Design Automation products, expanding and proliferating our Design IP offerings and continuing to expand our product portfolio and our total addressable market. Our revenue growth from period to period is expected to vary based on the mix of our time based and upfront products. Based on our leading technologies, customer relationships, business model, diligent

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expense management, and acquisition strategy, we believe that we will continue to execute our strategies successfully.

Recent Developments

Impact of the Current Macroeconomic and Geopolitical Environment

Uncertainty in the macroeconomic environment, including the effects of, among other things, increased global inflationary pressures and interest rates, potential economic slowdowns or recessions, supply chain disruptions, geopolitical pressures, fluctuations in foreign exchange rates, and associated global economic conditions, have resulted in volatility in credit, equity and foreign currency markets. We expect growth across our geographies in fiscal 2024; however, we are expecting a challenging near-term growth environment in China due to macroeconomic factors as well as, to a lesser degree, entity list and trade restrictions as further discussed below and in Part I, Item 1A, Risk Factors of this Annual Report on Form 10-K.

The current uncertain macroeconomic environment could lead some of our customers to postpone their decision-making, decrease their spending and/or delay their payments to us. For more on risks related to the current macroeconomic and geopolitical environment, see Part I, Item 1A, Risk Factors, “Uncertainty in the macroeconomic environment, and its potential impact on the semiconductor and electronics industries, may negatively affect our business, operating results and financial condition” of this Annual Report on Form 10-K. For example, we continue to experience an impact from the current macroeconomic environment in our Software Integrity segment as customers have applied elevated levels of scrutiny to purchasing decisions due in part to their own budget uncertainty, which has, in some cases, affected customer order size, pricing and/or contract duration. While the situation is dynamic, we expect customers to continue to scrutinize their budgets and negotiate orders for our Software Integrity segment products and solutions in light of the current macroeconomic environment. Further, following a strategic portfolio review, and in consultation with our Board of Directors, we have decided to explore strategic alternatives for our Software Integrity segment. As a part of this process, our management is considering a full range of strategic opportunities. At this time we cannot predict the impact that such strategic alternatives might have on our business, operations or financial condition.

We are also actively monitoring geopolitical pressures around the world, including, among others, changes in the China-Taiwan relations, the conflicts in Ukraine, the Middle East and other regional or global military conflicts. Any significant disruption caused by these or other geopolitical pressures or conflicts could materially affect our employees, business, operating results, financial condition or customers in those regions of the world. For example, Synopsys has employees, operations, customers and strategic partners in the Middle East and in Armenia, which are each experiencing geopolitical conflicts. While we are actively monitoring these conflicts, at this time, these geopolitical conflicts have not had a material impact on our business, financial condition, or results of operations.

While our time-based business model provides stability to our business, operating results and overall financial position, the broader implications of these macroeconomic or geopolitical events, particularly in the long term, remain uncertain. Further, the negative impact of these events or disruptions may be deferred due to our business model.

See Part I, Item 1A, Risk Factors of this Annual Report on Form 10-K for further discussion of the impact of global economic and geopolitical uncertainty on our business, operations and financial condition.

Developments in Export Control Regulations

On October 7, 2022, the Bureau of Industry and Security (BIS) of the U.S. Department of Commerce published changes to U.S. export control regulations (U.S. Export Regulations), including new restrictions on Chinese entities' ability to obtain advanced computing chips, develop and maintain supercomputers, and manufacture advanced semiconductors. Further, on October 14, 2022, a new rule went into effect imposing U.S. export controls on additional technologies, including electronic computer-aided design software specially designed for the development of ICs with Gate-All-Around Field-Effect Transistor structures. On October 17, 2023, the Department of Commerce, Bureau of Industry and Security, published clarifications of and other adjustments to the regulations promulgated on October 7, 2022, pertaining, among other things, to China's access to certain semiconductor and advanced computing technology. Based on our current understanding, we believe these regulations will not have a material impact on our business. We anticipate additional changes to U.S. Export Regulations in the future, but we cannot forecast the scope or timing of such changes. We will continue to monitor such developments, including potential additional trade restrictions, and other regulatory or policy changes by the U.S. and foreign governments.

For more on risks related to government export and import restrictions such as the U.S. government's Entity List and other U.S. Export Regulations, see Part I, Item 1A, Risk Factors, "Industry Risks – We are subject to

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governmental export and import requirements that could subject us to liability and restrict our ability to sell our products and services, which could impair our ability to compete in international markets.”

Business Segments

Effective in the first quarter of fiscal 2023, we realigned our organizational structure to evaluate the results of our Design IP business separately. Our Chief Operating Decision Maker (CODM), our Chief Executive Officer, now regularly reviews disaggregated segment information, assesses performance against our key growth strategies and allocates resources based on this new organizational structure. As a result, effective in the first quarter of fiscal 2023, we changed our reportable segments from two reportable segments to the following three reportable segments: (1) Design Automation, which includes our advanced silicon design, verification products and services, system integration products and services, digital, custom and FPGA IC design software, verification software and hardware products, manufacturing software products and other; (2) Design IP, which includes our Design IP products; and (3) Software Integrity, which includes solutions that test software code for security vulnerabilities and quality defects, as well as professional and managed services. As such, prior period reportable segment results and related disclosures have been reclassified to reflect our current reportable segments.

As a result of the change in reporting structure, financial information provided to and used by the CODM to assist in making operational decisions, allocating resources and assessing performance reflects consolidated financial information as well as revenue, adjusted operating income, and adjusted operating margin for the Design Automation, Design IP, and Software Integrity segments, accompanied by disaggregated information relating to revenues by geographic region.

Design Automation. This segment includes our advanced silicon design, verification products and services and system integration products. This segment also includes digital, custom and FPGA IC design software, verification software and hardware products, system integration products and services, and manufacturing software products. Designers use these products to automate the highly complex IC design process and to reduce defects that could lead to expensive design or manufacturing re-spins or suboptimal end products.

Design IP. This segment includes our Design IP products that serve companies primarily in the semiconductor and electronics industries. We are a leading provider of high-quality, silicon-proven IP solutions for system-on-chips (SoCs). This includes IP that has been optimized to address specific application requirements for the mobile, automotive, digital home, internet of things and cloud computing markets, enabling designers to quickly develop SoCs in these areas.

Software Integrity. This segment includes a broad portfolio of products and services to intelligently address software risks across the customer’s portfolio and at all stages of the application lifecycle. The testing tools, services, and programs enable our customers to manage open source license compliance and detect, prioritize, and remediate security vulnerabilities and defects across their entire software development lifecycle. Our offerings include security and quality testing products, managed services, programs and professional services, and training.

Fiscal Year End

Our fiscal year ends on the Saturday nearest to October 31 and consists of 52 weeks, with the exception that approximately every five years, we have a 53-week year. When a 53-week year occurs, we include the additional week in the first quarter to realign fiscal quarters with calendar quarters. Fiscal 2023, 2022 and 2021 were 52-week years ending on October 28, 2023, October 29, 2022, and October 30, 2021, respectively. Fiscal 2024 will be a 53-week year.

For presentation purposes, this Annual Report on Form 10-K refers to the closest calendar month end.

Critical Accounting Estimates

Our consolidated financial statements have been prepared in accordance with U.S. GAAP. In preparing these financial statements, we make assumptions, judgments and estimates that can affect the reported amounts of assets, liabilities, revenues and expenses, and net income. On an ongoing basis, we evaluate our estimates based on historical experience and various other assumptions that we believe are reasonable under the circumstances. Our actual results may differ from these estimates. See Note 2. Summary of Significant Accounting Policies and Basis of Presentation of the Notes to Consolidated Financial Statements for further information on our significant accounting policies.

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The accounting policies that most frequently require us to make assumptions, judgments and estimates, and therefore are critical to understanding our results of operations, are:

- Revenue recognition; and
- Business combinations.

Revenue Recognition

Our contracts with customers often include promises to transfer multiple products and services to a customer. Arrangements with customers can involve multiple products and various license rights. Customers can negotiate for a broad portfolio of solutions, and favorable terms along with future purchase options to manage their overall costs. Analysis of the terms and conditions in these contracts and their effect on revenue recognition may require significant judgment.

We have concluded that our EDA software licenses in Technology Subscription License (TSL) contracts are not distinct from our obligation to provide unspecified software updates to the licensed software throughout the license term, because those promises represent inputs to a single, combined performance obligation. Where unspecified additional software product rights are part of the contract with the customer, those rights are accounted for as part of the single performance obligation that includes the licenses, updates, and technical support, because such rights are provided during the same period of time and have the same time-based pattern of transfer to the customer.

For our IP licensing arrangements, we have concluded that the licenses and support services are distinct from each other, and therefore treated as separate performance obligations. Revenues from IP licenses are recognized at a point in time upon transfer of control of the IP license, and support services are recognized over the support period as a stand ready obligation to the customer.

We are required to estimate total consideration expected to be received from contracts with customers. In some circumstances, the consideration expected to be received is variable based on the specific terms of the contract or based on our expectations of the term of the contract. Generally, we have not experienced significant returns or refunds to customers. These estimates require significant judgment and the change in these estimates could have an effect on our results of operations during the periods involved.

Business Combinations

We allocate the purchase price of acquired companies to the tangible and intangible assets acquired and liabilities assumed based upon their estimated fair values on the acquisition date with the exception of contract assets and contract liabilities (deferred revenue) which are recognized and measured on the acquisition date in accordance with our "Revenue Recognition" policy in Note 2. Summary of Significant Accounting Policies and Basis of Presentation of the Notes to Consolidated Financial Statements in this Annual Report on Form 10-K, as if we had originated the contracts. The excess of the purchase price over the fair values of these net tangible and intangible assets acquired is recorded as goodwill.

Accounting for business combinations requires management to make significant estimates and assumptions including our estimates for intangible assets. Although we believe the assumptions and estimates we have made are reasonable, they are based in part on

historical experience, market conditions and information obtained from management of the acquired companies and are inherently uncertain. Examples of critical estimates in valuing certain of the intangible assets we have acquired or may acquire in the future include, but are not limited to:

- future expected cash flows from software license sales, subscriptions, support agreements, consulting contracts and acquired developed technologies and patents;
- historical and expected customer attrition rates and anticipated growth in revenue from acquired customers;
- estimated obsolescence rates used in valuing technology related intangible assets;
- the expected use of the acquired assets; and
- discount rates used to discount expected future cash flows to present value, which are typically derived from a weighted-average cost of capital analysis and adjusted to reflect inherent risks.

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The fair value of the definite-lived intangibles was determined using variations of the income approach.

For acquisitions completed in fiscal 2023, the fair value for acquired existing technology was determined by applying the relief from royalty method under the income approach. The relief from royalty method applies a royalty rate to projected income to quantify the benefit of owning the intangible asset rather than paying a royalty for use of the asset. The economic useful life was determined based on historical technology obsolescence patterns and prospective technology developments. We assumed royalty rates ranging from 40% to 55%. The present value of operating cash flows from the existing technology was determined using discount rates ranging from approximately 10% to 20%.

Customer relationships represent the fair value of the existing relationships with the acquired company's customers. Their fair value was determined using the multi-period excess earnings method under the income approach, which involves isolating the net earnings attributable to the asset being measured based on the present value of the incremental after-tax cash flows (excess earnings) attributable solely to the asset over its remaining useful life. The economic useful life was determined based on historical customer turnover rates. Projected income from existing customer relationships considered customer retention rates ranging from 85% to 100%. The present value of operating cash flows from existing customers was determined using discount rates ranging from approximately 10% to 20%.

We believe that our estimates and assumptions related to the fair value of acquired intangible assets are reasonable, but significant judgment is involved.

Results of Operations

The discussion of our consolidated results of operations includes year-over-year comparisons of fiscal 2023 changes compared to fiscal 2022. We have also included a comparison of segment results for fiscal 2022 and 2021 due to the change in reportable segments in the beginning of fiscal 2023. For a discussion of other fiscal 2022 changes compared to fiscal 2021, see the discussion in Item 7, Management's Discussion and Analysis of Financial Condition and Results of Operations in our Annual Report on Form 10-K for the fiscal year ended October 31, 2022, filed on December 12, 2022.

Revenue

Our revenues are generated from three business segments: the Design Automation segment, the Design IP segment and the Software Integrity segment. See Note 17. Segment Disclosure of the Notes to Consolidated Financial Statements for more information about our reportable segments and revenue by geographic regions.

Further disaggregation of the revenues into various products and services within these three segments is summarized as follows:

Design Automation Segment

- EDA solutions include digital, custom and FPGA IC design software, verification software and hardware products, system integration products and services, and obligations to provide unspecified updates and support services. EDA products and services are typically sold through TSL arrangements that grant customers the right to access and use all of the licensed products at the outset of an

arrangement; software updates are generally made available throughout the entire term of the arrangement. The duration of our TSL contracts is generally three years, though it may vary for specific arrangements. We have concluded that the software licenses in TSL contracts are not distinct from the obligation to provide unspecified software updates to the licensed software throughout the license term, because the multiple software licenses and support represent inputs to a single, combined offering, and timely, relevant software updates are integral to maintaining the utility of the software licenses. We recognize revenue for the combined performance obligation under TSL contracts ratably over the term of the license.

- In the case of arrangements involving the sale of hardware products, we generally have two performance obligations. The first performance obligation is to transfer the hardware product, which includes software integral to the functionality of the hardware product. The second performance obligation is to provide maintenance on the hardware and its embedded software, which includes rights to technical support, hardware repairs and software updates that are all provided over the same term and have the same time-based pattern of transfer to the customer. The portion of the transaction price allocated to the hardware product is generally recognized as revenue at the time of shipment because

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the customer obtains control of the product at that point in time. We have concluded that control generally transfers at that point in time because the customer has the ability to direct the use of the asset and an obligation to pay for the hardware. The portion of the transaction price allocated to the maintenance obligation is recognized as revenue ratably over the maintenance term.

- Revenue from Professional Service contracts is recognized over time, generally using costs incurred or hours expended to measure progress. We have a history of reasonably estimating project status and the costs necessary to complete projects. A number of internal and external factors can affect these estimates, including labor rates, utilization and efficiency variances and specification and testing requirement changes.

Design IP Segment

- Design IP includes our Synopsys IP portfolio. These arrangements generally have two performance obligations which consist of transferring of the licensed IP and providing related support, which includes rights to technical support and software updates that are provided over the support term and are transferred to the customer over time. Revenue allocated to the IP licenses is recognized at a point in time upon the later of the delivery date or the beginning of the license period, and revenue allocated to support is recognized over the support term. Royalties are recognized as revenue in the quarter in which the applicable customer sells its products that incorporate our IP. Payments for IP contracts are generally received upon delivery of the IP. Revenue related to the customization of certain IP is recognized over time, generally using costs incurred or hours expended to measure progress.

Software Integrity Segment

- We sell Software Integrity products in arrangements that provide customers the right to software licenses, maintenance updates and technical support. Over the term of these arrangements, the customer expects us to provide integral maintenance updates to the software licenses, which help customers protect their own software from new critical quality defects and potential security vulnerabilities. The licenses and maintenance updates serve together to fulfill our commitment to the customer as both work together to provide functionality to the customer and represent a combined performance obligation. We recognize revenue for the combined performance obligation over the term of the arrangement.

Our customer arrangements can involve multiple products and various license rights, and our customers negotiate with us over many aspects of these arrangements. For example, they generally request a broader portfolio of solutions, support and services and seek more favorable terms such as expanded license usage, future purchase rights and other unique rights at an overall lower total cost. No single factor typically drives our customers' buying decisions, and we compete on all fronts to serve customers in highly competitive markets. Customers generally negotiate the total value of the arrangement rather than just unit pricing or volumes.

Total Revenue

	Year Ended October 31,			\$ Change	% Change	\$ Change	% Change
	2023	2022	2021	2023 vs. 2022		2022 vs. 2021	
(dollars in millions)							
Design							
Automation	\$3,775.3	\$3,300.2	\$2,754.7	\$ 475.1	14 %	\$ 545.5	20 %
Design IP	1,542.7	1,315.5	1,055.7	227.2	17 %	259.8	25 %
Software							
Integrity	524.6	465.8	393.8	58.8	13 %	72.0	18 %
Total	\$5,842.6	\$5,081.5	\$4,204.2	\$ 761.1	15 %	\$ 877.3	21 %

Our revenues are subject to fluctuations, primarily due to customer requirements including the timing and value of contract renewals. For example, we experience fluctuations in our revenues due to factors such as the timing of IP product sales, Flexible Spending Account (FSA) drawdowns, royalties, and hardware products sales. As revenues from IP products sales and hardware products sales are recognized upfront, customer demand and timing requirements for such IP products and hardware products could result in increased variability of our total revenues.

Contracted but unsatisfied or partially unsatisfied performance obligations (backlog) as of October 31, 2023 were approximately \$8.6 billion, which includes \$1.4 billion in non-cancellable FSA commitments from customers where actual product selection and quantities of specific products or services are to be determined by customers at a later date. We have elected to exclude future sales-based royalty payments from the remaining performance obligations.

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Approximately 40% of the backlog as of October 31, 2023, excluding non-cancellable FSA, is expected to be recognized as revenue over the next 12 months. The majority of the remaining backlog is expected to be recognized in the following three years. The backlog was approximately \$7.1 billion as of October 31, 2022, which included \$1.1 billion in non-cancellable FSA commitments from customers.

The amount and composition of unsatisfied performance obligations will fluctuate period to period. We do not believe the amount of unsatisfied performance obligations is indicative of future sales or revenue, or that such obligations at the end of any given period correlates with actual sales performance of a particular geography or particular products and services. For more information regarding our revenue as of October 31, 2023, including our contract balances as of such date, see Note 3. Revenue of the Notes to Consolidated Financial Statements.

For fiscal 2023 compared to fiscal 2022, revenues increased due to the continued organic growth of our business in all product groups and geographies.

For a discussion of revenue by geographic areas, see Note 17. Segment Disclosure of the Notes to Consolidated Financial Statements.

Time-Based Products Revenue

	Year Ended October 31,			
	2023	2022	\$ Change	% Change
	(dollars in millions)			
Time-based products revenue	\$ 3,383.6	\$ 2,993.8	\$ 389.8	13 %
Percentage of total revenue	58 %	59 %		

The increase in time-based products revenue for fiscal 2023 compared to fiscal 2022 was primarily attributable to an increase in TSL license revenue from arrangements booked in prior periods.

Upfront Products Revenue

	Year Ended October 31,			
	2023	2022	\$ Change	% Change
	(dollars in millions)			
Upfront products revenue	\$ 1,429.3	\$ 1,226.7	\$ 202.6	17 %
Percentage of total revenue	24 %	24 %		

Changes in upfront products revenue are generally attributable to normal fluctuations in the extent and timing of customer requirements, which can drive the amount of upfront orders and revenue in any particular period.

The increase in upfront products revenue for fiscal 2023 compared to fiscal 2022 was primarily due to an increase in the sale of IP products and hardware products driven by higher demand from customers.

Upfront products revenue as a percentage of total revenue will likely fluctuate based on the timing of IP and hardware product sales. Such fluctuations will continue to be impacted by the timing of shipments and FSA drawdowns due to customer requirements.

Maintenance and Service Revenue

	Year Ended October 31,			
	2023	2022	\$ Change	% Change
	(dollars in millions)			
Maintenance revenue	\$ 361.7	\$ 293.3	\$ 68.4	23 %
Professional service and other revenue	668.0	567.7	100.3	18 %
Total	<u>\$ 1,029.7</u>	<u>\$ 861.0</u>	<u>\$ 168.7</u>	<u>20 %</u>
Percentage of total revenue	18 %	17 %		

The increase in maintenance revenue for fiscal 2023 compared to fiscal 2022 was primarily due to an increase in the volume of hardware arrangements that include maintenance.

The increase in professional services and other revenue for fiscal 2023 compared to fiscal 2022 was primarily due to the timing of IP customization projects.

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Cost of Revenue

	Year Ended October 31,			
	2023	2022	\$ Change	% Change
	(dollars in millions)			
Cost of products revenue	\$ 763.5	\$ 653.8	\$ 109.7	17 %
Cost of maintenance and service revenue	383.8	343.0	40.8	12 %
Amortization of intangible assets	74.9	66.9	8.0	12 %
Total	<u>\$ 1,222.2</u>	<u>\$ 1,063.7</u>	<u>\$ 158.5</u>	<u>15 %</u>
Percentage of total revenue	21 %	21 %		

We divide cost of revenue into three categories: cost of products revenue, cost of maintenance and service revenue, and amortization of intangible assets.

Cost of products revenue. Cost of products revenue includes costs related to products sold and software licensed, hardware-related costs including inventory provisions, allocated operating costs related to product support and distribution, royalties paid to third-party vendors, and the amortization of capitalized software development costs.

Cost of maintenance and service revenue. Cost of maintenance and service revenue includes costs to deliver our maintenance services, such as hotline and on-site support, production services and documentation of maintenance updates.

Amortization of intangible assets. Amortization of intangible assets, included in cost of revenue, consists of the amortization of core/developed technology and certain contract rights intangible assets related to acquisitions.

The increase in cost of revenue for fiscal 2023 compared to fiscal 2022 was primarily due to increases of \$62.2 million in employee-related costs as a result of headcount increases from hiring, \$53.5 million in hardware-related costs including inventory provisions, \$13.1 million in facility costs, \$8.0 million in amortization of technology-related intangible assets, \$6.7 million in costs to fulfill IP consulting arrangements, and \$6.1 million in the change in fair value of our executive deferred compensation plan assets.

Operating Expenses

Research and Development

	Year Ended October 31,			
	2023	2022	\$ Change	% Change
	(dollars in millions)			
Research and development expenses	\$ 1,946.8	\$ 1,680.4	\$ 266.4	16 %
Percentage of total revenue	33 %	33 %		

The increase in research and development expenses for fiscal 2023 compared to fiscal 2022 was primarily due to higher employee-related costs of \$139.2 million as a result of headcount increases as we continue to expand and enhance our product portfolio, increases of \$57.4

million in the change in fair value of our executive deferred compensation plan assets, \$31.0 million in facility costs, and \$20.9 million in consultant and contractor costs.

Sales and Marketing

	Year Ended October 31,			
	2023	2022	\$ Change	% Change
	(dollars in millions)			
Sales and marketing expenses	\$ 889.0	\$ 779.8	\$ 109.2	14 %
Percentage of total revenue	15 %	15 %		

The increase in sales and marketing expenses for fiscal 2023 compared to fiscal 2022 was primarily due to increases of \$62.9 million in employee-related costs due to headcount increases and higher sales commissions, \$13.4 million in the change in fair value of our executive deferred compensation plan assets, \$12.0 million in travel and marketing costs due to an increased number of in-person meetings and events, and \$8.5 million in facility costs.

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General and Administrative

	Year Ended October 31,			
	2023	2022	\$ Change	% Change
	(dollars in millions)			
General and administrative expenses	\$ 410.3	\$ 353.8	\$ 56.5	16 %
Percentage of total revenue	7 %	7 %		

The increase in general and administrative expenses for fiscal 2023 compared to fiscal 2022 was primarily due to increases of \$23.4 million in personnel-related costs due to headcount increases from hiring, \$16.4 million in maintenance and depreciation expenses, \$12.9 million in the change in fair value of our executive deferred compensation plan assets, and \$7.4 million in legal, consulting and other professional fees. These increases were partially offset by bad debt recoveries of \$15.9 million in the second quarter of fiscal 2022.

Change in Fair Value of Deferred Compensation

The income or loss arising from the change in fair value of our non-qualified deferred compensation plan obligation is recorded in cost of sales and each functional operating expense, with the offsetting change in the fair value of the related assets recorded in other income (expense), net. There is no impact on our net income from the fair value changes in our deferred compensation plan obligation and related assets.

Amortization of Intangible Assets

Amortization of intangible assets included in operating expenses consists of the amortization of trademarks, trade names, and customer relationships intangible assets related to acquisitions.

	Year Ended October 31,			
	2023	2022	\$ Change	% Change
	(dollars in millions)			
Amortization of intangible assets	\$ 28.0	\$ 29.8	\$ (1.8)	(6)%
Percentage of total revenue	— %	1 %		

The decrease in amortization of intangible assets for fiscal 2023 compared to fiscal 2022 was primarily due to certain intangible assets becoming fully amortized in fiscal 2023, partially offset by amortization expense related to intangible assets acquired during fiscal 2023.

Restructuring Charges

In the first quarter of fiscal 2023, we initiated a restructuring plan for involuntary employee terminations as part of a business reorganization (the 2023 Plan). The 2023 Plan was substantially completed in the third quarter of fiscal 2023, and total charges under the 2023 Plan were \$77.0 million, consisting primarily of severance costs and facility exit costs.

The following is a summary of our restructuring liabilities:

Fiscal Year	Balance at Beginning of Period	Costs Incurred	Cash Payments	Balance at End of Period
(dollars in millions)				
2023	\$ —	\$ 77.0	\$ (68.3)	\$ 8.7
2022	\$ 14.2	\$ 12.1	\$ (26.3)	\$ —
2021	\$ 1.3	\$ 33.4	\$ (20.5)	\$ 14.2

See Note 18. Restructuring Charges of the Notes to Consolidated Financial Statements for additional information.

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Other Income (Expense), Net

	Year Ended October 31,			
	2023	2022	\$ Change	% Change
	(dollars in millions)			
Interest income	\$ 36.7	\$ 8.5	\$ 28.2	332 %
Interest expense	(1.2)	(1.7)	0.5	(29)%
Gains (losses) on assets related to executive deferred compensation plan	20.5	(68.8)	89.3	(130)%
Foreign currency exchange gains (losses)	(1.5)	4.7	(6.2)	(132)%
Other, net	(22.0)	10.8	(32.8)	(304)%
Total	<u>\$ 32.5</u>	<u>\$ (46.5)</u>	<u>\$ 79.0</u>	<u>(170)%</u>

The increase in other income (expense) for fiscal 2023 as compared to fiscal 2022 was primarily due to the increase in the fair value of our executive deferred compensation plan assets.

Segment Operating Results

We do not allocate certain operating expenses managed at a consolidated level to our reportable segments. These unallocated expenses consist primarily of stock-based compensation expense, amortization of intangible assets, changes in the fair value of deferred compensation plan, restructuring charges, and certain other operating expenses. See Note 17. Segment Disclosure of the Notes to Consolidated Financial Statements for more information.

Design Automation Segment

	Year Ended October 31,			\$ Change	% Change	\$ Change	% Change
	2023	2022	2021	2023 vs. 2022		2022 vs. 2021	
	(dollars in millions)						
Adjusted operating income	\$1,439.7	\$1,206.6	\$ 924.6	\$ 233.1	19 %	\$ 282.0	30 %
Adjusted operating margin	38 %	37 %	34 %	1 %	3 %	3 %	9 %

The increase in adjusted operating income for both fiscal 2023 compared to fiscal 2022 and fiscal 2022 compared to fiscal 2021 was primarily due to an increase in revenue from arrangements booked in prior periods.

Design IP Segment

Year Ended October 31,			\$ Change	% Change	\$ Change	% Change
2023	2022	2021	2023 vs. 2022		2022 vs. 2021	
(dollars in millions)						

Adjusted operating income	\$ 532.1	\$ 421.5	\$ 318.5	\$ 110.6	26 %	\$ 103.0	32 %
Adjusted operating margin	34 %	32 %	30 %	2 %	6 %	2 %	7 %

The increase in adjusted operating income for both fiscal 2023 compared to fiscal 2022 and fiscal 2022 compared to fiscal 2021 was primarily due to an increase in the revenue of IP products driven by timing of customer demands.

Software Integrity Segment

Year Ended October 31,			\$ Change	% Change	\$ Change	% Change
2023	2022	2021	2023 vs. 2022		2022 vs. 2021	
(dollars in millions)						

Adjusted operating income	\$ 76.3	\$ 47.0	\$ 38.3	\$ 29.3	62 %	\$ 8.7	23 %
Adjusted operating margin	15 %	10 %	10 %	5 %	50 %	— %	— %

The increase in adjusted operating income for both fiscal 2023 compared to fiscal 2022 and fiscal 2022 compared to fiscal 2021 was primarily due to an increase in revenue from arrangements booked in prior periods.

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Income Taxes

Our effective tax rate for fiscal 2023 is 6.4%, which included a tax benefit of \$65.9 million of U.S. federal research tax credit, a foreign derived intangible income (FDII) deduction of \$82.4 million, and excess tax benefits from stock-based compensation of \$84.5 million.

Our effective tax rate for fiscal 2022 was 12.3%, which included a tax benefit of \$61.5 million of U.S. federal research tax credit, a FDII deduction of \$38.9 million, and excess tax benefits from stock-based compensation of \$88.8 million.

The Tax Act provides an exemption from federal income taxes for distributions from foreign subsidiaries made after December 31, 2017 that were not subject to the one-time transition tax. We have provided for foreign withholding taxes on undistributed earnings of certain of our foreign subsidiaries to the extent such earnings are no longer considered to be indefinitely reinvested in the operations of those subsidiaries.

In 2017, the Hungarian Tax Authority (the HTA) assessed withholding taxes of approximately \$25.0 million and interest and penalties of \$11.0 million, against our Hungary subsidiary (Synopsisys Hungary). Synopsisys Hungary contested the assessment with the Hungarian Administrative Court (Administrative Court). In 2019, as required under Hungarian law, Synopsisys Hungary paid the assessment and recorded a tax expense due to an unrecognized tax benefit of \$17.4 million, which is net of estimated U.S. foreign tax credits. During 2021 and 2022 a series of appeals, hearings and re-hearings occurred at the Administrative Court and Hungarian Supreme Court. Hearings with the Administrative Court were held on June 30, 2022, September 22, 2022 and April 25, 2023. The Administrative Court issued its written decision in favor of Synopsisys Hungary on May 17, 2023, and subsequently refunded Synopsisys Hungary the tax, penalty and interest paid in fiscal 2018, as well as additional interest all totaling \$39.1 million (including the effect of currency movement). The refunded tax, penalty and interest was recognized as an income tax benefit. The HTA had until July 14, 2023, to file an appeal with the Hungarian Supreme Court and the HTA did not appeal. This concludes the litigation. During the third quarter of fiscal 2023, Synopsisys released its unrecognized tax benefit and offsetting U.S. foreign tax credits, resulting in a net benefit of \$23.8 million.

See Note 15. Income Taxes of the Notes to Consolidated Financial Statements for further discussion of the provision for income taxes, the impacts related to the Tax Act, and the Hungarian audit.

Liquidity and Capital Resources

Our principal sources of liquidity are funds generated from our business operations and funds that may be drawn down under our revolving credit and term loan facilities.

As of October 31, 2023, we held \$1.6 billion in cash, cash equivalents and short-term investments. We also held \$2.3 million in restricted cash primarily associated with deposits for office leases and employee loan programs. Our cash equivalents consisted primarily of taxable money market mutual funds, time deposits and highly liquid investments with maturities of three months or less. Our short-term investments include U.S. government and municipal obligations, investment-grade available-for-sale debt and asset backed securities with an overall weighted-average credit rating of approximately AA.

As of October 31, 2023, approximately \$753.7 million of our cash and cash equivalents were domiciled in various foreign jurisdictions. We have provided for foreign withholding taxes on the undistributed earnings of certain of our foreign subsidiaries to the extent such earnings are no longer considered to be indefinitely reinvested in the operations of those subsidiaries.

We believe that our existing cash, cash equivalents and short-term investments and sources of liquidity will be sufficient to satisfy our cash requirements and capital return program over the next 12 months and beyond. We are currently not aware of any trends or demands, commitments, events or uncertainties that will result in, or that are reasonably likely to result in, our liquidity increasing or decreasing in any material way that will impact our capital needs during or beyond the next 12 months. Our future cash requirements will depend on many factors, including our rate of revenue growth, the expansion of our sales and marketing activities, and the timing and extent of our spending to support our research and development efforts. We also may invest in or acquire businesses, applications or technologies, or may further expand our board-authorized stock repurchase program, which may require the use of significant cash resources and/or additional financing.

Effective fiscal 2023, our research and development expenditures are required to be capitalized and amortized under the Tax Act instead of being deducted when incurred for US tax purposes. As a result of the IRS tax relief for the California winter storms, the due date for our fiscal 2023 federal tax payment was November 16, 2023 and as such, we have deferred our fiscal 2023 federal cash tax payments until the first quarter of fiscal 2024. This results in

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a significant increase to our cash outflows beginning in fiscal 2024. See Note 15. Income Taxes of the Notes to Consolidated Financial Statements for further discussion.

Cash Flows

	Year Ended October 31,		
	2023	2022	\$ Change
	(dollars in millions)		
Cash provided by operating activities	\$ 1,703.3	\$ 1,738.9	\$ (35.6)
Cash used in investing activities	\$ (482.1)	\$ (572.6)	\$ 90.5
Cash used in financing activities	\$ (1,196.9)	\$ (1,116.3)	\$ (80.6)

Cash Provided by Operating Activities

We expect cash from our operating activities to fluctuate as a result of a number of factors, including the timing of our billings and collections, our operating results, and the timing and amount of tax and other liability payments. Cash provided by our operations is dependent primarily upon the payment terms of our license agreements. We generally receive cash from upfront arrangements much sooner than from time-based products revenue, in which the license fee is typically paid either quarterly or annually over the term of the license.

The decrease in cash provided by operating activities was primarily attributable to the timing of customer billings and higher disbursements for operations, partially offset by higher net income and higher accounts receivable collection.

Cash Used in Investing Activities

The decrease in cash used in investing activities was primarily due to lower cash paid for acquisitions of \$124.7 million and higher proceeds from the sales and maturities of investments of \$44.6 million, partially offset by higher purchases of property and equipment of \$53.0 million and higher purchases of investments of \$27.3 million.

Cash Used in Financing Activities

The increase in cash used in financing activities was primarily due to higher stock repurchases of \$105.7 million, higher taxes paid for net share settlements of \$67.4 million partially offset by lower debt repayments of \$74.2 million and higher proceeds from issuance of common stock of \$15.0 million.

Credit and Term Loan Facilities

On December 14, 2022, we entered into a Fifth Extension and Amendment Agreement (the Fifth Amendment), which amended and restated our previous credit agreement, dated as of January 22, 2021 (as amended and restated, the Credit Agreement).

The Fifth Amendment increased the existing senior unsecured revolving credit facility (the Revolver) from \$650.0 million to \$850.0 million and extended the maturity date from January 22, 2024 to December 14, 2027, which could be further extended at our option. The Credit Agreement also provides an uncommitted incremental revolving loan facility of up to \$150.0 million in the aggregate principal amount. The Credit Agreement contains a financial covenant requiring us to maintain a maximum consolidated leverage ratio, as well as other

non-financial covenants. There was no outstanding balance under the Revolver as of October 31, 2023.

In July 2018, we entered into a 12-year 220.0 million Renminbi (approximately \$33.0 million) credit agreement with a lender in China to support our facilities expansion. Borrowings bear interest at a floating rate based on the 5-year Loan Prime Rate plus 0.74%. As of October 31, 2023, we had a \$18.1 million outstanding balance under the agreement. See Note 7.

Financial Assets and Liabilities of the Notes to Consolidated Financial Statements for further discussion.

Stock Repurchase Program

In fiscal 2022, our Board of Directors approved a stock repurchase program with authorization to purchase up to \$1.5 billion of our common stock. During the fiscal year 2023, we repurchased 3.0 million shares of common stock at an average price of \$387.92 per share for an aggregate purchase price of \$1.2 billion. As of October 31, 2023, \$194.3 million remained available for future stock repurchases. The pace of our repurchase activity will depend on factors such as our working capital needs, our cash requirements for acquisitions, our debt repayment obligations, our stock price, and economic and market conditions.

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The IR Act was enacted in the United States on August 16, 2022. The IR Act imposes a 1% excise tax on the fair market value of stock repurchases made by covered corporations after December 31, 2022. The total taxable value of shares repurchased is reduced by the fair market value of any newly issued shares during the taxable year. As of October 31, 2023, this does not have any impact on our consolidated financial statements. Risks related to the IR Act are described in Part I, Item 1A, Risk Factors.

Material Cash Requirements

Our material cash requirements include the following contractual and other obligations.

Leases

We have operating lease arrangements for office space, data center, equipment and other corporate assets. As of October 31, 2023, we had lease payment obligations, net of immaterial sublease income, of \$614.8 million, with \$84.6 million payable within 12 months.

Purchase Obligations

Purchase obligations represent an estimate of all open purchase orders and contractual obligations in the ordinary course of business for which we have not received the goods or services. As of October 31, 2023, we had \$604.3 million of purchase obligations, with \$464.2 million payable within 12 months. Although open purchase orders are considered enforceable and legally binding, the terms may allow us the option to cancel, reschedule and adjust our requirements based on our business needs prior to the delivery of goods or performance of services.

Term Loan

Refer to "Credit and Term Loan Facilities" under Item 7, Management's Discussion and Analysis of Financial Condition and Results of Operations included in this Annual Report on Form 10-K for more information.

Long Term Accrued Income Taxes

As of October 31, 2023, we had \$22.0 million of long-term accrued income taxes which represent uncertain tax benefits. Currently, a reasonably reliable estimate of timing of payments related to uncertain tax benefits in individual years beyond fiscal 2023 cannot be made due to uncertainties in timing of the commencement and settlement of potential tax audits.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk

We are exposed to financial market risks, primarily due to changes in interest rates, foreign currency exchange rates, and non-marketable equity security price. None of market risk sensitive instruments are held for speculative trading purposes.

Interest Rate Risk. The primary objective of our investment activities is to preserve the invested principal while maximizing yields without significantly increasing risk exposure. To achieve this objective, we maintain our portfolio of investments in a mix of tax-exempt and taxable instruments that meet high credit quality standards, as specified in our investment policy. Our policy also limits the amount of credit exposure to any one issue, issuer and type of instrument.

Our exposure to market risk for changes in interest rates relates to our cash, cash equivalents, short-term investments, and outstanding debt. As of October 31, 2023, all of our cash, cash equivalents, and debt were at short-term variable or fixed interest rates. As of October 31, 2023, we had short term fixed income investment portfolio of \$151.6 million. These securities, as with all fixed income instruments, are subject to interest rate risk and will decline in value if market interest rates increase. While par value generally approximates fair value on variable instruments, rising interest rates over time would increase both our interest income and our interest expense.

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Our cash equivalents and debt by fiscal year of expected maturity and average interest rates as of October 31, 2023 are as follows:

	Maturing in Year Ending						
	2024	2025	2026	2027	2028 and thereafter	Total	Fair Value
	(in thousands)						
Cash & Cash equivalents	\$1,343,860					\$1,343,860	\$1,343,860
Approx. average interest rate	2.44 %						
Short-term investments	\$ 73,879	\$38,851	\$24,558	\$9,501	\$ 4,850	\$ 151,639	\$ 151,639
Approx. average coupon rate	2.07 %	3.19 %	3.71 %	5.11 %	4.48 %		
Short-term debt (variable rate):							
Credit Facility in China					\$18,078	\$ 18,078	\$ 18,078
Average interest rate					LPR + 0.74% of such rate		

Foreign Currency Risk. We operate internationally and are exposed to potentially adverse movements in currency exchange rates. The functional currency of the majority of our active foreign subsidiaries is the foreign subsidiary's local currency. A weakening U.S. dollar relative to other currencies increases expenses of our foreign subsidiaries when they are translated into U.S. dollars in our consolidated statements of income. Likewise, a strengthening of the U.S. dollar relative to other currencies, including the renminbi or Yen, reduces revenue of our foreign subsidiaries upon translation and consolidation. If the U.S. dollar continues to strengthen, this could adversely affect our financial condition and operating results. In addition, increased international sales in the future may result in greater foreign currency denominated sales, increasing our foreign currency risk. Our operating expenses incurred outside the United States and denominated in foreign currencies are increasing and are subject to fluctuations due to changes in foreign currency exchange rates. If we are not able to successfully hedge against the risks associated with foreign currency fluctuations, our financial condition and operating results could be adversely affected. We enter into hedges in the form of foreign currency forward contracts to reduce our exposure to foreign currency rate changes on non-functional currency denominated forecasted transactions and balance sheet positions including: (1) certain assets and liabilities, (2) shipments forecasted to occur within approximately one month, (3) future billings and revenue on previously shipped

orders, and (4) certain future intercompany invoices denominated in foreign currencies. The foreign currency contracts are carried at fair value and denominated in various currencies as listed in the tables below. The duration of forward contracts usually ranges from one month to 27 months. See Note 2. Summary of Significant Accounting Policies and Basis of Presentation and Note 7. Financial Assets and Liabilities of the Notes to Consolidated Financial Statements for a description of our accounting for foreign currency contracts.

The success of our hedging activities depends upon the accuracy of our estimates of various balances and transactions denominated in non-functional currencies. Exchange rates are subject to significant and rapid fluctuations due to a number of factors, including interest rate changes and political and economic uncertainty. Therefore, we cannot predict the prospective impact of exchange rate fluctuations. To the extent our estimates are correct, gains and losses on our foreign currency contracts will be offset by corresponding losses and gains on the underlying transactions. For example, if the Euro were to depreciate by 10% compared to the U.S. dollar prior to the settlement of the Euro forward contracts listed in the table below as of October 31, 2023, the fair value of the contracts would decrease by approximately \$26.1 million, and we would be required to pay approximately \$26.1 million to the counterparty upon contract maturity. At the same time, the U.S. dollar value of our Euro-based expenses would decline, resulting in positive cash flow of approximately \$26.1 million that would offset the loss and negative cash flow on the maturing forward contracts.

If estimates of our balances and transactions prove inaccurate, we will not be completely hedged, and we will record gains or losses, depending upon the nature and extent of such inaccuracy. Although we engage in foreign currency hedging activity, we may be unable to hedge all of our foreign currency risk, which could have a negative impact on our results of operations.

We enter into foreign exchange forward contracts with financial institutions and have not experienced nonperformance by counterparties. Further, we anticipate performance by all counterparties to such agreements.

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Information about the gross notional values of our foreign currency contracts as of October 31, 2023 is as follows:

	Gross Notional Amount in U.S. Dollars	Average Contract Rate
	(in thousands)	
Forward Contract Values:		
Indian rupee	\$ 523,162	84.792
Japanese yen	286,654	144.426
Euro	260,562	1.086
Chinese renminbi	146,652	0.141
Canadian dollar	141,956	1.359
Taiwanese dollar	103,717	30.778
Korean won	80,903	1,326.344
Israel shekel	47,809	3.768
British pound sterling	32,556	0.819
Armenian dram	19,716	399.587
Singapore dollar	12,166	1.340
Swiss franc	8,324	0.865
Hungarian forint	2,581	359.851
	<u>\$ 1,666,758</u>	

Equity Price Risk. Our non-marketable equity securities investments totaled \$19.1 million and \$31.9 million as of October 31, 2023 and 2022, respectively. Our strategic investments include privately-held companies that are considered to be in the start-up or development stages and have a higher inherent risk. Specifically, the technologies or products these companies have under development are typically in the early stages and may never materialize, which could result in a loss of a substantial part of our initial investment in these companies. These investments could be impaired if the carrying value exceeds the fair value and is not expected to recover. The evaluation of these investments is based on information provided by these companies, which is not subject to the same disclosure regulations as U.S. publicly traded companies and as such, the basis for these evaluations is subject to the timing and accuracy of the data provided.

Item 8. Financial Statements and Supplementary Data

Report of Independent Registered Public Accounting Firm

To the Stockholders and Board of Directors

Synopsys, Inc.:

Opinions on the Consolidated Financial Statements and Internal Control Over Financial Reporting

We have audited the accompanying consolidated balance sheets of Synopsys, Inc. and subsidiaries (the Company) as of October 28, 2023 and October 29, 2022, the related consolidated statements of income, comprehensive income, stockholders' equity, and cash flows for each of the fiscal years in the three-year period ended October 28, 2023, and the related notes (collectively, the consolidated financial statements). We also have audited the Company's internal control over financial reporting as of October 28, 2023, based on criteria established in Internal Control – Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission.

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of October 28, 2023 and October 29, 2022, and the results of its operations and its cash flows for each of the fiscal years in the three-year period ended October 28, 2023, in conformity with U.S. generally accepted accounting principles. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of October 28, 2023 based on criteria established in Internal Control – Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission.

Basis for Opinions

The Company's management is responsible for these consolidated financial statements, for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Management's Report on Internal Control Over Financial Reporting. Our responsibility is to express an opinion on the Company's consolidated financial statements and an opinion on the Company's internal control over financial reporting 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 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, and whether effective internal control over financial reporting was maintained in all material respects.

Our audits of the consolidated financial statements 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. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

Definition and Limitations of Internal Control Over Financial Reporting

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A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

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

Critical Audit Matter

The critical audit matter communicated below is a matter arising from the current period audit of the consolidated financial statements that was communicated or required to be communicated to the audit committee and that: (1) relates to accounts or disclosures that are material to the consolidated financial statements and (2) involved our especially challenging, subjective, or complex judgments. The communication of a critical audit matter does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matter below, providing a separate opinion on the critical audit matter or on the accounts or disclosures to which it relates.

Evaluation of the Company's analysis of terms and conditions in software and intellectual property license contracts with customers

As discussed in Notes 2 and 3 to the consolidated financial statements, the Company generates revenue from the sale of products that include software and intellectual property (IP) licenses, hardware products, maintenance and services. The Company's contracts with customers often include promises to transfer multiple products and services to a customer. Arrangements with customers can involve hundreds of products and various license rights, and customers negotiate with the Company over many aspects of these arrangements. The Company's customers often request a broader portfolio of solutions, support and services and seek more favorable terms such as expanded license usage, future purchase rights and other unique rights at an overall lower total cost. The Company recognized total revenue of \$5,842.6 million for the year ended October 28, 2023, which included revenue related to software and IP licenses.

We identified the evaluation of the Company's analysis of terms and conditions in significant software and IP license contracts with customers and their effect on revenue recognition as a critical audit matter. Complex auditor judgment was required to assess

the Company's judgments made in applying revenue recognition requirements to certain terms and conditions.

The following are the primary procedures we performed to address this critical audit matter. We evaluated the design and tested the operating effectiveness of certain internal controls related to the Company's revenue recognition process, including the Company's analysis of terms and conditions in software and IP license contracts with customers and their effect on revenue recognition. We tested certain software and IP license customer contracts by inspecting the underlying customer agreements and evaluating the Company's assessment of the contractual terms and conditions in accordance with revenue recognition requirements. For a selection of software and IP license contracts with customers entered during the year, we inquired of personnel outside of the accounting function to corroborate our understanding of certain terms and conditions.

/s/ KPMG LLP

We have served as the Company's auditor since 1992.

Santa Clara, California
December 12, 2023

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SYNOPSYS, INC.
CONSOLIDATED BALANCE SHEETS
(In thousands, except par value amounts)

	October 31,	
	2023	2022
ASSETS		
Current assets:		
Cash and cash equivalents	\$ 1,438,913	\$ 1,417,608
Short-term investments	151,639	147,913
Total cash, cash equivalents and short-term investments	1,590,552	1,565,521
Accounts receivable, net	946,967	796,091
Inventories	325,590	211,927
Prepaid and other current assets	567,515	439,130
Total current assets	3,430,624	3,012,669
Property and equipment, net	557,261	483,300
Operating lease right-of-use assets, net	568,829	559,090
Goodwill	4,070,336	3,842,234
Intangible assets, net	374,194	386,446
Deferred income taxes	860,914	670,653
Other long-term assets	470,973	463,695
Total assets	<u>\$10,333,131</u>	<u>\$ 9,418,087</u>
LIABILITIES, REDEEMABLE NON-CONTROLLING INTEREST AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable and accrued liabilities	\$ 1,123,761	\$ 809,403
Operating lease liabilities	85,690	54,274
Deferred revenue	1,776,000	1,910,822
Total current liabilities	2,985,451	2,774,499
Long-term operating lease liabilities	584,035	581,273
Long-term deferred revenue	175,128	154,472
Long-term debt	18,078	20,824
Other long-term liabilities	386,138	327,829
Total liabilities	4,148,830	3,858,897
Redeemable non-controlling interest	31,043	38,664
Stockholders' equity:		
Preferred stock, \$0.01 par value: 2,000 shares authorized; none outstanding	—	—
Common stock, \$0.01 par value: 400,000 shares authorized; 152,053 and 152,375 shares outstanding, respectively	1,521	1,524
Capital in excess of par value	1,276,152	1,487,126
Retained earnings	6,741,699	5,534,307
Treasury stock, at cost: 5,207 and 4,886 shares, respectively	(1,675,650)	(1,272,955)
Accumulated other comprehensive income (loss)	(196,414)	(234,277)
Total Synopsys stockholders' equity	6,147,308	5,515,725
Non-controlling interest	5,950	4,801
Total stockholders' equity	6,153,258	5,520,526
Total liabilities, redeemable non-controlling interest and stockholders' equity	<u>\$10,333,131</u>	<u>\$ 9,418,087</u>

See the accompanying Notes to Consolidated Financial Statements.

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SYNOPSYS, INC.
CONSOLIDATED STATEMENTS OF INCOME
(In thousands, except per share amounts)

	Year Ended October 31,		
	2023	2022	2021
Revenue:			
Time-based products	\$ 3,383,632	\$ 2,993,786	\$ 2,633,763
Upfront products	1,429,330	1,226,728	861,063
Total products revenue	4,812,962	4,220,514	3,494,826
Maintenance and service	1,029,657	861,028	709,367
Total revenue	5,842,619	5,081,542	4,204,193
Cost of revenue:			
Products	763,494	653,783	542,114
Maintenance and service	383,835	342,978	271,202
Amortization of intangible assets	74,864	66,936	48,461
Total cost of revenue	1,222,193	1,063,697	861,777
Gross margin	4,620,426	4,017,845	3,342,416
Operating expenses:			
Research and development	1,946,813	1,680,379	1,504,823
Sales and marketing	889,016	779,777	712,491
General and administrative	410,311	353,840	322,988
Amortization of intangible assets	28,025	29,754	33,919
Restructuring charges	77,002	12,057	33,405
Total operating expenses	3,351,167	2,855,807	2,607,626
Operating income	1,269,259	1,162,038	734,790
Other income (expense), net	32,523	(46,524)	70,724
Income before income taxes	1,301,782	1,115,514	805,514
Provision (benefit) for income taxes	83,657	137,078	49,155
Net income	1,218,125	978,436	756,359
Net income (loss) attributed to non-controlling interest and redeemable non-controlling interest	(11,763)	(6,158)	(1,157)
Net income attributed to Synopsys	<u>\$ 1,229,888</u>	<u>\$ 984,594</u>	<u>\$ 757,516</u>
Net income per share attributed to Synopsys:			
Basic	<u>\$ 8.08</u>	<u>\$ 6.44</u>	<u>\$ 4.96</u>
Diluted	<u>\$ 7.92</u>	<u>\$ 6.29</u>	<u>\$ 4.81</u>
Shares used in computing per share amounts:			
Basic	<u>152,146</u>	<u>153,002</u>	<u>152,698</u>
Diluted	<u>155,195</u>	<u>156,485</u>	<u>157,340</u>

See the accompanying Notes to Consolidated Financial Statements.

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SYNOPSYS, INC.
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
(In thousands)

	Year Ended October 31,		
	2023	2022	2021
Net income	\$ 1,218,125	\$ 978,436	\$ 756,359
Other comprehensive income (loss):			
Change in foreign currency translation adjustment	(13,912)	(108,145)	9,415
Change in unrealized gains (losses) on available-for-sale securities, net of tax of \$0 for periods presented	1,513	(2,353)	(246)
Cash flow hedges:			
Deferred gains (losses), net of tax of \$ (8,940), \$28,416, and \$(1,736) for fiscal years 2023, 2022 and 2021, respectively	24,986	(79,069)	9,860
Reclassification adjustment on deferred (gains) losses included in net income, net of tax of \$(10,053), \$(1,342), and \$4,593 for fiscal years 2023, 2022 and 2021, respectively	25,276	4,894	(14,559)
Other comprehensive income (loss), net of tax effects	37,863	(184,673)	4,470
Comprehensive income	1,255,988	793,763	760,829
Less: Net income (loss) attributed to non-controlling interest and redeemable non-controlling interest	(11,763)	(6,158)	(1,157)
Comprehensive income attributed to Synopsys	<u>\$ 1,267,751</u>	<u>\$ 799,921</u>	<u>\$ 761,986</u>

See the accompanying Notes to Consolidated Financial Statements.

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SYNOPSYS, INC.
CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY
(In thousands)

	Common Stock		Capital in Excess of Par Value	Retained Earnings	Treasury Stock	Accumulated Other Comprehensive Income (Loss)	Total Synopsys Stockholders' Equity	Non- controlling Interest	Sto
	Shares	Amount							
Balance at October 31, 2020	152,618	\$ 1,528	\$1,653,166	\$3,795,397	\$ (488,613)	\$ (54,074)	\$ 4,907,404	\$ 4,963	\$
Net income				757,516			757,516	(1,157)	
Retained earnings adjustment due to adoption of ASC 326				(3,200)			(3,200)		
Other comprehensive income (loss), net of tax effects						4,470	4,470		
Purchases of treasury stock	(2,780)	(28)	28		(753,081)		(753,081)		
Equity forward contract, net			(35,000)				(35,000)		
Common stock issued, net of shares withheld for employee taxes	3,224	31	(387,103)		458,828		71,756		
Stock-based compensation			345,272				345,272		
Balance at October 31, 2021	153,062	\$ 1,531	\$1,576,363	\$4,549,713	\$ (782,866)	\$ (49,604)	\$ 5,295,137	\$ 3,806	\$
Net income				984,594			984,594	(1,306)	
Other comprehensive income (loss), net of tax effects						(184,673)	(184,673)		
Purchases of treasury stock	(3,609)	(36)	36		(1,135,000)		(1,135,000)		
Equity forward contract, net			35,000				35,000		
Common stock issued, net of shares withheld for employee taxes	2,922	29	(581,001)		644,911		63,939		

See the accompanying Notes to Consolidated Financial Statements.

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SYNOPSYS, INC.
CONSOLIDATED STATEMENTS OF CASH FLOWS
(In thousands)

	Year Ended October 31,		
	2023	2022	2021
Cash flows from operating activities:			
Net income	\$ 1,218,125	\$ 978,436	\$ 756,359
Adjustments to reconcile net income to net cash provided by operating activities:			
Amortization and depreciation	247,120	228,405	203,676
Reduction of operating lease right-of-use assets	97,705	89,541	86,645
Amortization of capitalized costs to obtain revenue contracts	82,190	73,026	64,698
Stock-based compensation	563,292	459,029	345,272
Allowance for credit losses	19,932	(3,477)	18,515
Deferred income taxes	(211,045)	(36,913)	(128,583)
Other non-cash	13,295	10,188	15,859
Net changes in operating assets and liabilities, net of acquired assets and assumed liabilities:			
Accounts receivable	(178,432)	(251,390)	201,706
Inventories	(123,752)	1,320	(48,046)
Prepaid and other current assets	(106,396)	(89,983)	(102,174)
Other long-term assets	(100,618)	(15,283)	(153,037)
Accounts payable and accrued liabilities	170,496	(34,066)	125,133
Operating lease liabilities	(73,281)	(85,828)	(82,581)
Income taxes	198,078	1,644	28,855
Deferred revenue	(113,435)	414,251	160,325
Net cash provided by operating activities	1,703,274	1,738,900	1,492,622
Cash flows from investing activities:			
Proceeds from sales and maturities of short-term investments	130,435	93,696	12,850
Purchases of short-term investments	(131,079)	(97,245)	(161,732)
Proceeds from sales of long-term investments	8,492	582	—
Purchases of long-term investments	(435)	(7,000)	(7,591)
Purchases of property and equipment	(189,618)	(136,589)	(93,764)
Acquisitions, net of cash acquired	(297,692)	(422,374)	(296,017)
Capitalization of software development costs	(2,204)	(2,493)	(1,976)
Other	—	(1,200)	(800)
Net cash used in investing activities	(482,101)	(572,623)	(549,030)
Cash flows from financing activities:			
Repayment of debt	(2,603)	(76,838)	(28,061)
Issuances of common stock	252,986	237,956	210,719
Payments for taxes related to net share settlement of equity awards	(241,408)	(174,005)	(138,950)
Purchase of equity forward contract	(45,000)	—	(35,000)
Purchases of treasury stock	(1,160,724)	(1,100,000)	(753,081)
Other	(122)	(3,413)	(4,375)
Net cash used in financing activities	(1,196,871)	(1,116,300)	(748,748)
Effect of exchange rate changes on cash, cash equivalents and restricted cash	(2,979)	(65,296)	2,369

See the accompanying Notes to Consolidated Financial Statements.

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SYNOPSYS, INC. NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Note 1. Description of Business

Synopsys, Inc. (Synopsys, we, our or us) provides products and services used across the entire Silicon to Software spectrum to bring Smart Everything to life. From engineers creating advanced semiconductors to product teams developing advanced electronic systems to software developers seeking to ensure the security and quality of their code, our customers trust that our technologies will enable them to meet new requirements for energy efficiency, reliability, mobility, security and more.

We are a global leader in supplying the electronic design automation (EDA) software that engineers use to design and test integrated circuits (ICs), also known as chips or silicon. We provide software and hardware used to validate the electronic systems that incorporate chips and the software that runs on them, including cloud-based digital design flow to boost chip-design development productivity. We also provide technical services and support to help our customers develop advanced chips and electronic systems. These products and services are part of our Design Automation segment.

We also offer a broad and comprehensive portfolio of semiconductor intellectual property (IP) products, which are pre-designed circuits that engineers use as components of larger chip designs rather than designing those circuits themselves. These products and services are part of our Design IP segment.

We are also a leading provider of software tools and services that improve the security, quality and compliance of software in a wide variety of industries, including electronics, financial services, automotive, medicine, energy and industrials. These tools and services are part of our Software Integrity segment.

Note 2. Summary of Significant Accounting Policies and Basis of Presentation

Basis of Presentation and Principles of Consolidation. Our fiscal year generally ends on the Saturday nearest to October 31 and consists of 52 weeks, with the exception that approximately every five years, we have a 53-week year. When a 53-week year occurs, we include the additional week in the first quarter to realign fiscal quarters with calendar quarters. Fiscal 2023, 2022 and 2021 were 52-week years ending on October 28, 2023, October 29, 2022, and October 30, 2021, respectively. For presentation purposes, the consolidated financial statements and accompanying notes refer to the closest calendar month end. Fiscal 2024 will be a 53-week year.

The consolidated financial statements include our accounts and the accounts of our wholly and majority-owned subsidiaries. All intercompany accounts and transactions have been eliminated in consolidation.

Use of Estimates. To prepare financial statements in conformity with U.S. generally accepted accounting principles, management must make estimates and assumptions that

affect the amounts reported in the consolidated financial statements and accompanying notes. Actual results could differ from these estimates and could have a material impact on our operating results and financial position.

Comparability. Effective beginning of fiscal 2022, we adopted an Accounting Standards Update (ASU) to simplify the accounting for income taxes in Accounting Standards Codification (ASC) 740, Income Taxes, on a prospective basis. Effective beginning the second quarter of fiscal 2022, we early adopted an ASU, on a prospective basis, to apply revenue guidance to recognize and measure contract assets and contract liabilities from contracts with customers acquired in a business combination on the acquisition date, instead of measuring them at fair value. The adoption of these updates did not have a material impact on our consolidated financial statements. Effective in the first quarter of fiscal 2023, we changed our reportable segments from two reportable segments to three reportable segments, as described in Segment Reporting policy below.

Certain reclassifications have been made to the prior year's consolidated financial statements to conform to the current year presentation. The reclassifications, including the segment change, did not have a material impact on the prior year's consolidated balance sheets, statements of income, statements of comprehensive income and statements of cash flows.

Cash Equivalents and Short-term Investments. We consider all highly liquid investments with original maturities of three months or less at the date of purchase to be cash equivalents. Our investments in debt securities with remaining maturities greater than three months at the date of purchase are designated as available-for-sale securities as we may convert these investments into cash at any time to fund general operations, and included in

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SYNOPSYS, INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—Continued

short-term investments on the consolidated balance sheet. Our debt securities generally have an effective maturity term of less than three years and are carried at fair value, with unrealized gains and losses included in the consolidated balance sheets as a component of accumulated other comprehensive income (loss). For available-for-sale debt securities in an unrealized loss position, we evaluate whether a current expected credit loss exists based on available information relevant to the credit rating of the security, current economic conditions and reasonable and supportable forecasts. The allowance for credit loss is recorded in other income (expense), net, on the consolidated statements of income, not to exceed the amount of the unrealized loss. Any excess unrealized loss other than the credit loss is recognized in accumulated other comprehensive income or loss in the stockholders' equity section of the consolidated balance sheets. The cost of securities sold is based on the specific identification method and realized gains and losses are included in other income (expense), net. See Note 7. Financial Assets and Liabilities of the Notes to Consolidated Financial Statements.

Investments in Equity Securities. We hold equity securities in privately held companies for the promotion of business and strategic objectives. We account for these investments using either the measurement alternative approach when the fair value of the investment is not readily determinable and we do not have the ability to exercise significant influence, or the equity method of accounting when it is determined that we have the ability to exercise significant influence. Investments accounted for using the measurement alternative approach are initially recorded at cost and adjusted for changes in fair value from observable transactions. For investments accounted for using the equity method of accounting, we record our proportionate share of the investee's income or loss to other income (expense), net, in our consolidated statements of income. These investments are subject to a periodic impairment review, and are included in other long-term assets on the consolidated balance sheets.

Accounts Receivable, Net. The balances consist of billed accounts receivable and current portion of unbilled accounts receivable. Trade accounts receivable are recorded at the invoiced amount and do not bear interest.

Allowance for Credit Losses. We maintain an allowance for credit losses for expected uncollectible accounts receivable and contract assets, which is recorded as an offset to accounts receivable or contract assets and provisions for credit losses are recorded in general and administrative expense in the consolidated statements of income. The allowance for current expected credit losses is based on a review of customer accounts and considers historical credit loss information that is adjusted for current conditions and reasonable and supportable forecasts. The allowance for credit losses is reviewed on a quarterly basis to assess the adequacy of the allowance. The following table presents the changes in the allowance for credit losses:

Fiscal Year	Balance at Beginning of Period	Provisions	Write-offs/ Adjustments	Balance at End of Period
(in thousands)				
2023	\$ 41,236	\$ 19,932	\$ (6,763)	\$ 54,405
2022	\$ 31,605	\$ 12,424	\$ (2,793)	\$ 41,236
2021	\$ 29,489	\$ 18,515	\$ (16,399)	\$ 31,605

Inventories. Inventories are computed at standard costs which approximate actual costs, on a first-in, first-out basis and valued at the lower of cost or net realizable value. Inventories primarily include components and finished goods for complex emulation and prototyping hardware systems. The valuation process includes a review of the forecasts based upon future demand and market conditions. Inventory provisions are recorded when the costs are determined to be in excess of anticipated demand or considered obsolete. Inventory provisions are impacted by market and economic conditions, technology changes, new product introductions and changes in strategic direction, and require estimates that may include uncertain elements.

Fair Values of Financial Instruments. Our cash equivalents, short-term investments and foreign currency contracts are carried at fair value. The fair value of our accounts receivable and accounts payable approximates the carrying amount due to their short duration. Non-marketable equity securities are accounted for using either the measurement alternative or equity method of accounting. We perform periodic impairment analysis on these non-marketable equity securities. The carrying amount of the short-term and long-term debt approximates the estimated fair value. See Note 8. Fair Value Measurements of the Notes to Consolidated Financial Statements.

Foreign Currency Contracts. We operate internationally and are exposed to potentially adverse movements in currency exchange rates. We enter into hedges in the form of foreign currency forward contracts to reduce our

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SYNOPSYS, INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—Continued

exposure to foreign currency rate changes on non-functional currency denominated forecasted transactions and balance sheet positions. The assets or liabilities associated with the forward contracts are recorded at fair value in other current assets or accrued liabilities in the consolidated balance sheets.

The accounting for gains and losses resulting from changes in fair value depends on the use of the foreign currency forward contract and whether it is designated and qualifies for hedge accounting. See Note 7. Financial Assets and Liabilities of the Notes to Consolidated Financial Statements.

Concentration of Credit Risk. Financial instruments that potentially subject us to significant concentrations of credit risk consist principally of cash equivalents, short-term investments, foreign currency contracts, and trade accounts receivable. We maintain cash equivalents primarily in highly rated taxable and tax-exempt money market funds located in the U.S. and in various overseas locations. Our short-term investments include a variety of financial instruments, such as corporate debt and municipal securities, U.S. Treasury and Government agency securities. By policy, we limit the amount of credit exposure with any one issue, issuer and type of instrument.

We sell our products worldwide primarily to customers in the global electronics market. We perform on-going credit evaluations of our customers' financial condition and do not require collateral. We establish reserves for potential credit losses and such losses have been within management's expectations and have not been material in any year presented.

Income Taxes. We account for income taxes using the asset and liability method. Deferred tax assets and liabilities are recognized for the future tax consequences attributable to differences between the financial statement carrying amounts of existing assets and liabilities and their respective tax bases and operating loss and tax credit carryforwards. Deferred tax assets and liabilities are measured using enacted tax rates expected to apply to taxable income in the years in which those temporary differences are expected to be recovered or settled. The effect on deferred tax assets and liabilities of a change in tax rates is recognized in income in the period that includes the enactment date.

We account for uncertainty in income taxes using a two-step approach to recognizing and measuring uncertain tax positions. The first step is to evaluate the tax position for recognition by determining whether it is more likely than not that the position will be sustained on audit, including resolution of related appeals or litigation processes, if any. The second step is to measure the tax benefit as the largest amount which is more than 50% likely of being realized upon ultimate settlement. An uncertain tax position is considered effectively settled on completion of an examination by a taxing authority if certain other conditions are satisfied.

Property and Equipment. Property and equipment is recorded at cost less accumulated depreciation. Assets, excluding land, are depreciated using the straight-line method over their estimated useful lives. Depreciation expenses were \$145.1 million, \$107.7 million and \$119.1 million in fiscal 2023, 2022 and 2021, respectively. Repair and maintenance costs are

expensed as incurred and such costs were \$84.0 million, \$72.9 million and \$62.6 million in fiscal 2023, 2022 and 2021, respectively.

The useful lives of depreciable assets are as follows:

	Useful Life in Years
Computer and other equipment	3 - 8
Buildings	30
Furniture and fixtures	5
Leasehold improvements	Shorter of the lease term or the estimated useful life

Leases. We determine if an arrangement is a lease at inception of the contract, which is the date on which the terms of the contract are agreed to, and the agreement creates enforceable rights and obligations. A contract is or contains a lease when we have the right to control the use of an identified asset for a period of time. The commencement date of the lease is the date that the lessor makes an underlying asset available for use by the lessee. On the commencement date, leases are evaluated for classification and assets and liabilities are recognized based on the present value of lease payments over the lease term.

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SYNOPSYS, INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—Continued

The lease term used to calculate the lease liability includes options to extend or terminate the lease when it is reasonably certain that the option will be exercised. The right of use (ROU) asset is initially measured as the amount of lease liability, adjusted for any initial lease costs, prepaid lease payments and any lease incentives. Variable lease payments, consisting primarily of reimbursement of costs incurred by lessors for common area maintenance, real estate taxes and insurance, are not included in the lease liability and are recognized as they are incurred.

As most of our leases do not provide an implicit rate, we use the incremental borrowing rate at lease commencement to measure ROU assets and lease liabilities. We use a benchmark senior unsecured yield curve for debt instruments over the similar term, and consider specific credit quality, market conditions, tenor of lease arrangements, and quality of collateral to determine the incremental borrowing rate.

Operating lease expense is generally recognized on a straight-line basis over the lease term. We have elected the practical expedient to account for the lease and non-lease components as a single lease component for the majority of our asset classes. For leases with an initial term of one year or less, we have elected not to record the ROU asset or liability.

Business Combinations. We allocate the purchase price of acquired companies to the tangible and intangible assets acquired and liabilities assumed based on their acquisition-date fair values with the exception of contract assets and contract liabilities (deferred revenue) which are recognized and measured on the acquisition date in accordance with our “Revenue Recognition” policy. The excess of the fair value of purchase consideration over the fair value of these identifiable assets and liabilities is recorded as goodwill. Acquisition-related expenses are recognized separately from the business combination and are expensed as incurred. We include the results of operations of the businesses that are acquired from the acquisition date.

Goodwill. Goodwill represents the excess of the aggregate purchase price over the fair value of the net tangible and identifiable intangible assets acquired by us. The carrying amount of goodwill at each reporting unit is tested for impairment annually on the first day of the fourth fiscal quarter, or more frequently if facts and circumstances warrant a review. We perform either a qualitative or quantitative assessment for goodwill impairment test. When a quantitative goodwill impairment assessment is performed, we use an income approach based on discounted cash flow analysis, a market approach based on market multiples, or a combination of both. If the fair value of a reporting unit is less than its carrying value, a goodwill impairment loss is recorded for the difference.

There was no goodwill impairment in fiscal 2023, 2022 and 2021.

Intangible Assets. Intangible assets consist of acquired technology, certain contract rights, customer relationships, trademarks and trade names, and capitalized software. These intangible assets are acquired through business combinations, direct purchases, or internally

developed capitalized software. Intangible assets are amortized on a straight-line basis over their estimated useful lives which range from one to ten years.

We review the carrying values of long-lived assets including intangible assets whenever events or changes in circumstances indicate that the carrying value may not be fully recoverable. Recoverability of long-lived assets is measured by comparing the carrying value of such asset group to the future undiscounted cash flows that asset group is expected to generate. If the undiscounted future cash flow is less than the carrying amount of the asset group, we recognize an impairment loss based on the excess of the carrying amount over the fair value of the asset group. There were no impairment charges for long-lived assets in fiscal 2023, 2022 and 2021.

Redeemable Non-controlling Interest. Non-controlling interest that is not solely redeemable within our control is reported as temporary equity in our consolidated balance sheets. The carrying value of the redeemable non-controlling interest equals the redemption value at the end of each reporting period, after giving effect to the change from the net income (loss) attributable to the redeemable non-controlling interest. We remeasure the redemption value of the non-controlling interest on a quarterly basis and changes in the estimated redemption value are recognized through retained earnings and may also impact the net income or loss attributable to common stockholders of Synopsys if the redemption value falls below a stated threshold. See Note 4. Business Combinations of the Notes to Consolidated Financial Statements for more information regarding the redeemable non-controlling interests.

Revenue Recognition. We recognize revenue for the transfer of services or products to customers in an amount that reflects the consideration to which we expect to be entitled in exchange for those services or products. The

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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—Continued

principle is achieved through the following five-step approach:

- Identification of the contract, or contracts, with the customer
- Identification of the performance obligation in the contract
- Determination of the transaction price
- Allocation of the transaction price to the performance obligations in the contract
- Recognition of revenue when, or as, we satisfy a performance obligation

Nature of Products and Services

We generate revenue from the licensing of our EDA software, IP Blocks, and Software Integrity products, as well as sale of hardware products, and maintenance and services. The various types are set forth below.

Electronic Design Automation

Software license revenue consists of fees associated with the licensing of our software primarily through Technology Subscription License (TSL) contracts. TSLs are time-based licenses for a finite term and generally provide the customer with limited rights to receive, or to exchange certain quantities of licensed software for, unspecified future technology. The majority of our arrangements are TSLs due to the nature of our business and customer requirements. In addition to the licenses, the arrangements also include: post-contract customer support, which includes providing frequent updates and upgrades to maintain the utility of the software due to rapid changes in technology; other intertwined services such as multiple copies of the tools; assisting our customers in applying our technology in the customers' development environment; and rights to remix licenses for other licenses. Payments are generally received in equal or near equal installments over the term of the arrangement. We have concluded that our software licenses in TSL contracts are not distinct from our obligation to provide unspecified software updates to the licensed software throughout the license term. Such updates represent inputs to a single, combined performance obligation, commencing upon the later of the arrangement effective date or transfer of control to the software license. Remix rights are not an additional promised good or service in the contract, and where unspecified additional software product rights are part of the contract with the customer, such rights are accounted for as part of the single performance obligation that includes the licenses, updates, and technical support because such rights are provided for the same period of time and have the same pattern of transfer to the customer over the duration of the subscription term.

Design IP Products

We generally license IP under nonexclusive license agreements that provide usage rights for specific applications. Additionally, for certain IP license agreements, royalties are collected as customers sell their own products that incorporate our IP. These arrangements generally have two distinct performance obligations that consist of transferring the licensed IP and the post contract support service. Support services consist of a stand-ready obligation to provide technical support and software updates over the support term. Revenue allocated to the IP license is recognized at a point in time upon the later of the delivery date or the beginning of the license period, and revenue allocated to support services is recognized ratably over the support term. Royalties are recognized as revenue is earned, generally when the customer sells its products that incorporate our IP.

Software Integrity Products

Software Integrity product arrangements provide customers the right to software licenses, software updates and technical support. Under the term of these arrangements, the customer expects to receive integral updates to the software licenses that protect the customer's software from potential security vulnerabilities. The licenses and software updates together serve to fulfill our commitment to the customer, as they represent inputs to a single, combined performance obligation that commences upon the later of the arrangement effective date or transfer of the software license. Software updates are part of the contract with the customer, and such rights are accounted for as part of the single performance obligation that includes the licenses, updates, and technical support because such rights are provided for the same period of time and have the same time-based pattern of transfer to the customer.

Hardware

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We generally have two performance obligations in arrangements involving the sale of hardware products. The first performance obligation is to transfer the hardware product, which includes embedded software integral to the functionality of the hardware product. The second performance obligation is to provide maintenance on the hardware and our embedded software, including rights to technical support, hardware repairs and software updates that are all provided over the same term and have the same time-based pattern of transfer to the customer. The portion of the transaction price allocated to the hardware product is recognized as revenue at a point in time when control of the hardware is transferred to the customer. We have concluded that control generally transfers upon shipment because the customer has the ability to direct the use of the asset and an obligation to pay for the hardware. The portion of the transaction price allocated to maintenance is recognized as revenue that is ratable over the maintenance term.

Professional Services

Our arrangements often include service elements (other than maintenance and support services). These services include training, design assistance, and consulting. These services are generally performed on a time and materials basis, and are recognized over time, as the customer simultaneously receives and consumes the benefit provided. Certain arrangements also include the customization or modification of licensed IP. Revenue from these contracts is recognized over time as the services are performed, when the development is specific to the customer's needs and we have enforceable rights to payment for performance completed. Inputs such as costs incurred and hours expended are used in order to measure progress of performance. We have a history of accurately estimating project status and the costs necessary to complete projects. A number of internal and external factors can affect these estimates, including labor rates, utilization and efficiency variances, specification and testing requirement changes, and changes in customer delivery priorities. Payments for services are generally due upon milestones in the contract or upon consumption of the hourly resources.

Flexible Spending Accounts

Our customers frequently enter into non-cancelable Flexible Spending Account arrangements (FSA) whereby the customer commits to a fixed dollar amount over a specified period of time that can be used to purchase from a list of our products or services. These arrangements do not meet the definition of a revenue contract until the customer executes a separate order (pulldown request) to identify the required products and services that they are purchasing. The combination of the FSA arrangement and the subsequent order creates enforceable rights and obligations, thus meeting the definition of a revenue contract. Each separate order under the agreement is treated as an individual contract and accounted for based on the respective performance obligations included within the pulldown requests.

Significant Judgments

Our contracts with customers often include promises to transfer multiple products and services to a customer. Determining whether services and products are considered distinct

performance obligations that should be accounted for separately versus together requires significant judgment. We have concluded that (1) our EDA software licenses in TSL contracts are not distinct from our obligation to provide unspecified software updates to the licensed software throughout the license term, because those promises represent inputs to a single, combined performance obligation, and (2) where unspecified additional software product rights are part of the contract with the customer, such rights are accounted for as part of the single performance obligation that includes the licenses, updates, and technical support, because such rights are provided for the same period of time and have the same time-based pattern of transfer to the customer. In reaching this conclusion, we considered the nature of the obligation to customers which is to provide an ongoing right to use the most up to date and relevant software. As EDA customers operate in a rapidly changing and competitive environment, satisfying the obligation requires providing critical updates to the existing software products, including ongoing iterative interaction with customers to make the software relevant to customers' ability to meet the time to go to market with advanced products.

Similarly, we also concluded that in our Software Integrity business, the licenses and maintenance updates serve together to fulfill our commitment to the customer as both work together to provide the functionality to the customer and represent a combined performance obligation because the updates are essential to the software's central utility, which is to identify security vulnerabilities and other threats.

Our contracts with customers can involve hundreds of products and various license rights. Customers often negotiate a broad portfolio of solutions, and favorable terms along with future purchase options to manage their

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overall costs. Determining whether the purchase options are considered distinct performance obligations that should be accounted for separately as material rights versus combined together may require significant judgment.

Judgment is also required to determine the standalone selling price (SSP) for each distinct performance obligation. For non-software performance obligations (IP, Hardware, and services), SSP is established based on observable prices of products and services sold separately. SSP for license (and related updates and support) in a contract with multiple performance obligations is determined by applying a residual approach whereby all other non-software performance obligations within a contract are first allocated a portion of the transaction price based upon their respective SSP, using observable prices, with any residual amount of the transaction price allocated to the license because we do not sell the license separately, and the pricing is highly variable.

Contract Balances

The timing of revenue recognition may differ from the timing of invoicing customers, and these timing differences result in receivables (billed or unbilled), contract assets, or contract liabilities (deferred revenue) on our consolidated balance sheet. We record a contract asset when revenue is recognized prior to the right to invoice, or deferred revenue when revenue is recognized subsequent to invoicing. For time-based software agreements, customers are generally invoiced in equal, quarterly amounts, although some customers prefer to be invoiced in single or annual amounts. We record an unbilled receivable when revenue is recognized and we have an unconditional right to invoice and receive payment.

Warranties and Indemnities

Warranties. We generally warrant our products to be free from defects in media and to substantially conform to material specifications for a period of 90 days for our software products and for up to six months for our hardware products.

Indemnities. In addition to such warranties, in certain cases, we provide our customers with limited indemnification with respect to claims that their use of our software products infringes on patents, copyrights, trademarks or trade secrets. For example, in connection with a litigation campaign launched by Bell Semiconductor LLC (Bell Semic), a patent monetization entity, some customers have requested defense and indemnification against claims of patent infringement asserted by Bell Semic in various district court litigations and at the U.S. International Trade Commission. Bell Semic alleges that the customers' use of one or more features of certain of our products infringes one or more of six patents held by Bell Semic. We have offered to defend some of our customers consistent with the terms of our End User License Agreement. We are unable to estimate the potential impact of these commitments on the future results of operations.

Net Income Per Share. We compute basic net income per share by dividing net income available to common stockholders by the weighted average number of common shares

outstanding during the period. Diluted net income per share reflects the dilution from potential common shares outstanding such as stock options and unvested restricted stock units and awards during the period using the treasury stock method. See Note 14. Net Income Per Share of the Notes to Consolidated Financial Statements.

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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—Continued

Foreign Currency Translation. The functional currency of the majority of our active foreign subsidiaries is the foreign subsidiary's local currency. Assets and liabilities that are not denominated in the functional currency are remeasured into the functional currency with any related gains or losses recorded in earnings. We translate assets and liabilities of our non-U.S. dollar functional currency foreign operations into the U.S. dollar reporting currency at exchange rates in effect at the balance sheet date. We translate income and expense items of such foreign operations into the U.S. dollar reporting currency at average exchange rates for the period. Accumulated translation adjustments are reported in stockholders' equity, as a component of accumulated other comprehensive income (loss).

Segment Reporting. Effective in the first quarter of fiscal 2023, we realigned our organizational structure to evaluate the results of our Design IP business separately. Our Chief Operating Decision Maker (CODM), our Chief Executive Officer (CEO), now regularly reviews disaggregated segment information, assesses performance against our key growth strategies and allocates resources based on this new organizational structure. As a result, effective in the first quarter of fiscal 2023, we changed our reportable segments from two reportable segments to the following three reportable segments: (1) Design Automation, which includes our advanced silicon design, verification products and services, system integration products and services, digital, custom and FPGA IC design software, verification software and hardware products, manufacturing software products and other; (2) Design IP, which includes our Design IP products; and (3) Software Integrity, which includes solutions that test software code for security vulnerabilities and quality defects, as well as professional and managed services. As such, prior period reportable segment results and related disclosures have been reclassified to reflect our current reportable segments.

Recently Adopted Accounting Pronouncements

In December 2019, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update (ASU) 2019-12, Simplifying the Accounting for Income Taxes, which simplifies the accounting for income taxes, eliminates certain exceptions within ASC 740, Income Taxes, and clarifies certain aspects of the current guidance to promote consistency among reporting entities. We adopted the standard as of the beginning of fiscal 2022 on a prospective basis and the adoption did not have a material impact on our consolidated financial statements.

Beginning in fiscal 2021, we adopted ASC 326, which was issued by the FASB in June 2016 as ASU 2016-13 Financial Instruments – Credit Losses: Measurement of Credit Losses on Financial Instruments. The ASU replaced previous incurred loss impairment guidance and established a single expected credit losses allowance framework for financial assets carried at amortized cost. It also eliminated the concept of other-than-temporary impairment and requires credit losses related to certain available-for-sale debt securities to be recorded through an allowance for credit losses. We adopted ASC 326 using the modified retrospective method, which requires a cumulative-effect adjustment to the opening balance of retained earnings to be recognized on the date of adoption and, accordingly, recorded a net decrease

of \$3.2 million to retained earnings as of beginning of fiscal 2021. Please see the “Allowance for Credit Losses” accounting policy above.

In October 2021, the FASB issued ASU 2021-08, Business Combinations (Topic 805): Accounting for Contract Assets and Contract Liabilities from Contracts with Customers. The new guidance requires contract assets and contract liabilities acquired in a business combination to be recognized and measured by the acquirer on the acquisition date in accordance with ASC 606, Revenue from Contracts with Customers, as if the acquirer had originated the contracts. We early adopted the standard in the second quarter of fiscal 2022 on a prospective basis, and the adoption did not have a material impact on our consolidated financial statements.

There have been no recently adopted accounting pronouncements during fiscal 2023 that are of significance to us.

Recent Accounting Pronouncements Not Yet Adopted

In June 2022, the FASB issued ASU 2022-03, Fair Value Measurement (Topic 820): Fair Value Measurement of Equity Securities Subject to Contractual Sale Restrictions (ASU 2022-03), which applies to all equity securities measured at fair value that are subject to contractual sale restrictions. This change prohibits entities from taking into account contractual restrictions on the sale of equity securities when estimating fair value and introduces required disclosures for such transactions. The standard will become effective for us beginning on November 1, 2024 and will be applied prospectively. Early adoption is permitted. Any future impact from the adoption of this guidance will depend on the facts and circumstances of future transactions.

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In November 2023, the FASB issued ASU 2023-07, Segment Reporting (Topic 280): Improvements to Reportable Segment Disclosures (ASU 2023-07). The ASU expands public entities' segment disclosures by requiring disclosure of significant segment expenses that are regularly provided to the CODM and included within each reported measure of segment profit or loss, an amount and description of its composition for other segment items, and interim disclosures of a reportable segment's profit or loss and assets. The ASU is effective for us beginning on November 1, 2024 and will be applied retrospectively. Early adoption is permitted. We are currently evaluating the impact of adopting this ASU on our consolidated financial statements and disclosures.

Note 3. Revenue

Disaggregated Revenue

The following table shows the percentage of revenue by product groups:

	Year Ended October 31,		
	2023	2022	2021
EDA	62.9 %	62.9 %	63.6 %
Design IP	26.4 %	25.9 %	25.1 %
Software Integrity	9.0 %	9.2 %	9.4 %
Other	1.7 %	2.0 %	1.9 %
Total	100.0 %	100.0 %	100.0 %

Contract Balances

The contract assets indicated below are presented as prepaid and other current assets in the consolidated balance sheets. The contract assets are transferred to receivables when the rights to invoice and receive payment become unconditional. Unbilled receivables are presented as accounts receivable, net, in the consolidated balance sheets.

Contract balances are as follows:

	As of October 31,	
	2023	2022
	(in thousands)	
Contract assets, net	\$ 389,042	\$ 260,498
Unbilled receivables	\$ 60,016	\$ 46,254
Deferred revenue	\$ 1,951,128	\$ 2,065,294

During fiscal 2023, we recognized revenue of \$1.7 billion, including previously unfulfilled contracts that have expired and are no longer subject to an implied promise to provide future services, that was included in the deferred revenue balance as of October 31, 2022. During

fiscal 2022, we recognized revenue of \$1.2 billion that was included in the deferred revenue balance as of October 31, 2021.

Contracted but unsatisfied or partially unsatisfied performance obligations (backlog) were approximately \$8.6 billion as of October 31, 2023, which includes \$1.4 billion in non-cancellable Flexible Spending Account (FSA) commitments from customers where actual product selection and quantities of specific products or services are to be determined by customers at a later date. We have elected to exclude future sales-based royalty payments from the remaining performance obligations. Approximately 40% of the backlog as of October 31, 2023, excluding non-cancellable FSA, is expected to be recognized as revenue over the next 12 months. The majority of the remaining backlog is expected to be recognized in the following three years. The backlog was approximately \$7.1 billion as of October 31, 2022, which included \$1.1 billion in non-cancellable FSA commitments from customers.

During fiscal 2023 and 2022, we recognized \$99.3 million and \$137.3 million, respectively, from performance obligations satisfied from sales-based royalties earned during the periods.

Costs of Obtaining a Contract with Customer

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The incremental costs of obtaining a contract with a customer, which consist primarily of direct sales commission earned upon execution of the contract, were capitalized in compliance with authoritative guidance, and amortized over the estimated period of which the benefit is expected to be received. As direct sales commission paid for renewals are commensurate with the amounts paid for initial contracts, the deferred incremental costs will be recognized over the contract term.

Capitalized commission costs, net of accumulated amortization, as of October 31, 2023 and 2022 were \$88.6 million and \$96.5 million, respectively. The balances are included in other long-term assets in our consolidated balance sheets. Amortization of these assets were \$82.2 million, \$73.0 million and \$64.7 million during fiscal 2023, 2022 and 2021, respectively, and are included in sales and marketing expense in our consolidated statements of income.

Note 4. Business Combinations

Fiscal 2023

During fiscal 2023, we completed several acquisitions for an aggregate purchase consideration of \$295.4 million, net of cash acquired. The aggregate purchase consideration was preliminary and allocated as follows: \$95.8 million to identifiable intangible assets, \$229.4 million to goodwill, and \$29.8 million to net tangible liabilities. The acquired identifiable intangible assets were valued using the income approach and are being amortized over their respective useful lives ranging from 1 to 8 years. The goodwill recognized from these acquisitions was assigned to the Design Automation reporting unit, of which \$5.7 million was deductible for income tax purposes.

We have included the financial results of the fiscal 2023 acquisitions in our consolidated financial statements from their respective acquisition date. We do not consider these acquisitions to be material, individually or in the aggregate, to our consolidated financial statements.

Fiscal 2022

NTT Security AppSec Solutions Inc.

On June 22, 2022, we completed the acquisition of all outstanding shares of NTT Security AppSec Solutions Inc. (which operated under the name WhiteHat Security, or WhiteHat), a provider of dynamic application security testing solutions, from NTT Security Corporation for an aggregate purchase price of \$310.0 million, net of cash acquired. With this acquisition, we broadened our product offering in the application security testing market.

The aggregate purchase consideration was allocated as follows: \$97.5 million to identifiable intangible assets, \$252.9 million to goodwill, and \$40.4 million to net tangible liabilities. The goodwill was assigned to the Software Integrity reporting unit and the amount recognized was not deductible for tax purposes. The acquired identifiable intangible assets of

\$97.5 million were valued using the income approach and are being amortized over their respective useful lives ranging from 5 to 10 years.

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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—Continued

OpenLight Photonics, Inc.

During the second quarter of fiscal 2022, we acquired a 75% equity interest in OpenLight Photonics, Inc. (OpenLight) for cash consideration of \$90.0 million. The remaining 25% equity interest in OpenLight is held by Juniper Networks, Inc. (the Minority Investor) from their contribution of IP and certain tangible assets.

The agreement with the Minority Investor contains redemption features whereby the interest held by the Minority Investor is redeemable either (i) at the option of the Minority Investor on or after the third anniversary of the acquisition or sooner in certain circumstances or (ii) at our option beginning on the third anniversary of the acquisition. This option is exercisable at the greater of fair value at the time of redemption or \$30.0 million and was valued at \$10.1 million, resulting in a total consideration of \$100.1 million.

The purchase price was allocated as follows: \$94.0 million to identifiable intangible assets and \$46.7 million to goodwill, which were attributable to the Design Automation reporting unit. There was no tax-deductible goodwill related to the acquisition.

During fiscal 2023, our ownership interest in OpenLight was reduced to 73% as a result of the recognition of non-controlling interest upon issuance of OpenLight stock.

During fiscal 2023, OpenLight incurred a net loss of \$40.9 million, of which \$10.0 million was attributable to redeemable non-controlling interest. As of October 31, 2023, the carrying value of the redeemable non-controlling interest was \$31.0 million in the consolidated balance sheets.

Other Fiscal 2022 Acquisitions

During fiscal 2022, we completed two other acquisitions for aggregate purchase consideration of \$31.8 million, net of cash acquired. The purchase price was allocated as follows: \$12.7 million to identifiable intangible assets, \$3.1 million to net tangible liabilities, and \$22.2 million to goodwill, which were attributable to the Design Automation reporting unit. There was no tax-deductible goodwill related to the acquisitions.

Fiscal 2021

During fiscal 2021, we completed several acquisitions for an aggregate consideration of \$298.9 million, net of cash acquired. We do not consider these acquisitions to be material, individually or in the aggregate, to our consolidated financial statements. Total purchase consideration was allocated as follows: \$109.3 million to identifiable intangible assets, \$16.2 million to net tangible liabilities, and \$205.8 million to goodwill, of which \$150.4 million was attributable to the Design Automation reporting unit, \$9.7 million was attributable to the Designed IP reporting unit, and \$45.7 million was attributable to the Software Integrity reporting unit.

Approximately \$34.0 million of the goodwill related to the fiscal 2021 acquisitions was deductible for tax purposes.

Preliminary Fair Value Estimates

For all acquisitions completed in fiscal 2023, the purchase price was allocated to tangible and identifiable intangible assets acquired and liabilities assumed based on their preliminary estimated fair values, which were determined using generally accepted valuation techniques based on estimates and assumptions made by management at the time of acquisition. These estimates and assumptions are subject to change as additional information becomes available during the respective measurement period, which is not expected to exceed 12 months from applicable acquisition date. The primary areas of those preliminary estimates relate to certain tangible assets and liabilities, identifiable intangible assets, and income taxes.

Acquisition-Related Transaction Costs

Acquisition-related transaction costs were \$15.1 million, \$14.1 million and \$15.4 million during fiscal 2023, 2022 and 2021, respectively. These costs consist of professional fees and administrative costs and were expensed as incurred in our consolidated statements of income.

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SYNOPSYS, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—Continued

Note 5. Goodwill and Intangible Assets

Goodwill

Goodwill represents the excess of the purchase price over the fair value of the net tangible and identifiable intangible assets acquired in business combinations. As a result of the change in reporting units effective in the first quarter of fiscal 2023, we have three reportable segments, and reporting units are determined to be the same as reportable segments. We performed a quantitative impairment assessment by estimating the fair value of our new reporting units and reallocating goodwill to the reporting units using a relative fair value method. No impairment of goodwill was identified before and after the change in reporting units. We also performed the required annual goodwill impairment test in the fourth quarter of fiscal 2023 and concluded that goodwill was not impaired.

Goodwill activity by reportable segment consists of the following:

	Design Automation	Design IP	Software Integrity	Total
	(in thousands)			
Balance at October 31, 2021	\$ 2,156,732	\$ 947,742	\$ 471,311	\$ 3,575,785
Additions	68,923	—	249,852	318,775
Adjustments	1,285	—	—	1,285
Effect of foreign currency translation	(50,603)	(3,008)	—	(53,611)
Balance at October 31, 2022	2,176,337	944,734	721,163	3,842,234
Additions	229,351	—	—	229,351
Adjustments	—	—	3,097	3,097
Effect of foreign currency translation	(5,006)	649	11	(4,346)
Balance at October 31, 2023	<u>\$ 2,400,682</u>	<u>\$ 945,383</u>	<u>\$ 724,271</u>	<u>\$ 4,070,336</u>

Intangible Assets

Intangible assets as of October 31, 2023 consists of the following:

	Gross Carrying Amount	Accumulated Amortization	Net Amount
	(in thousands)		
Core/developed technology	\$ 1,135,347	\$ 885,555	\$ 249,792
Customer relationships	463,371	358,421	104,950
Contract rights intangible	194,930	190,670	4,260
Trademarks and trade names	52,825	37,633	15,192
Capitalized software development costs	50,795	50,795	—
Total	<u>\$ 1,897,268</u>	<u>\$ 1,523,074</u>	<u>\$ 374,194</u>

Intangible assets as of October 31, 2022 consists of the following:

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SYNOPSYS, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—Continued

	Gross Carrying Amount	Accumulated Amortization	Net Amount
	(in thousands)		
Core/developed technology	\$ 1,083,703	\$ 813,226	\$ 270,477
Customer relationships	426,242	333,984	92,258
Contract rights intangible	190,666	188,262	2,404
Trademarks and trade names	52,795	34,054	18,741
Capitalized software development costs	48,591	46,025	2,566
Total	<u>\$ 1,801,997</u>	<u>\$ 1,415,551</u>	<u>\$ 386,446</u>

Amortization expense related to intangible assets consists of the following:

	Year Ended October 31,		
	2023	2022	2021
	(in thousands)		
Core/developed technology	\$ 72,412	\$ 64,469	\$ 46,049
Customer relationships	24,446	26,640	31,478
Contract rights intangible	2,452	2,682	2,413
Trademarks and trade names	3,579	2,899	2,440
Capitalized software development costs ⁽¹⁾	4,771	2,672	4,067
Total	<u>\$ 107,660</u>	<u>\$ 99,362</u>	<u>\$ 86,447</u>

⁽¹⁾ Amortization of capitalized software development costs is included in cost of products revenue in the consolidated statements of income.

The following table presents the estimated future amortization of intangible assets as of October 31, 2023:

Fiscal Year	(in thousands)
2024	\$ 103,108
2025	84,588
2026	71,406
2027	51,205
2028	25,807
2029 and thereafter	38,080
Total	<u>\$ 374,194</u>

Note 6. Balance Sheet Components

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SYNOPSYS, INC.
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	As of October 31,	
	2023	2022
	(in thousands)	
Accounts receivable, net:		
Accounts receivable	\$ 929,673	\$ 779,390
Unbilled accounts receivable	60,016	46,254
Total accounts receivable	989,689	825,644
Less: allowance for credit losses	(42,722)	(29,553)
Total	\$ 946,967	\$ 796,091
Property and equipment, net:		
Computer and other equipment	\$ 991,994	\$ 870,388
Buildings	135,255	135,722
Furniture and fixtures	86,946	80,885
Land	21,598	21,598
Leasehold improvements	265,536	241,062
	1,501,329	1,349,655
Less: accumulated depreciation ⁽¹⁾	(944,068)	(866,355)
Total	\$ 557,261	\$ 483,300
Other long-term assets:		
Deferred compensation plan assets	\$ 300,731	\$ 279,096
Capitalized commission, net	88,614	96,509
Other	81,628	88,090
Total	\$ 470,973	\$ 463,695
Accounts payable and accrued liabilities:		
Payroll and related benefits	\$ 583,854	\$ 559,886
Accrued income taxes	226,762	35,290
Other accrued liabilities	157,254	176,647
Accounts payable	155,891	37,580
Total	\$ 1,123,761	\$ 809,403
Other long-term liabilities:		
Deferred compensation plan liabilities	\$ 300,731	\$ 279,096
Other	85,407	48,733
Total	\$ 386,138	\$ 327,829

⁽¹⁾ Accumulated depreciation includes write-offs due to retirement of fully depreciated fixed assets.

Note 7. Financial Assets and Liabilities

Cash Equivalents and Short-term Investments

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SYNOPSYS, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—Continued

As of October 31, 2023, the balances of our cash equivalents and short-term investments are as follows:

	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses Less Than 12 Continuous Months	Gross Unrealized Losses 12 Continuous Months or Longer	Estimated Fair Value⁽¹⁾
(in thousands)					
Cash equivalents:					
Money market funds	\$ 10,129	\$ —	\$ —	\$ —	\$ 10,129
U.S. Treasury, agency & T-bills	2,994	—	—	—	2,994
Total:	\$ 13,123	\$ —	\$ —	\$ —	\$ 13,123
Short-term investments:					
U.S. Treasury, agency & T-bills	\$ 15,752	\$ —	\$ (61)	\$ (2)	\$ 15,689
Municipal bonds	515	—	—	(16)	499
Corporate debt securities	103,213	13	(455)	(396)	102,375
Asset-backed securities	33,245	21	(93)	(97)	33,076
Total:	\$ 152,725	\$ 34	\$ (609)	\$ (511)	\$ 151,639

⁽¹⁾ See Note 8. Fair Value Measurements for further discussion on fair values.

Our short-term investment portfolio includes both corporate and government debt securities that have a maximum maturity of three years. The longer the duration of these securities, the more susceptible they are to changes in market interest rates and bond yields. As yields increase, those securities with a lower yield-at-cost show a mark-to-market unrealized loss. Most of our unrealized losses are due to changes in market interest rates, and bond yields. We believe that we have the ability to realize the full value of all of these investments upon maturity. As of October 31, 2023, our investments that were in a continuous loss position of 12 months or more, as well as the unrealized losses on those investments, were immaterial.

The contractual maturities of our available-for-sale debt securities as of October 31, 2023 are as follows:

	Amortized Cost	Fair Value
	(in thousands)	
Less than 1 year	\$ 74,398	\$ 73,879
1-5 years	74,604	74,104
5-10 years	1,723	1,721
>10 years	2,000	1,935
Total	<u>\$ 152,725</u>	<u>\$ 151,639</u>

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SYNOPSYS, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—Continued

As of October 31, 2022, the balances of our cash equivalents and short-term investments are as follows:

	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses Less Than 12 Continuous Months	Gross Unrealized Losses 12 Continuous Months or Longer	Estimated Fair Value⁽¹⁾
(in thousands)					
Cash equivalents:					
Money market funds	\$ 77,683	\$ —	\$ —	\$ —	\$ 77,683
Total:	<u>\$ 77,683</u>	<u>\$ —</u>	<u>\$ —</u>	<u>\$ —</u>	<u>\$ 77,683</u>
Short-term investments:					
U.S. Treasury, agency & T-bills	\$ 25,816	\$ —	\$ (174)	\$ (39)	\$ 25,603
Municipal bonds	2,970	—	(12)	(80)	2,878
Corporate debt securities	95,899	7	(747)	(1,135)	94,024
Asset-backed securities	25,826	—	(149)	(269)	25,408
Total:	<u>\$ 150,511</u>	<u>\$ 7</u>	<u>\$ (1,082)</u>	<u>\$ (1,523)</u>	<u>\$ 147,913</u>

⁽¹⁾ See Note 8. Fair Value Measurements for further discussion on fair values.

Restricted cash

We include amounts generally described as restricted cash in cash and cash equivalents when reconciling beginning-of-period and end-of-period total amounts shown on the consolidated statements of cash flows. Restricted cash is primarily associated with office leases and employee loan programs.

The following table provides a reconciliation of cash, cash equivalents and restricted cash included in the consolidated balance sheets:

	As of October 31,	
	2023	2022
	(in thousands)	
Cash and cash equivalents	\$ 1,438,913	\$ 1,417,608
Restricted cash included in prepaid and other current assets	1,549	1,566
Restricted cash included in other long-term assets	725	690
Total cash, cash equivalents and restricted cash	<u>\$ 1,441,187</u>	<u>\$ 1,419,864</u>

Non-marketable equity securities

Our portfolio of non-marketable equity securities consists of strategic investments in privately held companies. There were no material impairments of non-marketable equity securities in fiscal 2023, fiscal 2022, or fiscal 2021.

Derivatives

We recognize derivative instruments as either assets or liabilities in the consolidated balance sheets at fair value and provide qualitative and quantitative disclosures about such derivatives. We operate internationally and are exposed to potentially adverse movements in foreign currency exchange rates. We enter into hedges in the form of foreign currency forward contracts to reduce our exposure to foreign currency rate changes on non-functional currency denominated forecasted transactions and balance sheet positions including: (1) certain assets and liabilities, (2) shipments forecasted to occur within approximately one month, (3) future billings and revenue on previously shipped orders, and (4) certain future intercompany invoices denominated in foreign currencies.

The duration of forward contracts, the majority of which are short-term, ranges from approximately 1 month to 27 months at inception. We do not use foreign currency forward contracts for speculative or trading purposes. We enter into foreign exchange forward contracts with high credit quality financial institutions that are rated "A" or above and to date have not experienced nonperformance by counterparties. In addition, we mitigate credit risk in derivative

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SYNOPSYS, INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—Continued

transactions by permitting net settlement of transactions with the same counterparty and anticipate continued performance by all counterparties to such agreements.

The assets or liabilities associated with the forward contracts are recorded at fair value in other current assets or accrued liabilities in the consolidated balance sheets. The accounting for gains and losses resulting from changes in fair value depends on the use of the foreign currency forward contract and whether it is designated and qualifies for hedge accounting. The cash flow impact upon settlement of the derivative contracts is included in “net cash provided by operating activities” in the consolidated statements of cash flows.

Cash Flow Hedging Activities

Certain foreign exchange forward contracts are designated and qualify as cash flow hedges. These contracts have durations of approximately 27 months or less. Certain forward contracts are rolled over periodically to capture the full length of exposure to our foreign currency risk, which can be up to three years. To receive hedge accounting treatment, all hedging relationships are formally documented at the inception of the hedge, and the hedges must be highly effective in offsetting changes to future cash flows on the hedged transactions. The related gains or losses resulting from changes in fair value of these hedges is initially reported, net of tax, as a component of other comprehensive income (loss) (OCI) in stockholders’ equity and reclassified into revenue or operating expenses, as appropriate, at the time the hedged transactions affect earnings. We expect a majority of the hedge balance in OCI to be reclassified to the statements of income within the next 12 months.

We did not record any gains or losses related to discontinuation of cash flow hedges for fiscal years 2023, 2022 and 2021.

Non-designated Hedging Activities

Our foreign exchange forward contracts that are used to hedge non-functional currency denominated balance sheet assets and liabilities are not designated as hedging instruments. Accordingly, any gains or losses from changes in the fair value of the forward contracts are recorded in other income (expense), net. The gains and losses on these forward contracts generally offset the gains and losses associated with the underlying assets and liabilities, which are also recorded in other income (expense), net. The duration of the forward contracts for hedging our balance sheet exposure is approximately one month.

We also have certain foreign exchange forward contracts for hedging certain international revenues and expenses that are not designated as hedging instruments. Accordingly, any gains or losses from changes in the fair value of the forward contracts are recorded in other income (expense), net. The gains and losses on these forward contracts generally offset the gains and losses associated with the foreign currency in operating income. The duration of these forward contracts is usually less than one year. The overall goal of our hedging program is to minimize the impact of currency fluctuations on the net income over the fiscal year.

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SYNOPSYS, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—Continued

The effects of the non-designated derivative instruments on our consolidated statements of income are summarized as follows:

	Year Ended October 31,		
	2023	2022	2021
	(in thousands)		
Gains (losses) recorded in other income (expense), net	\$ (5,899)	\$ (15,851)	\$ (855)

The notional amounts in the table below for derivative instruments provide one measure of the transaction volume outstanding:

	As of October 31,	
	2023	2022
	(in thousands)	
Total gross notional amounts	\$ 1,666,758	\$ 1,386,140
Net fair value	\$ (2,308)	\$ (50,080)

Our exposure to the market gains or losses will vary over time as a function of currency exchange rates. The amounts ultimately realized upon settlement of these financial instruments, together with the gains and losses on the underlying exposures, will depend on actual market conditions during the remaining life of the instruments.

The following table represents the consolidated balance sheets location and amount of derivative instrument fair values segregated between designated and non-designated hedge instruments:

	Fair values of derivative instruments designated as hedging instruments		Fair values of derivative instruments not designated as hedging instruments	
	(in thousands)		(in thousands)	
Balance at October 31, 2023				
Other current assets	\$	12,962	\$	491
Accrued liabilities	\$	14,665	\$	1,096
Balance at October 31, 2022				
Other current assets	\$	2,315	\$	223
Accrued liabilities	\$	52,171	\$	447

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SYNOPSIS, INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—Continued

The following table represents the location of the amount of gains and losses on derivative instrument fair values for designated hedge instruments, net of tax in the consolidated statements of income:

		Amount of gains (losses) recognized in			Amount of gains (losses) reclassified from OCI	
	Location of gains (losses) recognized in OCI on derivatives		OCI on derivatives (effective portion)		Location of gains (losses) reclassified from OCI	
(in thousands)						
Fiscal year ended October 31, 2023						
Foreign exchange contracts	Revenue	\$	8,390	Revenue	\$	(9,942)
Foreign exchange contracts	Operating expenses		16,596	Operating expenses		(15,334)
Total		\$	24,986		\$	(25,276)
Fiscal year ended October 31, 2022						
Foreign exchange contracts	Revenue	\$	(19,755)	Revenue	\$	10,975
Foreign exchange contracts	Operating expenses		(59,314)	Operating expenses		(15,869)
Total		\$	(79,069)		\$	(4,894)
Fiscal year ended October 31, 2021						
Foreign exchange contracts	Revenue	\$	1,148	Revenue	\$	4,181
Foreign exchange contracts	Operating expenses		8,712	Operating expenses		10,378
Total		\$	9,860		\$	14,559

Other Commitments – Credit and Term Loan

On December 14, 2022, we entered into a Fifth Extension and Amendment Agreement (the Fifth Amendment), which amended and restated our previous credit agreement, dated as of January 22, 2021 (as amended and restated, the Credit Agreement).

The Fifth Amendment increased the existing senior unsecured revolving credit facility (the Revolver) from \$650.0 million to \$850.0 million and extended the maturity date from January

22, 2024 to December 14, 2027, which could be further extended at our option. The Credit Agreement also provides an uncommitted incremental revolving loan facility of up to \$150.0 million in the aggregate principal amount. The Credit Agreement contains a financial covenant requiring us to maintain a maximum consolidated leverage ratio, as well as other non-financial covenants. As of October 31, 2023, we were in compliance with the financial covenant.

Borrowings bear interest at the adjusted term Secured Overnight Financing Rate (SOFR) plus an applicable margin between 0.785% and 0.975% based upon our consolidated leverage ratio. In addition, facility fees are payable on the Revolver at rates between 0.09% and 0.15% per year based on our leverage ratio on the daily amount of the revolving commitment.

There was no outstanding balance under the Revolver as of October 31, 2023 and October 31, 2022.

In July 2018, we entered into a 12-year 220.0 million Renminbi (approximately \$33.0 million) credit agreement with a lender in China to support our facilities expansion. Borrowings bear interest at a floating rate based on the 5-year Loan Prime Rate plus 0.74%. As of October 31, 2023, we had a \$18.1 million outstanding balance under the agreement. The carrying amount of the short-term and long-term debt approximates the estimated fair value.

Note 8. Fair Value Measurements

ASC 820-10, Fair Value Measurements and Disclosures, defines fair value, establishes guidelines and enhances disclosure requirements for fair value measurements. The accounting guidance requires an entity to maximize the use of observable inputs and minimize the use of unobservable inputs when measuring fair value. The accounting guidance also establishes a fair value hierarchy based on the independence of the source and objective evidence of the inputs used. There are three fair value hierarchies based upon the level of inputs that are significant to fair value measurement:

SYNOPSYS, INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—Continued

Level 1—Observable inputs that reflect quoted prices (unadjusted) for identical instruments in active markets;

Level 2—Observable inputs other than quoted prices for identical instruments in active markets, quoted prices for similar instruments in active markets, quoted prices for identical or similar instruments in inactive markets, and model-driven valuations in which all significant inputs and significant value drivers are observable in active markets; and

Level 3—Unobservable inputs derived from fair valuation techniques in which one or more significant inputs or significant value drivers are unobservable.

On a recurring basis, we measure the fair value of certain assets and liabilities, which include cash equivalents, short-term investments, non-qualified deferred compensation plan assets, and foreign currency derivative contracts.

Our cash equivalents and short-term investments are classified within Level 1 or Level 2 because they are valued using quoted market prices in an active market or alternative independent pricing sources and models utilizing market observable inputs.

Our non-qualified deferred compensation plan assets consist of money market and mutual funds invested in domestic and international marketable securities that are directly observable in active markets and are therefore classified within Level 1.

Our foreign currency derivative contracts are classified within Level 2 because these contracts are not actively traded and the valuation inputs are based on quoted prices and market observable data of similar instruments.

Our borrowings under our Credit and Term Loan facilities are classified within Level 2 because these borrowings are not actively traded and have a variable interest rate structure based upon market rates currently available to us for debt with similar terms and maturities. See Note 7. Financial Assets and Liabilities of the Notes to Consolidated Financial Statements for more information on these borrowings.

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SYNOPSYS, INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—Continued

Assets/Liabilities Measured at Fair Value on a Recurring Basis

Assets and liabilities measured at fair value on a recurring basis are summarized below as of October 31, 2023:

Description	Total	Fair Value Measurement Using		
		Quoted Prices in	Significant Other	Significant
		Active Markets	Significant Other	Significant
		for Identical Assets	Observable Inputs	Unobservable Inputs
		(Level 1)	(Level 2)	(Level 3)
(in thousands)				
Assets				
Cash equivalents:				
Money market funds	\$ 10,129	\$ 10,129	\$ —	\$ —
U.S. Treasury, agency & T-bills	2,994		2,994	—
Short-term investments:				
U.S. Treasury, agency & T-bills	15,689	—	15,689	—
Municipal bonds	499	—	499	—
Corporate debt securities	102,375	—	102,375	—
Asset-backed securities	33,076	—	33,076	—
Prepaid and other current assets:				
Foreign currency derivative contracts	13,453	—	13,453	—
Other long-term assets:				
Deferred compensation plan assets	300,731	300,731	—	—
Total assets	\$ 478,946	\$ 310,860	\$ 168,086	\$ —
Liabilities				
Accounts payable and accrued liabilities:				
Foreign currency derivative contracts	\$ 15,761	\$ —	\$ 15,761	\$ —
Other long-term liabilities:				
Deferred compensation plan liabilities	300,731	300,731	—	—
Total liabilities	\$ 316,492	\$ 300,731	\$ 15,761	\$ —

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SYNOPSYS, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—Continued

Assets and liabilities measured at fair value on a recurring basis are summarized below as of October 31, 2022:

Description	Total	Fair Value Measurement Using				
		Quoted Prices in		Significant Other	Significant	
		Active Markets	Observable Inputs			Unobservable Inputs
		for Identical Assets				
		(Level 1)	(Level 2)	(Level 3)		
(in thousands)						
Assets						
Cash equivalents:						
Money market funds	\$ 77,683	\$ 77,683	\$ —	\$ —		
Short-term investments:						
U.S. Treasury, agency & T-bills	25,603	—	25,603		—	
Municipal bonds	2,878	—	2,878		—	
Corporate debt securities	94,024	—	94,024		—	
Asset-backed securities	25,408	—	25,408		—	
Prepaid and other current assets:						
Foreign currency derivative contracts	2,538	—	2,538		—	
Other long-term assets:						
Deferred compensation plan assets	279,096	279,096	—		—	
Total assets	\$ 507,230	\$ 356,779	\$ 150,451	\$ —		
Liabilities						
Accounts payable and accrued liabilities:						
Foreign currency derivative contracts	\$ 52,618	\$ —	\$ 52,618	\$ —		
Other long-term liabilities:						
Deferred compensation plan liabilities	279,096	279,096	—		—	
Total liabilities	\$ 331,714	\$ 279,096	\$ 52,618	\$ —		

Assets/Liabilities Measured at Fair Value on a Non-Recurring Basis

Non-Marketable Equity Securities

Non-marketable equity securities are classified within Level 3 as they are valued using a combination of observable transaction price and unobservable inputs or data in an inactive market due to the absence of market price and inherent lack of liquidity.

Note 9. Leases

We have operating lease arrangements for office space, data center, equipment and other corporate assets. These leases have various expiration dates through December 31, 2042, some of which include options to extend the leases for up to 10 years. Because we are not reasonably certain to exercise these renewal options, the options are not considered in determining the lease term and associated potential option payments are excluded from lease payments.

The components of our lease expense during the period presented are as follows:

	Year Ended October 31,	
	2023	2022
	(in thousands)	
Operating lease expense ⁽¹⁾	\$ 96,083	\$ 91,972
Variable lease expense ⁽²⁾	20,789	11,649
Total lease expense	<u>\$ 116,872</u>	<u>\$ 103,621</u>

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SYNOPSYS, INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—Continued

- (1) Operating lease expense includes immaterial amounts of short-term leases, net of sublease income.
- (2) Variable lease expense includes payments to lessors that are not fixed or determinable at lease commencement date. These payments primarily consist of maintenance, property taxes, insurance and variable indexed based payments.

Supplemental cash flow information during the period presented is as follows:

	Year Ended October 31,	
	2023	2022
	(in thousands)	
Cash paid for amounts included in the measurement of operating lease liabilities	\$ 88,983	\$ 83,858
ROU assets obtained in exchange for operating lease liabilities	\$ 101,390	\$ 168,095

Lease term and discount rate information related to our operating leases as of the end of the period presented are as follows:

	As of October 31,	
	2023	2022
Weighted-average remaining lease term (in years)	8.34	9.16
Weighted-average discount rate	2.50 %	2.19 %

The following table represents the maturities of our future lease payments due under operating leases as of October 31, 2023:

Fiscal year	Lease Payments
	(in thousands)
2024	\$ 102,297
2025	102,849
2026	92,687
2027	91,038
2028	77,010
2029 and thereafter	282,186
Total future minimum lease payments	748,067
Less: Imputed interest	78,342
Total lease liabilities	<u>\$ 669,725</u>

In addition, certain facilities owned by us were leased to third parties under non-cancellable operating lease agreements. These leases have annual escalating payments and have

expiration dates through March 31, 2031 in accordance with the terms and conditions of the existing agreement. The lease receipts from owned facilities, including sublease income from other facilities leased by us, due to us as of October 31, 2023, are as follows:

	Lease Receipts
	(in thousands)
Fiscal year	
2024	\$ 24,698
2025	25,351
2026	26,230
2027	27,376
2028	27,557
2029 and thereafter	56,491
Total	<u>\$ 187,703</u>

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SYNOPSYS, INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—Continued

Note 10. Contingencies

Legal Proceedings

We are subject to routine legal proceedings, as well as demands, claims and threatened litigation that arise in the normal course of our business. The ultimate outcome of any litigation is often uncertain and unfavorable outcomes could have a negative impact on our results of operations and financial condition. We regularly review the status of each significant matter and assess its potential financial exposure. If the potential loss from any claim or legal proceeding is considered probable and the amount is estimable, we accrue a liability for the estimated loss. Legal proceedings are inherently uncertain and as circumstances change, it is possible that the amount of any accrued liability may increase, decrease, or be eliminated.

We have determined that, except as set forth below, no disclosure of estimated loss is required for a claim against us because: (1) there is not a reasonable possibility that a loss exceeding amounts already recognized (if any) may be incurred with respect to such claim; (2) a reasonably possible loss or range of loss cannot be estimated; or (3) such estimate is immaterial.

Mentor Patent Litigation

Prior to the legal settlement as further described below, we were engaged in complex patent litigation with Mentor Graphics Corporation (Mentor) involving several actions in different forums. We succeeded to the litigation when we acquired Emulation & Verification Engineering S.A. on October 4, 2012.

Legal Settlement

In March 2017, Siemens PLM Software (Siemens) acquired Mentor. On June 29, 2018, we, Siemens and Mentor settled all outstanding patent litigation between us and Mentor for a \$65.0 million payment made from us to Mentor. As a result of the settlement, the litigation with Mentor was dismissed and the injunction entered in connection with that litigation was vacated. The settlement included mutual seven-year patent cross-licenses between us and Siemens, and between us and Mentor. We and Mentor also amended an existing interoperability agreement to collaborate on a wide range of EDA products for the benefit of our mutual customers. The amendment includes a one-time termination charge between \$0.0 and \$25.0 million, payable to Mentor under certain conditions.

Tax Matters

We undergo examination from time to time by U.S. and foreign authorities for non-income based taxes, such as sales, use and value-added taxes, and are currently under examination

by tax authorities in certain jurisdictions. If the potential loss from such examinations is considered probable and the amount or the range of loss could be estimated, we would accrue a liability for the estimated expense. In addition to the foregoing, we are, from time to time, party to various other claims and legal proceedings in the ordinary course of our business, including with tax and other governmental authorities. For a description of certain of these other matters, refer to Note 15. Income Taxes of the Notes to Consolidated Financial Statements.

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SYNOPSYS, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—Continued

Note 11. Accumulated Other Comprehensive Income (Loss)

The components of accumulated other comprehensive income (loss), on an after-tax basis where applicable, are as follows:

	As of October 31,	
	2023	2022
	(in thousands)	
Cumulative currency translation adjustments	\$ (170,104)	\$ (156,192)
Unrealized gains (losses) on derivative instruments, net of taxes	(25,224)	(75,486)
Unrealized gains (losses) on available-for-sale securities, net of taxes	(1,086)	(2,599)
Total	<u>\$ (196,414)</u>	<u>\$ (234,277)</u>

The effect of amounts reclassified out of each component of accumulated other comprehensive income (loss) into net income is as follows:

	Year Ended October 31,		
	2023	2022	2021
	(in thousands)		
Reclassifications:			
Gains (losses) on cash flow hedges, net of taxes			
Revenues	\$ (9,942)	\$ 10,975	\$ 4,181
Operating expenses	(15,334)	(15,869)	10,378
Total	\$ (25,276)	\$ (4,894)	\$ 14,559

Amounts reclassified in fiscal 2023, 2022, and 2021 primarily consisted of gains (losses) from our cash flow hedging activities. See Note 7. Financial Assets and Liabilities of the Notes to Consolidated Financial Statements.

Note 12. Stock Repurchase Program

In fiscal 2022, our Board of Directors approved a stock repurchase program (the Program) with authorization to purchase up to \$1.5 billion of our common stock. As of October 31, 2023, \$194.3 million remained available for future repurchases under the Program.

In August 2023, we entered into an accelerated stock repurchase agreement (the August 2023 ASR) to repurchase an aggregate of \$300.0 million of our common stock. Pursuant to the August 2023 ASR, we made a prepayment of \$300.0 million to receive initial deliveries of

shares valued at \$255.0 million. The remaining balance of \$45.0 million was settled in November 2023. Total shares purchased under the August 2023 ASR were approximately 0.6 million shares, at an average purchase price of \$466.71 per share.

Stock repurchase activities as well as the reissuance of treasury stock for employee stock-based compensation purposes are as follows:

	Year Ended October 31,		
	2023 ⁽¹⁾	2022	2021 ⁽²⁾
	(in thousands, except per share price)		
Shares repurchased	2,992	3,609	2,780
Average purchase price per share	\$ 387.92	\$ 314.51	\$ 270.84
Aggregate purchase price	\$ 1,160,724	\$ 1,135,000	\$ 753,081
Reissuance of treasury stock	2,670	2,922	3,224

⁽¹⁾ Excludes 73,903 shares and \$45.0 million equity forward contract that was settled in November 2023.

⁽²⁾ Excludes 107,701 shares and \$35.0 million equity forward contract that was settled in November 2021.

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SYNOPSYS, INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—Continued

Note 13. Employee Benefit Plans

Employee Stock Purchase Plan

Under our Employee Stock Purchase Plan (ESPP), participating employees are granted the right to purchase shares of common stock at a price per share that is 85% of the lesser of the fair market value of the shares at (1) the beginning of an offering period (generally, a rolling two year period) or (2) the purchase date (generally occurring at the end of each semi-annual purchase period), subject to the terms of ESPP, including a limit on the number of shares that may be purchased in a purchase period.

On April 12, 2022, our stockholders approved amendments to the ESPP to increase the number of shares of common stock authorized for issuance under the plan by 2.0 million shares. During fiscal 2023, 2022 and 2021, we issued 0.6 million, 0.7 million, and 1.0 million shares, respectively, under the ESPP at average per share prices of \$266.82, \$195.48 and \$134.26, respectively. As of October 31, 2023, 13.5 million shares of common stock were reserved for future issuance under the ESPP.

Equity Compensation Plans

2006 Employee Equity Incentive Plan. On April 25, 2006, our stockholders approved the 2006 Employee Equity Incentive Plan (2006 Employee Plan), which provides for the grant of incentive stock options, non-statutory stock options, restricted stock awards, restricted stock unit awards, stock appreciation rights and other forms of equity compensation, including performance stock awards and performance cash awards, as determined by the plan administrator. The terms and conditions of each type of award are set forth in the 2006 Employee Plan and in the award agreements governing particular awards.

Restricted stock units are granted under the 2006 Employee Plan as part of our incentive compensation program. In general, restricted stock units vest over three to four years and are subject to the employee's continuing service with us. Restricted stock units granted with specific performance criteria vest to the extent performance conditions are met. Restricted stock units granted with certain market conditions vest over two to three years to the extent these market conditions are met. For each restricted stock unit granted under the 2006 Employee Plan, a share reserve ratio of 1.70 is applied for the purpose of determining the remaining number of shares reserved for future grants under the plan. Options granted under this plan generally have a contractual term of seven years and generally vest over four years.

On April 12, 2023, our stockholders amended the 2006 Employee Plan to, among other things, increase the number of shares of common stock reserved for future issuance under the plan by 3.3 million shares. As of October 31, 2023, an aggregate of 1.5 million stock options and 4.5 million restricted stock units were outstanding, and 13.3 million shares were available for future issuance under the 2006 Employee Plan.

2005 and 2017 Non-Employee Directors Equity Incentive Plans. On April 6, 2017, our stockholders approved the 2017 Non-Employee Directors Equity Incentive Plan (2017 Directors Plan). In connection with stockholder approval of the 2017 Directors Plan, the 2005 Non-Employee Directors Equity Incentive Plan (2005 Directors Plan) was terminated as of April 6, 2017, and no awards could be granted under the 2005 Directors Plan after that date.

Under the 2005 Directors Plan, we granted options, which vest over a period of three to four years to non-employee directors. As of October 31, 2023, 7,500 stock options were outstanding under the 2005 Directors Plan.

The 2017 Directors Plan provides for equity awards to non-employee directors in the form of stock options, restricted stock units, restricted stock or a combination thereof. On April 6, 2017, our stockholders approved an aggregate of 0.45 million shares of common stock reserved under the 2017 Directors Plan.

We grant restricted stock awards and options under the 2017 Directors Plan. Restricted stock awards generally vest on an annual basis and options vest over a period of three years. As of October 31, 2023, 4,806 shares of restricted stock awards were unvested and 12,792 stock options were outstanding, and a total of 368,407 shares of common stock were reserved for future issuance under the 2017 Directors Plan.

Other Assumed Stock Plans through Acquisitions. We have assumed certain outstanding stock awards of acquired companies, including restricted stock units and options. If these assumed equity awards are canceled, forfeited or expire unexercised, the underlying shares do not become available for future grant. As of October 31, 2023, 31 thousand shares of our common stock remained subject to such outstanding assumed equity awards.

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SYNOPSYS, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—Continued

Restricted Stock Units. The following table contains information concerning activities related to restricted stock units granted under the 2006 Employee Plan and assumed from acquisitions:

	Restricted Stock Units Outstanding⁽¹⁾	Weighted Average Grant Date Fair Value	Weighted Average Remaining Contractual Life (In Years)	Aggregate Fair Value
	(in thousands, except per share amounts and years)			
Balance at October 31, 2020	4,130	\$ 134.80	1.47	
Granted ⁽²⁾	1,901	\$ 258.58		
Vested ⁽⁴⁾	(1,565)	\$ 122.01		\$ 421,034
Forfeited	(279)	\$ 167.76		
Balance at October 31, 2021	4,187	\$ 193.58	1.39	
Granted ⁽³⁾	2,402	\$ 323.46		
Vested ⁽⁴⁾	(1,589)	\$ 170.36		\$ 529,766
Forfeited	(362)	\$ 228.70		
Balance at October 31, 2022	4,638	\$ 265.76	1.32	
Granted ⁽³⁾	2,083	\$ 394.34		
Vested ⁽⁴⁾	(1,839)	\$ 237.19		\$ 706,136
Forfeited	(365)	\$ 283.29		
Balance at October 31, 2023	4,517	\$ 335.26	1.41	

(1) No restricted stock units were assumed in connection with acquisitions in the last three fiscal years, but the balance at fiscal year-end includes certain restricted stock units that were previously assumed in connection with acquisitions.

(2) The number of granted restricted stock units includes those granted to senior management with performance-based vesting criteria (in addition to service-based vesting criteria) (performance-based RSUs) reported at the maximum possible number of shares that may ultimately be issuable if all applicable performance-based criteria are achieved at their maximum levels and all applicable service-based criteria are fully satisfied.

(3) The number of granted restricted stock units includes those granted to senior management with market-based and performance-based vesting criteria (in addition to service-based vesting criteria) (market-based RSUs) reported at the maximum possible number of shares that may ultimately be issuable if all applicable market-based and performance-based criteria are achieved at their maximum levels and all applicable service-based criteria are fully satisfied.

(4) The number of vested restricted stock units includes shares that were withheld on behalf of employees to satisfy the minimum statutory tax withholding requirements.



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SYNOPSYS, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—Continued

Stock Options. The following table summarizes stock option activity and includes stock options granted under all equity plans:

	Options Outstanding			
	Shares Under Stock Option (1)	Weighted- Average Exercise Price per Share	Weighted- Average Remaining Contractual Life (In Years)	Aggregate Intrinsic Value
	(in thousands, except per share amounts and years)			
Balance at October 31, 2020	3,993	\$ 85.26	4.10	\$ 513,845
Granted	353	\$ 239.46		
Exercised	(1,203)	\$ 66.50		
Canceled/forfeited/expired	(36)	\$ 128.49		
Balance at October 31, 2021	3,107	\$ 109.51	3.81	\$ 694,921
Granted	293	\$ 342.86		
Exercised	(1,126)	\$ 86.24		
Canceled/forfeited/expired	(114)	\$ 164.46		
Balance at October 31, 2022	2,160	\$ 150.37	3.57	\$ 328,120
Granted	294	\$ 361.64		
Exercised	(849)	\$ 109.83		
Canceled/forfeited/expired	(90)	\$ 245.86		
Balance at October 31, 2023	1,515	\$ 208.49	3.70	\$ 376,563
Vested and expected to vest as of October 31, 2023	1,515	\$ 208.49	3.70	\$ 376,563
Exercisable at October 31, 2023	972	\$ 142.41	2.67	\$ 305,738

(1) No stock options were assumed in connection with acquisitions in the last three fiscal years, but the balance at fiscal year-end includes certain stock options that were previously assumed in connection with acquisitions.

The aggregate intrinsic value in the preceding table represents the pre-tax intrinsic value based on stock options with an exercise price less than our closing stock price of \$457.00 as of October 31, 2023. The pre-tax intrinsic value of options exercised and their average exercise prices are:

	Year Ended October 31,		
	2023	2022	2021
	(in thousands, except per share price)		
Intrinsic value	\$ 241,385	\$ 273,524	\$ 254,587
Average exercise price per share	\$ 109.83	\$ 86.24	\$ 66.50

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SYNOPSYS, INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—Continued

Restricted Stock Units and Stock Options. The following table contains additional information concerning activities related to stock options and restricted stock units that were granted under the 2006 Employee Plan and assumed from acquisitions:

	Available for Grant ⁽¹⁾⁽²⁾
	(in thousands)
Balance at October 31, 2020	12,129
Options granted ⁽²⁾	(353)
Options canceled/forfeited/expired ⁽²⁾	36
Restricted stock units granted ⁽¹⁾⁽³⁾	(3,232)
Restricted stock units forfeited ⁽¹⁾	471
Additional shares reserved	4,700
Balance at October 31, 2021	13,751
Options granted ⁽²⁾	(286)
Options canceled/forfeited/expired ⁽²⁾	114
Restricted stock units granted ⁽¹⁾⁽⁴⁾	(4,083)
Restricted stock units forfeited ⁽¹⁾	615
Additional shares reserved	3,000
Balance at October 31, 2022	13,111
Options granted ⁽²⁾	(294)
Options canceled/forfeited/expired ⁽²⁾	89
Restricted stock units granted ⁽¹⁾⁽⁴⁾	(3,540)
Restricted stock units forfeited ⁽¹⁾	620
Additional shares reserved	3,300
Balance at October 31, 2023	13,286

- (1) Restricted stock units includes awards granted under the 2006 Employee Plan and assumed through acquisitions. The number of RSUs reflects the application of the award multiplier of 1.70 as described above.
- (2) Options granted by us are not subject to the award multiplier ratio described above.
- (3) The number of granted restricted stock units includes performance-based RSUs reported at the maximum possible number of shares that may ultimately be issuable if all applicable performance-based criteria are achieved at their maximum levels and all applicable service-based criteria are fully satisfied.
- (4) The number of granted restricted stock units includes market-based RSUs reported at the maximum possible number of shares that may ultimately be issuable if all applicable market-based and performance-based criteria are achieved at their maximum levels and all applicable service-based criteria are fully satisfied.

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SYNOPSYS, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—Continued

Restricted Stock Awards. The following table summarizes restricted stock award activities under the 2005 Directors Plan and 2017 Directors Plan:

	Restricted Shares	Weighted-Average Grant Date Fair Value
	(in thousands, except per share amounts)	
Unvested at October 31, 2020	9	\$ 140.97
Granted	5	\$ 261.01
Vested	(9)	\$ 140.97
Forfeited	—	\$ —
Unvested at October 31, 2021	5	\$ 261.01
Granted	5	\$ 310.02
Vested	(5)	\$ 261.01
Forfeited	—	\$ —
Unvested at October 31, 2022	5	\$ 310.02
Granted	5	\$ 387.79
Vested	(5)	\$ 310.02
Forfeited	—	\$ —
Unvested at October 31, 2023	5	\$ 387.79

Valuation and Expense of Stock-Based Compensation. We estimate the fair value of stock options and employee stock purchase rights under the ESPP on the grant date. The value of awards expected to vest is recognized as expense over the applicable service periods. We use the Black-Scholes option-pricing model to determine the fair value of stock options and employee stock purchase plan rights. The Black-Scholes option-pricing model incorporates various assumptions including expected volatility, expected term and interest rates. The expected volatility for both stock options and employee stock purchase rights is estimated by a combination of implied volatility for publicly traded options of our common stock with a term of six months or longer and the historical stock price volatility over the estimated expected term of such awards, which is based on historical experience.

Restricted stock units are valued based on the closing price of our common stock on the grant date. We use the straight-line attribution method to recognize stock-based compensation costs over the service period of the award except for performance-based RSUs and market-based RSUs.

We estimate the probability of achievement of applicable performance goals for performance-based RSUs in each reporting period and recognize related stock-based compensation expense using the graded-vesting method. The amount of stock-based compensation expense recognized in any period can vary based on the attainment or

expected attainment of the various performance goals. If such performance goals are not ultimately met, no compensation expense is recognized and any previously recognized compensation expense is reversed.

We estimated the fair value of market-based RSUs on the grant date using a Monte Carlo simulation model. Under the award agreements, the vesting of the market-based RSUs is contingent on achieving total stockholder return (TSR) relative to a peer index as well as revenue growth metrics. The maximum potential awards that may be earned are 187.5% of the target number of the initial awards. For market-based RSUs granted in February, May, August and December 2022, the performance period during which the achievement goals will be measured is fiscal 2022 and fiscal 2023. The awards will vest in equal increments in December 2023 and December 2024 if the TSR target, revenue growth metrics, and service conditions are achieved. For market-based RSUs granted in February and August 2023, the performance period during which the achievement goals will be measured is fiscal 2023, fiscal 2024 and fiscal 2025. The awards will vest in December 2025 if the TSR target, revenue growth metrics, and service conditions are achieved.

The assumptions presented in the following table are used to estimate the fair value of stock options and employee stock purchase rights granted under our stock plans:

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SYNOPSYS, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—Continued

	Year Ended October 31,		
	2023	2022	2021
Stock Options:			
Expected life (in years)	4.1	4.1	4.1
Risk-free interest rate	3.80%- 4.80%	1.07% - 4.42%	0.35% - 1.00%
Volatility	32.74% -36.16%	32.28% - 37.04%	29.19%- 32.28%
Weighted average estimated fair value	\$120.33	\$98.07	\$61.58
ESPP:			
Expected life (in years)	0.5 - 2.0	0.5 - 2.0	0.5 - 2.0
Risk-free interest rate	4.85% - 5.38%	0.67% - 3.44%	0.00% - 0.19%
Volatility	28.03% - 35.27%	34.51% - 38.69%	28.02% - 39.68%
Weighted average estimated fair value	\$120.82	\$102.63	\$89.82

The grant date fair value of the market-based RSUs and the assumptions used in the Monte Carlo simulation model to determine the grant date fair value during the periods are as follows:

	Year Ended October 31,		
	2023	2022	2021 ⁽¹⁾
Expected life (in years)	0.90 - 2.70	1.16 - 1.69	—
Risk-free interest rate	4.36% - 4.80%	1.33% - 3.46%	—
Volatility	34.79% - 42.86%	33.01% - 37.80%	—
Grant date fair value	\$357.29 - \$465.79	\$280.52 - \$412.2	—

⁽¹⁾ No market-based RSUs were granted in fiscal 2021.

The compensation cost recognized in the consolidated statements of income for our stock compensation arrangements is as follows:

	Year Ended October 31,		
	2023	2022	2021
	(in thousands)		
Cost of products	\$ 65,221	\$ 55,134	\$ 38,345
Cost of maintenance and service	29,572	24,146	13,817
Research and development expense	294,154	241,978	171,013
Sales and marketing expense	106,574	81,617	61,940
General and administrative expense	67,771	56,154	60,157
Stock-based compensation expense before taxes	563,292	459,029	345,272
Income tax benefit	(90,915)	(74,271)	(53,483)
Stock-based compensation expense after taxes	<u>\$ 472,377</u>	<u>\$ 384,758</u>	<u>\$ 291,789</u>

As of October 31, 2023, we had \$1.2 billion of total unrecognized stock-based compensation expense relating to options, RSUs and restricted stock awards, which is expected to be recognized over a weighted average period of 1.7 years. As of October 31, 2023, we had \$42.3 million of total unrecognized stock-based compensation expense relating to the ESPP, which is expected to be recognized over a period of 2.0 years.

Deferred Compensation Plan. We maintain the Synopsys Deferred Compensation Plan (Deferred Plan), which permits eligible employees to defer up to 50% of their annual cash base compensation and up to 100% of their eligible cash variable compensation. Amounts may be withdrawn from the Deferred Plan pursuant to elections made by the employees in accordance with the terms of the plan. Since the inception of the Deferred Plan, we have not made any matching or discretionary contributions to the Deferred Plan. There are no Deferred Plan provisions that

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provide for any guarantees or minimum return on investments. Undistributed amounts under the Deferred Plan are subject to the claims of our creditors.

Deferred plan assets and liabilities are as follows:

	As of October 31,	
	2023	2022
	(in thousands)	
Plan assets recorded in other long-term assets	\$ 300,731	\$ 279,096
Plan liabilities recorded in other long-term liabilities ⁽¹⁾	\$ 300,731	\$ 279,096

⁽¹⁾ Undistributed deferred compensation balances due to participants.

Income or loss from the change in fair value of the Deferred Plan assets is recorded in other income (expense), net. The increase or decrease in the fair value of the undistributed Deferred Plan obligation is recorded in total cost of revenue and operating expense. The following table summarizes the impact of the Deferred Plan:

	Year Ended October 31,		
	2023	2022	2021
	(in thousands)		
Increase (reduction) to cost of revenue and operating expense	\$ 20,488	\$ (68,778)	\$ 71,603
Other income (expense), net	20,488	(68,778)	71,603
Net increase (decrease) to net income	\$ —	\$ —	\$ —

Other Retirement Plans. We sponsor various defined contribution retirement plans for our eligible U.S. and non-U.S. employees. Total contributions to these plans were \$59.2 million, \$51.2 million, and \$49.4 million in fiscal 2023, 2022, and 2021, respectively. For employees in the United States and Canada, we match pre-tax employee contributions up to a maximum of U.S. \$3,000 and Canadian \$4,000, respectively, per participant per year.

Certain of our international subsidiaries sponsor defined benefit retirement plans. The unfunded projected benefit obligation for these defined benefit retirement plans as of October 31, 2023 and 2022 was immaterial and recorded in other long-term liabilities in our consolidated balance sheets.

Note 14. Net Income Per Share

The table below reconciles the weighted average common shares used to calculate basic net income per share with the weighted average common shares used to calculate diluted net income per share:

	Year Ended October 31,		
	2023	2022	2021
	(in thousands, except per share amounts)		
Numerator:			
Net income attributed to Synopsys	\$ 1,229,888	\$ 984,594	\$ 757,516
Denominator:			
Weighted average common shares for basic net income per share	152,146	153,002	152,698
Dilutive effect of common share equivalents from equity-based compensation	3,049	3,483	4,642
Weighted average common shares for diluted net income per share	155,195	156,485	157,340
Net income per share attributed to Synopsys:			
Basic	\$ 8.08	\$ 6.44	\$ 4.96
Diluted	\$ 7.92	\$ 6.29	\$ 4.81
Anti-dilutive employee stock-based awards excluded	475	281	408

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SYNOPSYS, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—Continued

Note 15. Income Taxes

The domestic and foreign components of our total income (loss) before provision for income taxes are as follows:

	Year Ended October 31,		
	2023	2022	2021
	(in thousands)		
United States	\$ 1,142,132	\$ 1,036,279	\$ 640,531
Foreign	159,650	79,235	164,983
Total income (loss) before provision for income taxes	<u>\$ 1,301,782</u>	<u>\$ 1,115,514</u>	<u>\$ 805,514</u>

The components of the provision (benefit) for income taxes are as follows:

	Year Ended October 31,		
	2023	2022	2021
	(in thousands)		
Current:			
Federal	\$ 244,523	\$ 105,493	\$ 85,950
State	22,193	23,201	11,898
Foreign	27,986	45,297	79,890
	<u>294,702</u>	<u>173,991</u>	<u>177,738</u>
Deferred:			
Federal	(192,762)	(42,086)	(108,530)
State	(1,842)	1,519	1,796
Foreign	(16,441)	3,654	(21,849)
	<u>(211,045)</u>	<u>(36,913)</u>	<u>(128,583)</u>
Provision (benefit) for income taxes	<u>\$ 83,657</u>	<u>\$ 137,078</u>	<u>\$ 49,155</u>

The provision (benefit) for income taxes differs from the taxes computed with the statutory federal income tax rate as follows:

	Year Ended October 31,		
	2023	2022	2021
	(in thousands)		
Statutory federal tax	\$ 273,374	\$ 234,257	\$ 168,745
State tax (benefit), net of federal effect	617	(2,514)	(2,419)
Federal tax credits	(65,878)	(61,582)	(45,503)
Tax (benefit) on foreign earnings	(12,454)	25,930	7,988
Foreign-derived intangible income deduction	(82,436)	(38,924)	(31,214)
Tax settlements	(23,752)	—	(7,134)
Stock-based compensation	(43,153)	(52,625)	(62,620)
Changes in valuation allowance	29,631	19,794	15,232
Other	7,708	12,742	6,080
Provision (benefit) for income taxes	<u>\$ 83,657</u>	<u>\$ 137,078</u>	<u>\$ 49,155</u>

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SYNOPSYS, INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—Continued

On December 22, 2017, the Tax Cuts and Jobs Act (Tax Act) was enacted, which significantly changed prior U.S. tax law and includes numerous provisions that affect our business. Effective in our fiscal 2023 year, the Tax Act requires that research and development expenditures are capitalized and amortized instead of being deducted when incurred. Domestic research is capitalized over five years and foreign research is capitalized over fifteen years. For fiscal 2023, this resulted in a significant increase to our current cash tax liabilities; however, the tax payment deadline was extended until November 16, 2023, due to IRS tax relief for the California winter storms. Capitalization of research and development expenditures also results in a corresponding deferred tax benefit and decreased our effective tax rate due to increasing the foreign-derived intangible income deduction.

We have provided for foreign withholding taxes on undistributed earnings of certain of our foreign subsidiaries to the extent such earnings are no longer considered to be indefinitely reinvested in the operations of those subsidiaries. Where foreign subsidiaries are considered indefinitely reinvested, and if the tax effect of undistributed earnings and other outside basis differences were recognized, the nature of taxes expected would be primarily be withholding taxes, taxes in non-conforming states, and taxes on intermediate holding companies outside of the U.S., net of foreign tax credits where available. As of October 31, 2023, the taxes due, after allowable foreign tax credits, are not expected to be material.

The significant components of deferred tax assets and liabilities are as follows:

	As of October 31,	
	2023	2022
	(in thousands)	
Net deferred tax assets:		
Deferred tax assets:		
Deferred revenue	37,641	41,941
Deferred compensation	69,824	67,782
Intangible and depreciable assets	94,564	119,791
Capitalized research and development costs	592,536	231,733
Stock-based compensation	65,039	60,537
Tax loss carryovers	62,779	59,754
Foreign tax credit carryovers	41,972	27,153
Research and other tax credit carryovers	182,999	316,650
Operating Lease Liabilities	118,679	119,575
Accruals and reserves	27,636	—
Other	—	16,887
Gross deferred tax assets	1,293,669	1,061,803
Valuation allowance	(229,259)	(198,213)
Total deferred tax assets	1,064,410	863,590
Deferred tax liabilities:		
Intangible assets	116,465	102,796
Operating lease Right-of-Use-Assets	94,068	96,598
Accruals and reserves	—	5,998
Undistributed earnings of foreign subsidiaries	8,900	1,000
Other	18,006	—
Total deferred tax liabilities	237,439	206,392
Net deferred tax assets	\$ 826,971	\$ 657,198

It is more likely than not that the results of future operations will be able to generate sufficient taxable income to realize the net deferred tax assets. The valuation allowance provided against our deferred tax assets as of October 31, 2023 is mainly attributable to foreign tax credits available to non-U.S. subsidiaries and the California research credits. The valuation allowance increased by a net of \$31.0 million in fiscal 2023 primarily related to the net increase of valuation allowance on California research credits.

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We have the following tax loss and credit carryforwards available to offset future income tax liabilities:

Carryforward	Amount	Expiration Date
	(in thousands)	
Federal net operating loss carryforward	\$ 156,991	2024-2042
Federal research credit carryforward	14,705	2024-2038
Federal foreign tax credit carryforward	27,522	2027-2033
International foreign tax credit carryforward	10,929	Indefinite
International net operating loss carryforward	48,823	2027- Indefinite
California research credit carryforward	243,960	Indefinite
Other state research credit carryforward	25,176	2025-2043
State net operating loss carryforward	236,391	2024-2045

The federal and state net operating loss carryforward is from acquired companies and the annual use of such loss is subject to significant limitations under Internal Revenue Code Section 382 and certain provisions of the Tax Act. Foreign tax credits may only be used to offset tax attributable to foreign source income.

The gross unrecognized tax benefits decreased by approximately \$6.8 million during fiscal 2023 resulting in gross unrecognized tax benefits of \$74.4 million as of October 31, 2023. A reconciliation of the beginning and ending balance of gross unrecognized tax benefits is summarized as follows:

	As of October 31,	
	2023	2022
	(in thousands)	
Beginning balance	\$ 81,183	\$ 82,360
Increases in unrecognized tax benefits related to prior year tax positions	211	435
Decreases in unrecognized tax benefits related to prior year tax positions	(25,678)	(9,791)
Increases in unrecognized tax benefits related to current year tax positions	8,223	6,794
Decreases in unrecognized tax benefits related to settlements with taxing authorities	—	(1,104)
Reductions in unrecognized tax benefits due to lapse of applicable statute of limitations	(249)	(2,601)
Increases in unrecognized tax benefits acquired	165	14,121
Changes in unrecognized tax benefits due to foreign currency translation	10,504	(9,031)
Ending balance	<u>\$ 74,359</u>	<u>\$ 81,183</u>

As of October 31, 2023 and 2022, approximately \$74.4 million and \$81.2 million, respectively, of the unrecognized tax benefits would affect our effective tax rate if recognized upon resolution of the uncertain tax positions.

Interest and penalties related to estimated obligations for tax positions taken in our tax returns are recognized as a component of income tax expense (benefit) in the consolidated statements of income and totaled approximately \$(10.6) million, \$0.8 million and \$0.4 million for fiscal years 2023, 2022 and 2021, respectively. As of October 31, 2023 and 2022, the combined amount of accrued interest and penalties related to tax positions taken on our tax returns were approximately \$2.1 million and \$12.7 million, respectively.

The timing of the resolution of income tax examinations, and the amounts and timing of various tax payments that are part of the settlement process, are highly uncertain. Variations in such amounts and/or timing could cause large fluctuations in the balance sheet classification of current and non-current assets and liabilities. We believe that in the coming 12 months, it is reasonably possible that either certain audits and ongoing tax litigation will conclude or the statute of limitations on certain state and foreign income and withholding taxes will expire, or both. Given the uncertainty as to ultimate settlement terms, the timing of payment and the impact of such settlements on other uncertain tax positions, the range of the estimated potential decrease in underlying unrecognized tax benefits is between \$0.0 and \$10.0 million.

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SYNOPSYS, INC. **NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—Continued**

We and/or our subsidiaries remain subject to tax examination in the following jurisdictions:

Jurisdiction	Year(s) Subject to Examination
United States	Fiscal years after 2020
California	Fiscal years after 2018
Hungary	Fiscal years after 2018
Ireland	Fiscal years after 2018
Japan	Fiscal years after 2017
Korea and Taiwan	Fiscal years after 2021
China	Fiscal years after 2013
India	Fiscal years after 2019

In addition, we have made acquisitions with operations in several of our significant jurisdictions which may have years subject to examination different from the years indicated in the above table.

IRS Examinations

In fiscal 2021, the Examination Division of the IRS completed its pre-filing review for fiscal 2020 and as a result we recognized approximately \$7.1 million in unrecognized tax benefits, primarily due to the allowance of research tax credits.

Non-U.S. Examinations

Hungarian Tax Authority

In 2017, the Hungarian Tax Authority (the HTA) assessed withholding taxes of approximately \$25.0 million and interest and penalties of \$11.0 million, against our Hungary subsidiary (Synopsisys Hungary). Synopsisys Hungary contested the assessment with the Hungarian Administrative Court (Administrative Court). In 2019, as required under Hungarian law, Synopsisys Hungary paid the assessment and recorded a tax expense due to an unrecognized tax benefit of \$17.4 million, which is net of estimated U.S. foreign tax credits. During 2021 and 2022 a series of appeals, hearings and re-hearings occurred at the Administrative Court and Hungarian Supreme Court. Hearings with the Administrative Court were held on June 30, 2022, September 22, 2022 and April 25, 2023. The Administrative Court issued its written decision in favor of Synopsisys Hungary on May 17, 2023, and subsequently refunded Synopsisys Hungary the tax, penalty and interest paid in fiscal 2018, as well as additional interest all totaling \$39.1 million (including the effect of currency movement). The refunded tax, penalty and interest was recognized as an income tax benefit. The HTA had until July 14, 2023, to file an appeal with the Hungarian Supreme Court and the HTA did not appeal. This concludes the litigation. During the third quarter of fiscal 2023, Synopsisys released its

unrecognized tax benefit and offsetting U.S. foreign tax credits, resulting in a net benefit of \$23.8 million.

We are also under examination by the tax authorities in certain other jurisdictions. No material assessments have been proposed in these examinations.

Legislative Developments

On August 16, 2022, the Inflation Reduction Act of 2022 (the IR Act) was enacted in the United States. The IR Act includes a 15% minimum tax based primarily on global consolidated U.S. GAAP profits with a \$1 billion minimum threshold. The tax takes effect in fiscal 2024, with the \$1 billion threshold measured as an average over three years commencing in the current fiscal year. Computation of the tax includes adjustments which, among others, provide for an offset of income taxes paid or accrued in non-U.S. jurisdictions. The details of the computation will be subject to regulations to be issued by the U.S. Department of the Treasury. Synopsys will monitor regulatory developments and will continue to evaluate the impact, if any, of the minimum tax.

The IR Act imposes a 1% excise tax on the fair market value of stock repurchases made by covered corporations after December 31, 2022. The total taxable value of shares repurchased is reduced by the fair market value of any newly issued shares during the taxable year. As of October 31, 2023, this does not have any impact on our consolidated financial statements.

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SYNOPSYS, INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—Continued

On August 9, 2022, the CHIPS and Science Act of 2022 (the CHIPS Act) was enacted in the United States. The CHIPS Act provides financial incentives to the semiconductor industry which are primarily directed at manufacturing activities within the United States. We are evaluating potential opportunities related to the CHIPS Act.

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SYNOPSYS, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—Continued

Note 16. Other Income (Expense), Net

The following table presents the components of other income (expense), net:

	Year Ended October 31,		
	2023	2022	2021
	(in thousands)		
Interest income	\$ 36,674	\$ 8,545	\$ 2,442
Interest expense	(1,178)	(1,698)	(3,365)
Gains (losses) on assets related to deferred compensation plan	20,488	(68,778)	71,603
Foreign currency exchange gains (losses)	(1,529)	4,694	5,292
Other, net	(21,932)	10,713	(5,248)
Total	<u>\$ 32,523</u>	<u>\$ (46,524)</u>	<u>\$ 70,724</u>

Note 17. Segment Disclosure

Segment reporting is based upon the “management approach,” i.e., how management organizes our operating segments for which separate financial information is (1) available and (2) evaluated regularly by the CODM in deciding how to allocate resources and in assessing performance. Our CODM is our CEO.

As described in Note 2. Summary of Significant Accounting Policies and Basis of Presentation of the Notes to Consolidated Financial Statements, effective in the first quarter of fiscal 2023, we realigned our organizational structure to evaluate the results of our Design IP business separately. Our CODM now regularly reviews disaggregated segment information, assesses performance against our key growth strategies and allocates resources based on this new organizational structure.

As a result, effective in the first quarter of fiscal 2023, we changed our reportable segments from two reportable segments to the following three reportable segments: (1) Design Automation, which includes our advanced silicon design, verification products and services, system integration products and services, digital, custom and FPGA IC design software, verification software and hardware products, manufacturing software products and other; (2) Design IP, which includes our Design IP products; and (3) Software Integrity, which includes solutions that test software code for security vulnerabilities and quality defects, as well as professional and managed services. As such, prior period reportable segment results and related disclosures have been reclassified to reflect our current reportable segments.

The financial information provided to and used by the CODM to assist in making operational decisions, allocating resources, and assessing performance includes consolidated financial information as well as revenue, adjusted operating income, and adjusted operating margin information for the Design Automation, Design IP and Software Integrity segments, accompanied by disaggregated information relating to revenue by geographic region.

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SYNOPSYS, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—Continued

Information by reportable segment is as follows:

	Year Ended October 31,		
	2023	2022	2021
	(in thousands)		
Total Segments:			
Revenue	\$ 5,842,619	\$ 5,081,542	\$ 4,204,193
Adjusted operating income	2,048,045	1,675,102	1,281,389
Adjusted operating margin	35 %	33 %	30 %
Design Automation:			
Revenue	\$ 3,775,287	\$ 3,300,173	\$ 2,754,737
Adjusted operating income	1,439,666	1,206,561	924,605
Adjusted operating margin	38 %	37 %	34 %
Design IP:			
Revenue	\$ 1,542,726	\$ 1,315,541	\$ 1,055,672
Adjusted operating income	532,055	421,547	318,473
Adjusted operating margin	34 %	32 %	30 %
Software Integrity:			
Revenue	\$ 524,606	\$ 465,828	\$ 393,784
Adjusted operating income	76,324	46,994	38,311
Adjusted operating margin	15 %	10 %	10 %

Certain operating expenses are not allocated to the segments and are managed at a consolidated level. The unallocated expenses managed at a consolidated level, including amortization of intangible assets, stock-based compensation, changes in the fair value of deferred compensation plan, restructuring charges, and certain other operating expenses, are presented in the table below to provide a reconciliation of the total adjusted operating income from segments to our consolidated operating income:

	Year Ended October 31,		
	2023	2022	2021
	(in thousands)		
Total segment adjusted operating income	\$ 2,048,045	\$ 1,675,102	\$ 1,281,389
Reconciling items:			
Amortization of intangible assets	(102,889)	(96,690)	(82,380)
Stock-based compensation expense	(563,292)	(459,029)	(345,272)
Deferred compensation plan	(20,488)	68,778	(71,603)
Restructuring charges	(77,002)	(12,057)	(33,405)
Other	(15,115)	(14,066)	(13,939)
Total operating income	<u>\$ 1,269,259</u>	<u>\$ 1,162,038</u>	<u>\$ 734,790</u>

The CODM does not use total assets by segment to evaluate segment performance or allocate resources. As a result, total assets by segment are not disclosed.

In allocating revenue to particular geographic areas, the CODM considers where individual “seats” or licenses to our products are located. Revenue is defined as revenue from external customers. Revenue and property and equipment, net, related to operations in the United States and other geographic areas are:

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SYNOPSYS, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—Continued

	Year Ended October 31,		
	2023	2022	2021
	(in thousands)		
Revenue:			
United States	\$ 2,786,064	\$ 2,349,766	\$ 1,951,964
Europe	595,634	493,430	440,825
China	886,256	795,405	562,711
Korea	634,802	531,542	427,471
Other	939,863	911,399	821,222
Consolidated	<u>\$ 5,842,619</u>	<u>\$ 5,081,542</u>	<u>\$ 4,204,193</u>

	As of October 31,	
	2023	2022
	(in thousands)	
Property and Equipment, net:		
United States	\$ 338,260	\$ 297,780
Other	219,001	185,520
Total	<u>\$ 557,261</u>	<u>\$ 483,300</u>

Geographic revenue data for multi-regional, multi-product transactions reflect internal allocations and are therefore subject to certain assumptions and to our allocation methodology.

One customer, including its subsidiaries, accounted for 12.4%, 11.7%, and 10.6% of our consolidated revenue in fiscal 2023, 2022, and 2021, respectively. One customer accounted for 10.9% of our accounts receivable as of October 31, 2023. No customer accounted for over 10% of our accounts receivable as of October 31, 2022.

Note 18. Restructuring Charges

In the first quarter of fiscal 2023, we initiated a restructuring plan for involuntary employee terminations as part of a business reorganization (the 2023 Plan). The 2023 Plan was substantially completed in the third quarter of fiscal 2023 and total charges under the 2023 Plan were \$77.0 million consisting primarily of severance costs and facility exit costs.

During fiscal 2023, we made payments of \$68.3 million under the 2023 Plan. As of October 31, 2023, the payroll and related benefits liabilities of \$4.2 million were recorded in accounts payable and accrued liabilities, and the remaining outstanding restructuring related liabilities of \$4.5 million were recorded in other long-term liabilities in the consolidated balance sheets.

During fiscal 2022, we recorded restructuring charges of \$12.1 million and made payments of \$26.3 million under the 2021 restructuring plan (the 2021 Plan) initiated in the third quarter of fiscal 2021. There was no outstanding balance under the 2021 Plan as of October 31, 2022.

During fiscal 2021, we recorded restructuring charges of \$33.4 million and made payments of \$19.2 million under the 2021 Plan. As of October 31, 2021, \$14.2 million of payroll and related benefits liabilities remained outstanding and was recorded in accounts payable and accrued liabilities in the consolidated balance sheets.

SYNOPSYS, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—Continued

Note 19. Subsequent Event

In November 2023, we completed the sale of a strategic equity investment in a privately-held company, and expect to recognize a gain ranging from \$50.0 million to \$60.0 million in the first quarter of fiscal 2024.

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

Not applicable.

Item 9A. Controls and Procedures

- (a) **Evaluation of Disclosure Controls and Procedures.** As of October 28, 2023, Synopsys carried out an evaluation under the supervision and with the participation of Synopsys' management, including the Chief Executive Officer and Chief Financial Officer, of the effectiveness of the design and operation of Synopsys' disclosure controls and procedures (as such term is defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act). There are inherent limitations to the effectiveness of any system of disclosure controls and procedures. Accordingly, even effective disclosure controls and procedures can only provide reasonable, not absolute, assurance of achieving their control objectives. Our Chief Executive Officer and Chief Financial Officer have concluded that, as of October 28, 2023, Synopsys' disclosure controls and procedures were effective to provide reasonable assurance that information required to be disclosed in the reports Synopsys files and submits under the Exchange Act is recorded, processed, summarized and reported as and when required, and that such information is accumulated and communicated to Synopsys' management, including the Chief Executive Officer and Chief Financial Officer, to allow timely decisions regarding its required disclosure.
- (b) **Management's Report on Internal Control Over Financial Reporting.** Our management is responsible for establishing and maintaining adequate internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act) for Synopsys.

Under the supervision and with the participation of our management, including our Chief Executive Officer and Chief Financial Officer, we conducted an evaluation of the effectiveness of our internal control over financial reporting as of October 28, 2023. In assessing the effectiveness of our internal control over financial reporting, our management used the framework established in Internal Control Integrated Framework (2013) issued by The Committee of Sponsoring Organizations of the Treadway Commission (COSO).

Our management has concluded that, as of October 28, 2023, our internal control over financial reporting was effective based on these criteria. Our independent registered public accounting firm, KPMG LLP, has issued an auditors' report on the effectiveness of our internal control over financial reporting, which is included herein.

- (c) **Changes in Internal Control Over Financial Reporting.** There were no changes in Synopsys' internal control over financial reporting during the fiscal quarter ended October 28, 2023 that have materially affected, or are reasonably likely to materially affect, Synopsys' internal control over financial reporting.

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Item 9B. Other Information

Insider Adoption or Termination of Trading Arrangements

None of our directors or officers informed us of the adoption, modification or termination of a "Rule 10b5-1 trading arrangement" or "non-Rule 10b5-1 trading arrangement" (as those terms are defined in Item 408(c) of Regulation S-K) during the quarterly period covered by this report, except as described in the table below:

Name and Title	Action	Date Adopted	Character of Trading Arrangement ⁽¹⁾	Aggregate Number of Common Stock to be Purchased or Sold Pursuant to Trading Arrangement	Expiration Date ⁽²⁾
Sassine Ghazi President, Chief Operating Officer and Director	Adoption	9/21/2023	Rule 10b5-1 Trading Arrangement	Up to 30,881 shares to be sold	9/20/2024
Mercedes Johnson Director	Adoption	8/18/2023	Rule 10b5-1 Trading Arrangement	Up to 7,500 shares to be sold	1/19/2024
Rick Mahoney Chief Revenue Officer	Adoption	9/13/2023	Rule 10b5-1 Trading Arrangement	(3)	9/13/2024
John F. Runkel, Jr. General Counsel and Corporate Secretary	Adoption	9/29/2023	Rule 10b5-1 Trading Arrangement	Up to 5,902 shares to be sold	7/19/2024

(1) Except as indicated by footnote, each trading arrangement marked as a "Rule 10b5-1 Trading Arrangement" is intended to satisfy the affirmative defense of Rule 10b5-1(c), as amended (the Rule).

(2) Except as indicated by footnote, each trading arrangement permitted or permits transactions through and including the earlier to occur of (a) the completion of all purchases or sales or (b) the date listed in the table. Each trading arrangement marked as a "Rule 10b5-1 Trading Arrangement" only permitted or only permits transactions upon expiration of the applicable mandatory cooling-off period under the Rule.

- (3) The aggregate number of common stock to be sold pursuant to Mr. Mahoney's Rule 10b5-1 Trading Arrangement includes:
- a. 5,956 shares of common stock held by Mr. Mahoney;
 - b.

75% of net after-tax shares of common stock received upon the payout of 7,833 performance-based restricted stock units (RSUs), which were granted in fiscal 2022. The number of shares that will be earned will depend on our performance. See the Compensation Discussion and Analysis in our most recent proxy statement, which was filed on February 17, 2023 for more information. In addition, the actual number of shares that will be released to Mr. Mahoney in connection with the 2022 RSUs and sold under the Rule 10b5-1 Trading Arrangement will be net of the number of shares withheld to satisfy tax withholding obligations arising from the vesting of such shares and is not yet determinable; and
 - c. 75% of the net after-tax shares received upon the vesting of 7,832 restricted stock units, which represents 1/4th of a grant of restricted stock units of 31,329 shares.

Item 9C. Disclosure Regarding Foreign Jurisdictions that Prevent Inspections

None.

PART III

Item 10. Directors, Executive Officers and Corporate Governance

For information required by this Item relating to our executive officers, see Information about our Executive Officers in Part I, Item 1 of this Annual Report on Form 10-K.

The information required by this Item relating to our directors and nominees is included under the heading “Proposal 1 — Election of Directors,” in our definitive Proxy Statement to be filed within 120 days after October 28, 2023 for the 2024 Annual Meeting of Stockholders (our Proxy Statement) and is incorporated herein by reference. The information required by this Item regarding our Audit Committee is included under the headings “Audit Committee Report” and “Corporate Governance” in our Proxy Statement and is incorporated herein by reference. We will provide disclosure of delinquent Section 16(a) reports, if any, in our Proxy Statement, and such disclosure, if any, is incorporated herein by reference.

The information required by this Item relating to our code of ethics and its applicability to our Principal Executive Officer, Principal Financial Officer and Principal Accounting Officer is included under the subheading “Ethics and Business Conduct” under the heading “Corporate Governance” in our Proxy Statement and is incorporated herein by reference.

Item 11. Executive Compensation

The information required by this Item relating to director and executive compensation is included under the headings “Compensation Discussion and Analysis” (and all subheadings thereunder), “Executive Compensation Tables” (and all subheadings thereunder), “Director Compensation,” “Compensation Committee Interlocks and Insider Participation,” and “Compensation Committee Report” in our Proxy Statement and is incorporated herein by reference.

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

The information required by this Item relating to security ownership of certain beneficial owners and management is included under the heading “Security Ownership of Certain Beneficial Owners and Management” in our Proxy Statement, and the information required by this Item relating to securities authorized for issuance under equity compensation plans is included under the heading “Equity Compensation Plan Information” in our Proxy Statement, and, in each case, is incorporated herein by reference.

Item 13. Certain Relationships and Related Transactions and Director Independence

The information required by this Item relating to the review, approval or ratification of transactions with related persons is included under the heading “Transactions with Related Persons” in our Proxy Statement, and the information required by this Item relating to

director independence is included under the heading “Director Independence,” and, in each case, is incorporated herein by reference.

Item 14. Principal Accountant Fees and Services

The information required by this Item is included under the subheadings “Fees and Service of Independent Registered Public Accounting Firm” and “Audit Committee Pre-Approval Policies and Procedures” under the proposal titled “Ratification of Selection of Independent Registered Public Accounting Firm” in our Proxy Statement and is incorporated herein by reference.

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PART IV

Item 15. Exhibits and Financial Statement Schedules

(a) The following documents are filed as part of this Form 10-K:

(1) Financial Statements

The following documents are included as Part II, Item 8 of this Form 10-K:

	Page
Report of Independent Registered Public Accounting Firm (KPMG LLP, Santa Clara, CA, PCAOB ID: 185)	50
Consolidated Balance Sheets	52
Consolidated Statements of Income	53
Consolidated Statements of Comprehensive Income	54
Consolidated Statements of Stockholders' Equity	55
Consolidated Statements of Cash Flows	56
Notes to Consolidated Financial Statements	57

(2) Financial Statement Schedules

Schedules not listed above have been omitted because the information required to be set forth therein is not applicable or is shown in the financial statements or notes herein.

(3) Exhibits

See Item 15(b) below.

(b) Exhibits

EXHIBIT INDEX

Exhibit Number	Exhibit Description	Incorporated By Reference				Filed or Furnished Herewith
		Form	File No.	Exhibit	Filing Date	
3.1	Amended and Restated Certificate of Incorporation	10-Q	000-19807	3.1	9/15/2003	
3.2	Amended and Restated Bylaws	10-K	000-19807	3.2	12/15/2020	
4.1	Description of Synopsys' Capital Stock	10-K	000-19807	4.2	12/15/2020	
10.1	Fifth Extension and Amendment Agreement, dated December 14, 2022, among Synopsys as Borrower, the Lenders parties thereto and JPMorgan Chase Bank, N.A., as administrative agent for the lenders.	8-K	000-19807	10.1	12/14/2022	
10.2*	2006 Employee Equity Incentive Plan, as amended	8-K	000-19807	10.2	4/14/2023	
10.3*	Form of Restricted Stock Unit Grant Notice and Award Agreement under 2006 Employee Equity Incentive Plan	8-K	000-19807	10.3	4/14/2023	

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Exhibit Number	Exhibit Description	Incorporated By Reference				Filed or Furnished Herewith
		Form	File No.	Exhibit	Filing Date	
10.4*	Form of Stock Option Grant Notice and Award Agreement under 2006 Employee Equity Incentive Plan	8-K	000-19807	10.4	4/14/2023	
10.5*	Employee Stock Purchase Plan, as amended	8-K	000-19807	10.6	4/15/2022	
10.6*	2017 Non-Employee Directors Equity Incentive Plan	8-K	000-19807	10.8	4/10/2017	
10.7*	Form of Restricted Stock Grant Notice and Award Agreement under 2017 Non-Employee Directors Equity Incentive Plan	10-K	000-19807	10.9	12/14/2017	
10.8*	Form of Stock Options Grant Notice and Option Agreement under 2017 Non-Employee Directors Equity Incentive Plan	10-K	000-19807	10.10	12/14/2017	
10.9*	Deferred Compensation Plan as restated effective August 1, 2002	10-Q	000-19807	10.5	6/10/2004	
10.10*	Synopsis Amended and Restated Deferred Compensation Plan II	10-Q	000-19807	10.23	3/9/2009	
10.11	Form of Indemnification Agreement for directors and executive officers	8-K	000-19807	99.2	7/14/2011	
10.12*	Director's and Officer's Insurance and Company Reimbursement Policy	S-1	33-45138	10.2	2/24/1992 (effective date)	
10.13*	Amended and Restated Employment Agreement, dated December 15, 2016 between Synopsys, Inc. and Dr. Aart de Geus	8-K	000-19807	10.16	12/21/2016	
10.14*	Executive Incentive Plan, as amended	10-Q	000-19807	10.1	2/17/2023	

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Exhibit Number	Exhibit Description	Incorporated By Reference				Filed or Furnished Herewith
		Form	File No.	Exhibit	Filing Date	
23.1	Consent of KPMG LLP, Independent Registered Public Accounting Firm					X
31.1	Certification of Chief Executive Officer pursuant to Rule 13a-14(a) or Rule 15d-14(a) of the Exchange Act					X
31.2	Certification of Chief Financial Officer pursuant to Rule 13a-14(a) or Rule 15d-14(a) of the Exchange Act					X
32.1+	Certification of Chief Executive Officer and Chief Financial Officer furnished pursuant to Rule 13a-14(b) or Rule 15d-14(b) of the Exchange Act and Section 1350 of Chapter 63 of Title 18 of the United States Code					X
97.1	Compensation Recovery Policy					X
101	The following financial statements from the Company's Annual Report on Form 10-K for the year ended October 28, 2023, formatted in Inline XBRL: (i) Consolidated Balance Sheets as of October 28, 2023 and October 29, 2022, (ii) Consolidated Statements of Income for the Years Ended October 28, 2023, October 29, 2022 and October 30, 2021 (iii) Consolidated Statements of Comprehensive Income for the Years Ended October 28,					X

- * Indicates a management contract, compensatory plan or arrangement.
- + This exhibit is furnished with this Annual Report on Form 10-K and is not deemed filed with the Securities and Exchange Commission and is not incorporated by reference in any filing of Synopsys, Inc. under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended, whether made before or after the date hereof and irrespective of any general incorporation language contained in such filing.

SIGNATURES

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

SYNOPSYS, INC.

Date: December 12, 2023

By: /s/ SHELAGH GLASER
Shelagh Glaser
Chief Financial Officer
(Principal Financial Officer)

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

Name	Title	Date
<u>/s/ AART J. DE GEUS</u> Aart J. de Geus	Chief Executive Officer (Principal Executive Officer) and Chair of the Board of Directors	December 12, 2023
<u>/s/ SHELAGH GLASER</u> Shelagh Glaser	Chief Financial Officer (Principal Financial Officer)	December 12, 2023
<u>/s/ SUDHINDRA KANKANWADI</u> Sudhindra Kankanwadi	Chief Accounting Officer (Principal Accounting Officer)	December 12, 2023
<u>/s/ SASSINE GHAZI</u> Sassine Ghazi	President, Chief Operating Officer and Director	December 12, 2023
<u>/s/ LUIS BORGEN</u> Luis Borgen	Director	December 12, 2023
<u>/s/ MARC CASPER</u> Marc Casper	Director	December 12, 2023
<u>/s/ JANICE D. CHAFFIN</u> Janice D. Chaffin	Director	December 12, 2023
<u>/s/ BRUCE R. CHIZEN</u> Bruce R. Chizen	Director	December 12, 2023
<u>/s/ MERCEDES JOHNSON</u> Mercedes Johnson	Director	December 12, 2023
<u>/s/ ROBERT PAINTER</u> Robert Painter	Director	December 12, 2023
<u>/s/ JEANNINE SARGENT</u> Jeannine Sargent	Director	December 12, 2023
<u>/s/ JOHN G. SCHWARZ</u> John G. Schwarz	Director	December 12, 2023
<u>/s/ ROY VALLEE</u> Roy Vallee	Director	December 12, 2023