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

FORM 10-Q

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

For the quarterly period ended June 30, 2023

OR

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

For the transition period from ________ to

Commission File Number: 001-38263

ALTAIR ENGINEERING INC.
(Exact name of registrant as specified in its charter)

Delaware	**38-2591828**
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)
1820 East Big Beaver Road, Troy, Michigan	**48083**
(Address of principal executive offices)	(Zip Code)

(248) 614-2400
(Registrant's telephone number, including area code)

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

Title of each class	Trading Symbol	Name of each exchange on which registered
Class A Common Stock $0.0001 par value per share	**ALTR**	**The 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 ☒

Indicate the number of shares outstanding of each of the issuer's classes of common stock, as of the latest practicable date.
On July 17, 2023, there were 54,072,791 shares of the registrant's Class A common stock outstanding and 27,164,574 shares of the registrant's Class B common stock outstanding.

ALTAIR ENGINEERING INC. AND SUBSIDIARIES

FORM 10-Q

FOR THE QUARTER ENDED JUNE 30, 2023

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PART I – FINANCIAL INFORMATION

Item 1. Financial Statements

ALTAIR ENGINEERING INC. AND SUBSIDIARIES
CONSOLIDATED BALANCE SHEETS

(In thousands)	June 30, 2023 (Unaudited)	December 31, 2022
ASSETS		
CURRENT ASSETS:		
Cash and cash equivalents	$ 418,338	$ 316,146
Accounts receivable, net	124,260	170,279
Income tax receivable	14,505	11,259
Prepaid expenses and other current assets	29,678	29,142
Total current assets	586,781	526,826
Property and equipment, net	39,107	37,517
Operating lease right of use assets	30,284	33,601
Goodwill	453,093	449,048
Other intangible assets, net	94,642	107,609
Deferred tax assets	8,183	9,727
Other long-term assets	43,717	40,410
TOTAL ASSETS	$ 1,255,807	$ 1,204,738
LIABILITIES AND STOCKHOLDERS' EQUITY		
CURRENT LIABILITIES:		
Accounts payable	$ 4,682	$ 10,434
Accrued compensation and benefits	35,951	42,456
Current portion of operating lease liabilities	9,557	10,396
Other accrued expenses and current liabilities	66,044	56,371
Deferred revenue	121,853	113,081
Current portion of convertible senior notes, net	81,161	—
Total current liabilities	319,248	232,738
Convertible senior notes, net	225,320	305,604
Operating lease liabilities, net of current portion	21,337	24,065
Deferred revenue, non-current	26,694	31,379
Other long-term liabilities	42,993	41,216
TOTAL LIABILITIES	635,592	635,002
Commitments and contingencies		
STOCKHOLDERS' EQUITY:		
Preferred stock ($0.0001 par value), authorized 45,000 shares, none issued and outstanding	—	—
Common stock ($0.0001 par value)		
Class A common stock, authorized 513,797 shares, issued and outstanding 53,951 and 52,277 shares as of June 30, 2023, and December 31, 2022, respectively	5	5
Class B common stock, authorized 41,203 shares, issued and outstanding 27,175 and 27,745 shares as of June 30, 2023, and December 31, 2022	3	3
Additional paid-in capital	790,184	721,307
Accumulated deficit	(145,816)	(121,577)
Accumulated other comprehensive loss	(24,161)	(30,002)
TOTAL STOCKHOLDERS' EQUITY	620,215	569,736
TOTAL LIABILITIES AND STOCKHOLDERS' EQUITY	$ 1,255,807	$ 1,204,738

See accompanying notes to consolidated financial statements.

ALTAIR ENGINEERING INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF OPERATIONS
(Unaudited)

(in thousands, except per share data)	Three Months Ended June 30, 2023	Three Months Ended June 30, 2022	Six Months Ended June 30, 2023	Six Months Ended June 30, 2022
Revenue				
License	$ 87,738	$ 82,688	$ 200,147	$ 188,857
Maintenance and other services	37,583	34,205	74,817	68,933
Total software	125,321	116,893	274,964	257,790
Software related services	6,664	7,376	13,764	16,437
Total software and related services	131,985	124,269	288,728	274,227
Client engineering services	8,034	7,047	15,810	15,059
Other	1,142	1,340	2,657	3,151
Total revenue	141,161	132,656	307,195	292,437
Cost of revenue				
License	3,981	4,120	8,805	8,807
Maintenance and other services	13,639	12,884	28,065	25,603
Total software	17,620	17,004	36,870	34,410
Software related services	5,308	5,464	10,924	11,499
Total software and related services	22,928	22,468	47,794	45,909
Client engineering services	6,767	5,914	13,391	12,555
Other	1,102	1,141	2,347	2,662
Total cost of revenue	30,797	29,523	63,532	61,126
Gross profit	110,364	103,133	243,663	231,311
Operating expenses:				
Research and development	55,277	50,437	108,528	97,516
Sales and marketing	44,982	41,153	88,474	78,993
General and administrative	18,622	18,370	36,573	35,796
Amortization of intangible assets	7,625	6,208	15,439	12,111
Other operating expense (income), net	127	(5,767)	5,732	(6,548)
Total operating expenses	126,633	110,401	254,746	217,868
Operating (loss) income	(16,269)	(7,268)	(11,083)	13,443
Interest expense	1,528	700	3,054	1,285
Other (income) expense, net	(4,195)	21,907	(7,808)	23,975
Loss before income taxes	(13,602)	(29,875)	(6,329)	(11,817)
Income tax expense	8,678	3,899	17,910	10,429
Net loss	$ (22,280)	$ (33,774)	$ (24,239)	$ (22,246)
Loss per share:				
Net loss per share attributable to common stockholders, basic and diluted	$ (0.28)	$ (0.43)	$ (0.30)	$ (0.28)
Weighted average shares outstanding:				
Weighted average number of shares used in computing net loss per share, basic and diluted	79,986	78,948	80,088	79,204

See accompanying notes to consolidated financial statements.

ALTAIR ENGINEERING INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF COMPREHENSIVE LOSS
(Unaudited)

(in thousands)	Three Months Ended June 30, 2023	Three Months Ended June 30, 2022	Six Months Ended June 30, 2023	Six Months Ended June 30, 2022
Net loss	$ (22,280)	$ (33,774)	$ (24,239)	$ (22,246)
Other comprehensive (loss) income, net of tax:				
Foreign currency translation (net of tax effect of $0 for all periods)	(1,340)	(15,949)	5,892	(20,112)
Retirement related benefit plans (net of tax effect of $(79), $7, $(79) and $7, respectively)	(70)	177	(51)	282
Total other comprehensive (loss) income	(1,410)	(15,772)	5,841	(19,830)
Comprehensive loss	$ (23,690)	$ (49,546)	$ (18,398)	$ (42,076)

See accompanying notes to consolidated financial statements.

ALTAIR ENGINEERING INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CHANGES IN STOCKHOLDERS' EQUITY
(Unaudited)

	Common stock				Additional		Accumulated other	Total
	Class A		Class B		paid-in	Accumulated	comprehensive	stockholders'
(in thousands)	Shares	Amount	Shares	Amount	capital	deficit	loss	equity
Balance as of December 31, 2022	52,277	$ 5	27,745	$ 3	$ 721,307	$ (121,577)	$ (30,002)	$ 569,736
Net loss	—	—	—	—	—	(1,959)	—	(1,959)
Issuance of common stock for acquisitions	34	—	—	—	—	—	—	—
Repurchase and retirement of common stock	(91)	—	—	—	(4,256)	—	—	(4,256)
Issuance of common stock for employee stock purchase program	92	—	—	—	3,648	—	—	3,648
Exercise of stock options	265	—	—	—	10,324	—	—	10,324
Vesting of restricted stock	336	—	—	—	—	—	—	—
Conversion of Class B to Class A common stock	240	—	(240)	—	—	—	—	—
Stock-based compensation	—	—	—	—	22,161	—	—	22,161
Foreign currency translation, net of tax	—	—	—	—	—	—	7,232	7,232
Retirement related benefit plans, net of tax	—	—	—	—	—	—	19	19
Balance as of March 31, 2023	53,153	5	27,505	3	753,184	(123,536)	(22,751)	606,905
Net loss	—	—	—	—	—	(22,280)	—	(22,280)
Exercise of stock options	382	—	—	—	13,264	—	—	13,264
Vesting of restricted stock	86	—	—	—	—	—	—	—
Conversion of Class B to Class A common stock	330	—	(330)	—	—	—	—	—
Stock-based compensation	—	—	—	—	23,736	—	—	23,736
Foreign currency translation, net of tax	—	—	—	—	—	—	(1,340)	(1,340)
Retirement related benefit plans, net of tax	—	—	—	—	—	—	(70)	(70)
Balance as of June 30, 2023	53,951	$ 5	27,175	$ 3	$ 790,184	$ (145,816)	$ (24,161)	$ 620,215

See accompanying notes to consolidated financial statements.

ALTAIR ENGINEERING INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CHANGES IN STOCKHOLDERS' EQUITY
(Unaudited)

	Common stock				Additional		Accumulated other	Total
	Class A		Class B		paid-in	Accumulated	comprehensive	stockholders'
(in thousands)	Shares	Amount	Shares	Amount	capital	deficit	loss	equity
Balance as of December 31, 2021	51,524	$ 5	27,745	$ 3	$ 724,226	$ (102,087)	$ (8,950)	$ 613,197
Cumulative effect of an accounting change	—	—	—	—	(50,009)	23,939	—	(26,070)
Net income	—	—	—	—	—	11,528	—	11,528
Issuance of common stock for employee stock purchase program	77	—	—	—	4,187	—	—	4,187
Exercise of stock options	86	—	—	—	238	—	—	238
Vesting of restricted stock	324	—	—	—	—	—	—	—
Stock-based compensation	—	—	—	—	19,403	—	—	19,403
Foreign currency translation, net of tax	—	—	—	—	—	—	(4,163)	(4,163)
Retirement related benefit plans, net of tax	—	—	—	—	—	—	105	105
Balance as of March 31, 2022	52,011	5	27,745	3	698,045	(66,620)	(13,008)	618,425
Net loss	—	—	—	—	—	(33,774)	—	(33,774)
Settlement of convertible senior notes	—	—	—	—	(29,756)	—	—	(29,756)
Repurchase and retirement of common stock	(85)	—	—	—	(4,387)	—	—	(4,387)
Reclassification of mezzanine equity to permanent equity	—	—	—	—	784	—	—	784
Exercise of stock options	222	—	—	—	1,452	—	—	1,452
Vesting of restricted stock	43	—	—	—	—	—	—	—
Stock-based compensation	—	—	—	—	21,200	—	—	21,200
Foreign currency translation, net of tax	—	—	—	—	—	—	(15,949)	(15,949)
Retirement related benefit plans, net of tax	—	—	—	—	—	—	177	177
Balance as of June 30, 2022	52,191	$ 5	27,745	$ 3	$ 687,338	$ (100,394)	$ (28,780)	$ 558,172

See accompanying notes to consolidated financial statements.

ALTAIR ENGINEERING INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CASH FLOWS
(Unaudited)

(In thousands)	Six Months Ended June 30, 2023	2022
OPERATING ACTIVITIES:		
Net loss	$ (24,239)	$ (22,246)
Adjustments to reconcile net loss to net cash provided by operating activities:		
Depreciation and amortization	19,488	15,819
Stock-based compensation expense	45,897	39,814
Amortization of debt issuance costs	930	829
Deferred income taxes	2,015	(64)
Loss (gain) on mark-to-market adjustment of contingent consideration	7,987	(5,304)
Expense on repurchase of convertible senior notes	—	16,621
Other, net	405	229
Changes in assets and liabilities:		
Accounts receivable, net	45,077	29,270
Prepaid expenses and other current assets	(3,166)	2,056
Other long-term assets	(2,516)	4,397
Accounts payable	(5,529)	(2,070)
Accrued compensation and benefits	(6,591)	(9,742)
Other accrued expenses and current liabilities	4,857	(61,648)
Deferred revenue	4,614	10,080
Net cash provided by operating activities	89,229	18,041
INVESTING ACTIVITIES:		
Capital expenditures	(6,184)	(3,457)
Payments for acquisition of businesses, net of cash acquired	(721)	(37,660)
Other investing activities, net	(1,452)	(322)
Net cash used in investing activities	(8,357)	(41,439)
FINANCING ACTIVITIES:		
Proceeds from the exercise of common stock options	23,507	1,689
Payments for repurchase and retirement of common stock	(6,255)	(4,387)
Proceeds from employee stock purchase plan contributions	3,797	4,431
Proceeds from issuance of convertible senior notes, net of discounts and commissions	—	224,265
Repurchase of convertible senior notes	—	(192,792)
Payments of debt issuance costs	—	(1,157)
Other financing activities	(48)	(131)
Net cash provided by financing activities	21,001	31,918
Effect of exchange rate changes on cash, cash equivalents and restricted cash	(44)	(6,226)
Net increase in cash, cash equivalents and restricted cash	101,829	2,294
Cash, cash equivalents and restricted cash at beginning of year	316,958	414,012
Cash, cash equivalents and restricted cash at end of period	$ 418,787	$ 416,306
Supplemental disclosure of cash flow:		
Interest paid	$ 2,121	$ 289
Income taxes paid	$ 8,901	$ 4,891
Supplemental disclosure of non-cash investing and financing activities:		
Property and equipment in accounts payable, other current liabilities and other liabilities	$ 427	$ 1,530

See accompanying notes to consolidated financial statements.

1. Organization and description of business

Altair Engineering Inc. (“Altair” or the “Company”) is incorporated in the state of Delaware. The Company is a global leader in computational science and artificial intelligence enabling organizations across broad industry segments to drive smarter decisions in an increasingly connected world. Altair delivers software and cloud solutions in the areas of simulation, high-performance computing (“HPC”), data analytics, and artificial intelligence (“AI”). Altair’s products and services leverage computational science to drive innovation and intelligent decisions for a more connected, safe, and sustainable future. The Company is headquartered in Troy, Michigan.

Basis of presentation

The accompanying unaudited consolidated financial statements have been prepared in accordance with United States generally accepted accounting principles (“GAAP”) and applicable rules and regulations of the Securities and Exchange Commission (“SEC”) regarding interim financial information. Accordingly, the accompanying statements do not include all the information and notes required by GAAP for complete financial statements. The accompanying unaudited consolidated financial statements should be read in conjunction with the Company’s audited consolidated financial statements (and notes thereto) for the year ended December 31, 2022, included in the most recent Annual Report on Form 10-K filed with the SEC.

Change in Classification of Indirect Costs

Beginning in the first quarter of 2023, the Company refined its classification of certain indirect costs to reflect the way management is now reviewing the information in decision making and to improve comparability with peers. These indirect costs include certain IT, facilities, and depreciation expenses that were previously reported primarily in General and administrative expense. These indirect costs have now been reclassified to Research and development, Sales and marketing, and General and administrative expenses based on global headcount. Management believes this refined methodology better reflects the nature of the costs and financial performance of the Company.

As a result, the Company’s consolidated statements of operations have been recast for prior periods presented to reflect the effects of the changes to Research and development, Sales and marketing, and General and administrative expense. There was no net impact to total operating expenses, income from operations, net income or net income per share for any periods presented. The consolidated balance sheets, consolidated statements of comprehensive income, consolidated statements of changes in stockholders’ equity, and the consolidated statements of cash flows were not affected by changes in the presentation of these costs.

The following table summarizes the changes made to the consolidated statement of operations for the three and six months ended June 30, 2022 (in thousands):

	Three Months Ended June 30, 2022		Six Months Ended June 30, 2022	
	Previously Reported	Recast	Previously Reported	Recast
Operating expenses:				
Research and development	$ 46,477	$ 50,437	$ 89,571	$ 97,516
Sales and marketing	39,116	41,153	74,798	78,993
General and administrative	24,367	18,370	47,936	35,796
Amortization of intangible assets	6,208	6,208	12,111	12,111
Other operating income, net	(5,767)	(5,767)	(6,548)	(6,548)
Total operating expenses	$ 110,401	$ 110,401	$ 217,868	$ 217,868

Use of estimates

The preparation of the consolidated financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosures of contingent assets and liabilities at the date of the financial statements and reported amounts of revenue and expenses during the reporting periods. On an ongoing basis, management evaluates its significant estimates including the stand alone selling price, or SSP, for each distinct performance obligation included in customer contracts with multiple performance obligations, valuation of acquired intangible assets in business combinations, the incremental borrowing rate used in the valuation of lease liabilities, the determination of the period of benefit for capitalized costs to obtain a contract, fair value of convertible senior notes, provision for credit loss, tax valuation allowances, liabilities for uncertain tax provisions, impairment of goodwill and intangible assets, useful lives of intangible assets, and stock-based compensation. Actual results could differ from those estimates.

Significant accounting policies

There have been no material changes to our significant accounting policies as of and for the six months ended June 30, 2023, as compared to the significant accounting policies described in our Annual Report on Form 10-K for the year ended December 31, 2022.

2. Recent accounting guidance

Accounting standards not yet adopted

Reference Rate Reform – In March 2020, the FASB issued ASU 2020-04. *Reference Rate Reform (Topic 848) - Facilitation of the Effects of Reference Rate Reform on Financial Reporting.* This ASU provides optional expedients and exceptions for applying U.S. GAAP to contract modifications and hedging relationships, subject to meeting certain criteria, that reference LIBOR or another rate that is expected to be discontinued. In October 2022, the FASB Board voted to amend the sunset date of ASU 2020-04 to December 31, 2024. The Company is currently evaluating the impact of this new guidance on its consolidated financial statements and related disclosures and does not expect this guidance to have a material effect on its consolidated financial statements.

3. Revenue from contracts with customers

Disaggregation of revenue

The Company disaggregates its software revenue by type of performance obligation and timing of revenue recognition as follows (in thousands):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2023	2022	2023	2022
Term licenses and other	$ 78,781	$ 72,485	$ 182,090	$ 166,530
Perpetual licenses	8,957	10,203	18,057	22,327
Maintenance	36,041	33,035	71,642	66,372
Professional software services	1,542	1,170	3,175	2,561
Software related services	6,664	7,376	13,764	16,437
Client engineering services	8,034	7,047	15,810	15,059
Other	1,142	1,340	2,657	3,151
Total revenue	$ 141,161	$ 132,656	$ 307,195	$ 292,437

The Company derived approximately 12.8% and 12.7% of its total revenue through indirect sales channels for the six months ended June 30, 2023 and 2022, respectively.

Costs to obtain a contract

As of June 30, 2023, and December 31, 2022, respectively, capitalized costs to obtain a contract were $4.7 million and $3.9 million recorded in Prepaid and other current assets and $0.2 million and $0.4 million recorded in Other long-term assets in the Company’s consolidated balance sheets. Sales commissions were $2.1 million and $4.1 million, respectively, for the three and six months ended June 30, 2023, and $2.1 million and $4.2 million, respectively, for the three and six months ended June 30, 2022. Sales commissions were included in Sales and marketing expense in the Company’s consolidated statement of operations.

Contract assets

As of June 30, 2023, and December 31, 2022, respectively, contract assets were $7.4 million and $6.3 million included in Accounts receivable, and $3.3 million and $2.3 million included in Prepaid expenses and other current assets in the Company's consolidated balance sheets.

Deferred revenue

Approximately $84.6 million of revenue recognized during the six months ended June 30, 2023, was included in deferred revenue at the beginning of the year.

Revenue allocated to remaining performance obligations represents contracted revenue that has not yet been recognized, which includes deferred revenue and amounts that will be invoiced and recognized as revenue in future periods. Contracted revenue not yet recognized was $198.6 million and $147.6 million as of June 30, 2023 and 2022, respectively. Of the amount recorded as of June 30, 2023, the Company expects to recognize approximately 74% over the next 12 months and the remainder thereafter.

4. Supplementary Information

Acquisitions

The Company finalized the valuation of the acquisition of Concept Engineering as of June 30, 2023. The Company finalized the valuation of three other prior year acquisitions as of March 31, 2023. There were no changes to the preliminary fair value of assets acquired and liabilities assumed, as previously reported.

The Company recognized a $1.0 million loss and an $8.0 million loss, respectively, for the three and six months ended June 30, 2023, and a $5.3 million gain for both the three and six months ended June 30, 2022, from a mark-to-market adjustment of contingent consideration associated with a prior year acquisition. The mark-to-market adjustments were included in Other operating expense (income), net in the consolidated statements of operations.

Cash, cash equivalents and restricted cash

The Company considers all highly liquid investments with original or remaining maturities of 90 days or less at the date of purchase to be cash equivalents. Cash and cash equivalents are recorded at cost, which approximates fair value. Restricted cash is included in other long-term assets on the consolidated balance sheets. The following table provides a reconciliation of cash, cash equivalents and restricted cash reported in the consolidated balance sheets that sum to the total of the amounts reported in the consolidated statement of cash flows (in thousands):

	June 30, 2023	December 31, 2022
Cash and cash equivalents	$ 418,338	$ 316,146
Restricted cash included in other long-term assets	449	812
Total cash, cash equivalents, and restricted cash	$ 418,787	$ 316,958

Restricted cash represents amounts required for the payment of potential health insurance claims and term deposits for bank guarantees.

Property and equipment, net

Property and equipment consisted of the following (in thousands):

	June 30, 2023	December 31, 2022
Land	$ 7,994	$ 7,994
Building and improvements	17,938	16,995
Computer equipment and software	46,884	45,340
Furniture, equipment and other	12,356	13,335
Leasehold improvements	7,354	8,766
Right-of-use assets under finance leases	2,066	2,122
Total property and equipment	94,592	94,552
Less: accumulated depreciation and amortization	55,485	57,035
Property and equipment, net	$ 39,107	$ 37,517

Depreciation expense, including amortization of right-of-use assets under finance leases, was $2.1 million and $4.0 million for the three and six months ended June 30, 2023, respectively, and $1.9 million and $3.7 million for the three and six months ended June 30, 2022, respectively.

Other liabilities

The following table provides the details of other accrued expenses and current liabilities (in thousands):

	June 30, 2023	December 31, 2022
Obligations for acquisition of businesses	$ 21,561	$ 13,136
Income taxes payable	17,001	11,524
Accrued VAT	5,515	8,402
Employee stock purchase plan obligations	4,118	3,969
Accrued professional fees	3,147	3,637
Accrued royalties	2,072	2,593
Non-income tax liabilities	1,778	2,465
Billings in excess of cost	1,689	1,874
Defined contribution plan liabilities	1,348	1,393
Other current liabilities	7,815	7,378
Total	$ 66,044	$ 56,371

The following table provides details of other long-term liabilities (in thousands):

	June 30, 2023	December 31, 2022
Deferred tax liabilities	$ 18,065	$ 16,775
Pension and other post retirement liabilities	13,258	12,273
Other long-term liabilities	11,670	12,168
Total	$ 42,993	$ 41,216

Other (income) expense, net

Other (income) expense, net consists of the following (in thousands):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2023	2022	2023	2022
Interest income	$ (3,984)	$ (455)	$ (6,869)	$ (300)
Foreign exchange (gain) loss	(211)	5,741	(939)	7,654
Expense on repurchase of convertible senior notes	—	16,621	—	16,621
Other (income) expense, net	$ (4,195)	$ 21,907	$ (7,808)	$ 23,975

5. Goodwill and other intangible assets

Goodwill

The changes in the carrying amount of goodwill, which is attributable to the Software reportable segment, were as follows (in thousands):

Balance as of December 31, 2022	$	449,048
Effects of foreign currency translation and other		4,045
Balance as of June 30, 2023	$	453,093

Other intangible assets

A summary of other intangible assets is shown below (in thousands):

	June 30, 2023						
	Weighted average amortization period		Gross carrying amount		Accumulated amortization		Net carrying amount
Definite-lived intangible assets:							
Developed technology	4-6 years	$	138,095	$	78,843	$	59,252
Customer relationships	7-10 years		57,611		33,625		23,986
Other intangibles	4-10 years		1,454		428		1,026
Total definite-lived intangible assets			197,160		112,896		84,264
Indefinite-lived intangible assets:							
Trade names			10,378				10,378
Total other intangible assets		$	207,538	$	112,896	$	94,642

	December 31, 2022						
	Weighted average amortization period		Gross carrying amount		Accumulated amortization		Net carrying amount
Definite-lived intangible assets:							
Developed technology	4-6 years	$	135,703	$	67,665	$	68,038
Customer relationships	7-10 years		57,143		29,148		27,995
Other intangibles	4-10 years		1,448		298		1,150
Total definite-lived intangible assets			194,294		97,111		97,183
Indefinite-lived intangible assets:							
Trade names			10,426				10,426
Total other intangible assets		$	204,720	$	97,111	$	107,609

Amortization expense related to intangible assets was $7.6 million and $15.4 million for the three and six months ended June 30, 2023, respectively, and $6.2 million and $12.1 million for the three and six months ended June 30, 2022, respectively.

6. Debt

Convertible senior notes

2027 Notes

In June 2022, the Company issued $230.0 million aggregate principal amount of 1.750% convertible senior notes due in 2027 (the "2027 Notes"), which includes the initial purchaser's exercise in full of its option to purchase an additional $30.0 million principal amount of the 2027 Notes, in a private offering. The net proceeds from the issuance of the 2027 Notes was $224.3 million after deducting discounts, commissions and estimated issuance costs. The 2027 Notes bear interest at a rate of 1.750% per year, payable semi-annually in arrears on June 15 and December 15 of each year, which commenced on December 15, 2022. The 2027 Notes mature on June 15, 2027, unless, earlier repurchased or redeemed by the Company or converted pursuant to their terms. The 2027 Notes have an initial conversion rate of 13.9505 shares of the Company's Class A common stock per $1,000 principal amount of 2027 Notes, which is equivalent to an initial conversion price of approximately $71.68 per share of its Class A common stock. Refer to the Company's consolidated financial statements for the year ended December 31, 2022, for details of the issuance of the 2027 Notes.

The Company may settle the 2027 Notes in cash, shares of Class A common stock or a combination of cash and shares of the Class A common stock, at the Company's election, in the manner and subject to the terms and conditions provided in the Indenture.

During the period ended June 30, 2023, the conditions allowing holders of the 2027 Notes to convert were not met. Therefore, the 2027 Notes remained classified as long-term debt on the consolidated balance sheet as of June 30, 2023.

2024 Notes

In June 2019, the Company issued $230.0 million aggregate principal amount of 0.25% convertible senior notes due in 2024 (the "2024 Notes" and together with the 2027 Notes, the "Convertible Notes"), which includes the underwriters' exercise in full of their option to purchase an additional $30.0 million principal amount of the 2024 Notes, in a public offering. The net proceeds from the issuance of the 2024 Notes were $221.9 million after deducting the underwriting discounts and commissions and estimated issuance costs. The 2024 Notes bear interest at a rate of 0.25% per year, payable semi-annually in arrears on June 1 and December 1 of each year. The 2024 Notes mature on June 1, 2024, unless, earlier repurchased or redeemed by the Company or converted pursuant to their terms. The 2024 Notes have an initial conversion rate of 21.5049 shares of the Company's Class A common stock per $1,000 principal amount of 2024 Notes, which is equivalent to an initial conversion price of approximately $46.50 per share of its Class A common stock. Refer to the Company's consolidated financial statements for the year ended December 31, 2022, for details of the issuance of the 2024 Notes.

During the year ended December 31, 2022, using proceeds from the issuance of the 2027 Notes, the Company entered into separate privately negotiated transactions with certain holders of the 2024 Notes to repurchase and retire $148.2 million aggregate principal amount of the 2024 Notes for an aggregate amount of $192.4 million of cash including accrued and unpaid interest.

As of June 30, 2023, $81.8 million principal amount of the 2024 Notes remained outstanding. The Company may settle the 2024 Notes in cash, shares of Class A common stock or a combination of cash and shares of the Class A common stock, at the Company's election, in the manner and subject to the terms and conditions provided in the indenture for the 2024 Notes.

For at least twenty trading days during the last thirty consecutive trading days in the quarter ended June 30, 2023, the last reported sale price of the Company's Class A common stock was greater than or equal to 130% of the conversion price of the 2024 Notes. As a result, the 2024 Notes were convertible at the option of the holders and were classified as current liabilities on the consolidated balance sheet as of June 30, 2023.

The net carrying value of the liability component of the 2027 and 2024 Notes was as follows (in thousands):

	June 30, 2023		December 31, 2022	
	2027 Notes	2024 Notes	2027 Notes	2024 Notes
Principal	$ 230,000	$ 81,754	$ 230,000	$ 81,754
Less: unamortized debt issuance costs	4,680	593	5,247	903
Net carrying amount	$ 225,320	$ 81,161	$ 224,753	$ 80,851

The interest expense recognized related to the 2027 and 2024 Notes was as follows (in thousands):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2023	2022	2023	2022
Contractual interest expense	$ 1,060	$ 194	$ 2,121	$ 338
Amortization of debt issuance costs and discount	435	406	899	818
Total	$ 1,495	$ 600	$ 3,020	$ 1,156

As of June 30, 2023, the "if converted value" of the 2027 Notes exceeded the principal amount by $13.3 million, and the "if converted value" of the 2024 Notes exceeded the principal amount by $51.6 million.

Credit agreement

Revolving credit facility

The Company has a $200.0 million credit facility with a maturity date of December 31, 2025 ("2019 Amended Credit Agreement").

As of June 30, 2023, there were no outstanding borrowings under the 2019 Amended Credit Agreement, there was $200.0 million available for future borrowing, and the Company was in compliance with all the financial covenants. The 2019 Amended Credit Agreement is available for general corporate purposes, including working capital, capital expenditures, and permitted acquisitions.

For additional information about the 2019 Amended Credit Agreement, refer to the Company's consolidated financial statements for the year ended December 31, 2022, included in our Annual Report on Form 10-K for the year ended December 31, 2022.

7. Fair value measurements

The accounting guidance for fair value, among other things, defines fair value, establishes a consistent framework for measuring fair value and expands disclosure for each major asset and liability category measured at fair value on either a recurring or nonrecurring basis. Fair value is defined as the price that would be received to sell an asset or paid to transfer a liability (an exit price) in an orderly transaction between market participants at the reporting date. The framework for measuring fair value consists of a three-level valuation hierarchy that prioritizes the inputs to valuation techniques used to measure fair value based upon whether such inputs are observable or unobservable. Observable inputs reflect market data obtained from independent sources, while unobservable inputs reflect market assumptions made by the reporting entity. The three-level hierarchy for the inputs to valuation techniques is briefly summarized as follows:

Level 1 – Quoted prices in active markets for identical assets and liabilities at the measurement date;

Level 2 – Observable inputs, other than the quoted prices in active markets, that are observable either directly or indirectly; and

Level 3 – Unobservable inputs in which there is little or no market data, which require the reporting entity to develop its own assumptions.

An asset's or liability's fair value measurement level within the fair value hierarchy is based on the lowest level of any input that is significant to the fair value measurement. Valuation techniques used need to maximize the use of observable inputs and minimize the use of unobservable inputs.

The carrying value of cash and cash equivalents, accounts receivable, net and accounts payable approximate fair value due to their short maturities. Interest on the Company's line of credit is at a variable rate, and as such the debt obligation outstanding approximates fair value.

The carrying value of the Company's Convertible Notes are at face value less unamortized issuance costs. The estimated fair values of the Convertible Notes, which the Company has classified as Level 2 financial instruments, were determined based on quoted bid prices of the Convertible Notes on the last trading day of each reporting period. As of June 30, 2023, the estimated fair value of the 2027 Notes and 2024 Notes was $279.4 million and $133.6 million, respectively, and is presented for required disclosure purposes only. For further information on the Convertible Notes, see Note 6. – Debt.

8. Stock-based compensation

2017 stock-based compensation plan

In 2017, the Company's board of directors adopted the 2017 Equity Incentive Plan ("2017 Plan"), which was approved by the Company's stockholders. The 2017 Plan provides for the grant of incentive stock options to the Company's employees and any parent and subsidiary corporations' employees, and for the grant of nonstatutory stock options, stock appreciation rights, restricted stock, restricted stock units, performance units, performance shares, other cash-based awards and other stock-based awards to the Company's employees, directors and consultants and the Company's parent, subsidiary, and affiliate corporations' employees and consultants. The 2017 Plan has 16,999,318 authorized shares of the Company's Class A common stock reserved for issuance.

The following table summarizes the restricted stock units, or RSUs, awarded under the 2017 Plan for the period:

	Number of RSUs
Outstanding as of December 31, 2022	1,230,774
Granted	374,034
Vested	(422,442)
Forfeited	(16,459)
Outstanding as of June 30, 2023	1,165,907

The weighted average grant date fair value of the RSUs was $65.23 and the RSUs generally vest in four equal annual installments. Total compensation cost related to nonvested awards not yet recognized as of June 30, 2023, totaled $88.4 million, and is expected to be recognized over a weighted average period of 2.5 years.

The following table summarizes the stock option activity under the 2017 Plan for the period:

	Number of options	Weighted average exercise price per share	Weighted average remaining contractual term (years)	Aggregate intrinsic value (in millions)
Outstanding as of December 31, 2022	7,491,491	$ 50.39	8.5	$ 11.5
Granted	1,017,785	$ 65.19		
Exercised	(522,126)	$ 44.55		
Forfeited	(64,965)	$ 57.03		
Outstanding as of June 30, 2023	7,922,185	$ 52.63	8.3	$ 186.5
Exercisable as of June 30, 2023	2,819,969	$ 47.34	7.3	$ 81.0

The total intrinsic value of the 2017 Plan stock options exercised during the six months ended June 30, 2023, was $13.1 million.

2021 Employee Stock Purchase Plan

The Company has an Employee Stock Purchase Plan ("ESPP") which allows eligible employees to purchase shares of common stock through payroll deductions and is intended to qualify under Section 423 of the Internal Revenue Code. As of June 30, 2023, the Company had 2,922,942 shares of its common stock available for future issuances under the ESPP.

The purchase price for each share of common stock purchased under the ESPP will be 85% of the lower of (a) the fair market value per share on the first day of the applicable offering period or (b) the fair market value per share on the applicable purchase date.

The Company issued 92,018 shares of common stock under the ESPP during the six months ended June 30, 2023. As of June 30, 2023 and December 31, 2022, respectively, $4.1 million and $4.0 million had been withheld on behalf of employees for future purchases under the ESPP due to the timing of payroll deductions and was reported in current liabilities. Stock-based compensation expense related to the ESPP was $0.6 million and $1.2 million of for the three and six months ended June 30, 2023, respectively, and $0.6 million and $1.3 million for the three and six months ended June 30, 2022, respectively.

Stock-based compensation expense

Stock-based compensation expense was recorded as follows (in thousands):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2023	2022	2023	2022
Cost of revenue – software	$ 2,572	$ 2,030	$ 5,324	$ 3,933
Research and development	9,943	8,979	18,686	16,337
Sales and marketing	7,581	7,664	15,172	14,699
General and administrative	3,640	2,527	6,715	4,845
Total stock-based compensation expense	$ 23,736	$ 21,200	$ 45,897	$ 39,814

9. Net loss per share

Basic net loss per share attributable to common stockholders is computed using the weighted average number of shares of common stock outstanding for the period, excluding dilutive securities, stock options, RSUs, and ESPP shares. Diluted net loss per share attributable to common stockholders is based upon the weighted average number of shares of common stock outstanding for the period and potentially dilutive common shares, including the effect of dilutive securities, stock options, RSUs and ESPP shares under the treasury stock method.

The Company applies the if-converted method for convertible instruments when calculating diluted earnings per share. Under the if-converted method, shares related to convertible senior notes, to the extent dilutive, are assumed to be converted into common stock at the beginning of the period.

The following table sets forth the computation of the numerators and denominators used in the basic and diluted net loss per share amounts (in thousands, except per share data):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2023	2022	2023	2022
Numerator:				
Net loss	$ (22,280)	$ (33,774)	$ (24,239)	$ (22,246)
Interest expense related to Convertible Notes, net of tax	—	—	—	—
Numerator for diluted loss per share	$ (22,280)	$ (33,774)	$ (24,239)	$ (22,246)
Denominator:				
Denominator for basic loss per share—weighted average shares	79,986	78,948	80,088	79,204
Effect of dilutive securities, stock options, RSUs and ESPP shares	—	—	—	—
Denominator for dilutive loss per share	79,986	78,948	80,088	79,204
Net loss per share attributable to common stockholders, basic and diluted	$ (0.28)	$ (0.43)	$ (0.30)	$ (0.28)

Anti-dilutive shares excluded from the computation of diluted net loss per share were as follows (in thousands):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2023	2022	2023	2022
Stock options and ESPP shares	3,430	2,366	3,679	2,345
Convertible shares	4,967	4,967	4,967	4,967
Total shares excluded from calculation	8,397	7,333	8,646	7,312

10. Income taxes

The Company's income tax expense and effective tax rate for the three and six months ended June 30, 2023 and 2022, were as follows (in thousands, except percentages):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2023	2022	2023	2022
Income tax expense	$ 8,678	$ 3,899	$ 17,910	$ 10,429
Effective tax rate	(64%)	(13%)	(283%)	(88%)

The tax rate is affected by the Company being a U.S. resident taxpayer, the tax rates in the U.S. and other jurisdictions in which the Company operates, the relative amount of income earned by jurisdiction and the relative amount of losses or income for which no benefit or expense is recognized due to a valuation allowance. The change in the effective tax rate for the six months ended June 30, 2023, was primarily due to a change to Internal Revenue Code ("IRC") Section 174 which became effective for tax years beginning on or after January 1, 2022. Under the new rules, the Company is required to capitalize and amortize research and development expenses over five years for research activities conducted in the U.S. and over fifteen years for research activities conducted outside of the U.S. The capitalization of research and development expenses resulted in an increase to the Company's taxable income and foreign derived intangible income ("FDII"), resulting in a corresponding increase in the Company's FDII deduction. However, no tax benefit is recognized for the deferred tax asset established for these capitalized research and development expenses due to the Company's valuation allowance position in the U.S. The Company's effective tax rate for the six months ended June 30, 2023 and 2022 also includes net discrete expense of $11.6 million and $3.4 million, respectively, primarily related to changes in tax laws, withholding taxes on royalties, current tax expense from capitalized research and development expense, changes in reserves, changes in accruals for unremitted earnings and other adjustments.

11. Accumulated other comprehensive loss

The components of accumulated other comprehensive loss were as follows (in thousands):

	Foreign currency translation	Retirement related benefit plans	Total
Balance as of December 31, 2022	$ (30,484)	$ 482	$ (30,002)
Other comprehensive income before reclassification	5,892	(1)	5,891
Amounts reclassified from accumulated other comprehensive income	—	29	29
Tax effects	—	(79)	(79)
Other comprehensive income	5,892	(51)	5,841
Balance as of June 30, 2023	$ (24,592)	$ 431	$ (24,161)

12. Commitments and contingencies

World Programming

The Company acquired World Programming Limited and a related company (collectively, "World Programming") in December 2021.

In 2018, SAS Institute, Inc. ("SAS") filed litigation in the United States District Court for the Eastern District of Texas (the "Texas Court") asserting that World Programming infringed SAS copyrights and patents. SAS voluntarily dismissed with prejudice its patent claims, and the Texas Court entered judgment in favor of World Programming on the copyright claims. SAS appealed the Texas Court judgment to the United States Court of Appeals for the Federal Circuit (the "Court of Appeals"). Oral arguments were held before the Court of Appeal on January 13, 2022. On April 6, 2023, the Court of Appeals issued its decision in favor of World Programing by affirming the Texas Court's dismissal of SAS's copyright claims. As of the date of this report, the period in which SAS is eligible to file a petition for a writ of certiorari has not expired.

Other legal proceedings

From time to time, the Company may be subject to legal proceedings and claims in the ordinary course of business. The Company has received, and may in the future continue to receive, claims from third parties asserting, among other things, infringement of their intellectual property rights. Future litigation may be necessary to defend the Company, its partners, and its customers by determining the scope, enforceability, and validity of third-party proprietary rights, or to establish and enforce the Company's proprietary rights.

Effects of proceedings

The results of any current or future litigation cannot be predicted with certainty and regardless of the outcome, litigation can have an adverse impact on the Company because of defense and settlement costs, diversion of management resources and other factors.

13. Segment information

The Company defines its operating segments as components of its business where separate financial information is available and used by the chief operating decision maker ("CODM") in deciding how to allocate resources to its segments and in assessing performance. The Company's CODM is its Chief Executive Officer.

The Company has identified two reportable segments for financial reporting purposes: Software and Client Engineering Services. The primary measure of segment operating performance is Adjusted EBITDA, which is defined as net income (loss) adjusted for income tax expense (benefit), interest expense, interest income and other, depreciation and amortization, stock-based compensation expense, restructuring charges, asset impairment charges and other special items as determined by management. Adjusted EBITDA includes an allocation of corporate headquarters costs.

The following tables are in thousands:

Three months ended June 30, 2023	**Software**	**CES**	**All other**	**Total**
Revenue	$ 131,985	$ 8,034	$ 1,142	$ 141,161
Adjusted EBITDA	$ 17,707	$ 633	$ (1,284)	$ 17,056

Three months ended June 30, 2022	**Software**	**CES**	**All other**	**Total**
Revenue	$ 124,269	$ 7,047	$ 1,340	$ 132,656
Adjusted EBITDA	$ 16,531	$ 406	$ (497)	$ 16,440

Six months ended June 30, 2023	**Software**	**CES**	**All other**	**Total**
Revenue	$ 288,728	$ 15,810	$ 2,657	$ 307,195
Adjusted EBITDA	$ 60,479	$ 1,042	$ (1,410)	$ 60,111

Six months ended June 30, 2022	**Software**	**CES**	**All other**	**Total**
Revenue	$ 274,227	$ 15,059	$ 3,151	$ 292,437
Adjusted EBITDA	$ 62,715	$ 1,204	$ (889)	$ 63,030

	Three Months Ended June 30,		**Six Months Ended June 30,**	
	2023	**2022**	**2023**	**2022**
Reconciliation of Adjusted EBITDA to U.S. GAAP loss before income taxes:				
Adjusted EBITDA	$ 17,056	$ 16,440	$ 60,111	$ 63,030
Stock-based compensation expense	(23,736)	(21,200)	(45,897)	(39,814)
Interest expense	(1,528)	(700)	(3,054)	(1,285)
Depreciation and amortization	(9,738)	(8,133)	(19,488)	(15,819)
Special adjustments, interest income and other (1)	4,344	(16,282)	1,999	(17,929)
Loss before income taxes	$ (13,602)	$ (29,875)	$ (6,329)	$ (11,817)

(1) The three months ended June 30, 2023, includes a $1.0 million loss from the mark-to-market adjustment of contingent consideration associated with the World Programming acquisition, $4.0 million of interest income, and $1.3 million currency gains on acquisition-related intercompany loans. The three months ended June 30, 2022, includes $16.6 million expense on repurchase of convertible senior notes, $5.4 million currency losses on acquisition-related intercompany loans, and a $5.3 million gain from the mark-to-market adjustment of contingent consideration associated with the World Programming acquisition. The six months ended June 30, 2023, includes an $8.0 million loss from the mark-to-market adjustment of contingent consideration associated with the World Programming acquisition, $6.9 million of interest income, and $3.1 million currency gains on acquisition-related intercompany loans. The six months ended June 30, 2022, includes $16.6 million expense on repurchase of convertible senior notes, $6.9 million currency losses on acquisition-related intercompany loans and a $5.3 million gain from the mark-to-market adjustment of contingent consideration associated with the World Programming acquisition.

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

The following discussion and analysis of our financial condition and results of operations should be read in conjunction with our consolidated financial statements and related notes included elsewhere in this quarterly report and with our audited consolidated financial statements (and notes thereto) for the year ended December 31, 2022, included in our Annual Report on Form 10-K filed with the SEC. This discussion contains forward-looking statements that involve risks and uncertainties. Our actual results could differ materially from those discussed below.

CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This quarterly report on Form 10-Q contains forward-looking statements made pursuant to the safe harbor provisions of the Private Securities Litigation Reform Act of 1995 under Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. Forward-looking statements include statements with respect to our beliefs, plans, objectives, goals, expectations, anticipations, assumptions, estimates, intentions, and future performance, and involve known and unknown risks, uncertainties, and other factors, which may be beyond our control, and which may cause our actual results, performance, or achievements to be materially different from future results, performance, or achievements expressed or implied by such forward-looking statements. All statements other than statements of historical fact are statements that could be forward-looking statements. You can identify these forward-looking statements through our use of words such as "may," "can," "anticipate," "assume," "should," "indicate," "would," "believe," "contemplate," "expect," "seek," "estimate," "continue," "plan," "point to," "project," "predict," "could," "intend," "target," "potential," and other similar words and expressions of the future.

There are a number of important factors that could cause the actual results to differ materially from those expressed in any forward-looking statement made by us. These factors include, but are not limited to:

- our ability and the time it takes to acquire new customers;
- reduced spending on product design and development activities by our customers;
- our ability to successfully renew our outstanding software licenses;
- our ability to maintain or protect our intellectual property;
- our ability to retain key executive members;
- our ability to internally develop new software products, inventions and intellectual property;
- our ability to successfully integrate and realize the benefits of our past or future strategic acquisitions or investments;
- demand for our software by customers other than simulation engineering specialists and in additional industry verticals;
- acceptance of our enhanced business model by customers and investors;
- our susceptibility to factors affecting the automotive, aerospace and banking, financial services, and insurance industries where we derive a substantial portion of our revenues;
- the accuracy of our estimates regarding expenses and capital requirements;
- our susceptibility to foreign currency risks that arise because of our substantial international operations;
- the significant quarterly fluctuations of our results; and
- the uncertain effect of cyberattacks, data security incidents, COVID-19 or other future pandemics or events on our business, operating results, and financial condition, including disruption to our customers, our employees, the global economy, and financial markets.

The foregoing does not represent an exhaustive list of matters that may be covered by the forward-looking statements contained herein or risk factors that we are faced with that may cause our actual results to differ from those anticipated in our forward-looking statements. For additional risks which could adversely impact our business and financial performance please see “Risk Factors” in our Annual Report on Form 10-K for the year ended December 31, 2022, which was filed with the SEC on February 24, 2023, and other information appearing elsewhere in our Annual Report on Form 10-K, this report on Form 10-Q and our other filings with the SEC.

All forward-looking statements are expressly qualified in their entirety by this cautionary notice. You are cautioned not to place undue reliance on any forward-looking statements, which speak only as of the date of this report or the date of the document incorporated by reference into this report. We have no obligation, and expressly disclaim any obligation, to update, revise or correct any of the forward-looking statements, whether as a result of new information, future events or otherwise. We have expressed our expectations, beliefs, and projections in good faith, and we believe they have a reasonable basis. However, we cannot assure you that our expectations, beliefs, or projections will result or be achieved or accomplished.

Overview

We are a global leader in computational science and artificial intelligence enabling organizations across broad industry segments to drive smarter decisions in an increasingly connected world. We deliver software and cloud solutions in the areas of simulation, high-performance computing (“HPC”), data analytics, and artificial intelligence (“AI”). Our products and services leverage computational science to drive innovation and intelligent decisions for a more connected, safe, and sustainable future.

Factors Affecting our Performance

We believe that our future success will depend on many factors, including those described below. While these areas present significant opportunity, they also present risks that we must manage to achieve successful results. If we are unable to address these challenges, our business, operating results and prospects could be harmed. Please see “Risk Factors” in our Annual Report on Form 10-K for the year ended December 31, 2022.

Seasonality and quarterly results

Our billings have historically been highest in the first and fourth quarters of any calendar year and may vary in future quarters. The timing of recording billings and the corresponding effect on our cash flows may vary due to the seasonality of the purchasing and payment patterns of our customers. In addition, the timing of the recognition of revenue, the amount and timing of operating expenses, including employee compensation, sales and marketing activities, and capital expenditures, may vary from quarter-to-quarter which may cause our reported results to fluctuate significantly. In addition, we may choose to grow our business for the long-term rather than to optimize for profitability or cash flows for a particular shorter-term period. This seasonality or the occurrence of any of the factors above may cause our results of operations to vary and our financial statements may not fully reflect the underlying performance of our business.

Integration of recent acquisitions

We believe that our recent acquisitions result in certain benefits, including expanding our portfolio of software and products and enabling us to better serve our customers’ requests for data analytics and simulation technology. However, to realize some of these anticipated benefits, the acquired businesses must be successfully integrated. The success of these acquisitions will depend in part on our ability to realize these anticipated benefits. We may fail to realize the anticipated benefits of these acquisitions for a variety of reasons.

Foreign currency fluctuations

Because of our substantial international operations, we are exposed to foreign currency risks that arise from our normal business operations, including in connection with our transactions that are denominated in foreign currencies, including the Euro, British Pound Sterling, Indian Rupee, Japanese Yen, and Chinese Yuan. To identify changes in our underlying business without regard to the impact of currency fluctuations, we evaluate certain of our operating results both on an as reported basis, as well as on a constant currency basis. For the remainder of our current fiscal year, we anticipate that our revenues and profit may be impacted by changes in foreign currency rates.

Business Segments

We have identified two reportable segments: Software and Client Engineering Services:

- *Software* —Our Software segment includes software and software related services. The software component of this segment includes our portfolio of software products including our solvers and optimization technology products, high-performance computing software applications and hardware products, modeling and visualization tools, data analytics and analysis products, IoT platform and analytics tools, as well as support and the complementary software products we offer through our Altair Partner Alliance, or APA. The APA includes technologies ranging from computational fluid dynamics and fatigue, to manufacturing process simulation and cost estimation. The software component of this segment includes consulting, training, and implementation services. The software related services component of this segment includes technical services focused on product design and development expertise and analysis from the component level up to complete product engineering at any stage of the lifecycle.
- *Client Engineering Services* —Our client engineering services, or CES, segment provides client engineering services to support our customers with long-term, ongoing expertise. We operate our CES business by hiring engineers and data scientists for placement at a customer site for specific customer-directed assignments. We employ and pay them only for the duration of the placement.

Our other businesses which do not meet the criteria to be separate reportable segments are combined and reported as “Other” which represents innovative services and products, including toggled, our LED lighting business. toggled is focused on developing and selling next-generation solid state lighting technology along with communication and control protocols based on our intellectual property for the direct replacement of fluorescent light tubes with LED lamps. Other businesses combined within Other include potential services and product concepts that are still in development stages.

For additional information about our reportable segments and other businesses, see Note 13 in the Notes to consolidated financial statements in Item 1, Part I of this Quarterly Report on Form 10-Q.

Results of operations

Comparison of the three and six months ended June 30, 2023 and 2022

The following table sets forth the results of operations and the period-over-period percentage change in certain financial data for the three and six months ended June 30, 2023 and 2022:

(in thousands)	Three Months Ended June 30, 2023	Three Months Ended June 30, 2022	Increase / (decrease) %	Six Months Ended June 30, 2023	Six Months Ended June 30, 2022	Increase / (decrease) %
Revenue:						
Software	$ 125,321	$ 116,893	7 %	$ 274,964	$ 257,790	7 %
Software related services	6,664	7,376	(10 %)	13,764	16,437	(16 %)
Total software and related services	131,985	124,269	6 %	288,728	274,227	5 %
Client engineering services	8,034	7,047	14 %	15,810	15,059	5 %
Other	1,142	1,340	(15 %)	2,657	3,151	(16 %)
Total revenue	141,161	132,656	6 %	307,195	292,437	5 %
Cost of revenue:						
Software	17,620	17,004	4 %	36,870	34,410	7 %
Software related services	5,308	5,464	(3 %)	10,924	11,499	(5 %)
Total software and related services	22,928	22,468	2 %	47,794	45,909	4 %
Client engineering services	6,767	5,914	14 %	13,391	12,555	7 %
Other	1,102	1,141	(3 %)	2,347	2,662	(12 %)
Total cost of revenue	30,797	29,523	4 %	63,532	61,126	4 %
Gross profit	110,364	103,133	7 %	243,663	231,311	5 %
Operating expenses:						
Research and development	55,277	50,437	10 %	108,528	97,516	11 %
Sales and marketing	44,982	41,153	9 %	88,474	78,993	12 %
General and administrative	18,622	18,370	1 %	36,573	35,796	2 %
Amortization of intangible assets	7,625	6,208	23 %	15,439	12,111	27 %
Other operating expense (income), net	127	(5,767)	NM	5,732	(6,548)	NM
Total operating expenses	126,633	110,401	15 %	254,746	217,868	17 %
Operating income (loss)	(16,269)	(7,268)	124 %	(11,083)	13,443	NM
Interest expense	1,528	700	118 %	3,054	1,285	138 %
Other (income) expense, net	(4,195)	21,907	NM	(7,808)	23,975	NM
Income (loss) before income taxes	(13,602)	(29,875)	(54 %)	(6,329)	(11,817)	(46 %)
Income tax expense	8,678	3,899	123 %	17,910	10,429	72 %
Net loss	$ (22,280)	$ (33,774)	(34 %)	$ (24,239)	$ (22,246)	9 %
Other financial information:						
Billings[1]	$ 147,765	$ 125,423	18 %	$ 311,282	$ 296,759	5 %
Adjusted EBITDA[2]	$ 17,056	$ 16,440	4 %	$ 60,111	$ 63,030	(5 %)
Net cash provided by operating activities				$ 89,229	$ 18,041	NM
Free cash flow[3]				$ 83,045	$ 14,584	NM

NM Not meaningful.

(1) Billings consists of our total revenue plus the change in our deferred revenue, excluding deferred revenue from acquisitions. For more information about Billings and our other non-GAAP financial measures and reconciliations of our non-GAAP financial measures to the most directly comparable financial measures calculated and presented in accordance with GAAP, see "Non-GAAP financial measures" contained herein.

(2) We define Adjusted EBITDA as net income (loss) adjusted for income tax expense (benefit), interest expense, interest income and other, depreciation and amortization, stock-based compensation expense, restructuring charges, asset impairment charges and other special items as determined by management. For more information about Adjusted EBITDA and our other non-GAAP financial measures and reconciliations of our non-GAAP financial measures to the most directly comparable financial measure calculated and presented in accordance with GAAP, see "Non-GAAP financial measures" contained herein.

(3) We define Free Cash Flow as net cash provided by operating activities less capital expenditures. For a reconciliation of Free Cash Flow, see "Non-GAAP financial measures" contained herein.

Change in Classification of Indirect Costs

As indicated in Note 1. to the Consolidated Financial Statements, beginning in the first quarter of 2023, we refined the classification of certain indirect costs to reflect the way we are now reviewing the information in decision making and to improve comparability with peers. These indirect costs include certain IT, facilities, and depreciation expenses that were previously reported primarily in General and administrative expense. These indirect costs have now been reclassified to Research and development, Sales and marketing, and General and administrative expenses based on global headcount. We believe this refined methodology better reflects the nature of the costs and financial performance of the Company.

As a result, the consolidated statements of operations have been recast for prior periods presented to reflect the effects of the changes to Research and development, Sales and marketing, and General and administrative expense. There was no net impact to total operating expenses, income from operations, net income or net income per share for any periods presented. The consolidated balance sheets, consolidated statements of comprehensive income, consolidated statements of changes in stockholders' equity, and the consolidated statements of cash flows were not affected by changes in the presentation of these costs.

Three months ended June 30, 2023 and 2022

Revenue

Software

	Three Months Ended June 30,		Period-to-period change	
(in thousands)	**2023**	**2022**	**$**	**%**
Software revenue	$ 125,321	$ 116,893	$ 8,428	7%
As a percent of software segment revenue	95%	94%		
As a percent of consolidated revenue	89%	88%		

Software revenue increased 7%, or 9% in constant currency, for the three months ended June 30, 2023, as compared to the three months ended June 30, 2022. The increase was driven by growth in software license revenue primarily by strong retention and expansions within existing accounts, particularly in aerospace, defense, technology and automotive verticals.

Software related services

	Three Months Ended June 30,		Period-to-period change	
(in thousands)	**2023**	**2022**	**$**	**%**
Software related services revenue	$ 6,664	$ 7,376	$ (712)	(10%)
As a percent of software segment revenue	5%	6%		
As a percent of consolidated revenue	5%	6%		

Software related services revenue decreased 10% for the three months ended June 30, 2023, as compared to the three months ended June 30, 2022. This decrease was the result of lower customer demand for these services.

Client engineering services

	Three Months Ended June 30,		Period-to-period change	
(in thousands)	**2023**	**2022**	**$**	**%**
Client engineering services revenue	$ 8,034	$ 7,047	$ 987	14%
As a percent of consolidated revenue	6%	5%		

CES revenue increased 14% for the three months ended June 30, 2023, as compared to the three months ended June 30, 2022. Customer demand for CES has begun to stabilize in the current year compared to the year-over-year declines in the prior year.

Other

	Three Months Ended June 30,		Period-to-period change	
(in thousands)	**2023**	**2022**	**$**	**%**
Other revenue	$ 1,142	$ 1,340	$ (198)	(15%)
As a percent of consolidated revenue	1%	1%		

The 15% decrease in other revenue for the three months ended June 30, 2023, as compared to the three months ended June 30, 2022, was due to reduced sales by toggled, our LED lighting business.

Cost of revenue

Software

(in thousands)	Three Months Ended June 30, 2023	Three Months Ended June 30, 2022	Period-to-period change $	Period-to-period change %
Cost of software revenue	$ 17,620	$ 17,004	$ 616	4 %
As a percent of software revenue	14 %	15 %		
As a percent of consolidated revenue	12 %	13 %		

Cost of software revenue increased $0.6 million, or 4%, for the three months ended June 30, 2023, as compared to the three months ended June 30, 2022. Stock-based compensation expense increased $0.5 million, royalty expense increased $0.3 million, and travel costs increased $0.2 million for the three months ended June 30, 2023. These increases were partially offset by a decrease in hardware costs of $0.5 million.

Software related services

(in thousands)	Three Months Ended June 30, 2023	Three Months Ended June 30, 2022	Period-to-period change $	Period-to-period change %
Cost of software related services revenue	$ 5,308	$ 5,464	$ (156)	(3 %)
As a percent of software related services revenue	80 %	74 %		
As a percent of consolidated revenue	4 %	4 %		

Cost of software related services revenue decreased $0.2 million, or 3%, for the three months ended June 30, 2023, as compared to the three months ended June 30, 2022. The decrease was due to a decrease in employee-related expense, partially offset by an increase in facilities costs.

Client engineering services

(in thousands)	Three Months Ended June 30, 2023	Three Months Ended June 30, 2022	Period-to-period change $	Period-to-period change %
Cost of client engineering services revenue	$ 6,767	$ 5,914	$ 853	14 %
As a percent of client engineering services revenue	84 %	84 %		
As a percent of consolidated revenue	5 %	4 %		

Cost of CES revenue increased $0.9 million, or 14%, for the three months ended June 30, 2023, as compared to the three months ended June 30, 2022, consistent with the increase in CES revenue.

Other

(in thousands)	Three Months Ended June 30, 2023	Three Months Ended June 30, 2022	Period-to-period change $	Period-to-period change %
Cost of other revenue	$ 1,102	$ 1,141	$ (39)	(3 %)
As a percent of other revenue	96 %	85 %		
As a percent of consolidated revenue	1 %	1 %		

Cost of other revenue remained consistent for the three months ended June 30, 2023, as compared to the three months ended June 30, 2022.

Gross profit

(in thousands)	Three Months Ended June 30, 2023	Three Months Ended June 30, 2022	Period-to-period change $	Period-to-period change %
Gross profit	$ 110,364	$ 103,133	$ 7,231	7 %
As a percent of consolidated revenue	78 %	78 %		

Gross profit increased by $7.2 million, or 7%, for the three months ended June 30, 2023, as compared to the three months ended June 30, 2022. This increase in gross profit was primarily attributable to the increase in software revenue.

Operating expenses

Operating expenses, as discussed below, support all the products and services that we provide to our customers and, as a result, they are reported and discussed in the aggregate.

Research and development

(in thousands)	Three Months Ended June 30, 2023	Three Months Ended June 30, 2022	Period-to-period change $	Period-to-period change %
Research and development	$ 55,277	$ 50,437	$ 4,840	10 %
As a percent of consolidated revenue	39 %	38 %		

Research and development expenses increased by $4.8 million, or 10%, for the three months ended June 30, 2023, as compared to the three months ended June 30, 2022. Employee compensation and related expense increased $3.0 million, primarily due to annual merit increases and increased headcount as a result of acquisitions, stock-based compensation expense increased $1.0 million, and software maintenance and other IT related expense increased $0.6 million for the three months ended June 30, 2023.

Sales and marketing

(in thousands)	Three Months Ended June 30, 2023	Three Months Ended June 30, 2022	Period-to-period change $	Period-to-period change %
Sales and marketing	$ 44,982	$ 41,153	$ 3,829	9 %
As a percent of consolidated revenue	32 %	31 %		

Sales and marketing expenses increased by $3.8 million, or 9%, for the three months ended June 30, 2023, as compared to the three months ended June 30, 2022. Employee compensation and related expense increased $3.8 million, primarily due to annual merit increases and increased headcount as a result of acquisitions, and travel costs increased $0.4 million for the three months ended June 30, 2023. These increases were partially offset by a decrease in advertising and trade show related expenses of $0.5 million.

General and administrative

(in thousands)	Three Months Ended June 30, 2023	Three Months Ended June 30, 2022	Period-to-period change $	Period-to-period change %
General and administrative	$ 18,622	$ 18,370	$ 252	1 %
As a percent of consolidated revenue	13 %	14 %		

General and administrative expenses increased by $0.3 million, or 1%, for the three months ended June 30, 2023, as compared to the three months ended June 30, 2022. Stock-based compensation expense increased $1.1 million, non-income tax expense increased $0.4 million, and charitable contributions increased $0.3 million for the three months ended June 30, 2023. These increases were partially offset by decreases in employee compensation and related expense of $0.8 million, professional fees of $0.4 million, and travel costs of $0.3 million.

Amortization of intangible assets

(in thousands)	Three Months Ended June 30, 2023	Three Months Ended June 30, 2022	Period-to-period change $	Period-to-period change %
Amortization of intangible assets	$ 7,625	$ 6,208	$ 1,417	23 %
As a percent of consolidated revenue	5 %	5 %		

Amortization of intangible assets increased by $1.4 million, or 23%, for the three months ended June 30, 2023, as compared to the three months ended June 30, 2022. Amortization of intangible assets increased primarily as a result of recent acquisitions.

Other operating expense (income), net

(in thousands)	Three Months Ended June 30, 2023	Three Months Ended June 30, 2022	Period-to-period change $	Period-to-period change %
Other operating expense (income), net	$ 127	$ (5,767)	$ 5,894	NM
As a percent of consolidated revenue	0 %	(4 %)		

Other operating expense (income), net increased $5.9 million for the three months ended June 30, 2023 as compared to the three months ended June 30, 2022. We recognized a $1.0 million loss on the mark-to-market adjustment of contingent consideration associated with the World Programming acquisition for the three months ended June 30, 2023, compared to a $5.3 million gain in the prior year quarter. We also had a $0.2 million decrease in the provision for credit loss for the three months ended June 30, 2023.

Interest expense

(in thousands)	Three Months Ended June 30, 2023	Three Months Ended June 30, 2022	Period-to-period change $	Period-to-period change %
Interest expense	$ 1,528	$ 700	$ 828	118 %
As a percent of consolidated revenue	1 %	1 %		

Interest expense increased $0.8 million for the three months ended June 30, 2023, as compared to the three months ended June 30, 2022. Interest expense increased as a result of the interest costs on the 2027 Notes which were issued in June 2022.

Other (income) expense, net

(in thousands)	Three Months Ended June 30, 2023	Three Months Ended June 30, 2022	Period-to-period change $	Period-to-period change %
Other (income) expense, net	$ (4,195)	$ 21,907	$ 26,102	NM
As a percent of consolidated revenue	(3 %)	17 %		

Other (income) expense, net was $4.2 million of income for the three months ended June 30, 2023, compared to $21.9 million of expense for the three months ended June 30, 2022. We recognized $4.0 million of interest income and $0.2 million in net foreign currency gains for the three months ended June 30, 2023, compared to $16.6 million expense on the repurchase of a portion of our 2024 Notes, $5.7 million in net foreign currency losses and $0.5 million of interest income during the three months ended June 30, 2022.

Income tax expense

(in thousands)	Three Months Ended June 30, 2023	Three Months Ended June 30, 2022	Period-to-period change $	Period-to-period change %
Income tax expense	$ 8,678	$ 3,899	$ 4,779	123 %

The effective tax rate was -64% and -13% for the three months ended June 30, 2023 and 2022, respectively. The tax rate is affected by our status as a U.S. resident taxpayer, the tax rates in the U.S. and other jurisdictions in which we operate, the relative amount of income earned by jurisdiction and the relative amount of losses or income for which no benefit or expense is recognized due to a valuation allowance. The change in our effective tax rate for the three months ended June 30, 2023, was primarily due to a change to Internal Revenue Code (“IRC”) Section 174 which became effective for tax years beginning on or after January 1, 2022. Under the new rules, we are required to capitalize and amortize research and development expenses over five years for research activities conducted in the U.S. and over fifteen years for research activities conducted outside of the U.S. for U.S. tax purposes. The capitalization of research and development expenses resulted in an increase to our taxable income and foreign derived intangible income (“FDII”), resulting in a corresponding increase in our FDII deduction. However, no tax benefit is recognized for the deferred tax asset established for these capitalized research and development expenses due to our valuation allowance position in the U.S. Our effective tax rates for the three months ended June 30, 2023 and 2022, also include net discrete expense of $5.9 million and $1.6 million, respectively, primarily related to changes in tax laws, withholding taxes on royalties, current tax expense from capitalized research and development expense, changes in reserves, changes in accruals for unremitted earnings and other adjustments.

Net loss

(in thousands)	Three Months Ended June 30, 2023	Three Months Ended June 30, 2022	Period-to-period change $	Period-to-period change %
Net loss	$ (22,280)	$ (33,774)	$ 11,494	NM

Net loss was $22.3 million and $33.8 million for the three months ended June 30, 2023 and June 30, 2022, respectively. The net loss for the three months ended June 30, 2023, was largely attributable to the increase in operating expenses and income tax expense, partially offset by the increase in software revenue and interest income, as described above. The net loss for the three months ended June 30, 2022, included expense recognized on the repurchase of a portion of our 2024 Notes, foreign currency losses and a gain on the mark-to-market adjustment of contingent consideration.

Six months ended June 30, 2023 and 2022

Revenue

Software

(in thousands)	Six Months Ended June 30, 2023	Six Months Ended June 30, 2022	Period-to-period change $	Period-to-period change %
Software revenue	$ 274,964	$ 257,790	$ 17,174	7 %
As a percent of software segment revenue	95 %	94 %		
As a percent of consolidated revenue	90 %	88 %		

Software revenue increased 7%, or 10% in constant currency, for the six months ended June 30, 2023, as compared to the six months ended June 30, 2022. The increase was driven by growth in software license revenue primarily by strong retention and expansions within existing accounts, particularly in aerospace, defense, technology and automotive verticals.

Software related services

(in thousands)	Six Months Ended June 30, 2023	Six Months Ended June 30, 2022	Period-to-period change $	Period-to-period change %
Software related services revenue	$ 13,764	$ 16,437	$ (2,673)	(16 %)
As a percent of software segment revenue	5 %	6 %		
As a percent of consolidated revenue	4 %	6 %		

Software related services revenue decreased 16% for the six months ended June 30, 2023, as compared to the six months ended June 30, 2022. This decrease was the result of lower customer demand for these services.

Client engineering services

(in thousands)	Six Months Ended June 30, 2023	Six Months Ended June 30, 2022	Period-to-period change $	Period-to-period change %
Client engineering services revenue	$ 15,810	$ 15,059	$ 751	5 %
As a percent of consolidated revenue	5 %	5 %		

CES revenue increased 5% for the six months ended June 30, 2023, as compared to the six months ended June 30, 2022. Customer demand for CES has begun to stabilize in the current year compared to the year-over-year declines in the prior year.

Other

(in thousands)	Six Months Ended June 30, 2023	Six Months Ended June 30, 2022	Period-to-period change $	Period-to-period change %
Other revenue	$ 2,657	$ 3,151	$ (494)	(16 %)
As a percent of consolidated revenue	1 %	1 %		

The 16% decrease in other revenue for the six months ended June 30, 2023, as compared to the six months ended June 30, 2022, was due to reduced sales by toggled, our LED lighting business.

Cost of revenue

Software

(in thousands)	Six Months Ended June 30, 2023	Six Months Ended June 30, 2022	Period-to-period change $	Period-to-period change %
Cost of software revenue	$ 36,870	$ 34,410	$ 2,460	7 %
As a percent of software revenue	13 %	13 %		
As a percent of consolidated revenue	12 %	12 %		

Cost of software revenue increased $2.5 million, or 7%, for the six months ended June 30, 2023, as compared to the six months ended June 30, 2022. Stock-based compensation expense increased $1.4 million, travel costs increased $0.4 million, third-party sales commissions increased $0.3 million, employee compensation and related expense increased $0.3 million, and software maintenance and other IT related expense increased $0.2 million for the three months ended June 30, 2023.

Software related services

(in thousands)	Six Months Ended June 30, 2023	Six Months Ended June 30, 2022	Period-to-period change $	Period-to-period change %
Cost of software related services revenue	$ 10,924	$ 11,499	$ (575)	(5%)
As a percent of software related services revenue	79%	70%		
As a percent of consolidated revenue	4%	4%		

Cost of software related services revenue decreased $0.6 million, or 5%, for six months ended June 30, 2023, as compared to the six months ended June 30, 2022. The decrease is due to a decrease in employee-related expense, partially offset by an increase in facilities costs.

Client engineering services

(in thousands)	Six Months Ended June 30, 2023	Six Months Ended June 30, 2022	Period-to-period change $	Period-to-period change %
Cost of client engineering services revenue	$ 13,391	$ 12,555	$ 836	7%
As a percent of client engineering services revenue	85%	83%		
As a percent of consolidated revenue	4%	4%		

Cost of CES revenue increased $0.8 million, or 7%, for the six months ended June 30, 2023, as compared to the six months ended June 30, 2022, consistent with the increase in CES revenue.

Other

(in thousands)	Six Months Ended June 30, 2023	Six Months Ended June 30, 2022	Period-to-period change $	Period-to-period change %
Cost of other revenue	$ 2,347	$ 2,662	$ (315)	(12%)
As a percent of other revenue	88%	84%		
As a percent of consolidated revenue	1%	1%		

Cost of other revenue decreased 12% for the six months ended June 30, 2023, as compared to the six months ended June 30, 2022, consistent with the decrease in other revenue.

Gross profit

(in thousands)	Six Months Ended June 30, 2023	Six Months Ended June 30, 2022	Period-to-period change $	Period-to-period change %
Gross profit	$ 243,663	$ 231,311	$ 12,352	5%
As a percent of consolidated revenue	79%	79%		

Gross profit increased by $12.4 million, or 5%, for the six months ended June 30, 2023, as compared to the six months ended June 30, 2022. This increase in gross profit was primarily attributable to the increase in software revenue.

Operating expenses

Operating expenses, as discussed below, support all the products and services that we provide to our customers and, as a result, they are reported and discussed in the aggregate.

Research and development

(in thousands)	Six Months Ended June 30, 2023	Six Months Ended June 30, 2022	Period-to-period change $	Period-to-period change %
Research and development	$ 108,528	$ 97,516	$ 11,012	11%
As a percent of consolidated revenue	35%	33%		

Research and development expenses increased by $11.0 million, or 11%, for the six months ended June 30, 2023, as compared to the six months ended June 30, 2022. Employee compensation and related expense increased $6.8 million, primarily due to annual merit increases and increased headcount as a result of acquisitions, stock-based compensation expense increased $2.4 million, software maintenance and other IT related expense increased $1.4 million, travel costs increased $0.3 million, facilities costs increased $0.2 million, depreciation expense increased $0.2 million, and professional services decreased $0.3 million for the six months ended June 30, 2023.

Sales and marketing

(in thousands)	Six Months Ended June 30, 2023	Six Months Ended June 30, 2022	Period-to-period change $	Period-to-period change %
Sales and marketing	$ 88,474	$ 78,993	$ 9,481	12 %
As a percent of consolidated revenue	29 %	27 %		

Sales and marketing expenses increased by $9.5 million, or 12%, for the six months ended June 30, 2023, as compared to the six months ended June 30, 2022. Employee compensation and related expense increased $6.7 million, primarily due to annual merit increases and increased headcount as a result of acquisitions, travel costs increased $0.9 million, stock-based compensation expense increased $0.5 million, advertising and trade show related expenses increased $0.4 million, software maintenance and other IT related expense increased $0.3 million, facilities costs increased $0.2 million, and non-income tax increased $0.2 million for the six months ended June 30, 2023.

General and administrative

(in thousands)	Six Months Ended June 30, 2023	Six Months Ended June 30, 2022	Period-to-period change $	Period-to-period change %
General and administrative	$ 36,573	$ 35,796	$ 777	2 %
As a percent of consolidated revenue	12 %	12 %		

General and administrative expenses increased by $0.8 million, or 2%, for the six months ended June 30, 2023, as compared to the six months ended June 30, 2022. Stock-based compensation expense increased $1.9 million, charitable contributions increased $0.5 million, and non-income tax expense increased $0.3 million, for the six months ended June 30, 2023. These increases were partially offset by decreases in professional fees of $1.4 million, and employee compensation and related expense of $0.8 million.

Amortization of intangible assets

(in thousands)	Six Months Ended June 30, 2023	Six Months Ended June 30, 2022	Period-to-period change $	Period-to-period change %
Amortization of intangible assets	$ 15,439	$ 12,111	$ 3,328	27 %
As a percent of consolidated revenue	5 %	4 %		

Amortization of intangible assets increased by $3.3 million, or 27%, for the six months ended June 30, 2023, as compared to the six months ended June 30, 2022. Amortization of intangible assets increased primarily as a result of recent acquisitions.

Other operating expense (income), net

(in thousands)	Six Months Ended June 30, 2023	Six Months Ended June 30, 2022	Period-to-period change $	Period-to-period change %
Other operating expense (income), net	$ 5,732	$ (6,548)	$ 12,280	NM
As a percent of consolidated revenue	2 %	(2 %)		

Other operating expense (income), net increased $12.3 million for the six months ended June 30, 2023, as compared to the six months ended June 30, 2022. We recognized a $8.0 million loss on the mark-to-market adjustment of contingent consideration associated with the World Programming acquisition for the six months ended June 30, 2023, compared to a $5.3 million gain for the six months ended June 30, 2022. This loss was partially offset by a $0.9 million increase in grant income for the six months ended June 30, 2023.

Interest expense

(in thousands)	Six Months Ended June 30, 2023	Six Months Ended June 30, 2022	Period-to-period change $	Period-to-period change %
Interest expense	$ 3,054	$ 1,285	$ 1,769	138 %
As a percent of consolidated revenue	1 %	0 %		

Interest expense increased $1.8 million for the six months ended June 30, 2023, as compared to the six months ended June 30, 2022. Interest expense increased as a result of the interest costs on the 2027 Notes which were issued in June 2022.

Other (income) expense, net

(in thousands)	Six Months Ended June 30, 2023	2022	Period-to-period change $	%
Other (income) expense, net	$ (7,808)	$ 23,975	$ 31,783	NM
As a percent of consolidated revenue	(3%)	8%		

Other (income) expense, net increased by $31.8 million for the six months ended June 30, 2023, as compared to the six months ended June 30, 2022. We recognized $6.9 million of interest income and $0.9 million in net foreign currency gains for the six months ended June 30, 2023, compared to $16.6 million expense on the repurchase of a portion of our 2024 Notes, $7.7 million in net foreign currency losses and $0.3 million of interest income during the six months ended June 30, 2022.

Income tax expense

(in thousands)	Six Months Ended June 30, 2023	2022	Period-to-period change $	%
Income tax expense	$ 17,910	$ 10,429	$ 7,481	72%

The effective tax rate was -283% and -88% for the six months ended June 30, 2023 and 2022, respectively. The tax rate is affected by our status as a U.S. resident taxpayer, the tax rates in the U.S. and other jurisdictions in which we operate, the relative amount of income earned by jurisdiction and the relative amount of losses or income for which no benefit or expense is recognized due to a valuation allowance. The change in our effective tax rate for the six months ended June 30, 2023, was primarily due to a change to IRC Section 174 which became effective for tax years beginning on or after January 1, 2022. Under the new rules, we are required to capitalize and amortize research and development expenses over five years for research activities conducted in the U.S. and over fifteen years for research activities conducted outside of the U.S. for U.S. tax purposes. The capitalization of research and development expenses resulted in an increase to our taxable income and FDII, resulting in a corresponding increase in our FDII deduction. However, no tax benefit is recognized for the deferred tax asset established for these capitalized research and development expenses due to our valuation allowance position in the U.S. Our effective tax rates for the six months ended June 30, 2023 and 2022, also include net discrete expense of $11.6 million and $3.4 million, respectively, primarily related to changes in tax laws, withholding taxes on royalties, current tax expense from capitalized research and development expense, changes in reserves, changes in accruals for unremitted earnings and other adjustments.

Net loss

(in thousands)	Six Months Ended June 30, 2023	2022	Period-to-period change $	%
Net loss	$ (24,239)	$ (22,246)	$ (1,993)	NM

Net loss was $24.2 million and $22.2 million for the six months ended June 30, 2023 and 2022, respectively. The net loss for the six months ended June 30, 2023 was largely attributable to the increase in operating expenses and income tax expense, as well as a loss on the mark-to-market adjustment of contingent consideration, partially offset by the increase in software revenue and interest income, as described above. The net loss for the six months ended June 30, 2022 included expense recognized on the repurchase of a portion of our 2024 Notes, foreign currency losses and a gain on the mark-to-market adjustment of contingent consideration.

Non-GAAP financial measures

We monitor the following key non-GAAP (United States generally accepted accounting principles) financial and operating metrics to help us evaluate our business, measure our performance, identify trends affecting our business, formulate business plans and make strategic decisions. In analyzing and planning for our business, we supplement our use of GAAP financial measures with non-GAAP financial measures, including Billings as a liquidity measure, Adjusted EBITDA as a performance measure and Free Cash Flow as a liquidity measure.

(in thousands)	Three Months Ended June 30, 2023	2022	Six Months Ended June 30, 2023	2022
Other financial data:				
Billings	$ 147,765	$ 125,423	$ 311,282	$ 296,759
Adjusted EBITDA	$ 17,056	$ 16,440	$ 60,111	$ 63,030
Free Cash Flow			$ 83,045	$ 14,584

Billings. Billings consists of our total revenue plus the change in our deferred revenue, excluding deferred revenue from acquisitions during the period. Given that we generally bill our customers at the time of sale, but typically recognize a portion of the related revenue ratably over time, management believes that Billings is a meaningful way to measure and monitor our ability to provide our business with the working capital generated by upfront payments from our customers.

Adjusted EBITDA. We define Adjusted EBITDA as net income (loss) adjusted for income tax expense (benefit), interest expense, interest income and other, depreciation and amortization, stock-based compensation expense, restructuring charges, asset impairment charges and other special items as determined by management. Our management team believes that Adjusted EBITDA is a meaningful measure of performance as it is commonly utilized by management and the investment community to analyze operating performance in our industry.

Free Cash Flow. Free Cash Flow is a non-GAAP measure that we calculate as cash flow provided by operating activities less capital expenditures. Management believes that Free Cash Flow is useful in analyzing our ability to service and repay debt, when applicable, and return value directly to stockholders.

These non-GAAP financial measures reflect an additional way of viewing aspects of our business that, when viewed with our GAAP results and the accompanying reconciliations to corresponding GAAP financial measures included in the tables below, may provide a more complete understanding of factors and trends affecting our business. These non-GAAP financial measures should not be relied upon to the exclusion of GAAP financial measures and are by definition an incomplete understanding of the Company and must be considered in conjunction with GAAP measures.

We believe that the non-GAAP measures disclosed herein are only useful as an additional tool to help management and investors make informed decisions about our financial and operating performance and liquidity. By definition, non-GAAP measures do not give a full understanding of the Company. To be truly valuable, they must be used in conjunction with the comparable GAAP measures. In addition, non-GAAP financial measures are not standardized. It may not be possible to compare these financial measures with other companies' non-GAAP financial measures having the same or similar names. We strongly encourage investors to review our consolidated financial statements and the notes thereto in their entirety and not to rely on any single financial measure.

Reconciliation of non-GAAP financial measures

The following tables provides reconciliations of revenue to Billings, net loss to Adjusted EBITDA, and net cash provided by operating activities to Free Cash Flow:

Billings

	Three Months Ended June 30,		Six Months Ended June 30,	
(in thousands)	**2023**	**2022**	**2023**	**2022**
Revenue	$ 141,161	$ 132,656	$ 307,195	$ 292,437
Ending deferred revenue	148,547	112,926	148,547	112,926
Beginning deferred revenue	(141,943)	(118,403)	(144,460)	(106,032)
Deferred revenue acquired	—	(1,756)	—	(2,572)
Billings	$ 147,765	$ 125,423	$ 311,282	$ 296,759

Adjusted EBITDA

	Three Months Ended June 30,		Six Months Ended June 30,	
(in thousands)	**2023**	**2022**	**2023**	**2022**
Net loss	$ (22,280)	$ (33,774)	$ (24,239)	$ (22,246)
Income tax expense	8,678	3,899	17,910	10,429
Stock-based compensation expense	23,736	21,200	45,897	39,814
Interest expense	1,528	700	3,054	1,285
Depreciation and amortization	9,738	8,133	19,488	15,819
Special adjustments, interest income and other [(1)]	(4,344)	16,282	(1,999)	17,929
Adjusted EBITDA	$ 17,056	$ 16,440	$ 60,111	$ 63,030

(1) The three months ended June 30, 2023, includes a $1.0 million loss from the mark-to-market adjustment of contingent consideration associated with the World Programming acquisition, $4.0 million of interest income, and $1.3 million currency gains on acquisition-related intercompany loans. The three months ended June 30, 2022, includes $16.6 million expense on repurchase of convertible senior notes, $5.4 million currency losses on acquisition-related intercompany loans, and a $5.3 million gain from the mark-to-market adjustment of contingent consideration associated with the World Programming

acquisition. The six months ended June 30, 2023, includes a $8.0 million loss from the mark-to-market adjustment of contingent consideration associated with the World Programming acquisition, $6.9 million of interest income, and $3.1 million currency gains on acquisition-related intercompany loans. The six months ended June 30, 2022, includes $16.6 million expense on repurchase of convertible senior notes, $6.9 million currency losses on acquisition-related intercompany loans and a $5.3 million gain from the mark-to-market adjustment of contingent consideration associated with the World Programming acquisition.

Free Cash Flow

	Six Months Ended June 30,	
(in thousands)	**2023**	**2022**
Net cash provided by operating activities [(1)]	$ 89,229	$ 18,041
Capital expenditures	(6,184)	(3,457)
Free cash flow [(1)]	$ 83,045	$ 14,584

(1) The six months ended June 30, 2022, includes $65.9 million payment for a damages judgement assumed as part of an acquisition in December 2021.

Recurring software license rate

A key factor to our success is our recurring software license rate which we measure through Billings, primarily derived from annual renewals of our existing subscription customer agreements. Recurring revenue streams allow us to create more consistent, predictable cash flows and drive greater long-term customer value. We believe the recurring software license rate is a key factor to our success and we monitor this measure to ensure our go-to-market strategy is driving long-term success of our business.

We calculate our recurring software license rate for a particular period by dividing (i) the sum of software term-based license Billings, software license maintenance Billings, and 20% of software perpetual license Billings which we believe approximates maintenance as an element of the arrangement by (ii) the total software license Billings including all term-based subscriptions, maintenance, and perpetual license billings from all customers for that period. For the six months ended June 30, 2023 and 2022, our recurring software license rate was 94% and 93%, respectively. The recurring software license rate may vary from period to period.

Liquidity and capital resources

As of June 30, 2023, our principal sources of liquidity were $418.3 million in cash and cash equivalents and $200.0 million availability on our credit facility. We have outstanding debt in the form of our 2027 and 2024 convertible notes (“Convertible Notes”) with a $311.8 million principal amount as of June 30, 2023.

For at least twenty trading days during the last thirty consecutive trading days in the quarter ended June 30, 2023, the last reported sale price of the Company’s Class A common stock was greater than or equal to 130% of the conversion price of the 2024 Notes. As a result, the 2024 Notes were convertible at the option of the holders and were classified as current liabilities on the consolidated balance sheet as of June 30, 2023.

During the period ended June 30, 2023, the conditions allowing holders of the 2027 Notes to convert were not met. Therefore, the 2027 Notes were classified as long-term debt on the consolidated balance sheet as of June 30, 2023.

We have the ability to settle the Convertible Notes in cash, shares of our common stock, or a combination of cash and shares of our common stock at our own election.

On May 31, 2023, our Board approved an increased authorization under our existing stock repurchase program from $50.0 million to $75.0 million of our common stock. During the six months ended June 30, 2023, under our stock repurchase program, we repurchased and retired 91,273 shares of our Class A Common Stock at an average price of $46.63 per share for a total cost of approximately $4.3 million. As of June 30, 2023, approximately $49.1 million remained available for repurchase under the program.

We continue to evaluate possible acquisitions and other strategic transactions designed to expand our business. As a result, our expected uses of cash could change, our cash position could be reduced, or we may incur additional debt obligations to the extent we complete additional acquisitions or strategic transactions.

Our existing cash and cash equivalents may fluctuate during fiscal 2023 due to changes in our planned cash expenditures, including changes in incremental costs such as direct costs and integration costs related to acquisitions. Cash from operations could also be affected by various risks and uncertainties. It is possible that certain customers may unilaterally decide to extend payments on accounts receivable, however our customer base is comprised primarily of larger organizations with typically strong liquidity and capital resources.

We believe that our existing cash balances, together with funds generated from operations and amounts available under our credit facility, will be sufficient to finance our operations and meet our foreseeable cash requirements for the next twelve months. We also believe that our financial resources, along with managing discretionary expenses, will allow us to manage our business operations for the foreseeable future and withstand economic uncertainty, which could include reductions in revenue and delays in payments from customers and partners. We will continue to evaluate our financial position as developments evolve.

Revolving credit facility

We have a $200.0 million credit facility with a maturity date of December 31, 2025 (“2019 Amended Credit Agreement”). As of June 30, 2023, there were no outstanding borrowings under the 2019 Amended Credit Agreement and there was $200.0 million available for future borrowing. The 2019 Amended Credit Agreement is available for general corporate purposes, including working capital, capital expenditures and permitted acquisitions. As of June 30, 2023, we were in compliance with the financial covenants.

For additional information about the 2019 Amended Credit Agreement, refer to our consolidated financial statements for the year ended December 31, 2022, included in our Annual Report on Form 10-K filed with the SEC on February 24, 2023.

Cash flows

As of June 30, 2023, we had cash and cash equivalents of $418.3 million available for working capital purposes, acquisitions, and capital expenditures; $310.9 million of this amount was held in the United States and $102.2 million was held in the APAC and EMEA regions with the remainder held in Canada, Mexico, and South America.

Other than statutory limitations, there are no significant restrictions on the ability of our subsidiaries to pay dividends or make other distributions to Altair. Based on our current liquidity needs and repatriation strategies, we expect that we can manage our global liquidity needs without material adverse tax implications.

The following table summarizes our cash flows for the periods indicated:

	Six Months Ended June 30,	
(in thousands)	**2023**	**2022**
Net cash provided by operating activities	$ 89,229	$ 18,041
Net cash used in investing activities	(8,357)	(41,439)
Net cash provided by financing activities	21,001	31,918
Effect of exchange rate changes on cash, cash equivalents and restricted cash	(44)	(6,226)
Net increase in cash, cash equivalents and restricted cash	$ 101,829	$ 2,294

Net cash provided by operating activities

Net cash provided by operating activities for the six months ended June 30, 2023, was $89.2 million, which reflects an increase of $71.2 million compared to the six months ended June 30, 2022. This increase was the result of a $65.9 million payment in the prior year on an existing legal judgment against World Programming, and changes to our working capital position for the six months ended June 30, 2023, as compared to the six months ended June 30, 2022.

Net cash used in investing activities

Net cash used in investing activities for the six months ended June 30, 2023, was $8.4 million, which reflects a decrease of $33.1 million compared to the six months ended June 30, 2022. For the six months ended June 30, 2022, we paid $37.7 million related to business acquisitions.

Net cash provided by financing activities

Net cash provided by financing activities for the six months ended June 30, 2023, was $21.0 million, which reflects a decrease of $10.9 million compared to the six months ended June 30, 2022. For the six months ended June 30, 2023, we received proceeds of $23.5 million from the exercise of common stock options and made payments of $6.3 million for the repurchase of our Class A common stock. For the six months ended June 30, 2022, we received aggregate proceeds of $224.3 million from the issuance of our 2027 Notes, net of certain discounts and commissions, partially offset by $192.8 million proceeds used for the repurchase of a portion of our 2024 Notes, and made payments of $4.4 million for the repurchase of our Class A common stock.

Effect of exchange rate changes on cash, cash equivalents and restricted cash

There was a minimal effect of exchange rate changes on cash, cash equivalents and restricted cash for the six months ended June 30, 2023, compared to an adverse effect of exchange rate changes on cash, cash equivalents and restricted cash of $6.2 million for the six months ended June 30, 2022.

Commitments

There were no material changes in our commitments as disclosed in our Annual Report on Form 10-K for the year ended December 31, 2022.

Recently issued accounting pronouncements

See Note 2 in the Notes to consolidated financial statements in Item 1, Part I of this Quarterly Report on Form 10-Q for a full description of the recent accounting pronouncements and our expectation of their impact, if any, on our results of operations and financial condition.

Item 3. Quantitative and Qualitative Disclosures About Market Risk

We are exposed to certain global market risks, including foreign currency exchange risk and interest rate risk associated with our revolving credit facility.

Foreign Currency Risk

As a result of our substantial international operations, we are exposed to foreign currency risks that arise from our normal business operations, including in connection with our transactions that are denominated in foreign currencies. In addition, we translate sales and financial results denominated in foreign currencies into United States dollars for purposes of our consolidated financial statements. As a result, appreciation of the United States dollar against these foreign currencies generally will have a negative impact on our reported revenue and operating income while depreciation of the United States dollar against these foreign currencies will generally have a positive effect on reported revenue and operating income.

As of June 30, 2023, we do not have any foreign currency hedging contracts. Based on our current international operations, we do not plan on engaging in hedging activities in the near future.

Market Risk and Market Interest Risk

In June 2022, we issued $230.0 million aggregate principal amount of 1.750% convertible senior notes due in 2027. In June 2019, we issued $230.0 million aggregate principal amount of 0.250% convertible senior notes due 2024 of which $81.8 million aggregate principal amount remains outstanding as of June 30, 2023. The 2027 Notes and 2024 Notes have fixed annual interest rates at 1.750% and 0.250%, respectively, and, therefore, we do not have economic interest rate exposure on our Convertible Notes. However, the value of the Convertible Notes is exposed to interest rate risk. Generally, the fair market value of our fixed interest rate Convertible Notes will increase as interest rates fall and decrease as interest rates rise. In addition, the fair values of the Convertible Notes are affected by our stock price. The fair value of the Convertible Notes will generally increase as our Class A common stock price increases in value and will generally decrease as our Class A common stock price declines in value. We carry the Convertible Notes at face value less unamortized issuance costs on our balance sheet, and we present the fair value for required disclosure purposes only.

As of June 30, 2023, we had cash, cash equivalents and restricted cash of $418.8 million, consisting primarily of bank deposits and money market funds. As of June 30, 2023, we had no outstanding borrowings under our 2019 Amended Credit Agreement. Such interest-bearing instruments carry a degree of interest rate risk; however, historical fluctuations of interest expense have not been significant.

Interest rate risk relates to the gain/increase or loss/decrease we could incur on our debt balances and interest expense associated with changes in interest rates. Changes in interest rates would impact the amount of interest income we realize on our invested cash balances. It is our policy not to enter into derivative instruments for speculative purposes, and therefore, we hold no derivative instruments for trading purposes.

Item 4. Controls and Procedures

We maintain disclosure controls and procedures (as defined in Rule 13a-15(e) or 15d-15(e) of the Exchange Act) that are designed to ensure that information required to be disclosed in periodic reports filed with the SEC under the Securities Exchange Act of 1934 is recorded, processed, summarized and reported within the time periods specified in the SEC’s rules and forms, and that such information is accumulated and communicated to the Company’s management, including its Chief Executive Officer and Chief Financial Officer, as appropriate, to allow timely decisions regarding required disclosure. Under the supervision and with the participation of our management, including the Chief Executive Officer and Chief Financial Officer, we have evaluated the effectiveness of our disclosure controls and procedures as defined in Rule 13(a)-15(e) under the Exchange Act as of the end of the period covered by this report. Based on that evaluation, the Chief Executive Officer and Chief Financial Officer have concluded that our disclosure controls and procedures were effective as of June 30, 2023.

Changes in Internal Control Over Financial Reporting

There was no change in our internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act) that occurred during the quarter ended June 30, 2023, that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

PART II – OTHER INFORMATION

Item 1. Legal Proceedings

World Programming

We acquired World Programming Limited and a related company (collectively, “World Programming”) in December 2021.

In 2018, SAS Institute, Inc. (“SAS”) filed litigation in the United States District Court for the Eastern District of Texas (the “Texas Court”) asserting that World Programming infringed SAS copyrights and patents. SAS voluntarily dismissed with prejudice its patent claims, and the Texas Court entered judgment in favor of World Programming on the copyright claims. SAS appealed the Texas Court judgment to the United States Court of Appeals for the Federal Circuit (the “Court of Appeals”). Oral arguments were held before the Court of Appeal on January 13, 2022. On April 6, 2023, the Court of Appeals issued its decision in favor of World Programing by affirming the Texas Court’s dismissal of SAS’s copyright claims. As of the date of this report, the period in which SAS is eligible to file a petition for a writ of certiorari has not expired.

Other legal proceedings

From time to time, we may be subject to other legal proceedings and claims in the ordinary course of business. We have received, and may in the future continue to receive, claims from third parties asserting, among other things, infringement of their intellectual property rights. Future litigation may be necessary to defend ourselves, our partners and our customers by determining the scope, enforceability and validity of third-party proprietary rights, or to establish and enforce our proprietary rights. The results of any current or future litigation cannot be predicted with certainty and regardless of the outcome, litigation can have an adverse impact on us because of defense and settlement costs, diversion of management resources and other factors.

Item 1A. Risk Factors

There have been no material changes to the risk factors disclosed in the Company’s Annual Report on 10-K for the year ended December 31, 2022.

Item 2. Unregistered Sales of Equity Securities and Use of Proceeds

Not applicable.

Item 3. Defaults Upon Senior Securities

Not applicable.

Item 4. Mine Safety Disclosures

Not applicable.

Item 5. Other Information

Insider Trading Arrangements and Policies

During the quarter ended June 30, 2023, none of the Company's directors or officers adopted or terminated a "Rule 10b5-1 trading arrangement" or "non-Rule 10b5-1 trading arrangement," as those terms are defined in Regulation S-K, Item 408, that was intended to satisfy the affirmative defense conditions of Rule 10b5-1(c).

Item 6. Exhibits

No.	Description
31.1*	Certification of the Chief Executive Officer of Altair Engineering Inc. pursuant to Rule 13a-14(a)/Rule 15d-14(a) under the Securities Exchange Act of 1934, as amended
31.2*	Certification of the Chief Financial Officer of Altair Engineering Inc. pursuant to Rule 13a-14(a)/Rule 15d-14(a) under the Securities Exchange Act of 1934, as amended
32.1**	Certification of the Chief Executive Officer and Chief Financial Officer of Altair Engineering Inc. pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
101.INS*	Inline XBRL Instance Document – the instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document.
101.SCH*	Inline XBRL Taxonomy Extension Schema Document
101.CAL*	Inline XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF*	Inline XBRL Taxonomy Extension Definition Linkbase Document
101.LAB*	Inline XBRL Taxonomy Extension Label Linkbase Document
101.PRE*	Inline XBRL Taxonomy Extension Presentation Linkbase Document
104	Cover Page Interactive Data File (formatted as Inline XBRL and contained in Exhibits 101).

* Filed herewith.
** The certifications furnished in Exhibit 32.1 hereto are deemed to accompany this Quarterly Report on Form 10-Q and will not be deemed “filed” for purposes of Section 18 of the Securities Exchange Act of 1934, as amended, except to the extent that the registrant specifically incorporates it by reference.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

ALTAIR ENGINEERING INC.

Date: August 3, 2023	By:	/s/ James R. Scapa
		James R. Scapa
		Chief Executive Officer (Principal Executive Officer)
Date: August 3, 2023	By:	/s/ Matthew Brown
		Matthew Brown
		Chief Financial Officer (Principal Financial Officer)

Exhibit 31.1

CERTIFICATION PURSUANT TO
RULES 13a-14(a) AND 15d-14(a) UNDER THE SECURITIES EXCHANGE ACT OF 1934,
AS ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, James R. Scapa, certify that:

1. I have reviewed this quarterly report on Form 10-Q of Altair Engineering Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant’s other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

c) Evaluated the effectiveness of the registrant’s disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

d) Disclosed in this report any change in the registrant’s internal control over financial reporting that occurred during the registrant’s most recent fiscal quarter (the registrant’s fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant’s internal control over financial reporting; and

5. The registrant’s other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant’s auditors and the audit committee of registrant’s board of directors (or persons performing the equivalent functions):

a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant’s ability to record, process, summarize and report financial information; and

b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant’s internal control over financial reporting.

/s/ James R. Scapa

James R. Scapa
Chief Executive Officer
(Principal Executive Officer)

August 3, 2023

Exhibit 31.2

CERTIFICATION PURSUANT TO
RULES 13a-14(a) AND 15d-14(a) UNDER THE SECURITIES EXCHANGE ACT OF 1934,
AS ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Matthew Brown, certify that:

1. I have reviewed this quarterly report on Form 10-Q of Altair Engineering Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant’s other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

c) Evaluated the effectiveness of the registrant’s disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

d) Disclosed in this report any change in the registrant’s internal control over financial reporting that occurred during the registrant’s most recent fiscal quarter (the registrant’s fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant’s internal control over financial reporting; and

5. The registrant’s other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant’s auditors and the audit committee of registrant’s board of directors (or persons performing the equivalent functions):

a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant’s ability to record, process, summarize and report financial information; and

b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant’s internal control over financial reporting.

/s/ Matthew Brown
Matthew Brown
Chief Financial Officer
(Principal Financial Officer)

August 3, 2023

Exhibit 32.1

CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350, AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Quarterly Report of Altair Engineering Inc. (the “Company”), on Form 10-Q for the period ended June 30, 2023, as filed with the Securities and Exchange Commission on the date hereof (the “Report”), the undersigned officers of the Company certify to their knowledge and in their respective capacities, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that:

(1) The Report fully complies with the requirements of section 13(a) or 15(d), as applicable, of the Securities Exchange Act of 1934, as amended; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

/s/ James R. Scapa
James R. Scapa
Chief Executive Officer
(Principal Executive Officer)

/s/ Matthew Brown
Matthew Brown
Chief Financial Officer
(Principal Financial Officer)

August 3, 2023