

**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, 2021  
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**

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**SYNOPSYS, INC.**

(Exact name of registrant as specified in its charter)

**Delaware**

(State or other jurisdiction of  
incorporation or organization)

**690 East Middlefield Road, Mountain View, California**

(Address of principal executive offices)

**56-1546236**

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

**94043**

(Zip Code)

**(650) 584-5000**

(Registrant's telephone number, including area code)

Securities Registered Pursuant to Section 12(b) of the Act:

<u>Title of Each Class</u>	<u>Trading Symbol(s)</u>	<u>Name of Each Exchange on Which Registered</u>
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. ☐

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 \$27.5 billion. Aggregate market value excludes an aggregate of approximately 41.3 million shares of 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 8, 2021, 153,438,336 shares of the registrant's Common Stock, par value of \$0.01 per share, were outstanding.

### **DOCUMENTS INCORPORATED BY REFERENCE**

Portions of the registrant's Proxy Statement relating to the registrant's 2022 Annual Meeting of Stockholders, scheduled to be held on April 12, 2022, 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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**SYNOPSYS, INC.**  
**ANNUAL REPORT ON FORM 10-K**  
**Fiscal year ended October 31, 2021**  
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### Cautionary Note Regarding Forward-Looking Statements

This Annual Report on Form 10-K (this Form 10-K or 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;
- our business outlook;
- the continued impact and duration of the COVID-19 pandemic;
- the impact of macroeconomic conditions, supply shortages, and trade disruptions on our business and our customers' businesses;
- demand for our products and our customers' products;
- the expected realization of our contracted but unsatisfied or partially unsatisfied performance obligations;
- our ability to successfully compete in the markets in which we serve;
- our license mix, our 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;
- customer license renewals;
- the completion of development of our unfinished products, or further development or integration of our existing products;
- technological trends in integrated circuit design;
- litigation;
- our ability to protect our intellectual property;
- our ability to attract and retain senior management and key employees;
- the impact of tax laws and changes in such laws on our business;
- the impact of new and recently adopted accounting pronouncements;
- regulatory changes in the United States and other regions in which we operate;
- 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* of this 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 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 2021, 2020 and 2019 were 52-week years and ended on October 30, 2021, October 31, 2020, November 2, 2019, respectively. Fiscal 2022 will be a 52-week year.

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

## PART I

### Item 1. *Business*

#### Company and Segment Overview

Synopsys, Inc. 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 low power as well as reliability, mobility, and security.

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. We also offer 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. We provide software and hardware used to validate the electronic systems that incorporate chips and the software that runs on them. To complement these offerings, we provide technical services and support to help our customers develop advanced chips and electronic systems. These products and services are part of our Semiconductor & System Design 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 690 East Middlefield Road, Mountain View, California 94043, and our headquarters' telephone number is (650) 584-5000. We have approximately 125 offices worldwide.

Our annual and quarterly reports on Forms 10-K and 10-Q (including related filings in XBRL format), current reports on Form 8-K, and Proxy Statements relating to our annual meetings of stockholders (including any amendments to these reports, as well as filings made by our executive officers and directors) are available through the Investor Relations page of our website ([www.synopsys.com](http://www.synopsys.com)) free of charge as soon as practicable after we file them with, or furnish them to, the SEC ([www.sec.gov](http://www.sec.gov)). We use our Investor Relations page as a routine channel for distribution of important information, including news releases, investor presentations, and financial information. The contents of our website are not part of this Form 10-K.

#### 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 (apps) have been developed to expand the potential of these connected devices. The increasing impact of artificial intelligence 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 fueled 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 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 and FinFET, or 3D transistors, which in turn have introduced new challenges to design and production.

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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 system 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. But, at a time when software is critical in many industries across a growing array of smart devices, it is crucial to have high-quality, secure code to ensure consumers’ privacy and safety.

### ***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—to speed time to market, achieve the highest quality of results, mitigate risk, and maximize profitability.

Chip and system 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 both 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 also 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**

### ***Semiconductor & System Design Segment***

Our Semiconductor & System Design segment includes the EDA, IP and System Integration and Other revenue categories.

#### **EDA**

Designing ICs involves many complex steps: architecture definition, register transfer level (RTL) design, functional/RTL verification, logic design or synthesis, gate-level verification, floorplanning, place and route, and physical verification, to name just a few. 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, also growing in EDA is customer interest in accessing EDA on the cloud, and the scalability and flexibility that cloud computing can offer to customer flows and engineering teams. This customer shift in interest has started and continues to grow. 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, we have been working directly with customers and commercial cloud vendors, including Amazon Web

Services, Microsoft Azure, Google Cloud and Alibaba Cloud, to further enhance our EDA-on-cloud products and platforms.

Our platforms comprehensively address the 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 an IC;
- Verification, which includes technology to verify that an IC design behaves as intended; and
- Manufacturing, which includes products that both enable early manufacturing process development and convert IC design layouts into the masks used to manufacture the chips.

### *Digital and Custom IC Design*

Our Fusion Design Platform™ 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 Fusion Design Platform 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, available as part of the Fusion Design Platform, 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 DSO.ai™, which brings AI to the entire design process. It autonomously learns through quickly exploring potential design alternatives, enabling engineers to develop superior design outcomes with our design tools.

Our Custom Design Platform™ 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. Platform tools include Custom Compiler layout and schematic editor, StarRC parasitic extraction, and IC Validator physical verification. The platform also includes PrimeSim™ Continuum. Launched in 2021, the PrimeSim Continuum 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 Continuum.

Our Silicon Lifecycle Management Platform is a new 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 platform is integrated with the Fusion Design Platform 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® (Pro® and Premier) implementation and Identify® debug software tools.

### *Verification*

Our Verification Continuum® platform is built from our industry-leading and fastest 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



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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 included in the Verification Continuum platform are reported in our EDA and IP and System Integration revenue categories. The solutions reported in our EDA revenue 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; and
- Other principal individual verification solutions, including the PrimeSim Continuum solution and the PrimeWave™ design environment.

The verification IP, virtual prototyping, and FPGA-based prototyping solutions that are part of our Verification Continuum platform are included in our IP and System Integration category and further described below.

### *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.

### **IP and System Integration**

#### *IP Products*

As more functionality converges into a single device or even a single chip, and as chip designs grow more complex, 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 DesignWare IP portfolio includes:

- High-quality solutions for widely used wired and wireless interfaces such as USB, PCI Express, DDR, Ethernet, SATA, MIPI, HDMI, and Bluetooth Low Energy;
- Logic libraries and embedded memories, including memory compilers, non-volatile memory, standard cells, and integrated test and repair;
- Processor solutions, including configurable ARC® processor cores, software, Embedded Vision processor cores and application-specific instruction-set processor tools for embedded applications;
- IP subsystems for audio, sensor, and data fusion functionality that combine IP blocks, an efficient processor, and software into an integrated, pre-verified subsystem;
- Security IP solutions, including cryptographic cores and software, security subsystems, platform security and content protection IP;
- An industry-leading offering of IP for the automotive market, optimized for strict functional safety and reliability standards such as ISO 26262;

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- Analog IP including data converters and audio codecs; 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 DesignWare 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.

Our Verification IP portfolio, part of our Verification Continuum platform, is also part of the IP Products category.

### *System Integration Solutions*

Our System Integration verification solutions include the following elements of our Verification Continuum platform:

- 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.

We also provide a series of tools used in the design of optical systems and photonic devices. Our CODE V® solution enables engineers to model, analyze and optimize designs for optical imaging and communication systems. Our LightTools® design and analysis software allows designers to simulate and improve the performance of a broad range of illumination systems, from vehicle lighting to projector systems.

### **Other**

Our Other revenue category includes revenue from sales of products to academic and research institutions.

### **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 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.

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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;
- Code Dx, 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;
- 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 both field-based and corporate-based application engineering teams.

Post-contract customer support includes providing frequent updates and upgrades to maintain the utility of the software due to rapid changes in technology. In our Semiconductor & System Design segment, 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. Updated daily, 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 frequently updated with new and supplemental materials on a variety of topics. Customers may engage dedicated support engineers for an additional charge.

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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 system 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 6 months for our hardware products. In many 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 Semiconductor & System Design 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. We also 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 Semiconductor & System Design 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. 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, and Taiwan. Our international headquarters are located in Dublin, Ireland. Our offices are further described under Part I, Item 2, *Properties*.

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*. Risks related to our foreign operations are described in Part I, Item 1A, *Risk Factors*.

### **Revenue Attributable to Product Categories and Segments**

Revenue attributable to each of our four product categories (with EDA, IP & Systems Integration, and Other comprising our Semiconductor & System Design segment) 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 10.6%, 12.4% and 12.8% of our total revenue in fiscal 2021, 2020 and 2019, respectively. In each such year, the revenue derived from such customer and its subsidiaries was primarily attributable to our Semiconductor & System Design segment.

#### **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*.

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

#### **Competition**

The EDA industry is highly competitive. We compete against other EDA vendors and against our customers' own design tools and internal design capabilities. 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 (formerly Mentor Graphics Corporation). 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 Semiconductor & System Design segment, Synopsys also 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 and 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 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. For example, competitors named in the Gartner Magic Quadrant for Application Security Testing include Checkmarx Ltd., Veracode (now part of Thoma Bravo, LLC) and Micro Focus International plc.

### **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 3,400 United States and foreign patents issued, and we will continue to pursue additional patents in the future. Our issued patents have expiration dates through 2040. 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*.

### **Corporate Social Responsibility at Synopsys**

We recognize that our significant role in shaping a future of Smart Everything brings important responsibilities. The future is not smart if it is not sustainable, fair and secure. Our "Smart Future" Corporate Social Responsibility (CSR) program provides a focus and structure for how we address both our own operational impact on the world and our ability to influence others around us. Through CSR, we are taking action on important Environmental, Social and Governance (ESG) matters, including sustainability initiatives to procure more renewable energy and to reduce our operational footprint as well as driving a culture of diversity and inclusion throughout our workforce and on our Board of Directors.

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. As the role of computing increases exponentially, IoT, 5G and machine learning applications risk driving similarly exponential energy consumption and carbon emissions. This makes our work to enable low-power computing at the device level and in the cloud especially critical to the industry's sustainability.

Additional information about our approach to CSR and to ESG issues is available on our CSR website, including our Environmental Policy, our CSR Report, and our CDP Climate Change Questionnaire. The contents of our website,

Corporate Social Responsibility Report and CDP Climate Change Questionnaire are referenced for general information only and are not incorporated into this 10-K.

## **Human Capital Resources**

Synopsys continues our commitment to attracting and retaining the brightest and best talent, and investing in and inspiring our people to do their best work is critical for our success. As of fiscal year-end, Synopsys had 16,361 employees, of which approximately 28% are in the United States, and 72% in other locations around the world. Approximately 78% of our employees are engineers, and over half of those employees hold Masters' or PhD degrees. Human capital measures and objectives that Synopsys focuses on in managing its business include employee health, safety and wellbeing, talent acquisition and retention, employee engagement, development and training, inclusion and diversity, and compensation and pay equity.

### ***Health, Safety and Wellbeing***

The health and safety of our employees, their families, our customers and the communities in which we live and work, remains a top priority. We have held multiple clinics in our offices for employees to be vaccinated, and have provided ongoing assistance to our employees and their families throughout the pandemic. With employee wellness at the forefront of our efforts, we provided our employees with a variety of benefits and support initiatives to address the inherent challenges of working remotely during the pandemic, including a parental resources website with information to assist working parents co-educating children at home, and our Stronger Through Wellbeing campaign focused on employee empowerment, which included five recharge days to ensure employees were taking time off and truly getting a restful break.

### ***Recruitment and Retention***

Our workforce is representative of the industry we serve. We are highly technical, enjoy pushing the boundaries of what is possible and are individually innovative. In 2021, we grew our employee headcount by approximately 9% with a continued focus on increasing the number of women in technical positions in our workforce and ensuring a vibrant talent pipeline through early career hiring. While we experienced an increase in employee turnover in 2021, our turnover rate remains notably lower than our competitive benchmarks. We attribute the strong retention of our talented workforce to a number of factors, including exciting and challenging assignments, strong leadership and management, a culture of integrity, the opportunity to learn new skills and advance careers, our commitment to diversity and inclusion, and the strength of our technology and customer relationships, along with competitive and equitable total rewards, as described below.

### ***Inclusion and Diversity***

Inclusion and Diversity (I&D) runs through our corporate values at every level—from our foundation of integrity to our execution excellence, from our dedicated leadership to our united passion for a better tomorrow. We have always strived to be a company where different perspectives and backgrounds are leveraged and celebrated. We care deeply about 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.

In 2021, we continued to increase the representation of women in our workforce globally and increased representation of Black, Latinx and Indigenous individuals in our U.S. employee base. We provide leadership training designed to promote inclusion and diversity in attracting, retaining and developing our workforce, and we are developing a training program to actively attract and engage individuals with disabilities. In addition, we established employee resource groups, which are employee led communities that serve to foster an inclusive and diverse workplace and align with Synopsys' mission and values in support of our goals for inclusion and diversity.

### ***Total Rewards***

To ensure a compelling total rewards philosophy and practice, we have practices in place to deliver fair and equitable compensation for employees based on their contribution and performance. We benchmark market practices, and regularly review our compensation against the market to ensure it remains competitive. We also offer a comprehensive and tailored set of benefits for employees and their families, providing protection from unexpected losses or medical expenses. 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;
- robust medical, dental, vision, and wellness benefits;

- financial planning tools and employee assistance plans;
- comprehensive leave alternatives;
- Employee Stock Purchase Plan (ESPP);
- equity compensation for eligible employees;
- life insurance options;
- retirement plans and associated benefits;
- student loan repayment assistance;
- and parental resources and adoption benefits.

### ***Employee Engagement***

We use employee feedback to drive and improve processes that support our customers and ensure a deep understanding of our culture and vision among our employees. Through our semi-annual SHAPE Synopsys surveys, we obtain employee insights on our values, manager effectiveness, ability to innovate, perceptions on inclusion and diversity, and other critical factors. By inviting employees to share their experiences, we create space for important conversations about who we are, where we are going, and how we can connect with each other and our work.

In mid-year 2021, 88% of our employee population participated in the SHAPE Synopsys survey. Results showed our global workforce to be highly engaged, with our overall score outpacing the industry engagement benchmark. We were pleased to see strong scores from our people in both how they were coping with the challenging circumstances related to the pandemic, and our managers' demonstrated ability to consider the wellbeing of their team members. We also observed positive scores and trends on items related to the employee experience.

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***

We regard every member of our employee base as a leader. We provide a number of leadership programs to address the career advancement and associated business impact of our employees, emerging leaders and executives. Through our digital platform, which was heavily utilized by our employees in 2021, we drive a culture of continuous learning where employees can access training, external articles, videos and blogs. In addition, we hosted 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 builds 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, inclusion and diversity, hiring and on-boarding, business skills and ensuring an ethical and supportive work environment free from bias and harassment. Our regions and business teams also customize development programs for their specific needs.



## Information about our Executive Officers

The executive officers of Synopsys and their ages as of December 13, 2021 were as follows:

Name	Age	Position
Aart J. de Geus	67	Co-Chief Executive Officer and Chairman of the Board of Directors
Chi-Foon Chan	72	Co-Chief Executive Officer
Sassine Ghazi	51	President and Chief Operating Officer
Trac Pham	52	Chief Financial Officer
Joseph W. Logan	62	Chief Revenue Officer
John F. Runkel, Jr.	66	General Counsel and Corporate Secretary

*Aart J. de Geus* co-founded Synopsys and has served as Chairman of our Board of Directors since February 1998 and Chief Executive Officer since January 1994. He has served as Co-Chief Executive Officer with Dr. Chi-Foon Chan since May 2012. 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 Synopsys' Board of Directors since 1986, and served as Chairman of our Board from 1986 to 1992 and again from 1998 until present. 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.

*Chi-Foon Chan* has served as our Co-Chief Executive Officer since May 2012 and a member of our Board of Directors since February 1998. Prior to his appointment as our Co-Chief Executive Officer in May 2012, he served as our President from February 1998 to October 2021. Dr. Chan joined Synopsys in May 1990 and has held various senior management positions, including Chief Operating Officer from April 1997 to May 2012. Dr. Chan has also held senior management and engineering positions at NEC Electronics and Intel Corporation. Dr. Chan holds a B.S. in Electrical Engineering from Rutgers University, and an M.S. and a Ph.D. in Computer Engineering from Case Western Reserve University.

*Sassine Ghazi* has served as our Chief Operating Officer since August 2020 and became our President in November 2021. Mr. Ghazi joined Synopsys in March 1998 as an Application Engineer and most recently served as General Manager of the Design Group. Prior to joining Synopsys, Mr. Ghazi was a design engineer at Intel. Mr. Ghazi received his bachelor's degree in Business Administration from Lebanese American 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.

*Trac Pham* is our Chief Financial Officer. Mr. Pham joined Synopsys in November 2006 as Vice President, Financial Planning and Strategy. He became our Vice President, Corporate Finance, in August 2012, assuming additional responsibility for our tax and treasury functions, before being appointed Chief Financial Officer in December 2014. Mr. Pham holds a Bachelor of Arts in Economics from the University of California, Berkeley and an MPIA (Master of Pacific International Affairs) from the University of California, San Diego. He is an active status California CPA.

*Joseph W. Logan* has served as our Chief Revenue Officer since June 2021. Previously, Mr. Logan was our Sales and Corporate Marketing Officer from July 2017 to June 2021, Senior Vice President of Worldwide Sales from September 2006 to July 2017, and Head of Sales for Synopsys' North America East region from September 2001 to September 2006. Prior to Synopsys, Mr. Logan was head of North American Sales and Support at Avant! Corporation. Mr. Logan holds a B.S.E.E. from the University of Massachusetts, Amherst.

*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. He 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.

## Item 1A. Risk Factors

A description of the risk factors associated with our business is set forth below. The risks and uncertainties described below 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 these risks and uncertainties before investing in our common stock.

### COVID-19 Pandemic Risks

***The COVID-19 pandemic could have a material adverse effect on our business, operations and financial condition.***

The COVID-19 pandemic has caused minor disruptions to our business operations to date and could have a material adverse effect on our business, operations and financial condition in the future. For example, we have experienced limited hardware supply chain and logistical challenges as well as a slowdown in customer commitments in our Software Integrity segment. In response to the COVID-19 pandemic, governments and businesses have taken unprecedented actions to contain the virus, including requiring social distancing, implementing travel restrictions, instituting shelter-in-place orders and various other restrictions on non-essential businesses. These restrictions have significantly curtailed global economic activity and have caused substantial volatility and disruption in global financial markets. We transitioned most of our employees in affected regions to work remotely in order to comply with applicable restrictions and government requirements, and implemented travel restrictions and other changes to our business operations. We are continuing to transition employees back into offices in select jurisdictions in conformity with local guidelines and regulations. Each office must follow physical distancing guidelines and affirmative health measures in compliance with applicable local, state and national requirements. For instance, on November 5, 2021, the Occupational Safety and Health Administration issued an interim final rule that requires employers with 100 or more employees to develop, to implement and to enforce a mandatory COVID-19 vaccination policy, unless unvaccinated employees comply with masking and testing requirements. Such requirements are currently scheduled to be effective on January 4, 2022. Although we have been able to navigate workplace restrictions and limitations with minimal disruptions to our business operations to date, we may further modify our business practices and real estate needs in response to the risks and negative impacts caused by the COVID-19 pandemic, but we cannot be certain that these measures will continue to be successful.

The extent to which the COVID-19 pandemic impacts our business operations in future periods will depend on multiple uncertain factors, including the duration and scope of the pandemic, its overall negative impact on the global economy and, in some cases, the regional and national economies of areas experiencing a localized surge in COVID-19 cases, continued responses by governments and businesses to COVID-19 and its variants, the ability to secure timely payment from customers, the ability to accurately estimate customer demand, reduced willingness of current and potential customers to purchase our products and services due to their own business and market uncertainties, the ability of our business partners and third-party providers to fulfill their responsibilities and commitments, the ability to secure adequate and timely supply of equipment and materials from suppliers for our hardware products, and the ability to develop and deliver our products. While our operations have experienced minor disruptions to date in connection with localized surges in cases, a continued and sustained increase in the amount of COVID-19 cases, or the emergence of additional variants, in countries or regions where we have operations could have a material adverse effect on our or our customers' businesses, operations and financial conditions. In addition, continued weak economic conditions may result in impairment in value of our tangible and intangible assets. The impact of the COVID-19 pandemic may also have the effect of heightening many of the other risks and uncertainties described in this "Risk Factors" section.

### Industry Risks

***Uncertainty in the global economy, and its potential impact on the semiconductor and electronics industries in particular, may negatively affect our business, operating results and financial condition.***

Uncertainty caused by the recent challenging global economic conditions, including due to the effects of the COVID-19 pandemic, 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. Outside of a slowdown in customer commitments in our Software Integrity segment, we have not seen evidence of impacts on customer orders from the COVID-19 pandemic to date.

We cannot predict the stability of the economy as a whole or the industries in which we operate. Economic conditions could deteriorate in the future, and, in particular, the semiconductor and electronics industries could fail to grow, including as the result of the effects of, among other things, the COVID-19 pandemic, a sustained global semiconductor shortage, supply chain disruptions or delays, and any disruption of international trade relationships such as tariffs, export licenses or other government trade restrictions. Furthermore, China's stated policy of becoming a global leader in the semiconductor industry may lead to increased competition and further disruption of international trade relationships, including, but not limited to, additional government trade restrictions. For more on risks related to government trade restrictions such as the United States government's "Entity List," see *"Business Operations Risks—The global nature of our operations exposes us to increased risks and compliance obligations that may adversely affect our business."*

Adverse economic conditions affect demand for devices that our products help create, such as the ICs incorporated in personal computers, smartphones and 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 downturns could also adversely affect our business. 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 bookings 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. Similarly, in the event of future improvements in economic conditions for our customers, the positive impact on our revenues and financial results may be deferred due to our business model.

Further economic instability could also adversely affect the banking and financial services industry and result in 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 and financial services industries are subject to complex laws and heavily regulated. There is uncertainty regarding how proposed, contemplated or future changes to the laws and regulations governing our industry, the banking and financial services industry and the economy could affect our business. 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, our Semiconductor & System Design segment product sales, and to some extent our Software Integrity segment product 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 systems-on-chips, 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 financial condition and results of operations could be adversely affected if growth in the semiconductor and electronics industries slows or stalls, including due to the impact of the COVID-19 pandemic or a sustained global supply chain disruption. 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 may have an adverse effect on our business and financial condition.

Furthermore, the semiconductor and electronics industries have become increasingly complex ecosystems. Many of our customers outsource the manufacture 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, and our business and financial condition may be harmed.***

In our Semiconductor & System Design segment, we compete against EDA vendors that offer a variety of products and services, such as Cadence Design Systems, Inc. and Siemens EDA (formerly Mentor Graphics Corporation). 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, including internal designs that compete with our IP products. In the area of IP products, we compete against a growing number of IP providers as well as our customers' internally developed IP.

In our Software Integrity segment, we compete with numerous 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. The demand for our products and services is dynamic and depends on a number of factors, including 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 technologies can bring new demands and also challenges in terms of disruption to both business models and our existing technology offerings. Semiconductor device functionality requirements continually increase while feature widths decrease, substantially increasing the complexity, cost and risk of chip design and manufacturing. At the same time, our customers and potential customers continue to demand an overall lower total cost of design, which can lead to the consolidation of their purchases with 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 availability of hardware products;
- 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 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 and financial condition will be adversely affected.

***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, including mergers, asset acquisitions 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. Furthermore, 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 the demand for our products and services if customers streamline research and development or operations, reduce purchases or delay purchasing decisions.

Reduced customer spending or the loss of a small number of customers, particularly our large customers, could adversely affect our business and financial condition. In addition, we and our competitors from time to time acquire businesses and technologies to complement and expand our respective product offerings. Consolidated competitors could have considerable financial resources, channel influence, and broad geographic reach; thus, they can engage in competition on the basis of product differentiation, pricing, marketing, services, support and more. If any of our competitors consolidate or acquire businesses and technologies that we do not offer, they may be able to offer a larger technology portfolio, additional support and service capability or lower prices, which could negatively impact our business and operating results.

**Business Operations Risks**

***The global nature of our operations exposes us to increased risks and compliance obligations that may adversely affect our business.***

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:

- Ineffective or weaker legal protection of intellectual property rights;
- Uncertain economic and political conditions in regions where we do business such as China or Europe;
- Government trade restrictions, including tariffs, export controls, or other trade barriers, and changes to existing trade arrangements between various countries such as China;
- 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 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, including COVID-19.

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 results of operations 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 future revenue and profits, our customers' and suppliers' businesses, and our results of operations.

For example, the United States government has placed certain entities on the Entity List, restricting the sale of U.S. technologies to the named entities. As a result of this government action, unless and until the restriction is lifted, we are not able to ship technologies subject to the U.S. Export Administration Regulations or provide support to these entities. Furthermore, any company with knowledge that a customer will use certain U.S. technologies to design or produce any item for a Huawei-affiliated company on the Entity List must obtain a license prior to any export of such technologies. The Bureau of Industry and Security (BIS) also added a military end user list, where they identified more than one hundred Chinese and Russian companies that are considered to be military end users. We believe that the restrictions imposed by the U.S. government thus far will not materially impact our business at this time, but cannot predict the impact that additional regulatory changes may have on our business in the future. Due to the nature of our business and technology, governmental authorities may inquire into transactions between us and certain foreign entities. For example, we recently received an administrative subpoena from BIS requesting production of information relating to transactions with certain Chinese entities. We believe we are in full compliance with all applicable regulations and are currently working with BIS to respond to its subpoena. However, inquiries, such as this one, are subject to a number of uncertainties, and we cannot predict the outcome of this inquiry or its potential effect on our operations or financial condition.

In response to actions taken by the United States, other countries may 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. Although we have implemented policies and procedures to help ensure compliance with these laws and regulations, there can be no assurance that our employees, contractors, agents or partners will not violate such laws and regulations. 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, and therefore we cannot predict the prospective impact of exchange rate fluctuations. 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.

***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.



Many factors may cause our revenue or earnings to fluctuate, including:

- 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 the COVID-19 pandemic, 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 inventory;
- 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, as well as impacts due to the COVID-19 pandemic; 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;

- 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 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 confidential employee information, in our data centers, on our networks or on the cloud. Despite our security measures, our information technology and infrastructure may be vulnerable to attacks by hackers or breached due to employee error, malfeasance or other disruptions that could result in unauthorized disclosure or loss of sensitive information. As a result of the COVID-19 pandemic and shelter-in-place orders, most of our employees in affected areas are working remotely, which magnifies the importance of the integrity of our remote access security measures.

For example, 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. While we identified and remediated the incident, it is possible that our security measures may be circumvented again in the future, and any such breach could harm our business and reputation. The techniques used to obtain unauthorized access to networks, or to sabotage systems, change frequently and generally are not recognized until launched against a target. We may be unable to anticipate these techniques or to implement adequate preventative measures. Furthermore, in the operation of our business we also use third-party vendors that store certain sensitive data, including confidential information about our employees, and these third parties are subject to their own cybersecurity threats. While 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, a breach may still occur. In addition, if we select a vendor that uses cloud storage of information 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. 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.

Our software products, our hosted solutions as well as our software security and quality testing solutions, may also be vulnerable to attacks, including traditional computer hackers, malicious code (such as viruses and worms), distributed denial-of-service attacks, sophisticated attacks conducted or sponsored by nation-states, advanced persistent threat intrusions, ransomware and other malware. An attack could 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 fail to detect vulnerabilities in our customers' software code. An actual or perceived failure to identify security flaws may harm 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 information technology infrastructure. As a result, if any of the foregoing were to occur, 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 financial performance 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 acquisitions 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.***

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 or other risks, which could harm our operating results. Acquisitions and strategic investments are difficult, time-consuming, and pose a number of risks, including:

- 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;
- 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;
- Failure to realize expected synergies or cost savings;
- Difficulties in integrating or expanding sales, marketing and distribution functions and administrative systems, including information technology and human resources systems;
- Dilution of our current stockholders through the issuance of common stock as part of the merger 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, information technology, 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.

If we do not manage the foregoing risks, the acquisitions or strategic investments that we complete may have an adverse effect on our business and financial condition.

***We pursue new product and technology initiatives from time to time, and if we fail to successfully carry out these initiatives, our business, financial condition, or results of operations 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, 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 and quality testing solutions. 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 this area may not be successful. Our success in these and other new markets depends on a variety of factors, including 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 and security tools 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
- 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 delays or disruptions as a result of the COVID-19 pandemic, could adversely affect our 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 and operating results.

***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:

- 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 operating results;
- Decreases or delays in customer purchases in favor of next-generation releases, which may lead to excess or obsolete inventory or require us to discount our older hardware products;

- 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 due to the effects of the COVID-19 pandemic and a sustained global semiconductor shortage.

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

We depend in large part upon the services of key members of our senior management team to drive our future success. If we were to lose the services of any member of our senior management team, our business could be adversely affected.

To be successful, we must also attract and retain key employees who join us organically and through acquisitions. There are a limited number of qualified engineers, and 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 retain key employees could harm our business, results of operations and financial condition, and our recruiting and retention efforts may be negatively impacted by restrictions on travel and business activity due to the COVID-19 pandemic. Additionally, efforts to recruit and retain qualified 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 its dilutive effect on stockholders. If we are unable to grant attractive equity-based packages in the future, it could limit our ability to attract and retain key employees.

***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 infringe 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.

***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. Although we seek to mitigate this risk contractually, we may not be able to sufficiently limit our potential liability. Regardless of outcome, infringement claims may require us to use significant resources and may divert management's attention.

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. Although we have tools and processes to monitor and restrict our use of open source software, the risks associated with open

source usage may not be eliminated 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 doubtful accounts, 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. In addition, we cannot predict the full impact of the COVID-19 pandemic on our business operations. The uncertainty affects management's estimates and assumptions, which could result in greater variability in a variety of areas that depend on these estimates and assumptions.

***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, 2021, approximately 51% 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, due to the impact of the COVID-19 pandemic or otherwise, we may be required to incur additional debt at higher than anticipated interest rates or access other funding sources, which could negatively affect our results of operations, 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 as a result of tax law changes and related new or revised guidance and regulations, changes in our geographical earnings mix, unfavorable government reviews of our tax returns, material differences between our forecasted and actual annual effective tax rates, future changes to our tax structure, or by evolving enforcement practices.***

Our operations are subject to income and transaction taxes in the United States 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. For example, in response to the fiscal impact of the COVID-19 pandemic, the State of California enacted legislation on June 29, 2020 that would suspend the use of certain corporate research and development tax credits for a three-year period beginning in our fiscal 2021, which resulted in an impact in our tax expense.

On December 22, 2017, the President of the United States signed into law the Tax Cuts and Jobs Act (Tax Act), which significantly changed prior U.S. tax law and includes numerous provisions that affect our business. The Tax Act includes certain new provisions that began to affect our income from foreign operations in the first quarter of fiscal 2019. Further, President Biden has proposed The American Jobs Act and various bills have been introduced by members of the House of Representatives and the Senate proposing changes to the corporate tax rate as well as other provisions. On August 9, 2021 the Senate released the fiscal 2022 budget resolution with reconciliation instructions for a potential \$3.5 trillion spending bill. The House Ways and Means Committee introduced a \$3.5 trillion spending bill on September 12, 2021 which proposes to raise the corporate rate to 26.5% and amend certain provisions of the Tax Act and on October 28, 2021, the House Rules Committee introduced a revised bill which maintains the current corporate tax rate at 21%, while introducing a new corporate minimum tax of 15% of adjusted financial statement income as well as other modifications to the Tax Act, which if enacted may materially affect our financial position. Accounting for certain of these provisions requires the exercise of significant judgment.

Further changes in the tax laws of foreign jurisdictions could arise as a result of the *Programme of Work to Develop a Consensus Solution to the Tax Challenges Arising from the Digitalization of the Economy (Programme of Work)* agreement by the Organisation for Economic Co-operation and Development (OECD), which represents a coalition of member countries, including the United States. The *Programme of Work* is evaluating potential changes to numerous long-standing tax principles. On October 8, 2021 the 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 the digitalization of the economy. Pillar one provides a framework for the reallocation of certain residual profits of multinational enterprises to market jurisdictions using a revenue-based allocation key to source to the end market jurisdictions where goods or services are used or consumed. Pillar two consists of two interrelated rules referred to as Global Anti-Base Erosion Rules, which operate to impose a minimum tax rate of 15% calculated on a jurisdictional basis. The Framework calls for law enactment by OECD and G20 members in 2022 to take effect in 2023 and 2024. 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, including future taxes payable related to the transition tax on earnings from their foreign operations, if any, under the Tax Act. Although we believe our tax estimates are reasonable, 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.

In July 2017, the Hungarian Tax Authority (HTA) issued a final assessment against our Hungarian subsidiary (Synopsys Hungary) for fiscal years 2011 through 2013. The HTA has applied withholding taxes on certain payments made to affiliates, resulting in an aggregate tax assessment of approximately \$25.0 million and interest and penalties of \$11.0 million. We paid the tax assessments, penalties and interest in the first quarter of fiscal 2018 as required by law and recorded these amounts as prepaid taxes on our balance sheet. On April 30, 2019, the Hungarian Administrative Court (the Administrative Court) ruled against Synopsys Hungary. We filed an appeal with the Hungarian Supreme Court on July 5, 2019. The Hungarian Supreme Court heard our appeal on November 12, 2020 and remanded the case to the Administrative Court for further proceedings. We received the Hungarian Supreme Court's written decision in the first quarter of fiscal 2021. On April 27, 2021, the Administrative Court reheard the case and again ruled against Synopsys Hungary. We received the written opinion from the Administrative Court on May 19, 2021 and filed an appeal with the Hungarian Supreme Court on July 19, 2021. The hearing for the appeal is scheduled for January 27, 2022. For further discussion of the Hungary audit, see Note 13 of *Notes to Consolidated Financial Statements* under the heading "Non-U.S. Examinations."

We maintain significant deferred tax assets related to certain tax credits. Our ability to use these credits 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 the Tax Act 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.

***Changes in United States 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 Financial Accounting Standards Board (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. For example, the new revenue recognition standard became applicable to us at the beginning of fiscal 2019 and there is an increased volatility in our total revenue with less predictability than under the prior accounting standard.



***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 results of operations could be materially harmed. Further information regarding certain of these matters is contained in Part I, Item 3, *Legal Proceedings*.

***Our business is subject to evolving corporate governance and public disclosure regulations that have increased both our compliance costs and the risk of noncompliance, which could have an adverse effect on our stock price.***

We are subject to changing rules and regulations promulgated by a number of governmental and self-regulatory organizations, including the SEC, the Nasdaq Stock Market and the 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 more difficult and uncertain. For example, our efforts to comply with the Dodd-Frank Wall Street Reform and Consumer Protection Act and other regulations, including “conflict minerals” regulations affecting our hardware products, have resulted in, and are likely to continue to result in, increased general and administrative expenses and a diversion of management time and attention from revenue-generating activities to compliance activities.

***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 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. Moreover, although we have implemented compliance programs and compliance training for employees, such measures 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.

***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 the economic effects of the COVID-19 pandemic. 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. As a result of capital pressures on certain banks, especially in Europe, and the continuing low interest rate environment, some of our financial instruments may become impaired.

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.

**General Risks**

***Catastrophic 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 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 (including the COVID-19 pandemic), or other catastrophic event or climate change-related risk 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

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sales and infrastructure are vulnerable to regional or worldwide health conditions, including the effects of the outbreak of contagious diseases such as 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 historic wildfires. A catastrophic event that results in the destruction or disruption of our data centers or our critical business or information technology 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 2. *Properties***

Our principal offices are in Mountain View, California and are leased through August 2030. The leased property consists of two adjacent buildings, which together provide approximately 341,000 square feet of available space. We currently sublease one of the two buildings to a third party under a lease agreement that runs through July 2024. We have two options to extend the lease term, the first to extend the term by ten years, followed by a second option to extend by approximately nine additional years. We also lease approximately 350,000 square feet of space in three adjacent buildings in Sunnyvale, California, which we have leased through October 2031. These buildings in Mountain View and Sunnyvale are used for research and development, sales and support, marketing, and administrative activities for both of our business segments.

Additionally, we own one building in Sunnyvale, California with approximately 120,000 square feet of space that was vacated in February 2020 and is currently leased to a third party under a lease agreement that runs through February 2031.

We currently lease 31 other offices throughout the United States, and own two office buildings in Oregon, one of which is leased to a third party. These offices are used primarily for sales and support activities as well as research and development for both of our business segments.

#### **International Facilities**

We lease additional space for sales, service, and research and development activities for both of our business segments in 31 countries throughout the world, including 25,000 square feet in Dublin, Ireland for our international headquarters, as well as significant sites in Yerevan, Armenia, Bangalore, India, Shanghai and Wuhan, China. We own several buildings in Wuhan, China with approximately 551,000 square feet of combined space. In addition, we own two buildings in Hsinchu, Taiwan with approximately 212,000 square feet of combined space. In March 2021, we leased approximately 161,000 square feet of space in Shanghai, which we relocated to in August 2021.

We believe that our existing facilities, including both owned and leased properties, are in good condition and suitable for the current conduct of our business.

### **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.



In July 2017, the HTA issued a final assessment against Synopsys Hungary for fiscal years 2011 through 2013. The HTA disallowed Synopsys Hungary's tax positions taken during these years regarding the timing of the deduction of research expenses and applied withholding taxes on certain payments made to affiliates, resulting in an aggregate tax assessment of approximately \$44.5 million and interest and penalties of \$18.0 million. On August 2, 2017, Synopsys Hungary filed a claim contesting the final assessment with the Administrative Court. On November 16, 2017, Synopsys Hungary paid the assessment as required by law, while continuing its challenge to the assessment in court. Hearings were held in February and July 2018, February 26, 2019 and April 30, 2019. On December 10, 2018, Synopsys withdrew its claim contesting the final assessment with regard to the timing of the deduction of research expenses, resulting in a remaining disputed tax assessment of approximately \$25.0 million and interest and penalties of \$11.0 million. On April 30, 2019, the Administrative Court ruled against Synopsys Hungary. The Administrative Court's opinion was received on May 16, 2019. Synopsys Hungary filed an appeal with the Hungarian Supreme Court on July 5, 2019. In the second quarter of 2019, as a result of the Administrative Court's decision, we recorded a tax expense due to an unrecognized tax benefit of \$17.4 million, which is net of estimated U.S. foreign tax credits for the tax assessments. The Hungarian Supreme Court heard our appeal on November 12, 2020 and remanded the case to the Administrative Court for further proceedings. We received the Hungarian Supreme Court's written decision in the first quarter of fiscal 2021. On April 27, 2021, the Administrative Court reheard the case and again ruled against Synopsys Hungary. We received the written opinion from the Administrative Court on May 19, 2021 and filed an appeal with the Hungarian Supreme Court on July 19, 2021. The hearing for the appeal is scheduled for January 27, 2022.

For further discussion of the Hungary audit, see Note 13 of *Notes to Consolidated Financial Statements* under the heading "Non-U.S. Examinations."

#### **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 8, 2021, we had 228 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 October 28, 2016 (the last trading day before the beginning of our fifth preceding fiscal year) and in each of the indexes on October 28, 2016 (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\*

snps-20211031\_g3.jpg



\*\$100 invested on October 28, 2016 in stock or index, including reinvestment of dividends. Fiscal year ending October 30.

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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.

### Stock Repurchase Program

Our Board of Directors (Board) previously approved a stock repurchase program pursuant to which we were authorized to purchase up to \$500.0 million of our common stock, and has periodically replenished the stock repurchase program to such amount. Our Board approved a replenishment of the stock repurchase program up to \$500.0 million on June 17, 2021. As of October 31, 2021, \$110.0 million remained available for future repurchases under the program. In December 2021, our Board approved a new stock repurchase program with authorization to purchase up to \$1.0 billion of our common stock, that replaced the prior stock repurchase program in its entirety.

In August 2021, we entered into an accelerated share repurchase agreement (the August 2021 ASR) to repurchase an aggregate of \$175.0 million of our common stock. Pursuant to the August 2021 ASR, we made a prepayment of \$175.0 million to receive initial deliveries of shares valued at \$140.0 million. The remaining balance of \$35.0 million was settled in November 2021. Total shares purchased under the August 2021 ASR were approximately 0.5 million shares, at an average purchase price of \$325.00 per share.

The table below sets forth information regarding our repurchases of our common stock during the three months ended October 31, 2021:

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				
August 1, 2021 through September 4, 2021	530,329	\$ 329.98	530,329	\$ 150,000,000
Month #2				
September 5, 2021 through October 2, 2021	—	\$ —	—	\$ 150,000,000
Month #3				
October 3, 2021 through October 30, 2021	136,152	\$ 293.78	—	\$ 110,001,399
Total	666,481	\$ 322.59	530,329	\$ 110,001,399

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

## Item 6. [Reserved]

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

### Overview

The following overview of our financial condition and results of operations 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 Form 10-K regarding forward-looking statements.

### Business Summary

Synopsys, Inc. provides products and services used across the entire Silicon to Software spectrum, 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. 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. We also offer 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. We provide

software and hardware used to validate the electronic systems that incorporate chips and the software that runs on them. To complement these offerings, we provide technical services and support to help our customers develop advanced chips and electronic systems. These products and services are part of our Semiconductor & System Design 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.

Our EDA and IP customers are generally semiconductor and electronics systems companies. Our solutions help these companies overcome the challenges of developing increasingly advanced electronics products while also helping them reduce their design and manufacturing costs. While our products are an important part of our customers' development process, our sales could be affected based on their research and development budgets, and our customers' spending decisions may be affected by their business outlook and willingness to invest in new and increasingly complex chip designs.

Our Software Integrity business delivers products and services that enable software developers to test their code - while it is being written - for known security vulnerabilities and quality defects, as well as testing for open source security vulnerabilities and license compliance. Our Software Integrity customers are software developers across many industries, including, but also well beyond, the semiconductor and systems industries. Our Software Integrity products and services form a platform that helps our customers build security into the software development lifecycle and across the entire cyber supply chain.

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 of *Notes to Consolidated Financial Statements* for 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 EDA products, expanding and proliferating our IP offerings, driving growth in the software security and quality market, 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 expense management, and acquisition strategy, we believe that we will continue to execute our strategies successfully.

#### **COVID-19 Pandemic**

While the COVID-19 pandemic has changed the physical working environment of the substantial majority of our workforce to working from home, it has otherwise caused only minor disruptions to our business operations with a limited impact on our operating results thus far. Given the unpredictable nature of the COVID-19 pandemic's impact on the global economy, our historical results may not be an indication of future performance.

The extent to which the COVID-19 pandemic impacts our business operations in future periods will depend on multiple uncertain factors, including the duration and scope of the pandemic, its overall negative impact on the global economy generally and the semiconductor and electronics industries specifically, and continued responses by governments and businesses to COVID-19. We have not identified trends that we expect will materially impact our future operating results at this time. As we generally recognize our revenue for software licenses over the arrangement period, any potential impact related to COVID-19 may be delayed. We have not observed any changes in the design activity of customers, but we experienced a slowdown in customer commitments in our Software Integrity segment. We have not received any significant requests from our customers to either delay payments or modify arrangements due to COVID-19. However, this situation could change in future periods and the extent that these requests may impact our business is uncertain. We have also experienced minor disruptions in our hardware supply chain, which we have been able to address with minimal impact to our business operations to date.

We will continue to consider the potential impact of the COVID-19 pandemic on our business operations. Although no material impairment or other effects have been identified to date related to the COVID-19 pandemic, there is substantial uncertainty in the nature and degree of its continued effects over time. That uncertainty affects

management's accounting estimates and assumptions, which could result in greater variability in a variety of areas that depend on these estimates and assumptions as additional events and information become known.

See Part I, Item 1A, *Risk Factors* for further discussion of the possible impact of the COVID-19 pandemic on our business, operations and financial condition.

### **Business Segments**

**Semiconductor & System Design.** This segment includes our advanced silicon design, verification products and services, and semiconductor IP portfolio, which encompasses products and services that serve companies primarily in the semiconductor and electronics industries. EDA includes digital, custom and field programmable gate array (FPGA) IC design software, verification products, 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. For IP, 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 2021, 2020 and 2019 were 52-week years ending on October 30, 2021, October 31, 2020 and November 2, 2019, respectively. Fiscal 2022 will be a 52-week year.

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

### **Critical Accounting Policies and Estimates**

Our discussion and analysis of our financial results under *Results of Operations* below are based on our audited results of operations, which we have 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 we believe are reasonable under the circumstances. Our actual results may differ from these estimates. See Note 2 of *Notes to Consolidated Financial Statements* for further information on our significant accounting policies.

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;
- Valuation of business combinations; and
- Income taxes.

### **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 Time-based 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.

### **Valuation of 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 at the acquisition date. The purchase price allocation process requires management to make significant estimates and assumptions with respect to 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.

Unanticipated events and circumstances may occur which may affect the accuracy or validity of such assumptions, estimates or actual results.

### **Income Taxes**

We use the asset and liability method of accounting for income taxes. Under this method, income tax expense is recognized for the amount of taxes payable or refundable for the current year. In addition, deferred tax assets and liabilities are recognized for the expected future tax consequences of temporary differences between the financial reporting and tax bases of assets and liabilities, and for operating losses and tax credit carryforwards. Management must make assumptions, judgments and estimates to determine our current provision for income taxes and also our deferred tax assets and liabilities.

Our assumptions, judgments and estimates relative to the current provision for income taxes take into account current tax laws, our interpretation of current tax laws and possible outcomes of current and future audits conducted by foreign and domestic tax authorities. We have established reserves for income taxes to address potential exposures involving tax positions that could be challenged by tax authorities. In addition, we are subject to the continual examination of our income tax returns by the U.S. Internal Revenue Service (IRS) and other domestic and foreign tax authorities. We regularly assess the likelihood of outcomes resulting from these examinations to determine the adequacy of our provision for income taxes and have reserved for potential adjustments that may result from such examinations. We believe such estimates to be reasonable; however, the final determination of any of these examinations could significantly impact the amounts provided for income taxes in our consolidated financial statements.

## Changes from Prior Periodic Reports

In this Annual Report on Form 10-K, we have revised our disclosures to comply with SEC Release No. 33-10825, "Modernization of Regulation S-K Items 101, 103, and 105." In addition, we have adopted the changes in the disclosure standards included in SEC Release No. 33-10890, "Management's Discussion and Analysis, Selected Financial Data, Supplementary Financial Information."

### **Modernization of Regulation S-K Items 101, 103, and 105**

The SEC issued Release No. 33-10825, "Modernization of Regulation S-K Items 101, 103, and 105," effective for annual periods beginning subsequent to November 2020. This release was adopted to simplify the description of business, legal proceedings, and risk factor disclosures that registrants are required to make pursuant to Regulation S-K. Specifically, this release requires registrants to provide disclosures relating to their human capital resources and to restructure their risk factor disclosures. Additionally, the release increases the threshold for disclosure of environmental proceedings to which the government is a party.

### **Management's Discussion and Analysis, Selected Financial Data, and Supplementary Financial Information**

The SEC issued Release No. 33-10890 "Management's Discussion and Analysis, Selected Financial Data, Supplementary Financial Information" which became fully effective on August 9, 2021. This release was adopted to simplify and enhance certain financial disclosure requirements in Regulation S-K. Specifically, the SEC eliminated the requirement for selected financial data, only requiring quarterly disclosure when there are retrospective changes affecting comprehensive income, and amending the matters required to be presented under Management's Discussion and Analysis (MD&A) to, among other things, eliminate the requirement to include the contractual obligations table.

With our adoption of this release, we have eliminated from this document the items discussed above that are no longer required. Information on our contractual obligations is still disclosed in narrative form within the "Management's Discussion and Analysis of Financial Condition and Results of Operations" in Item 7 of Part II of this Annual Report on Form 10-K.

## Results of Operations

The discussion of our consolidated results of operations include year-over-year comparisons of fiscal 2021 changes compared to fiscal 2020. For a discussion of the fiscal 2020 changes compared to fiscal 2019, 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, 2020, filed on December 15, 2020.

### **Fiscal 2021 Financial Performance Summary**

Results of operations for fiscal 2021, compared to fiscal 2020, reflect the following:

- Revenues were \$4,204.2 million, an increase of \$518.9 million or 14%, primarily due to higher revenue resulting from growth across all products and geographies.
- Total cost of revenue and operating expenses were \$3,469.4 million, an increase of \$404.3 million or 13%, primarily due to increases of \$342.2 million in employee-related costs resulting from headcount increases through organic growth and acquisitions.
- Operating income was \$734.8 million, an increase of \$114.6 million or 18%, as revenue growth exceeded the growth of costs and expenses.

### **Revenue**

Our revenues are generated from two business segments: the Semiconductor & System Design segment and the Software Integrity segment. See Note 15 of *Notes to Consolidated Financial Statements* for additional information about our reportable segments and revenue by geographic regions.

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

#### **Semiconductor & System Design Segment**

This segment is comprised of the following:

- EDA software includes digital, custom and FPGA IC design software, verification products 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 and software updates are generally made available throughout the entire term of the arrangement. The duration of our TSL contracts is generally 3 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.

- IP & System Integration includes our DesignWare® IP portfolio and system-level products and services. 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 as "Professional Services."
- 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 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.

#### *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 may 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
	2021	2020	2020 to 2021	
	(dollars in millions)			
Semiconductor & System Design Segment	\$ 3,810.4	\$ 3,327.2	\$ 483.2	15 %
Software Integrity Segment	393.8	358.1	35.7	10 %
Total	\$ 4,204.2	\$ 3,685.3	\$ 518.9	14 %

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, consulting projects, Flexible Spending Account (FSA) drawdowns, royalties, and hardware sales. As revenues from IP products sales and hardware sales are recognized upfront, customer demand and timing requirements for such IP products and hardware could result in increased variability of our total revenues.

For fiscal 2021 compared to fiscal 2020, revenues increased primarily due to the continued organic growth of our business in most product categories and regions as a result of increased investments by our customers in new, complex designs for their hardware and software products across a wide range of industries.

For a discussion of revenue by geographic areas, see Note 15 of *Notes to Consolidated Financial Statements*.

### Time-Based Products Revenue

	Year Ended October 31,		\$ Change	% Change
	2021	2020	2020 to 2021	
	(dollars in millions)			
Time-based products revenue	\$ 2,633.8	\$ 2,365.2	\$ 268.6	11 %
Percentage of total revenue	63 %	64 %		

The increase in time-based products revenue for fiscal 2021 compared to fiscal 2020 was primarily attributable to an increase in TSL license revenue and higher renewals from arrangements booked in prior periods.

### Upfront Products Revenue

	Year Ended October 31,		\$ Change	% Change
	2021	2020	2020 to 2021	
	(dollars in millions)			
Upfront products revenue	\$ 861.1	\$ 735.6	\$ 125.5	17 %
Percentage of total revenue	20 %	20 %		

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 2021 compared to fiscal 2020 was primarily due to an increase in the sale of IP products and hardware products driven by higher demands from customers.

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

### Maintenance and Service Revenue

	Year Ended October 31,		\$ Change	% Change
	2021	2020	2020 to 2021	
	(dollars in millions)			
Maintenance revenue	\$ 235.9	\$ 177.4	\$ 58.5	33 %
Professional service and other revenue	473.5	407.1	66.4	16 %
Total	\$ 709.4	\$ 584.5	\$ 124.9	21 %
Percentage of total revenue	17 %	16 %		

The increase in maintenance revenue for fiscal 2021 compared to fiscal 2020 was primarily due to an increase in the volume of hardware and IP arrangements that include maintenance.

The increase in professional services and other revenue for fiscal 2021 compared to fiscal 2020 was primarily due to an increase in the volume of IP consulting projects.

### Cost of Revenue

	Year Ended October 31,		\$ Change	% Change
	2021	2020	2020 to 2021	
	(dollars in millions)			
Cost of products revenue	\$ 542.1	\$ 487.3	\$ 54.8	11 %
Cost of maintenance and service revenue	271.2	254.9	16.3	6 %
Amortization of intangible assets	48.5	52.5	(4.0)	(8) %
Total	\$ 861.8	\$ 794.7	\$ 67.1	8 %
Percentage of total revenue	20 %	22 %		

We divide cost of revenue into three categories: cost of products revenue, cost of maintenance and service revenue, and amortization of intangible assets. We segregate expenses directly associated with consulting and training services from cost of products revenue associated with internal functions providing license delivery and post-customer contract support services. We then allocate group costs between cost of products revenue and cost of maintenance and service revenue based on products and maintenance and service revenue reported.

*Cost of products revenue.* Cost of products revenue includes costs related to products sold and software licensed, hardware related direct costs, allocated operating costs related to product support and distribution costs, 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 and consulting services, such as hotline and on-site support, production services and documentation of maintenance updates.

*Amortization of intangible assets.* Amortization of intangible assets, which is recorded to cost of revenue and operating expenses, includes the amortization of core/developed technology and certain contract rights intangible.

The increase in cost of revenue for fiscal 2021 compared to fiscal 2020 was primarily due to increases of \$54.8 million in personnel-related costs as a result of headcount increases from hiring and acquisitions, \$20.0 million in hardware related costs, and higher deferred compensation expenses of \$4.6 million. These increases were partially offset by a decrease of \$5.3 million in depreciation and maintenance expense, a decrease of \$4.0 million in servicing IP consulting arrangements expense and a reduction of \$4.0 million in amortization of intangible assets as certain technology-related intangibles assets became fully amortized during 2021.

Changes in other cost of revenue categories for the above-mentioned periods were not individually material.

## Operating Expenses

### Research and Development

	Year Ended October 31,		\$ Change	% Change
	2021	2020	2020 to 2021	
	(dollars in millions)			
	\$ 1,504.8	\$ 1,279.0	\$ 225.8	18 %
Percentage of total revenue	36 %	35 %		

The increase in research and development expenses for fiscal 2021 compared to fiscal 2020 was primarily due to higher personnel-related costs of \$176.0 million from headcount increases from hiring and acquisitions as we continue to expand and enhance our product portfolio, \$9.7 million in consultant and contractor costs, \$7.4 million in facility expenses, as well as higher deferred compensation expenses of \$29.3 million.

Changes in other research and development expense categories for the above-mentioned periods were not individually material.

### Sales and Marketing

	Year Ended October 31,		\$ Change	% Change
	2021	2020	2020 to 2021	
	(dollars in millions)			
	\$ 712.5	\$ 632.0	\$ 80.5	13 %
Percentage of total revenue	17 %	17 %		

The increase in sales and marketing expenses for fiscal 2021 compared to fiscal 2020 was primarily due to an increase of \$71.8 million in personnel-related costs due to headcount increases from hiring and higher sales commissions as well as higher deferred compensation expenses of \$11.0 million, partially offset by a decrease of \$4.8 million in travel costs as a result of COVID-19 restrictions.

Changes in other sales and marketing expense categories for the above-mentioned periods were not individually material.

### General and Administrative

	Year Ended October 31,		\$ Change	% Change
	2021	2020	2020 to 2021	
	(dollars in millions)			
	\$ 323.0	\$ 284.5	\$ 38.5	14 %
Percentage of total revenue	8 %	8 %		

The increase in general and administrative expenses for fiscal 2021 compared to fiscal 2020 was primarily due to an increase of \$39.6 million in personnel-related expenses from headcount increases from hiring and higher deferred compensation expenses of \$5.0 million.

Changes in other general and administrative expense categories for the above-mentioned periods were not individually material.

### 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. These assets are classified as trading securities. There is no impact to our net income from the fair value changes in our deferred compensation plan obligation and asset.

### Amortization of Intangible Assets

Amortization of intangible assets includes the amortization of contract rights and the amortization of core/developed technology, trademarks, trade names, and customer relationships related to acquisitions completed in prior years. Amortization expense is included in the consolidated statements of income as follows:

	Year Ended October 31,		\$ Change	% Change
	2021	2020	2020 to 2021	
	(dollars in millions)			
Included in cost of revenue	\$ 48.5	\$ 52.5	\$ (4.0)	(8) %
Included in operating expenses	33.9	38.8	(4.9)	(13) %
Total	<u>\$ 82.4</u>	<u>\$ 91.3</u>	<u>\$ (8.9)</u>	<u>(10) %</u>
Percentage of total revenue	2 %	2 %		

The decrease in amortization of intangible assets for fiscal 2021 compared to fiscal 2020 was primarily due to certain intangible assets becoming fully amortized in fiscal 2021, partially offset by amortization expense related to acquired intangible assets in fiscal 2021.

### Restructuring Charges

In the third quarter of fiscal 2021, our management approved, committed and initiated a restructuring plan (the 2021 Plan) as part of a business reorganization. Total charges under the 2021 Plan are expected to be in the range of \$42 million to \$53 million and consist primarily of severance, retirement benefits under the 2021 Voluntary Retirement Program (2021 VRP), and lease abandonment costs. Restructuring charges under the 2021 Plan are anticipated to be completed in the first quarter of fiscal 2022.

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
	(in millions)			
2021	\$ 1.3	\$ 33.4	\$ (20.5)	\$ 14.2
2020	\$ 22.6	\$ 36.1	\$ (57.4)	\$ 1.3
2019	\$ 8.1	\$ 47.2	\$ (32.7)	\$ 22.6

See Note 2 of *Notes to Consolidated Financial Statements* for additional information.

### Interest and Other Income (Expense), Net

	Year Ended October 31,		\$ Change	% Change
	2021	2020	2020 to 2021	
	(dollars in millions)			
Interest income	\$ 2.4	\$ 3.6	\$ (1.2)	(33) %
Interest expense	(3.4)	(5.1)	1.7	(33) %
Gain (loss) on assets related to executive deferred compensation plan	71.6	21.5	50.1	233 %
Foreign currency exchange gain (loss)	5.3	5.5	(0.2)	(4) %
Other, net	(5.2)	(7.5)	2.3	(31) %
Total	\$ 70.7	\$ 18.0	\$ 52.7	293 %

The increase in other income (expense) for fiscal 2021 as compared to fiscal 2020 was primarily due to 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, restructuring, litigation and acquisition-related costs. See Note 15 of *Notes to Consolidated Financial Statements* for more information.

### Semiconductor & System Design Segment

	Year Ended October 31,		\$ Change	% Change
	2021	2020	2020 to 2021	
	(dollars in millions)			
Adjusted operating income	\$ 1,243.1	\$ 990.8	\$ 252.3	25 %
Adjusted operating margin	33 %	30 %	3 %	10 %

The increase in adjusted operating income for fiscal 2021 compared to fiscal 2020 was primarily due to an increase in revenue from arrangements booked in prior periods.

### Software Integrity Segment

	Year Ended October 31,		\$ Change	% Change
	2021	2020	2020 to 2021	
	(dollars in millions)			
Adjusted operating income	\$ 38.3	\$ 40.8	\$ (2.5)	(6) %
Adjusted operating margin	10 %	11 %	(1) %	(9) %

The decrease in adjusted operating income for fiscal 2021 compared to fiscal 2020 was primarily due to an increase in operating expenses, partially offset by an increase in revenue from arrangements booked in prior periods.

### Income Taxes

Our effective tax rate for fiscal 2021 was 6.1%, which included a tax benefit of \$45.5 million of U.S. federal research tax credit, a foreign derived intangible income (FDII) deduction of \$31.2 million, and excess tax benefits from stock-based compensation of \$94.0 million.

Our effective tax rate for fiscal 2020 was (4.0%), which included a tax benefit of \$39.2 million of U.S. federal research tax credit, a FDII deduction of \$24.3 million, and excess tax benefits from stock-based compensation of \$72.3 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 July 2017, the Hungarian Tax Authority (the HTA) issued a final assessment against our Hungarian subsidiary (Synopsis Hungary) for fiscal years 2011 through 2013. The HTA applied withholding taxes on certain payments made to affiliates, resulting in an aggregate tax assessment of approximately \$25.0 million and interest and penalties of \$11.0 million. We paid the tax assessments, penalties and interest in the first quarter of 2018 as required by law and recorded these amounts as prepaid taxes on our balance sheet. On April 30, 2019, the Hungarian Administrative Court ruled against Synopsis Hungary. We filed an appeal with the Hungarian Supreme Court on July 5, 2019. In the second quarter of 2019, as a result of the Court's decision, we recorded a tax expense due to an unrecognized tax benefit of \$17.4 million, which is net of estimated U.S. foreign tax credits for the tax assessments. The Hungarian Supreme Court heard our appeal on November 12, 2020 and remanded the case to the Hungarian Administrative Court for further proceedings. We received the Hungarian Supreme Court's written decision in the first quarter of fiscal 2021. On April 27, 2021, the Administrative Court reheard the case and again ruled against Synopsis Hungary. We received the written opinion from the Administrative Court on May 19, 2021. We filed an appeal with the Hungarian Supreme Court on July 19, 2021. The hearing for the appeal is scheduled for January 27, 2022.

See Note 13 of *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.

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As of October 31, 2021, we held \$1,580.8 million in cash, cash equivalents and short-term investments. 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. We believe that the overall credit quality of our portfolio is strong, with our global excess cash, and our cash equivalents, invested in banks and securities with a weighted-average credit rating exceeding AA.

As of October 31, 2021, approximately \$799.1 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. 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 complementary 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.

### **Cash Flows**

	Year Ended October 31,		\$ Change
	2021	2020	2020 to 2021
	(dollars in millions)		
Cash provided by operating activities	\$ 1,492.6	\$ 991.3	\$ 501.3
Cash used in investing activities	\$ (549.0)	\$ (360.4)	\$ (188.6)
Cash used in financing activities	\$ (748.7)	\$ (140.6)	\$ (608.1)

#### *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.

*Fiscal 2021 compared to fiscal 2020.* The increase in cash provided by operating activities was primarily attributable to higher operating income and higher cash collections.

#### *Cash Used in Investing Activities*

*Fiscal 2021 compared to fiscal 2020.* The increase in cash used in investing activities was primarily due to purchase of short-term investments of \$161.7 million and higher cash paid for acquisitions of \$95.0 million, partially offset by lower purchases of property and equipment of \$61.0 million.

#### *Cash Used in Financing Activities*

*Fiscal 2021 compared to fiscal 2020.* The increase in cash used in financing activities was primarily due to higher stock repurchases of \$546.0 million and higher income taxes paid for net share settlements of \$56.7 million.

### **Credit and Term Loan Facilities**

On November 28, 2016, we entered into an amended and restated credit agreement with several lenders (as amended and restated, the Credit Agreement) providing for (i) a \$650.0 million senior unsecured revolving credit facility (the Revolver) and (ii) a \$150.0 million senior unsecured term loan facility (the Term Loan). On January 22, 2021, the Credit Agreement was amended (Credit Agreement) to extend the termination date of the existing \$650 million senior unsecured revolving credit facility from November 28, 2021 to January 22, 2024, which may be further extended at our option. Further, the Credit Agreement was also amended to provide an uncommitted incremental loan facility of up to \$150.0 million in the aggregate principal amount.

Our outstanding term loan borrowings under the previous credit agreement carried over under the Credit Agreement. As of October 31, 2021, we had \$75.0 million in aggregate principal amount in outstanding balance under the Term Loan. There was no outstanding balance under the Revolver as of October 31, 2021.

In July 2018, we entered into a 12-year 220.0 million RMB (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, 2021, we had \$25.1 million outstanding under the agreement. The remaining outstanding balance of \$75.0 million was repaid in full on November 26, 2021.

#### **Share Repurchase Program**

Our Board of Directors previously approved a stock repurchase program up to \$500.0 million of our common stock, and approved a replenishment of the stock repurchase program of up to \$500.0 million in June 2021. During the fiscal year 2021, we repurchased 2.8 million shares of common stock at an average price of \$270.84 per share for an aggregate purchase price of \$753.1 million. As of October 31, 2021, \$110.0 million remained available for future share repurchases. In December 2021, our Board approved a stock repurchase program with authorization to purchase up to \$1.0 billion of our common stock. 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.

#### **Contractual and Other Obligations**

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, 2021, we had lease payment obligations, net of immaterial sublease income, of \$588.3 million, with \$80.4 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, 2021, we had \$301.7 million of purchase obligations, with \$151.8 million payable within 12 months. Although open purchase orders are considered enforceable and legally binding, the terms generally 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 “Other Commitments – 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, 2021, we had \$27.9 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 2021 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**

**Interest Rate Risk.** 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, 2021, all of our cash, cash equivalents, and debt were at short-term variable or fixed interest rates. As of October 31, 2021, we had an investment portfolio of fixed income securities of \$147.9 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. The primary objective of our investment activities is to preserve the principal while at the same time maximizing yields without significantly increasing the risk. 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



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our investment policy. None of these investments are held for trading purposes. Our policy also limits the amount of credit exposure to any one issue, issuer and type of instrument.

Our cash equivalents and debt by fiscal year of expected maturity and average interest rates as of October 31, 2021 are as follows:

	Maturing in Year Ending October 31,					Total	Fair Value
	2022	2023	2024	2025	2025 thereafter		
	(in thousands)						
Cash & Cash equivalents	\$ 1,416,810					\$ 1,416,810	\$ 1,416,810
Approx. average interest rate	0.17 %						
Short-term debt (variable rate):							
Term Loan	\$ 75,000					\$ 75,000	\$ 75,000
Average interest rate	LIBOR + 1.125%						
Credit Facility in China					\$ 25,094	\$ 25,094	\$ 25,094
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. 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 23 months. See Note 2 and Note 6 of *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. 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 providing information as of October 31, 2021, the fair value of the contracts would decrease by approximately \$13.5 million, and we would be required to pay approximately \$13.5 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 \$13.5 million that would offset the loss and negative cash flow on the maturing forward contracts.

Net unrealized gain of approximately \$1.3 million and net unrealized loss of \$3.4 million, net of tax, are included in accumulated other comprehensive income (loss) in our consolidated balance sheets as of October 31, 2021 and 2020, respectively.

If estimates of our balances and transactions prove inaccurate, we will not be completely hedged, and we will record a gain or loss, depending upon the nature and extent of such inaccuracy.

We do not use foreign currency forward contracts for speculative or trading purposes. 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.

Information about the gross notional values of our foreign currency contracts as of October 31, 2021 was as follows:

	Gross Notional Amount in U.S. Dollars	Average Contract Rate
	(in thousands)	
Forward Contract Values:		
Japanese yen	\$ 311,030	110.672
Indian rupee	270,717	79.144
Euro	135,099	1.182
Chinese renminbi	97,860	6.470
Taiwanese dollar	89,693	27.866
Canadian dollar	68,780	1.265
Hungarian forint	68,462	315.169
Korean won	50,453	1,186.931
British pound sterling	29,994	1.368
Israel shekel	25,502	3.217
Armenian dram	9,799	510.264
Singapore dollar	9,503	1.361
Swiss franc	9,260	0.923
	<u>\$ 1,176,152</u>	

*Equity Risk.* We had approximately \$17.6 million and \$13.2 million of non-marketable equity securities in privately held companies as of October 31, 2021 and 2020, respectively. The investments that we do not have the ability to exercise significant influence over are accounted for using the measurement alternative when the fair value of the investment is not readily determinable. Securities accounted for as equity method investments are recorded at cost plus the proportional share of the issuers' income or loss, which is recorded in the other income (expense), net. Investments are written down to the fair value when an event or circumstance which impacts the fair value of these investments indicates that the investments are impaired and the fair value of the investments is less than the carrying value. None of our investments are held for speculation purposes.

**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 30, 2021 and October 31, 2020, the related consolidated statements of income, comprehensive income, stockholders' equity, and cash flows for each of the years in the three-year period ended October 30, 2021, and the related notes (collectively, the consolidated financial statements). We also have audited the Company's internal control over financial reporting as of October 30, 2021, 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 30, 2021 and October 31, 2020, and the results of its operations and its cash flows for each of the years in the three-year period ended October 30, 2021, 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 30, 2021 based on criteria established in Internal Control – Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission.

*Change in Accounting Principle*

As discussed in Note 2 to the consolidated financial statements, the Company has changed its method of accounting for leases as of November 3, 2019 due to the adoption of Financial Accounting Standards Board (FASB) Accounting Standards Codification (ASC) 842, Leases ("ASC 842").

*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*

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 \$4,204.2 million for the year ended October 30, 2021, 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 controls related to 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 13, 2021

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

	October 31,	
	2021	2020
<b>ASSETS</b>		
Current assets:		
Cash and cash equivalents	\$ 1,432,840	\$ 1,235,653
Short-term investments	147,949	—
Total cash, cash equivalents and short-term investments	1,580,789	1,235,653
Accounts receivable, net	568,501	780,709
Inventories, net	229,023	192,333
Income taxes receivable and prepaid taxes	32,411	32,355
Prepaid and other current assets	397,617	308,167
Total current assets	2,808,341	2,549,217
Property and equipment, net	472,398	483,818
Operating lease right-of-use assets, net	493,251	465,818
Goodwill	3,575,785	3,365,114
Intangible assets, net	279,132	254,322
Deferred income taxes	612,655	497,546
Other long-term assets	510,698	414,227
Total assets	<u>\$ 8,752,260</u>	<u>\$ 8,030,062</u>
<b>LIABILITIES AND STOCKHOLDERS' EQUITY</b>		
Current liabilities:		
Accounts payable and accrued liabilities	\$ 694,748	\$ 623,664
Operating lease liabilities, current	79,678	73,173
Accrued income taxes	46,443	27,738
Deferred revenue	1,517,623	1,388,263
Short-term debt	74,992	27,084
Total current liabilities	2,413,484	2,139,922
Operating lease liabilities, non-current	487,003	462,411
Long-term accrued income taxes	27,893	25,178
Long-term deferred revenue	136,303	104,850
Long-term debt	25,094	100,823
Other long-term liabilities	363,540	284,511
Total liabilities	3,453,317	3,117,695
Stockholders' equity:		
Preferred stock, \$0.01 par value: 2,000 shares authorized; none outstanding	—	—
Common stock, \$0.01 par value: 400,000 shares authorized; 153,062 and 152,618 shares outstanding, respectively	1,531	1,528
Capital in excess of par value	1,576,363	1,653,166
Retained earnings	4,549,713	3,795,397
Treasury stock, at cost: 4,198 and 4,643 shares, respectively	(782,866)	(488,613)
Accumulated other comprehensive income (loss)	(49,604)	(54,074)
Total Synopsys stockholders' equity	5,295,137	4,907,404
Non-controlling interest	3,806	4,963
Total stockholders' equity	5,298,943	4,912,367
Total liabilities and stockholders' equity	<u>\$ 8,752,260</u>	<u>\$ 8,030,062</u>

See accompanying notes to consolidated financial statements.

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

	Year Ended October 31,		
	2021	2020	2019
Revenue:			
Time-based products	\$ 2,633,763	\$ 2,365,199	\$ 2,197,965
Upfront products	861,063	735,572	619,791
Maintenance and service	709,367	584,510	542,938
Total revenue	4,204,193	3,685,281	3,360,694
Cost of revenue:			
Products	542,114	487,307	459,127
Maintenance and service	271,202	254,931	234,196
Amortization of intangible assets	48,461	52,452	59,623
Total cost of revenue	861,777	794,690	752,946
Gross margin	3,342,416	2,890,591	2,607,748
Operating expenses:			
Research and development	1,504,823	1,279,022	1,136,932
Sales and marketing	712,491	632,010	632,890
General and administrative	322,988	284,530	229,218
Amortization of intangible assets	33,919	38,829	41,291
Restructuring charges	33,405	36,059	47,186
Total operating expenses	2,607,626	2,270,450	2,087,517
Operating income	734,790	620,141	520,231
Other income (expense), net	70,724	18,018	25,275
Income before income taxes	805,514	638,159	545,506
Provision (benefit) for income taxes	49,155	(25,288)	13,139
Net income	756,359	663,447	532,367
Net income (loss) attributed to non-controlling interest	(1,157)	(900)	—
Net income attributed to Synopsys	\$ 757,516	\$ 664,347	\$ 532,367
Net income per share attributed to Synopsys:			
Basic	\$ 4.96	\$ 4.40	\$ 3.55
Diluted	\$ 4.81	\$ 4.27	\$ 3.45
Shares used in computing per share amounts:			
Basic	152,698	151,135	149,872
Diluted	157,340	155,706	154,190

See accompanying notes to consolidated financial statements.



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

	Year Ended October 31,		
	2021	2020	2019
Net income	\$ 756,359	\$ 663,447	\$ 532,367
Other comprehensive income (loss):			
Change in foreign currency translation adjustment	9,415	30,466	1,360
Change in unrealized gains (losses) on available-for-sale securities, net of tax of \$0 for periods presented	(246)	—	—
Cash flow hedges:			
Deferred gains (losses), net of tax of \$(1,736), \$(3,192), and \$(2,009) for fiscal years 2021, 2020 and 2019, respectively	9,860	7,834	4,733
Reclassification adjustment on deferred (gains) losses included in net income, net of tax of \$4,593, \$176, and \$(3,672) for fiscal years 2021, 2020 and 2019, respectively	(14,559)	73	14,637
Other comprehensive income (loss), net of tax effects	4,470	38,373	20,730
Comprehensive income	760,829	701,820	553,097
Less: Net income (loss) attributed to non-controlling interest	(1,157)	(900)	—
Comprehensive income attributed to Synopsys	<u>\$ 761,986</u>	<u>\$ 702,720</u>	<u>\$ 553,097</u>

See accompanying notes to consolidated financial statements.

**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	Stockholders' Equity
	Shares	Amount							
<b>Balance at October 31, 2018</b>	149,265	\$ 1,493	\$1,644,830	\$2,543,688	\$ (597,682)	\$ (113,177)	\$ 3,479,152	\$ 5,863	\$ 3,485,015
Net income				532,367			532,367		532,367
Retained earnings adjustment due to adoption of accounting standards related to revenue				257,594			257,594		257,594
Retained earnings adjustment due to adoption of an accounting standard related to income taxes				(130,544)			(130,544)		(130,544)
Other comprehensive income (loss), net of tax effects						20,730	20,730		20,730
Purchases of treasury stock	(2,732)	(27)	27		(329,185)		(329,185)		(329,185)
Common stock issued, net of shares withheld for employee taxes	3,798	37	(163,198)	(38,961)	301,225		99,103		99,103
Stock-based compensation			153,796				153,796		153,796
<b>Balance at October 31, 2019</b>	150,331	\$ 1,503	\$1,635,455	\$3,164,144	\$ (625,642)	\$ (92,447)	\$ 4,083,013	\$ 5,863	\$ 4,088,876
Net income				664,347			664,347	(900)	663,447
Other comprehensive income (loss), net of tax effects						38,373	38,373		38,373
Purchases of treasury stock	(1,585)	(14)	14		(242,078)		(242,078)		(242,078)
Common stock issued, net of shares withheld for employee taxes	3,872	39	(230,887)	(33,094)	379,107		115,165		115,165
Stock-based compensation			248,584				248,584		248,584
<b>Balance at October 31, 2020</b>	152,618	\$ 1,528	\$1,653,166	\$3,795,397	\$ (488,613)	\$ (54,074)	\$ 4,907,404	\$ 4,963	\$ 4,912,367
Net income				757,516			757,516	(1,157)	756,359
Retained earnings adjustment due to adoption of ASC 326				(3,200)			(3,200)		(3,200)
Other comprehensive income (loss), net of tax effects						4,470	4,470		4,470
Purchases of treasury stock	(2,780)	(28)	28		(753,081)		(753,081)		(753,081)
Equity forward contract			(35,000)				(35,000)		(35,000)
Common stock issued, net of shares withheld for employee taxes	3,224	31	(387,103)		458,828		71,756		71,756
Stock-based compensation			345,272				345,272		345,272
<b>Balance at October 31, 2021</b>	153,062	\$ 1,531	\$1,576,363	\$4,549,713	\$ (782,866)	\$ (49,604)	\$ 5,295,137	\$ 3,806	\$ 5,298,943

See accompanying notes to consolidated financial statements.

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

	Year Ended October 31,		
	2021	2020	2019
Cash flow from operating activities:			
Net income attributed to Synopsis	\$ 757,516	\$ 664,347	\$ 532,367
Adjustments to reconcile net income to net cash provided by operating activities:			
Amortization and depreciation	203,676	209,986	201,676
Reduction of operating lease right-of-use assets	86,645	82,895	—
Amortization of capitalized costs to obtain revenue contracts	64,698	61,185	62,750
Stock-based compensation	345,272	248,584	155,001
Allowance for credit losses	18,515	20,875	11,669
Deferred income taxes	(128,583)	(111,526)	(82,620)
Other non-cash	14,702	3,425	(5,045)
Net changes in operating assets and liabilities, net of acquired assets and liabilities:			
Accounts receivable	201,706	(236,806)	(8,575)
Inventories	(48,046)	(55,024)	(17,396)
Prepaid and other current assets	(102,174)	(11,298)	(49,779)
Other long-term assets	(153,037)	(83,367)	(125,749)
Accounts payable and accrued liabilities	125,133	113,773	(19,280)
Operating lease liabilities	(82,581)	(78,578)	—
Income taxes	28,855	14,120	19,777
Deferred revenue	160,325	148,722	125,717
Net cash provided by operating activities	1,492,622	991,313	800,513
Cash flows from investing activities:			
Proceeds from sales and maturities of short-term investments	12,850	—	—
Purchases of short-term investments	(161,732)	—	—
Proceeds from sales of long-term investments	—	2,151	6,361
Purchases of long-term investments	(7,591)	(2,762)	(3,245)
Purchases of property and equipment	(93,764)	(154,717)	(198,129)
Cash paid for acquisitions, net of cash acquired	(296,017)	(201,045)	(36,605)
Capitalization of software development costs	(1,976)	(4,045)	(4,259)
Other	(800)	—	—
Net cash used in investing activities	(549,030)	(360,418)	(235,877)
Cash flows from financing activities:			
Proceeds from credit facilities	—	276,489	192,897
Repayment of debt	(28,061)	(288,879)	(524,063)
Issuances of common stock	210,719	197,403	156,364
Payments for taxes related to net share settlement of equity awards	(138,950)	(82,225)	(57,143)
Purchase of equity forward contract	(35,000)	—	—
Purchases of treasury stock	(753,081)	(242,078)	(329,185)
Other	(4,375)	(1,316)	(762)
Net cash used in financing activities	(748,748)	(140,606)	(561,892)
Effect of exchange rate changes on cash, cash equivalents and restricted cash	2,369	17,154	2,782
Net change in cash, cash equivalents and restricted cash	197,213	507,443	5,526
Cash, cash equivalents and restricted cash, beginning of year	1,237,970	730,527	725,001
Cash, cash equivalents and restricted cash, end of year	\$ 1,435,183	\$ 1,237,970	\$ 730,527
Supplemental disclosure of cash flow information:			
Cash paid for income taxes during the year:	\$ 149,762	\$ 70,711	\$ 75,744
Interest payments during the year:	\$ 3,365	\$ 5,136	\$ 12,363

See accompanying notes to consolidated financial statements.

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

**Note 1. Description of Business**

Synopsys, Inc. ("Synopsys" or "the Company") provides products and services used across the entire silicon to software spectrum, from engineers creating advanced semiconductors to software developers seeking to ensure the security and quality of their code. The Company is 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. The Company also offers 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. The Company provides software and hardware used to validate the electronic systems that incorporate chips and the software that runs on them. To complement these offerings, the Company provides technical services and support to help its customers develop advanced chips and electronic systems. These products and services are part of the Company's Semiconductor & System Design segment.

The Company is 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 the Company's Software Integrity segment.

**Note 2. Summary of Significant Accounting Policies**

*Fiscal Year End.* The Company's fiscal year generally ends on the Saturday nearest to October 31 and consists of 52 weeks, with the exception that approximately every five years, the Company has a 53-week year. When a 53-week year occurs, the Company includes the additional week in the first quarter to realign fiscal quarters with calendar quarters. Fiscal 2021, 2020 and 2019 were 52-week years ending on October 30, 2021, October 31, 2020 and November 2, 2019, respectively. For presentation purposes, the consolidated financial statements and accompanying notes refer to the closest calendar month end. Fiscal 2022 will be a 52-week year.

*Principles of Consolidation.* The consolidated financial statements include the accounts of the Company and all of its subsidiaries. All intercompany accounts and transactions have been eliminated.

*Use of Estimates.* To prepare financial statements in conformity with U.S. generally accepted accounting principles (U.S. GAAP), 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 may result in material effects on the Company's operating results and financial position.

*Comparability.* Effective beginning of fiscal 2021, the Company adopted Accounting Standards Codification (ASC) 326, Measurement of Credit Losses on Financial Instruments (ASC 326). Prior periods were not retrospectively recast and accordingly, the consolidated balance sheets as of October 31, 2020 and the consolidated statements of income for the years ended October 31, 2020 and 2019 were prepared using accounting standards that were different than those in effect as of and for the year ended October 31, 2021. Effective beginning in fiscal 2020, the Company adopted ASC 842, Leases (ASC 842). Prior periods were not retrospectively recast, and accordingly the consolidated statements of income for the year ended October 31, 2019 was prepared using accounting standards that were different than those in effect for the years ended October 31, 2021 and 2020.

*Foreign Currency Translation.* The functional currency of the majority of the Company's 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 gain or loss recorded in earnings. The Company translates assets and liabilities of its 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. The Company translates 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).

*Foreign Currency Contracts.* The Company operates internationally and is exposed to potentially adverse movements in currency exchange rates. The Company enters into hedges in the form of foreign currency forward contracts to reduce its 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.

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

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 6. Financial Assets and Liabilities*.

*Fair Values of Financial Instruments.* The Company's cash equivalents, short-term investments and foreign currency contracts are carried at fair value. The fair value of the Company's 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, net of impairments. The Company performs periodic impairment analysis on these non-marketable equity securities. The carrying amount of the short-term debt approximates the estimated fair value. See *Note 7. Fair Value Measures*.

*Cash and Cash Equivalents and Short-term Investments.* The Company classifies investments with original maturities of three months or less when acquired as cash equivalents. Debt securities and other investments with stated maturities longer than three months are classified as short-term investments and the Company may convert these investments into cash at any time to fund general operations. These debt securities and other investments generally have an effective maturity term of less than three years and are classified as available-for-sale 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, the Company evaluates 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 to 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 6. Financial Assets and Liabilities*. There were no credit losses on available-for-sale debt securities recognized in the years ended October 31, 2021.

*Concentration of Credit Risk.* Financial instruments that potentially subject the Company to significant concentrations of credit risk consist principally of cash equivalents, marketable securities, foreign currency contracts, and accounts receivable from trade customers. The Company maintains cash equivalents primarily in highly rated taxable and tax-exempt money market funds located in the U.S. and in various overseas locations.

The Company sells its products worldwide primarily to customers in the global electronics market. The Company performs on-going credit evaluations of its customers' financial condition and does not require collateral. The Company establishes reserves for potential credit losses and such losses have been within management's expectations and have not been material in any year presented.

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

*Accounts Receivable, Net.* The balances consist of accounts receivable billed and unbilled. Unbilled accounts receivable represent amounts recorded as revenue which will be invoiced within one year of the balance sheet date. The following table represents the components of accounts receivable, net:

	October 31,	
	2021	2020
	(in thousands)	
Accounts receivable	\$ 563,592	\$ 758,341
Unbilled accounts receivable	35,589	50,932
Total accounts receivable	599,181	809,273
Less allowance for credit losses	(30,680)	(28,564)
Total accounts receivable, net	<u>\$ 568,501</u>	<u>\$ 780,709</u>

*Allowance for Credit Losses.* Trade accounts receivable are recorded at the invoiced amount and do not bear interest. The Company maintains an allowance for credit losses for expected uncollectible accounts receivable, which is recorded as an offset to accounts receivable and changes in such are classified as 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)			
2021	\$ 28,564	\$ 18,515	\$ (16,399)	\$ 30,680
2020	\$ 9,046	\$ 20,875	\$ (1,357)	\$ 28,564
2019	\$ 5,613	\$ 11,669	\$ (8,236)	\$ 9,046

*Inventories, net.* 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 parts used in emulation and prototyping hardware systems. The valuation process includes a review of the stage of the product life cycle and 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.

*Income Taxes.* The Company accounts 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.

The Company accounts 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. Leasehold improvements are amortized using the straight-line method over the remaining term of the lease or the economic useful life of the asset, whichever is shorter. Depreciation expenses were \$119.1 million, \$119.1 million and \$100.4

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

million in fiscal 2021, 2020 and 2019, respectively. Repair and maintenance costs are expensed as incurred and such costs were \$62.6 million, \$62.1 million and \$52.5 million in fiscal 2021, 2020 and 2019, respectively.

A summary of property and equipment, at cost less accumulated depreciation and amortization, as of October 31, 2021 and 2020 is as follows:

	October 31,	
	2021	2020
	(in thousands)	
Computer and other equipment	\$ 812,161	\$ 788,105
Buildings	134,931	129,746
Furniture and fixtures	73,624	72,702
Land	19,965	19,965
Leasehold improvements	236,064	242,830
	1,276,745	1,253,348
Less accumulated depreciation and amortization <sup>(1)</sup>	(804,347)	(769,530)
Total	\$ 472,398	\$ 483,818

<sup>(1)</sup> Accumulated depreciation and amortization includes write-offs due to retirement of fully amortized fixed assets.

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

*Investments in Equity Securities.* The Company holds equity securities in privately held companies for the promotion of business and strategic objectives. These investments are initially recorded at cost and included in other long-term assets in the consolidated balance sheets and are subject to a periodic impairment review. The Company accounts for these investments using the measurement alternative when the fair value of the investment is not readily determinable and the Company does not have the ability to exercise significant influence or using the equity method of accounting when it is determined that the Company has the ability to exercise significant influence. For investments accounted for using the equity method of accounting, the Company records its proportionate share of the investee's income or loss, net of the effects of any basis differences, to other income, in its consolidated statements of income.

*Leases.* The Company determines 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 the Company has 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 our use. 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.

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 the Company's leases do not provide an implicit rate, the Company uses the incremental borrowing rate at lease commencement to measure ROU assets and lease liabilities. The Company uses a benchmark senior



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

unsecured yield curve for debt instruments and considers specific credit quality, market conditions, tenor of lease arrangements, and quality of collateral to determine the incremental borrowing rate.

The Company used the incremental borrowing rate as of the date of adoption for all leases that commenced on or prior to that date. Operating lease expense is generally recognized on a straight-line basis over the lease term. The Company has elected the practical expedient to account for the lease and non-lease components as a single lease component for the majority of the Company's asset classes. For leases with a term of one year or less, the Company has elected not to record the ROU asset or liability.

*Goodwill.* Goodwill represents the excess of the aggregate purchase price over the fair value of the net tangible and identifiable intangible assets acquired by the Company. The carrying amount of goodwill at each reporting unit is tested for impairment annually as of October 31, or more frequently if facts and circumstances warrant a review.

The Company performs a qualitative analysis when testing a reporting unit's goodwill for impairment. A qualitative goodwill impairment test is performed when the fair value of a reporting unit historically has significantly exceeded the carrying value of its net assets and based on current operations is expected to continue to do so. Otherwise, the Company is required to conduct a quantitative impairment test for each reporting unit and estimate the fair value of each reporting unit using a combination of an income approach based on discounted cash flow analysis and a market approach based on market multiples. The discount rate used in the income approach is based on the Company's weighted-average cost of capital and may be adjusted for the relevant risks pertaining to projecting future cash flows. If the fair value of a reporting unit is less than its carrying value, a goodwill impairment charge is recorded for the difference. As of October 31, 2021, the Company performed a qualitative impairment test on each reporting unit and concluded there was no impairment of goodwill.

*Intangible Assets.* Intangible assets consist of acquired technology, certain contract rights, customer relationships, trademarks and trade names, capitalized software, and in-process research and development. 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, except for in-process research and development (IPR&D) projects not yet completed. IPR&D assets are amortized over their estimated useful lives upon completion or are written off upon abandonment.

The Company continually monitors events and changes in circumstances that could indicate carrying amounts of long-lived assets, including property and equipment and intangible assets, may not be recoverable. When such events or changes in circumstances occur, the Company assesses the recoverability of long-lived assets by determining whether the carrying value of such asset group will be recovered through the undiscounted future cash flow. If the undiscounted future cash flow is less than the carrying amount of the asset group, the Company recognizes an impairment loss based on the excess of the carrying amount over the fair value of the asset group. The Company had no impairment charges for long-lived assets in fiscal 2021, 2020 and 2019.

*Restructuring Charges.* In the third quarter of fiscal 2021, the Company initiated a restructuring plan for involuntary and voluntary employee termination and facility closure actions as part of a business reorganization. The total charges under the 2021 restructuring plan (the 2021 Plan) are expected to be in the range of \$42 million to \$53 million and will consist primarily of severance, retirement benefits under the 2021 Voluntary Retirement Program (VRP) and lease abandonment costs. The 2021 Plan and VRP are expected to be completed in the first quarter of fiscal 2022.

During fiscal 2021, the Company 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.

During fiscal 2020, the Company incurred restructuring charges of \$36.1 million under the 2019 restructuring plan. These charges consisted primarily of severance and retirement benefits. \$57.4 million was paid in fiscal 2020 which included payments of remaining balances in fiscal 2019. As of October 31, 2020, \$1.3 million remained outstanding and was recorded in accounts payable and accrued liabilities as payroll and related benefits in the consolidated balance sheets. The remaining balance was paid in fiscal 2021.

During fiscal 2019, the Company incurred restructuring charges of approximately \$47.2 million for involuntary employee termination actions and the VRP. As of October 31, 2020, no amounts remained outstanding.

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

*Accounts Payable and Accrued Liabilities.* The balance consisted of:

	October 31,	
	2021	2020
	(in thousands)	
Payroll and related benefits	\$ 581,687	\$ 492,626
Other accrued liabilities	85,648	101,035
Accounts payable	27,413	30,003
Total	<u>\$ 694,748</u>	<u>\$ 623,664</u>

*Other Long-term Liabilities.* The balance consisted of:

	October 31,	
	2021	2020
	(in thousands)	
Deferred compensation liability (See Note 12)	\$ 343,820	\$ 269,737
Other long-term liabilities	19,720	14,774
Total	<u>\$ 363,540</u>	<u>\$ 284,511</u>

*Other Comprehensive Income (Loss).* Other comprehensive income (loss) (OCI) includes all changes in equity during a period, such as accumulated net translation adjustments, unrealized gain (loss) on certain foreign currency forward contracts that qualify as cash flow hedges, reclassification adjustments related to cash flow hedges and unrealized gain (loss) on investments. See Note 10. *Accumulated Other Comprehensive Income (Loss).*

*Revenue Recognition.* The Company recognizes revenue for the transfer of services or products to customers in an amount that reflects the consideration to which the Company expects to be entitled in exchange for those services or products. The 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, the Company satisfies a performance obligation

*Nature of Products and Services*

The Company generates 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 the Company's 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 the Company's arrangements are TSLs due to the nature of its 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 the Company's customers in applying the Company's 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. The Company has concluded that its software licenses in TSL contracts are not distinct from its 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

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

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.

#### *IP & System Integration*

The Company generally licenses 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 the Company's 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 the Company's 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 the Company's 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*

The Company generally has 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 its 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. The Company has 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*

The Company's 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 Synopsys has enforceable rights to payment for performance completed. Inputs such as costs incurred and hours expended are used in order to measure progress of performance. The Company has 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

**SYNOPSYS, INC.**  
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Synopsys 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*

The Company's 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. The Company has concluded that (1) its EDA software licenses in TSL contracts are not distinct from its 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, the Company 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, the Company also concluded that in its Software Integrity business, the licenses and maintenance updates serve together to fulfill the Company's 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.

The Company's 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 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 the Company does 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 to customers, and these timing differences result in receivables (billed or unbilled), contract assets, or contract liabilities (deferred revenue) on the Company's consolidated balance sheet. The Company records 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. The Company records an unbilled receivable when revenue is recognized and it has an unconditional right to invoice and receive payment.

*Warranties and Indemnities.* The Company generally warrants its products to be free from defects in media and to substantially conform to material specifications for a period of 90 days for software products and for up to six months for hardware systems. In certain cases, the Company also provides its customers with limited indemnification with respect to claims that their use of the Company's software products infringes on United States patents, copyrights, trademarks or trade secrets. The Company is unable to estimate the potential impact of these commitments on the future results of operations. To date, the Company has not been required to pay any material warranty claims.

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

*Net Income Per Share.* The Company computes 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.

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,		
	2021	2020	2019
	(in thousands, except per share amounts)		
Numerator:			
Net income attributed to Synopsys	\$ 757,516	\$ 664,347	\$ 532,367
Denominator:			
Weighted average common shares for basic net income per share	152,698	151,135	149,872
Dilutive effect of common share equivalents from equity-based compensation	4,642	4,571	4,318
Weighted average common shares for diluted net income per share	157,340	155,706	154,190
Net income per share:			
Basic	\$ 4.96	\$ 4.40	\$ 3.55
Diluted	\$ 4.81	\$ 4.27	\$ 3.45
Anti-dilutive employee stock-based awards excluded <sup>(1)</sup>	408	97	171

<sup>(1)</sup> These stock options and unvested restricted stock units were anti-dilutive for the respective periods and are excluded in calculating diluted net income per share. While such awards were anti-dilutive for the respective periods, they could be dilutive in the future.

*Recently Adopted Accounting Pronouncements*

Beginning in fiscal 2021, the Company adopted ASC 326, which was issued by the Financial Accounting Standards Board (FASB) in June 2016 as Accounting Standards Update (ASU) No. 2016-13 Financial Instruments – Credit Losses (ASC 326): 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. The Company 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.

*Recent Accounting Pronouncements Not Yet Adopted*

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 it had originated the contracts. Under the current business combinations guidance, such assets and liabilities are recognized by the acquirer at fair value on the acquisition date. The new standard is effective for the Company’s fiscal year beginning on November 1, 2023. Early adoption is permitted. The standard will not impact acquired contract assets or liabilities from business combinations occurring prior to the effective date of adoption, and the impact in future periods will depend on the contract assets and contract liabilities acquired in future business combinations.

In March 2020, the FASB issued ASU 2020-04, Reference Rate Reform (Topic 848): Facilitation of the Effects of Reference Rate Reform on Financial Reporting (ASU 2020-04) and also issued subsequent amendments to the

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initial guidance (collectively, Topic 848). Topic 848 provides optional guidance for contract modifications and certain hedging relationships associated with the transition from reference rates that are expected to be discontinued. The Company will adopt Topic 848 when the relevant contracts are modified upon transition to alternative reference rates. The Company does not expect the adoption of Topic 848 will have a material impact on the consolidated financial statements.

**Note 3. Revenue**

*Disaggregated Revenue*

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

	2021	2020	2019
EDA	55.5 %	57.4 %	58.4 %
IP & System Integration	34.8 %	32.6 %	31.4 %
Software Integrity Products & Services	9.4 %	9.7 %	10.0 %
Other	0.3 %	0.3 %	0.2 %
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,	
	2021	2020
	(in thousands)	
Contract assets, net	\$ 284,574	\$ 214,583
Unbilled receivables	\$ 35,589	\$ 50,932
Deferred revenue	\$ 1,653,926	\$ 1,493,113

During fiscal 2021, the Company recognized \$1.2 billion of revenue that was included in the deferred revenue balance as of October 31, 2020. During fiscal 2020, the Company recognized \$1.1 billion of revenue that was included in the deferred revenue balance as of October 31, 2019.

Contracted but unsatisfied or partially unsatisfied performance obligations were approximately \$6.9 billion as of October 31, 2021, which includes \$890.9 million 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. The Company has elected to exclude future sales-based royalty payments from the remaining performance obligations. Approximately 40% of the contracted but unsatisfied or partially unsatisfied performance obligations as of October 31, 2021, excluding non-cancellable FSA, are expected to be recognized over the next 12 months with the remainder recognized thereafter.

During fiscal 2021, the Company recognized \$116.7 million from performance obligations satisfied from sales-based royalties earned during the periods. During fiscal 2020, the Company recognized \$102.4 million from performance obligations satisfied from sales-based royalties earned during the periods.

*Costs of Obtaining a Contract with Customer*

The incremental costs of obtaining a contract with a customer, which consist primarily of direct sales commissions earned upon execution of the contract, are required to be capitalized under ASC 340-40 and amortized over the estimated period of which the benefit is expected to be received. As direct sales commissions paid for renewals are commensurate with the amounts paid for initial contracts, the deferred incremental costs will be recognized over the contract term. Capitalized direct commission costs, net of accumulated amortization, as of October 31, 2021 were \$92.2 million and are included in other assets in the Company's consolidated balance sheets. Amortization was

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

\$64.7 million during fiscal 2021 and is included in sales and marketing expense in the Company's consolidated statements of income. Capitalized direct commission costs, net of accumulated amortization, as of October 31, 2020 were \$81.3 million and are included in other assets in the Company's consolidated balance sheets. Amortization was \$61.2 million during fiscal 2020 and is included in sales and marketing expense in the Company's consolidated statements of income.

**Note 4. Business Combinations**

***Fiscal 2021 Acquisitions***

During fiscal 2021, the Company completed several acquisitions for an aggregate consideration of \$298.9 million, net of cash acquired. The Company does not consider these acquisitions to be material, individually or in the aggregate, to the Company's consolidated statements of income. The preliminary purchase allocations are \$109.3 million of identifiable intangible assets and \$204.5 million in goodwill, of which \$158.8 million is attributable to the Semiconductor & System Design reporting segment and \$45.7 million is attributable to the Software Integrity reporting segment.

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

***Fiscal 2020 Acquisitions***

During fiscal 2020, the Company completed several acquisitions for an aggregate consideration of \$238.3 million, net of cash acquired. The Company does not consider these acquisitions to be material, individually or in the aggregate, to the Company's consolidated statements of income. The preliminary purchase allocations are \$65.3 million of identifiable intangible assets, and \$173.7 million in goodwill, of which \$160.4 million is attributable to the Semiconductor & System Design reporting segment and \$13.3 million is attributable to the Software Integrity reporting segment.

The preliminary fair value estimates for the assets acquired and liabilities assumed for all acquisitions completed within 12 months from the applicable acquisition date are not yet finalized and may change as additional information becomes available during the respective measurement periods. The primary areas of those preliminary estimates relate to certain tangible assets and liabilities, identifiable intangible assets, and income taxes.

***Acquisition-Related Transaction Costs***

Transaction costs were \$15.4 million and \$14.1 million during fiscal 2021 and 2020, respectively. These costs consist of professional fees and administrative costs and were expensed as incurred in the Company's consolidated statements of income.

**Note 5. Goodwill and Intangible Assets**

The Company has two reporting units and has assigned assets and liabilities to each of the reporting units based on each unit's operating activities. No impairment of goodwill was identified for any periods presented. Goodwill activity by reportable segment for the year ended October 31, 2021 consisted of the following:

	Semiconductor & System Design	Software Integrity (in thousands)	Total
Balance at October 31, 2020	\$ 2,939,512	\$ 425,602	\$ 3,365,114
Additions	158,760	45,709	204,469
Effect of foreign currency translation	6,202	—	6,202
Balance at October 31, 2021	<u>\$ 3,104,474</u>	<u>\$ 471,311</u>	<u>\$ 3,575,785</u>



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

Goodwill activity by reportable segment for the year ended October 31, 2020 consisted of the following:

	Semiconductor & System Design	Software Integrity (in thousands)	Total
Balance at October 31, 2019	\$ 2,758,926	\$ 412,253	\$ 3,171,179
Additions	160,447	13,285	173,732
Adjustments	59	—	59
Effect of foreign currency translation	20,080	64	20,144
Balance at October 31, 2020	<u>\$ 2,939,512</u>	<u>\$ 425,602</u>	<u>\$ 3,365,114</u>

Intangible assets as of October 31, 2021 consisted of the following:

	Gross Assets	Accumulated Amortization (in thousands)	Net Assets
Core/developed technology	\$ 911,903	\$ 748,759	\$ 163,144
Customer relationships	404,571	308,355	96,216
Contract rights intangible	193,317	188,231	5,086
Trademarks and trade names	43,095	31,155	11,940
Capitalized software development costs	46,098	43,352	2,746
Total	<u>\$ 1,598,984</u>	<u>\$ 1,319,852</u>	<u>\$ 279,132</u>

Intangible assets as of October 31, 2020 consisted of the following:

	Gross Assets	Accumulated Amortization (in thousands)	Net Assets
Core/developed technology	\$ 827,232	\$ 703,009	\$ 124,223
Customer relationships	380,838	277,219	103,619
Contract rights intangible	192,812	186,763	6,049
Trademarks and trade names	43,096	28,716	14,380
In-process research and development (IPR&D)	1,214	—	1,214
Capitalized software development costs	44,122	39,285	4,837
Total	<u>\$ 1,489,314</u>	<u>\$ 1,234,992</u>	<u>\$ 254,322</u>

Amortization expense related to intangible assets consisted of the following:

	Year Ended October 31,		
	2021	2020	2019
	(in thousands)		
Core/developed technology	\$ 46,049	\$ 47,890	\$ 56,163
Customer relationships	31,478	35,075	37,533
Contract rights intangible	2,413	5,181	3,581
Trademarks and trade names	2,440	3,135	3,637
Capitalized software development costs <sup>(1)</sup>	4,067	3,723	2,868
Total	<u>\$ 86,447</u>	<u>\$ 95,004</u>	<u>\$ 103,782</u>

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

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

The following table presents the estimated future amortization of intangible assets as of October 31, 2021:

Fiscal Year	(in thousands)
2022	\$ 81,778
2023	63,744
2024	52,895
2025	36,793
2026	24,368
2027 and thereafter	19,554
Total	<u>\$ 279,132</u>

**Note 6. Financial Assets and Liabilities**

*Short-term investments.* Gross unrealized gains and losses on our short-term investment portfolio of available-for-sale debt securities at October 31, 2021 were not significant. The stated maturities of the Company's available-for-sale debt securities as of October 31, 2021 were as follows:

	Cost	Fair Value
	(in thousands)	
Due within 1 year	\$ 45,562	\$ 45,533
After 1 year through 5 years	94,591	94,396
After 5 years through 10 years	5,786	5,785
After 10 years	2,256	2,235
Total	<u>\$ 148,195</u>	<u>\$ 147,949</u>

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

As of October 31, 2021, the balances of the Company's cash equivalents, short-term investments and non-marketable equity securities investments were:

	Cost	Gross Unrealized Gains	Gross Unrealized Losses Less Than 12 Continuous Months	Gross Unrealized Losses 12 Continuous Months or Longer	Estimated Fair Value <sup>(1)</sup>
(in thousands)					
Cash equivalents:					
Money market funds	\$ 172,934	\$ —	\$ —	\$ —	\$ 172,934
Total:	<u>\$ 172,934</u>	<u>\$ —</u>	<u>\$ —</u>	<u>\$ —</u>	<u>\$ 172,934</u>
Short-term investments:					
U.S. government agency & T-bills	\$ 6,447	\$ —	\$ (5)	\$ —	\$ 6,442
Municipal bonds	4,588	—	(12)	—	4,576
Corporate debt securities	103,615	7	(170)	—	103,452
Asset-backed securities	33,545	6	(72)	—	33,479
Total:	<u>\$ 148,195</u>	<u>\$ 13</u>	<u>\$ (259)</u>	<u>\$ —</u>	<u>\$ 147,949</u>
Other long-term assets:					
Non-marketable equity securities	\$ 17,638	\$ —	\$ —	\$ —	\$ 17,638
Total:	<u>\$ 17,638</u>	<u>\$ —</u>	<u>\$ —</u>	<u>\$ —</u>	<u>\$ 17,638</u>

<sup>(1)</sup> See Note 7. *Fair Value Measures* for further discussion on fair values.

As of October 31, 2020, the balances of the Company's cash equivalents and non-marketable equity securities investments were:

	Cost	Gross Unrealized Gains	Gross Unrealized Losses Less Than 12 Continuous Months	Gross Unrealized Losses 12 Continuous Months or Longer	Estimated Fair Value <sup>(1)</sup>
(in thousands)					
Cash equivalents:					
Money market funds	\$ 304,127	\$ —	\$ —	\$ —	\$ 304,127
Total:	<u>\$ 304,127</u>	<u>\$ —</u>	<u>\$ —</u>	<u>\$ —</u>	<u>\$ 304,127</u>
Other long-term assets:					
Non-marketable equity securities	\$ 13,200	\$ —	\$ —	\$ —	\$ 13,200
Total:	<u>\$ 13,200</u>	<u>\$ —</u>	<u>\$ —</u>	<u>\$ —</u>	<u>\$ 13,200</u>

<sup>(1)</sup> See Note 7. *Fair Value Measures* for further discussion on fair values.

**Restricted cash.** The Company includes amounts generally described as restricted cash and restricted cash equivalents in cash and cash equivalents when reconciling beginning-of-period and end-of-period total amounts shown on the consolidated statements of cash flows. All restricted cash is primarily associated with office leases.

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

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

	October 31,	
	2021	2020
	(in thousands)	
Cash and cash equivalents	\$ 1,432,840	\$ 1,235,653
Restricted cash included in Prepaid expenses and other current assets	1,560	1,523
Restricted cash included in Other long-term assets	783	794
Total cash, cash equivalents and restricted cash	<u>\$ 1,435,183</u>	<u>\$ 1,237,970</u>

*Non-marketable equity securities.* The Company's 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 2021, fiscal 2020, or fiscal 2019.

*Derivatives.*

The Company recognizes derivative instruments as either assets or liabilities in the consolidated balance sheets at fair value and provides qualitative and quantitative disclosures about such derivatives. The Company operates internationally and is exposed to potentially adverse movements in foreign currency exchange rates. The Company enters into hedges in the form of foreign currency forward contracts to reduce its 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 ranges from approximately one month to 23 months, the majority of which are short-term. The Company does not use foreign currency forward contracts for speculative or trading purposes. The Company enters into foreign exchange forward contracts with high credit quality financial institutions that are rated 'A' or above and to date has not experienced nonperformance by counterparties. In addition, the Company mitigates credit risk in derivative transactions by permitting net settlement of transactions with the same counterparty and anticipates 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 will be 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 23 months or less. Certain forward contracts are rolled over periodically to capture the full length of exposure to the Company's 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. The Company expects a majority of the hedge balance in OCI to be reclassified to the statements of income within the next 12 months.

The Company did not record any gains or losses related to discontinuation of cash flow hedges for fiscal years 2021, 2020 and 2019.

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

**Non-designated Hedging Activities**

The Company's 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 the Company's balance sheet exposure is approximately one month.

The Company also has 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 the Company's hedging program is to minimize the impact of currency fluctuations on its net income over its fiscal year.

The effects of the non-designated derivative instruments on the Company's consolidated statements of income for fiscal years 2021, 2020, and 2019 are summarized as follows:

	October 31,		
	2021	2020	2019
	(in thousands)		
Gain (loss) recorded in other income (expense), net	\$ (855)	\$ 1,957	\$ 4,538

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

	October 31,	
	2021	2020
	(in thousands)	
Total gross notional amount	\$ 1,176,152	\$ 981,234
Net fair value	\$ 13,404	\$ 6,940

The Company's exposure to market gain or loss 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)	
Balance at October 31, 2021		
Other current assets	\$ 15,455	\$ 17
Accrued liabilities	\$ 2,027	\$ 42
Balance at October 31, 2020		
Other current assets	\$ 9,182	\$ 138
Accrued liabilities	\$ 2,088	\$ 292

**SYNOPSYS, 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:

	Location of gain (loss) recognized in OCI on derivatives	Amount of gain (loss) recognized in OCI on derivatives (effective portion)	Location of gain (loss) reclassified from OCI	Amount of gain (loss) reclassified from OCI (effective portion)
(in thousands)				
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		<u>\$ 9,860</u>		<u>\$ 14,559</u>
Fiscal year ended October 31, 2020				
Foreign exchange contracts	Revenue	\$ 3,034	Revenue	\$ 530
Foreign exchange contracts	Operating expenses	4,800	Operating expenses	(603)
Total		<u>\$ 7,834</u>		<u>\$ (73)</u>
Fiscal year ended October 31, 2019				
Foreign exchange contracts	Revenue	\$ 278	Revenue	\$ 1,436
Foreign exchange contracts	Operating expenses	4,455	Operating expenses	(16,073)
Total		<u>\$ 4,733</u>		<u>\$ (14,637)</u>

**Other Commitments — Credit and Term Loan**

On January 22, 2021, the Company entered into a Fourth Extension and Amendment Agreement (the Fourth Amendment), which amends and restates the Company's previous credit agreement, dated as of November 28, 2016 (as amended and restated, the Credit Agreement). The Company's outstanding borrowings under the previous credit agreement, which as of January 22, 2021 consisted of term loans in the aggregate principal amount of \$97.5 million, are carried over under the Credit Agreement.

The Fourth Amendment extends the termination date of the existing \$650.0 million senior unsecured revolving credit facility from November 28, 2021 to January 22, 2024, which may be further extended at the Company's option. The outstanding term loans under the Credit Agreement will continue to amortize in quarterly installments with the balance due at maturity on November 28, 2021. The Credit Agreement also provides an uncommitted incremental loan facility of up to \$150.0 million in the aggregate principal amount. The Credit Agreement contains financial covenants requiring the Company to maintain a maximum consolidated leverage ratio and a minimum consolidated interest coverage ratio, as well as other non-financial covenants. As of October 31, 2021, the Company was in compliance with all financial covenants.

As of October 31, 2021, the Company had \$75.0 million outstanding balance, net of debt issuance costs, under the Term Loan. The remaining outstanding balance of \$75.0 million was repaid in full on November 26, 2021.

As of October 31, 2020, the Company had \$102.1 million outstanding balance, net of debt issuance costs, under the Term Loan, of which \$75.0 million was classified as long-term liabilities.

There was no outstanding balance under the Revolver as of October 31, 2021 and October 31, 2020. The Company expects its borrowings under the Revolver will fluctuate from quarter to quarter.

Borrowings bear interest at a floating rate based on a margin over the Company's choice of market observable base rates as defined in the Credit Agreement. As of October 31, 2021, borrowings under the Term Loan bore interest at LIBOR +1.125% and the applicable interest rate for the Revolver was LIBOR +1.000%. In addition, commitment fees are payable on the Revolver at rates between 0.125% and 0.200% per year based on the Company's leverage ratio on the daily amount of the revolving commitment.

In July 2018, the Company entered into a 12-year 220.0 million RMB (approximately \$33.0 million) credit agreement with a lender in China to support its facilities expansion. Borrowings bear interest at a floating rate based on the 5

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

year Loan Prime Rate plus 0.74%. As of October 31, 2021, the Company had \$25.1 million outstanding under the agreement.

The carrying amount of the short-term and long-term debt approximates the estimated fair value. These borrowings under the Credit Agreement have a variable interest rate structure and are classified within Level 2 of the fair value hierarchy.

**Note 7. Fair Value Measurements**

Accounting Standards Codification (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:

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

**Level 2**—Observable inputs other than quoted prices included in Level 1 for similar instruments in active markets, quoted prices for identical or similar instruments in markets that are not active, and model-driven valuations in which all significant inputs and significant value drivers are observable in active markets; and

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

On a recurring basis, the Company measures the fair value of certain of its assets and liabilities, which include cash equivalents, non-qualified deferred compensation plan assets, and foreign currency derivative contracts.

The Company's 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.

The Company's 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.

The Company's 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.

The Company's borrowings under its 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 the Company for debt with similar terms and maturities. See *Note 6. Financial Assets and Liabilities* for more information on these borrowings.

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, 2021:

Description	Total	Fair Value Measurement Using						
		Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)				
		(in thousands)						
Assets								
Cash equivalents:								
Money market funds	\$	172,934	\$	172,934	\$	—	\$	—
Short-term investments:								
U.S. government agency & T-bills		6,442				6,442		—
Municipal bonds		4,576		—		4,576		—
Corporate debt securities		103,452		—		103,452		—
Asset-backed securities		33,479		—		33,479		—
Prepaid and other current assets:								
Foreign currency derivative contracts		15,472		—		15,472		—
Other long-term assets:								
Deferred compensation plan assets		343,820		343,820		—		—
Total assets	\$	680,175	\$	516,754	\$	163,421	\$	—
Liabilities								
Accounts payable and accrued liabilities:								
Foreign currency derivative contracts	\$	2,068	\$	—	\$	2,068	\$	—
Other long-term liabilities:								
Deferred compensation plan liabilities		343,820		343,820		—		—
Total liabilities	\$	345,888	\$	343,820	\$	2,068	\$	—



**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, 2020:

Description	Fair Value Measurement Using			
	Total	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
<b>Assets</b>				
Cash equivalents:				
Money market funds	\$ 304,127	\$ 304,127	\$ —	\$ —
Prepaid and other current assets:				
Foreign currency derivative contracts	9,320	—	9,320	—
Other long-term assets:				
Deferred compensation plan assets	269,737	269,737	—	—
<b>Total assets</b>	<u>\$ 583,184</u>	<u>\$ 573,864</u>	<u>\$ 9,320</u>	<u>\$ —</u>
<b>Liabilities</b>				
Accounts payable and accrued liabilities:				
Foreign currency derivative contracts	\$ 2,380	\$ —	\$ 2,380	\$ —
Other long-term liabilities:				
Deferred compensation plan liabilities	269,737	269,737	—	—
<b>Total liabilities</b>	<u>\$ 272,117</u>	<u>\$ 269,737</u>	<u>\$ 2,380</u>	<u>\$ —</u>

**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 significant unobservable inputs or data in an inactive market due to the absence of market price and inherent lack of liquidity.

**Note 8. Leases**

The Company has operating lease arrangements for office space, data center, equipment and other corporate assets. These leases have various expiration dates through December 31, 2040, some of which include options to extend the leases for up to 10 years. Because the Company is 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 the Company's lease expense during the period presented are as follows:

	Year Ended October 31,	
	2021	2020
	(in thousands)	
Operating lease expense <sup>(1)</sup>	\$ 93,848	\$ 93,636
Variable lease expense <sup>(2)</sup>	8,231	5,147
<b>Total lease expense</b>	<u>\$ 102,079</u>	<u>\$ 98,783</u>

<sup>(1)</sup> Operating lease expense includes immaterial amounts of short-term leases, net of sublease income.

<sup>(2)</sup> 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.

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

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

	Year Ended October 31,	
	2021	2020
	(in thousands)	
Cash paid for amounts included in the measurement of operating lease liabilities	\$ 86,360	\$ 72,828
ROU assets obtained in exchange for operating lease liabilities	\$ 112,637	\$ 69,439

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

	October 31, 2021	October 31, 2020
Weighted-average remaining lease term (in years)	8.00	8.62
Weighted-average discount rate	2.01 %	2.56 %

The following represents the maturities of the Company's future lease payments due under operating leases as of October 31, 2021:

Fiscal year	Lease Payments (in thousands)
2022	\$ 89,891
2023	83,062
2024	76,762
2025	65,434
2026	55,647
Thereafter	243,891
Total future minimum lease payments	614,687
Less: Imputed interest	48,006
Total lease liabilities	\$ 566,681

As of October 31, 2021, the Company has additional operating leases that have not yet commenced with future undiscounted lease payments of \$0.8 million. These operating leases may commence in January 2022, with lease terms between 3 years and 5 years.

In addition, certain facilities owned by the Company 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, due to the Company as of October 31, 2021 are as follows:

Fiscal year	Lease Receipts (in thousands)
2022	\$ 17,131
2023	16,433
2024	13,949
2025	6,375
2026	6,566
Thereafter	31,466
Total	\$ 91,920

SYNOPSYS, INC.  
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—Continued

**Note 9. Contingencies*****Legal Proceedings***

The Company is subject to routine legal proceedings, as well as demands, claims and threatened litigation that arise in the normal course of its business. The ultimate outcome of any litigation is often uncertain and unfavorable outcomes could have a negative impact on the Company's results of operations and financial condition. The Company regularly reviews the status of each significant matter and assesses its potential financial exposure. If the potential loss from any claim or legal proceeding is considered probable and the amount is estimable, the Company accrues 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.

The Company has determined that, except as set forth below, no disclosure of estimated loss is required for a claim against the Company 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, the Company was engaged in complex patent litigation with Mentor Graphics Corporation (Mentor) involving several actions in different forums. The Company succeeded to the litigation when it 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, the Company, Siemens and Mentor settled all outstanding patent litigation between the Company and Mentor for a \$65.0 million payment made from the Company 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 the Company and Siemens, and between the Company and Mentor. The Company and Mentor also amended an existing interoperability agreement to collaborate on a wide range of EDA products for the benefit of their 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***

The Company undergoes 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 is 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, the Company would accrue a liability for the estimated expense. In addition to the foregoing, the Company is, from time to time, party to various other claims and legal proceedings in the ordinary course of its business, including with tax and other governmental authorities. For a description of certain of these other matters, refer to *Note 13. Income Taxes*.

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

**Note 10. Accumulated Other Comprehensive Income (Loss)**

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

	Year Ended October 31,	
	2021	2020
	(in thousands)	
Cumulative currency translation adjustments	\$ (48,047)	\$ (57,463)
Unrealized gain (loss) on derivative instruments, net of taxes	(1,311)	3,389
Unrealized gain (loss) on available-for-sale securities, net of taxes	(246)	—
Total accumulated other comprehensive income (loss)	<u>\$ (49,604)</u>	<u>\$ (54,074)</u>

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

	Year Ended October 31,		
	2021	2020	2019
	(in thousands)		
Reclassifications from accumulated other comprehensive income (loss) into consolidated statements of income:			
Gain (loss) on cash flow hedges, net of taxes			
Revenues	\$ 4,181	\$ 530	\$ 1,436
Operating expenses	10,378	(603)	(16,073)
Total reclassifications into net income	<u>\$ 14,559</u>	<u>\$ (73)</u>	<u>\$ (14,637)</u>

Amounts reclassified in fiscal 2021, 2020, and 2019 primarily consisted of gains (losses) from the Company's cash flow hedging activities. See *Note 6. Financial Assets and Liabilities*.

**Note 11. Stock Repurchase Program**

The Company's Board of Directors (the Board) previously approved a stock repurchase program pursuant to which the Company was authorized to purchase up to \$500.0 million of its common stock and has periodically replenished the stock repurchase program to such amount. The Board approved a replenishment of the stock repurchase program up to \$500.0 million on June 17, 2021. As of October 31, 2021, \$110.0 million remained available for future repurchases under the program. In December 2021, our Board approved a stock repurchase program with authorization to purchase up to \$1.0 billion of our common stock.

In August 2021, the Company entered into an accelerated share repurchase agreement (the August 2021 ASR) to repurchase an aggregate of \$175.0 million of the Company's common stock. Pursuant to the August 2021 ASR, the Company made a prepayment of \$175.0 million to receive initial deliveries of shares valued at \$140.0 million. The remaining balance of \$35.0 million was settled in November 2021. Total shares purchased under the August 2021 ASR were approximately 0.5 million shares, at an average purchase price of \$325.0 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,		
	2021	2020	2019
	(in thousands, except per share price)		
Shares repurchased <sup>(1)</sup>	2,780	1,585	2,732
Average purchase price per share <sup>(1)</sup>	\$ 270.84	\$ 152.76	\$ 120.49
Aggregate purchase price <sup>(1)</sup>	\$ 753,081	\$ 242,078	\$ 329,185
Reissuance of treasury stock	3,224	3,872	3,798

<sup>(1)</sup> Excludes 107,701 shares and \$35.0 million equity forward contract that was settled in November 2021.

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

**Note 12. Employee Benefit Plans*****Employee Stock Purchase Plan***

Under the Company's 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 9, 2020, the Company's stockholders approved an amendment to the ESPP to increase the number of shares of common stock authorized for issuance under the plan by 5.0 million shares. During fiscal 2021, 2020 and 2019, the Company issued 1.0 million, 1.0 million, and 1.2 million shares, respectively, under the ESPP at average per share prices of \$134.26, \$103.41 and \$73.18, respectively. As of October 31, 2021, 12.8 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, the Company's 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 the Company's incentive compensation program. In general, restricted stock units vest over three to four years and are subject to the employee's continuing service with the Company. Restricted stock units granted with specific performance criteria vest to the extent performance conditions are met. For each restricted stock unit granted under the 2006 Employee Plan, a share reserve ratio is applied for the purpose of determining the remaining number of shares reserved for future grants under the plan. As of October 31, 2021, the share reserve ratio was 1.70. Options granted under this plan generally have a contractual term of seven years and generally vest over four years.

On April 8, 2021, the Company's 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 4.7 million shares. As of October 31, 2021, an aggregate of 3.0 million stock options and 4.2 million restricted stock units were outstanding, and 13.8 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, the Company's 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, the Company granted options, which vest over a period of three to four years to non-employee directors. As of October 31, 2021, 15,000 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, the Company's stockholders approved an aggregate of 0.45 million shares of common stock reserved under the 2017 Directors Plan.

The Company grants 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, 2021, 4,690 shares of restricted stock awards were unvested and 5,998 stock options were outstanding, and a total of 384,992 shares of common stock were reserved for future issuance under the 2017 Directors Plan.

**Other Assumed Stock Plans through Acquisitions.** The Company has 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,

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

2021, 0.1 million shares of the Company's common stock remained subject to such outstanding assumed equity awards.

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

	Restricted Stock Units Outstanding <sup>(1)</sup>	Weighted Average Grant Date Fair Value	Weighted Average Remaining Contractual Life (In Years)	Aggregate Fair Value
(in thousands, except per share and life amounts)				
Balance at October 31, 2018	3,769	\$ 72.75	1.46	
Granted <sup>(2)</sup>	1,844	\$ 119.27		
Vested <sup>(3)</sup>	(1,508)	\$ 65.97		\$ 176,659
Forfeited	(248)	\$ 79.49		
Balance at October 31, 2019	3,857	\$ 97.21	1.56	
Granted <sup>(2)</sup>	2,041	\$ 168.15		
Vested <sup>(3)</sup>	(1,480)	\$ 88.70		\$ 261,563
Forfeited	(288)	\$ 104.67		
Balance at October 31, 2020	4,130	\$ 134.80	1.47	
Granted <sup>(2)</sup>	1,901	\$ 258.58		
Vested <sup>(3)</sup>	(1,565)	\$ 122.01		\$ 421,034
Forfeited	(279)	\$ 167.76		
Balance at October 31, 2021	4,187	\$ 193.58	1.39	

<sup>(1)</sup> 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.

<sup>(2)</sup> Includes restricted stock units 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.

<sup>(3)</sup> The number of vested restricted stock units includes shares that were withheld on behalf of employees to satisfy the minimum statutory tax withholding requirements.

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

*Stock Options.* The following table summarizes stock option activity and includes stock options granted under the 2006 Employee Plan:

	Options Outstanding			
	Shares Under Stock Option <sup>(1)</sup>	Weighted- Average Exercise Price per Share	Weighted- Average Remaining Contractual Life (In Years)	Aggregate Intrinsic Value
	(in thousands, except per share)			
Balance at October 31, 2018	6,291	\$ 55.63	4.39	\$ 214,432
Granted	799	\$ 113.17		
Exercised	(1,615)	\$ 44.29		
Canceled/forfeited/expired	(185)	\$ 58.02		
Balance at October 31, 2019	5,290	\$ 65.57	4.08	\$ 373,112
Granted	700	\$ 143.44		
Exercised	(1,891)	\$ 51.76		
Canceled/forfeited/expired	(106)	\$ 84.14		
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
Vested and expected to vest as of October 31, 2021	3,107	109.51	3.81	\$ 694,921
Exercisable at October 31, 2021	1,990	81.88	3.08	\$ 500,210

<sup>(1)</sup> 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 the Company's closing stock price of \$333.18 as of October 31, 2021. The pre-tax intrinsic value of options exercised and their average exercise prices were:

	Year Ended October 31,		
	2021	2020	2019
	(in thousands, except per share price)		
Intrinsic value	\$ 254,587	\$ 218,640	\$ 110,815
Average exercise price per share	\$ 66.50	\$ 51.76	\$ 44.29

**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 <sup>(1)(2) (3)</sup>
	(in thousands, except per share and life amounts)
Balance at October 31, 2018	12,439
Options granted <sup>(2)</sup>	(799)
Options canceled/forfeited/expired <sup>(2)</sup>	129
Restricted stock units granted <sup>(1)</sup>	(3,134)
Restricted stock units forfeited <sup>(1)</sup>	373
Additional shares reserved	3,200
Balance at October 31, 2019	12,208
Options granted <sup>(2)</sup>	(694)
Options canceled/forfeited/expired <sup>(2)</sup>	102
Restricted stock units granted <sup>(1)</sup>	(3,469)
Restricted stock units forfeited <sup>(1)</sup>	482
Additional shares reserved	3,500
Balance at October 31, 2020	12,129
Options granted <sup>(2)</sup>	(353)
Options canceled/forfeited/expired <sup>(2)</sup>	36
Restricted stock units granted <sup>(1)</sup>	(3,232)
Restricted stock units forfeited <sup>(1)</sup>	471
Additional shares reserved	4,700
Balance at October 31, 2021	13,751

(1) Restricted stock units include awards granted under the 2006 Employee Plan and assumed through acquisitions. The number of RSUs reflects the application of the award multiplier of 1.70x as described above.

(2) Options granted by the Company are not subject to the award multiplier ratio described above.

(3) Excluding shares reserved for future issuance under the 2017 Directors Plan.



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

*Restricted Stock Awards.* The following table summarizes restricted stock award activities during fiscal 2021 under the 2005 Directors Plan and 2017 Directors Plan:

	Restricted Shares	Weighted-Average Grant Date Fair Value
	(in thousands, except per share)	
Unvested at October 31, 2018	20	\$ 73.95
Granted	11	\$ 116.43
Vested	(20)	\$ 73.95
Forfeited	—	\$ —
Unvested at October 31, 2019	11	\$ 116.43
Granted	9	\$ 140.97
Vested	(11)	\$ 116.43
Forfeited	—	\$ —
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

*Valuation and Expense of Stock-Based Compensation.* The Company estimates 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. The Company uses the straight-line attribution method to recognize stock-based compensation costs over the service period of the award except for performance grants with specific performance criteria. With respect to such performance grants in each reporting period, the Company estimates the probability of achievement of applicable performance goals and recognizes related stock-based compensation expense using the graded-vesting method. The amount of stock-based compensation expense recognized in any one 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.

The Company uses 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 subjective 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 the Company's 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 the Company's common stock on the grant date.

The assumptions presented in the following table were used to estimate the fair value of stock options and employee stock purchase rights granted under the Company's stock plans or stock plans assumed from acquisitions:

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

	Year Ended October 31,		
	2021	2020	2019
Stock Options			
Expected life (in years)	4.1	4.1	4.1
Risk-free interest rate	0.35% - 1.00%	0.26% - 1.71%	1.28% - 2.73%
Volatility	29.19% - 32.28%	23.05% - 32.80%	23.16% - 24.76%
Weighted average estimated fair value	\$61.58	\$33.02	\$22.86
ESPP			
Expected life (in years)	0.5 - 2.0	0.5 - 2.0	0.5 - 2.0
Risk-free interest rate	0.00% - 0.19%	0.09% - 1.24%	1.54% - 2.60%
Volatility	28.02% - 39.68%	25.59% - 43.06%	23.73% - 27.86%
Weighted average estimated fair value	\$89.82	\$47.69	\$35.18

The compensation cost recognized in the consolidated statements of income for the Company's stock compensation arrangements was as follows:

	Year Ended October 31,		
	2021	2020	2019
	(in thousands)		
Cost of products	\$ 38,345	\$ 27,193	\$ 17,193
Cost of maintenance and service	13,817	9,327	6,385
Research and development expense	171,013	125,814	75,853
Sales and marketing expense	61,940	43,205	28,834
General and administrative expense	60,157	43,045	26,736
Stock-based compensation expense before taxes	345,272	248,584	155,001
Income tax benefit	(53,483)	(39,077)	(26,226)
Stock-based compensation expense after taxes	\$ 291,789	\$ 209,507	\$ 128,775

As of October 31, 2021, the Company had \$680.8 million of total unrecognized stock-based compensation expense relating to options and restricted stock units and awards, which is expected to be recognized over a weighted average period of 2.2 years. As of October 31, 2021, the Company had \$49.3 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.* The Company maintains 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, the Company has not made any matching or discretionary contributions to the Deferred Plan. There are no Deferred Plan provisions that provide for any guarantees or minimum return on investments. Undistributed amounts under the Deferred Plan are subject to the claims of the Company's creditors. The securities held by the Deferred Plan are classified as trading securities.

Deferred plan assets and liabilities are as follows:

	As of October 31, 2021	As of October 31, 2020
	(in thousands)	
Plan assets recorded in other long-term assets	\$ 343,820	\$ 269,737
Plan liabilities recorded in other long-term liabilities <sup>(1)</sup>	\$ 343,820	\$ 269,737

<sup>(1)</sup> Undistributed deferred compensation balances due to participants.

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

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,		
	2021	2020	2019
	(in thousands)		
Increase (reduction) to cost of revenue and operating expense	\$ 71,603	\$ 21,469	\$ 27,759
Other income (expense), net	71,603	21,469	27,759
Net increase (decrease) to net income	\$ —	\$ —	\$ —

*Other Retirement Plans.* The Company sponsors various retirement plans for its eligible U.S. and non-U.S. employees. Total contributions to these plans were \$68.8 million, \$54.7 million, and \$50.7 million in fiscal 2021, 2020, and 2019, respectively. For employees in the United States and Canada, the Company matches pre-tax employee contributions up to a maximum of U.S. \$3,000 and Canadian \$4,000, respectively, per participant per year.

**Note 13. Income Taxes**

The domestic and foreign components of the Company's total income (loss) before provision for income taxes are as follows:

	Year Ended October 31,		
	2021	2020	2019
	(in thousands)		
United States	\$ 640,531	\$ 544,391	\$ 487,430
Foreign	164,983	93,768	58,076
Total income (loss) before provision for income taxes	\$ 805,514	\$ 638,159	\$ 545,506

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

	Year Ended October 31,		
	2021	2020	2019
	(in thousands)		
Current:			
Federal	\$ 85,950	\$ 29,272	\$ 22,821
State	11,898	1,863	11,846
Foreign	79,890	55,103	61,092
	177,738	86,238	95,759
Deferred:			
Federal	(108,530)	(84,739)	(41,219)
State	1,796	(20,233)	(7,227)
Foreign	(21,849)	(6,554)	(34,174)
	(128,583)	(111,526)	(82,620)
Provision (benefit) for income taxes	\$ 49,155	\$ (25,288)	\$ 13,139

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

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

	Year Ended October 31,		
	2021	2020	2019
	(in thousands)		
Statutory federal tax	\$ 168,745	\$ 133,979	\$ 114,557
State tax (benefit), net of federal effect	(2,419)	(29,096)	6,529
Federal Tax credits	(45,503)	(39,206)	(34,485)
Tax on foreign earnings	7,988	(3,980)	23,467
Foreign-derived intangible income deduction	(31,214)	(24,282)	(26,615)
Tax settlements	(7,134)	(13,167)	(10,953)
Stock-based compensation	(62,620)	(50,047)	(25,356)
Changes in valuation allowance	15,232	(614)	(42,144)
Undistributed earnings of foreign subsidiaries	—	—	6,341
Other	6,080	1,125	1,798
Provision (benefit) for income taxes	<u>\$ 49,155</u>	<u>\$ (25,288)</u>	<u>\$ 13,139</u>

The Company has provided for foreign withholding taxes on undistributed earnings of certain of its 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 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, the taxes due, after allowable foreign tax credits, are not expected to be material.

On June 7, 2019, the United States Court of Appeals for the Ninth Circuit (Ninth Circuit) overturned a prior ruling to exclude stock-based compensation in cost-sharing arrangements. In the third quarter of 2019, as a result of the Ninth Circuit decision, the Company recorded a tax expense of \$18.3 million, which is net of estimated U.S. foreign tax credits.

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

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

	October 31,	
	2021	2020
	(in thousands)	
Net deferred tax assets:		
Deferred tax assets:		
Deferred revenue	30,113	2,367
Deferred compensation	59,823	55,172
Intangible and depreciable assets	117,211	115,097
Capitalized research and development costs	203,052	118,857
Stock-based compensation	40,922	28,478
Tax loss carryovers	30,305	35,571
Foreign tax credit carryovers	32,498	18,645
Research and other tax credit carryovers	326,164	320,317
Operating Lease Liabilities	94,519	101,386
Gross deferred tax assets	934,607	795,890
Valuation allowance	(174,117)	(158,895)
Total deferred tax assets	760,490	636,995
Deferred tax liabilities:		
Intangible assets	61,448	45,915
Operating lease Right-of-Use-Assets	77,877	84,716
Accruals and reserves	6,216	7,780
Undistributed earnings of foreign subsidiaries	7,580	3,063
Other	628	372
Total deferred tax liabilities	153,749	141,846
Net deferred tax assets	\$ 606,741	\$ 495,149

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 the Company's deferred tax assets as of October 31, 2021 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 \$15.2 million in fiscal 2021 primarily related to the net increase of valuation allowance on California research credits.

The Company has 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	\$ 43,778	2022-2040
Federal research credit carryforward	158,143	2022-2041
Federal foreign tax credit carryforward	12,153	2027-2032
International foreign tax credit carryforward	17,364	Indefinite
International net operating loss carryforward	55,342	2027-Indefinite
California research credit carryforward	193,404	Indefinite
Other state research credit carryforward	17,767	2024-2041
State net operating loss carryforward	79,621	2023-2044

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.

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

The gross unrecognized tax benefits decreased by approximately \$0.8 million during fiscal 2021 resulting in gross unrecognized tax benefits of \$82.4 million as of October 31, 2021. A reconciliation of the beginning and ending balance of gross unrecognized tax benefits is summarized as follows:

	As of October 31, 2021	As of October 31, 2020
	(in thousands)	
Beginning balance	\$ 83,149	\$ 116,212
Increases in unrecognized tax benefits related to prior year tax positions	794	5,390
Decreases in unrecognized tax benefits related to prior year tax positions	(7,372)	(43,783)
Increases in unrecognized tax benefits related to current year tax positions	9,168	9,226
Decreases in unrecognized tax benefits related to settlements with taxing authorities	(1,538)	(1,411)
Reductions in unrecognized tax benefits due to lapse of applicable statute of limitations	(1,235)	(2,472)
Increases in unrecognized tax benefits acquired	—	778
Changes in unrecognized tax benefits due to foreign currency translation	(606)	(791)
Ending balance	<u>\$ 82,360</u>	<u>\$ 83,149</u>

As of October 31, 2021 and 2020, approximately \$82.4 million and \$83.1 million, respectively, of the unrecognized tax benefits would affect the Company's effective tax rate if recognized upon resolution of the uncertain tax positions.

Interest and penalties related to estimated obligations for tax positions taken in the Company's tax returns are recognized as a component of income tax expense (benefit) in the consolidated statements of income and totaled approximately \$0.4 million, \$0.2 million and \$0.3 million for fiscal years 2021, 2020 and 2019, respectively. As of October 31, 2021 and 2020, the combined amount of accrued interest and penalties related to tax positions taken on the Company's tax returns was approximately \$13.5 million and \$13.1 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. The Company believes 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 \$42.5 million.

The Company and/or its subsidiaries remain subject to tax examination in the following jurisdictions:

Jurisdiction	Year(s) Subject to Examination
United States	Fiscal 2020
California	Fiscal years after 2017
Hungary	Fiscal years after 2018
Ireland	Fiscal years after 2017
Japan and Taiwan	Fiscal years after 2016
Korea	Fiscal years after 2016

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

***Intra-Entity Transfers of Assets***

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

In October 2016, the FASB issued ASU 2016-16, "Income Taxes (Topic 740), Intra-Entity Transfers of Assets Other Than Inventory." This ASU requires the immediate recognition of current and deferred income tax effects of intra-entity transfers of assets other than inventory. This ASU was adopted on the first day of fiscal 2019. As a result of the adoption, the Company recorded a decrease of approximately \$130.5 million in retained earnings as of the beginning of the period of adoption, with a corresponding decrease in prepaid taxes related to the unamortized tax expense attributed to intra-entity transfers of assets other than inventory previously deferred. The Company recognizes the income tax consequences of new intra-entity transfers of assets other than inventory in the consolidated statements of income in the period when the transaction takes place.

**IRS Examinations**

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

In fiscal 2020, the Company reached partial settlement with the Examination Division of the IRS for fiscal 2019 and recognized approximately \$6.3 million in unrecognized tax benefits, primarily due to the allowance of certain foreign tax credits and research tax credits.

In fiscal 2019, the Company reached final settlement with the Examination Division of the IRS for fiscal 2018 and recognized approximately \$5.4 million in unrecognized tax benefits and realized \$28.1 million of foreign tax credits.

**State Examinations**

In fiscal 2020, the Company reached final settlement with the California Franchise Tax Board for fiscal 2015, 2016, and 2017. As a result of the settlement, the Company recognized \$20.2 million in unrecognized tax benefits and increased its valuation allowance by \$20.2 million.

**Non-U.S. Examinations**

*Hungarian Tax Authority*

In July 2017, the Hungarian Tax Authority (the HTA) issued a final assessment against the Company's Hungarian subsidiary (Synopsys Hungary) for fiscal years 2011 through 2013. The HTA has applied withholding taxes on certain payments made to affiliates, resulting in an aggregate tax assessment of approximately \$25.0 million and interest and penalties of \$11.0 million. On August 2, 2017, Synopsys Hungary filed a claim contesting the final assessment with the Hungarian Administrative Court (the Administrative Court). In the first quarter of fiscal 2018, Synopsys Hungary paid the assessments, penalties and interest as required by law and recorded these amounts as prepaid taxes on its balance sheet, while continuing its challenge to the assessment through the Hungarian Administrative Court. On April 30, 2019, the Administrative Court ruled against Synopsys Hungary. The Administrative Court's opinion was received on May 16, 2019 and the Company filed an appeal with the Hungarian Supreme Court on July 5, 2019. In the second quarter of 2019, as a result of the Court's decision, the Company recorded a tax expense due to an unrecognized tax benefit of \$17.4 million, which is net of estimated U.S. foreign tax credits for the tax assessments. The Hungarian Supreme Court heard the Company's appeal on November 12, 2020 and remanded the case to the Administrative Court for further proceedings. The Company received the Hungarian Supreme Court's written decision in the first quarter of fiscal 2021. On April 27, 2021, the Administrative Court reheard the case and again ruled against Synopsys Hungary. The Company received the written opinion from the Administrative Court on May 19, 2021. The Company filed an appeal with the Hungarian Supreme Court on July 19, 2021 and the hearing for the appeal is scheduled for January 27, 2022.

In fiscal 2020, the Company reached final settlement with the HTA for fiscal years 2014 through 2018. As a result of the settlement, the Company recognized tax expense of \$1.4 million, and recognized \$6.9 million in unrecognized tax benefits.

*National Taxation Bureau of Taipei*

In fiscal 2019, the Company reached final settlement with the National Taxation Bureau of Taipei for fiscal year 2017 and recognized \$5.5 million in previously unrecognized tax benefits.

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

**Note 14. Other Income (Expense), Net**

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

	Year Ended October 31,		
	2021	2020	2019
	(in thousands)		
Interest income	\$ 2,442	\$ 3,561	\$ 6,859
Interest expense	(3,365)	(5,140)	(11,659)
Gain (loss) on assets related to deferred compensation plan	71,603	21,469	27,759
Foreign currency exchange gain (loss)	5,292	5,544	3,588
Other, net	(5,248)	(7,416)	(1,272)
Total	<u>\$ 70,724</u>	<u>\$ 18,018</u>	<u>\$ 25,275</u>

**Note 15. Segment Disclosure**

Segment reporting is based upon the “management approach,” i.e., how management organizes the Company’s operating segments for which separate financial information is (1) available and (2) evaluated regularly by the Chief Operating Decision Makers (CODMs) in deciding how to allocate resources and in assessing performance. The Company’s CODMs are its two Co-Chief Executive Officers.

The Company has two reportable segments: (1) Semiconductor & System Design, which includes EDA tools, IP products, system integration solutions and other associated revenue categories, and (2) Software Integrity, which includes a comprehensive solution for building integrity—security, quality and compliance testing—into the customers’ software development lifecycle and supply chain.

The financial information provided to and used by the CODMs 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 information for the Semiconductor & System Design and Software Integrity segments, accompanied by disaggregated information relating to revenue by geographic region.

Information by reportable segment was as follows:

	Year Ended October 31,		
	2021	2020	2019
	(in thousands)		
<b>Total Segments:</b>			
Revenue	\$ 4,204,193	\$ 3,685,281	\$ 3,360,694
Adjusted operating income	1,281,389	1,031,630	838,821
Adjusted operating margin	30 %	28 %	25 %
<b>Semiconductor &amp; System Design:</b>			
Revenue	\$ 3,810,409	\$ 3,327,211	\$ 3,026,097
Adjusted operating income	1,243,078	990,837	806,618
Adjusted operating margin	33 %	30 %	27 %
<b>Software Integrity:</b>			
Revenue	\$ 393,784	\$ 358,070	\$ 334,597
Adjusted operating income	38,311	40,793	32,203
Adjusted operating margin	10 %	11 %	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 and certain other operating expenses, are presented in the table below to provide a reconciliation of the total adjusted operating income from segments to the Company’s consolidated operating income:



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

	Year Ended October 31,		
	2021	2020	2019
	(in thousands)		
Total segment adjusted operating income	\$ 1,281,389	\$ 1,031,630	\$ 838,821
Reconciling items:			
Amortization of intangible expense	(82,380)	(91,281)	(100,914)
Stock-based compensation expense	(345,272)	(248,584)	(155,001)
Other	(118,947)	(71,624)	(62,675)
Total operating income	<u>\$ 734,790</u>	<u>\$ 620,141</u>	<u>\$ 520,231</u>

The CODMs do not use total assets by segment to evaluate segment performance or allocate resources. As a result, total assets by segment are not required to be disclosed.

In allocating revenue to particular geographic areas, the CODMs consider where individual "seats" or licenses to the Company's 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 were:

	Year Ended October 31,		
	2021	2020	2019
	(in thousands)		
Revenue:			
United States	\$ 1,951,964	\$ 1,774,348	\$ 1,676,178
Europe	440,825	385,287	349,033
China	562,711	420,829	321,777
Korea	427,471	389,008	353,358
Other	821,222	715,809	660,348
Consolidated	<u>\$ 4,204,193</u>	<u>\$ 3,685,281</u>	<u>\$ 3,360,694</u>

	As of October 31,	
	2021	2020
	(in thousands)	
Property and Equipment, net:		
United States	\$ 283,602	\$ 311,350
Other	188,796	172,468
Total	<u>\$ 472,398</u>	<u>\$ 483,818</u>

Geographic revenue data for multi-regional, multi-product transactions reflect internal allocations and are therefore subject to certain assumptions and to the Company's methodology.

One customer, including its subsidiaries, accounted for 10.6%, 12.4%, and 12.8% of the Company's consolidated revenue in fiscal 2021, 2020, and 2019, respectively.

**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 31, 2021, Synopsys carried out an evaluation under the supervision and with the participation of Synopsys' management, including the Co-Chief Executive Officers 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 Co-Chief Executive Officers and Chief Financial Officer have concluded that, as of October 31, 2021, 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 Co-Chief Executive Officers 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 Co-Chief Executive Officers and Chief Financial Officer, we conducted an evaluation of the effectiveness of our internal control over financial reporting as of October 31, 2021. 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 31, 2021, 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 31, 2021 that have materially affected, or are reasonably likely to materially affect, Synopsys' internal control over financial reporting.

**Item 9B. Other Information**

**Item 5.02 Departure of Directors or Certain Officers; Election of Directors; Appointment of Certain Officers; Compensation Arrangements of Certain Officers.**

On December 9, 2021, Chi-Foon Chan notified the Company of his decision not to stand for re-election to Synopsys' Board of Directors at the 2022 Annual Meeting of Stockholders (the 2022 Annual Meeting). Mr. Chan's decision not to stand for re-election was not the result of any disagreement with Synopsys on any matter. Mr. Chan will continue to serve as a director until his term ends at the 2022 Annual Meeting, and the Company is thankful for his dedicated service.

**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.

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 for the 2022 Annual Meeting of Stockholders (the 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 Officers, Principal Financial Officer and Principal Accounting Officer is included under the subheading "Code of 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 Services 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.

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:

	<b>Page</b>
<a href="#">Report of Independent Registered Public Accounting Firm</a>	<a href="#">47</a>
<a href="#">Consolidated Balance Sheets</a>	<a href="#">50</a>
<a href="#">Consolidated Statements of Income</a>	<a href="#">51</a>
<a href="#">Consolidated Statements of Comprehensive Income</a>	<a href="#">52</a>
<a href="#">Consolidated Statements of Stockholders' Equity</a>	<a href="#">53</a>
<a href="#">Consolidated Statements of Cash Flows</a>	<a href="#">54</a>
<a href="#">Notes to Consolidated Financial Statements</a>	<a href="#">55</a>

(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	<a href="#">Amended and Restated Certificate of Incorporation</a>	10-Q	000-19807	3.1	9/15/2003	
3.2	<a href="#">Amended and Restated Bylaws</a>	10-K	000-19807	3.2	12/15/2020	
4.1	Specimen Common Stock Certificate	S-1	33-45138	4.3	2/24/1992 (effective date)	
4.2	<a href="#">Description of Synopsys' Stock</a>	10-K	000-19807	4.2	12/15/2020	
10.1	<a href="#">Conformed Credit Agreement, as amended and restated pursuant to that certain Fourth Extension and Amendment Agreement, dated January 22, 2021, among Synopsys, Inc. as Borrower, the Lenders parties thereto and JPMorgan Chase Bank, N.A., as administrative agent for the lenders</a>	8-K	000-19807	10.1	1/25/2021	

## Table of Contents

Exhibit Number	Exhibit Description	Incorporated By Reference				Filed or Furnished Herewith
		Form	File No.	Exhibit	Filing Date	
10.2	<a href="#">Lease Agreement dated October 14, 2011 between Synopsys, Inc. and 690 E. Middlefield Road Fee, LLC. ("The October 14, 2011 Lease")</a>	10-K	000-19807	10.19	12/16/2011	
10.2(i)†	<a href="#">Notification of Change of Ownership of Leased Premises under The October 14, 2011 Lease—Effective May 9, 2012</a>	10-K	000-19807	10.10(i)	12/20/2012	
10.2(ii)	<a href="#">First Amendment to The October 14, 2011 Lease</a>	10-Q	000-19807	10.10(ii)	3/4/2013	
10.2(iii)	<a href="#">Second Amendment to The October 14, 2011 Lease</a>	10-Q	000-19807	10.10(iii)	5/22/2015	
10.3*	<a href="#">2006 Employee Equity Incentive Plan, as amended</a>	8-K	000-19807	10.4	4/12/2021	
10.4*	<a href="#">Form of Restricted Stock Unit Grant Notice and Award Agreement under 2006 Employee Equity Incentive Plan</a>	8-K	000-19807	10.5	4/6/2018	
10.5*	<a href="#">Form of Notice of Grant of Stock Options and Option Agreement under 2006 Employee Equity Incentive Plan</a>	8-K	000-19807	10.6	4/6/2018	
10.6*	<a href="#">Employee Stock Purchase Plan, as amended</a>	8-K	000-19807	10.7	4/15/2020	
10.7*	<a href="#">2017 Non-Employee Directors Equity Incentive Plan</a>	8-K	000-19807	10.8	4/10/2017	
10.8*	<a href="#">Form of Restricted Stock Grant Notice and Award Agreement under 2017 Non-Employee Directors Equity Incentive Plan</a>	10-K	000-19807	10.9	12/14/2017	
10.9*	<a href="#">Form of Stock Options Grant Notice and Option Agreement under 2017 Non-Employee Directors Equity Incentive Plan</a>	10-K	000-19807	10.10	12/14/2017	
10.10*	<a href="#">Deferred Compensation Plan as restated effective August 1, 2002</a>	10-Q	000-19807	10.5	6/10/2004	
10.11*	<a href="#">Synopsys Amended and Restated Deferred Compensation Plan II</a>	10-Q	000-19807	10.23	3/9/2009	
10.12	<a href="#">Form of Indemnification Agreement for directors and executive officers</a>	8-K	000-19807	99.2	7/14/2011	
10.13*	Director's and Officer's Insurance and Company Reimbursement Policy	S-1	33-45138	10.2	2/24/1992 (effective date)	
10.14*	<a href="#">Amended and Restated Employment Agreement, dated December 15, 2016 between Synopsys, Inc. and Dr. Aart de Geus</a>	8-K	000-19807	10.16	12/21/2016	

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Exhibit Number	Exhibit Description	Incorporated By Reference				Filed or Furnished Herewith
		Form	File No.	Exhibit	Filing Date	
10.15*	<a href="#">Amended and Restated Employment Agreement, dated December 15, 2016 between Synopsys, Inc. and Dr. Chi-Foon Chan</a>	8-K	000-19807	10.17	12/21/2016	
10.16*	<a href="#">Executive Incentive Plan, as amended</a>	8-K	000-19807	10.1	12/6/2021	
10.17*	<a href="#">Amended and Restated Executive Change of Control Severance Benefit Plan</a>	8-K	000-19807	10.19	12/21/2016	
10.18*	<a href="#">Compensation Recovery Policy</a>	10-K	000-19807	10.46	12/22/2008	
10.19*	<a href="#">Executive Severance Benefit and Transition Plan</a>	8-K	000-19807	10.1	2/9/2021	
10.20*	<a href="#">Relocation Assistance Agreement, dated April 30, 2021, by and between Synopsys, Inc. and Sassine Ghazi</a>	10-Q	000-19807	10.2	5/21/2021	
21.1	<a href="#">Subsidiaries of Synopsys, Inc.</a>					X
23.1	<a href="#">Consent of KPMG LLP, Independent Registered Public Accounting Firm</a>					X
24.1	<a href="#">Power of Attorney (see signature page to this Annual Report on Form 10-K)</a>					X
31.1	<a href="#">Certification of Co-Chief Executive Officer pursuant to Rule 13a-14(a) or Rule 15d-14(a) of the Exchange Act</a>					X
31.2	<a href="#">Certification of Co-Chief Executive Officer pursuant to Rule 13a-14(a) or Rule 15d-14(a) of the Exchange Act</a>					X
31.3	<a href="#">Certification of Chief Financial Officer pursuant to Rule 13a-14(a) or Rule 15d-14(a) of the Exchange Act</a>					X
32.1	<a href="#">Certification of Co-Chief Executive Officers 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</a>					X
101.INS	Inline XBRL Instance Document					X
101.SCH	Inline XBRL Taxonomy Extension Schema Document					X

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Exhibit Number	Exhibit Description	Incorporated By Reference				Filed or Furnished Herewith
		Form	File No.	Exhibit	Filing Date	
101.CAL	Inline XBRL Taxonomy Extension Calculation Linkbase Document					X
101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase Document					X
101.LAB	Inline XBRL Taxonomy Extension Label Linkbase Document					X
101.PRE	Inline XBRL Taxonomy Extension Presentation Linkbase Document					X
104	Cover Page Interactive Data File (embedded within the Inline XBRL document)					

\* Indicates a management contract, compensatory plan or arrangement.

† We have requested confidential treatment for certain portions of this document pursuant to an application for confidential treatment sent to the SEC. We omitted such portions from this filing and filed them separately with the SEC.

## 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.

**SYNOPSIS, INC.**

Date: December 13, 2021

By: /s/ Trac Pham  
**Trac Pham**  
**Chief Financial Officer**  
**(Principal Financial Officer)**



## POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints Aart J. de Geus, Chi-Foon Chan and Trac Pham, and each of them, as his true and lawful attorneys-in-fact and agents, with full power of substitution and reconstitution, for him and in his name, place and stead, in any and all capacities, to sign any and all amendments to this Annual Report on Form 10-K, and to file the same, with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite and necessary to be done in connection therewith, as fully to all intents and purposes as he might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents, or any of them, or their or his substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

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:

<u>Name</u>	<u>Title</u>	<u>Date</u>
<u>/S/ AART J. DE GEUS</u> Aart J. de Geus	Co-Chief Executive Officer (Co-Principal Executive Officer) and Chairman of the Board of Directors	December 13, 2021
<u>/S/ CHI-FOON CHAN</u> Chi-Foon Chan	Co-Chief Executive Officer (Co-Principal Executive Officer) and Director	December 13, 2021
<u>/S/ TRAC PHAM</u> Trac Pham	Chief Financial Officer (Principal Financial Officer)	December 13, 2021
<u>/S/ SUDHINDRA KANKANWADI</u> Sudhindra Kankanwadi	Chief Accounting Officer (Principal Accounting Officer)	December 13, 2021
<u>/S/ JANICE D. CHAFFIN</u> Janice D. Chaffin	Director	December 13, 2021
<u>/S/ BRUCE R. CHIZEN</u> Bruce R. Chizen	Director	December 13, 2021
<u>/S/ MERCEDES JOHNSON</u> Mercedes Johnson	Director	December 13, 2021
<u>/S/ CHRYSOSTOMOS L. NIKIAS</u> Chrysostomos L. Nikias	Director	December 13, 2021
<u>/S/ JEANNINE SARGENT</u> Jeannine Sargent	Director	December 13, 2021
<u>/S/ JOHN G. SCHWARZ</u> John G. Schwarz	Director	December 13, 2021
<u>/S/ ROY VALLEE</u> Roy Vallee	Director	December 13, 2021