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

FORM 10-Q

(MARK ONE)

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

FOR THE QUARTERLY PERIOD ENDED JANUARY 31, 2023

OR

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

FOR THE TRANSITION PERIOD FROM TO

COMMISSION FILE NUMBER: 000-19807

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SYNOPSYS, INC.
(Exact name of registrant as specified in its charter)

Delaware	**56-1546236**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification Number)**

690 EAST MIDDLEFIELD ROAD
MOUNTAIN VIEW, CA 94043
(Address of principal executive offices, including zip code)

(650) 584-5000
(Registrant's telephone number, including area code)

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

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock (par value of $0.01 per share)	**SNPS**	**Nasdaq Global Select Market**

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

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

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

Large accelerated filer	☒	Accelerated Filer	☐
Non-accelerated filer	☐	Smaller reporting company	☐
		Emerging growth company	☐

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 is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes ☐ No ☒

As of February 15, 2023, there were 152,301,677 shares of the registrant's common stock outstanding.

SYNOPSYS, INC.

QUARTERLY REPORT ON FORM 10-Q
FOR THE FISCAL QUARTER ENDED JANUARY 31, 2023

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PART I. FINANCIAL INFORMATION

Item 1. *Financial Statements*

SYNOPSYS, INC.

CONDENSED CONSOLIDATED BALANCE SHEETS
(in thousands, except par value amounts)

	January 31, 2023	October 31, 2022
	(unaudited)	
ASSETS		
Current assets:		
Cash and cash equivalents	$ 1,154,873	$ 1,417,608
Short-term investments	147,050	147,913
Total cash, cash equivalents and short-term investments	1,301,923	1,565,521
Accounts receivable, net	1,035,323	796,091
Inventories	220,881	211,927
Prepaid and other current assets	470,272	439,130
Total current assets	3,028,399	3,012,669
Property and equipment, net	516,925	483,300
Operating lease right-of-use assets, net	586,892	559,090
Goodwill	3,864,833	3,842,234
Intangible assets, net	361,154	386,446
Deferred income taxes	719,082	670,653
Other long-term assets	488,339	463,695
Total assets	$ 9,565,624	$ 9,418,087
LIABILITIES, REDEEMABLE NON-CONTROLLING INTEREST AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable and accrued liabilities	$ 663,594	$ 809,403
Operating lease liabilities	66,326	54,274
Deferred revenue	1,995,077	1,910,822
Total current liabilities	2,724,997	2,774,499
Long-term operating lease liabilities	603,538	581,273
Long-term deferred revenue	172,794	154,472
Long-term debt	20,569	20,824
Other long-term liabilities	364,975	327,829
Total liabilities	3,886,873	3,858,897
Redeemable non-controlling interest	36,049	38,664
Stockholders' equity:		
Preferred stock, $0.01 par value: 2,000 shares authorized; none outstanding	—	—
Common stock, $0.01 par value: 400,000 shares authorized; 152,380 and 152,375 shares outstanding, respectively	1,524	1,524
Capital in excess of par value	1,292,900	1,487,126
Retained earnings	5,805,843	5,534,307
Treasury stock, at cost: 4,881 and 4,886 shares, respectively	(1,321,180)	(1,272,955)
Accumulated other comprehensive income (loss)	(142,333)	(234,277)
Total Synopsys stockholders' equity	5,636,754	5,515,725
Non-controlling interest	5,948	4,801
Total stockholders' equity	5,642,702	5,520,526
Total liabilities, redeemable non-controlling interest and stockholders' equity	$ 9,565,624	$ 9,418,087

See the accompanying *Notes to Condensed Consolidated Financial Statements (unaudited).*

SYNOPSYS, INC.

CONDENSED CONSOLIDATED STATEMENTS OF INCOME
(Unaudited, in thousands, except per share amounts)

	Three Months Ended January 31, 2023	Three Months Ended January 31, 2022
Revenue:		
Time-based products	$ 782,313	$ 707,483
Upfront products	336,658	368,274
Total products revenue	1,118,971	1,075,757
Maintenance and service	242,369	194,498
Total revenue	1,361,340	1,270,255
Cost of revenue:		
Products	174,367	165,399
Maintenance and service	91,347	78,225
Amortization of intangible assets	18,640	13,360
Total cost of revenue	284,354	256,984
Gross margin	1,076,986	1,013,271
Operating expenses:		
Research and development	465,329	383,971
Sales and marketing	210,785	180,510
General and administrative	97,364	81,008
Amortization of intangible assets	6,717	9,000
Restructuring charges	40,859	11,746
Total operating expenses	821,054	666,235
Operating income	255,932	347,036
Other income (expense), net	23,292	(19,793)
Income before income taxes	279,224	327,243
Provision (benefit) for income taxes	10,597	13,902
Net income	$ 268,627	$ 313,341
Net income (loss) attributed to non-controlling interest and redeemable non-controlling interest	(2,909)	(346)
Net income attributed to Synopsys	$ 271,536	$ 313,687
Net income per share attributed to Synopsys:		
Basic	$ 1.78	$ 2.05
Diluted	$ 1.75	$ 1.99
Shares used in computing per share amounts:		
Basic	152,401	153,218
Diluted	155,076	157,273

See the accompanying *Notes to Condensed Consolidated Financial Statements (unaudited).*

SYNOPSYS, INC.

CONDENSED CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
(Unaudited, in thousands)

	Three Months Ended January 31,	
	2023	**2022**
Net income	$ 268,627	$ 313,341
Other comprehensive income (loss):		
Change in foreign currency translation adjustment	40,317	(613)
Changes in unrealized gains (losses) on available-for-sale securities, net of tax of $0 for periods presented	1,158	(500)
Cash flow hedges:		
Deferred gains (losses), net of tax $(14,807) and $230, respectively.	42,112	(1,585)
Reclassification adjustment on deferred (gains) losses included in net income, net of tax of $(3,099) and $(302), respectively.	8,357	845
Other comprehensive income (loss), net of tax effects	91,944	(1,853)
Comprehensive income	360,571	311,488
Less: net income (loss) attributed to non-controlling interest and redeemable non-controlling interest	(2,909)	(346)
Comprehensive income attributed to Synopsys	$ 363,480	$ 311,834

See the accompanying *Notes to Condensed Consolidated Financial Statements (unaudited)*.

SYNOPSYS, INC.

CONDENSED CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY
(Unaudited, 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							
Balance at October 31, 2022	152,375	$ 1,524	$ 1,487,126	$ 5,534,307	$ (1,272,955)	$ (234,277)	$ 5,515,725	$ 4,801	$ 5,520,526
Net income				271,536			271,536	(294)	271,242
Other comprehensive income (loss), net of tax effects						91,944	91,944		91,944
Purchases of treasury stock	(806)	(8)	8		(260,724)		(260,724)		(260,724)
Equity forward contract, net			(45,000)				(45,000)		(45,000)
Common stock issued, net of shares withheld for employee taxes	811	8	(282,020)		212,499		(69,513)		(69,513)
Stock-based compensation			132,786				132,786	1,441	134,227
Balance at January 31, 2023	152,380	$ 1,524	$ 1,292,900	$ 5,805,843	$ (1,321,180)	$ (142,333)	$ 5,636,754	$ 5,948	$ 5,642,702

	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							
Balance at October 31, 2021	153,062	$ 1,531	$ 1,576,363	$ 4,549,713	$ (782,866)	$ (49,604)	$ 5,295,137	$ 3,806	$ 5,298,943
Net income				313,687			313,687	(346)	313,341
Other comprehensive income (loss), net of tax effects						(1,853)	(1,853)		(1,853)
Purchases of treasury stock	(701)	(7)	7		(245,000)		(245,000)		(245,000)
Equity forward contract, net			(5,000)				(5,000)		(5,000)
Common stock issued, net of shares withheld for employee taxes	895	9	(236,915)		170,937		(65,969)		(65,969)
Stock-based compensation			95,771				95,771		95,771
Balance at January 31, 2022	153,256	$ 1,533	$ 1,430,226	$ 4,863,400	$ (856,929)	$ (51,457)	$ 5,386,773	$ 3,460	$ 5,390,233

See the accompanying *Notes to Condensed Consolidated Financial Statements (unaudited).*

SYNOPSYS, INC.

CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS
(Unaudited, in thousands)

	Three Months Ended January 31,	
	2023	2022
Cash flows from operating activities:		
Net income	$ 268,627	$ 313,341
Adjustments to reconcile net income to net cash provided by operating activities:		
Amortization and depreciation	57,294	61,685
Reduction of operating lease right-of-use assets	23,903	21,010
Amortization of capitalized costs to obtain revenue contracts	18,850	16,737
Stock-based compensation	134,227	95,771
Allowance for credit losses	3,700	5,278
Deferred income taxes	(65,495)	(11,952)
Other non-cash	4,535	4,832
Net changes in operating assets and liabilities, net of acquired assets and liabilities:		
Accounts receivable	(237,360)	(466,684)
Inventories	(8,610)	9,155
Prepaid and other current assets	(355)	(303)
Other long-term assets	(54,196)	(11,969)
Accounts payable and accrued liabilities	(144,258)	(223,223)
Operating lease liabilities	(17,629)	(19,477)
Income taxes	50,416	6,555
Deferred revenue	81,102	354,988
Net cash provided by operating activities	114,751	155,744
Cash flows from investing activities:		
Proceeds from sales and maturities of short-term investments	30,971	16,437
Purchases of short-term investments	(28,829)	(17,210)
Proceeds from sales of long-term investments	5,735	582
Purchases of long-term investments	—	(5,000)
Purchases of property and equipment	(43,500)	(41,751)
Acquisitions, net of cash acquired	—	(19,989)
Capitalization of software development costs	(624)	(494)
Other	—	(600)
Net cash used in investing activities	(36,247)	(68,025)
Cash flows from financing activities:		
Repayment of debt	(1,294)	(75,938)
Issuances of common stock	22,338	30,835
Payments for taxes related to net share settlement of equity awards	(92,095)	(96,785)
Purchase of equity forward contract	(45,000)	(40,000)
Purchases of treasury stock	(260,724)	(210,000)
Other	—	(2,709)
Net cash used in financing activities	(376,775)	(394,597)
Effect of exchange rate changes on cash, cash equivalents and restricted cash	35,675	(1,720)
Net change in cash, cash equivalents and restricted cash	(262,596)	(308,598)
Cash, cash equivalents and restricted cash, beginning of year	1,419,864	1,435,183
Cash, cash equivalents and restricted cash, end of period	$ 1,157,268	$ 1,126,585

See the accompanying *Notes to Condensed Consolidated Financial Statements (unaudited).*

SYNOPSYS, INC.

NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS

(Unaudited)

Note 1. Description of Business

Synopsys, Inc. (Synopsys, we, our or us) 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.

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

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

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

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

We have prepared the accompanying condensed consolidated financial statements pursuant to the rules and regulations of the Securities and Exchange Commission (SEC). Pursuant to these rules and regulations, we have condensed or omitted certain information and footnote disclosures we normally include in our annual consolidated financial statements prepared in accordance with U.S. generally accepted accounting principles (U.S. GAAP). The condensed consolidated financial statements are unaudited but, in management’s opinion, we have made all adjustments (consisting only of normal, recurring adjustments, except as otherwise indicated) necessary for a fair presentation of our quarterly results. Our interim period operating results do not necessarily indicate the results that may be expected for any other interim period or for the full fiscal year. These financial statements and accompanying notes should be read in conjunction with the consolidated financial statements and notes thereto in our Annual Report on Form 10-K for the fiscal year ended October 31, 2022 as filed with the SEC on December 12, 2022 (our Annual Report).

Use of Estimates. To prepare financial statements in conformity with U.S. GAAP, management must make estimates and assumptions that affect the amounts reported in the condensed consolidated financial statements and accompanying notes. Actual results could differ from these estimates and could have a material impact on our operating results and financial position.

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

Fiscal Year End. Our fiscal year generally ends on the Saturday nearest to October 31 and consists of 52 weeks, with the exception that approximately every five years, we have a 53-week year. When a 53-week year occurs, we include the additional week in the first quarter to realign fiscal quarters with calendar quarters. Fiscal 2023 and 2022 are both 52-week years. Fiscal 2023 will end on October 28, 2023. Fiscal 2022 ended on October 29, 2022. For presentation purposes, the condensed consolidated financial statements and accompanying notes refer to the closest calendar month end.

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

Segment Reporting. Effective in the first quarter of fiscal 2023, we realigned our organizational structure to evaluate the results of our Design IP business separately, and our Chief Operating Decision Maker (CODM), our Chief

Executive Officer (CEO), now allocates resources and assesses performance against our key growth strategies based on this new organizational structure. As a result, we changed our reportable segments from two reportable segments to three reportable segments. The CODM now regularly reviews disaggregated information for the following three reportable segments: (1) Design Automation, which includes EDA tools, system integration solutions and other associated revenue categories, (2) Design IP, which includes IP products, and (3) Software Integrity, which includes a comprehensive solution for building integrity - security, quality and compliance testing - into the customers' software development lifecycle and supply chain. As such, prior period reportable segment results and related disclosures have been reclassified to reflect our current reportable segments.

Goodwill. As a result of the change to our reportable segments, we reassessed our reporting units for the evaluation of goodwill during the first quarter of fiscal 2023. Prior to this change, our reporting units were determined to be the same as reportable segments for the purpose of goodwill impairment assessment. Our reassessment determined that we now have three reporting units, which are the same as our reportable segments.

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

The change in reporting units was considered a triggering event, indicating a test for goodwill impairment was required before and after the change in reporting units. We performed those impairment tests, which did not result in the identification of an impairment loss as of January 31, 2023.

If assumptions or estimates with respect to our future performance vary from what is expected, including but not limited to those assumptions relating to inflationary pressure on costs, geopolitical uncertainties and the threat of additional COVID-19 variants, this may impact the impairment analysis and could reduce the underlying cash flows used to estimate fair values and result in a decline in fair value that may trigger future impairment charges.

Significant Accounting Policies. There have been no material changes to our significant accounting policies included in our Annual Report.

Recently Issued Accounting Pronouncements

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

Note 3. Revenue

Disaggregated Revenue

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

	Three Months Ended January 31,	
	2023	2022
EDA	64.3 %	61.3 %
Design IP	25.2 %	28.2 %
Software Integrity	9.4 %	8.5 %
Other	1.1 %	2.0 %
Total	100.0 %	100.0 %

Contract Balances

The contract assets indicated below are presented as prepaid and other current assets in the condensed 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 condensed consolidated balance sheets.

Contract balances were as follows:

	As of	
	January 31, 2023	October 31, 2022
	(in thousands)	
Contract assets, net	$ 259,146	$ 260,498
Unbilled receivables	$ 45,814	$ 46,254
Deferred revenue	$ 2,167,871	$ 2,065,294

During the three months ended January 31, 2023, we recognized revenue of $793.5 million that was included in the deferred revenue balance as of October 31, 2022.

Contracted but unsatisfied or partially unsatisfied performance obligations were approximately $6.9 billion as of January 31, 2023, which includes $1.0 billion in non-cancellable Flexible Spending Account (FSA) commitments from customers where actual product selection and quantities of specific products or services are to be determined by customers at a later date. We have elected to exclude future sales-based royalty payments from the remaining performance obligations. Approximately 44% of the contracted but unsatisfied or partially unsatisfied performance obligations as of January 31, 2023, excluding non-cancellable FSA, are expected to be recognized over the next 12 months, with the remainder recognized thereafter.

During the three months ended January 31, 2023 and 2022, we recognized $24.7 million and $32.0 million, respectively, from performance obligations satisfied from sales-based royalties earned during the periods.

Costs of Obtaining a Contract with Customer

Capitalized commission costs, net of accumulated amortization, as of January 31, 2023 were $95.4 million and included in other long-term assets in our condensed consolidated balance sheets. Amortization of these assets was $18.9 million and $16.7 million during the three months ended January 31, 2023 and 2022, respectively, and included in sales and marketing expense in the condensed consolidated statements of income.

Note 4. Goodwill and Intangible Assets

Goodwill

As a result of the change in reporting units effective in the first quarter of fiscal 2023, we estimated the fair value of our new reporting units and reallocated goodwill to the reporting units using a relative fair value method. No impairment of goodwill was identified for any period presented.

The changes in the carrying amount of goodwill during the three months ended January 31, 2023 were as follows:

	(in thousands)
Balance at October 31, 2022	$ 3,842,234
Adjustments	335
Effect of foreign currency translation	22,264
Balance at January 31, 2023	$ 3,864,833

Intangible Assets

Intangible assets as of January 31, 2023 consisted of the following:

	Gross Carrying Amount	Accumulated Amortization	Net Amount
		(in thousands)	
Core/developed technology	$ 1,083,703	$ 831,495	$ 252,208
Customer relationships	426,705	340,271	86,434
Contract rights intangible	191,859	189,826	2,033
Trademarks and trade names	52,795	34,947	17,848
Capitalized software development costs	49,215	46,584	2,631
Total	$ 1,804,277	$ 1,443,123	$ 361,154

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

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

Amortization expense related to intangible assets consisted of the following:

	Three Months Ended January 31,	
	2023	2022
	(in thousands)	
Core/developed technology	$ 18,269	$ 12,848
Customer relationships	5,824	8,185
Contract rights intangible	371	727
Trademarks and trade names	893	600
Capitalized software development costs[1]	559	752
Total	$ 25,916	$ 23,112

[1] *Amortization of capitalized software development costs is included in cost of products revenue in the condensed consolidated statements of income.*

The following table presented the estimated future amortization of intangible assets as of January 31, 2023:

Fiscal year	(in thousands)
Remainder of fiscal 2023	$ 73,629
2024	88,333
2025	71,191
2026	58,688
2027	38,487
2028 and thereafter	30,826
Total	$ 361,154

Note 5. Balance Sheets Components

	As of	
	January 31, 2023	October 31, 2022
	(in thousands)	
Other long-term assets:		
Deferred compensation plan assets	$ 313,844	$ 279,096
Capitalized commission, net	95,373	96,509
Other	79,122	88,090
Total	$ 488,339	$ 463,695
Accounts payable and accrued liabilities:		
Payroll and related benefits	$ 381,889	$ 559,886
Other accrued liabilities	211,460	211,937
Accounts payable	70,245	37,580
Total	$ 663,594	$ 809,403
Other long-term liabilities:		
Deferred compensation plan liabilities	$ 313,844	$ 279,096
Other	51,131	48,733
Total	$ 364,975	$ 327,829

Note 6. Financial Assets and Liabilities

Cash Equivalents and Short-term Investments.

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

	Cost	Gross Unrealized Gains	Gross Unrealized Losses Less Than 12 Continuous Months	Gross Unrealized Losses 12 Continuous Months or Longer	Estimated Fair Value[(1)]
	(in thousands)				
Cash equivalents:					
Money market funds	$ 45,367	$ —	$ —	$ —	$ 45,367
Total:	$ 45,367	$ —	$ —	$ —	$ 45,367
Short-term investments:					
U.S. government agency & T-bills	$ 24,851	$ 5	$ (108)	$ —	$ 24,748
Municipal bonds	2,695	—	—	(56)	2,639
Corporate debt securities	93,437	103	(304)	(852)	92,384
Asset-backed securities	27,507	19	(64)	(183)	27,279
Total:	$ 148,490	$ 127	$ (476)	$ (1,091)	$ 147,050

[(1)] *See Note 7. Fair Value Measurements for further discussion on fair values.*

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

	Amortized Cost	Fair Value
	(in thousands)	
less than 1 year	$ 69,730	$ 69,137
1-5 years	73,891	73,155
5-10 years	2,547	2,519
>10 years	2,322	2,239
Total	$ 148,490	$ 147,050

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

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

[1] See Note 7. Fair Value Measurements for further discussion on fair values.

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

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

	As of	
	January 31, 2023	October 31, 2022
	(in thousands)	
Cash and cash equivalents	$ 1,154,873	$ 1,417,608
Restricted cash included in prepaid and other current assets	1,658	1,566
Restricted cash included in other long-term assets	737	690
Total cash, cash equivalents and restricted cash	$ 1,157,268	$ 1,419,864

Non-marketable equity securities. Our portfolio of non-marketable equity securities consists of strategic investments in privately held companies. There was an immaterial impairment of a non-marketable equity security during the three months ended January 31, 2023. There was no impairment of non-marketable equity securities during the three months ended January 31, 2022.

Derivatives

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

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

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

Cash Flow Hedging Activities

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

We did not record any gains or losses related to discontinuation of cash flow hedges during the three months ended January 31, 2023 and 2022.

Non-designated Hedging Activities

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

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

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

	Three Months Ended January 31,	
	2023	2022
	(in thousands)	
Gains (losses) recorded in other income (expense), net	$ 8,221	$ 446

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

	As of	
	January 31, 2023	October 31, 2022
	(in thousands)	
Total gross notional amounts	$ 1,317,911	$ 1,386,140
Net fair value	$ (3,737)	$ (50,080)

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

The following table represented the condensed 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 January 31, 2023		
Other current assets	$ 12,840	$ 57
Accrued liabilities	$ 16,433	$ 201
Balance at October 31, 2022		
Other current assets	$ 2,315	$ 223
Accrued liabilities	$ 52,171	$ 447

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

	Location of gains (losses) recognized in OCI on derivatives	Amount of gains (losses) recognized in OCI on derivatives (effective portion)	Location of gains (losses) reclassified from OCI	Amount of gains (losses) reclassified from OCI (effective portion)
		(in thousands)		
Three months ended January 31, 2023				
Foreign exchange contracts	Revenue	$ 5,267	Revenue	$ (3,967)
Foreign exchange contracts	Operating expenses	36,845	Operating expenses	(4,390)
Total		$ 42,112		$ (8,357)
Three months ended January 31, 2022				
Foreign exchange contracts	Revenue	$ (816)	Revenue	$ (571)
Foreign exchange contracts	Operating expenses	(769)	Operating expenses	(274)
Total		$ (1,585)		$ (845)

Note 7. Fair Value Measurements

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

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

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

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

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

Our borrowings under the credit and term loan facilities are classified within Level 2 because these borrowings are not actively traded and have a variable interest rate structure based upon market rates currently available to us for debt with similar terms and maturities. See Note 9. Credit and Term Loan Facilities for more information on these borrowings.

Assets/Liabilities Measured at Fair Value on a Recurring Basis

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

		Fair Value Measurement Using		
Description	Total	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	$ 45,367	45,367	$ —	$ —
Short-term investments:				
U.S. government agency & T-bills	24,748	—	24,748	—
Municipal bonds	2,639	—	2,639	—
Corporate debt securities	92,384	—	92,384	—
Asset-backed securities	27,279	—	27,279	—
Prepaid and other current assets:				
Foreign currency derivative contracts	12,897	—	12,897	—
Other long-term assets:				
Deferred compensation plan assets	313,844	313,844	—	—
Total assets	$ 519,158	$ 359,211	$ 159,947	$ —
Liabilities				
Accounts payable and accrued liabilities:				
Foreign currency derivative contracts	$ 16,634	$ —	$ 16,634	$ —
Other long-term liabilities:				
Deferred compensation plan liabilities	313,844	313,844	—	—
Total liabilities	$ 330,478	$ 313,844	$ 16,634	$ —

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

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	$ 77,683	$ 77,683	$ —	$ —
Short-term investments:				
U.S. government agency & T-bills	25,603	—	25,603	—
Municipal bonds	2,878	—	2,878	—
Corporate debt securities	94,024	—	94,024	—
Asset-backed securities	25,408	—	25,408	—
Prepaid and other current assets:				
Foreign currency derivative contracts	2,538	—	2,538	—
Other long-term assets:				
Deferred compensation plan assets	279,096	279,096	—	—
Total assets	$ 507,230	$ 356,779	$ 150,451	$ —
Liabilities				
Accounts payable and accrued liabilities:				
Foreign currency derivative contracts	$ 52,618	$ —	$ 52,618	$ —
Other long-term liabilities:				
Deferred compensation plan liabilities	279,096	279,096	—	—
Total liabilities	$ 331,714	$ 279,096	$ 52,618	$ —

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

Non-Marketable Equity Securities

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

Note 8. Restructuring Charges

In the first quarter of fiscal 2023, we initiated a restructuring plan for involuntary employee terminations as part of a business reorganization (the 2023 Plan). Total charges under the 2023 Plan are expected to be in the range of $40.0 million and $50.0 million, and consist primarily of severance costs. The 2023 Plan is anticipated to be completed in the third quarter of fiscal 2023.

During the first quarter of fiscal 2023, we recorded restructuring charges of $40.9 million and made payments of $0.2 million under the 2023 Plan. As of January 31, 2023, the outstanding restructuring related liabilities were $40.7 million and recorded in accounts payable and accrued liabilities in the condensed consolidated balance sheets.

Note 9. Credit and Term Loan Facilities

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

The Fifth Amendment increased the existing senior unsecured revolving credit facility (the Revolver) from $650.0 million to $850.0 million and extended the maturity date from January 22, 2024 to December 14, 2027, which could be further extended at our option. The Credit Agreement also provides an uncommitted incremental revolving loan facility of up to $150.0 million in the aggregate principal amount. The Credit Agreement contains a financial covenant requiring us to maintain a maximum consolidated leverage ratio, as well as other non-financial covenants. As of January 31, 2023, we were in compliance with the financial covenant.

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

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

In July 2018, we entered into a 12-year 220.0 million Renminbi (approximately $33.0 million) credit agreement with a lender in China to support our facilities expansion. Borrowings bear interest at a floating rate based on the 5-year Loan Prime Rate plus 0.74%. As of January 31, 2023, we had $20.6 million outstanding balance under the agreement.

The carrying amount of the short-term and long-term debt approximates the estimated fair value.

Note 10. Leases

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

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

	Three Months Ended January 31,	
	2023	2022
	(in thousands)	
Operating lease expense [1]	$ 24,348	$ 22,032
Variable lease expense [2]	4,325	2,124
Total lease expense	$ 28,673	$ 24,156

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

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

	Three Months Ended January 31,	
	2023	2022
	(in thousands)	
Cash paid for amounts included in the measurement of operating lease liabilities	$ 21,053	$ 20,620
ROU assets obtained in exchange for operating lease liabilities	$ 44,339	$ 9,354

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

	As of	
	January 31, 2023	October 31, 2022
Weighted-average remaining lease term (in years)	8.73	9.16
Weighted-average discount rate	2.27 %	2.19 %

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

Fiscal year		Lease Payments (in thousands)
Remainder of fiscal 2023	$	51,483
2024		104,982
2025		93,685
2026		83,259
2027		81,967
2028 and thereafter		333,494
Total future minimum lease payments		748,870
Less: Imputed interest		79,006
Total lease liabilities	$	669,864

In addition, certain facilities owned by us were leased to third parties under non-cancellable operating lease agreements. These leases have annual escalating payments and have expiration dates through March 31, 2031 in accordance with the terms and conditions of the existing agreement. The lease receipts from owned facilities, including sublease income from other facilities leased by us, due to us as of January 31, 2023 were as follows:

Fiscal year		Lease Receipts (in thousands)
Remainder of fiscal 2023	$	11,923
2024		24,591
2025		24,479
2026		25,333
2027		26,452
2028 and thereafter		83,737
Total	$	196,515

Note 11. Redeemable Non-controlling Interest

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

The agreement with the Minority Investor contains redemption features whereby the interest held by the Minority Investor is redeemable either (1) at the option of the Minority Investor on or after the third anniversary of the acquisition or sooner in certain circumstances or (2) at our option beginning on the third anniversary of the acquisition. This option is exercisable at the greater of fair value at the time of redemption or $30.0 million and was valued at $10.1 million, resulting in a total consideration of $100.1 million.

During the three months ended January 31, 2023, OpenLight incurred a net loss of $10.5 million, of which $2.6 million was attributable to redeemable non-controlling interest. As of January 31, 2023, the carrying value of the redeemable non-controlling interest was $36.0 million in the condensed consolidated balance sheets.

Note 12. Accumulated Other Comprehensive Income (Loss)

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

	As of	
	January 31, 2023	October 31, 2022
	(in thousands)	
Cumulative currency translation adjustments	$ (115,875)	$ (156,192)
Unrealized gains (losses) on derivative instruments, net of taxes	(25,017)	(75,486)
Unrealized gains (losses) on available-for-sale securities, net of taxes	(1,441)	(2,599)
Total	$ (142,333)	$ (234,277)

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

	Three Months Ended January 31,	
	2023	2022
	(in thousands)	
Reclassifications:		
Gains (losses) on cash flow hedges, net of taxes		
Revenues	$ (3,967)	$ (571)
Operating expenses	(4,390)	(274)
Total	$ (8,357)	$ (845)

Note 13. Stock Repurchase Program

In September 2022, our Board of Directors (the Board) approved a replenishment of our stock repurchase program (the Program) with authorization to purchase up to $1.5 billion of our common stock.

In December 2022, we entered into an accelerated stock repurchase agreement (the December 2022 ASR) to repurchase an aggregate of $300.0 million of our common stock. Pursuant to the December 2022 ASR, we made a prepayment of $300.0 million to receive initial deliveries of shares valued at $255.0 million. The remaining balance of $45.0 million was settled in February 2023. Total shares purchased under the December 2022 ASR were approximately 0.9 million shares, at an average purchase price of $335.39 per share.

During the three months ended January 31, 2023, we also repurchased on the open market approximately 18.2 thousand shares of our common stock at an average price of $314.77 per share for an aggregate purchase price of $5.7 million.

As of January 31, 2023, $1.1 billion remained available for future repurchases under the Program.

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

	Three Months Ended January 31,	
	2023[(1)]	2022[(2)(3)]
	(in thousands)	
Total shares repurchased	806	701
Total cost of the repurchased shares	$ 260,724	$ 245,000
Reissuance of treasury stock	811	895

[(1)] *Excluded the 107,020 shares and $45.0 million equity forward contract from the December 2022 ASR settled in February 2023.*
[(2)] *Included the 107,701 shares and $35.0 million equity forward contract from the August 2021 ASR settled in November 2021.*

(3) *Excluded the 161,215 shares and $40.0 million equity forward contract from the December 2021 ASR settled in February 2022.*

Note 14. Stock-Based Compensation

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

	Three Months Ended January 31,	
	2023	2022
	(in thousands)	
Cost of products	$ 16,029	$ 11,207
Cost of maintenance and service	7,155	4,583
Research and development expense	69,231	49,540
Sales and marketing expense	24,907	17,801
General and administrative expense	16,905	12,640
Stock-based compensation expense before taxes	134,227	95,771
Income tax benefit	(21,570)	(15,429)
Stock-based compensation expense after taxes	$ 112,657	$ 80,342

During the three months ended January 31, 2023, we recognized stock-based compensation expense relating to restricted stock units (RSUs), granted to senior executives with certain market, performance and service conditions (market-based RSUs). The grant date fair value for the market-based RSUs granted during the three months ended January 31, 2023 was determined using the Monte Carlo simulation model with the following assumptions: expected volatility of 42.86%, risk-free interest rate of 4.63% and an expected term of 0.9 years. There were no market-based RSUs granted during the three months ended January 31, 2022.

As of January 31, 2023, we had $917.6 million of total unrecognized stock-based compensation expense relating to options, RSUs and restricted stock awards, which is expected to be recognized over a weighted-average period of 2.1 years. As of January 31, 2023, we had $60.3 million of unrecognized stock-based compensation expense relating to our Employee Stock Purchase Plan, which is expected to be recognized over a period of approximately 2.0 years.

The intrinsic values of equity awards exercised during the periods were as follows:

	Three Months Ended January 31,	
	2023	2022
	(in thousands)	
Intrinsic value of awards exercised	$ 54,776	$ 112,925

Note 15. Net Income Per Share

We compute basic net income per share by dividing net income available to common stockholders by the weighted average number of common shares outstanding during the period. Diluted net income per share reflects the dilution from potential common shares outstanding such as stock options and unvested RSUs and awards during the period using the treasury stock method.

The table below reconciled 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:

	Three Months Ended January 31,	
	2023	2022
	(in thousands, except per share amounts)	
Numerator:		
Net income attributed to Synopsys	$ 271,536	$ 313,687
Denominator:		
Weighted average common shares for basic net income per share	152,401	153,218
Dilutive effect of common share equivalents	2,675	4,055
Weighted average common shares for diluted net income per share	155,076	157,273
Net income per share attributed to Synopsys:		
Basic	$ 1.78	$ 2.05
Diluted	$ 1.75	$ 1.99
Anti-dilutive employee stock-based awards excluded	527	170

Note 16. Segment Disclosure

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

As described in Note 2, *Summary of Significant Accounting Policies and Basis of Presentation*, effective in the first quarter of fiscal 2023, we realigned our organizational structure to evaluate the results of our Design IP business separately, and our CODM now allocates resources and assesses performance against our key growth strategies based on this new organizational structure. As a result, we changed our reportable segments from two reportable segments to three reportable segments.

Our three reportable segments are: (1) Design Automation, which includes EDA tools, system integration solutions and other associated revenue categories, (2) Design IP, which includes IP products, and (3) Software Integrity, which includes a comprehensive solution for building integrity - security, quality and compliance testing - into the customers’ software development lifecycle and supply chain. Prior period reportable segment results and related disclosures have been reclassified to reflect our current reportable segments.

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

Information by reportable segment was as follows:

	Three Months Ended January 31,	
	2023	2022
	(in thousands)	
Total Segments:		
Revenue	$ 1,361,340	$ 1,270,255
Adjusted operating income	479,167	459,391
Adjusted operating margin	35 %	36 %
Design Automation:		
Revenue	$ 889,846	$ 803,862
Adjusted operating income	346,009	293,271
Adjusted operating margin	39 %	36 %
Design IP:		
Revenue	$ 343,651	$ 358,833
Adjusted operating income	117,625	154,121
Adjusted operating margin	34 %	43 %
Software Integrity:		
Revenue	$ 127,843	$ 107,560
Adjusted operating income	15,533	11,999
Adjusted operating margin	12 %	11 %

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

	Three Months Ended January 31,	
	2023	2022
	(in thousands)	
Total segment adjusted operating income	$ 479,167	$ 459,391
Reconciling items:		
Amortization of intangible assets	(25,357)	(22,360)
Stock-based compensation expense	(134,227)	(95,771)
Deferred compensation plan	(20,197)	19,599
Restructuring charges	(40,859)	(11,746)
Other	(2,595)	(2,077)
Total operating income	$ 255,932	$ 347,036

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

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

	Three Months Ended January 31,	
	2023	2022
	(in thousands)	
Revenue:		
United States	$ 671,782	$ 610,334
Europe	135,007	132,717
China	197,778	212,823
Korea	145,792	114,355
Other	210,981	200,026
Consolidated	$ 1,361,340	$ 1,270,255

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

Note 17. Other Income (Expense), Net

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

	Three Months Ended January 31,	
	2023	2022
	(in thousands)	
Interest income	$ 6,899	$ 858
Interest expense	(264)	(500)
Gains (losses) on assets related to deferred compensation plan	20,197	(19,599)
Foreign currency exchange gains (losses)	2,700	(1,024)
Other, net	(6,240)	472
Total	$ 23,292	$ (19,793)

Note 18. Income Taxes

Effective Tax Rate

We estimate our annual effective tax rate at the end of each fiscal quarter. The effective tax rate takes into account our estimations of annual pre-tax income, the geographic mix of pre-tax income and interpretations of tax laws and possible outcomes of audits.

The following table presented the provision for income taxes and the effective tax rates:

	Three Months Ended January 31,	
	2023	2022
	(in thousands)	
Income before income taxes	$ 279,224	$ 327,243
Provision for income taxes	$ 10,597	$ 13,902
Effective tax rate	3.8 %	4.2 %

Our effective tax rate for the three months ended January 31, 2023 is lower than the statutory federal corporate tax rate of 21% primarily due to U.S. federal research tax credits, foreign-derived intangible income deduction, excess tax benefits from stock-based compensation, and U.S. foreign tax credits, partially offset by state taxes, the effect of non-deductible stock-based compensation, and higher taxes on certain foreign earnings.

On December 22, 2017, the Tax Cuts and Jobs Act (Tax Act) was enacted, which significantly changed prior U.S. tax law and includes numerous provisions that affect our business. Effective our fiscal 2023, the Tax Act requires that research and development expenditures are capitalized and amortized instead of being deducted when incurred. Domestic research is capitalized over five years and foreign research is capitalized over fifteen years. For fiscal 2023, this will result in a significant increase to our cash tax liabilities and will also decrease our effective tax rate due to increasing the foreign derived intangible income deduction. The impact to our cash tax liabilities will decrease over time as the research and development expenditures are amortized.

Our effective tax rate decreased in the three months ended January 31, 2023 as compared to the same period in fiscal 2022, primarily due to higher foreign derived intangible income deduction, as a result of the Tax Act, offset by lower excess tax benefits from stock-based compensation.

The timing of the resolution of income tax examinations, and the amounts and timing of various tax payments that are part of the settlement process, are highly uncertain. Variations in such amounts and/or timing could cause large fluctuations in the balance sheet classification of current and non-current assets and liabilities. We believe that in the coming 12 months, it is reasonably possible that either certain audits and ongoing tax litigation will conclude or the statute of limitations on certain state and foreign income and withholding taxes will expire, or both. Given the uncertainty as to ultimate settlement terms, the timing of payment and the impact of such settlements on other uncertain tax positions, the range of the estimated potential decrease in underlying unrecognized tax benefits is between $0 and $34 million.

Non-U.S. Examinations

Hungarian Tax Authority

In 2017, the Hungarian Tax Authority (the HTA) assessed withholding taxes of approximately $25.0 million and interest and penalties of $11.0 million against our Hungary subsidiary (Synopsys Hungary). Synopsys Hungary contested the assessment with the Hungarian Administrative Court (Administrative Court). In 2019, as required under Hungarian law, Synopsys Hungary paid the assessment and recorded a tax expense due to an unrecognized tax benefit of $17.4 million, which is net of estimated U.S. foreign tax credits. The Administrative Court found against Synopsys Hungary, and we appealed to the Hungarian Supreme Court. During 2021, the Hungarian Supreme Court heard our appeal and remanded the case to the Administrative Court for further proceedings. The Administrative Court once again ruled against Synopsys Hungary, and we filed another appeal with the Hungarian Supreme Court. The Hungarian Supreme Court heard our appeal on January 27, 2022, vacated the lower court's decision and remanded the case back to the Administrative Court for further proceedings. Hearings with the Administrative Court were held on June 30, 2022 and September 22, 2022. In response to a request by the Administrative Court, we filed an additional brief on November 23, 2022. The next hearing has been scheduled for April 25, 2023.

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

Legislative Developments

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

The IR Act includes provisions intended to mitigate climate change by, among others, providing tax credit incentives for reductions in greenhouse gas emissions. The details of the implementation of these incentives are subject to regulations to be released by the U.S. Department of the Treasury. Synopsys is monitoring these developments and will continue to evaluate opportunities to utilize these incentives in the future.

The IR Act imposes a 1% excise tax on the fair market value of stock repurchases made by covered corporations after December 31, 2022. The total taxable value of shares repurchased is reduced by the fair market value of any newly issued shares during the taxable year. We are assessing the potential impact of the stock repurchase excise tax. Based on our preliminary assessment, we do not expect a material impact on our overall capital allocation strategy or our consolidated financial statements.

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

Note 19. Contingencies

Legal Proceedings

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

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

Legal Settlement

There have been no changes to the disclosure related to Mentor Graphics Corporation (now part of Siemens AG) since our Annual Report. See Note 10. Contingencies of our Annual Report for further information.

Tax Matters

We undergo examination from time to time by U.S. and foreign authorities for non-income based taxes, such as sales, use and value-added taxes, and are currently under examination by tax authorities in certain jurisdictions. If the potential loss from such examinations is considered probable and the amount or the range of loss could be estimated, we would accrue a liability for the estimated expense.

In addition to the foregoing, we are, from time to time, party to various other claims and legal proceedings in the ordinary course of our business, including with tax and other governmental authorities. For a description of certain of these other matters, see Note 18. Income Taxes.

Item 2. *Management's Discussion and Analysis of Financial Condition and Results of Operations*

This Quarterly Report on Form 10-Q includes forward-looking statements, which involve risks, uncertainties and other factors that could cause our actual results, time frames or achievements to differ materially from those expressed or implied in such forward-looking statements. Readers are urged to carefully review and consider the various disclosures regarding these risks and uncertainties made in this Quarterly Report on Form 10-Q, including those identified below in Part II, Item 1A, Risk Factors, and in other documents we file from time to time with the Securities and Exchange Commission (SEC). Forward-looking statements include any statements that are not statements of historical fact and include, but are not limited to, statements concerning strategies related to our products, technology and services; business and market outlook, opportunities and strategies; the expected impact of U.S. and foreign government actions and regulatory changes, including export control restrictions, on our financial results; customer demand and market expansion; our planned product releases and capabilities; industry growth rates; software trends; planned acquisitions and stock repurchases; our expected tax rate; and the impact of the ongoing COVID-19 pandemic. Forward-looking statements may be identified by words including, but not limited to, "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. 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. (Synopsys, we, our or us) or persons acting on our behalf are expressly qualified in their entirety by these cautionary statements.

The following summary of our financial condition and results of operations should be read together with our condensed consolidated financial statements and the related notes thereto contained in Part I, Item 1 of this Quarterly Report on Form 10-Q and with our audited consolidated financial statements and the related notes thereto contained in our Annual Report on Form 10-K for the fiscal year ended October 31, 2022, as filed with the SEC on December 12, 2022 (our Annual Report).

Overview

Business Summary

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

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

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

Our Design Automation and Design 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 segment 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 the *Notes to Consolidated Financial Statements* in our Annual Report for a discussion on our revenue recognition policy. The revenue we recognize in a particular period generally results from selling efforts in prior periods rather than the current period. As a result, decreases as well as increases in customer spending do not immediately affect our revenues in a significant way.

Our growth strategy is based on maintaining and building on our leadership in our Design Automation products, expanding and proliferating our Design IP offerings, 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.

Recent Developments

Developments in Export Control Regulations

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

For more on risks related to government export and import restrictions such as the U.S. government's Entity List and other U.S. Export Regulations, see Part II, Item 1A, Risk Factors, "*Industry Risks – We are subject to governmental export and import requirements that could subject us to liability and restrict our ability to sell our products and services, which could impair our ability to compete in international markets*."

Impact of the Current Macroeconomic Environment and COVID-19

Uncertainty in the macroeconomic environment, including the effects of increased global inflationary pressures and interest rates, potential economic slowdowns or recessions, supply chain disruptions, geopolitical pressures, including the unknown impact of current and future U.S. and Chinese trade regulations, changes in China-Taiwan relations and the war in Ukraine, fluctuations in foreign exchange rates, and associated global economic conditions have resulted in volatility in credit, equity and foreign currency markets.

These uncertain macroeconomic conditions could lead some of our customers to postpone their decision-making, decrease their spending and/or delay their payments to us. For example, we continued to experience a minor impact from the current macroeconomic environment in our Software Integrity segment as customers applied elevated levels of scrutiny to purchasing decisions, which has, in some cases, caused some customers to elect shorter term contracts due to their own budget uncertainty. Although we have not experienced a material adverse impact to date, if these uncertain macroeconomic conditions persist, they may have an adverse impact on certain aspects of our business.

Additionally, the ongoing COVID-19 pandemic has impacted worldwide economic activity and financial markets and significantly increased economic volatility and uncertainty. Despite this widespread volatility and uncertainty, the COVID-19 pandemic has caused only minor disruptions to our business operations with a limited impact on our operating results thus far. The extent to which the COVID-19 pandemic impacts our business operations in future periods will depend on multiple uncertain factors, including the duration of the pandemic and its overall negative impact on the global economy generally and the semiconductor and electronics industries specifically. We have not identified trends that we expect will materially impact our future operating results at this time and continue to consider the impacts of the COVID-19 pandemic on our business operations.

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

See Part II, Item 1A, *Risk Factors* for further discussion of the impact of global macroeconomic uncertainty and the ongoing COVID-19 pandemic on our business, operations and financial condition.

Business Segments

Effective in the first quarter of fiscal 2023, we realigned our organizational structure to evaluate the results of our Design IP business separately, and our Chief Operating Decision Maker (CODM), our Chief Executive Officer, now allocates resources and assesses performance against our key growth strategies based on this new organizational structure. As a result, we changed our reportable segments from two reportable segments to three reportable segments. The CODM now regularly reviews disaggregated information for the following three reportable segments: (1) Design Automation, which includes EDA tools, system integration solutions and other associated revenue categories, (2) Design IP, which includes IP products, and (3) Software Integrity, which includes a comprehensive solution for building integrity - security, quality and compliance testing - into the customers' software development lifecycle and supply chain. As such, prior period reportable segment results and related disclosures have been reclassified to reflect our current reportable segments.

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

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

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

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

Fiscal Year and Fiscal Quarter End

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

Our results of operations for the three months of fiscal 2023 and 2022 ended on January 28, 2023 and January 29, 2022, respectively. For presentation purposes, this Form 10-Q refers to the closest calendar month end.

Russia-Ukraine Conflict

Due to the ongoing conflict between Russia and Ukraine and the related sanctions and other penalties imposed on Russia and Belarus by the United States, the European Union, the United Kingdom and other countries, we ceased all Synopsys business operations in Russia commencing in the second quarter of fiscal 2022. We do not have operations or employees in Ukraine. The cessation of our business operations in Russia has not had a material impact on our business, financial condition, or results of operations as our operations in Russia and our sales to customers in Russia and Belarus do not constitute a material portion of our business. Further, unless and until the U.S. government lifts its sanctions on Russia and Belarus, which are restricting the export of a broad range of U.S. technologies to those countries, we will continue to be unable to ship such technologies or provide support to anyone in Russia or Belarus. We are actively monitoring the Russia-Ukraine conflict and the potential impact it could have on our business, employees and our ability to sell our products and services to our customers. See Part II, Item 1A, *Risk Factors* for further discussion of the possible impact of the Russia-Ukraine Conflict on our business, operations and financial condition.

Critical Accounting Estimates

Our condensed consolidated financial statements have been prepared in accordance with U.S. generally accepted accounting principles (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 the *Notes to Condensed Consolidated Financial Statements* for more 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; and
- Valuation of business combinations.

See Critical Accounting Estimates section of Part II, Item 7, *Management's Discussion and Analysis of Financial Condition and Results of Operations* in our Annual Report for more information.

Results of Operations

Revenue

Our revenues are generated from three business segments: the Design Automation segment, the Design IP segment and the Software Integrity segment. See Note 16 of the *Notes to Condensed Consolidated Financial Statements* for more information about our reportable segments and revenue by geographic regions.

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

Design Automation Segment

- EDA solutions include digital, custom and FPGA IC design software, verification software and hardware products, system integration products and services, and obligations to provide unspecified updates and support services. EDA products and services are typically sold through Technology Subscription License (TSL) arrangements that grant customers the right to access and use all of the licensed products at the outset of an arrangement; software updates are generally made available throughout the entire term of the arrangement. The duration of our TSL contracts is generally 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.
- 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.

Design IP Segment

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

Software Integrity Segment

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

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

Total Revenue

	January 31, 2023	January 31, 2022	$ Change	% Change
	(dollars in millions)			
Three months ended				
Design Automation	$ 889.8	$ 803.9	$ 85.9	11 %
Design IP	343.7	358.8	(15.1)	(4) %
Software Integrity	127.8	107.6	20.2	19 %
Total	$ 1,361.3	$ 1,270.3	$ 91.0	7 %

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

Contracted but unsatisfied or partially unsatisfied performance obligations as of January 31, 2023 were $6.9 billion. The amount and composition of unsatisfied performance obligations will fluctuate period to period. We do not believe the amount of unsatisfied performance obligations is indicative of future sales or revenue, or that such obligations at the end of any given period correlates with actual sales performance of a particular geography or particular products and services. For more information regarding our revenue during the three months ended January 31, 2023, including our contract balances as of such date, see Note 3 of the *Notes to Condensed Consolidated Financial Statements.*

The increase in total revenues for the three months ended January 31, 2023 compared to the same period in fiscal 2022 was due to the continued organic growth of our business across a majority of product groups and geographies.

For a discussion of revenue by geographic areas, see Note 16 of the *Notes to Condensed Consolidated Financial Statements*.

Time-Based Products Revenue

	January 31, 2023	January 31, 2022	$ Change	% Change
	(dollars in millions)			
Three months ended	$ 782.3	$ 707.5	$ 74.8	11 %
Percentage of total revenue	57 %	56 %		

The increase in time-based products revenue for the three months ended January 31, 2023 compared to the same period in fiscal 2022 was primarily attributable to an increase in TSL license revenue and higher renewals from arrangements booked in prior periods.

Upfront Products Revenue

	January 31, 2023	January 31, 2022	$ Change	% Change
	(dollars in millions)			
Three months ended	$ 336.7	$ 368.3	$ (31.6)	(9) %
Percentage of total revenue	25 %	29 %		

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 decrease in upfront products revenue for the three months ended January 31, 2023 compared to the same period in fiscal 2022 was primarily due to a decrease in the sale of IP products, partially offset by an increase in the sale of hardware products, driven by timing of customer demands.

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

Maintenance and Service Revenue

	January 31, 2023	January 31, 2022	$ Change	% Change
	(dollars in millions)			
Three months ended				
Maintenance revenue	$ 81.4	$ 65.5	$ 15.9	24 %
Professional services and other revenue	161.0	129.0	32.0	25 %
Total	$ 242.4	$ 194.5	$ 47.9	25 %
Percentage of total revenue	18 %	15 %		

The increase in maintenance revenue for the three months ended January 31, 2023 compared to the same period in fiscal 2022 was primarily due to an increase in the volume of hardware arrangements that include maintenance.

The increase in professional services and other revenue for the three months ended January 31, 2023 compared to the same period in fiscal 2022 was due to the timing of IP customization projects.

Cost of Revenue

	January 31, 2023	January 31, 2022	$ Change	% Change
	(dollars in millions)			
Three months ended				
Cost of products revenue	$ 174.4	$ 165.4	$ 9.0	5 %
Cost of maintenance and service revenue	91.3	78.2	13.1	17 %
Amortization of intangible assets	18.6	13.4	5.2	39 %
Total	$ 284.3	$ 257.0	$ 27.3	11 %
Percentage of total revenue	21 %	20 %		

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

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

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

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

The increase in cost of revenue for the three months ended January 31, 2023 compared to the same period in fiscal 2022, was primarily due to increases of $23.5 million in employee-related costs as a result of headcount increases from hiring and acquisitions, $5.2 million in amortization of technology-related intangible assets, $4.3 million in facility costs, and $2.8 million in the fair value of our executive deferred compensation plan assets. These increases were partially offset by a decrease of $12.8 million in hardware-related costs.

Operating Expenses

Research and Development

	January 31, 2023	January 31, 2022	$ Change	% Change
	(dollars in millions)			
Three months ended	$ 465.3	$ 384.0	$ 81.3	21 %
Percentage of total revenue	34 %	30 %		

The increase in research and development expenses for the three months ended January 31, 2023 compared to the same period in fiscal 2022 was primarily due to increases of $45.2 million in employee-related costs as a result of headcount increases as we continue to expand and enhance our product portfolio, $25.0 million in the fair value of our executive deferred compensation plan assets, and $9.7 million in facility costs.

Sales and Marketing

	January 31, 2023	January 31, 2022	$ Change	% Change
	(dollars in millions)			
Three months ended	$ 210.8	$ 180.5	$ 30.3	17 %
Percentage of total revenue	15 %	14 %		

The increase in sales and marketing expenses for the three months ended January 31, 2023 compared to the same period in fiscal 2022 was primarily due to increases of $11.3 million in employee-related costs due to headcount increases, $6.0 million in travel and marketing expenses due to an increased number of in-person meetings and events, $5.9 million in the fair value of our executive deferred compensation plan assets, and $2.2 million in facility costs.

General and Administrative

	January 31, 2023	January 31, 2022	$ Change	% Change
	(dollars in millions)			
Three months ended	$ 97.4	$ 81.0	$ 16.4	20 %
Percentage of total revenue	7 %	6 %		

The increase in general and administrative expenses for the three months ended January 31, 2023 compared to the same period in fiscal 2022 was primarily due to increases of $10.7 million in employee-related costs due to headcount increases from hiring, $6.2 million in the fair value of our executive deferred compensation plan assets, and $2.4 million in legal, consulting and other professional fees.

Amortization of Intangible Assets

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

	January 31, 2023	January 31, 2022	$ Change	% Change
	(dollars in millions)			
Three months ended	6.7	9.0	(2.3)	(26) %
Percentage of total revenue	— %	1 %		

The decrease in amortization of intangible assets for the three months ended January 31, 2023 compared to the same periods in fiscal 2022 was primarily due to certain intangible assets becoming fully amortized.

Restructuring Charges

In the first quarter of fiscal 2023, we initiated a restructuring plan for involuntary employee terminations as part of a business reorganization (the 2023 Plan). Total charges under the 2023 Plan are expected to be in the range of $40.0 million and $50.0 million, and consist primarily of severance costs. The 2023 Plan is anticipated to be completed in the third quarter of fiscal 2023. We recorded restructuring charges of $40.9 million in the first quarter of fiscal 2023.

See Note 8 of the *Notes to Condensed Consolidated Financial Statements* for more information.

Other Income (Expense), Net

	January 31, 2023	January 31, 2022	$ Change	% Change
	(dollars in millions)			
Three months ended				
Interest income	$ 6.9	$ 0.9	$ 6.0	667 %
Interest expense	(0.3)	(0.5)	0.2	(40)%
Gains (losses) on assets related to executive deferred compensation plan	20.2	(19.6)	39.8	(203)%
Foreign currency exchange gains (losses)	2.7	(1.0)	3.7	(370)%
Other, net	(6.2)	0.4	(6.6)	(1,650)%
Total	$ 23.3	$ (19.8)	$ 43.1	(218)%

The increase in other income (expense) for the three months ended January 31, 2023 as compared to the same period in fiscal 2022 was primarily due to the increase in the fair value of our executive deferred compensation plan assets.

Segment Operating Results

We do not allocate certain operating expenses managed at a consolidated level to our reportable segments. These unallocated expenses consist primarily of stock-based compensation expense, amortization of intangible assets, changes in the fair value of deferred compensation plan, restructuring charges, and certain other operating expenses. See Note 16 of the *Notes to Condensed Consolidated Financial Statements* for more information.

Design Automation Segment

	January 31, 2023	January 31, 2022	Change	% Change
	(dollars in millions)			
Three months ended				
Adjusted operating income	$ 346.0	$ 293.3	$ 52.7	18 %
Adjusted operating margin	39 %	36 %	3 %	8 %

The increase in adjusted operating income for the three months ended January 31, 2023 compared to the same period in fiscal 2022 was primarily due to an increase in revenue from arrangements booked in prior periods.

Design IP Segment

	January 31, 2023	January 31, 2022	Change	% Change
		(dollars in millions)		
Three months ended				
Adjusted operating income	$ 117.6	$ 154.1	$ (36.5)	(24) %
Adjusted operating margin	34 %	43 %	(9)%	(21) %

The decrease in adjusted operating income for the three months ended January 31, 2023 compared to the same period in fiscal 2022 was primarily due to a decrease in the revenue of IP products driven by timing of customer demands and an increase in employee-related costs due to headcount increases.

Software Integrity Segment

	January 31, 2023	January 31, 2022	Change	% Change
		(dollars in millions)		
Three months ended				
Adjusted operating income	$ 15.5	12.0	$ 3.5	29 %
Adjusted operating margin	12 %	11 %	1 %	9 %

The increase in adjusted operating income for the three months ended January 31, 2023 compared to the same period in fiscal 2022 was primarily due to an increase in revenue from arrangements booked in prior periods.

Income Taxes

Our effective tax rate decreased in the three months ended January 31, 2023 as compared to the same period in fiscal 2022, primarily due to higher foreign derived intangible income deduction, as a result of the Tax Act, offset by lower excess tax benefits from stock-based compensation.

See Note 18 of the *Notes to Condensed Consolidated Financial Statements* for further discussion.

Liquidity and Capital Resources

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

As of January 31, 2023, we held $1.3 billion in cash, cash equivalents and short-term investments. We also held $2.4 million in restricted cash primarily associated with deposits for office leases. 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 January 31, 2023, approximately $846.8 million of our cash and cash equivalents were domiciled in various foreign jurisdictions. We have provided for foreign withholding taxes on the undistributed earnings of certain of our foreign subsidiaries to the extent such earnings are no longer considered to be indefinitely reinvested in the operations of those subsidiaries.

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

Effective fiscal 2023, our research and development expenditures are required to be capitalized and amortized under the Tax Act instead of being deducted when incurred for US tax purposes. This results in a significant increase to our cash tax liabilities for fiscal 2023. See Note 18 of the *Notes to Condensed Consolidated Financial Statements* for further discussion.

During the three months ended January 31, 2023, there were no significant changes to our material cash requirements, including contractual and other obligations, as presented in Part II, Item 7, *Management's Discussion and Analysis of Financial Condition and Results of Operations* included in our Annual Report.

The following sections discuss changes in our condensed consolidated statements of cash flows and other commitments of our liquidity and capital resources during the three months ended January 31, 2023.

Cash Flows

	Three Months Ended January 31,		
	2023	2022	$ Change
	(dollars in millions)		
Cash provided by operating activities	$ 114.8	$ 155.7	$ (40.9)
Cash used in investing activities	(36.2)	(68.0)	31.8
Cash used in financing activities	(376.8)	(394.6)	17.8

Cash Provided by Operating Activities

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

The decrease in cash provided by operating activities for the three months ended January 31, 2023 compared to the same period in fiscal 2022 was primarily due to lower net income and timing of customer billings, partially offset by lower disbursements for operations, including vendor and tax payments.

Cash Used in Investing Activities

The decrease in cash used in investing activities for the three months ended January 31, 2023 compared to the same period in fiscal 2022 was primarily due to lower cash paid for acquisitions of $20.0 million, higher proceeds from the sales and maturities of investments of $19.7 million, partially offset by higher purchases of investments of $6.6 million.

Cash Used in Financing Activities

The decrease in cash used in financing activities for the three months ended January 31, 2023 compared to the same period in fiscal 2022 was primarily due to lower debt repayments of $74.6 million, partially offset by higher stock repurchases of $55.7 million.

Credit and Term Loan Facilities

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

The Fifth Amendment increased the existing senior unsecured revolving credit facility (the Revolver) from $650.0 million to $850.0 million and extended the maturity date from January 22, 2024 to December 14, 2027, which could be further extended at our option. The Credit Agreement also provides an uncommitted incremental revolving loan facility of up to $150.0 million in the aggregate principal amount. The Credit Agreement contains a financial covenant requiring us to maintain a maximum consolidated leverage ratio, as well as other non-financial covenants. There was no outstanding balance under the Revolver as of January 31, 2023.

In July 2018, we entered into a 12-year 220.0 million Renminbi (approximately $33.0 million) credit agreement with a lender in China to support our facilities expansion. Borrowings bear interest at a floating rate based on the 5 year Loan Prime Rate plus 0.74%. As of January 31, 2023, we had $20.6 million outstanding balance under the agreement.

See Note 9 of the *Notes to Condensed Consolidated Financial Statements* for more information.

Stock Repurchase Program

In September 2022, our Board of Directors (the Board) approved a replenishment of our stock repurchase program (the Program) with authorization to purchase up to $1.5 billion of our common stock.

In December 2022, we entered into an accelerated stock repurchase agreement (the December 2022 ASR) to repurchase an aggregate of $300.0 million of our common stock. Pursuant to the December 2022 ASR, we made a prepayment of $300.0 million to receive initial deliveries of shares valued at $255.0 million. The remaining balance of $45.0 million was settled in February 2023. Total shares purchased under the December 2022 ASR were approximately 0.9 million shares, at an average purchase price of $335.39 per share.

During the three months ended January 31, 2023, we also repurchased on the open market approximately 18.2 thousand shares of our common stock at an average price of $314.77 per share for an aggregate purchase price of $5.7 million.

As of January 31, 2023, $1.1 billion remained available for future repurchases under the Program. 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.

The IR Act was enacted in the United States on August 16, 2022. The IR Act imposes a 1% excise tax on the fair market value of stock repurchases made by covered corporations after December 31, 2022. The total taxable value of shares repurchased is reduced by the fair market value of any newly issued shares during the taxable year. We are assessing the potential impact of the stock repurchase excise tax. Based on our preliminary assessment, we do not expect a material impact on our overall capital allocation strategy or our consolidated financial statements. Risks related to the IR Act are described in Part II, Item 1A, *Risk Factors*.

Item 3. *Quantitative and Qualitative Disclosures About Market Risk*

See Other Commitments — Credit and Term Loan Facilities, Item 2, *Management's Discussion and Analysis of Financial Condition and Results of Operations*, regarding borrowings under our senior unsecured revolving credit facility.

As of January 31, 2023, our exposure to market risk had not changed materially since October 31, 2022. For more information on financial market risks related to changes in interest rates and foreign currency rates, reference is made to Item 7A, *Quantitative and Qualitative Disclosures About Market Risk* contained in Part II of our Annual Report.

Item 4. *Controls and Procedures*

(a) *Evaluation of Disclosure Controls and Procedures.* As of January 31, 2023, Synopsys carried out an evaluation under the supervision and with the participation of Synopsys' management, including the Chief Executive Officer and Chief Financial Officer, of the effectiveness of the design and operation of Synopsys' disclosure controls and procedures (as such term is defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended (the Exchange Act)). There are inherent limitations to the effectiveness of any system of disclosure controls and procedures. Accordingly, even effective disclosure controls and procedures can only provide reasonable, not absolute, assurance of achieving their control objectives. Our Chief Executive Officer and Chief Financial Officer have concluded that, as of January 31, 2023, Synopsys' disclosure controls and procedures were effective to provide reasonable assurance that information required to be disclosed in the reports Synopsys files and submits under the Exchange Act is recorded, processed, summarized and reported as and when required, and that such information is accumulated and communicated to Synopsys' management, including the Chief Executive Officer and Chief Financial Officer, to allow timely decisions regarding its required disclosure.

(b) *Changes in Internal Control over Financial Reporting.* There were no changes in Synopsys' internal control over financial reporting during the fiscal quarter ended January 31, 2023 that have materially affected, or are reasonably likely to materially affect, Synopsys' internal control over financial reporting.

PART II. OTHER INFORMATION

Item 1. *Legal Proceedings*

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

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

Hungarian Tax Matter

See Note 18 of the Notes to Condensed Consolidated Financial Statements for a discussion of our Hungary audit under the heading "Non-U.S. Examinations."

Bell Semic Actions

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

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

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

In November and December 2022, Synopsys and other EDA vendors filed actions for Declaratory Judgment of invalidity and/or non-infringement as to each of the six patents asserted by Bell Semic in the aforementioned actions. Synopsys and other EDA vendors also filed Motions for Preliminary Injunction seeking to enjoin Bell Semic from proceeding with the ITC investigations and patent infringement lawsuits.

Item 1A. *Risk Factors*

A description of the risk factors associated with our business is set forth below. Some of these risks are highlighted in the following discussion and in Management's Discussion and Analysis of Financial Condition and Results of Operations, Legal Proceedings, and Quantitative and Qualitative Disclosures About Market Risk. The occurrence of any of these risks or additional risks and uncertainties not presently known to us or that we currently believe to be immaterial could materially and adversely affect our business, financial condition, operating results and stock price. These risks and uncertainties could cause our actual results to differ materially from the results contemplated by the forward-looking statements contained in this Quarterly Report on Form 10-Q. Investors should carefully consider all relevant risks and uncertainties before investing in our common stock.

Industry Risks

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

Uncertainty in the macroeconomic environment, including the effects of increased global inflationary pressures and interest rates, potential economic slowdowns or recessions, supply chain disruptions, geopolitical pressures, fluctuations in foreign exchange rates, and the ongoing 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. For example, we continued to experience a minor impact from the current macroeconomic environment in our Software Integrity segment as customers applied elevated levels of scrutiny to purchasing decisions, which has, in some cases, caused some customers to elect shorter term contracts due to their own budget uncertainty.

If these macroeconomic uncertainties persist and economic conditions continue to deteriorate, then the semiconductor and electronics industries could fail to grow. Additionally, 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 export and import restrictions such as the U.S. government's Entity List and Export Regulations (as defined below), see "*Industry Risks – We are subject to governmental export and import requirements that could subject us to liability and restrict our ability to sell our products and services, which could impair our ability to compete in international markets.*"

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

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

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

The growth of the EDA industry as a whole, sales in our Design Automation and Design IP segments, and, to some extent, our Software Integrity segment sales are dependent on the semiconductor and electronics industries. A substantial portion of our business and revenue depends upon the commencement of new design projects by semiconductor manufacturers, systems companies and their customers. The increasing complexity of designs of SoCs, ICs, electronic systems and customers' concerns about managing costs have previously led to, and in the future could lead to, a decrease in design starts and design activity in general. For example, in response to this increasing complexity, some customers may choose to focus on one discrete phase of the design process or opt for less advanced, but less risky, manufacturing processes that may not require the most advanced EDA products. Demand for our products and services could decrease and our financial condition and results of operations could be adversely affected if growth in the semiconductor and electronics industries slows or stalls, including due to increased global inflationary pressures and interest rates, a continued or worsening global supply chain disruption, or the impact of the ongoing COVID-19 pandemic. 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 manufacturing of their semiconductor designs to foundries. Our customers also frequently incorporate third-party IP, whether provided by us or other vendors, into their designs to improve the efficiency of their design process. We work closely with major foundries to ensure that our EDA, IP and manufacturing solutions are compatible with their manufacturing processes. Similarly, we work closely with other major providers of semiconductor IP, particularly microprocessor IP, to optimize our EDA tools for use with their IP designs and to assure that their IP and our own IP products work effectively together, as we may each provide for the design of separate components on the same chip. If we fail to optimize our EDA and IP solutions for use with major foundries' manufacturing processes or major IP providers' products, or if our access to such foundry processes or third-party IP products is hampered, then our solutions may become less desirable to our customers, resulting in an adverse effect on our business and financial condition.

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

In our Design Automation segment, we compete against EDA vendors that offer a variety of products and services, such as Cadence Design Systems, Inc. and Siemens EDA. We also compete with other EDA vendors, including new entrants to the marketplace, that offer products focused on one or more discrete phases of the IC design process. Moreover, our customers internally develop design tools and capabilities that compete with our products.

In our Design IP segment, we compete against a growing number of silicon IP providers as well as our customers' internally developed IP.

In our Software Integrity segment, we compete with other solution providers, many of which focus on specific aspects of software security or quality analysis. We also compete with frequent new entrants, which include start-up companies and more established software companies.

The industries in which we operate are highly competitive, with new competitors entering these markets both domestically and internationally. For example, China has implemented national policies favoring Chinese companies and has formed government-backed investment funds as it seeks to build independent EDA capabilities and compete internationally in the semiconductor industry. The demand for our products and services is dynamic and depends on a number of factors, including 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.

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

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

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

We believe that current Export Regulations do not materially impact our business at this time, but we cannot predict the impact that additional regulatory changes may have on our business in the future. The United States has published significant changes to Export Regulations with respect to Russia and China, and we anticipate additional changes to the Export Regulations in the future. For example, the United States government has implemented controls on advanced computing ICs, computer commodities that contain such ICs, and certain semiconductor manufacturing items, as well as controls on transactions involving items for supercomputer and semiconductor manufacturing end-users. The new controls expand the scope of foreign-produced items subject to license requirements for certain entities on the U.S. government's Entity List. Future changes in the Export Regulations, including changes in the enforcement and scope of such regulations, may create delays in the introduction of our products or services in international markets or could prevent our customers with international operations from deploying our products or services globally. In some cases, such changes could prevent the export or import of our products.

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

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

Reduced customer spending or the loss of customers, particularly our large customers, could adversely affect our business and financial condition. In addition, we and our competitors may acquire businesses and technologies to complement and expand our respective product offerings. Consolidated competitors could have considerable financial resources and channel influence as well as broad geographic reach, which would enable them to be more competitive in product differentiation, pricing, marketing, services, support and more. If 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, legal and political conditions in China, Europe and other regions where we do business, including, for example, changes in China-Taiwan relations, the military conflict between Russia and Ukraine and the related sanctions and other penalties imposed on Russia by the United States, the European Union, the United Kingdom and other countries;
- Economic recessions or uncertainty in financial markets, including the impact of increased global inflationary pressures and interest rates;
- 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, changes in currency exchange rates and difficulty in collecting accounts receivable;
- Inadequate local infrastructure that could result in business disruptions;
- Additional taxes, interest and potential penalties and uncertainty around changes in tax laws of various countries; and
- Other factors beyond our control such as natural disasters, terrorism, civil unrest, war and infectious diseases and pandemics, including COVID-19 and its variants.

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 ongoing geopolitical and economic uncertainty between the U.S. and China, the unknown impact of current and future U.S. and Chinese trade regulations as described above, and other geopolitical risks with respect to China and Taiwan may cause disruptions in the markets and industries we serve and our supply chain, decreased demand from customers for products using our solutions or other disruptions which could, directly or indirectly, materially harm our business, financial condition and results of operations. For more on risks related to government export and import restrictions such as the U.S. government's Entity List and Export Regulations see "*Industry Risks – We are subject to governmental export and import requirements that could subject us to liability and restrict our ability to sell our products and services, which could impair our ability to compete in international markets.*"

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

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

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

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

The ongoing COVID-19 pandemic has caused minor disruptions to our business operations to date, but could have a material adverse effect on our business, operations and financial condition in the future. For example, we have previously 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 imposed restrictions, which significantly curtailed global, regional and national economic activity and have caused substantial volatility and disruption in global financial markets. We are continuing to transition employees back into offices worldwide while maintaining compliance with applicable local, state and national requirements. We may need to further modify our business practices and real estate needs in response to the risks and negative impacts caused by the COVID-19 pandemic.

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 localized surges in COVID-19 cases, continued responses by governments and businesses to COVID-19 and its variants, acceptance and effectiveness of vaccines, 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. In addition, continued weak or worsening economic conditions may result in impairment in value of our tangible and intangible assets. The impact of the ongoing COVID-19 pandemic may also have the effect of heightening many of the other risks and uncertainties described in this *Risk Factors* section.

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 increased global inflationary pressures and interest rates, a sustained global semiconductor shortage, the ongoing COVID-19 pandemic 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 ongoing 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. These systems may be vulnerable to attacks by hackers or compromised due to employee error, malfeasance or other disruptions that could result in unauthorized disclosure or loss of sensitive information. Many employees continue to work remotely based on a hybrid work model, which magnifies the importance of maintaining the integrity of our remote access security measures.

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. It is possible that our security measures may be circumvented again in the future, and any such breach could adversely impact our business, operations 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, react in a timely manner or implement adequate preventative measures. Furthermore, in the operation of our business we also use third-party vendors that have access to our network and store certain sensitive data, including confidential information about our employees, and these third parties are subject to their own cybersecurity threats. Our standard vendor terms and conditions include provisions requiring the use of appropriate security measures to prevent unauthorized use or disclosure of our data, as well as other safeguards. However, that is no guarantee that a breach will not 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 and our ability to sell our products and services.

Our software products, hosted solutions, and software security and quality testing solutions may also be vulnerable to attacks, including phishing, exploits of our code or our system configurations, 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. Furthermore, the risk of state-supported and geopolitical-related cybersecurity incidents may increase due to geopolitical incidents, such as the Russia-Ukraine conflict. 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. 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, which may be at higher than anticipated interest rates;
- Failure to realize expected synergies or cost savings;
- Difficulties in integrating or expanding sales, marketing and distribution functions and administrative systems, including 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 may pursue new product and technology initiatives, and if we fail to successfully carry out these initiatives, we could be adversely impacted.

As part of the evolution of our business, we have made substantial investments to develop new products and enhancements to existing products through our acquisitions and research and development efforts. If we are unable to anticipate technological changes in our industry by introducing new or enhanced products in a timely and cost-effective manner, or if we fail to introduce products that meet market demand, we may lose our competitive position, our products may become obsolete, and our business, 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 as a result of delays or disruptions, export control restrictions or the ongoing 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 the effects of increased global inflationary pressures and interest rates, a sustained global semiconductor shortage and the COVID-19 pandemic.

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

We depend in large part upon the services of our senior management team to drive our future success, and certain team members depart our company from time to time. If we were to lose the services of any member of our senior management team without adequate notice, 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. 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 the ongoing 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 are alleged to infringe on a third party's intellectual property rights. Infringement claims can result in costly and time-consuming litigation, require us to enter into royalty arrangements, subject us to damages or injunctions restricting our sale of products, invalidate a patent or family of patents, require us to refund license fees to our customers or to forgo future payments, or require us to redesign certain of our products, any one of which could harm our business and operating results. For example, some customers have requested we defend and indemnify them against claims for patent infringement asserted in various district courts and at the U.S. International Trade Commission by Bell Semiconductor LLC (Bell Semic), a patent monetization entity, based on Bell Semic's allegation that the customers' use of one or more features of certain of our products infringes one or more of six patents held by Bell Semic. We are defending some of our customers consistent with the terms of our End User License Agreement.

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

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

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

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

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

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

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 January 31, 2023, approximately 65% of our worldwide cash and cash equivalents balance is held by our international subsidiaries. We intend to meet our U.S. cash spending needs primarily through our existing U.S. cash balances, ongoing U.S. cash flows, and available credit under our term loan and revolving credit facilities. Should our cash spending needs in the U.S. rise and exceed these liquidity sources, we may be required to incur additional debt at higher than anticipated interest rates or access other funding sources, which could negatively affect our 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, changes in our geographical earnings mix, unfavorable government reviews of our tax returns, material differences between our forecasted and actual annual effective tax rates, or future changes to our tax structure.

Our operations are subject to income and transaction taxes in the 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 suspends the use of certain corporate research and development tax credits for a three-year period beginning in our fiscal 2021, which resulted in an increase to our tax expense. On February 9, 2022, California Governor Newsom signed into law 2022 CA SB 113, which shortened the previously enacted suspension on the use of research and development tax credits to a two-year period covering our fiscal 2021 and 2022.

On December 22, 2017, the Tax Act was enacted, which significantly changed prior U.S. tax law and includes numerous provisions that affect our business. The Tax Act includes certain provisions that began to affect our income in the first quarter of fiscal 2019, while other sections of the Tax Act and related regulations will begin to affect our business in the first quarter of fiscal 2023. One of these provisions includes the requirement to capitalize and amortize research and development expenditures instead of expensing such expenditures as incurred. This will result in a significant increase to our cash tax liability and will also decrease our effective tax rate due to increasing the foreign derived intangible income deduction. The state of future legislation remains uncertain and, if enacted, may materially affect our financial position.

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

On October 8, 2021, the Organization for Economic Co-operation and Development (OECD) announced the OECD/G20 Inclusive Framework on Base Erosion and Profit Shifting (Framework) which agreed to a two-pillar solution to address tax challenges arising from digitalization of the economy. On December 20, 2021, the OECD released Pillar Two Model Rules defining the global minimum tax rules, which contemplate a 15% minimum tax rate. The OECD continues to release additional guidance on these rules and the Framework calls for law enactment by OECD and G20 members 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. The final determination in an audit may be materially different than the treatment reflected in our historical income tax provisions and accruals. An assessment of additional taxes because of an audit could adversely affect our income tax provision and net income in the periods for which that determination is made. For further discussion on any ongoing audits, see Note 18 of the *Notes to Condensed 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, other regulatory changes, and changes in our forecasts of future income could result in an adjustment to the deferred tax asset and a related charge to earnings that could materially affect our financial results.

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

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

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

We prepare our consolidated financial statements in conformity with U.S. GAAP. These principles are subject to interpretation by the FASB, the SEC and various bodies formed to interpret and create appropriate accounting principles and guidance. The FASB periodically issues new accounting standards on a variety of topics, including, for example, revenue recognition and accounting for leases. These and other such standards generally result in different accounting principles, which may significantly impact our reported results or could result in variability of our financial results.

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

We may be subject to legal claims or regulatory matters involving stockholder, consumer, employment, customer, supplier, competition and other issues on a global basis. Litigation is subject to inherent uncertainties, and unfavorable rulings could occur. An unfavorable ruling could include monetary damages or, in cases for which injunctive relief is sought, an injunction prohibiting us from manufacturing or selling one or more products. If we were to receive an unfavorable ruling on a matter, our business and results of operations could be materially harmed. Further information regarding certain of these matters is contained in Part II, Item 1, *Legal Proceedings.*

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. Our compliance programs and compliance training for employees may not prevent our employees, contractors or agents from breaching or circumventing our policies or violating applicable laws and regulations. Failure of our control systems and compliance programs to prevent error, fraud or violations of law could have a material adverse impact on our business.

General Risks

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

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

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

Catastrophic events and the effects of climate change may disrupt our business and harm our operating results.

Due to the global nature of our business, our operating results may be negatively impacted by catastrophic events and the effects of climate change 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 ongoing COVID-19 pandemic), or other catastrophic events or climate change-related events could cause system interruptions, delays in our product development and loss of critical data and could prevent us from fulfilling our customers' orders. In particular, our sales and infrastructure are vulnerable to regional or worldwide health conditions, including the effects of the outbreak of contagious diseases such as the COVID-19 pandemic. Moreover, our corporate headquarters, a significant portion of our research and development activities, our data centers, and certain other critical business operations are located in California, near major earthquake faults and sites of recent wildfires, which may become more frequent, along with other extreme weather events, due to climate change. A catastrophic event or other extreme weather event that results in the destruction or disruption of our data centers or our critical business or 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 2. *Unregistered Sales of Equity Securities and Use of Proceeds*

In December 2022, we entered into an accelerated stock repurchase agreement (the December 2022 ASR) to repurchase an aggregate of $300.0 million of our common stock. Pursuant to the December 2022 ASR, we made a prepayment of $300.0 million to receive initial deliveries of shares valued at $255.0 million. The remaining balance of $45.0 million was settled in February 2023. Total shares purchased under the December 2022 ASR were approximately 0.9 million shares at an average purchase price of $335.39 per share.

During the three months ended January 31, 2023, we also repurchased on the open market approximately 18.2 thousand shares of our common stock at an average price of $314.77 per share for an aggregate purchase price of $5.7 million.

The table below sets forth information regarding our repurchases of our common stock during the three months ended January 31, 2023:

Period [(1)]	Total number of shares purchased [(2)]	Average price paid per share [(2)]	Total number of shares purchased as part of publicly announced programs [(2)]	Maximum approximate dollar value of shares that may yet be purchased under the programs[(1)]
Month #1				
October 30, 2022 through December 3, 2022	—	$ —	—	$ 1,400,000,207
Month #2				
December 4, 2022 through December 31, 2022	787,978	$ 323.81	787,474	$ 1,099,841,437
Month #3				
January 1, 2023 through January 28, 2023	17,680	$ 314.76	—	$ 1,094,276,393
Total	805,658	$ 323.62	787,474	$ 1,094,276,393

(1) *As of January 31, 2023, $1.1 billion remained available for future repurchases under the Program.*
(2) *Amounts are calculated based on the settlement date.*

See Note 13 of the *Notes to Condensed Consolidated Financial Statements* for more information on the Program.

Item 6. *Exhibits*

Exhibit Number	Exhibit Description	Incorporated By Reference: Form	File No.	Exhibit	Filing Date	Filed Herewith
3.1	Amended and Restated Certificate of Incorporation	10-Q	000-19807	3.1	9/15/2003	
3.2	Amended and Restated Bylaws	10-K	000-19807	3.2	12/15/2020	
4.1	Specimen Common Stock Certificate	S-1	33-45138	4.3	2/24/1992 (effective date)	
10.1*	Executive Incentive Plan, as amended					X
10.2*	Offer Letter dated November 23, 2022 by and between Shelagh Glaser and Synopsys, Inc.	8-K	000-19807	10.1	11/29/2022	
10.3	Fifth Extension and Amendment Agreement, dated December 14, 2022, among Synopsys as Borrower, the Lenders parties thereto and JPMorgan Chase Bank, N.A., as administrative agent for the lenders.	8-K	000-19807	10.1	12/14/2022	
31.1	Certification of Chief Executive Officer pursuant to Rule 13a-14(a) or Rule 15d-14(a) of the Exchange Act					X
31.2	Certification of Chief Financial Officer pursuant to Rule 13a-14(a) or Rule 15d-14(a) of the Exchange Act					X
32.1+	Certification of Chief Executive Officer and Chief Financial Officer furnished pursuant to Rule 13a-14(b) or Rule 15d-14(b) of the Exchange Act and Section 1350 of Chapter 63 of Title 18 of the United States Code					X
101.INS	Inline XBRL Instance Document					X
101.SCH	Inline XBRL Taxonomy Extension Schema Document					X
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 (formatted as Inline XBRL and contained in Exhibit 101)					

* Indicates a management contract, compensatory plan or arrangement.

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

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this Quarterly Report on Form 10-Q to be signed on its behalf by the undersigned thereunto duly authorized.

SYNOPSYS, INC.

Date: February 17, 2023	By:	/s/ SHELAGH GLASER
		Shelagh Glaser **Chief Financial Officer** **(Principal Financial Officer)**