

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

FORM 10-K

(Mark One)

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

For the fiscal year ended June 30, 2021

or

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

For the transition period from to

Commission file number: 001-34630

Aspen Technology, Inc.

(Exact name of registrant as specified in its charter)

Delaware
(State or other jurisdiction of
incorporation or organization)

04-2739697
(I.R.S. Employer
Identification No.)

20 Crosby Drive
Bedford
Massachusetts
(Address of principal executive offices)

01730
(Zip Code)

Registrant's telephone number, including area code: **781-221-6400**

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

Title of Each Class	Trading Symbol	Name of Each Exchange on Which Registered
Common stock, \$0.10 par value per share	AZPN	NASDAQ Global Select Market

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

None

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

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

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

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

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

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

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

Indicate by check mark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report.

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

As of December 31, 2020, the aggregate market value of common stock (the only outstanding class of common equity of the registrant) held by non-affiliates of the registrant was \$8,795,495,299 based on a total of 67,527,795 shares of common stock held by non-affiliates and on a closing price of \$130.25 on December 31, 2020 for the common stock as reported on The NASDAQ Global Select Market.

There were 67,076,892 shares of common stock outstanding as of August 11, 2021.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's Proxy Statement related to the registrant's 2021 Annual Meeting of Stockholders to be filed with the Securities and Exchange Commission pursuant to Regulation 14A not later than 120 days after the end of the fiscal year covered by this Form 10-K are incorporated by reference in Part III, Items 10-14 of this Form 10-K.

		<u>Page</u>
	<u>PART I</u>	
Item 1.	Business	4
Item 1A.	Risk Factors	16
Item 1B.	Unresolved Staff Comments	22
Item 2.	Properties	22
Item 3.	Legal Proceedings	22
Item 4.	Mine Safety Disclosures	22
	<u>PART II</u>	
Item 5.	Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities	23
Item 6.	Selected Financial Data	24
Item 7.	Management's Discussion and Analysis of Financial Condition and Results of Operations	24
Item 7A.	Quantitative and Qualitative Disclosures About Market Risk	42
Item 8.	Financial Statements and Supplementary Data	43
Item 9.	Changes in and Disagreements With Accountants on Accounting and Financial Disclosure	43
Item 9A.	Controls and Procedures	43
Item 9B.	Other Information	46
	<u>PART III</u>	
Item 10.	Directors, Executive Officers and Corporate Governance	47
Item 11.	Executive Compensation	47
Item 12.	Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters	47
Item 13.	Certain Relationships and Related Transactions, and Director Independence	47
Item 14.	Principal Accounting Fees and Services	47
	<u>PART IV</u>	
Item 15.	Exhibits, Financial Statement Schedules	48
	<u>SIGNATURES</u>	

Our registered trademarks include aspenONE and Aspen Plus. All other trademarks, trade names and service marks appearing in this Form 10-K are the property of their respective owners.

Our fiscal year ends on June 30, and references to a specific fiscal year are the twelve months ended June 30 of such year (for example, "fiscal 2021" refers to the year ended June 30, 2021).

Unless the context indicates otherwise, references in this report to "we", "us", "our" and similar references mean Aspen Technology, Inc. and its subsidiaries.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS AND INDUSTRY DATA

This Form 10-K contains "forward-looking statements" within the meaning of Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934. Forward-looking statements relate to future events or our future financial performance. We generally identify forward-looking statements by terminology such as "anticipate," "believe," "could," "estimate," "expect," "intend," "may," "potential," "should," "target," or the negative of these terms or other similar words. These statements are only predictions. The outcome of the events described in these forward-looking statements is subject to known and unknown risks, uncertainties and other factors that may cause our, our customers' or our industry's actual results, levels of activity, performance or achievements expressed or implied by these forward-looking statements, to differ. "Item 1. Business," "Item 1A. Risk Factors" and "Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations" as well as other sections in this Form 10-K, discuss some of the factors that could contribute to these differences. The forward-looking statements made in this Form 10-K relate only to events as of the date on which the statements are made. We undertake no obligation to update any forward-looking statement to reflect events or circumstances after the date on which the statement is made or to reflect the occurrence of unanticipated events. Our forward-looking statements do not reflect the potential impact of any future acquisitions, mergers, dispositions, joint ventures or investments we may make. The industry in which we operate is subject to a high degree of uncertainty and risk due to variety of factors, including those described in "Item 1A. Risk Factors."

PART I

Item 1. Business.

Overview

We are a global leader in asset optimization software that optimizes asset design, operations and maintenance in complex, industrial environments. We combine decades of process modeling and operations expertise with big data, artificial intelligence, and advanced analytics. Our purpose-built software improves the competitiveness and profitability of our customers by: increasing throughput, energy efficiency, and production levels; reducing unplanned downtime, plant emissions, and safety risks; enhancing capital efficiency; and decreasing working capital requirements over the entire asset lifecycle to support operational excellence.

Our software combines our proprietary mathematical and empirical models of manufacturing and planning processes which reflects the deep domain expertise we have amassed from focusing on solutions for the process and other capital-intensive industries for over 40 years. Our products have embedded artificial intelligence, or AI, capabilities that create insights, provide guidance, and automate and democratize knowledge, known as Industrial AI, to create more value for the process industries. For customers beginning to consider how AI can be applied to their domain-specific challenges, we recently introduced our hybrid model methodology. This capability enhances first principles-driven models with AI to improve accuracy, safety and predictability without requiring customers to have additional data science expertise.

We have developed our applications to design and optimize processes across three principal business areas: engineering, manufacturing and supply chain, and asset performance management. Each business area leverages our artificial intelligence of things, or AIoT, products as the foundation of industrial data, to help us realize our vision for Industrial AI at scale. We are the recognized market and technology leader in providing process optimization and asset performance management software for each of these business areas.

We have established sustainable competitive advantages based on the following strengths:

- Innovative products that can enhance our customers' profitability and productivity;
- Long-term customer relationships;
- Large installed base of users of our software; and
- Long-term license contracts.

We have approximately 2,500 customers globally. Our customers consist of companies engaged in the process industry and other capital-intensive industries such as energy, chemicals, engineering and construction, as well as pharmaceuticals, food and beverage, transportation, power, metals and mining, pulp and paper, and consumer packaged goods.

Industry Background

The process manufacturing industries consist of companies that typically manufacture finished products by applying a controlled chemical process either to a raw material that is fed continuously through the plant or to a specific batch of raw material.

Process industry characteristics and dynamics are complex and the scale of operation is very large; therefore, any small improvement in the high-volume feedstocks used, or to the chemical process applied, for example, can have a significant impact on the efficiency and cost-effectiveness of manufacturing operations. As a result, process manufacturers, as well as the engineering and construction firms that partner with these manufacturers, have extensive technical requirements and need sophisticated, integrated software to help design, operate and maintain their complex manufacturing assets. The unique characteristics associated with process manufacturing create special demands for business applications that frequently exceed the capabilities of generic or non-process manufacturing software packages.

Industry Specific Challenges Facing the Process Industries

Companies in different segments of the process industries face specific challenges driving their need for software solutions that design, operate and maintain manufacturing environments more effectively:

Energy. Our energy markets are comprised of three primary sectors: Exploration and Production, also called "upstream," Oil and Gas Production and Processing, also called "midstream," and Refining and Marketing, also called "downstream":

- Companies engaged in Exploration and Production explore for and produce hydrocarbons. They target reserves in increasingly diverse geographies involving geological, logistical and political challenges. They need to design and develop ever larger, more complex and more remote production, gathering and processing facilities as quickly as possible with the objective of optimizing production and ensuring regulatory compliance.
- Companies engaged in Oil and Gas Production and Processing produce and gather oil and natural gas from well heads, clean it, process it, and separate it into oil, dry natural gas, and natural gas liquids in preparation for transport to downstream markets. The processing capacity of oil and gas processing plants in North America has increased significantly in recent years to process the oil and gas extracted from shale deposits.
- Companies engaged in Refining and Marketing convert crude oil through a thermal and chemical manufacturing process into end products such as gasoline, jet and diesel fuels and into intermediate products for downstream chemical manufacturing companies. These companies are characterized by high volumes and low operating margins. In order to deliver better margins, they focus on optimizing feedstock selection and product mix, reducing energy and capital costs, maximizing throughput, and minimizing inventory, all while operating safely and in accordance with regulations.

Chemicals. The chemicals industry includes both bulk and specialty chemical companies:

- Bulk chemical producers manufacture commodity chemicals and compete primarily on price; they seek to achieve economies of scale and manage operating margin pressure by building larger, more complex plants located near feedstock sources.
- Specialty chemical manufacturers, which primarily manufacture highly differentiated customer-specific products, face challenges in managing diverse product lines, multiple plants, complex supply chains and product quality.

Engineering and construction. Engineering and construction firms that work with process manufacturers compete on a global basis by bidding on and executing on complex, large-scale projects. They need a digital environment in which optimal plant designs can be produced quickly and efficiently, incorporating highly accurate modeling, analysis and cost estimation technology. In addition, these projects require software that enables significant collaboration internally, with the manufacturer, and in many cases, with other engineering and construction firms.

Other Industries. We recently embarked on a new strategy to market our products and solutions to support companies in the pharmaceuticals and metal and mining industries. These industries desire a far more connected digital infrastructure than the one they have now, and are seeking asset optimization solutions that help them improve their processes, reduce costs and improve quality. Companies in the consumer packaged goods, power, and pulp and paper industries are also seeking asset optimization solutions that help them deliver improved financial and operating results in the face of varied process manufacturing challenges.

Organizations in the process industries now also view sustainability efforts as being a more urgent necessity due to a variety of factors including governmental regulations, environmental stewardship, and new market opportunities. Achieving sustainability goals requires organizations to focus on their environmental footprints, which include everything from reducing the use of non-renewable resources, such as water for feedstocks or energy generation, to decreasing carbon emissions related to standard business operations. Key techniques used to meet these goals can include sustainability tracking, enhanced waste management, process intensification, process redesign and making better use of energy and water. AspenTech products are solutions for each of these techniques.

Complexity of the Process Industries

Companies in the process industries constantly face pressure on margins causing them to continually seek ways to operate more efficiently. At the same time, these manufacturers face complexity as a result of the following:

Globalization of markets. Process manufacturers are continuously expanding their operations to take advantage of growing demand and more economically viable sources of feedstocks. Process manufacturers must be able to design, build and operate plants efficiently and economically while managing and optimizing ever broadening supply chains.

Market volatility. Process manufacturers must react quickly to frequent changes in feedstock prices, temporary or longer-term feedstock shortages, and rapid changes in finished product prices. Unpredictable commodity markets strain the manufacturing and supply chain operations of process manufacturers, which must evaluate and implement changes in inventory levels, feedstock inputs, equipment usage and operational processes to remain competitive.

Environmental and safety regulations. Process companies must comply with an expanding array of data maintenance and reporting requirements under governmental and regulatory mandates, and the global nature of their operations can subject them to numerous regulatory regimes. These companies are increasingly relying upon software applications to model potential outcomes, store operating data and develop reporting capabilities in response to heightened scrutiny and oversight because of environmental, safety and other implications of their products and manufacturing processes.

Evolving Workforce. Process companies must adapt to the changing nature of the technical workforce. A generation of highly experienced plant operators and engineers is nearing retirement. New entrants to the workforce must be able to leverage effectively organization knowledge to become productive with far fewer years of experience.

Market Opportunity

Process industries have been focusing on digital transformation initiatives to improve productivity for more than 40 years. In the 1980s, process manufacturers implemented distributed control systems, or DCS, to automate the management of plant hardware. DCS use computer hardware, communication networks and industrial instruments to measure, record and automatically control process variables. In the 1990s, these manufacturers adopted enterprise resource planning, or ERP, systems to streamline back office functions and interact with DCS. These systems allowed process manufacturers to track, monitor and report the performance of each plant, rather than rely on traditional paper and generic desktop spreadsheets.

Many process manufacturers have implemented both DCS and ERP systems but have realized that their investments in hardware and back-office systems are inadequate. DCS are only able to control and monitor processes based on fixed sets of parameters and cannot dynamically react to changes in the manufacturing process unless instructed by end users. ERP systems can only record what is produced in operations. Although DCS and ERP systems help manage manufacturing performance, neither of these systems can optimize what is produced, how it is produced or where it is produced. Moreover, neither can help a process manufacturer understand how to improve its processes or how to identify opportunities to decrease operating expenses, or to reduce environmental impact.

As digital transformation initiatives were extended to each aspect of asset operations, the opportunity to optimize across the full asset lifecycle came into focus. Asset optimization software focuses on the optimum design, operation, and maintenance of the manufacturing process; how the design is optimized for optimum operations and reliability, how the process is operated for optimal economic, safety, and sustainable performance, and how the design and operations impact the longevity and reliability of the equipment. By connecting DCS and ERP systems with intelligent applications, asset optimization software allows a manufacturer to make faster economic decisions, resulting in safer, greener, and more reliable asset operations.

Examples of how asset optimization software can optimize a manufacturing environment include incorporating process manufacturing domain knowledge, supporting real-time decision making, predicting equipment failure, and providing the ability to respond and adapt to operational changes. Furthermore, these solutions can optimize the supply chain by helping a manufacturer to understand the operating conditions in each plant, enabling more efficient and optimized production decisions.

Increasingly, industrial organizations are focusing on how AI can be applied to address domain-specific industrial challenges. They are concentrating on tangible business outcomes from AI-enabled use cases to further validate the case for widespread industrial AI adoption. These initiatives involve shifting from mass data collection to more strategic industrial data management with a specific focus on data integration, mobility, and accessibility across the enterprise. As a result, integrated data management, edge and cloud infrastructure, and production-grade AI environments are in demand to build, deploy and host industrial AI applications at the appropriate speeds and scale.

AspenTech solutions help customers meet these challenges with proven domain expertise and innovative solutions. Our hybrid model methodology and capabilities in particular enhance first-principles driven models with AI. This is important because highly nonlinear processes are very difficult to model using first principles, and our software can model them using machine learning capabilities and insert empirical data models as objects into first principles-driven models to improve accuracy, safety and predictability.

Process manufacturers employ highly skilled technical personnel specializing in areas such as process design, equipment design, control engineering, manufacturing operations, analytics, planning, scheduling, and supply chain management. To drive efficiency and improve operating margins, these personnel need to collaborate across functional areas and increasingly rely on software to enable this collaboration as well as automate complex tasks associated with their jobs. Process companies must adapt to the changing nature of the technical workforce. A generation of highly experienced plant operators and engineers is nearing retirement. As a result, we believe there is increasing demand for intelligent software applications that capture and automate expert knowledge and are intuitive and easy-to-learn.

aspenONE Solutions

We provide integrated asset optimization software solutions designed and developed specifically for the process and other capital-intensive industries. Guided by 40 years of industrial expertise, we are delivering fit-for-purpose Industrial AI to create the next generation of domain-specific applications that extract new levels of value from industrial data across the entire enterprise. Customers use our solutions to accelerate their digitalization efforts in order to meet sustainability and profitability goals. Our solutions help customers automate processes to improve competitiveness and operational and resource efficiencies by increasing throughput and productivity, reducing operating and maintenance costs, increasing reliability, enhancing capital efficiency, enabling collaboration among different functions, increasing safety, reducing emissions and risk, and decreasing working capital requirements. Our solutions also help organizations design, operate, and maintain the production of innovative products from new energy sources like hydrogen to new genetic-based pharmaceuticals such as vaccines. Our aspenONE solutions are organized into three suites: 1) engineering; 2) manufacturing and supply chain; and 3) asset performance management or APM. Each product suite leverages our AIoT products as the foundation of industrial data.

Engineering. Our engineering software is used to develop process designs of new plants, re-vamp existing plants, and simulate and optimize existing processes. Using advanced modeling technologies including industrial AI, our engineering software can create digital twins of new and existing plant processes and equipment that are used to troubleshoot, fine-tune plant operations and improve overall environmental impact.

Manufacturing and Supply Chain. Our manufacturing software is used to optimize day-to-day processing activities, enabling process manufacturers to make better, more profitable decisions and to improve plant performance while driving more sustainable operations. Our supply chain management software is designed to enable process manufacturers to reduce inventory levels, increase asset efficiency, respond rapidly to market demands and optimize supply chain operations.

Asset Performance Management. Our asset performance management software is used to understand and predict the reliability of a system; be it multiple assets, a single asset, or equipment in a plant. The factors that impact reliability include how operating conditions degrade equipment performance over time, or how process conditions lead to equipment failure, and the ability to predict when the equipment will fail and prescribe actions to avoid such occurrences. The APM suite delivers Industrial AI through comprehensive machine learning and analytics technologies which, when used in a standalone or integrated manner with historical and real time asset and equipment data, can help our customers improve their return on capital employed and adhere to their sustainability goals.

Artificial Intelligence of Things. Our artificial intelligence of things products are used to: collect large volumes of data for reporting and analysis; integrate data across plants and technologies; visualize data to identify trends, outliers and patterns; and customize applications with our Data Science Studio. Each suite leverage our AIoT products to capture industrial data to help us realize our Industrial AI vision.

We offer customer support, professional services and training services to our customers. Under our aspenONE licensing model, software maintenance and support are included for the term of the arrangement. Professional services are offered to customers as a means to further implement and extend our technology across their corporations.

The key benefits of our aspenONE solutions include the following.

Broad and comprehensive software suites. We believe that we offer the most comprehensive suites of software applications addressing the engineering, manufacturing and supply chain and maintenance requirements of process manufacturers. While some competitors offer solutions in one or two principal business areas, no other vendor can match the breadth of our aspenONE offerings. In addition, we embed fit-for-purpose Industrial AI to help customers capture value from industrial data an extensive array of software applications that address extremely specific and complex industry and end user challenges, such as feedstock selection, dynamic optimization of plant assets, production planning and scheduling, design of new plant operations, maintenance of assets, quality of products delivered, sustainability and much more.

Integrated software solutions. aspenONE provides a standards-based framework that integrates applications, data and models within each of our software suites. Process manufacturers seeking to improve their business operations can use the integrated software applications in the aspenONE Engineering, Manufacturing and Supply Chain, Asset Performance Engineering suites to support real-time decision making both for individual production facilities and across multiple sites.

Flexible commercial model. Our aspenONE licensing model is primarily a subscription offering that provides customers with access to all of the applications within and across the aspenONE suite(s) that the customers license, including the right to any future software products and updates that may be introduced into the licensed aspenONE software suites. The customer can change or alternate the use of multiple applications in a licensed suite through the use of interchangeable measures of usage, or tokens, licensed in quantities determined by the customer. This enables the customer to use those applications whenever required and to experiment with different applications to best solve whatever critical business challenges the customer faces. The customer can easily increase its usage of our software as their business requirements evolve.

Cloud-ready infrastructure. The Aspen AIoT Hub is the cloud-ready Industrial AI infrastructure that enables our vision for the Self-Optimizing Plant. It provides the integrated data management, edge, and cloud infrastructure, and a production-grade AI environment, that enable customers to build, deploy and host Industrial AI applications at the enterprise speed and scale needed to gain critical insights from industrial data across plants and the enterprise.

Our Competitive Strengths

In addition to the breadth and depth of our integrated aspenONE software and the flexibility of our aspenONE licensing model, we believe our key competitive advantages include the following.

Industry-leading innovation based on substantial process industry expertise. For over 40 years, our significant investment in research and development has led to a number of major process engineering advances considered to be industry-standard applications. Our development organization is comprised of software engineers, chemical engineers and data scientists. This combination of expertise has been essential to the development of leading products embedded with chemical engineering principles, optimization and machine learning algorithms, analytics, and the process industries' workflows and best practices.

Rapid, high return on investment. Many customers purchase our software because they believe it will provide rapid, demonstrable and significant returns on their investment and increase their profitability. For some customers, economic benefits in the first year following installation have exceeded the total cost of our software. For many customers, even a relatively small improvement in performance can generate substantial recurring benefits due to the large production volumes and limited profit margins typical in process industries. In addition, our solutions can generate organizational efficiencies and operational improvements that can further increase a process company's profitability.

Growth Strategy

We seek to maintain and extend our position as a leading global provider of process optimization software and related services to the process industries. We have introduced a new strategy to evolve our scope of optimization from the process units in a plant to the process and the equipment in the plant or entire asset. We have expanded our reach in optimization from conceptualization and design, operations, and supply chain to the maintenance aspects of the plant. We plan to continue to build on our expertise in process optimization, our installed base, and long-term customer relationships to further expand our reach in the maintenance area of the plant. By focusing on asset optimization, we will be able to optimize the design and operations of a plant considering the performance and constraints of process equipment so as to optimize the full asset lifecycle.

Our primary growth strategy is to expand organically within our core verticals by leveraging our market leadership position and driving increased usage and product adoption of the broad capabilities in our aspenONE offerings. We believe this

strategy is proving effective as our customers are increasingly facing a dual challenge in today's environment – meeting the demand for resources and higher standards of living from a growing population while also addressing sustainability goals, reductions in emissions and reductions in plastic waste. This means generating new levels of operational excellence while simultaneously addressing sustainability targets. In this complex and uncertain environment, companies require the agility in operations to address volatility, the flexibility to operate across different scenarios, and access to critical supply chain insights. These requirements in turn necessitate digitalization across the enterprise to deliver increased safety in operations, greater reliability, and improved efficiencies. In combination, these results drive greater sustainability by delivering safer, greener, and faster operations, all while supporting increased profitability.

Additionally, we seek acquisitions to accelerate our overall growth in the design and operations of the process, acquisitions that will expand our maintenance solution to deliver asset optimization, or acquisitions that will introduce us to or allow us to further penetrate new industries. To accomplish these goals, we will pursue the following activities:

Continue to provide innovative, market-leading solutions. Our recent product release, aspenONE V12, embeds AI across the product portfolio, and uses the cloud for delivery of enterprise-wide analytics and insights for increased safety, sustainability, and improved margins. This new release further supports our Industrial AI solutions and the ability to democratize the application of AI where it can deliver most value and is a vital step towards our vision for the Self-Optimizing Plant.

aspenONE V12 solutions have Industrial AI hybrid model capability that is purpose-built for the process industries and other capital-intensive industries. Aspen Hybrid Models capture data from assets across the enterprise, and then apply AI, engineering first principles and AspenTech's domain expertise to deliver comprehensive, more accurate models at enterprise speed and scale. With AspenTech's four decades of knowledge about the unique challenges of building solutions for process industries and other capital-intensive industries, aspenONE V12 enables customers to apply AI to critical processes without additional data science expertise and offers support for new users without deep process knowledge or experience.

Further penetrate existing customer base. We have an installed base of approximately 2,500 customers. Many of our customers only use a fraction of our products. We work with our customers to identify ways in which they can improve their business performance by using the entire licensed suite of aspenONE solutions, both at an individual user level and across all of their plant locations. Our customers are segmented based on their size and complexity. Our large complex customers are serviced by our Field Sales organization, while our other customers are serviced by our inside sales group. Additionally, we regularly enhance our products to make them easier to use and seek to increase productivity of users by offering more integrated workflows.

Adoption and usage in customer base. We strive for our customers to adopt and sustain the use of our products by maximizing the consumption of their token entitlement. We do so by focusing our go-to-market resources through specific customer success management activities that generate and sustain the value from our products by ensuring that customers are using the latest version of our products, that our software is deployed in the most optimal manner in their IT networks, and that our customers are familiar with the latest value enhancing functionality in our products.

Asset Performance Management expansion. In fiscal 2017, we introduced a new suite of products focused on improving the reliability of our customers' assets and equipment using a combination of machine learning, data science and process modeling, together with historical and real time asset and equipment data. We have increased our investment in the research and development, sales and marketing, and channel sales functions to build out the capabilities that will enable us to grow this new business area and deliver value for our customers. In addition, we target additional capital-intensive industries with the APM functionality that we refer to as the global economy industries. These include other industries such as metals and mining, pharmaceutical, power, pulp and paper, and food and beverage.

Build an ecosystem. The relevance of our solutions in the markets we serve means that we can leverage third parties interested in building or expanding their businesses to increase our market penetration. The breadth of relationships that we establish will depend on the profile of the third-party company and the objectives specified to be achieved from the promotion and implementation of our products and solutions.

Pursue acquisitions. As part of our make-vs-buy analyses, we regularly explore and evaluate acquisitions. We have made several acquisitions in recent years and believe the opportunity exists to do more, especially as we seek to evolve our strategy to asset optimization and the maintenance area of the plant as well as diversify the types of industries we serve.

Expand our total addressable market. Our focus on innovation also means introducing product capabilities or new product categories that create value for our customers and therefore expand our total addressable market. For example, the needs of pharmaceutical customers are evolving by requiring more agility while still meeting high expectations for quality. This

momentum, in particular the increasing role of digitalization, electronic batch release and online process models, is creating additional opportunities for AspenTech strengths.

Products

Our integrated asset optimization software solutions are designed and developed specifically for the process industries. Customers use our solutions to improve their competitiveness and profitability by increasing throughput and productivity, reducing operating costs and emissions, enhancing capital efficiency, and decreasing working capital requirements. We have designed and developed our software applications across three principal business areas: engineering, manufacturing and supply chain, and asset performance management. Each business area leverages our AIoT products as the foundation of industrial data, to help us realize our vision for Industrial AI at scale.

Engineering. Our engineering software applications are used during both the design and the ongoing operation of plant facilities to model and improve the way engineers develop and deploy manufacturing assets. Process manufacturers must address a variety of challenges including design, operational improvement, collaborative engineering and economic evaluation. They must, for example, determine where they should locate facilities, how they can lower capital and manufacturing costs, what they should produce and how they can maximize plant efficiency.

Manufacturing. Our manufacturing software products focus on optimizing day-to-day processing activities, enabling customers to make better, faster decisions that lead to improved plant performance and operating results. These solutions include desktop and server applications that help customers make real-time decisions, which can reduce fixed and variable costs and improve product yields. Process manufacturers must address a wide range of manufacturing challenges, such as optimizing execution efficiency, reducing costs, selecting the right raw materials, scheduling and coordinating production processes, and identifying an appropriate balance between turnaround times, delivery schedules, product quality, cost and inventory.

Supply Chain Management. Our supply chain management solutions include desktop and server applications that help customers optimize critical supply chain decisions in order to reduce inventory, increase asset efficiency, and respond more quickly to changing market conditions. Process manufacturers must address numerous challenges as they strive to manage raw materials inventory, production schedules and feedstock purchasing decisions effectively and efficiently. Supply chain managers face these challenges in an environment of ever-changing market prices, supply constraints and customer demands.

Asset Performance Management. Our asset performance management products are used to understand and predict the reliability of a system; be it multiple assets, a single asset, or equipment in a plant. Factors that impact reliability include how operating conditions degrade equipment performance over time, or how process conditions can lead to equipment failure. The APM suite is a comprehensive suite of machine learning and analytics technologies which can be used in a standalone or integrated manner with historical and real time asset and equipment data to help our customers predict when the equipment will fail and prescribe actions to avoid such occurrences, thereby improving return on capital employed.

Artificial Intelligence of Things. Our AIoT solutions are used to leverage industrial data by collecting large volumes of data for reporting and analysis; integrating data across plants and technologies; visualizing data to identify trends, outliers and patterns; and customizing data science applications with an AI workbench.

Our software applications are currently offered in three suites: aspenONE Engineering, aspenONE Manufacturing and Supply Chain, and aspenONE Asset Performance Management. Each business suite leverages our AIoT products as the foundation of industrial data. These suites and our AIoT products are integrated applications that allow end users to design process manufacturing environments, monitor operational performance, respond and adapt to operational changes, predict asset reliability and equipment failure, and manage planning and scheduling activities as well as collaborate across these functions and activities. The three suites and our AIoT products are designed around core modules and applications that allow customers to design, operate and maintain their process manufacturing environments, as shown below:

aspenONE Engineering

Business Area	aspenONE Module	Major Products	Product Description
Engineering	Process Simulation for Energy	Aspen HYSYS	Process modeling software for the design and optimization of hydrocarbon processes, including flow assurance, refinery reactors, acid gas clean-up, and sulfur recovery - with embedded Industrial AI capabilities
		Aspen Operator Training	Solution for developing and deploying dynamic plant simulations for the purpose of training plant operators to respond to operational and safety scenarios in a virtual training environment
	Process Simulation for Chemicals	Aspen Plus	Process modeling software for the design and optimization of chemical processes, including solids and batch processes - with embedded Industrial AI capabilities
	Economic Evaluation	Aspen Capital Cost Estimator	Economic evaluation software for estimating project capital costs and lifecycle asset economics - from conceptual definition through detailed cost estimation
	Equipment Design & Rating	Aspen Exchanger Design and Rating	Software for the design, simulation and rating of various types of heat exchangers
		Aspen OptiPlant 3D Layout	A platform used to develop rapid 3D Models, engineer multiple options for analysis, select the design optimized for Cost, Layout, Constructability, Safety and Operations
	Basic Engineering	Aspen Basic Engineering	Collaborative platform for managing process engineering data and producing front-end design deliverables such as multi-disciplinary datasheets, process flow diagrams, piping and instrument diagrams, and equipment lists
	Operation Support	Aspen Online	Solution that connects process models to real-time plant data for expedited decisions, operational guidance, and optimization

aspenONE Manufacturing and Supply Chain

Business Area	aspenONE Module	Major Products	Product Description
Manufacturing	Advanced Process Control	Aspen DMC3	Multi-variable controller software for maintaining processes at their optimal operating point under changing process conditions with Industrial AI
		Aspen Inferential Qualities	Maintain tighter quality control and reduce lab work with accurate real-time estimates of infrequently measured properties using powerful deep learning technology
	Dynamic Optimization	Aspen GDOT	Multi-unit dynamic optimization software for alignment of Advanced Process Control (APC) with Planning & Scheduling to enable unified production optimization for refineries and ethylene plants
	Manufacturing Execution Systems	Aspen Production Execution Manager	Workflow, order and recipe management software per CGMP guidelines that ensures operational consistency for improved yields, higher quality and lower production costs
		Aspen Operations Reconciliation and Accounting	Accuracy in production accounting and better decision-making with reconciled production data using one model that integrates unit- and plant-boundary balances

Supply Chain

	Aspen Tank and Operations Manager	Efficiently execute and monitor inventory operations with a powerful interface for movement and tank operations
Multivariate Statistical Analysis and Real-time Monitoring	Aspen Unscrambler	Industry-leading tool for modeling, prediction and optimization using multivariate statistical analysis and interactive visualizations. Develop products faster, improve quality and optimize processes by analyzing large, complex data sets easier than ever
	Aspen Unscrambler HSI	Solve complex problems with explorative, multivariate analysis of hyperspectral images for transformations, outlier detection and model validation to classify products and improve quality
	Aspen Process Pulse	Monitor, control and optimize processes with real-time visibility of all types of process and spectral data. Run models for early fault detection, process deviation warnings, Process Analytical Technology (PAT) support and continuous improvement while enabling compliance with regulatory mandates
Refinery Planning & Scheduling	Aspen Unified PIMS	Refinery and olefins planning software for optimizing feedstock selection, product slate and operational execution
	Aspen Unified Scheduling	Refinery and olefins scheduling software for scheduling and optimization of refinery operations with integration to refinery planning, blending and dock operations
Supply & Distribution	Aspen Petroleum Supply Chain Planner	Economic planning software for optimizing the profitability of the petroleum distribution network, including transportation, raw materials, sales demands, and processing facilities
	Aspen Fleet Optimizer	Software for inventory management and truck transportation optimization in secondary petroleum distribution
Supply Chain Management	Aspen Collaborative Demand Manager	Software for forecasting market demand and managing forecast through changes in the business environment by combining historical and real time data
	Aspen Plant Scheduler	Software for generating optimal production schedules to meet total demand
	Aspen Supply Planner	Software for determining the optimal production plan taking into account labor and equipment, feedstock, inbound /outbound transportation, storage capacity, and other variables
	Aspen Schedule Explorer	Enable flawless operational execution by aligning teams via a common collaborative hub, allowing supply chain and operations to communicate and make proactive decisions

aspenONE Asset Performance Management

Business Area	aspenONE Module	Major Products	Product Description
Asset Performance Management	Risk Analysis	Aspen Fidelis Reliability	Software for predicting the future performance of any system and quantifying the change in performance due to changes in design, capacity, operations, maintenance, logistics, market dynamics, and weather
	Process Analytics	Aspen ProMV	Multivariate analysis software for analyzing interrelated process data for continuous and batch processes, to identify the minimum critical set of variables driving product quality and process performance, and identifying optimal set points
		Aspen Event Analytics	Software for analyzing plant operations in real time to identify causal precursors that can lead to an unplanned downtime event
		Aspen Mtell	Software for recognizing unique data patterns as predictions of future equipment behavior

aspenONE Artificial Intelligence of Things

Business Area	aspenONE Module	Major Products	Product Description
Artificial Intelligence of Things	Connect	Aspen Cloud Connect	Software to collect data from assets, enterprise data sources, and MES systems using Industrial IoT technology, and integrating the data into enterprise systems on-premise or in the cloud
		Aspen InfoPlus.21	Local data historian software for storing, visualizing and analyzing large volumes of data to improve production execution and enhance performance management
		Aspen Enterprise IP.21 Historian	Aggregate data in the cloud across multiple IP.21 or third-party historian sites, support smaller sites, provide inherent high-availability and enable an industrial data lake strategy
		aspenONE Process Explorer	Software for combining process measurements, product characteristics, alarms, events and unstructured data for a complete view of production
		Aspen Production Record Manager	Easy and fast segmentation of production data into batches, campaigns or other logical groupings for easier analysis and production reporting
		Aspen Enterprise Insights	Enterprise Visibility, Collaboration and Workflow Automation- Translate real-time data into faster, smarter, profitable business decisions to visualize deviations automatically and identify risks early
		Aspen Data Science Studio	Enable an Industrial AI Application Ecosystem-Out-of-the box analytics libraries and AI development collaboration tools empowering both domain experts and data scientists

Our product development activities are currently focused on strengthening the integration of our applications and adding new capabilities that address specific operational business processes in each industry. As of June 30, 2021, we had a total of 747 employees in our research and development group, which is comprised of product management, software development and quality assurance. Research and development expenses were \$94.2 million in fiscal 2021, \$92.2 million in fiscal 2020 and \$83.1 million in fiscal 2019.

Sales and Marketing

We employ a value-based sales approach, offering our customers a comprehensive suite of software and services that enhance the efficiency and productivity of their engineering, manufacturing and supply chain and maintenance operations. We have increasingly focused on positioning our products as a strategic investment and therefore devote an increasing portion of our sales efforts to our customers' senior management, including senior decision makers in manufacturing, operations,

maintenance and technology. Our aspenONE solution strategy supports this value-based approach by broadening the scope of optimization across the entire enterprise over its lifecycle, expanding the use of process models in the operations environment, and enabling the use of analytics and data science to enhance equipment and process reliability. We offer a variety of training programs focused on illustrating the capabilities of our applications as well as online training built into our applications. We have implemented incentive compensation programs for our sales force to reward efforts that increase customer usage of our products. Furthermore, we believe our aspenONE licensing model enables our sales force to develop consultative sales relationships with our customers.

Historically, most of our license sales have been generated through our direct Field Sales organization. In order to market the specific functionality and other technical features of our software, our account managers work with specialized teams of technical sales personnel and product specialists organized for each sales and marketing effort. Our technical sales personnel typically have degrees in chemical engineering or related disciplines and actively consult with a customer's plant engineers. Product specialists share their detailed knowledge of the specific features of our software solutions as they apply to the unique business processes of different vertical industries. In addition to our direct Field Sales organization, we employ an inside sales team that targets customers in certain market segments.

We have established channel relationships with select companies that we believe can help us pursue opportunities in adjacent target markets. We also license our software products to universities that agree to use our products in teaching and research. We believe that students' familiarity with our products will stimulate future demand once the students enter the workplace.

We supplement our sales efforts with a variety of marketing initiatives, including industry analyst and public relations activities, campaigns to promote product usage and adoption, user group meetings and customer relationship programs. Our broad user base spans multiple verticals and geographies and these users possess a variety of skills, experience and business needs. In order to reach each of them in an effective, productive and leveraged manner we will increasingly capitalize on digital customer engagement solutions. Using webinars, digital communities, social media, videos, email and other digital means, we seek to engage our extensive user base with targeted messages intended to address the specific needs of each market, customer and user.

Our overall sales force, which consists of sales account managers, technical sales personnel, indirect-channel personnel, inside sales personnel, and marketing personnel, consisted of 543 employees as of June 30, 2021.

Software Maintenance and Support, Professional Services and Training

Software maintenance and support, or SMS, consists primarily of providing customer technical support and access to software fixes and upgrades. Customer technical support services are provided throughout the world by our three global call centers as well as via email and through our support website. For license term arrangements entered into subsequent to our transition to a subscription-based licensing model, SMS is included with the license arrangement. For license arrangements that do not include SMS, customers can purchase standalone SMS.

We offer professional services focused on implementation of our solutions. Our professional services team primarily consists of project engineers with degrees in chemical engineering or a similar discipline, or who have significant relevant industry experience. Our employees include experts in fields such as thermophysical properties, distillation, adsorption processes, polymer processes, industrial reactor modeling, the identification of empirical models for process control or analysis, large-scale optimization, supply distribution systems modeling and scheduling methods. Our primary focus is the successful implementation and usage of our software, and in many instances, this work can be professionally performed by qualified third parties. As a result, we often compete with third-party consulting firms when bidding for professional services contracts, particularly in developed markets. We offer our services on either a time-and-material or fixed-price basis.

We offer a variety of training solutions ranging from standardized training, which can be delivered in a public forum, on-site at a customer's location or over the Internet, to customized training sessions, which can be tailored to fit customer needs. We have also introduced a wide range of online computer-based training courses offering customers on-demand training in basic and advanced features of our products directly from within the products. As of June 30, 2021, we had a total of 351 employees in our customer support, professional services and training groups.

Business Segments

We have two operating and reportable segments, which are consistent with our reporting units: i) subscription and software and ii) services and other. The subscription and software segment is engaged in the licensing of process optimization and asset performance management software solutions and associated support services, and includes our license and maintenance revenue. The services and other segment includes professional services and training, and includes our services and other revenue.

Competition

Our markets in general are competitive, and we expect the intensity of competition in our markets to increase as existing competitors enhance and expand their product and service offerings and as new participants enter the market. Increased competition may result in price reductions, reduced profitability and loss of market share. We cannot ensure that we will be able to compete successfully against existing or future competitors. Some of our customers and companies with which we have strategic relationships also are, or may become, competitors.

Many of our current and potential competitors have greater financial, technical, marketing, service and other resources than we have. As a result, these companies may be able to offer lower prices, additional products or services, or other incentives that we cannot match or offer. These competitors may be in a stronger position to respond more quickly to new technologies and may be able to undertake more extensive marketing campaigns. We believe they also have adopted and may continue to pursue more aggressive pricing policies and make more attractive offers to potential customers, employees and strategic partners. For example, some competitors may be able to initiate relationships through sales and installations of hardware and then seek to expand their customer relationships by offering asset optimization software at a discount. In addition, competitors with greater financial resources may make strategic acquisitions to increase their ability to gain market share or improve the quality or marketability of their products. Furthermore, we face challenges in selling our solutions to large companies in the process industries that have internally developed their own proprietary software solutions.

We seek to develop and offer integrated suites of targeted, high-value vertical industry solutions that can be implemented with relatively limited service requirements. We believe this approach provides us with an advantage over many of our competitors that offer software products that are point solutions or are more service-based. Our key competitive differentiators include:

- Breadth, depth and integration of our aspenONE software offering;
- Rapid return on investment and increase in profitability;
- Focus on software for the process industries;
- Embedded AI capabilities that create insights, provide guidance, and automate and democratize knowledge;
- Flexibility of our usage-based aspenONE licensing model;
- Consistent global support; and
- Deep domain expertise and AI to deliver Industrial AI.

Proprietary Rights

Our software is proprietary and fundamental to our business. To protect our proprietary technology and brand, and prevent unauthorized use of our software, we rely on a combination of copyright, patent, trademark and trade secret laws in the United States and other jurisdictions, license and confidentiality agreements, and software security measures to further protect our proprietary technology and brand. We generally seek to protect our trade secrets by entering into non-disclosure agreements with our employees and customers, and historically have restricted access to our software and source code, which we regard as proprietary information. We have obtained or applied for patent protection with respect to some of our intellectual property and have registered or applied to register some of our trademarks in the United States and in selected other countries. We actively monitor use of our intellectual property and have enforced, and will continue to enforce, our intellectual property rights. In the United States, we are generally able to maintain our patents for up to 20 years from the earliest effective filing date, and to maintain our trademark registrations for as long as the trademarks are in use.

The laws of many countries in which our products are licensed may not protect our intellectual property rights to the same extent as the laws of the United States. While we consider our intellectual property rights to be valuable, we do not believe that our competitive position in the industry depends solely on obtaining legal protection for our software products and technology. Instead, we believe that the success of our business also depends on our ability to maintain a leadership position by continuing to develop innovative software products and technology.

Our proprietary rights are subject to risks and uncertainties described under Item 1A. "Risk Factors" below. You should read that discussion, which is incorporated into this section by reference.

Licenses

In connection with our acquisition of Hyprotech Ltd. and related subsidiaries of AEA Technology plc in May 2002 and the consent decree we entered into with the Federal Trade Commission in December 2004 to resolve allegations that the

acquisition was improperly anticompetitive, we and certain of our subsidiaries entered into a purchase and sale agreement with Honeywell International Inc. and certain of its subsidiaries, pursuant to which we sold intellectual property and other assets to Honeywell relating to our operator training business and our Hyprotech engineering software products. Under the terms of the transactions, we retained a perpetual, irrevocable, worldwide, royalty-free non-exclusive license to the Hyprotech engineering software and have the right to continue to develop, license and sell the Hyprotech engineering products.

In March 1982, we entered into a System License Agreement with the Massachusetts Institute of Technology, or MIT, granting us a worldwide, perpetual non-exclusive license (with the right to sublicense) to use, reproduce, distribute and create derivative works of the computer program known as "ASPEN" which provides a framework for simulating the steady-state behavior of chemical processes that we utilize in the simulation engine for our Aspen Plus product. MIT agreed that we would own any derivative works and enhancements. MIT has the right to terminate the agreement if: we breach it and do not cure the breach within 90 days after receiving a written notice from MIT; we cease to carry on our business; or certain bankruptcy or insolvency proceedings are commenced and not dismissed. In the event of such termination, sublicenses granted to our customers prior to termination will remain in effect.

Employees

As of June 30, 2021, we had a total of approximately 1,897 full-time employees, of whom 863 were located in the United States. None of our employees in the United States is represented by a labor union; however, in certain foreign subsidiaries labor unions or workers' councils may represent some of our employees. We have experienced no work stoppages and believe that our employee relations are satisfactory.

Corporate Information

Aspen Technology, Inc. was formed in Massachusetts in 1981 and reincorporated in Delaware in 1998. Our principal executive offices are at 20 Crosby Drive, Bedford, Massachusetts 01730, and our telephone number at that address is (781) 221-6400. Our website address is <http://www.aspentech.com>. The information on our website is not part of this Form 10-K, unless expressly noted.

Available Information

We file reports with the Securities and Exchange Commission, or the SEC, which we make available on our website free of charge. These reports include annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and amendments to such reports, each of which is provided on our website as soon as reasonably practicable after we electronically file such materials with or furnish them to the SEC. You can also read and copy any materials we file with the SEC at the SEC's Public Reference Room at 100 F Street, N.E., Washington, DC 20549. You can obtain additional information about the operation of the Public Reference Room by calling the SEC at 1-800-SEC-0330. In addition, the SEC maintains a website (<http://www.sec.gov>) that contains reports, proxy and information statements, and other information regarding issuers that file electronically with the SEC, including us.

Item 1A. Risk Factors.

Investing in our common stock involves a high degree of risk. You should carefully consider the risks and uncertainties described below before purchasing our common stock. The risks and uncertainties described below are not the only ones facing our company. Additional risks and uncertainties may also impair our business operations. If any of the following risks actually occurs, our business, financial condition, results of operations or cash flows would likely suffer. In that case, the trading price of our common stock could fall, and you may lose all or part of your investment in our common stock.

Risks Related to Our Business

Our customers' business operations have been, and continue to be, subject to business interruptions arising from the COVID-19 pandemic. We continue to monitor the situation, but there can be no assurance that the pandemic will not result in delays or possibly reductions in demand for our solutions that could have a serious adverse effect on our business.

Many countries have restrictions on travel and public assembly and closed schools and businesses in order to slow the spread of the SARS-CoV-2 virus and associated COVID-19 disease. These governmental restrictions and related private sector responses have adversely affected the business operations of some of our customers and resulted in a slowdown in closing some customer contracts and, to a lesser extent, a delay in customer payments in the fiscal year ended June 30, 2021. While the measures instituted in response to COVID-19 are expected to be temporary, the duration of the business disruptions and related operational and financial impact on our customers and us cannot be estimated with certainty at this time. The adverse effects on the economies and financial markets of many countries and markets may result in an economic downturn and changes in global economic policy that could reduce demand for our products and have a material adverse impact on our business, operating

results and financial condition, including on our ability to collect accounts receivable. Our business may also be harmed if our employees are not able to perform services for customers on-site due to travel restrictions or facility closings.

If we fail to increase usage and product adoption of our aspenONE engineering and manufacturing and supply chain offerings and grow our aspenONE APM business, or fail to continue to provide innovative, market-leading solutions, we may be unable to implement our growth strategy successfully, and our business could be seriously harmed.

The maintenance and extension of our market leadership and our future growth is largely dependent upon our ability to increase usage and product adoption of our aspenONE engineering and manufacturing and supply chain offerings and grow our aspenONE APM business, and to develop new software products that achieve market acceptance with acceptable operating margins. Enterprises are requiring their application software vendors to provide greater levels of functionality and broader product offerings. We must continue to enhance our current product line and develop and introduce new products and services that keep pace with increasingly sophisticated customer requirements and the technological developments of our competitors. Our business and operating results could suffer if we cannot successfully execute our strategy and drive usage and product adoption.

We have implemented a product strategy that unifies our software solutions under the aspenONE brand with differentiated aspenONE vertical solutions targeted at specific capital-intensive industries. We cannot ensure that our product strategy will result in products that will continue to meet market needs and achieve significant usage and product adoption. If we fail to increase usage and product adoption or fail to develop or acquire new software products that meet the demands of our customers or our target markets, our operating results and cash flows from operations will grow at a slower rate than we anticipate and our financial condition could suffer.

Our business could suffer if we do not grow our aspenONE APM business or if the demand for, or usage of, our other aspenONE software declines for any reason, including declines due to adverse changes in the process and other capital-intensive industries.

We have introduced the aspenONE APM suite, and our aspenONE engineering and manufacturing and supply chain suites account for a significant majority of our revenue and will continue to do so for the foreseeable future. If we do not grow our aspenONE APM business or if demand for, or usage of, our other suites declines for any reason, our operating results, cash flows from operations and financial position would suffer. Our business could be adversely affected by:

- any decline in demand for or usage of our aspenONE suites;
- the introduction of products and technologies that serve as a replacement or substitute for, or represent an improvement over, our aspenONE suites;
- technological innovations that our aspenONE suites do not address;
- our inability to release enhanced versions of our aspenONE suites on a timely basis; and
- adverse changes in capital intensive industries or otherwise that lead to reductions, postponements or cancellations of customer purchases of our products and services, or delays in the execution of license agreement renewals in the same quarter in which the original agreements expire.

Because of the nature of their products and manufacturing processes and their global operations, companies in the process and other capital-intensive industries are subject to risk of adverse or even catastrophic environmental, safety and health accidents or incidents and are often subject to changing standards and regulations worldwide. In addition, worldwide economic downturns and pricing pressures experienced by energy, chemical, engineering and construction, and other capital-intensive industries have led to consolidations and reorganizations. In particular, we believe that reduced demand for oil due to the COVID-19 pandemic, impacted and may continue to impact the operating levels and capital spending of certain of our customers. This has resulted in, and could continue to result in, less predictable and lower demand for our products and services. Any such adverse environmental, safety or health incident, change in regulatory standards, or economic downturn that affects the capital-intensive industries, including continued challenges and uncertainty among customers whose business is adversely affected by a shift to a greater percentage of renewable energy sources such as wind and solar, as well as general domestic and foreign economic conditions and other factors that reduce spending by companies in these industries, could harm our operating results in the future.

Unfavorable economic and market conditions or a lessening demand in the market for asset optimization software could adversely affect our operating results.

Our business is influenced by a range of factors that are beyond our control and difficult or impossible to predict. If the market for asset optimization software grows more slowly than we anticipate, demand for our products and services could decline and our operating results could be impaired.

Further, the state of the global economy may deteriorate in the future. Customer demand for our products is linked to the strength of the global economy. If weakness in the global economy persists, many customers may amend their procurement strategies to delay or reduce their technology purchases. Capital expenditure and operating expense budgetary cycles are inherent in our customers' procurement strategies. These cycles are often informed by oil prices and environmental factors such as the COVID-19 pandemic. Delay or reduction in our customers' technology purchases could result in reductions in sales of our products, longer sales cycles, slower adoption of new technologies, increased price competition or reduced use of our products by our customers. We will lose revenue if demand for our products is reduced because potential customers experience weak or deteriorating economic conditions, catastrophic environmental or other events, and our business, results of operations, financial condition and cash flow from operations would likely be adversely affected.

The majority of our revenue is attributable to operations outside the United States, and our operating results therefore may be materially affected by the economic, political, military, regulatory and other risks of foreign operations or of transacting business with customers outside the United States.

As of June 30, 2021, we operated in 35 countries. We sell our products primarily through a direct sales force located throughout the world. In the event that we are unable to adequately staff and maintain our foreign operations, we could face difficulties managing our international operations.

Customers outside the United States accounted for the majority of our total revenue during the fiscal years ended June 30, 2021, 2020 and 2019. We anticipate that revenue from customers outside the United States will continue to account for a significant portion of our total revenue for the foreseeable future. Our operating results attributable to operations outside the United States are subject to additional risks, including:

- unexpected changes in regulatory or environmental requirements, tariffs and other barriers, including, for example, international trade disputes, changes in climate regulations, sanctions or other regulatory restrictions imposed by the United States or foreign governments;
- less effective protection of intellectual property;
- requirements of foreign laws and other governmental controls;
- difficulties in collecting trade accounts receivable in other countries;
- adverse tax consequences; and
- the challenges of managing legal disputes in foreign jurisdictions.

Fluctuations in foreign currency exchange rates could result in declines in our reported revenue and operating results.

During fiscal 2021, 2020 and 2019, 12.6%, 6.6% and 10.1% of our total revenue was denominated in a currency other than the U.S. dollar, respectively. In addition, certain of our operating expenses incurred outside the United States are denominated in currencies other than the U.S. dollar. Our reported revenue and operating results are subject to fluctuations in foreign exchange rates. Foreign currency risk arises primarily from the net difference between non-U.S. dollar receipts from customers outside the United States and non-U.S. dollar operating expenses for subsidiaries in foreign countries. Currently, our largest exposures to foreign exchange rates exist primarily with the Euro, Pound Sterling, Canadian Dollar, Japanese Yen, and Russian Ruble against the U.S. dollar. During fiscal 2021, 2020 and 2019, we did not enter into, and were not a party to any, derivative financial instruments, such as forward currency exchange contracts, intended to manage the volatility of these market risks. We cannot predict the impact of foreign currency fluctuations, and foreign currency fluctuations in the future may adversely affect our revenue and operating results. Any hedging policies we may implement in the future may not be successful, and the cost of those hedging techniques may have a significant negative impact on our operating results.

Competition from software offered by current competitors and new market entrants, as well as from internally developed solutions by our customers, could adversely affect our ability to sell our software products and related services and could result in pressure to price our products in a manner that reduces our margins.

Our markets in general are competitive and differ among our principal product areas: engineering, manufacturing, and supply chain, asset performance management and AIoT. We face challenges in selling our solutions to large companies that have internally developed their own proprietary software solutions, and we face competition from well-established vendors as well as new entrants in our markets. Many of our current and potential competitors have greater financial, technical, marketing, service and other resources than we have. As a result, these companies may be able to offer lower prices, additional products or services, or other incentives that we cannot match or offer. These competitors may be in a stronger position to respond more quickly to new technologies and may be able to undertake more extensive marketing campaigns. We believe they also have adopted and may continue to pursue more aggressive pricing policies and make more attractive offers to potential customers, employees and strategic partners. For example, some competitors may be able to initiate relationships through sales and installations of hardware and then seek to expand their customer relationships by offering asset optimization software at a discount. In addition, many of our competitors have established, and may in the future continue to establish, cooperative relationships with third parties to improve their product offerings and to increase the availability of their products in the marketplace. Competitors with greater financial resources may make strategic acquisitions to increase their ability to gain market share or improve the quality or marketability of their products.

Competition could seriously impede our ability to sell additional software products and related services on terms favorable to us. Businesses may continue to enhance their internally developed solutions, rather than investing in commercial software such as ours. Our current and potential commercial competitors may develop and market new technologies that render our existing or future products obsolete, unmarketable or less competitive. In addition, if these competitors develop products with similar or superior functionality to our products, we may need to decrease the prices for our products in order to remain competitive. If we are unable to maintain our current pricing due to competitive pressures, our margins will be reduced and our operating results will be negatively affected. We cannot ensure that we will be able to compete successfully against current or future competitors or that competitive pressures will not materially adversely affect our business, financial condition and operating results.

Defects or errors in our software products could harm our reputation, impair our ability to sell our products and result in significant costs to us.

Our software products are complex and may contain undetected defects or errors. We have not suffered significant harm from any defects or errors to date, but we have from time to time found defects in our products and we may discover additional defects in the future. We may not be able to detect and correct defects or errors before releasing products. Consequently, we or our customers may discover defects or errors after our products have been implemented. We have in the past issued, and may in the future need to issue, corrective releases of our products to remedy defects or errors. The occurrence of any defects or errors could result in:

- lost or delayed market acceptance and sales of our products;
- delays in payment to us by customers;
- product returns;
- injury to our reputation;
- diversion of our resources;
- increased service and warranty expenses or financial concessions;
- increased insurance costs; and
- legal claims, including product liability claims.

Defects and errors in our software products could result in claims for substantial damages against us.

Potential acquisitions could be difficult to consummate and integrate into our operations, and these acquisitions and investment transactions could disrupt our business, dilute stockholder value or impair our financial results.

As part of our business strategy, we may continue from time to time to seek to grow our business through acquisitions of or investments in new or complementary businesses, technologies or products that we believe can improve our ability to compete in our existing customer markets or allow us to enter new markets. The potential risks associated with acquisitions and investment transactions include, but are not limited to:

- failure to realize anticipated returns on investment, cost savings and synergies;
- difficulty in assimilating the operations, policies and personnel of the acquired company;

- unanticipated costs or liabilities associated with or arising from acquisitions;
- challenges in combining product offerings and entering into new markets in which we may not have experience;
- distraction of management's attention from normal business operations;
- potential loss of key employees of the acquired company;
- difficulty implementing effective internal controls over financial reporting and disclosure controls and procedures;
- impairment of relationships with customers or suppliers;
- possibility of incurring impairment losses related to goodwill and intangible assets; and
- other issues not discovered in due diligence, which may include product quality issues or legal or other contingencies.

Acquisitions and/or investments may also result in potentially dilutive issuances of equity securities, the incurrence of debt and contingent liabilities, the expenditure of available cash, and amortization expenses or write-downs related to intangible assets such as goodwill, any of which could have a material adverse effect on our operating results or financial condition. Investments in immature businesses with unproven track records and technologies have an especially high degree of risk, with the possibility that we may lose our entire investment or incur unexpected liabilities. We may experience risks relating to the challenges and costs of closing a business combination or investment transaction and the risk that an announced business combination or investment transaction may not close. There can be no assurance that we will be successful in making additional acquisitions in the future or in integrating or executing on our business plan for existing or future acquisitions.

We may be subject to significant expenses and damages because of product-related claims.

In the ordinary course of business, we are, from time to time, involved in lawsuits, claims, investigations, proceedings and threats of litigation. The amount of damages cannot be predicted with certainty, and a successful claim brought against us could materially harm our business and financial condition. Product-related claims, even if not successful, could damage our reputation, cause us to lose existing clients, limit our ability to obtain new clients, divert management's attention from operations, result in significant revenue loss, create potential liabilities for our clients and us, and increase insurance and other operational costs.

Claims that we infringe the intellectual property rights of others may be costly to defend or settle and could damage our business.

We cannot be certain that our software and services do not infringe patents, copyrights, trademarks or other intellectual property rights, so infringement claims might be asserted against us. In addition, we have agreed, and may agree in the future, to indemnify certain of our customers against infringement claims that third parties may assert against our customers based on use of our software or services. Such claims may have a material adverse effect on our business, may be time-consuming and may result in substantial costs and diversion of resources, including our management's attention to our business. Furthermore, a party making an infringement claim could secure a judgment that requires us to pay substantial damages and could also include an injunction or other court order that could prevent us from selling our software or require that we re-engineer some or all of our products. Claims of intellectual property infringement also might require us to enter costly royalty or license agreements. We may be unable to obtain royalty or license agreements on terms acceptable to us or at all. Our business, operating results and financial condition could be harmed significantly if any of these events were to occur, and the price of our common stock could be adversely affected.

We may not be able to protect our intellectual property rights, which could make us less competitive and cause us to lose market share.

Our software is proprietary. Our strategy is to rely on a combination of copyright, patent, trademark and trade secret laws in the United States and other jurisdictions, and to rely on license and confidentiality agreements and software security measures to further protect our proprietary technology and brand. We have obtained or applied for patent protection with respect to some of our intellectual property, but generally do not rely on patents as a principal means of protecting our intellectual property. We have registered or applied to register some of our trademarks in the United States and in selected other countries. We generally enter into non-disclosure agreements with our employees and customers, and historically have restricted third-party access to our software and source code, which we regard as proprietary information. In certain cases, we have provided copies of source code to customers for the purpose of special product customization or have deposited copies of the source code with a third-party escrow agent as security for ongoing service and license obligations. In these cases, we rely on non-disclosure and other contractual provisions to protect our proprietary rights.

The steps we have taken to protect our proprietary rights may not be adequate to deter misappropriation of our technology or independent development by others of technologies that are substantially equivalent or superior to our technology. Our intellectual property rights may expire or be challenged, invalidated or infringed upon by third parties or we may be unable to maintain, renew or enter into new licenses on commercially reasonable terms. Any misappropriation of our technology or development of competitive technologies could harm our business and could diminish or cause us to lose the competitive advantages associated with our proprietary technology, and could subject us to substantial costs in protecting and enforcing our intellectual property rights, and/or temporarily or permanently disrupt our sales and marketing of the affected products or services. The laws of some countries in which our products are licensed do not protect our intellectual property rights to the same extent as the laws of the United States. Moreover, in some non-U.S. countries, laws affecting intellectual property rights are uncertain in their application, which can affect the scope of enforceability of our intellectual property rights.

Our software research and development initiatives and our customer relationships could be compromised if the security of our information technology is breached as a result of a cyberattack. This could have a material adverse effect on our business, operating results and financial condition, and could harm our competitive position.

We devote significant resources to continually updating our software and developing new products, and our financial performance is dependent in part upon our ability to bring new products and services to market. Our customers use our software to optimize their manufacturing processes and manage asset performance, and they rely on us to provide updates and releases as part of our software maintenance and support services, and to provide remote on-line troubleshooting support. The security of our information technology environment is therefore important to our research and development initiatives, and an important consideration in our customers' purchasing decisions. We maintain cybersecurity policies and procedures, including employee training, to manage risk to our information systems, and we continually evaluate and adapt our systems and processes to mitigate evolving cybersecurity threats, including the increase in ransomware attacks. Our policy is to follow the NIST cybersecurity framework to manage and reduce cybersecurity risk. We may incur additional costs to maintain appropriate cybersecurity protections in response to evolving cybersecurity threats, and we may not be able to safeguard against all data security breaches or misuses of data. If the security of our systems is impaired, or if our systems are infiltrated by unauthorized persons, our development initiatives might be disrupted, and we might be unable to provide service. Our customer relationships might deteriorate, our reputation in the industry could be harmed, and we could be subject to liability claims. This could reduce our revenues, and expose us to significant costs to detect, correct and avoid recurrences of any breach of security and to defend any claims against us. In addition, our insurance coverage may not be adequate to cover all costs related to cybersecurity incidents and the disruptions resulting from such events.

Risks Related to Our Common Stock

Our common stock may experience substantial price and volume fluctuations.

The equity markets have from time to time experienced extreme price and volume fluctuations, particularly in the high technology sector, and those fluctuations often have been unrelated to the operating performance of particular companies. In addition, the market price of our common stock may be affected by other factors, such as: (i) our financial performance; (ii) announcements of technological innovations or new products by us or our competitors; and (iii) market conditions in the computer software or hardware industries.

In the past, following periods of volatility in the market price of a public company's securities, securities class action litigation has often been instituted against that company. This type of litigation against us could result in substantial liability and costs and divert management's attention and resources.

Our corporate documents and provisions of Delaware law may prevent a change in control or management that stockholders may consider desirable.

Section 203 of the Delaware General Corporation Law, our charter and our by-laws contain provisions that might enable our management to resist a takeover of our company. These provisions include:

- limitations on the removal of directors;
- a classified Board of Directors, so that not all members of the Board are elected at one time;
- advance notice requirements for stockholder proposals and nominations;
- the inability of stockholders to act by written consent or to call special meetings;
- the ability of the Board of Directors to make, alter or repeal our by-laws; and

- the ability of the Board of Directors to designate the terms of and issue new series of preferred stock without stockholder approval.

These provisions could:

- have the effect of delaying, deferring or preventing a change in control of our company or a change in our management that stockholders may consider favorable or beneficial;
- discourage proxy contests and make it more difficult for stockholders to elect directors and take other corporate actions; and
- limit the price that investors might be willing to pay in the future for shares of our common stock.

Item 1B. Unresolved Staff Comments.

None.

Item 2. Properties.

Our principal executive offices are located in leased facilities in Bedford, Massachusetts, consisting of approximately 143,000 square feet of office space to accommodate our product development, sales, marketing, operations, finance and administrative functions. The lease for our Bedford executive offices commenced in November 2014 and is scheduled to expire March 2025. Subject to the terms and conditions of the lease, we may extend the term of the lease for two successive terms of five years each.

We also lease approximately 80,000 square feet in Houston, Texas to accommodate sales, services and product development functions. In addition to our Bedford and Houston locations, we lease office space in the United Kingdom, Shanghai, Mexico City, Singapore, Beijing, Pune, Moscow, Tokyo, and Bahrain, to accommodate sales, services and product development functions.

In the remainder of our other locations, the majority of our leases have lease terms of one year or less that are generally based on the number of workstations required. We believe this facilities strategy provides us with significant flexibility to adjust to changes in our business environment. We do not own any real property. We believe that our leased facilities are adequate for our anticipated future needs.

Item 3. Legal Proceedings.

None.

Item 4. Mine Safety Disclosures

Not applicable.

PART II

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

Market Information

Our common stock currently trades on The NASDAQ Global Select Market under the symbol "AZPN." The closing price of our common stock on June 30, 2021 was \$137.54.

Holders

On August 11, 2021, there were 305 holders of record of our common stock. The number of record holders does not include persons who held common stock in nominee or "street name" accounts through brokers.

Dividends

We have never declared or paid cash dividends on our common stock. We do not anticipate paying cash dividends on our common stock in the foreseeable future. In December 2019, we entered into an Amended and Restated Credit Agreement with JPMorgan Chase Bank, N.A., as administrative agent, joint lead arranger and joint bookrunner, Silicon Valley Bank, as joint lead arranger, joint bookrunner and syndication agent, and the lenders and co-documentation agents named therein, which we refer to as the Amended and Restated Credit Agreement. The Amended and Restated Credit Agreement, which amends and restates the Credit Agreement we entered into as of February 26, 2016 with the same lenders, which we refer to as the Prior Credit Agreement, provides for a \$200.0 million secured revolving credit facility and a \$320.0 million secured term loan facility. The Amended and Restated Credit Agreement restricts us from declaring or paying dividends in cash on our capital stock if our leverage ratio (as defined in the Amended and Restated Credit Agreement) is in excess of 2.75 to 1.00 (refer to "Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations - Liquidity and Capital Resources - Credit Agreement" and Note 12, "Credit Agreement," to our Consolidated Financial Statements for further discussion of the Amended and Restated Credit Agreement). Our Leverage Ratio is below 2.75 to 1.00 as of June 30, 2021. Any future determination relating to our dividend policy will be made at the discretion of the Board of Directors and will depend on a number of factors, including our future earnings, capital requirements, financial condition and future prospects and such other factors as the Board of Directors may deem relevant.

Purchases of Equity Securities by the Issuer

As of June 30, 2021, the total number of shares of common stock repurchased since November 1, 2010 under all programs approved by the Board of Directors was 36,631,254 shares.

On January 22, 2015, our Board of Directors approved a share repurchase program, or the Share Repurchase Program for up to \$450.0 million of our common stock. The Share Repurchase Program was announced on January 28, 2015, and expires at the end of each fiscal year unless extended. On April 26, 2016, June 8, 2017, April 18, 2018, December 6, 2018, and April 17, 2019, the Board of Directors approved a \$400.0 million, \$200.0 million, \$200.0 million, \$100.0 million, and \$200.0 million increase in the Share Repurchase Program, respectively. On July 22, 2020, our Board of Directors approved a new share repurchase program, or the FY 2021 Program, for up to \$200.0 million of our common stock, and terminated the Share Repurchase Program. The FY 2021 Program expired on June 30, 2021. On June 4, 2021, our Board of Directors approved another share repurchase program, or the FY 2022 Program, for up to \$300.0 million of our common stock in our fiscal year ending June 30, 2022. The specific timing, price and size of purchases will depend on prevailing stock prices, general market and economic conditions, and other considerations, including the amount of cash generated in the United States and other potential uses of cash, such as acquisitions. Purchases may be made through a Rule 10b5-1 plan pursuant to predetermined metrics set forth in such plan. The Board of Directors' authorization of the FY 2022 Program does not obligate us to acquire any particular amount of common stock, and the program may be suspended or discontinued at any time.

On June 14, 2021, as part of our FY 2022 Program, we entered into an accelerated share repurchase program, or the ASR Program, with a third party financial institution to repurchase an aggregate of \$150.0 million of our common stock. The final settlement of the transaction under the ASR Program is expected to occur in the first quarter of our fiscal year 2022. For more details on of the ASR Program, refer to Note 21, "Subsequent Events".

During fiscal 2021, we repurchased 361,239 shares of our common stock in the open market for \$50.0 million. During fiscal 2020, we repurchased 1,252,289 shares of our common stock in the open market for \$150.0 million. During fiscal 2019, we repurchased 3,074,127 shares of our common stock in the open market for \$300.0 million.

As of June 30, 2021, there was no remaining dollar value under the FY 2021 Program, and \$300.0 million remaining under the FY 2022 Program.

Item 6. Selected Financial Data.

The following tables present selected consolidated financial data for Aspen Technology, Inc. The consolidated statements of operations data set forth below for fiscal 2021, 2020 and 2019 and the consolidated balance sheets data as of June 30, 2021 and 2020, are derived from our consolidated financial statements included beginning on page 51 of this Form 10-K. The consolidated statements of operations data for fiscal 2018 and 2017 and the consolidated balance sheet data as of June 30, 2019, 2018, and 2017 are derived from our consolidated financial statements that are not included in this Form 10-K. The data presented below should be read in conjunction with our consolidated financial statements and accompanying notes beginning on page F-1 and "Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations."

Our historical results should not be viewed as indicative of results expected for any future period.

As a result of the adoption of new guidance related to revenue recognition during fiscal 2019, prior period information for fiscal 2018 and 2017 included below has been restated to reflect the new guidance.

	Year Ended June 30,				
	2021	2020	2019	2018	2017
	(in Thousands, except per share data)				
Consolidated Statements of Operations Data:					
Revenue	\$ 709,376	\$ 598,717	\$ 596,682	\$ 507,566	\$ 483,395
Gross profit	649,225	537,110	538,866	456,922	435,939
Income from operations	358,401	257,359	281,139	207,928	205,687
Net income	\$ 319,803	\$ 229,671	\$ 261,362	\$ 281,234	\$ 173,063
Basic income per share	\$ 4.71	\$ 3.38	\$ 3.74	\$ 3.90	\$ 2.26
Diluted income per share	\$ 4.67	\$ 3.34	\$ 3.69	\$ 3.85	\$ 2.25
Weighted average shares outstanding—Basic	67,863	68,000	69,925	72,140	76,491
Weighted average shares outstanding—Diluted	68,492	68,727	70,787	72,956	76,978

	Year Ended June 30,				
	2021	2020	2019	2018	2017
	(in Thousands)				
Consolidated Balance Sheet Data:					
Cash and cash equivalents	\$ 379,853	\$ 287,796	\$ 71,926	\$ 96,165	\$ 101,954
Accounts receivable, net	52,502	56,301	47,784	41,810	42,656
Contract assets	715,787	610,473	582,291	521,627	536,559
Total assets	1,454,000	1,223,306	863,013	814,453	816,730
Borrowings, net	293,162	427,532	220,000	170,000	140,000
Deferred revenue	68,125	57,081	44,891	27,504	44,860
Working capital	626,787	415,942	105,645	155,389	213,150
Total stockholders' equity	800,757	466,353	361,960	377,974	268,759

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

You should read the following discussion in conjunction with our consolidated financial statements and related notes beginning on page 51. In addition to historical information, this discussion contains forward-looking statements that involve risks and uncertainties. You should read "Item 1A. Risk Factors" for a discussion of important factors that could cause our actual results to differ materially from our expectations.

Our fiscal year ends on June 30, and references to a specific fiscal year are the twelve months ended June 30 of such year (for example, "fiscal 2021" refers to the year ended June 30, 2021).

Business Overview

We are a global leader in asset optimization software that optimizes asset design, operations and maintenance in complex, industrial environments. We combine decades of process modeling and operations expertise with big data, artificial intelligence, and advanced analytics. Our purpose-built software improves the competitiveness and profitability of our customers by: increasing throughput, energy efficiency, and production levels; reducing unplanned downtime, plant emissions, and safety risks; enhancing capital efficiency; and decreasing working capital requirements over the entire asset lifecycle to support operational excellence.

Our software combines our proprietary mathematical and empirical models of manufacturing and planning processes which reflects the deep domain expertise we have amassed from focusing on solutions for the process and other capital-intensive industries for over 40 years. Our products have embedded AI capabilities that create insights, provide guidance, and automate and democratize knowledge, known as Industrial AI, to create more value for the process industries. We have developed our applications to design and optimize processes across three principal business areas: engineering, manufacturing and supply chain, and asset performance management. Each business area leverages our artificial intelligence of things products as the foundation of industrial data to help us realize our vision for Industrial AI at scale. We are the recognized market and technology leader in providing process optimization and asset performance management software for each of these business areas.

We have established sustainable competitive advantages based on the following strengths:

- Innovative products that can enhance our customers' profitability and productivity;
- Long-term customer relationships;
- Large installed base of users of our software; and
- Long-term license contracts.

We have approximately 2,500 customers globally. Our customers consist of companies engaged in the process and other capital-intensive industries such as energy, chemicals, engineering and construction, as well as pharmaceuticals, food and beverage, transportation, power, metals and mining, pulp and paper, and consumer packaged goods.

Business Segments

We have two operating and reportable segments, which are consistent with our reporting units: (i) subscription and software and (ii) services and other. The subscription and software segment is engaged in the licensing of process optimization and asset performance management software solutions and associated support services, and includes our license and maintenance revenue. The services and other segment includes professional services and training, and includes our services and other revenue.

Recent Events

In December 2019, the novel SARS-CoV-2 virus and associated COVID 19 disease, or COVID-19, were reported in China, and in March 2020 the World Health Organization declared a pandemic. Since the beginning of March 2020, the sudden decrease in demand for oil due to the COVID-19 pandemic, compounded by the excess supply arising from producers' failure to agree on production cuts, resulted in a drop in oil prices. During fiscal 2021, our business was negatively impacted by these factors. Specifically, we saw a slowdown in closing customer contracts, a slight increase in our customer attrition rate due to non-renewals and renewals at lower entitlement level and, to a lesser extent, a slowdown in customer payments. We are continuing to assess the impact of these items on global markets and the various industries of our customers. The extent of the impact on our operational and financial performance going forward will depend on capital expenditure and operational expenditure budgetary cycles that are inherent in our customers' procurement strategies, which are informed by oil prices and environmental factors such as COVID-19, all of which are uncertain and cannot be predicted. We are continuing to monitor the potential impacts related to the current disruption of COVID-19 and uncertainty in the global markets on the various industries of our customers. These factors could potentially impact the signing of new agreements, as well as the recoverability of assets, including accounts receivable and contract costs.

On June 14, 2021, as part of our common stock repurchase program, we entered into an accelerated share repurchase program, or the ASR Program, with a third-party financial institution. Pursuant to the terms of the ASR Program, on July 1, 2021 we made an upfront payment of \$150.0 million in exchange for an initial delivery of approximately 872,473 shares of our common stock, representing 80% of the total shares ultimately expected to be delivered over the program's term.

At the ASR Program's conclusion, the financial institution may be required to deliver additional shares of common stock to us, or, under certain circumstances, we may be required to, at our election, deliver shares of our common stock or make a cash payment to the financial institution. Final settlement of the ASR Program is expected to occur during the first quarter of fiscal 2022, with the number of shares to be delivered, or the amount of any cash payment to be made, determined based on the volume-weighted average price per share of our common stock over the term of the ASR Program, less an agreed-upon discount.

Key Components of Operations

Revenue

We generate revenue primarily from the following sources:

License Revenue. We sell our software products to end users, primarily under fixed-term licenses, through a subscription offering which we refer to as our aspenONE licensing model. The aspenONE licensing model includes software maintenance and support, known as our Premier Plus SMS offering, for the entire term. Our aspenONE products are organized into three suites: 1) engineering; 2) manufacturing and supply chain; and 3) asset performance management. Each product suite leverages our AIoT products as the foundation of industrial data. Our APM product suite is licensed by customer sites, user seats or cloud connections. The engineering and manufacturing and supply chain product suites are licensed by tokens, which are interchangeable measures of usage based on the various units of measure such as users, servers, applications, manipulated variables, etc. Customers may use tokens flexibly to access one or more products in the suite in any combination. This licensing system enables customers to use products as needed, and to experiment with different products to best solve whatever critical business challenges the customer faces, and to license additional tokens as business needs evolve.

We also license our software through point product arrangements with our Premier Plus SMS offering included for the contract term.

Maintenance Revenue. We provide customers technical support, access to software fixes and updates and the right to any new unspecified future software products and updates that may be introduced into the licensed aspenONE software suite. Our technical support services are provided from our customer support centers throughout the world, as well as via email and through our support website.

Services and Other Revenue. We provide training and professional services to our customers. Our professional services are focused on implementing our technology in order to improve customers' plant performance and gain better operational data. Customers who use our professional services typically engage us to provide those services over periods of up to 24 months. We charge customers for professional services on a time-and-materials or fixed-price basis. We provide training services to our customers, including on-site, Internet-based and customized training.

Cost of Revenue

Cost of License. Our cost of license revenue consists of (i) royalties, (ii) amortization of capitalized software and intangible assets, and (iii) distribution fees.

Cost of Maintenance. Our cost of maintenance revenue consists primarily of personnel-related costs of providing Premier Plus SMS bundled with our aspenONE licensing and point product arrangements.

Cost of Services and Other. Our cost of services and other revenue consists primarily of personnel-related and external consultant costs associated with providing our customers professional services and training.

Operating Expenses

Selling and Marketing Expenses. Selling expenses consist primarily of the personnel and travel expenses related to the effort expended to license our products and services to current and potential customers, as well as for overall management of customer relationships. Marketing expenses include expenses needed to promote our company and our products and to conduct market research to help us better understand our customers and their business needs.

Research and Development Expenses. Research and development expenses consist primarily of personnel expenses related to the creation of new software products, enhancements and engineering changes to existing products.

General and Administrative Expenses. General and administrative expenses include the personnel expenses of corporate and support functions, such as executive leadership and administration groups, finance, legal, human resources and corporate communications, and other costs, such as outside professional and consultant fees, amortization of intangible assets, and the provision for bad debt on accounts receivable.

Other Income and Expenses

Interest Income. Interest income is recorded for financing components under Accounting Standards Update ("ASU") No. 2014-09, *Revenue from Contracts with Customers* (Topic 606) or Topic 606. When a contract includes a significant financing component, we generally receive the majority of the customer consideration after the recognition of a substantial portion of the arrangement fee as license revenue. As a result, we decrease the amount of revenue recognized and increase interest income by a corresponding amount.

Interest Expense. Interest expense is primarily related to outstanding borrowings under our Amended and Restated Credit Agreement.

Other (Expense) Income, Net. Other (expense) income, net is comprised primarily of foreign currency exchange gains (losses) generated from the settlement and remeasurement of transactions denominated in currencies other than the functional currency of our entities.

Provision for Income Taxes. Provision for income taxes is comprised of domestic and foreign taxes. We record interest and penalties related to income tax matters as a component of income tax expense. Our effective income tax rate may fluctuate between fiscal years and from quarter to quarter due to items arising from discrete events, such as tax benefits from the disposition of employee equity awards, settlements of tax audits and assessments and tax law changes. Our effective income tax rate is also impacted by, and may fluctuate in any given period because of, the composition of income in foreign jurisdictions where tax rates differ.

Key Business Metrics

Background

We utilize key business measures to track and assess the performance of our business. We have identified the following set of appropriate business metrics in the context of our evolving business:

- Annual spend
- Total contract value
- Bookings

We also use the following non-GAAP business metrics in addition to GAAP measures to track our business performance:

- Free cash flow
- Non-GAAP operating income

We make these measures available to investors and none of these metrics should be considered as an alternative to any measure of financial performance calculated in accordance with GAAP.

Annual Spend

Annual spend is an estimate of the annualized value of our portfolio of term license agreements, as of a specific date. Annual spend is calculated by summing the most recent annual invoice value of each of our active term license agreements. Annual spend also includes the annualized value of standalone SMS agreements purchased with certain legacy term license agreements, which have become an immaterial part of our business.

Comparing annual spend for different dates can provide insight into the growth and retention rates of our business, because annual spend represents the estimated annualized billings associated with our active term license agreements. Management utilizes the annual spend business metric to evaluate the growth and performance of our business as well as for planning and forecasting. In addition, our corporate and executive bonus programs are based in part on our success in meeting targets for growth in annual spend that are approved by our Board of Directors. We believe that annual spend is a useful business metric to investors as it provides insight into the growth component of our term licenses and to how management evaluates and forecasts the results of the business.

Annual spend increases as a result of new term license agreements with new or existing customers, renewals or modifications of existing term license agreements that result in higher license fees due to contractually-agreed price escalation or an increase in the number of tokens (units of software usage) or products licensed, and escalation of annual payments in our active term license agreements.

Annual spend is adversely affected by term license and standalone SMS agreements that are renewed at a lower entitlement level or not renewed and, to a lesser extent, by customer agreements that become inactive during the agreement's term because, in our determination, amounts due (or which will become due) under the agreement are not collectible. Because the annual spend calculation includes all of our active term license agreements, the reported balance may include agreements with customers that are delinquent in paying invoices, that are in bankruptcy proceedings, or where payment is otherwise in doubt.

As of June 30, 2021, approximately 90% of our term license agreements (by value) are denominated in U.S. dollars. For agreements denominated in other currencies, we use a fixed historical exchange rate to calculate annual spend in dollars rather than using current exchange rates, so that our calculation of growth in annual spend is not affected by fluctuations in foreign currencies.

Beginning in fiscal 2019 and for all future periods, for term license agreements that contain professional services or other products and services, we have included in the annual spend calculation the portion of the invoice allocable to the term license under Topic 606 rather than the portion of the invoice attributed to the license in the agreement. We believe that methodology more accurately allocates any discounts or premiums to the different elements of the agreement. We have not applied this methodology retroactively for agreements entered into in prior fiscal years.

We estimate that annual spend grew by approximately 4.8% during fiscal 2021, from \$593.1 million as of June 30, 2020 to \$621.3 million as of June 30, 2021. We estimate that annual spend grew by approximately 9.6% during fiscal 2020, from \$541.0 million as of June 30, 2019 to \$593.1 million as of June 30, 2020.

Total Contract Value

Total Contract Value ("TCV") is the aggregate value of all payments received or to be received under all active term license agreements, including maintenance and escalation. TCV was \$2.9 billion and \$2.8 billion as of June 30, 2021 and 2020, respectively.

Bookings

Bookings is the total value of customer term license contracts signed in the current period, less the value of such contracts signed in the current period where the initial licenses are not yet deemed delivered, plus term license contracts signed in a previous period for which the initial licenses are deemed delivered in the current period.

Bookings was \$774.5 million during fiscal 2021, compared to \$610.1 million and \$651.8 million during fiscal 2020 and 2019, respectively. The change in bookings during fiscal 2021, 2020, and 2019 is related to the timing of renewals.

Free Cash Flow

We use a non-GAAP measure of free cash flow to analyze cash flows generated from our operations. Management believes that this financial measure is useful to investors because it permits investors to view our performance using the same tools that management uses to gauge progress in achieving our goals. We believe this measure is also useful to investors because it is an indication of cash flow that may be available to fund investments in future growth initiatives or to repay borrowings under the Amended and Restated Credit Agreement, and it is a basis for comparing our performance with that of our competitors. The presentation of free cash flow is not meant to be considered in isolation or as an alternative to cash flows from operating activities as a measure of liquidity.

Free cash flow is calculated as net cash provided by operating activities adjusted for the net impact of (a) purchases of property, equipment and leasehold improvements, (b) payments for capitalized computer software costs, and (c) other nonrecurring items, such as acquisition related payments.

The following table provides a reconciliation of GAAP cash flow from operating activities to free cash flow for the indicated periods:

	June 30,		
	2021	2020	2019
	(Dollars in Thousands)		
Net cash provided by operating activities (GAAP)	\$ 276,134	\$ 243,258	\$ 238,313
Purchase of property, equipment, and leasehold improvements	(1,237)	(1,278)	(436)
Payments for capitalized computer software costs	(1,129)	(141)	(1,131)
Acquisition related payments	3,733	1,264	27
Free cash flow (non-GAAP)	<u>\$ 277,501</u>	<u>\$ 243,103</u>	<u>\$ 236,773</u>

Fiscal 2021 Compared to Fiscal 2020

Total free cash flow increased \$34.4 million during fiscal 2021 as compared to the prior fiscal year primarily due to changes in working capital. For a more detailed description of these changes refer to "Liquidity and Capital Resources."

Fiscal 2020 Compared to Fiscal 2019

Total free cash flow increased \$6.3 million during fiscal 2020 as compared to the prior fiscal year primarily due to changes in working capital. For a more detailed description of these changes refer to "Liquidity and Capital Resources."

Non-GAAP Income from Operations

Non-GAAP income from operations excludes certain non-cash and non-recurring expenses, and is used as a supplement to income from operations presented on a GAAP basis. We believe that non-GAAP income from operations is a useful financial measure because removing certain non-cash and other items provides additional insight into recurring profitability and cash flow from operations.

The following table presents our income from operations, as adjusted for stock-based compensation expense, amortization of intangible assets, and other items, such as the impact of acquisition related fees, for the indicated periods:

	June 30,			2021 Compared to 2020		2020 Compared to 2019	
	2021	2020	2019	\$	%	\$	%
GAAP income from operations	\$ 358,401	\$ 257,359	\$ 281,139	\$ 101,042	39.3 %	\$ (23,780)	(8.5)%
Plus:							
Stock-based compensation	33,644	31,548	27,573	2,096	6.6 %	3,975	14.4 %
Amortization of intangible assets	7,697	6,572	4,533	1,125	17.1 %	2,039	45.0 %
Acquisition related fees	4,518	78	1,438	4,440	5,692.3 %	(1,360)	(94.6)%
Non-GAAP income from operations	<u>\$ 404,260</u>	<u>\$ 295,557</u>	<u>\$ 314,683</u>	<u>\$ 108,703</u>	<u>36.8 %</u>	<u>\$ (19,126)</u>	<u>(6.1)%</u>

Results of Operations

The following table sets forth the results of operations, percentage of total revenue and the year-over-year percentage change in certain financial data for fiscal 2021, 2020 and 2019.

	Year Ended June 30,						2021 Compared to 2020 %	2020 Compared to 2019 %
	2021		2020		2019			
(Dollars in Thousands)								
Revenue:								
License	\$ 497,479	70.1 %	\$ 388,180	64.8 %	\$ 404,581	67.8 %	28.2 %	(4.1)%
Maintenance	185,164	26.1	178,139	29.8	163,567	27.4	3.9	8.9
Services and other	26,733	3.8	32,398	5.4	28,534	4.8	(17.5)	13.5
Total revenue	709,376	100.0	598,717	100.0	596,682	100.0	18.5	0.3
Cost of revenue:								
License	9,276	1.3	7,241	1.2	7,060	1.2	28.1	2.6
Maintenance	18,287	2.6	19,248	3.2	19,208	3.2	(5.0)	0.2
Services and other	32,588	4.6	35,118	5.9	31,548	5.3	(7.2)	11.3
Total cost of revenue	60,151	8.5	61,607	10.3	57,816	9.7	(2.4)	6.6
Gross profit	649,225	91.5	537,110	89.7	538,866	90.3	20.9	(0.3)
Operating expenses:								
Selling and marketing	114,959	16.2	114,486	19.1	111,374	18.7	0.4	2.8
Research and development	94,229	13.3	92,230	15.4	83,122	13.9	2.2	11.0
General and administrative	81,636	11.5	73,035	12.2	63,231	10.6	11.8	15.5
Total operating expenses	290,824	41.0	279,751	46.7	257,727	43.2	4.0	8.5
Income from operations	358,401	50.5	257,359	43.0	281,139	47.1	39.3	(8.5)
Interest income	36,791	5.2	32,658	5.5	28,457	4.8	12.7	14.8
Interest (expense)	(7,245)	(1.0)	(11,862)	(2.0)	(8,733)	(1.5)	(38.9)	35.8
Other income (expense), net	(3,200)	(0.5)	1,202	0.2	664	0.1	(366.2)	81.0
Income before income taxes	384,747	54.2	279,357	46.7	301,527	50.5	37.7	(7.4)
Provision for income taxes	64,944	9.2	49,686	8.3	40,165	6.7	30.7	23.7
Net income	\$ 319,803	45.0 %	\$ 229,671	38.4 %	\$ 261,362	43.8 %	39.2 %	(12.1)%

Revenue

Fiscal 2021 Compared to Fiscal 2020

Total revenue increased by \$110.7 million during fiscal 2021 as compared to the prior fiscal year. The increase of \$110.7 million was due to an increase in license revenue of \$109.3 million and an increase in maintenance revenue of \$7.0 million partially offset by a decrease in services and other revenue of \$(5.7) million, as compared to the prior fiscal year.

Fiscal 2020 Compared to Fiscal 2019

Total revenue increased by \$2.0 million during fiscal 2020 as compared to the prior fiscal year. The increase of \$2.0 million was due to an increase in maintenance revenue of \$14.6 million and an increase in services and other revenue of \$3.9 million, partially offset by a decrease in license revenue of \$(16.4) million as compared to the prior fiscal year.

License Revenue

	Year Ended June 30,			2021 Compared to 2020		2020 Compared to 2019	
	2021	2020	2019	\$	%	\$	%
	(Dollars in Thousands)						
License revenue	\$ 497,479	\$ 388,180	\$ 404,581	\$ 109,299	28.2 %	\$ (16,401)	(4.1)%
As a percent of total revenue	70.1 %	64.8 %	67.8 %				

We expect license revenue to increase or decrease as a result of: (i) dollar value of bookings in the period; and (ii) timing of renewals.

Fiscal 2021 Compared to Fiscal 2020

The increase in license revenue of \$109.3 million during fiscal 2021 as compared to the prior fiscal year was primarily attributable to an increase in bookings related to the timing of renewals.

Fiscal 2020 Compared to Fiscal 2019

The decrease in license revenue of \$(16.4) million during fiscal 2020 as compared to the prior fiscal year was primarily attributable to a decrease in bookings and the timing of renewals.

Maintenance Revenue

	Year Ended June 30,			2021 Compared to 2020		2020 Compared to 2019	
	2021	2020	2019	\$	%	\$	%
	(Dollars in Thousands)						
Maintenance revenue	\$ 185,164	\$ 178,139	\$ 163,567	\$ 7,025	3.9 %	\$ 14,572	8.9 %
As a percent of total revenue	26.1 %	29.8 %	27.4 %				

We expect maintenance revenue to increase as a result of: (i) having a larger base of arrangements recognized on a ratable basis; (ii) increased customer usage of our software; (iii) adding new customers; and (iv) escalating annual payments.

Fiscal 2021 Compared to Fiscal 2020

The increase in maintenance revenue of \$7.0 million during fiscal 2021 as compared to the prior fiscal year was primarily due to growth of our base of arrangements, which include maintenance, being recognized on a ratable basis.

Fiscal 2020 Compared to Fiscal 2019

The increase in maintenance revenue of \$14.6 million during fiscal 2020 as compared to the prior fiscal year was primarily due to growth of our base of arrangements, which include maintenance, being recognized on a ratable basis.

Services and Other Revenue

	Year Ended June 30,			2021 Compared to 2020		2020 Compared to 2019	
	2021	2020	2019	\$	%	\$	%
	(Dollars in Thousands)						
Services and other revenue	\$ 26,733	\$ 32,398	\$ 28,534	\$ (5,665)	(17.5)%	\$ 3,864	13.5 %
As a percent of total revenue	3.8 %	5.4 %	4.8 %				

We recognize professional services revenue for our time-and-materials ("T&M") contracts based upon hours worked and contractually agreed-upon hourly rates. Revenue from fixed-price engagements is recognized using the proportional performance method based on the ratio of costs incurred to the total estimated project costs.

Fiscal 2021 Compared to Fiscal 2020

Services and other revenue decreased by \$(5.7) million during fiscal 2021 as compared to the prior fiscal year primarily due to a decrease in bookings, delay in timing of professional service engagements, and an increase in discounts provided for the professional services engagements to help generate license growth.

Fiscal 2020 Compared to Fiscal 2019

Services and other revenue increased by \$3.9 million during fiscal 2020 as compared to the prior fiscal year primarily due to the timing of professional services engagements.

Cost of Revenue

Cost of License Revenue

	Year Ended June 30,			2021 Compared to 2020		2020 Compared to 2019	
	2021	2020	2019	\$	%	\$	%
	(Dollars in Thousands)						
Cost of license revenue	\$ 9,276	\$ 7,241	\$ 7,060	\$ 2,035	28.1 %	\$ 181	2.6 %
As a percent of license revenue	1.9 %	1.9 %	1.7 %				

Fiscal 2021 Compared to Fiscal 2020

Cost of license revenue increased by \$2.0 million during fiscal 2021 as compared to the prior fiscal year. The increase in cost of license revenue during fiscal 2021 was primarily due to increased amortization of intangible assets attributable to acquisitions in the current year. License gross profit margin was 98.1% in fiscal 2021 and was relatively consistent with that of fiscal 2020.

Fiscal 2020 Compared to Fiscal 2019

Cost of license revenue increased by \$0.2 million during fiscal 2020 as compared to the prior fiscal year. The increase in cost of license revenue during fiscal 2020 was primarily due to increased amortization of intangible assets from acquisitions. License gross profit margin was 98.1% in fiscal 2020 and was consistent with that of fiscal 2019.

Cost of Maintenance Revenue

	Year Ended June 30,			2021 Compared to 2020		2020 Compared to 2019	
	2021	2020	2019	\$	%	\$	%
	(Dollars in Thousands)						
Cost of maintenance revenue	\$ 18,287	\$ 19,248	\$ 19,208	\$ (961)	(5.0)%	\$ 40	0.2 %
As a percent of maintenance revenue	9.9 %	10.8 %	11.7 %				

Fiscal 2021 Compared to Fiscal 2020

Cost of maintenance revenue was relatively consistent during fiscal 2021 as compared to the prior fiscal year. Maintenance gross profit margin was 90.1% in fiscal 2021 and was relatively consistent with that of fiscal 2020.

Fiscal 2020 Compared to Fiscal 2019

Cost of maintenance revenue was relatively consistent during fiscal 2020 as compared to the prior fiscal year. Maintenance gross profit margin was 89.2% in fiscal 2020 and was relatively consistent with that of fiscal 2019.

Cost of Services and Other Revenue

	Year Ended June 30,			2021 Compared to 2020		2020 Compared to 2019	
	2021	2020	2019	\$	%	\$	%
	(Dollars in Thousands)						
Cost of services and other revenue	\$ 32,588	\$ 35,118	\$ 31,548	\$ (2,530)	(7.2)%	\$ 3,570	11.3 %
As a percent of services and other revenue	121.9 %	108.4 %	110.6 %				

The timing of revenue and expense recognition on professional service arrangements can impact the comparability of cost and gross profit margin of professional services revenue from year to year. For example, revenue from fixed-price engagements is recognized using the proportional performance method based on the ratio of costs incurred to the total estimated project costs.

Fiscal 2021 Compared to Fiscal 2020

Cost of services and other revenue decreased by \$(2.5) million during fiscal 2021 as compared to the prior fiscal year. The decrease in cost of services and other revenue during fiscal 2021 was primarily due to a decrease in subcontractor costs. Services and other gross profit margin was (21.9)% in fiscal 2021, compared to (8.4)% in fiscal 2020. The decrease in gross profit margin is attributable to an increase in discounts provided for the professional service engagements in fiscal 2021.

Fiscal 2020 Compared to Fiscal 2019

Cost of services and other revenue increased by \$3.6 million during fiscal 2020 as compared to the prior fiscal year. The increase in cost of services and other revenue during fiscal 2020 was primarily due to higher cost of delivering professional services to support the corresponding increase in revenue during the period. Services and other gross profit margin was (10.8)% in fiscal 2020, compared to (16.2)% in fiscal 2019.

Gross Profit

	Year Ended June 30,			2021 Compared to 2020		2020 Compared to 2019	
	2021	2020	2019	\$	%	\$	%
	(Dollars in Thousands)						
Gross profit	\$ 649,225	\$ 537,110	\$ 538,866	\$ 112,115	20.9 %	\$ (1,756)	(0.3)%
As a percent of total revenue	91.5 %	89.7 %	90.3 %				

For further discussion of subscription and software gross profit and services and other gross profit, please refer to the "Cost of License Revenue," "Cost of Maintenance Revenue," and "Cost of Services and Other Revenue" sections above.

Fiscal 2021 Compared to Fiscal 2020

Gross profit increased by \$112.1 million during fiscal 2021 as compared to the prior fiscal year. Gross profit margin increased to 91.5% in fiscal 2021 compared to 89.7% in fiscal 2020 due to the growth in license revenue compared to the related costs.

Fiscal 2020 Compared to Fiscal 2019

Gross profit decreased by \$(1.8) million during fiscal 2020 as compared to the prior fiscal year and gross profit margin remained relatively consistent at 89.7% in fiscal 2020 compared to that of fiscal 2019.

Operating Expenses
Selling and Marketing Expense

	Year Ended June 30,			2021 Compared to 2020		2020 Compared to 2019	
	2021	2020	2019	\$	%	\$	%
	(Dollars in Thousands)						
Selling and marketing expense	\$ 114,959	\$ 114,486	\$ 111,374	\$ 473	0.4 %	\$ 3,112	2.8 %
As a percent of total revenue	16.2 %	19.1 %	18.7 %				

Fiscal 2021 Compared to Fiscal 2020

The year-over-year increase of \$0.5 million in selling and marketing expense in fiscal 2021 as compared to the prior fiscal year was due to higher compensation costs of \$3.2 million primarily related to an increase in headcount, and an increase in marketing programs of \$3.0 million including our biennial customer conference being held this fiscal year. The increase in selling and marketing expense is offset by lower travel-related costs of \$5.2 million in fiscal 2021.

Fiscal 2020 Compared to Fiscal 2019

The year-over-year increase of \$3.1 million in selling and marketing expense in fiscal 2020 as compared to the prior fiscal year was primarily due to higher compensation costs of \$6.9 million related to an increase in headcount and higher stock-based compensation of \$1.0 million, partially offset by lower travel-related costs of \$1.8 million, lower royalties of \$0.9 million, and lower marketing costs of \$0.8 million due to our biennial customer conference held in fiscal 2019.

Research and Development Expense

	Year Ended June 30,			2021 Compared to 2020		2020 Compared to 2019	
	2021	2020	2019	\$	%	\$	%
	(Dollars in Thousands)						
Research and development expense	\$ 94,229	\$ 92,230	\$ 83,122	\$ 1,999	2.2 %	\$ 9,108	11.0 %
As a percent of total revenue	13.3 %	15.4 %	13.9 %				

Fiscal 2021 Compared to Fiscal 2020

The year-over-year increase of \$2.0 million in research and development expense in fiscal 2021 as compared to the prior fiscal year was primarily due to higher compensation costs of \$1.9 million related to an increase in headcount.

Fiscal 2020 Compared to Fiscal 2019

The year-over-year increase of \$9.1 million in research and development expense in fiscal 2020 as compared to the prior fiscal year was primarily due to higher compensation costs of \$6.8 million related to an increase in headcount and higher stock-based compensation of \$1.7 million.

General and Administrative Expense

	Year Ended June 30,			2021 Compared to 2020		2020 Compared to 2019	
	2021	2020	2019	\$	%	\$	%
	(Dollars in Thousands)						
General and administrative expense	\$ 81,636	\$ 73,035	\$ 63,231	\$ 8,601	11.8 %	\$ 9,804	15.5 %
As a percent of total revenue	11.5 %	12.2 %	10.6 %				

Fiscal 2021 Compared to Fiscal 2020

The year-over-year increase of \$8.6 million in general and administrative expense during fiscal 2021 as compared to the prior fiscal year was primarily due to higher bad debt expense of \$4.5 million, acquisition related fees of \$4.4 million, and higher stock-based compensation of \$1.8 million, partially offset by a decrease in legal costs of \$3.4 million.

Fiscal 2020 Compared to Fiscal 2019

The year-over-year increase of \$9.8 million in general and administrative expense during fiscal 2020 as compared to the prior fiscal year was primarily due to higher professional fees of \$3.1 million, higher bad debt expense of \$2.0 million, higher compensation costs of \$1.7 million related to an increase in headcount, and higher stock-based compensation of \$0.7 million.

Non-Operating Income (Expense)
Interest Income

	Year Ended June 30,			2021 Compared to 2020		2020 Compared to 2019	
	2021	2020	2019	\$	%	\$	%
	(Dollars in Thousands)						
Interest income	\$ 36,791	\$ 32,658	\$ 28,457	\$ 4,133	12.7 %	\$ 4,201	14.8 %
As a percent of total revenue	5.2 %	5.5 %	4.8 %				

Fiscal 2021 Compared to Fiscal 2020

The year-over-year increase of \$4.1 million in interest income during fiscal 2021 as compared to the prior fiscal year was a result of: (i) increased customer usage of our software; (ii) adding new customers; and (iii) escalating annual payments.

Fiscal 2020 Compared to Fiscal 2019

The year-over-year increase of \$4.2 million in interest income during fiscal 2020 as compared to the prior fiscal year was a result of: (i) increased customer usage of our software; (ii) adding new customers; and (iii) escalating annual payments.

Interest Expense

	Year Ended June 30,			2021 Compared to 2020		2020 Compared to 2019	
	2021	2020	2019	\$	%	\$	%
	(Dollars in Thousands)						
Interest expense	\$ (7,245)	\$ (11,862)	\$ (8,733)	\$ 4,617	(38.9)%	\$ (3,129)	35.8 %
As a percent of total revenue	(1.0)%	(2.0)%	(1.5)%				

Fiscal 2021 Compared to Fiscal 2020

The year-over-year decrease of \$4.6 million in interest expense during fiscal 2021 as compared to the prior fiscal year was primarily due to less interest associated with the revolving line of credit under our Amended and Restated Credit Agreement due to the repayment of the outstanding balance during fiscal 2021 and a lower interest rate associated with the term loan.

Fiscal 2020 Compared to Fiscal 2019

The year-over-year increase of \$3.1 million in interest expense during fiscal 2020 as compared to the prior fiscal year was primarily due to interest expenses related to an increase in borrowings under our Amended and Restated Credit Agreement.

Other Income (Expense), Net

	Year Ended June 30,			2021 Compared to 2020		2020 Compared to 2019	
	2021	2020	2019	\$	%	\$	%
	(Dollars in Thousands)						
Other income (expense), net	\$ (3,200)	\$ 1,202	\$ 664	\$ (4,402)	(366.2)%	\$ 538	81.0 %
As a percent of total revenue	(0.5)%	0.2 %	0.1 %				

Other income (expense), net is comprised primarily of unrealized and realized foreign currency exchange gains and losses generated from the settlement and remeasurement of transactions denominated in currencies other than the functional currency of our entities

Fiscal 2021 Compared to Fiscal 2020

Other income, net was comprised of \$3.4 million of net foreign currency exchange losses during fiscal 2021 compared to a \$(0.9) million net foreign currency gains for fiscal 2020.

Fiscal 2020 Compared to Fiscal 2019

Other income, net was comprised of \$1.2 million and \$0.7 million of net foreign currency exchange gains during fiscal 2020 and 2019, respectively.

Provision for Income Taxes

	Year Ended June 30,			2021 Compared to 2020		2020 Compared to 2019	
	2021	2020	2019	\$	%	\$	%
	As Adjusted		As Adjusted				
	(Dollars in Thousands)						
Provision for income taxes	\$ 64,944	\$ 49,686	\$ 40,165	\$ 15,258	30.7 %	\$ 9,521	23.7 %
Effective tax rate	16.9 %	17.8 %	13.3 %				

Fiscal 2021 Compared to Fiscal 2020

The effective tax rate for the periods presented is primarily the result of income earned in the U.S. taxed at U.S. federal and state statutory income tax rates, income earned in foreign tax jurisdictions taxed at the applicable rates, as well as the impact of permanent differences between book and tax income.

Our effective tax rate was 16.9% and 17.8% during fiscal 2021 and 2020, respectively.

We recognized income tax expense of \$64.9 million during fiscal 2021 compared to \$49.7 million during fiscal 2020. Fiscal 2021 was impacted primarily by the higher pre-tax book income, offset by the Foreign-Derived Intangible Income ("FDII") deduction, tax credits, and the recognition of excess tax benefits related to stock-based compensation. Assuming certain requirements are met, the FDII deduction is a benefit for US companies that sell their products or services to customers for use outside the US. Fiscal 2020 was unfavorably impacted by the recognition of \$6.4 million tax expense due to an accounting method change election when we filed our fiscal 2019 federal tax return as a result of a change in tax regulations during this fiscal year. Fiscal 2020 was favorably impacted by the FDII deduction and tax credits.

As of June 30, 2021, we maintained a valuation allowance in the U.S. primarily for certain deferred tax assets related to the investment in a joint venture and on state research and development (R&D) credits. We also maintain a valuation allowance on certain foreign subsidiary tax attributes, primarily net operating loss carryforwards because it is more likely than not that a benefit will not be realized. As of June 30, 2021 and 2020, our total valuation allowance was \$9.9 million and \$6.2 million, respectively.

We made cash tax payments totaling \$61.4 million during fiscal 2021. We paid \$58.4 million for U.S. federal and state income taxes and \$3.0 million for foreign tax liabilities

Fiscal 2020 Compared to Fiscal 2019

The effective tax rate for the periods presented is primarily the result of income earned in the U.S. taxed at U.S. federal and state statutory income tax rates, income earned in foreign tax jurisdictions taxed at the applicable rates, as well as the impact of permanent differences between book and tax income.

Our effective tax rate was 17.8% and 13.3% during fiscal 2020 and 2019, respectively.

We recognized income tax expense of \$49.7 million during fiscal 2020 compared to \$40.2 million during fiscal 2019. Fiscal 2020 was unfavorably impacted by the recognition of \$6.4 million tax expense due to an accounting method change election when we filed our fiscal 2019 federal tax return as a result of a change in tax regulations during this fiscal year. Fiscal 2020 was favorably impacted by the FDII deduction and tax credits. Assuming certain requirements are met, the FDII deduction is a benefit for US companies that sell their products or services to customers for use outside the US. Fiscal 2019 was also favorably impacted by the FDII deduction and the recognition of excess tax benefits related to stock-based compensation.

As of June 30, 2020, we maintain a valuation allowance in the U.S. primarily for certain deferred tax assets related to the investment in a joint venture and on state research and development (R&D) credits. We also maintain a valuation allowance on certain foreign subsidiary tax attributes, primarily net operating loss carryforwards because it is more likely than not that a benefit will not be realized. As of June 30, 2020 and 2019, our total valuation allowance was \$6.2 million and \$4.9 millions, respectively.

We made cash tax payments totaling \$39.5 million during fiscal 2020. We paid \$37.1 million for U.S. federal and state income taxes and \$2.4 million for foreign tax liabilities.

Liquidity and Capital Resources

Resources

In recent years, we have financed our operations with cash generated from operating activities. As of June 30, 2021 and 2020, our principal sources of liquidity consisted of \$379.9 million and \$287.8 million in cash and cash equivalents, respectively.

We believe our existing cash and cash equivalents, together with our cash flows from operating activities, will be sufficient to meet our anticipated cash needs for at least the next twelve months. We may need to raise additional funds if we decide to make one or more acquisitions of businesses, technologies or products. If additional funding for such purposes is required beyond existing resources and our Amended and Restated Credit Agreement described below, we may not be able to effect a receivable, equity or debt financing on terms acceptable to us or at all.

Credit Agreement

In December 2019, we entered into an Amended and Restated Credit Agreement with JPMorgan Chase Bank, N.A., as administrative agent, joint lead arranger and joint bookrunner, Silicon Valley Bank, as joint lead arranger, joint bookrunner and syndication agent, and the lenders and co-documentation agents named therein (the "Amended and Restated Credit Agreement"). The Amended and Restated Credit Agreement, which amends and restates the prior Credit Agreement we entered into as of February 26, 2016 with the same lenders (the "Prior Credit Agreement"), provides for a \$200.0 million secured revolving credit facility and a \$320.0 million secured term loan facility. The indebtedness under the revolving credit facility matures on December 23, 2024. Prior to the maturity of the revolving credit facility under the Amended and Restated Credit Agreement, any amounts borrowed under the facility may be repaid and, subject to the terms and conditions of the Amended and Restated Credit Agreement, borrowed again in whole or in part without penalty.

During fiscal year 2021, we paid off the outstanding balance of our revolving credit facility of \$119.2 million. As of June 30, 2021, our current borrowings of \$20.0 million consist of the term loan facility. Our non-current borrowings of \$273.2 million consist of \$276.0 million of our term loan facility, net of \$2.8 million in debt issuance costs. We had current borrowings of \$135.2 million and non-current borrowings of \$292.4 million as of June 30, 2020.

For a more detailed description of the Amended and Restated Credit Agreement, refer to Note 12, "Credit Agreement," to our Consolidated Financial Statements.

Cash Equivalents and Cash Flows

Our cash equivalents of \$1.0 million as of June 30, 2021 and 2020, respectively, consisted of money market funds. The objective of our investment policy is to manage our cash and investments to preserve principal and maintain liquidity.

The following table summarizes our cash flow activities for the periods indicated:

	Year Ended June 30,		
	2021	2020	2019
	(Dollars in Thousands)		
Cash flow provided by (used in):			
Operating activities	\$ 276,134	\$ 243,258	\$ 238,313
Investing activities	(19,781)	(76,203)	(7,665)
Financing activities	(165,134)	49,435	(254,527)
Effect of exchange rates on cash and cash equivalents	838	(620)	(360)
Increase (decrease) in cash and cash equivalents	<u>\$ 92,057</u>	<u>\$ 215,870</u>	<u>\$ (24,239)</u>

Operating Activities

Our primary source of cash is from the annual installments associated with our software license arrangements and related software support services, and to a lesser extent from professional services and training. We believe that cash inflows from our term license business will grow as we benefit from the continued growth of our portfolio of term license contracts.

Fiscal 2021

Cash from operating activities provided \$276.1 million during fiscal 2021. This amount resulted from net income of \$319.8 million, adjusted for non-cash items of \$79.1 million, and net uses of cash of \$(122.8) million related to changes in working capital.

Non-cash items within net income consisted primarily of stock-based compensation expense of \$33.6 million, depreciation and amortization expense of \$10.3 million, provision for bad debts of \$9.7 million, reduction in the carrying amount of right-of-use assets of \$8.9 million, deferred income taxes of \$12.3 million, and net foreign currency losses of \$3.4 million.

Cash used by working capital of \$(122.8) million in fiscal 2021 was primarily attributable to an increase in contract assets of \$113.7 million, increases in prepaid expenses, prepaid income taxes, and other assets of \$12.8 million, decreases in lease liabilities of \$10.2 million, increases in accounts receivable of \$2.1 million, and increases in contract costs of \$0.4 million, partially offset by cash provided by increases in deferred revenue of \$16.6 million.

Fiscal 2020

Cash from operating activities provided \$243.3 million during fiscal 2020. This amount resulted from net income of \$229.7 million, adjusted for non-cash items of \$83.2 million, and net uses of cash of \$(69.6) million related to changes in working capital.

Non-cash items within net income consisted primarily of stock-based compensation expense of \$31.5 million, deferred income taxes of \$28.1 million, depreciation and amortization expense of \$9.6 million, reduction in the carrying amount of right-of-use assets of \$9.1 million, provision for bad debts of \$5.3 million, and net foreign currency gains of \$(0.9) million.

Cash used by working capital of \$(69.6) million was primarily attributable to cash used by increases in contract assets of \$28.1 million, decreases in accounts payable, accrued expenses and other current liabilities of \$23.4 million, increases in accounts receivable of \$12.9 million, decreases in lease liabilities of \$9.5 million, increases in prepaid expenses, prepaid income taxes, and other assets of \$5.3 million, and increases in contract costs of \$3.6 million, partially offset by cash provided by increases in deferred revenue of \$13.0 million.

Fiscal 2019

Cash from operating activities provided \$238.3 million during fiscal 2019. This amount resulted from net income of \$261.4 million, adjusted for non-cash items of \$8.4 million, and net sources of cash of \$(31.5) million related to changes in working capital.

Non-cash items within net income consisted primarily of stock-based compensation expense of \$27.6 million, depreciation and amortization expense of \$8.1 million, deferred income taxes of \$(27.1) million, provision for bad debts of \$0.6 million, and net foreign currency gains of \$(1.3) million.

Cash used by working capital of \$(31.5) million was primarily attributable to cash used by increases in contract assets of \$57.7 million, increases in accounts receivable of \$6.6 million, increases in contract costs of \$4.5 million, and increases in prepaid expenses, prepaid income taxes, and other assets of \$2.4 million, partially offset by cash provided by increases in accounts payable, accrued expenses and other current liabilities of \$21.9 million, and increases in deferred revenue of \$17.8 million. The increase in accounts payable, accrued expenses and other current liabilities is primarily due to an increase in income taxes payable as of June 30, 2019 from the tax liability associated with adopting Topic 606. There was a correlating decrease in deferred income taxes during fiscal 2019.

Investing Activities

Fiscal 2021

During fiscal 2021, we used \$19.8 million of cash from investing activities. We used \$16.3 million for business acquisitions, \$1.2 million for capital expenditures, \$1.1 million for equity method investments, and \$1.1 million for capitalized computer software development costs.

Fiscal 2020

During fiscal 2020, we used \$76.2 million of cash from investing activities. We used \$74.5 million for business acquisitions, \$1.3 million for capital expenditures, \$0.3 million for equity method investments, and \$0.1 million for capitalized computer software development costs.

Fiscal 2019

During fiscal 2019, we used \$7.7 million of cash from investing activities. We used \$6.1 million for business acquisitions, \$1.1 million for capitalized computer software development costs, and \$0.4 million for capital expenditures.

Financing Activities

Fiscal 2021

During fiscal 2021, we used \$165.1 million of cash from financing activities. Uses of cash in the period included the repayment of the outstanding revolving line of credit of \$119.2 million, \$45.6 million for repurchases of our common stock, \$16.0 million for repayments of the term loan, \$9.2 million for withholding taxes on vested and settled restricted stock units, and \$1.2 million for deferred business acquisition payments, partially offset by proceeds of \$26.1 million from the exercise of employee stock options.

Fiscal 2020

During fiscal 2020, \$49.4 million of net cash was provided by financing activities. Sources of cash in the period included proceeds of \$449.2 million from the Amended and Restated Credit Agreement, \$125.0 million from the Prior Credit Agreement, and proceeds of \$9.0 million from the exercise of employee stock options, partially offset by uses of cash of \$152.4 million for repurchases of our common stock, \$10.2 million for withholding taxes on vested and settled restricted stock units, \$345.0 million for repayments of the revolving line of credit from the Prior Credit Agreement, \$10.0 million for repayments of the revolving line of credit and \$8.0 million for repayments of the term loan from the Amended and Restated Credit Agreement, and \$4.6 million for deferred business acquisition payments, and \$3.5 million for debit issuance costs.

Fiscal 2019

During fiscal 2019, we used \$254.5 million of cash for financing activities. We used \$299.2 million for repurchases of our common stock, \$1.7 million for deferred business acquisition payments, and \$14.5 million for withholding taxes on vested and settled restricted stock units. Sources of cash in the period included proceeds of \$50.0 million from the Prior Credit Agreement and proceeds of \$10.9 million from the exercise of employee stock options.

Contractual Obligations and Requirements

Our contractual obligations, which consisted of borrowings, interest, and fees under our Amended and Restated Credit Agreement, operating lease commitments for our headquarters and other facilities, royalty obligations, equity method investments, deferred acquisition payments, and standby letters of credit and other obligations, were as follows as of June 30, 2021:

	Payments due by Period				
	Total	Less than 1 Year	1 to 3 Years	3 to 5 Years	More than 5 Years
Contractual Cash Obligations:					
Credit agreement (1)	\$ 314,094	\$ 25,091	\$ 73,173	\$ 215,830	\$ —
Operating leases (2)	62,363	10,718	20,297	11,287	20,061
Royalty obligations	4,299	2,292	1,498	202	307
Equity method investments	4,093	4,093	—	—	—
Deferred acquisition payments	4,062	2,862	1,200	—	—
Other purchase obligations	18,824	16,598	2,226	—	—
Total contractual cash obligations	\$ 407,735	\$ 61,654	\$ 98,394	\$ 227,319	\$ 20,368
Other Commercial Commitments:					
Standby letters of credit	\$ 2,323	\$ 779	\$ —	\$ 1,544	\$ —
Total commercial commitments	\$ 410,058	\$ 62,433	\$ 98,394	\$ 228,863	\$ 20,368

(1) The \$314.1 million of contractual obligations related to our Amended and Restated Credit Agreement includes \$296.0 million in outstanding borrowings under our term loan facility, and \$18.1 million of interest expense and commitment fees as of June 30, 2021.

(2) The \$62.4 million of contractual obligations includes rent and fixed fees for all of our operating leases, including those not recognized on the balance sheet.

We are not currently a party to any other material purchase contracts related to future capital expenditures, and we do not expect our future investment in capital expenditures to be materially different from recent levels.

The standby letters of credit were issued by Silicon Valley Bank in the United States and secure our performance on professional services contracts and certain facility leases.

The above table does not reflect a liability for uncertain tax positions of \$2.1 million as of June 30, 2021. We estimate that none of this amount will be paid within the next year and we are currently unable to reasonably estimate the timing of payments for the remainder of the liability.

Off-Balance Sheet Arrangements

As of June 30, 2021, we did not have any significant off-balance sheet arrangements, as defined in Item 303(a)(4)(ii) of SEC Regulation S-K.

Critical Accounting Estimates and Judgments

Our consolidated financial statements are prepared in accordance with GAAP. The preparation of our financial statements requires management to make estimates and judgments that affect the reported amounts of assets, liabilities, revenue, expenses and related disclosures. We base our estimates on historical experience and various other assumptions that we believe to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions or conditions.

We believe that the assumptions and estimates associated with revenue recognition policies have the greatest potential impact on our consolidated financial statements.

For further information on our significant accounting policies, refer to Note 2, "Significant Accounting Policies," and Note 3, "Revenue from Contracts with Customers," to our Consolidated Financial Statements.

Revenue Recognition

In accordance with Topic 606, we account for a customer contract when both parties have approved the contract and are committed to perform their respective obligations, each party's rights can be identified, payment terms can be identified, the contract has commercial substance, and it is probable that we will collect substantially all of the consideration to which we are entitled. Revenue is recognized when, or as, performance obligations are satisfied by transferring control of a promised product or service to a customer.

Nature of Products and Services

We generate revenue from the following sources: (1) License revenue; (2) Maintenance revenue; and (3) Services and other revenue. We sell our software products to end users primarily under fixed-term licenses. We license our software products primarily through a subscription offering which we refer to as our aspenONE licensing model, which includes software maintenance and support, known as our Premier Plus SMS offering, for the entire term. Our aspenONE products are organized into three suites: 1) engineering; 2) manufacturing and supply chain; and 3) asset performance management. Each product suite leverages our AIoT products as the foundation of industrial data. Our APM product suite is licensed by customer sites, user seats or cloud connections. The engineering and manufacturing and supply chain product suites are licensed by tokens, which are interchangeable measures of usage based on the various units of measure such as users, servers, applications, manipulated variables, etc. Customers may use tokens flexibly to access any product or combination of products in the licensed suite.

We also license our software through point product term arrangements, which include our Premier Plus SMS offering for the entire term.

We determine revenue recognition through the following steps:

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

Term-based Arrangements: Term-based arrangements consist of on-premise term licenses as well as maintenance.

License

License revenue consists primarily of product and related revenue from our aspenONE licensing model and point product arrangements.

When a customer elects to license our products under our aspenONE licensing model, the customer receives, for the term of the arrangement, the right to all software products in the licensed aspenONE software suite. When a customer elects to license point products, the customer receives, for the term of the arrangement, the right to license specified products in the licensed aspenONE software suite. Revenue from initial product licenses is recognized upfront upon delivery.

Maintenance

When a customer elects to license our products under our aspenONE licensing model, our Premier Plus SMS offering is included for the entire term of the arrangement and the customer receives, for the term of the arrangement, the right to any updates that may be introduced into the licensed aspenONE software suite. When a customer elects to license point products, our Premier Plus SMS offering is included for the entire term of the arrangement and the customer receives, for the term of the arrangement, the right to any updates that may be introduced related to the specified products licensed. Maintenance represents a stand-ready obligation and, due to our obligation to provide unspecified future software updates on a when-and-if available basis as well as telephone support services, we are required to recognize revenue ratably over the term of the arrangement.

Services and Other Revenue

Professional Services Revenue

Professional services are provided to customers on a T&M or fixed-price basis. The obligation to provide professional services is generally satisfied over time, with the customer simultaneously receiving and consuming the benefits as we satisfy our performance obligation. For professional services, revenue is recognized by measuring progress toward the completion of our obligations. We recognize professional services fees for our T&M contracts based upon hours worked and contractually agreed-upon hourly rates. Revenue from fixed-price engagements is recognized using the proportional performance method based on the ratio of costs incurred to the total estimated project costs. The use of the proportional performance method is dependent upon our ability to reliably estimate the costs to complete a project. We use historical experience as a basis for future estimates to complete current projects. Additionally, we believe that costs are the best available measure of performance. Out-of-pocket expenses which are reimbursed by customers are recorded as revenue.

Training Revenue

We provide training services to our customers, including on-site, Internet-based, public and customized training. The obligation to provide training services is generally satisfied over time, with the customer simultaneously receiving and consuming the benefits as we satisfy our performance obligation. Revenue is recognized in the period in which the services are performed.

Contracts with Multiple Performance Obligations

Our contracts generally contain more than one of the products and services listed above, each of which is separately accounted for as a distinct performance obligation.

Allocation of consideration: We allocate total contract consideration to each distinct performance obligation in an arrangement on a relative standalone selling price basis. The standalone selling price reflects the price we would charge for a specific product or service if it was sold separately in similar circumstances and to similar customers.

If the arrangement contains professional services and other products or services, we allocate to the professional service obligation a portion of the total contract consideration based on the standalone selling price of professional services that is observed from consistently priced standalone sales.

The standalone selling price for term licenses, which are always sold with maintenance, is the price for the combined license and maintenance bundle. The amount assigned to the license and maintenance bundle is separated into license and maintenance amounts using the respective standalone selling prices represented by the value relationship between the software license and maintenance.

When two or more contracts are entered into at or near the same time with the same customer, we evaluate the facts and circumstances associated with the negotiation of those contracts. Where the contracts are negotiated as a package, we will

account for them as a single arrangement and allocate the consideration for the combined contracts among the performance obligations accordingly.

Standalone selling price: When available, we use directly observable transactions to determine the standalone selling prices for performance obligations. Generally, directly observable data is not available for term licenses and maintenance. When term licenses are sold together with maintenance in a bundled arrangement, we estimate a standalone selling price for these distinct performance obligations using relevant information, including our overall pricing objectives and strategies and historical pricing data, and taking into consideration market conditions and other factors.

Other policies and judgments

Payment terms and conditions vary by contract type, although terms generally include a requirement of payment annually over the term of the license arrangement. Therefore, we generally receive payment from a customer after the performance obligation related to the license has been satisfied, and therefore, our contracts generally contain a significant financing component. The significant financing component is calculated utilizing an interest rate that derives the net present value of the performance obligations delivered on an upfront basis based on the allocation of consideration. We have instituted a customer portfolio approach in assigning interest rates. The rates are determined at contract inception and are based on the credit characteristics of the customers within each portfolio.

Contract modifications

We sometimes enter into agreements to modify previously executed contracts, which constitute contract modifications. We assess each of these contract modifications to determine (i) if the additional products and services are distinct from the products and services in the original arrangement; and (ii) if the amount of consideration expected for the added products and services reflects the stand-alone selling price of those products and services, as adjusted for contract-specific circumstances. A contract modification meeting both criteria is accounted for as a separate contract. A contract modification not meeting both criteria is considered a change to the original contract and is accounted for on either (i) a prospective basis as a termination of the existing contract and the creation of a new contract; or (ii) a cumulative catch-up basis. Generally, our contract modifications meet both criteria and are accounted for as a separate contract, as adjusted for contract-specific circumstances.

Contract Costs

We pay commissions for new product sales as well as for renewals of existing contracts. Commissions paid to obtain renewal contracts are not commensurate with the commissions paid for new product sales and therefore, a portion of the commissions paid for new contracts relate to future renewals.

We account for new product sales commissions using a portfolio approach and allocate the cost of commissions in proportion to the allocation of transaction price of license and maintenance performance obligations, including assumed renewals. Commissions allocated to the license and license renewal components are expensed at the time the license revenue is recognized. Commissions allocated to maintenance are capitalized and amortized on a straight-line basis over a period of four to eight years for new contracts, reflecting our estimate of the expected period that we will benefit from those commissions.

Amortization of capitalized contract costs is included in sales and marketing expenses in our Condensed Consolidated Statement of Operations.

Recent Accounting Pronouncements

Refer to Note 2 (o) "New Accounting Pronouncements Adopted in Fiscal 2021" and Note 2 (p) "Recently Issued Accounting Pronouncements," to our Consolidated Financial Statements for information about recent accounting pronouncements.

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

In the ordinary course of conducting business, we are exposed to certain risks associated with potential changes in market conditions. These market risks include changes in currency exchange rates and interest rates which could affect operating results, financial position and cash flows. We manage our exposure to these market risks through our regular operating and financing activities and, if considered appropriate, we may enter into derivative financial instruments such as forward currency exchange contracts.

Foreign Currency Risk

During fiscal 2021 and 2020, 12.6% and 6.6% of our total revenue, respectively, was denominated in a currency other than the U.S. dollar. In addition, certain of our operating costs incurred outside the United States are denominated in currencies other than the U.S. dollar. We conduct business on a worldwide basis and as a result, a portion of our revenue, earnings, net assets, and net investments in foreign affiliates is exposed to changes in foreign currency exchange rates. We measure our net exposure for cash balance positions and for cash inflows and outflows in order to evaluate the need to mitigate our foreign exchange risk. We may enter into foreign currency forward contracts to minimize the impact related to unfavorable exchange rate movements, although we have not done so during fiscal 2021 and fiscal 2020. Our largest exposures to foreign currency exchange rates exist primarily with the Euro, Pound Sterling, Canadian Dollar, Japanese Yen, and Russian Ruble.

During fiscal 2021 and fiscal 2020, we recorded net foreign currency losses of \$3.4 million and gains of \$(0.9) million, respectively, related to the settlement and remeasurement of transactions denominated in currencies other than the functional currency of our operating units. Our analysis of operating results transacted in various foreign currencies indicated that a hypothetical 10% change in the foreign currency exchange rates could have increased or decreased the consolidated results of operations by approximately \$8.1 million and \$4.8 million for fiscal 2021 and 2020, respectively.

Interest Rate Risk

We place our investments in money market instruments. Our analysis of our investments and interest rates at June 30, 2021 and 2020 indicated that a hypothetical 100 basis point increase or decrease in interest rates would not have a material impact on the fair value of our investments determined in accordance with an income-based approach utilizing portfolio future cash flows discounted at the appropriate rates.

As of June 30, 2021, our current borrowings of \$20.0 million consist of the term loan facility under the Amended and Restated Credit Agreement. Our non-current borrowings of \$273.2 million consist of \$276.0 million under our term loan facility, net of \$2.8 million in debt issuance costs. A hypothetical 10% increase or decrease in interest rates paid on outstanding borrowings under the Amended and Restated Credit Agreement would not have a material impact on our financial position, results of operations or cash flows.

Investment Risk

During fiscal 2020, we entered into a limited partnership investment fund agreement. The primary objective of this partnership is investing in equity and equity-related securities (including convertible debt) of venture growth-stage businesses. We account for the investment in accordance with Topic 323, *Investments - Equity Method and Joint Ventures*. Our total commitment under this partnership is 5.0 million CAD (\$3.5 million). Under the conditions of the equity method investment, unfavorable future changes in market conditions could lead to a potential loss up to the full value of our 5.0 million CAD (\$3.5 million) commitment. As of June 30, 2021, the fair value of this investment is 1.8 million CAD (\$1.3 million), representing our payments towards the total commitment during fiscal 2021, and is recorded in non-current assets in our consolidated balance sheet.

Item 8. Financial Statements and Supplementary Data.

The following consolidated financial statements specified by this Item, together with the reports thereon of KPMG LLP, are presented following Item 15 of this Form 10-K:

Financial Statements:

Report of Independent Registered Public Accounting Firm
Consolidated Statements of Operations for the years ended June 30, 2021, 2020 and 2019
Consolidated Statements of Comprehensive Income for the years ended June 30, 2021, 2020 and 2019
Consolidated Balance Sheets as of June 30, 2021 and 2020
Consolidated Statements of Stockholders' Equity for the years ended June 30, 2021, 2020 and 2019
Consolidated Statements of Cash Flows for the years ended June 30, 2021, 2020 and 2019
Notes to Consolidated Financial Statements

Item 9A. Controls and Procedures

Evaluation of Disclosure Controls and Procedures

As required by Rule 13a-15(b) under the Securities Exchange Act of 1934, as amended, as of the end of the period covered by this report, we carried out an evaluation under the supervision and with the participation of our management, including our Chief Executive Officer and Chief Financial Officer, of the effectiveness of our disclosure controls and

procedures. In designing and evaluating our disclosure controls and procedures, we recognize that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving the desired control objectives, and our management necessarily applies its judgment in evaluating and implementing possible controls and procedures. The effectiveness of our disclosure controls and procedures is also necessarily limited by the staff and other resources available to us and the geographic diversity of our operations. Based upon that evaluation, the Chief Executive Officer and Chief Financial Officer concluded that, as of June 30, 2021, our disclosure controls and procedures were effective.

Management's Annual Report on Internal Control Over Financial Reporting

Management of the Company is responsible for establishing and maintaining adequate internal control over financial reporting as defined in Rules 13a-15(f) under the Securities Exchange Act of 1934. The Company's internal control over financial reporting is designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. The Company's internal control over financial reporting includes those policies and procedures that:

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

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. A control system, no matter how well designed and operated, can provide only reasonable, not absolute assurance that the control system's objectives will be met.

Management, including our Chief Executive Officer and Chief Financial Officer, assessed the effectiveness of the Company's internal control over financial reporting as of June 30, 2021. In making this assessment, management used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) in Internal Control-Integrated Framework (2013). Based on this assessment, management has concluded that our internal control over financial reporting was effective as of June 30, 2021.

Our independent registered public accounting firm has audited our consolidated financial statements and the effectiveness of our internal control over financial reporting as of June 30, 2021. This report appears below.

Remediation Efforts of Previously Disclosed Material Weakness

As previously disclosed in our Annual Report on Form 10-K for the fiscal years ended June 30, 2019 and June 30, 2020, we identified a material weakness in our internal control over financial reporting. In fiscal 2019, we did not effectively design process level control activities over the accuracy of the retrospective restatement of revenue and related contract balances recorded upon the adoption of Topic 606, which also impacted the related deferred tax assets and liabilities on the consolidated balance sheet. The control deficiencies identified resulted from an ineffective risk assessment and the lack of timely creation of relevant reporting tools and complete and accurate information used to support the functioning of internal control. These deficiencies created a reasonable possibility that a material misstatement would not have been prevented or detected on a timely basis and accordingly management concluded that the deficiencies represented a material weakness in our internal control over financial reporting. Additional deficiencies related to the fiscal 2019 material weakness were identified in fiscal 2020. Consequently, there were control failures in the areas of revenue and contract asset balances, which also impacted the related deferred tax liabilities.

In response to the material weakness, with the oversight of the Audit Committee of the Board of Directors, we implemented a remediation plan. The remediation plan included enhancing our risk assessment process over the design and implementation of internal controls over new and emerging financial reporting matters and updating our risk assessment of revenue and associated contract balances controls, resulting in the identification and design of enhanced review controls over the accounting for revenue contracts under Topic 606, including the use of additional reporting tools and additional reconciliation controls.

All remediation efforts have been completed by management and applicable controls have operated for a sufficient period of time. Management concluded, through testing, that these controls are operating effectively. As a result, management concluded that the prior year's material weakness in our internal control over financial reporting had been remediated as of June 30, 2021.

Changes in Internal Control Over Financial Reporting

Except for the remediation efforts of the previously identified material weakness discussed above, there were no changes in our internal control over financial reporting during the year ended June 30, 2021 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

We will continue to review and document our disclosure controls and procedures, including our internal control over financial reporting, and may from time to time make changes aimed at enhancing their effectiveness and to ensure that our systems evolve with our business.

Report of Independent Registered Public Accounting Firm

To the Stockholders and Board of Directors
Aspen Technology, Inc.:

Opinion on Internal Control Over Financial Reporting

We have audited Aspen Technology, Inc. and subsidiaries' (the Company) internal control over financial reporting as of June 30, 2021, based on criteria established in *Internal Control - Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission. In our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of June 30, 2021, based on criteria established in *Internal Control - Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated balance sheets of the Company as of June 30, 2021 and 2020, the related consolidated statements of operations, comprehensive income, stockholders' equity, and cash flows for each of the years in the three-year period ended June 30, 2021, and the related notes and financial statement Schedule II - Valuation and Qualifying Accounts (collectively, the consolidated financial statements), and our report dated August 18, 2021 expressed an unqualified opinion on those consolidated financial statements.

Basis for Opinion

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying *Management's Annual Report on Internal Control Over Financial Reporting*. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audit also included performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control Over Financial Reporting

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

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

/s/ KPMG LLP

Boston, Massachusetts

August 18, 2021

PART III

Item 10. Directors, Executive Officers and Corporate Governance.

Certain information required under this Item 10 will appear under the sections entitled “Executive Officers of the Registrant,” “Election of Directors,” “Information Regarding our Board of Directors and Corporate Governance,” “Code of Business Conduct and Ethics,” and “Section 16(a) Beneficial Ownership Reporting Compliance” in our definitive proxy statement for our 2021 annual meeting of stockholders, and is incorporated herein by reference.

Item 11. Executive Compensation.

Certain information required under this Item 11 will appear under the sections entitled “Director Compensation,” “Compensation Discussion and Analysis,” “Executive Compensation” and “Employment and Change in Control Agreements” in our definitive proxy statement for our 2021 annual meeting of stockholders, and is incorporated herein by reference.

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

Certain information required under this Item 12 will appear under the sections entitled “Stock Owned by Directors, Executive Officers and Greater-than 5% Stockholders” and “Securities Authorized for Issuance Under Equity Compensation Plans” in our definitive proxy statement for our 2021 annual meeting of stockholders, and is incorporated herein by reference.

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

Certain information required under this Item 13 will appear under the sections entitled “Information Regarding the Board of Directors and Corporate Governance” and “Related Party Transactions” in our definitive proxy statement for our 2021 annual meeting of stockholders, and is incorporated herein by reference.

Item 14. Principal Accounting Fees and Services.

Certain information required under this Item 14 will appear under the section entitled “Independent Registered Public Accountants” in our definitive proxy statement for our 2021 annual meeting of stockholders, and is incorporated herein by reference.

PART IV

Item 15. Exhibits and Financial Statement Schedules.

(a)(1) Financial Statements

<u>Description</u>	<u>Page</u>
Report of Independent Registered Public Accounting Firm	50
Consolidated Statements of Operations for the years ended June 30, 2021, 2020 and 2019	52
Consolidated Statements of Comprehensive Income for the years ended June 30, 2021, 2020 and 2019	53
Consolidated Balance Sheets as of June 30, 2020 and 2019	54
Consolidated Statements of Stockholders' Equity for the years ended June 30, 2021, 2020 and 2019	55
Consolidated Statements of Cash Flows for the years ended June 30, 2021, 2020 and 2019	56
Notes to Consolidated Financial Statements	58

(a)(2) Financial Statement Schedules

Schedule II-Valuation and Qualifying Accounts for the years ended June 30, 2021, 2020 and 2019 appears immediately following the financial statements. All other schedules are omitted because they are not required or the required information is shown in the consolidated financial statements or notes thereto.

(a)(3) Exhibits

The exhibits listed in the accompanying exhibit index are filed or incorporated by reference as part of this Form 10-K.

INDEX TO CONSOLIDATED FINANCIAL STATEMENTS

Report of Independent Registered Public Accounting Firm	50
Consolidated Statements of Operations for the years ended June 30, 2021, 2020 and 2019	52
Consolidated Statements of Comprehensive Income for the years ended June 30, 2021, 2020 and 2019	53
Consolidated Balance Sheets as of June 30, 2020 and 2019	54
Consolidated Statements of Stockholders' Equity for the years ended June 30, 2021, 2020 and 2019	55
Consolidated Statements of Cash Flows for the years ended June 30, 2021, 2020 and 2019	56
Notes to Consolidated Financial Statements	58
Schedule II - Valuation and Qualifying Accounts	85

Report of Independent Registered Public Accounting Firm

To the Stockholders and Board of Directors
Aspen Technology, Inc.:

Opinion on the Consolidated Financial Statements

We have audited the accompanying consolidated balance sheets of Aspen Technology, Inc. and subsidiaries (the Company) as of June 30, 2021 and 2020, the related consolidated statements of operations, comprehensive income, stockholders' equity, and cash flows for each of the years in the three-year period ended June 30, 2021, and the related notes and financial statement Schedule II - Valuation and Qualifying Accounts (collectively, the consolidated financial statements). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company as of June 30, 2021 and 2020, and the results of its operations and its cash flows for each of the years in the three-year period ended June 30, 2021, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of June 30, 2021, based on criteria established in *Internal Control - Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission, and our report dated August 18, 2021 expressed an unqualified opinion on the effectiveness of the Company's internal control over financial reporting.

Change in Accounting Principle

As discussed in Note 2(o) to the consolidated financial statements, the Company has changed its method of accounting for leases as of July 1, 2019 due to the adoption of Accounting Standards Codification, or ASC, Topic 842, *Leases*.

Basis for Opinion

These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these consolidated financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. We believe that our audits provide a reasonable basis for our opinion.

Critical Audit Matter

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

Determination of Standalone Selling Prices for Term License and Maintenance Performance Obligations

As discussed in Note 3 to the consolidated financial statements, the Company recognized term license revenue and maintenance revenue of \$497.5 million and \$185.2 million, respectively, for the year ended June 30, 2021. The Company allocates the transaction price to each distinct performance obligation on a relative standalone selling price basis. For term license and maintenance performance obligations, directly observable data is generally not available, which requires the Company to make significant assumptions regarding the relative fair value of the related performance obligations.

We identified the determination of standalone selling prices for term license and maintenance performance obligations as a critical audit matter. There is a high degree of subjective auditor judgment involved in performing procedures on the Company's assumptions, since there is no direct observable data available.

The primary procedures we performed to address this critical audit matter included the following. We tested certain internal controls over the Company's revenue process, including the control over the development of standalone selling prices. We evaluated the information used by the Company to determine standalone selling prices by comparing it to external sources, such as available information regarding industry pricing practices, and internal data, including the Company's pricing practices.

/s/ KPMG LLP

We have served as the Company's auditor since 2008.

Boston, Massachusetts

August 18, 2021

ASPEN TECHNOLOGY, INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF OPERATIONS

	Year Ended June 30,		
	2021	2020	2019
(Dollars in Thousands, Except per Share Data)			
Revenue:			
License	\$ 497,479	\$ 388,180	\$ 404,581
Maintenance	185,164	178,139	163,567
Services and other	26,733	32,398	28,534
Total revenue	<u>709,376</u>	<u>598,717</u>	<u>596,682</u>
Cost of revenue:			
License	9,276	7,241	7,060
Maintenance	18,287	19,248	19,208
Services and other	32,588	35,118	31,548
Total cost of revenue	<u>60,151</u>	<u>61,607</u>	<u>57,816</u>
Gross profit	<u>649,225</u>	<u>537,110</u>	<u>538,866</u>
Operating expenses:			
Selling and marketing	114,959	114,486	111,374
Research and development	94,229	92,230	83,122
General and administrative	81,636	73,035	63,231
Total operating expenses	<u>290,824</u>	<u>279,751</u>	<u>257,727</u>
Income from operations	358,401	257,359	281,139
Interest income	36,791	32,658	28,457
Interest (expense)	(7,245)	(11,862)	(8,733)
Other (expense) income, net	(3,200)	1,202	664
Income before income taxes	384,747	279,357	301,527
Provision for income taxes	64,944	49,686	40,165
Net income	<u>\$ 319,803</u>	<u>\$ 229,671</u>	<u>\$ 261,362</u>
Net income per common share:			
Basic	\$ 4.71	\$ 3.38	\$ 3.74
Diluted	\$ 4.67	\$ 3.34	\$ 3.69
Weighted average shares outstanding:			
Basic	67,863	68,000	69,925
Diluted	68,492	68,727	70,787

See accompanying notes to these consolidated financial statements.

ASPEN TECHNOLOGY, INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME

	Year Ended June 30,		
	2021	2020	2019
	(Dollars in Thousands)		
Net income	\$ 319,803	\$ 229,671	\$ 261,362
Other comprehensive income (loss):			
Foreign currency translation adjustments	14,314	(5,624)	(1,052)
Total other comprehensive income (loss)	14,314	(5,624)	(1,052)
Comprehensive income	\$ 334,117	\$ 224,047	\$ 260,310

See accompanying notes to these consolidated financial statements.

ASPEN TECHNOLOGY, INC. AND SUBSIDIARIES
CONSOLIDATED BALANCE SHEETS

	June 30,	
	2021	2020
	(Dollars in Thousands, Except Share and Per Share Data)	
ASSETS		
Current assets:		
Cash and cash equivalents	\$ 379,853	\$ 287,796
Accounts receivable, net	52,502	56,301
Current contract assets	308,607	291,497
Prepaid expenses and other current assets	12,716	10,884
Prepaid income taxes	14,639	3,962
Total current assets	768,317	650,440
Property, equipment and leasehold improvements, net	5,610	5,963
Computer software development costs, net	1,461	928
Goodwill	159,852	137,055
Intangible assets, net	44,327	42,851
Non-current contract assets	407,180	318,976
Contract costs	29,056	28,614
Operating lease right-of-use assets	32,539	34,905
Deferred tax assets	2,121	1,735
Other non-current assets	3,537	1,839
Total assets	\$ 1,454,000	\$ 1,223,306
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	\$ 4,367	\$ 3,988
Accrued expenses and other current liabilities	50,575	43,556
Current operating lease liabilities	6,751	6,824
Income taxes payable	3,444	1,799
Current borrowings	20,000	135,163
Current deferred revenue	56,393	43,168
Total current liabilities	141,530	234,498
Non-current deferred revenue	11,732	13,913
Deferred income taxes	193,360	179,978
Non-current operating lease liabilities	29,699	33,088
Non-current borrowings, net	273,162	292,369
Other non-current liabilities	3,760	3,107
Commitments and contingencies (Note 17)		
Series D redeemable convertible preferred stock, \$0.10 par value—Authorized—3,636 shares as of June 30, 2021 and 2020 Issued and outstanding—none as of June 30, 2021 and 2020	—	—
Stockholders' equity:		
Common stock, \$0.10 par value—Authorized—210,000,000 shares Issued— 104,543,414 shares at June 30, 2021 and 103,988,707 shares at June 30, 2020 Outstanding— 67,912,160 shares at June 30, 2021 and 67,718,692 shares at June 30, 2020	10,455	10,399
Additional paid-in capital	819,642	769,411
Retained earnings	1,778,133	1,458,330
Accumulated other comprehensive income (loss)	9,026	(5,288)
Treasury stock, at cost— 36,631,254 shares of common stock at June 30, 2021 and 36,270,015 shares at June 30, 2020	(1,816,499)	(1,766,499)
Total stockholders' equity	800,757	466,353
Total liabilities and stockholders' equity	\$ 1,454,000	\$ 1,223,306

See accompanying notes to these consolidated financial statements.

ASPEN TECHNOLOGY, INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY

	Common Stock				Retained Earnings	Accumulated Other Comprehensive Income (Loss)	Treasury Stock		Total Stockholders' Equity
	Number of Shares	\$0.10 Par Value	Additional Paid-in Capital	(Dollars in Thousands, Except Share Data)			Number of Shares	Cost	
Balance June 30, 2018	103,130,300	\$ 10,313	\$ 715,475	\$ 967,297	\$ 1,388	31,943,599	\$ (1,316,499)	\$ 377,974	
Comprehensive income:									
Net income	—	—	—	261,362	—	—	—	261,362	
Other comprehensive loss	—	—	—	—	(1,052)	—	—	(1,052)	
Issuance of shares of common stock	266,014	27	10,803	—	—	—	—	10,830	
Issuance of restricted stock units and net share settlement related to withholding taxes	245,978	25	(14,752)	—	—	—	—	(14,727)	
Repurchase of common stock	—	—	—	—	—	3,074,127	(300,000)	(300,000)	
Stock-based compensation	—	—	27,573	—	—	—	—	27,573	
Balance June 30, 2019	103,642,292	\$ 10,365	\$ 739,099	\$ 1,228,659	\$ 336	35,017,726	\$ (1,616,499)	\$ 361,960	
Comprehensive income:									
Net income	—	—	—	229,671	—	—	—	229,671	
Other comprehensive loss	—	—	—	—	(5,624)	—	—	(5,624)	
Issuance of shares of common stock	173,390	17	8,921	—	—	—	—	8,938	
Issuance of restricted stock units and net share settlement related to withholding taxes	173,025	17	(10,157)	—	—	—	—	(10,140)	
Repurchase of common stock	—	—	—	—	—	1,252,289	(150,000)	(150,000)	
Stock-based compensation	—	—	31,548	—	—	—	—	31,548	
Balance June 30, 2020	103,988,707	\$ 10,399	\$ 769,411	\$ 1,458,330	\$ (5,288)	36,270,015	\$ (1,766,499)	\$ 466,353	
Comprehensive income:									
Net income	—	—	—	319,803	—	—	—	319,803	
Other comprehensive income	—	—	—	—	14,314	—	—	14,314	
Issuance of shares of common stock	424,040	42	25,802	—	—	—	—	25,844	
Issuance of restricted stock units and net share settlement related to withholding taxes	130,667	14	(9,215)	—	—	—	—	(9,201)	
Repurchase of common stock	—	—	—	—	—	361,239	(50,000)	(50,000)	
Stock-based compensation	—	—	33,644	—	—	—	—	33,644	
Balance June 30, 2021	104,543,414	\$ 10,455	\$ 819,642	\$ 1,778,133	\$ 9,026	36,631,254	\$ (1,816,499)	\$ 800,757	

See accompanying notes to these consolidated financial statements.

ASPEN TECHNOLOGY, INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CASH FLOWS

	Year Ended June 30,		
	2021	2020	2019
	(Dollars in Thousands)		
Cash flows from operating activities:			
Net income	\$ 319,803	\$ 229,671	\$ 261,362
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation and amortization	10,257	9,550	8,143
Reduction in the carrying amount of right-of-use assets	8,927	9,094	—
Net foreign currency losses (gains)	3,410	(945)	(1,251)
Stock-based compensation	33,644	31,548	27,573
Deferred income taxes	12,255	28,101	(27,129)
Provision for bad debts	9,716	5,255	645
Other non-cash operating activities	921	625	429
Changes in assets and liabilities:			
Accounts receivable	(2,132)	(12,875)	(6,626)
Contract assets	(113,737)	(28,084)	(57,660)
Contract costs	(438)	(3,570)	(4,482)
Lease liabilities	(10,182)	(9,508)	—
Prepaid expenses, prepaid income taxes, and other assets	(12,842)	(5,288)	(2,411)
Accounts payable, accrued expenses, income taxes payable and other liabilities	(59)	(23,360)	21,921
Deferred revenue	16,591	13,044	17,799
Net cash provided by operating activities	<u>276,134</u>	<u>243,258</u>	<u>238,313</u>
Cash flows from investing activities:			
Purchase of property, equipment and leasehold improvements	(1,237)	(1,278)	(436)
Payments for business acquisitions, net of cash acquired	(16,272)	(74,460)	(6,098)
Payments for equity method investments	(1,143)	(324)	—
Payments for capitalized computer software costs	(1,129)	(141)	(1,131)
Net cash used in investing activities	<u>(19,781)</u>	<u>(76,203)</u>	<u>(7,665)</u>
Cash flows from financing activities:			
Issuance of shares of common stock	26,096	9,004	10,864
Repurchases of common stock	(45,647)	(152,432)	(299,214)
Payment of tax withholding obligations related to restricted stock	(9,172)	(10,167)	(14,477)
Deferred business acquisition payments	(1,229)	(4,600)	(1,700)
Proceeds from borrowings	—	574,163	50,000
Repayments of amounts borrowed	(135,182)	(363,000)	—
Payments of debt issuance costs	—	(3,533)	—
Net cash (used in) provided by financing activities	<u>(165,134)</u>	<u>49,435</u>	<u>(254,527)</u>
Effect of exchange rate changes on cash and cash equivalents	838	(620)	(360)
Increase (decrease) in cash and cash equivalents	<u>92,057</u>	<u>215,870</u>	<u>(24,239)</u>

Cash and cash equivalents, beginning of year	287,796	71,926	96,165
Cash and cash equivalents, end of year	<u>\$ 379,853</u>	<u>\$ 287,796</u>	<u>\$ 71,926</u>
Supplemental disclosure of cash flow information:			
Income taxes paid, net	\$ 61,410	\$ 39,533	\$ 53,153
Interest paid	6,403	12,444	8,121
Supplemental disclosure of non-cash activities:			
Change in purchases of property, equipment and leasehold improvements included in accounts payable and accrued expenses	\$ 112	\$ (99)	\$ 104
Change in repurchases of common stock included in accounts payable and accrued expenses	4,353	(2,432)	786
Lease liabilities arising from obtaining right-of-use assets	3,500	14,013	—

See accompanying notes to these consolidated financial statements.

ASPEN TECHNOLOGY, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

(1) Operations

Aspen Technology, Inc., together with its subsidiaries, is a global leader in asset optimization software that optimizes asset design, operations and maintenance in complex, industrial environments. Our aspenONE software and related services have been developed specifically for companies engaged in the process and other capital-intensive industries such as energy, chemicals, engineering and construction, as well as pharmaceuticals, food and beverage, transportation, power, metals and mining, pulp and paper, and consumer packaged goods. Customers use our solutions to improve their competitiveness and profitability by; increasing throughput, energy efficiency, and production levels; reducing unplanned downtime, plant emissions, and safety risks; enhancing capital efficiency; and decreasing working capital requirements over the entire asset lifecycle to support operational excellence. We operate globally in 35 countries as of June 30, 2021.

(2) Significant Accounting Policies

(a) Principles of Consolidation

The accompanying consolidated financial statements include the accounts of Aspen Technology, Inc. and our wholly owned subsidiaries. All intercompany balances and transactions have been eliminated in consolidation.

(b) Management Estimates

The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions. These estimates and assumptions affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenue and expenses during the reporting period. Actual results could differ from those estimates.

(c) Cash and Cash Equivalents

Cash and cash equivalents consist of short-term money market instruments.

(d) Computer Software Development Costs

Certain computer software development costs are capitalized in the accompanying consolidated balance sheets. Capitalization of computer software development costs begins upon establishing technological feasibility defined as meeting specifications determined by the program design. Amortization of capitalized computer software development costs is provided on a product-by-product basis using the greater of (a) the amount computed using the ratio that current gross revenue for a product bears to total of current and anticipated future gross revenue for that product or (b) the straight-line method, beginning upon commercial release of the product, and continuing over the remaining estimated economic life of the product, not to exceed three years.

Total computer software costs capitalized were \$1.2 million, \$0.2 million and \$1.1 million during the years ended June 30, 2021, 2020 and 2019, respectively. Total amortization expense charged to operations was approximately \$0.7 million, \$0.6 million and \$0.5 million for the years ended June 30, 2021, 2020 and 2019, respectively. Computer software development accumulated amortization totaled \$76.4 million and \$75.7 million as of June 30, 2021 and 2020, respectively. Weighted average remaining useful life of computer software development costs was 2.1 years and 2.0 years at June 30, 2021 and 2020, respectively.

At each balance sheet date, we evaluate the unamortized capitalized software costs for potential impairment by comparing the balance to the net realizable value of the products. During the years ended June 30, 2021, 2020 and 2019, our computer software development costs were not considered impaired and as such, we did not recognize impairment losses during the periods then ended.

ASPEN TECHNOLOGY, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

(e) Foreign Currency Translation

The determination of the functional currency of subsidiaries is based on the subsidiaries' financial and operational environment. Gains and losses from foreign currency translation related to entities whose functional currency is not our reporting currency are credited or charged to accumulated other comprehensive income included in stockholders' equity in the consolidated balance sheets. In all instances, foreign currency transaction and remeasurement gains or losses are credited or charged to the consolidated statements of operations as incurred as a component of other income (expense), net. There was a net foreign currency transaction and remeasurement losses of \$3.4 million in fiscal 2021 and gains were \$(0.9) million and \$(0.7) million in fiscal 2020 and 2019, respectively.

(f) Concentration of Credit Risk

Financial instruments that potentially subject us to concentrations of credit risk are principally cash and cash equivalents, contract assets, and accounts receivable. Our cash is held in financial institutions and our cash equivalents are invested in money market mutual funds that we believe to be of high credit quality.

Concentration of credit risk with respect to contract assets and receivables is limited to certain customers to which we make substantial sales. To reduce risk, we assess the financial strength of our customers. We do not require collateral or other security in support of our contract assets and receivables. As of June 30, 2021 and 2020, we had no customer receivable balance that represented approximately 10% or more of our total receivables.

(g) Computer Software Developed for Internal Use and Long-Lived Assets

Computer Software Developed for Internal Use:

Computer software developed for internal use is capitalized in accordance with ASC Topic 350-40, *Intangibles Goodwill and Other—Internal Use Software*. We capitalize costs incurred to develop internal-use software during the application development stage after determining software technological requirements and obtaining management approval for funding projects probable of completion.

In fiscal 2021, 2020 and 2019, there were no capitalized direct labor costs associated with our development of software for internal use.

Impairment of Long-Lived Assets:

We evaluate our long-lived assets, which include finite-lived intangible assets, property and leasehold improvements for impairment as events and circumstances indicate that the carrying amount of an asset or a group of assets may not be recoverable. We assess the recoverability of the asset or a group of assets based on the undiscounted future cash flows the asset is expected to generate, and recognize an impairment loss when estimated undiscounted future cash flows expected to result from the use of the asset are less than its carrying value. If an asset or a group of assets are deemed to be impaired, the amount of the impairment loss, if any, represents the excess of the asset's or a group of assets' carrying value compared to their estimated fair values.

(h) Comprehensive Income (loss)

Comprehensive income (loss) is defined as the change in equity of a business enterprise during a period from transactions and other events and circumstances from non-owner sources. Comprehensive income (loss) and its components for fiscal 2021, 2020 and 2019 are disclosed in the accompanying consolidated statements of comprehensive income (loss).

As of June 30, 2021 and 2020, accumulated other comprehensive income (loss) is comprised of foreign translation adjustments of \$14.3 million and \$(5.6) million, respectively.

(i) Accounting for Stock-Based Compensation

Substantially all stock-based compensation cost is measured at the grant date based on the fair value of the award and is recognized as expense over the requisite service period.

ASPEN TECHNOLOGY, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

(j) Income Taxes

Deferred income taxes are recognized based on temporary differences between the financial statement and tax bases of assets and liabilities. Deferred tax assets and liabilities are measured using the statutory tax rates and laws expected to apply to taxable income in the years in which the temporary differences are expected to reverse. Valuation allowances are provided against net deferred tax assets if, based upon the available evidence, it is more likely than not that some or all of the deferred tax assets will not be realized. The ultimate realization of deferred tax assets is dependent upon the generation of future taxable income and the timing of the temporary differences becoming deductible. Management considers, among other available information, scheduled reversals of deferred tax liabilities, projected future taxable income, limitations of availability of net operating loss carryforwards, and other matters in making this assessment.

We do not provide deferred taxes on unremitted earnings of foreign subsidiaries since we intend to indefinitely reinvest either currently or sometime in the foreseeable future. Unrecognized provisions for taxes on undistributed earnings of foreign subsidiaries, which are considered indefinitely reinvested, are not material to our consolidated financial position or results of operations. We are continuously subject to examination by the Internal Revenue Service (the "IRS"), as well as various state and foreign jurisdictions. The IRS and other taxing authorities may challenge certain deductions and credits reported by us on our income tax returns. In accordance with provisions of ASC Topic 740, *Income Taxes* (ASC 740), an entity should recognize a tax benefit when it is more-likely-than-not, based on the technical merits, that the position would be sustained upon examination by a taxing authority. The amount to be recognized, if the more-likely-than-not threshold was passed, should be measured as the largest amount of tax benefit that is greater than 50 percent likely of being realized upon ultimate settlement with a taxing authority that has full knowledge of all relevant information. Furthermore, any change in the recognition, de-recognition or measurement of a tax position should be recorded in the period in which the change occurs. We account for interest and penalties related to uncertain tax positions as part of the provision for income taxes.

(k) Loss Contingencies

We accrue estimated liabilities for loss contingencies arising from claims, assessments, litigation and other sources when it is probable that a liability has been incurred and the amount of the claim assessment or damages can be reasonably estimated. We believe that we have sufficient accruals to cover any obligations resulting from claims, assessments or litigation that have met these criteria.

(l) Advertising Costs

Advertising costs are expensed as incurred and are classified as sales and marketing expenses. We incurred advertising expenses of \$6.2 million, \$3.5 million and \$4.4 million during fiscal 2021, 2020 and 2019, respectively.

(m) Research and Development Expense

We charge research and development expenditures to expense as the costs are incurred. Research and development expenses consist primarily of personnel expenses related to the creation of new products, enhancements and engineering changes to existing products and costs of acquired technology prior to establishing technological feasibility.

(n) Equity Method Investments

During fiscal 2020, we entered into a limited partnership investment fund agreement. The primary objective of this partnership is investing in equity and equity-related securities (including convertible debt) of venture growth- stage businesses. We account for the investment in accordance with Topic 323, *Investments - Equity Method and Joint Ventures*. Our total commitment under this partnership is 5.0 million CAD (\$3.5 million). Under the conditions of the equity method investment, unfavorable future changes in market conditions could lead to a potential loss up to the full value of our 5.0 million CAD (\$3.5 million) commitment. As of June 30, 2021, the fair value of this investment is 1.8 million CAD (\$1.3 million), representing our payments towards the total commitment during fiscal 2021, and is recorded in non-current assets in our consolidated balance sheet.

(o) New Accounting Pronouncements Adopted in Fiscal 2021 and 2020

In February 2016, the FASB issued Accounting Standards Update ("ASU") No. 2016-02, *Leases* ("Topic 842"). Under the amendment, lessees are required to recognize virtually all of their leases on the balance sheet, by recording a right-of-use asset and lease liability. The ASU is effective for annual periods, including interim periods within those annual periods, beginning

ASPEN TECHNOLOGY, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

after December 15, 2018. We adopted Topic 842 effective July 1, 2019 using the effective date method with a modified retrospective transition approach. Results for reporting periods beginning on or after July 1, 2019 are presented under Topic 842, while prior period amounts were not adjusted and continue to be reported in accordance with the Company's historic accounting under Topic 840 "Leases." We elected the package of practical expedients permitted under the transition guidance within the new standard, which allowed the carry forward of historical assessments of whether a contract contains a lease, lease classification and initial direct costs. The most significant impact of the adoption of Topic 842 was the recognition of operating lease right-of-use assets of \$28.5 million and current and non-current operating lease liabilities of \$7.4 million and \$26.5 million, respectively, and the reversal of deferred rent of \$6.5 million as of July 1, 2019. The adoption of Topic 842 did not have a material impact on our operating results or cash flows, and there was no impact on our debt covenants. See Note 4, "Leases," to our Consolidated Financial Statements for more information on the impact of adopting Topic 842.

In June 2016, the FASB issued Topic 326. The amendment changes the impairment model for most financial assets and certain other instruments. Under Topic 326, entities are required to use a model that will result in the earlier recognition of allowances for losses for trade and other receivables, contract assets, held-to-maturity debt securities, loans, and other instruments. Topic 326 is effective for annual periods, including interim periods within those annual periods, beginning after December 15, 2019. We adopted Topic 326 effective July 1, 2020 using the effective date method with a modified retrospective transition approach. The adoption of Topic 326 did not have a material impact on our balance sheet, operating results or cash flows, and there was no impact on our debt covenants.

In March 2020, the FASB issued ASU 2020-04, *Facilitation of the Effects of Reference Rate Reform on Financial Reporting* ("Topic 848"). ASU 2020-04 provides practical expedients and exceptions for applying U.S. GAAP to contracts, hedging relationships, and other transactions affected by reference rate reform if certain criteria are met. The expedients and exceptions provided by ASU 2020-04 apply only to contracts, hedging relationships, and other transactions that reference the London Interbank Offered Rate ("LIBOR") or another reference rate expected to be discontinued as a result of reference rate reform. These amendments are not applicable to contract modifications made and hedging relationships entered into or evaluated after December 31, 2022. ASU No. 2020-04 is effective as of March 12, 2020 through December 31, 2022, and may be applied to contract modifications and hedging relationships from the beginning of an interim period that includes or is subsequent to March 12, 2020. We adopted ASU 2020-04 effective July 1, 2020. The adoption of ASU No. 2020-04 did not have a material impact on our operating results or cash flows, and there was no impact on our debt covenants.

(p) Recently Issued Accounting Pronouncements

In December 2019, the FASB issued ASU No. 2019-12, *Income Taxes ("Topic 740") - Simplifying the Accounting for Income Taxes*. ASU 2019-12 is intended to simplify accounting for income taxes. It removes certain exceptions to the general principles in Topic 740 and amends existing guidance to improve consistent application. ASU 2019-12 is effective for annual periods, including interim periods within those annual periods, beginning after December 15, 2020. Early adoption is permitted. We are currently evaluating the impact of ASU 2019-12 on our consolidated financial statements.

ASPEN TECHNOLOGY, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

(3) Revenue from Contracts with Customers

In accordance with Topic 606, we account for a customer contract when both parties have approved the contract and are committed to perform their respective obligations, each party's rights can be identified, payment terms can be identified, the contract has commercial substance, and it is probable that we will collect substantially all of the consideration to which we are entitled. Revenue is recognized when, or as, performance obligations are satisfied by transferring control of a promised product or service to a customer.

Nature of Products and Services

We generate revenue from the following sources: (1) License revenue; (2) Maintenance revenue; and (3) Services and other revenue. We sell our software products to end users primarily under fixed-term licenses. We license our software products primarily through a subscription offering which we refer to as our aspenONE licensing model, which includes software maintenance and support, known as our Premier Plus SMS offering, for the entire term. Our aspenONE products are organized into three suites: 1) engineering; 2) manufacturing and supply chain; and 3) asset performance management. Each product suite leverages our artificial intelligence of things products as the foundation of industrial data. Our asset performance management product suite is licensed by customer sites, user seats or cloud connections. The engineering and manufacturing and supply chain product suites are licensed by tokens, which are interchangeable measures of usage based on the various units of measure such as users, servers, applications, manipulated variables, etc. Customers may use tokens flexibly to access any product or combination of products in the licensed suite.

We also license our software through point product term arrangements, which include our Premier Plus SMS offering for the entire term.

We determine revenue recognition through the following steps:

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

Term-based Arrangements: Term-based arrangements consist of on-premise term licenses as well as maintenance.

License

License revenue consists primarily of product and related revenue from our aspenONE licensing model and point product arrangements.

When a customer elects to license our products under our aspenONE licensing model, the customer receives, for the term of the arrangement, the right to all software products in the licensed aspenONE software suite. When a customer elects to license point products, the customer receives, for the term of the arrangement, the right to license specified products in the licensed aspenONE software suite. Revenue from initial product licenses is recognized upfront upon delivery.

Maintenance

When a customer elects to license our products under our aspenONE licensing model, our Premier Plus SMS offering is included for the entire term of the arrangement and the customer receives, for the term of the arrangement, the right to any updates that may be introduced into the licensed aspenONE software suite. When a customer elects to license point products, our Premier Plus SMS offering is included for the entire term of the arrangement and the customer receives, for the term of the arrangement, the right to any updates that may be introduced related to the specified products licensed. Maintenance represents a stand-ready obligation and, due to our obligation to provide unspecified future software updates on a when-and-if available basis as well as telephone support services, we are required to recognize revenue ratably over the term of the arrangement.

ASPEN TECHNOLOGY, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Services and Other Revenue

Professional Services Revenue

Professional services are provided to customers on a time-and-materials ("T&M") or fixed-price basis. The obligation to provide professional services is generally satisfied over time, with the customer simultaneously receiving and consuming the benefits as we satisfy our performance obligation. For professional services, revenue is recognized by measuring progress toward the completion of our obligations. We recognize professional services fees for our T&M contracts based upon hours worked and contractually agreed-upon hourly rates. Revenue from fixed-price engagements is recognized using the proportional performance method based on the ratio of costs incurred to the total estimated project costs. The use of the proportional performance method is dependent upon our ability to reliably estimate the costs to complete a project. We use historical experience as a basis for future estimates to complete current projects. Additionally, we believe that costs are the best available measure of performance. Out-of-pocket expenses which are reimbursed by customers are recorded as revenue.

Training Revenue

We provide training services to our customers, including on-site, Internet-based, public and customized training. The obligation to provide training services is generally satisfied over time, with the customer simultaneously receiving and consuming the benefits as we satisfy our performance obligation. Revenue is recognized in the period in which the services are performed.

Contracts with Multiple Performance Obligations

Our contracts generally contain more than one of the products and services listed above, each of which is separately accounted for as a distinct performance obligation.

Allocation of consideration: We allocate total contract consideration to each distinct performance obligation in an arrangement on a relative standalone selling price basis. The standalone selling price reflects the price we would charge for a specific product or service if it was sold separately in similar circumstances and to similar customers.

If the arrangement contains professional services and other products or services, we allocate to the professional service obligation a portion of the total contract consideration based on the standalone selling price of professional services that is observed from consistently priced standalone sales.

The standalone selling price for term arrangements, which always include maintenance for the full term of the arrangement, is the price for the combined license and maintenance bundle. The amount assigned to the license and maintenance bundle is separated into license and maintenance amounts using the respective standalone selling prices represented by the value relationship between the software license and maintenance.

When two or more contracts are entered into at or near the same time with the same customer, we evaluate the facts and circumstances associated with the negotiation of those contracts. Where the contracts are negotiated as a package, we will account for them as a single arrangement and allocate the consideration for the combined contracts among the performance obligations accordingly.

Standalone selling price: When available, we use directly observable transactions to determine the standalone selling prices for performance obligations. Generally, directly observable data is not available for term licenses and maintenance. When term licenses are sold together with maintenance in a bundled arrangement, we estimate a standalone selling price for these distinct performance obligations using relevant information, including our overall pricing objectives and strategies and historical pricing data, and taking into consideration market conditions and other factors.

Other policies and judgments

Payment terms and conditions vary by contract type, although terms generally include a requirement of payment annually over the term of the license arrangement. Therefore, we generally receive payment from a customer after the performance obligation related to the license has been satisfied, and therefore, our contracts generally contain a significant financing

ASPEN TECHNOLOGY, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

component. The significant financing component is calculated utilizing an interest rate that derives the net present value of the performance obligations delivered on an upfront basis based on the allocation of consideration. We have instituted a customer portfolio approach in assigning interest rates. The rates are determined at contract inception and are based on the credit characteristics of the customers within each portfolio.

Contract modifications

We sometimes enter into agreements to modify previously executed contracts, which constitute contract modifications. We assess each of these contract modifications to determine (i) if the additional products and services are distinct from the products and services in the original arrangement; and (ii) if the amount of consideration expected for the added products and services reflects the stand-alone selling price of those products and services, as adjusted for contract-specific circumstances. A contract modification meeting both criteria is accounted for as a separate contract. A contract modification not meeting both criteria is considered a change to the original contract and is accounted for on either (i) a prospective basis as a termination of the existing contract and the creation of a new contract or (ii) a cumulative catch-up basis. Generally, our contract modifications meet both criteria and are accounted for as a separate contract, as adjusted for contract-specific circumstances.

Disaggregation of Revenue

We disaggregate our revenue by region, type of performance obligation, and segment as follows:

	Year Ended June 30,		
	2021	2020	2019
(Dollars in Thousands)			
Revenue by region:			
North America	\$ 289,149	\$ 264,134	\$ 254,428
Europe	220,052	148,774	153,284
Other (1)	200,175	185,809	188,970
	\$ 709,376	\$ 598,717	\$ 596,682
Revenue by type of performance obligation:			
Term licenses	\$ 497,479	\$ 388,180	\$ 404,581
Maintenance	185,164	178,139	163,567
Professional services and other	26,733	32,398	28,534
	\$ 709,376	\$ 598,717	\$ 596,682
Revenue by segment:			
Subscription and software	\$ 682,643	\$ 566,319	\$ 568,148
Services and other	26,733	32,398	28,534
	\$ 709,376	\$ 598,717	\$ 596,682

(1) Other consists primarily of Asia Pacific, Latin America and the Middle East.

Contract Assets and Deferred Revenue

The difference in the opening and closing balances of our contract assets and deferred revenue primarily results from the timing difference between our performance and the customer's payment. We fulfill our obligations under a contract with a customer by transferring products and services in exchange for consideration from the customer. We recognize a contract asset when we transfer products or services to a customer and the right to consideration is conditional on something other than the

ASPEN TECHNOLOGY, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

passage of time. Accounts receivable are recorded when the customer has been billed or the right to consideration is unconditional. We recognize deferred revenue when we have received consideration or an amount of consideration is due from the customer and we have a future obligation to transfer products or services.

Payment terms and conditions vary by contract type. Terms generally include a requirement of payment annually over the term of the license arrangement. During the majority of each customer contract term, the amount invoiced is generally less than the amount of revenue recognized to date, primarily because we transfer control of the performance obligation related to the software license at the inception of the contract term, and the allocation of contract consideration to the license performance obligation is a significant portion of the total contract consideration. Therefore, our contracts often result in the recording of a contract asset throughout the majority of the contract term. We record a contract asset when revenue recognized on a contract exceeds the billings.

The contract assets are subject to credit risk and reviewed in accordance with Topic 326. We monitor the credit quality of customer contract asset balances on an individual basis, at each reporting date, through credit characteristics, geographic location, and the industry in which they operate. We recognize an impairment on contract assets if, subsequent to contract inception, it becomes probable payment is not collectible. An allowance for expected credit loss reflects losses expected over the remaining term of the contract asset and is determined based upon historical losses, customer-specific factors, and current economic conditions.

The following table presents the change in the reserve for contract assets during the fiscal year June 30, 2021:

June 30, 2020	Provision	Write-Offs, Recoveries, and Billings	June 30, 2021
(Dollars in Thousands)			
\$ (2,947)	\$ (9,143)	\$ 6,710	\$ (5,380)

Our contract assets and deferred revenue were as follows as of June 30, 2021 and 2020:

	June 30, 2021	June 30, 2020
(Dollars in Thousands)		
Contract assets	\$ 715,787	\$ 610,473
Deferred revenue	(68,125)	(57,081)
	\$ 647,662	\$ 553,392

Contract assets and deferred revenue are presented net at the contract level for each reporting period.

The change in deferred revenue during fiscal 2021 was primarily due to an increase in new billings in advance of revenue recognition, partially offset by \$39.8 million of revenue that was included in deferred revenue at June 30, 2020.

Contract Costs

We pay commissions for new product sales as well as for renewals of existing contracts. Commissions paid to obtain renewal contracts are not commensurate with the commissions paid for new product sales and therefore, a portion of the commissions paid for new contracts relate to future renewals.

We account for new product sales commissions using a portfolio approach and allocate the cost of commissions in proportion to the allocation of transaction price of license and maintenance performance obligations, including assumed renewals. Commissions allocated to the license and license renewal components are expensed at the time the license revenue is recognized. Commissions allocated to maintenance are capitalized and amortized on a straight-line basis over a period of four years to eight years for new contracts, reflecting our estimate of the expected period that we will benefit from those commissions.

Amortization of capitalized contract costs is included in selling and marketing expenses in our statement of operations.

ASPEN TECHNOLOGY, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Transaction Price Allocated to Remaining Performance Obligations

The following table includes the aggregate amount of the transaction price allocated as of June 30, 2021 to the performance obligations that are unsatisfied (or partially unsatisfied) at the end of the reporting period:

	Year Ended June 30,					
	2022	2023	2024	2025	2026	Thereafter
	(Dollars in Thousands)					
License	\$ 39,300	\$ 16,050	\$ 5,445	\$ 5,485	\$ 3,990	\$ 106
Maintenance	174,981	135,320	102,983	68,850	37,199	12,134
Services and other	46,666	1,262	611	424	380	123

ASPEN TECHNOLOGY, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

(4) Leases

We have operating leases primarily for corporate offices, and other operating leases for data centers and certain equipment. We determine whether an arrangement is or contains a lease based on facts and circumstances present at the inception of the arrangement. We recognize lease expense on a straight-line basis over the lease term. Our leases have remaining lease terms of less than one year to approximately ten years, some of which include options to extend the leases for up to five years, and some of which include the option to terminate the leases upon advanced notice of 30 days or more. If we are reasonably certain we will exercise an option to extend or terminate the lease, the time period covered by the extension or termination option is included in the lease term.

Operating lease liabilities and their corresponding right-of-use assets are recorded based on the present value of lease payments over the expected lease term. The interest rate implicit in the lease contracts is typically not readily determinable. As such, we utilize the appropriate incremental borrowing rate, which is the rate incurred to borrow on a collateralized basis over a similar term at an amount equal to the lease payments in a similar economic environment. Certain adjustments to the right-of-use asset may be required for items such as incentives received. We have lease agreements with lease and non-lease components, which are accounted for separately.

Operating lease costs are recognized on a straight-line basis over the term of the lease. Total lease expenses consisted of rent and fixed fees of \$9.4 million and \$9.2 million for fiscal year June 30, 2021, and 2020, respectively.

The following table represents the weighted-average remaining lease term and discount rate information related to our operating leases:

	<u>June 30, 2021</u>	<u>June 30, 2020</u>
Weighted average remaining lease term	6.1 Years	5.7 Years
Weighted average discount rate	3.6 %	4.4 %

The following table represents the maturities of our operating lease liabilities as of June 30, 2021:

	<u>June 30, 2021</u>
Year Ending June 30,	(Dollars in Thousands)
2022	\$ 7,973
2023	8,024
2024	7,355
2025	5,353
2026	2,209
Thereafter	11,008
Total lease payments	41,922
Less: imputed interest	(5,472)
	<u>\$ 36,450</u>

ASPEN TECHNOLOGY, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

(5) Fair Value

We determine fair value by utilizing a fair value hierarchy that ranks the quality and reliability of the information used in its determination. Fair values determined using "Level 1 inputs" utilize unadjusted quoted prices in active markets for identical assets or liabilities that we have the ability to access. Fair values determined using "Level 2 inputs" utilize data points that are observable, such as quoted prices, interest rates and yield curves for similar assets and liabilities.

Cash equivalents are reported at fair value utilizing quoted market prices in identical markets, or "Level 1 Inputs." Our cash equivalents consist of short-term money market instruments.

Equity method investments are reported at fair value calculated in accordance with the market approach, utilizing market consensus pricing models with quoted prices that are directly or indirectly observable, or "Level 2 Inputs."

The following table summarizes financial assets and liabilities measured and recorded at fair value on a recurring basis in the accompanying consolidated balance sheets as of June 30, 2021 and 2020, segregated by the level of the valuation inputs within the fair value hierarchy utilized to measure fair value:

	Fair Value Measurements at Reporting Date Using			
	Quoted Prices in Active Markets for Identical Assets (Level 1 Inputs)		Significant Other Observable Inputs (Level 2 Inputs)	
	(Dollars in Thousands)			
June 30, 2021				
Cash equivalents	\$	1,020	\$	—
Equity method investments		—		1,326
June 30, 2020				
Cash equivalents	\$	1,020	\$	—
Equity method investments				342

Financial instruments not measured or recorded at fair value in the accompanying consolidated financial statements consist of accounts receivable, accounts payable and accrued liabilities. The estimated fair value of these financial instruments approximates their carrying value. The estimated fair value of the borrowings under the Amended and Restated Credit Agreement (described below in Note 12, "Credit Agreement") approximates its carrying value due to the floating interest rate.

(6) Accounts Receivable

Our accounts receivable, net of the related allowance for doubtful accounts, were as follows as of June 30, 2021 and 2020:

	June 30, 2021		June 30, 2020	
	(Dollars in Thousands)			
Accounts receivable, gross	\$	61,273	\$	62,925
Allowance for doubtful accounts		(8,771)		(6,624)
Accounts receivable, net	\$	52,502	\$	56,301

As of June 30, 2021 and 2020, we had no customer receivable balance that represented approximately 10% or more of our total receivables.

ASPEN TECHNOLOGY, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

(7) Property and Equipment

Property, equipment and leasehold improvements in the accompanying consolidated balance sheets consist of the following:

	Year Ended June 30,	
	2021	2020
(Dollars in Thousands)		
Property, equipment and leasehold improvements, at cost:		
Computer equipment	\$ 6,250	\$ 6,958
Purchased software	22,711	22,534
Furniture & fixtures	6,592	6,971
Leasehold improvements	12,982	12,424
Property, equipment and leasehold improvements, at cost	48,535	48,887
Accumulated depreciation	(42,925)	(42,924)
Property, equipment and leasehold improvements, net	<u>\$ 5,610</u>	<u>\$ 5,963</u>

Property and equipment are stated at cost. We record depreciation using the straight-line method over their estimated useful lives, as follows:

Asset Classification	Estimated Useful Life
Computer equipment	3 years
Purchased software	3 - 5 years
Furniture and fixtures	3 - 10 years
Leasehold improvements	Life of lease or asset, whichever is shorter

During fiscal 2021 and 2020, we wrote off fully depreciated property, equipment and leasehold improvements that were no longer in use with gross book values of \$2.3 million and \$0.9 million, respectively.

Depreciation expense was \$1.9 million, \$2.4 million and \$3.1 million for fiscal 2021, 2020 and 2019, respectively.

We account for asset retirement obligations in accordance with ASC Topic 410, *Asset Retirement and Environmental Obligations*. Our asset retirement obligations relate to leasehold improvements for leased properties. The balance of our asset retirement obligations was \$0.9 million as of June 30, 2021 and 2020, respectively.

(8) Acquisitions

Camo Analytics AS

On November 17, 2020, we completed the acquisition of substantially all the outstanding shares of Camo Analytics AS (“Camo”), a leading provider of industrial analytics, for a total cash consideration of \$12.7 million. The purchase price consisted of \$10.0 million of cash paid at closing, a subsequent working capital adjustment of \$(0.1) million, \$0.3 million to be paid for the remaining undelivered shares as of the closing date, and \$2.4 million to be held back as security for certain representations, warranties, and obligations of the sellers. The remaining holdback amount of \$1.2 million is recorded in accrued expenses and other current liabilities in our consolidated balance sheet. As of June 30, 2021, \$1.2 million of the holdback amount and the \$0.2 million for the remaining undelivered shares, has been subsequently paid.

ASPEN TECHNOLOGY, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

An allocation of the purchase price is as follows:

	Amount
	(Dollars in Thousands)
Tangible assets acquired, net	\$ 877
Identifiable intangible assets:	
Technology-related	2,533
Customer relationships	1,900
Goodwill	7,356
Total assets acquired, net	\$ 12,666

The goodwill reflects the value of the assembled workforce and the company-specific synergies we expect to realize by selling Camo products and services to our existing customers and is reported under the subscription and software reporting unit. The results of operations of Camo have been included prospectively in our results of operations since the date of acquisition.

OptiPlant, Inc.

On December 8, 2020, we completed the acquisition of all the outstanding shares of OptiPlant, Inc. ("OptiPlant"), a leading provider of AI Driven 3D Conceptual Design and Engineering Automation software, for a total cash consideration of \$8.2 million. The purchase price consisted of \$6.8 million of cash paid at closing, \$0.2 million to be held back for working capital adjustments, and \$1.2 million to be held back as security for certain representations, warranties, and obligations of the sellers. The holdback amount is recorded in other non-current liabilities in our consolidated balance sheet. The working capital adjustment holdback of \$0.2 million was subsequently paid in March 2021.

An allocation of the purchase price is as follows:

	Amount
	(Dollars in Thousands)
Tangible assets acquired, net	\$ 44
Identifiable intangible assets:	
Technology-related	1,485
Customer relationships	990
Goodwill	6,252
Deferred tax liabilities	(545)
Total assets acquired, net	\$ 8,226

The goodwill reflects the value of the assembled workforce and the company-specific synergies we expect to realize by selling OptiPlant products and services to our existing customers and is reported under the subscription and software reporting unit. The results of operations of OptiPlant have been included prospectively in our results of operations since the date of acquisition.

ASPEN TECHNOLOGY, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

(9) Intangible Assets

We include in our amortizable intangible assets those intangible assets acquired in our business and asset acquisitions. We amortize acquired intangible assets with finite lives over their estimated economic lives, generally using the straight-line method. Each period, we evaluate the estimated remaining useful lives of acquired intangible assets to determine whether events or changes in circumstances warrant a revision to the remaining period of amortization. Acquired intangible assets are removed from the accounts when fully amortized and no longer in use.

Intangible assets consist of the following as of June 30, 2021 and 2020:

	Gross Carrying Amount	Accumulated Amortization	Effect of Currency Translation	Net Carrying Amount
(Dollars in Thousands)				
June 30, 2021:				
Technology	\$ 55,288	\$ (19,378)	\$ 911	\$ 36,821
Customer relationships	12,038	(4,713)	181	7,506
Non-compete agreements	553	(553)	—	—
Total	<u>\$ 67,879</u>	<u>\$ (24,644)</u>	<u>\$ 1,092</u>	<u>\$ 44,327</u>
June 30, 2020:				
Technology	\$ 51,269	\$ (13,245)	\$ (842)	\$ 37,182
Customer relationships	9,148	(3,171)	(308)	5,669
Non-compete agreements	553	(553)	—	—
Total	<u>\$ 60,970</u>	<u>\$ (16,969)</u>	<u>\$ (1,150)</u>	<u>\$ 42,851</u>

Total amortization expense related to intangible assets amounted to \$7.7 million, \$6.6 million and \$4.5 million in fiscal 2021, 2020 and 2019, respectively.

Future amortization expense as of June 30, 2021 is expected to be as follows:

Year Ended June 30,	Amortization Expense (Dollars in Thousands)
2022	\$ 8,190
2023	8,173
2024	7,633
2025	7,548
2026	5,314
Thereafter	7,469
Total	<u>\$ 44,327</u>

ASPEN TECHNOLOGY, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

(10) Goodwill

The changes in the carrying amount of goodwill for our subscription and software reporting segment during the fiscal years ended June 30, 2021 and 2020 were as follows:

	Gross Carrying Amount	Accumulated Impairment Losses	Effect of Currency Translation	Net Carrying Amount
June 30, 2020	\$ 207,850	\$ (65,569)	\$ (5,226)	\$ 137,055
Goodwill from acquisitions	13,608	—	—	13,608
Foreign currency translation	—	—	9,189	9,189
June 30, 2021	<u>\$ 221,458</u>	<u>\$ (65,569)</u>	<u>\$ 3,963</u>	<u>\$ 159,852</u>
	Gross Carrying Amount	Accumulated Impairment Losses	Effect of Currency Translation	Net Carrying Amount
June 30, 2019	\$ 145,572	\$ (65,569)	\$ (1,620)	\$ 78,383
Goodwill from acquisitions, net of adjustments	62,278	—	—	62,278
Foreign currency translation	—	—	(3,606)	(3,606)
June 30, 2020	<u>\$ 207,850</u>	<u>\$ (65,569)</u>	<u>\$ (5,226)</u>	<u>\$ 137,055</u>

We test goodwill for impairment annually (or more often if impairment indicators arise), at the reporting unit level. We first assess qualitative factors to determine whether the existence of events or circumstances indicates that it is more likely than not that the fair value of a reporting unit is less than its carrying amount. If we determine based on this assessment that it is more likely than not that the fair value of a reporting unit is less than its carrying amount, we perform the goodwill impairment test. The first step requires us to determine the fair value of the reporting unit and compare it to the carrying amount, including goodwill, of such reporting unit. If the fair value exceeds the carrying amount, no impairment loss is recognized. However, if the carrying amount of the reporting unit exceeds its fair value, the goodwill of the unit is impaired.

Fair value of a reporting unit is determined using a combined weighted average of a market-based approach (utilizing fair value multiples of comparable publicly traded companies) and an income-based approach (utilizing discounted projected cash flows). In applying the income-based approach, we would be required to make assumptions about the amount and timing of future expected cash flows, growth rates and appropriate discount rates. The amount and timing of future cash flows would be based on our most recent long-term financial projections. The discount rate we would utilize would be determined using estimates of market participant risk-adjusted weighted-average costs of capital and reflect the risks associated with achieving future cash flows.

We have elected December 31st as the annual impairment assessment date. We performed our annual impairment test for the subscription and software reporting unit as of December 31, 2020 and, based upon the results of our qualitative assessment, determined that it was not likely that its fair value was less than its carrying amount. As such, we did not recognize impairment losses as a result of our analysis. There were also no impairment losses recognized during fiscal 2021 and 2020. If an event occurs or circumstances change that would more likely than not reduce the fair value of a reporting unit below its carrying value, goodwill will be evaluated for impairment between annual tests.

ASPEN TECHNOLOGY, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

(11) Accrued Expenses and Other Liabilities

Accrued expenses and other current liabilities in the accompanying consolidated balance sheets consist of the following:

	June 30, 2021	June 30, 2020
(Dollars in Thousands)		
Compensation-related	\$ 26,442	\$ 27,591
Share repurchases	4,353	—
Royalties and external commissions	3,642	3,359
Professional fees	2,964	2,115
Deferred acquisition payments	2,862	1,479
Uncertain tax positions	1,087	318
Other	9,225	8,694
Total accrued expenses and other current liabilities	<u>\$ 50,575</u>	<u>\$ 43,556</u>

Other non-current liabilities in the accompanying consolidated balance sheets consist of the following:

	June 30, 2021	June 30, 2020
(Dollars in Thousands)		
Uncertain tax positions	1,343	2,027
Deferred acquisition payments	1,200	—
Asset retirement obligations	947	920
Other	270	160
Total other non-current liabilities	<u>\$ 3,760</u>	<u>\$ 3,107</u>

(12) Credit Agreement

In December 2019, we entered into an Amended and Restated Credit Agreement with JPMorgan Chase Bank, N.A., as administrative agent, joint lead arranger and joint bookrunner, Silicon Valley Bank, as joint lead arranger, joint bookrunner and syndication agent, and the lenders and co-documentation agents named therein (the "Amended and Restated Credit Agreement"). The Amended and Restated Credit Agreement, which amends and restates the Credit Agreement we entered into as of February 26, 2016, provides for a \$200.0 million secured revolving credit facility and a \$320.0 million secured term loan facility.

Principal outstanding under the Amended and Restated Credit Agreement bears interest at a rate per annum equal to, at our option, either: (1) the sum of (a) the highest of (i) the rate of interest last quoted by The Wall Street Journal in the United States as the prime rate in effect, (ii) the NYFRB Rate plus 0.5%, and (iii) the LIBO rate multiplied by the Statutory Reserve Rate plus 1.0%, plus (b) a margin initially of 0.5% for the first full fiscal quarter ending after the date of the Amended and Restated Credit Agreement and thereafter based on our leverage ratio (as defined in the Amended and Restated Credit Agreement); or (2) the sum of (a) the LIBO rate multiplied by the Statutory Reserve Rate, plus (b) a margin initially of 1.5% for the first full fiscal quarter ending after the date of the Amended and Restated Credit Agreement and thereafter based on our leverage ratio. The interest rate as of June 30, 2021 was 1.61% on \$296.0 million in outstanding borrowings on our term loan facility.

All borrowings under the Amended and Restated Credit Agreement are secured by liens on substantially all of our assets and the assets of our subsidiary AspenTech Canada Holdings, LLC, which has guaranteed our obligations under the Amended and Restated Credit Agreement. Additional significant subsidiaries (as determined in the Amended and Restated Credit Agreement) may be required to guarantee our obligations and to grant liens on their assets in favor of the lenders.

ASPEN TECHNOLOGY, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

As of June 30, 2021, our current borrowings of \$20.0 million consist of the term loan facility. Our non-current borrowings of \$273.2 million consist of \$276.0 million of our term loan facility, net of \$2.8 million in debt issuance costs. As of June 30, 2020, we had current borrowings of \$135.2 million, which consisted of \$119.2 million under the revolving credit facility and \$16.0 million under our term loan facility. As of June 30, 2020, we had non-current borrowings of \$292.4 million, which consisted of \$296.0 million under our term loan facility, net of \$3.6 million in debt issuance costs.

Outstanding balances of the indebtedness under the revolving credit facility mature on December 23, 2024. The following table summarizes the maturities of the term loan facility:

<u>Year Ended June 30,</u>	<u>Amount</u>
	<u>(Dollars in Thousands)</u>
2022	\$ 20,000
2023	28,000
2024	36,000
2025	212,000
Total	\$ 296,000

The Amended and Restated Credit Agreement contains affirmative and negative covenants customary for facilities of this type, including restrictions on incurrence of additional debt, liens, fundamental changes, asset sales, restricted payments and transactions with affiliates. There are also financial covenants regarding maintenance as of the end of each fiscal quarter of a maximum leverage ratio of 3.50 to 1.00 and a minimum interest coverage ratio of 2.50 to 1.00. As of June 30, 2021, we were in compliance with these covenants.

ASPEN TECHNOLOGY, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

(13) Stock-Based Compensation

Stock Compensation Plans

In December 2016, the shareholders approved the establishment of the 2016 Omnibus Incentive Plan (the "2016 Plan"), which provides for the issuance of a maximum of 6,000,000 shares of common stock. The 2016 Plan provides for the grant of incentive and nonqualified stock options, stock appreciation rights, restricted stock, restricted stock units, other stock-related awards, and performance awards that may be settled in cash, stock, or other property. As of June 30, 2021, there were 5,451,500 shares of common stock available for issuance subject to awards under the 2016 Plan.

Employee Stock Purchase Plan

On July 26, 2018, our Board of Directors approved the Aspen Technology, Inc. 2018 Employee Stock Purchase Plan (the "ESPP"), which provides for the issuance of up to 250,000 shares of common stock to participating employees. The ESPP is intended to be a qualified employee stock purchase plan under Section 423 of the Internal Revenue Code of 1986, or the IRC. The ESPP was approved at our Annual Meeting of Stockholders on December 7, 2018. The ESPP permits eligible employees to purchase a limited amount of shares as defined in the ESPP through payroll deductions at a purchase price equal to 85% of the lower of (a) the fair market value of the common stock on the first trading day of each ESPP offering period and (b) the fair market value of the common stock on the last day of each six-month offering period.

We recorded stock-based compensation expense associated with the ESPP of approximately \$0.6 million and \$0.5 million during fiscal 2021 and 2020, respectively. As a result of employee stock purchases, we issued 18,508 shares and 19,222 shares of common stock during fiscal 2021 and 2020, respectively. The aggregate intrinsic value of shares issued under the ESPP was \$1.9 million and \$1.8 million during fiscal 2021 and 2020, respectively. As of June 30, 2021, there were 199,231 shares of common stock available for issuance under the ESPP.

General Award Terms

We issue stock options and restricted stock units (RSUs) to our employees and outside directors, pursuant to shareholder-approved equity compensation plans. Option awards are granted with an exercise price equal to the market closing price of our stock on the trading day prior to the grant date. Those options generally vest over four years and expire within 7 or 10 years of grant. RSUs generally vest over four years. Historically, our practice has been to settle stock option exercises and RSU vesting through newly-issued shares.

Stock Compensation Accounting

Our stock-based compensation is accounted for as awards of equity instruments. Our policy is to issue new shares upon the exercise of stock awards.

We utilize the Black-Scholes option valuation model for estimating the fair value of options granted. The Black-Scholes option valuation model incorporates assumptions regarding expected stock price volatility, the expected life of the option, the risk-free interest rate, dividend yield and the market value of our common stock. The expected stock price volatility is determined based on our stock's historic prices over a period commensurate with the expected life of the award. The expected life of an option represents the period for which options are expected to be outstanding as determined by historic option exercises and cancellations. The risk-free interest rate is based on the U.S. Treasury yield curve for notes with terms approximating the expected life of the options granted. The expected dividend yield is zero, based on our history and expectation of not paying dividends on common shares. We recognize stock-based compensation expense on a straight-line basis, net of forfeitures, over the requisite service period for time-vested awards.

The weighted average estimated fair value of option awards granted during fiscal 2021, 2020 and 2019 was \$38.84, \$33.13, and \$31.25, respectively.

ASPEN TECHNOLOGY, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

We utilized the Black-Scholes option valuation model with the following weighted average assumptions:

	Year Ended June 30,		
	2021	2020	2019
Risk-free interest rate	0.4 %	1.5 %	2.8 %
Expected dividend yield	None	None	None
Expected life (in years)	4.7	4.5	4.6
Expected volatility factor	34.2 %	26.8 %	26.6 %

The stock-based compensation expense and its classification in the accompanying consolidated statements of operations for fiscal 2021, 2020 and 2019 was as follows:

	Year Ended June 30,		
	2021	2020	2019
(Dollars in Thousands)			
Recorded as expenses:			
Cost of maintenance	\$ 896	\$ 1,441	\$ 1,282
Cost of service and other	1,613	1,961	1,420
Selling and marketing	6,567	5,656	4,849
Research and development	8,987	8,306	6,923
General and administrative	15,581	14,184	13,099
Total stock-based compensation	\$ 33,644	\$ 31,548	\$ 27,573

A summary of stock option and RSU activity under all equity plans in fiscal 2021 is as follows:

	Stock Options				Restricted Stock Units	
	Shares	Weighted Average Exercise Price	Weighted Average Remaining Contractual Term	Aggregate Intrinsic Value (in 000's)	Shares	Weighted Average Grant Date Fair Value
Outstanding at June 30, 2020	1,410,139	\$ 76.19	6.67	\$ 49,705	352,921	\$ 112.45
Granted	327,209	131.57			248,366	131.31
Settled (RSUs)					(198,219)	105.50
Exercised	(405,532)	59.16				
Cancelled / Forfeited	(46,595)	116.81			(41,044)	117.36
Outstanding at June 30, 2021	1,285,221	\$ 94.18	6.93	\$ 56,032	362,024	\$ 128.66
Exercisable at June 30, 2021	812,704	\$ 73.83	5.86	\$ 51,793		
Vested and expected to vest at June 30, 2021	1,231,660	\$ 92.72	6.86	\$ 55,523	314,455	\$ 128.78

During fiscal 2021, 2020 and 2019, the weighted average grant-date fair value of RSUs granted was \$131.31, \$133.35 and \$114.72, respectively. During fiscal 2021, 2020 and 2019 the total fair value of vested shares from RSU grants amounted to \$27.0 million, \$29.7 million and \$39.9 million, respectively.

As of June 30, 2021, the total future unrecognized compensation cost related to stock options and RSUs was \$12.9 million and \$32.5 million, respectively, and are expected to be recorded over a weighted average period of 2.55 years and 2.47 years, respectively.

During fiscal 2021, 2020 and 2019 the weighted average exercise price of stock options granted was \$131.57, \$133.00 and \$113.88. The total intrinsic value of options exercised during fiscal 2021, 2020 and 2019 was \$32.9 million, \$9.9 million and \$18.2 million, respectively. We received \$24.2 million, \$9.0 million and \$10.9 million in cash proceeds from issuances of

ASPEN TECHNOLOGY, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

shares of common stock during fiscal 2021, 2020 and 2019, respectively. We paid \$9.2 million, \$10.2 million and \$14.7 million for withholding taxes on vested RSUs during fiscal 2021, 2020 and 2019, respectively.

At June 30, 2021, common stock reserved for future issuance under equity compensation plans was 5.5 million shares.

(14) Stock Repurchases

On January 22, 2015, our Board of Directors approved a share repurchase program (the "Share Repurchase Program") for up to \$450.0 million of our common stock. The Share Repurchase Program was announced on January 28, 2015, and expires at the end of each fiscal year unless extended. On April 26, 2016, June 8, 2017, April 18, 2018, December 6, 2018, and April 17, 2019, the Board of Directors approved a \$400.0 million, \$200.0 million, \$200.0 million, \$100.0 million, and \$200.0 million increase in the Share Repurchase Program, respectively. On July 22, 2020, our Board of Directors approved a new share repurchase program (the "FY 2021 Program") for up to \$200.0 million of our common stock, and terminated the Share Repurchase Program. The FY 2021 Program expired on June 30, 2021. On June 4, 2021, our Board of Directors approved another share repurchase program (the "FY 2022 Program") for up to \$300.0 million of our common stock in our fiscal year ending June 30, 2022. The timing and amount of any shares repurchased under the FY 2022 Program are based on market conditions and other factors. All shares of our common stock repurchased have been recorded as treasury stock under the cost method.

On June 14, 2021, as part of our FY 2022 Program, we entered into an accelerated share repurchase program (the "ASR Program") with a third party financial institution to repurchase an aggregate of \$150.0 million of our common stock. The final settlement of the transaction under the ASR Program is expected to occur in the first quarter of our fiscal year 2022. For more details on of the ASR Program, refer to Note 21, "Subsequent Events".

During fiscal 2021, we repurchased 361,239 shares of our common stock in the open market for \$50.0 million under the FY 2021 Program. During fiscal 2020, we repurchased 1,252,289 shares of our common stock in the open market for \$150.0 million. During fiscal 2019, we repurchased 3,074,127 shares of our common stock in the open market for \$300.0 million.

As of June 30, 2021, there was no remaining dollar value under the FY 2021 Program, and \$300.0 million under the FY 2022 Program.

ASPEN TECHNOLOGY, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

(15) Net Income Per Share

Basic income per share is determined by dividing net income by the weighted average common shares outstanding during the period. Diluted income per share is determined by dividing net income by diluted weighted average shares outstanding during the period. Diluted weighted average shares reflect the dilutive effect, if any, of potential common shares. To the extent their effect is dilutive, employee equity awards and other commitments to be settled in common stock are included in the calculation of diluted net income per share based on the treasury stock method.

The calculations of basic and diluted net income per share and basic and dilutive weighted average shares outstanding for the years ended June 30, 2021, 2020 and 2019 are as follows:

	Year Ended June 30,		
	2021	2020	2019
	(Dollars and Shares in Thousands, Except per Share Data)		
Net income	\$ 319,803	\$ 229,671	\$ 261,362
Weighted average shares outstanding	67,863	68,000	69,925
Dilutive impact from:			
Employee equity awards	629	727	862
Dilutive weighted average shares outstanding	68,492	68,727	70,787
Income per share			
Basic	\$ 4.71	\$ 3.38	\$ 3.74
Dilutive	\$ 4.67	\$ 3.34	\$ 3.69

For the years ended June 30, 2021, 2020 and 2019, certain employee equity awards were anti-dilutive based on the treasury stock method. The following employee equity awards were excluded from the calculation of dilutive weighted average shares outstanding because their effect would be anti-dilutive as of the balance sheet date:

	Year Ended June 30,		
	2021	2020	2019
	(Shares in Thousands)		
Employee equity awards	533	670	784

Included in the table above are options to purchase 269,341 shares of our common stock as of June 30, 2021 which were not included in the computation of dilutive weighted average shares outstanding, because their exercise prices ranged from \$132.63 per share to \$153.07 per share and were greater than the average market price of our common stock during the period then ended. These options were outstanding as of June 30, 2021 and expire at various dates through February 17, 2030.

ASPEN TECHNOLOGY, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

(16) Income Taxes

Income before provision for income taxes consists of the following:

	Year Ended June 30,		
	2021	2020	2019
	(Dollars in Thousands)		
Domestic	\$ 376,582	\$ 274,066	\$ 297,002
Foreign	8,164	5,291	4,525
Income before provision for income taxes	<u>\$ 384,746</u>	<u>\$ 279,357</u>	<u>\$ 301,527</u>

The provision for income taxes shown in the accompanying consolidated statements of operations is composed of the following:

	Year Ended June 30,		
	2021	2020	2019
	(Dollars in Thousands)		
Federal—			
Current	\$ 45,643	\$ 17,048	\$ 64,194
Deferred	13,039	28,101	(27,267)
State—			
Current	2,821	1,367	3,246
Deferred	(41)	500	(1,033)
Foreign—			
Current	4,004	2,797	1,549
Deferred	(522)	(127)	(524)
	<u>\$ 64,944</u>	<u>\$ 49,686</u>	<u>\$ 40,165</u>

Our tax expense for fiscal 2021 was unfavorably impacted primarily by the higher pre-tax book income, offset by the FDII deduction, tax credits, and the recognition of excess tax benefits related to stock-based compensation.

The provision for income taxes differs from that based on the federal statutory rate due to the following:

	Year Ended June 30,		
	2021	2020	2019
	(Dollars in Thousands)		
Federal tax provision at statutory rate	\$ 80,797	\$ 58,665	\$ 63,321
State income taxes	2,226	1,225	1,533
Foreign-derived intangible income (FDII)	(13,805)	(13,581)	(20,326)
Global intangible low-taxed income (GILTI)	49	404	797
Effect of foreign operations	8,950	6,148	7,395
Impact of tax accounting method change	—	6,433	—
Foreign taxes and rate differences	(566)	404	514
Stock-based compensation	(2,415)	33	(3,774)
Tax credits	(11,301)	(7,969)	(9,677)
Uncertain tax positions	89	(3,236)	1,055
Valuation allowance	1,171	504	(550)
Other, net	(251)	656	(123)
Provision for income taxes	<u>\$ 64,944</u>	<u>\$ 49,686</u>	<u>\$ 40,165</u>

ASPEN TECHNOLOGY, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Net deferred tax liabilities consist of the following at June 30, 2021 and 2020:

	Year Ended June 30,	
	2021	2020
(Dollars in Thousands)		
Deferred tax assets:		
State and foreign credits	\$ 6,684	\$ 4,922
Net operating loss carryforwards	4,511	1,200
Deferred revenue	3,876	4,596
Other reserves and accruals	8,663	7,465
Intangible assets	957	982
Property, leasehold improvements, and other basis differences	5,202	5,514
Other temporary differences	452	925
	<u>30,345</u>	<u>25,604</u>
Deferred tax liabilities:		
Contract assets and costs	(182,809)	(158,538)
Deferred revenue	(15,944)	(27,066)
Intangible assets	(7,795)	(6,815)
Property, leasehold improvements, and other basis differences	(5,122)	(5,223)
	<u>(211,670)</u>	<u>(197,642)</u>
Valuation allowance	<u>(9,914)</u>	<u>(6,205)</u>
Net deferred tax liabilities	<u>\$ (191,239)</u>	<u>\$ (178,243)</u>

Reflected in the deferred tax assets above at June 30, 2021, we have foreign net operating loss carryforwards of \$4.5 million, with unlimited carryforwards, and state and foreign research and development credits of \$6.7 million which begin to expire in 2026.

Our valuation allowance for deferred tax assets was \$9.9 million and \$6.2 million as of June 30, 2021 and 2020, respectively. The most significant portion of the valuation allowance as of June 30, 2021 is attributable to a reserve against state R&D tax credits of \$5.4 million.

For fiscal 2021, our income tax provision included amounts determined under the provisions of ASC 740 intended to satisfy additional income tax assessments, including interest and penalties, that could result from any tax return positions for which the likelihood of sustaining the position on audit does not meet a threshold of "more likely than not." Tax liabilities were recorded as a component of our income taxes payable and other non-current liabilities. The ultimate amount of taxes due will not be known until examinations are completed and settled or the audit periods are closed by statutes.

A reconciliation of the reserve for uncertain tax positions is as follows:

	Year Ended June 30,		
	2021	2020	2019
(Dollars in Thousands)			
Uncertain tax positions, beginning of year	\$ 2,106	\$ 5,380	\$ 3,931
Gross (decreases) increases —tax positions in prior period	—	(2,216)	407
Gross increases—tax positions in current period	304	—	1,789
Gross decreases—lapse of statutes	(317)	(1,032)	(740)
Currency translation adjustment	45	(26)	(7)
Uncertain tax positions, end of year	<u>\$ 2,138</u>	<u>\$ 2,106</u>	<u>\$ 5,380</u>

At June 30, 2021, the total amount of unrecognized tax benefits is \$2.1 million. Upon being recognized, \$1.9 million would reduce the effective tax rate. Our policy is to recognize interest and penalties related to income tax matters as provision

ASPEN TECHNOLOGY, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

for (benefit from) income taxes. At June 30, 2021, we had approximately \$0.3 million of accrued interest and \$0.1 million of penalties related to uncertain tax positions. We recorded a benefit for interest and penalties of approximately \$0.1 million during fiscal 2021.

We are subject to income tax in many jurisdictions outside the U.S. We are no longer under examination by the taxing authority regarding any U.S. federal income tax returns for fiscal years prior to 2018. Our operations in certain jurisdictions remain subject to examination for tax years 2010 to 2020, some of which are currently under audit by local tax authorities. The resolutions of these audits are not expected to be material to our consolidated financial statements.

(17) Commitments and Contingencies

Standby letters of credit for \$2.3 million and \$3.5 million secured our performance on professional services contracts, certain facility leases and potential liabilities as of June 30, 2021 and 2020, respectively. The letters of credit as of June 30, 2021 expire at various dates through fiscal 2026.

(18) Retirement Plans

We maintain a defined contribution retirement plan under Section 401(k) of the Internal Revenue Code (IRC) covering all eligible employees, as defined. Under the plan, a participant may elect to defer receipt of a stated percentage of his or her compensation, subject to limitation under the IRC, which would otherwise be payable to the participant for any plan year. We may make discretionary contributions to this plan, including making matching contributions of 50%, up to a maximum of 6% of an employee's pretax contribution. We made matching contributions of approximately \$3.4 million, \$2.8 million and \$2.6 million in fiscal 2021, 2020 and 2019, respectively. Additionally, we participate in certain government mandated and defined contribution plans throughout the world for which we comply with all funding requirements.

(19) Segment and Geographic Information

Operating segments are defined as components of an enterprise that engage in business activities for which discrete financial information is available and regularly reviewed by the chief operating decision maker in deciding how to allocate resources and to assess performance. Our chief operating decision maker is our President and Chief Executive Officer.

We have two operating and reportable segments, which are consistent with our reporting units: i) subscription and software and ii) services and other. The subscription and software segment is engaged in the licensing of process optimization and asset performance management software solutions and associated support services, and includes our license and maintenance revenue. The services and other segment includes professional services and training, and includes our services and other revenue. We do not track assets or capital expenditures by operating segments. Consequently, it is not practical to present assets, capital expenditures, depreciation or amortization by operating segments.

ASPEN TECHNOLOGY, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

The following table presents a summary of our reportable segments' profits:

	Subscription and Software	Services and Other	Total
	(Dollars in Thousands)		
Year Ended June 30, 2021:			
Segment revenue	\$ 682,643	\$ 26,733	\$ 709,376
Segment expenses (1)	(236,751)	(32,588)	(269,339)
Segment profit (loss)	\$ 445,892	\$ (5,855)	\$ 440,037
Year Ended June 30, 2020:			
Segment revenue	\$ 566,319	\$ 32,398	\$ 598,717
Segment expenses (1)	(233,205)	(35,118)	(268,323)
Segment profit (loss)	\$ 333,114	\$ (2,720)	\$ 330,394
Year Ended June 30, 2019, As Adjusted:			
Segment revenue	\$ 568,148	\$ 28,534	\$ 596,682
Segment expenses (1)	(260,764)	(31,548)	(292,312)
Segment profit (loss)	\$ 307,384	\$ (3,014)	\$ 304,370

(1) Our reportable segments' operating expenses include expenses directly attributable to the segments. Segment expenses include selling and marketing and research and development expenses. Segment expenses do not include allocations of general and administrative expense; interest income; interest expense; and other (expense) income, net.

Reconciliation to Income Before Income Taxes

The following table presents a reconciliation of total segment operating profit to income before provision for income taxes:

	Year Ended June 30,		
	2021	2020	2019
	(Dollars in Thousands)		
Total segment profit for reportable segments	\$ 440,037	\$ 330,394	\$ 344,370
General and administrative	(81,636)	(73,035)	(63,231)
Interest income	36,791	32,658	28,457
Interest (expense)	(7,245)	(11,862)	(8,733)
Other (expense) income, net	(3,200)	1,202	664
Income before income taxes	\$ 384,747	\$ 279,357	\$ 301,527

Geographic Information:

We have long-lived assets of approximately \$89.1 million that are located domestically and \$160.3 million that reside in other geographic locations as of June 30, 2021. We had long-lived assets of approximately \$92.9 million that were located domestically and \$132.4 million that reside in other geographic locations as of June 30, 2020.

ASPEN TECHNOLOGY, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

(20) Quarterly Financial Data (Unaudited)

The following tables present quarterly consolidated statement of operations data for fiscal 2021 and 2020. The below data is unaudited but, in our opinion, reflects all adjustments necessary for a fair presentation of this data in accordance with GAAP.

	Three Months Ended			
	June 30, 2021	March 31, 2021	December 31, 2020	September 30, 2020
	(Dollars in Thousands, Except per Share Data)			
Total revenue	\$ 197,961	\$ 162,726	\$ 233,718	\$ 114,971
Gross profit	183,646	146,671	219,403	99,505
Income from operations	105,879	68,899	149,453	34,170
Net income	95,445	62,495	129,152	32,711
Net income per common share:				
Basic	\$ 1.40	\$ 0.92	\$ 1.91	\$ 0.48
Diluted	\$ 1.39	\$ 0.91	\$ 1.89	\$ 0.48
Weighted average shares outstanding:				
Basic	68,028	67,920	67,780	67,729
Diluted	68,612	68,608	68,400	68,299

	Three Months Ended			
	June 30, 2020	March 30, 2020	December 31, 2019	September 30, 2019
	(Dollars in Thousands, Except per Share Data)			
Total revenue	\$ 201,940	\$ 130,588	\$ 126,012	\$ 140,177
Gross profit	186,782	114,883	110,486	124,959
Income from operations	116,296	44,734	42,939	53,390
Net income	94,530	41,826	39,801	53,514
Net income per common share:				
Basic	\$ 1.40	\$ 0.62	\$ 0.58	\$ 0.78
Diluted	\$ 1.39	\$ 0.61	\$ 0.58	\$ 0.77
Weighted average shares outstanding:				
Basic	67,634	67,806	68,114	68,441
Diluted	68,176	68,482	68,844	69,317

ASPEN TECHNOLOGY, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

(21) Subsequent Events

On June 14, 2021, as part of our FY 2022 Program, we entered into the ASR Program with a third-party financial institution. Pursuant to the terms of the ASR Program, on July 1, 2021 we made an upfront payment of \$150.0 million. We will receive an initial delivery of approximately 80% of the underlying shares of our common stock, based on the closing price of our common stock on June 30, 2021 and subject to limitations set forth in the ASR Program. The final number of shares we will repurchase under the ASR Program will be based on the average of the daily volume-weighted average prices of our common stock during the term of the transaction, less a discount. The final settlement of the transaction under the ASR Program is expected to occur in the first quarter of our fiscal year 2022.

ASPEN TECHNOLOGY, INC. AND SUBSIDIARIES
SCHEDULE II - VALUATION AND QUALIFYING ACCOUNTS

Schedule II - Valuation and Qualifying Accounts

Description	Balance at Beginning of Year	Additions: Charges to Costs and Expenses	Deductions: Returns and Write-Offs	Balance at End of Year
(Dollars in Thousands)				
Year ended June 30, 2021 Allowance for doubtful accounts	\$ (6,624)	\$ (9,716)	\$ 7,569	\$ (8,771)
Year ended June 30, 2020 Allowance for doubtful accounts	(3,349)	(5,255)	1,980	(6,624)
Year ended June 30, 2019 Allowance for doubtful accounts	(2,703)	(1,621)	975	(3,349)

EXHIBIT INDEX

Exhibit Number	Description	Filed with this Form 10-K
3.1	Certificate of Incorporation of Aspen Technology, Inc., as amended	X
3.2	Amended and Restated By-laws of Aspen Technology, Inc., adopted on May 19, 2020	
4.1	Specimen certificate for common stock, \$10 par value, of Aspen Technology, Inc.	
4.2	Description of Securities	
10.1	Lease Agreement dated January 27, 2014 between RAR2-Crosby Corporate Center QRS, Inc. and Aspen Technology, Inc. regarding 20, 22 and 28 Crosby Drive, Bedford, Massachusetts	
10.2	System License Agreement dated March 30, 1982 between Aspen Technology, Inc. and the Massachusetts Institute of Technology	
10.3	Amendment dated March 30, 1982 to System License Agreement dated March 30, 1982 between Aspen Technology, Inc. and the Massachusetts Institute of Technology	
10.4	Amended and Restated Credit Agreement dated as of December 23, 2019, among Aspen Technology, Inc., as borrower, the lenders party thereto, JPMorgan Chase Bank, N.A., as administrative agent, joint lead arranger and joint bookrunner, Silicon Valley Bank, as joint lead arranger, joint bookrunner and syndication agent, and Citibank N.A., Citizens Bank, N.A., TD Bank, N.A. and Wells Fargo Bank, N.A., as co-documentation agents	
10.5	First Amendment to Amended and Restated Credit Agreement dated as of August 5, 2020, among Aspen Technology, Inc., as borrower, the lenders party thereto, JPMorgan Chase Bank, N.A., as administrative agent, joint lead arranger and joint bookrunner, Silicon Valley Bank, as joint lead arranger, joint bookrunner and syndication agent, and Citibank N.A., Citizens Bank, N.A., TD Bank, N.A. and Wells Fargo Bank, N.A., as co-documentation agents	
10.6	Master Confirmation-Accelerated Share Repurchase Dated August 29, 2016, with J.P. Morgan Securities, as agent for JP Morgan Chase Bank	
10.7	Supplemental Confirmation-Accelerated Share Repurchase, dated June 14, 2021, between Aspen Technology, Inc. and JPMorgan Chase Bank, National Association	
10.8^	Aspen Technology, Inc. 2010 Equity Incentive Plan	
10.9^	Form of Terms and Conditions of Restricted Stock Unit Agreement granted under Aspen Technology, Inc. 2010 Equity Incentive Plan	
10.10^	Form of Terms and Conditions of Stock Option Agreement Granted under Aspen Technology, Inc. 2010 Equity Incentive Plan	
10.11^	Aspen Technology, Inc. 2016 Omnibus Incentive Plan	
10.12^	Form of Terms and Conditions of Restricted Stock Unit Agreement Granted Under Aspen Technology Inc. 2016 Omnibus Incentive Plan	
10.13^	Form of Terms and Conditions of Stock Option Agreement Granted Under Aspen Technology Inc. 2016 Omnibus Incentive Plan	
10.14^	Aspen Technology, Inc. FY21 Executive Bonus Plan	
10.15^	Aspen Technology, Inc FY22 Executive Bonus Plan	
10.16^	Amended and Restated Executive Retention Agreement dated January 31, 2019 entered into by Aspen Technology, Inc. and Antonio J. Pietri	

<u>Exhibit Number</u>	<u>Description</u>	<u>Filed with this Form 10-K</u>
10.17 [^]	Form of Amended and Restated Executive Retention Agreement dated January 31, 2019 entered into between Aspen Technology, Inc. and each of Gary M. Weiss, Karl E. Johnsen and Frederic G. Hammond	
10.18 [^]	Executive Retention Agreement dated March 22, 2021 entered into between Aspen Technology, Inc. and Chantelle Breithaupt	
10.19 [^]	Form of Confidentiality and Non-Competition Agreement of Aspen Technology, Inc.	
10.20 [^]	Non-Competition and Non-Solicitation Agreement dated July 1, 2013 entered into by Aspen Technology, Inc. and Antonio J. Pietri	
21.1	Subsidiaries of Aspen Technology, Inc.	X
23.1	Consent of KPMG LLP	X
31.1	Certification of Principal Executive Officer Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002	X
31.2	Certification of Principal Financial Officer Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002	X
32.1*	Certification Pursuant to 18 U.S.C. Section 1350, As Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002	X
101.INS	Inline Instance Document	X
101.SCH	Inline XBRL Taxonomy Extension Schema Document	X
101.CAL	Inline XBRL Taxonomy Extension Calculation Linkbase Document	X
101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase Document	X
101.LAB	Inline XBRL Taxonomy Extension Label Linkbase Document	X
101.P	Inline XBRL Taxonomy Extension Presentation Linkbase DocuCover Page Interactive Data File (formatted as Inline XBRL with applicable taxonomy extension information contained in Exhibits 101)	X
104	Cover Page Interactive Data File (formatted as Inline XBRL with applicable taxonomy extension information contained in Exhibits 101)	X

+ Certain information redacted and replaced with "[***]"

[^] Management contract or compensatory plan or arrangement

* The certification attached as Exhibit 32.1 that accompanies this Form 10-K is not deemed filed with the SEC and is not to be incorporated by reference into any filing of Aspen Technology, Inc. under the Securities Act of 1933 or the Securities Exchange Act of 1934, whether made before or after the date of this Form 10-K, irrespective of any general incorporation language contained in such filing.

SIGNATURES

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

Date: August 18, 2021

ASPEN TECHNOLOGY, INC.

By: /s/ ANTONIO J. PIETRI

Antonio J. Pietri

President and Chief Executive Officer

(Principal Executive Officer)

Date: August 18, 2021

By: /s/ CHANTELE BREITHAUPT

Chantelle Breithaupt

Senior Vice President and Chief Financial Officer

(Principal Financial Officer)

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

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<hr/> <i>/s/ ANTONIO J. PIETRI</i> Antonio J. Pietri	President and Chief Executive Officer and Director (Principal Executive Officer)	August 18, 2021
<hr/> <i>/s/ CHANTELE BREITHAAPT</i> Chantelle Breithaupt	Senior Vice President and Chief Financial Officer (Principal Financial Officer)	August 18, 2021
<hr/> <i>/s/ CHRISTOPHER J. STAGNO</i> Christopher J. Stagno	Senior Vice President and Chief Accounting Officer (Principal Accounting Officer)	August 18, 2021
<hr/> <i>/s/ JILL D. SMITH</i> Jill D. Smith	Chair of the Board of Directors	August 18, 2021
<hr/> <i>/s/ DR. THOMAS BRADICICH</i> Dr. Thomas Bradicich	Director	August 18, 2021
<hr/> <i>/s/ DONALD P. CASEY</i> Donald P. Casey	Director	August 18, 2021
<hr/> <i>/s/ KAREN GOLZ</i> Karen Golz	Director	August 18, 2021
<hr/> <i>/s/ AMAR HANSPAL</i> Amar Hanspal	Director	August 18, 2021
<hr/> <i>/s/ GARY E. HAROIAN</i> Gary E. Haroian	Director	August 18, 2021
<hr/> <i>/s/ ADRIANA KARABOUTIS</i> Adriana Karaboutis	Director	August 18, 2021
<hr/> <i>/s/ GEORGIA KERESTY</i> Georgia Keresty	Director	August 18, 2021
<hr/> <i>/s/ ROBERT M. WHELAN, JR.</i> Robert M. Whelan, Jr.	Director	August 18, 2021
<hr/> <i>/s/ R. HALSEY WISE</i> R. Halsey Wise	Director	August 18, 2021

**CERTIFICATE OF INCORPORATION
OF
ASPEN TECHNOLOGY, INC.**

FIRST: The name of this corporation (the "Corporation") is Aspen Technology, Inc.

SECOND: The address of the registered office of the Corporation in the State of Delaware is 1209 Orange Street, Wilmington, Delaware 19801, County of New Castle, and the name of its registered agent at such address is The Corporation Trust Company.

THIRD: The purpose for which the Corporation is organized is to engage in any lawful act or activity for which corporations may be organized under the General Corporation Law of the State of Delaware.

FOURTH: The Corporation is authorized to issue two classes of capital stock, one of which is designated as common stock, \$.10 par value per share ("Common Stock"), and the other of which is designated as preferred stock, \$.10 par value per share ("Preferred Stock"). The total number of shares of both classes of capital stock that the Corporation shall have authority to issue is 50,000,000 shares, consisting of 40,000,000 shares of Common Stock and 10,000,000 shares of Preferred Stock. The Preferred Stock may be issued from time to time in one or more series as set forth in Section (b) of this Article FOURTH. The following is a statement of the designations and the powers, preferences and rights of, and the qualifications, limitations or restrictions applicable to, each class of capital stock of the Corporation.

(a) Common Stock

(1) *General.* The voting, dividend and liquidation rights of holders of Common Stock are subject to and qualified by the rights of holders of Preferred Stock of any series as may be designated in any resolution or resolutions providing for the issue of such series as may be adopted by the board of directors as hereinafter provided.

(2) *Voting.* Holders of Common Stock are entitled to one vote for each share held at all meetings of stockholders. The number of authorized shares of Common Stock may be increased or decreased (but not below the number of shares thereof then outstanding) by the affirmative vote of the holders of a majority of the capital stock of the Corporation entitled to vote, irrespective of the provisions of Section 242(b)(2) of the General Corporation Law of the State of Delaware.

(3) *Dividends.* Dividends may be declared and paid on Common Stock from funds lawfully available therefor, as and when determined by the board of directors and subject to any preferential dividend rights of any series of Preferred Stock then outstanding.

(4) *Liquidation.* Upon the dissolution or liquidation of the Corporation, whether voluntary or involuntary, holders of Common Stock will be entitled to receive all assets of the Corporation available for distribution to stockholders of the Corporation, subject to any preferential rights of any series of Preferred Stock then outstanding.

(b) Preferred Stock

(1) *Issuance.* Preferred Stock may be issued from time to time in one or more series, each of which series shall have such terms as are set forth herein and in any resolution or resolutions providing

for the issue of such series as may be adopted by the board of directors as hereinafter provided. Any shares of Preferred Stock that may be redeemed, purchased or acquired by the Corporation may be reissued except as otherwise expressly provided in this Certificate of Incorporation or provided by law.

(2) *Single Class.* Different series of Preferred Stock shall not be construed to constitute different classes of capital stock for the purposes of voting by classes unless expressly provided.

(3) *Authority of Board.* Authority is hereby expressly granted to the board of directors to provide for the issuance of Preferred Stock from time to time in one or more series, and in connection with the creation of any such series, to determine and fix such voting powers, full or limited, or no voting powers, and such designations, preferences and relative participating, optional or other special rights thereof, and qualifications, limitations or restrictions applicable thereto, as shall be stated and expressed in such resolutions, all to the full extent now or hereafter permitted by the General Corporation Law of the State of Delaware. Without limiting the generality of the foregoing, a resolution or resolutions providing for issuance of any series of Preferred Stock may provide for dividend rights, conversion rights, redemption privileges and liquidation preferences applicable to such series and may provide that such series shall rank superior, equal or junior to the Preferred Stock of any other series, in each case except as otherwise expressly provided in this Certificate of Incorporation or as provided by law. Except as otherwise provided in this Certificate of Incorporation, no vote of holders of Common Stock or holders of Preferred Stock shall be a prerequisite to the designation or issuance of any shares of any series of Preferred Stock authorized by and complying with the conditions of this Certificate of Incorporation.

FIFTH: Stockholders of the Corporation may not take any action by written consent in lieu of a meeting. Special meetings of stockholders may be called at any time by the Chairman of the Board, the Chief Executive Officer (or if there is no Chief Executive Officer, the President) or the board of directors. Business transacted at any special meeting of stockholders shall be limited to matters relating to the purpose or purposes stated in the notice of the general meeting.

SIXTH: The following provisions shall apply with respect to the board of directors of the Corporation:

(a) Number of Directors

The number of directors shall be fixed from time to time by, or in the manner provided in, the by-laws of the Corporation, the Series A Certificate or any other certificate of designation with respect to a series of Preferred Stock, *provided* that in no event shall the number of directors be less than three.

(b) Election of Directors

Elections of directors need not be by written ballot unless otherwise provided in the by-laws of the Corporation.

(c) Classes of Directors

The board of directors shall be divided into three classes, consisting of Class I, Class II and Class III. No class of directors shall have more than one director more than any other class. If a fraction is contained in the quotient arrived at by dividing the designated number of directors by three, then, if such fraction is one-third, the extra director shall be a member of Class I, and if such fraction

is two-thirds, one of the extra directors shall be a member of Class I and one of the extra directors shall be a member of Class II, except as otherwise may be provided from time to time by the board of directors.

(d) Terms of Office

Each director shall serve for a term ending on the date of the third annual meeting following the annual meeting at which such director was elected; *provided* that each initial director in Class I shall serve for a term ending on the date of the annual meeting of stockholders in 2000, each initial director in Class II shall serve for a term ending on the date of the annual meeting of stockholders in 1998 and each initial director in Class III shall serve for a term ending on the date of the annual meeting of stockholders in 1999 and *provided further* that the term of each director shall be subject to the election and qualification of a successor to such director and to the earlier death, resignation or removal of such director.

(e) Allocation of Directors Among Classes Upon Changes in Authorized Number of Directors

In the event of any increase or decrease in the authorized number of directors, (1) each director then serving shall continue as a director of the class of which such director is a member and (2) the newly created or eliminated directorships resulting from such increase or decrease shall be apportioned by the board of directors among the three classes of directors so as to ensure that no one class has more than one director more than any other class. To the extent possible, consistent with the foregoing, any newly created directorships shall be added to those classes whose terms of office are to expire at the latest dates following such allocation and any newly eliminated directorships shall be subtracted from those classes whose terms of offices are to expire at the earliest dates following such allocation, except as otherwise may be provided from time to time by the board of directors.

(f) Removal

Directors may be removed only for cause by the affirmative vote of the holders of at least two-thirds of the shares of capital stock of the Corporation issued and outstanding and entitled to vote.

SEVENTH: No director shall be personally liable to the Corporation or to any of its stockholders for monetary damages arising out of such director's breach of fiduciary duty as a director of the Corporation, except to the extent that the elimination or limitation of such liability is not permitted by the General Corporation Law of the State of Delaware, as the same exists or may hereafter be amended. No amendment to or repeal of the provisions of this Article SEVENTH shall deprive any director of the Corporation of the benefit of the provisions of this Article SEVENTH with respect to any act or failure to act of any director occurring prior to such amendment or repeal.

EIGHTH: The following provisions shall apply with respect to the indemnification of, and advancement of expenses to, certain parties as set forth below:

(a) Indemnification

(1) *Proceedings Other than by or in the Right of the Corporation.* The Corporation shall indemnify each person who was or is a party or is threatened to be made a party to any threatened, pending or completed action, suit or proceeding, whether civil, criminal, administrative or investigative (other than an action by or in the right of the Corporation), by reason of the fact that such person is or

was, or has agreed to become, a director or officer of the Corporation, or is or was serving or has agreed to serve, at the request of the Corporation, as a director, officer or trustee of, or in a similar capacity with, another corporation (including any partially or wholly owned subsidiary of the Corporation), partnership, joint venture, trust or other enterprise (including any employee benefit plan) (each of such persons being referred to as an "Indemnitee"), or by reason of any action alleged to have been taken or omitted in such capacity, against all expenses (including attorneys' fees), judgments, fines and amounts paid in settlement actually and reasonably incurred by the Indemnitee or on the Indemnitee's behalf in connection with such action, suit or proceeding and any appeal therefrom, if (A) the Indemnitee acted in good faith and in a manner the Indemnitee reasonably believed to be in, or not opposed to, the best interests of the Corporation and (B) with respect to any criminal action or proceeding, the Indemnitee had no reasonable cause to believe the Indemnitee's conduct was unlawful. The termination of any action, suit or proceeding by judgment, order, settlement, conviction or upon a plea of *nolo contendere* or its equivalent, shall not, of itself, create a presumption that the Indemnitee did not act in good faith, did not act in a manner that the Indemnitee reasonably believed to be in, or not opposed to, the best interests of the Corporation or, with respect to any criminal action or proceeding, did not have reasonable cause to believe that the Indemnitee's conduct was unlawful. Notwithstanding anything to the contrary in this Article EIGHTH, except as set forth in Section (c)(2) of this Article EIGHTH, the Corporation shall not indemnify an Indemnitee seeking indemnification in connection with a proceeding (or part thereof) initiated by the Indemnitee unless the initiation thereof was approved by the board of directors of the Corporation.

(2) *Proceedings by or in the Right of the Corporation.* The Corporation shall indemnify any Indemnitee who was or is a party or is threatened to be made a party to any threatened, pending or completed action or suit by or in the right of the Corporation to procure a judgment in the Corporation's favor by reason of the fact that the Indemnitee is or was, or has agreed to become, a director or officer of the Corporation, or is or was serving as a director, officer or trustee of, or in a similar capacity with, another corporation (including any partially or wholly owned subsidiary of the Corporation), partnership, joint venture, trust or other enterprise (including any employee benefit plan), or by reason of any action alleged to have been taken or omitted in such capacity, against all expenses (including attorneys' fees) and amounts paid in settlement actually and reasonably incurred by the Indemnitee or on the Indemnitee's behalf in connection with such action, suit or proceeding and any appeal therefrom, if the Indemnitee acted in good faith and in a manner the Indemnitee reasonably believed to be in, or not opposed to, the best interests of the Corporation, except that no indemnification shall be made in respect of any claim, issue or matter as to which the Indemnitee shall have been adjudged to be liable to the Corporation unless and only to the extent that the Court of Chancery of Delaware shall determine upon application that, despite the adjudication of such liability but in view of all the circumstances of the case, the Indemnitee is fairly and reasonably entitled to indemnity for such expenses (including attorneys' fees) that the Court of Chancery of the State of Delaware shall deem proper.

(3) *Expenses of Successful Indemnitee.* Notwithstanding any other provision of this Article EIGHTH, to the extent that an Indemnitee has been successful, on the merits or otherwise (including a disposition without prejudice), in defense of any action, suit or proceeding referred to in Section (a)(1) or (2) of this Article EIGHTH, or in defense of any claim, issue or matter therein, or on appeal from any such action, suit or proceeding, the Indemnitee shall be indemnified against all expenses (including attorneys' fees) actually and reasonably incurred by the Indemnitee or on the Indemnitee's behalf in connection therewith. Without limiting the foregoing, if any action, suit or proceeding is disposed of, on the merits or otherwise (including a disposition without prejudice), without (A) the disposition being adverse to the Indemnitee, (B) an adjudication that the Indemnitee was liable to the Corporation, (C) a plea of guilty or *nolo contendere* by the Indemnitee, (D) an

adjudication that the Indemnitee did not act in good faith and in a manner the Indemnitee reasonably believed to be in, or not opposed to, the best interests of the Corporation, and (E) with respect to any criminal proceeding, an adjudication that the Indemnitee had reasonable cause to believe the Indemnitee's conduct was unlawful, the Indemnitee shall be considered for the purposes hereof to have been wholly successful with respect thereto.

(4) *Partial Indemnification.* If any Indemnitee is entitled under any provision of this Section (a) to indemnification by the Corporation for a portion, but not all, of the expenses (including attorneys' fees), judgments, fines or amounts paid in settlement actually and reasonably incurred by the Indemnitee or on the Indemnitee's behalf in any appeal therefrom, the Corporation shall indemnify the Indemnitee for the portion of such expenses (including attorneys' fees), judgments, fines or amounts paid in settlement to which the Indemnitee is entitled.

(b) Advancement of Expenses

Subject to Section (c)(2) of this Article EIGHTH, in the event that the Corporation does not assume a defense pursuant to Section (c)(1) of this Article EIGHTH of any action, suit, proceeding or investigation of which the Corporation receives notice under this Article EIGHTH, any expenses (including attorneys' fees) incurred by an Indemnitee in defending a civil or criminal action, suit, proceeding or investigation or any appeal therefrom shall be paid by the Corporation in advance of the final disposition of such matter; *provided, however,* that the payment of such expenses incurred by an Indemnitee in advance of the final disposition of such matter shall be made only upon receipt of an undertaking by or on behalf of the Indemnitee to repay all amounts so advanced in the event that it shall ultimately be determined that the Indemnitee is not entitled to be indemnified by the Corporation as authorized in this Article EIGHTH. Any such undertaking by an Indemnitee shall be accepted without reference to the financial ability of the Indemnitee to make such repayment.

(c) Procedures

(1) *Notification and Defense of Claim.* As a condition precedent to any Indemnitee's right to be indemnified, the Indemnitee must promptly notify the Corporation in writing of any action, suit, proceeding or investigation involving the Indemnitee for which indemnity will or may be sought. With respect to any action, suit, proceeding or investigation of which the Corporation is so notified, the Corporation will be entitled to participate therein at its own expense and/or to assume the defense thereof at its own expense, with legal counsel reasonably acceptable to the Indemnitee; *provided that* the Corporation shall not be entitled, without the consent of the Indemnitee, to assume the defense of any claim brought by or in the right of the Corporation or as to which counsel for the Indemnitee shall have reasonably concluded that there may be a conflict of interest or position on any significant issue between the Corporation and the Indemnitee in the conduct of the defense of such claim. After notice from the Corporation to the Indemnitee of its election so to assume such defense, the Corporation shall not be liable to the Indemnitee for any legal or other expenses subsequently incurred by the Indemnitee in connection with such claim, other than as provided in this Paragraph (1). The Indemnitee shall have the right to employ the Indemnitee's own counsel in connection with such claim, but the fees and expenses of such counsel incurred after notice from the Corporation of its assumption of the defense thereof shall be at the expense of the Indemnitee unless (A) the employment of counsel by the Indemnitee has been authorized by the Corporation, (B) counsel to the Indemnitee has reasonably concluded that there may be a conflict of interest or position on any significant issue between the Corporation and the Indemnitee in the conduct of the defense of such action or (C) the Corporation has not in fact employed counsel to assume the defense of such action, in each of which cases the fees and

expenses of counsel for the Indemnitee shall be at the expense of the Corporation except as otherwise expressly provided by this Article EIGHTH.

(2) *Requests and Payment.* In order to obtain indemnification or advancement of expenses pursuant to this Article EIGHTH, an Indemnitee shall submit to the Corporation a written request therefor, which request shall include documentation and information as is reasonably available to the Indemnitee and is reasonably necessary to determine whether and to what extent the Indemnitee is entitled to indemnification or advancement of expenses. Any such indemnification or advancement of expenses shall be made promptly, and in any event within sixty days after receipt by the Corporation of the written request of the Indemnitee, unless with respect to requests under Section (a)(1), (a)(2) or (b) of this Article EIGHTH, the Corporation determines, by clear and convincing evidence, within such sixty-day period, that any Indemnitee did not meet the applicable standard of conduct set forth in Section (a)(1) or (a)(2) of this Article EIGHTH. Such determination shall be made in each instance by (A) a majority vote of the directors of the Corporation consisting of persons who are not at that time parties to the action, suit or proceeding in question ("disinterested directors"), even though less than a quorum, (B) a majority vote of a quorum of the outstanding shares of capital stock of all classes entitled to vote for directors, which quorum shall consist of stockholders who are not at that time parties to the action, suit, proceeding or investigation in question, (C) independent legal counsel (who may be regular legal counsel to the Corporation), or (D) a court of competent jurisdiction.

(3) *Remedies.* The right of an Indemnitee to indemnification or advancement of expenses pursuant to this Article EIGHTH shall be enforceable by the Indemnitee in any court of competent jurisdiction if the Corporation denies, in whole or in part, a request of an Indemnitee in accordance with the preceding Paragraph (2) or if no disposition thereof is made within the sixty-day period referred to in the preceding Paragraph (2). Unless otherwise provided by law, the burden of proving that an Indemnitee is not entitled to indemnification or advancement of expenses pursuant to this Article EIGHTH shall be on the Corporation. Neither the failure of the Corporation to have made a determination prior to the commencement of such action that indemnification is proper in the circumstances because the Indemnitee has met any applicable standard of conduct, nor an actual determination by the Corporation pursuant to the preceding Section (c)(2) that the Indemnitee has not met such applicable standard of conduct, shall be a defense to the action or create a presumption that the Indemnitee has not met the applicable standard of conduct. The Indemnitee's expenses (including attorneys' fees) incurred in connection with successfully establishing the Indemnitee's right to indemnification, in whole or in part, in any such proceeding shall also be indemnified by the Corporation.

(d) Rights Not Exclusive

The right of an Indemnitee to indemnification and advancement of expenses pursuant to this Article EIGHTH shall not be deemed exclusive of any other rights to which the Indemnitee may be entitled under any law (common or statutory), agreement, vote of stockholders or disinterested directors, or otherwise, both as to action in the Indemnitee's official capacity and as to action in any other capacity while holding office for the Corporation, and shall continue as to an Indemnitee who has ceased to serve in the capacity with respect to which the Indemnitee's right to indemnification or advancement of expenses accrued, and shall inure to the benefit of the estate, heirs, executors and administrators of the Indemnitee. Nothing contained in this Article EIGHTH shall be deemed to prohibit, and the Corporation is specifically authorized to enter into, agreements with officers and directors providing indemnification rights and procedures supplemental to those set forth in this Article EIGHTH. The Corporation may, to the extent authorized from time to time by its board of

directors, grant indemnification rights to other employees or agents of the Corporation or other persons serving the Corporation and such rights may be equivalent to, or greater or less than, those set forth in this Article EIGHTH. In addition, the Corporation may purchase and maintain insurance, at its expense, to protect itself and any director, officer, employee or agent of the Corporation or another corporation (including any partially or wholly owned subsidiary of the Corporation), partnership, joint venture, trust or other enterprise (including any employee benefit plan) against any expense, liability or loss incurred by such a person in any such capacity, or arising out of such person's status as such, whether or not the Corporation would have the power to indemnify such person against such expense, liability or loss under the General Corporation Law of the State of Delaware.

(e) Subsequent Events

(1) *Amendments of Article or Law.* No amendment, termination or repeal of this Article EIGHTH or of any relevant provisions of the General Corporation Law of the State of Delaware or any other applicable law shall affect or diminish in any way the rights of any Indemnitee to indemnification under the provisions of this Article EIGHTH with respect to any action, suit, proceeding or investigation arising out of or relating to any actions, transactions or facts occurring prior to the effective date of such amendment, termination or repeal. If the General Corporation Law of the State of Delaware is amended after adoption of this Article EIGHTH to expand further the indemnification permitted to any Indemnitee, then the Corporation shall indemnify the Indemnitee to the fullest extent permitted by the General Corporation Law of the State of Delaware, as so amended, without the need for any further action with respect to this Article EIGHTH.

(2) *Merger or Consolidation.* If the Corporation is merged into or consolidated with another corporation and the Corporation is not the surviving corporation, the surviving corporation shall assume the obligations of the Corporation under this Article EIGHTH with respect to any action, suit, proceeding or investigation arising out of or relating to any actions, transactions or factors occurring prior to the date of such merger or consolidation.

(f) Invalidation

If any or all of the provisions of this Article EIGHTH shall be invalidated on any ground by any court of competent jurisdiction, then the Corporation shall nevertheless indemnify each Indemnitee as to any expenses (including attorneys' fees), judgments, fines and amounts paid in settlement in connection with any action, suit, proceeding or investigation, whether civil, criminal or administrative, including an action by or in the right of the Corporation, to the fullest extent permitted by any applicable provision of this Article EIGHTH that shall not have been invalidated and to the fullest extent permitted by the General Corporation Law of the State of Delaware or any other applicable law.

(g) Definitions

Unless defined elsewhere in this Certificate of Incorporation, any term used in this Article EIGHTH and defined in Section 145(h) or (i) of the General Corporation Law of the State of Delaware shall have the meaning ascribed to such term in such Section.

NINTH: In furtherance of and not in limitation of powers conferred by statute, it is further provided that:

(a) Amendment of By-Laws

Subject to the limitations and exceptions, if any, contained in the by-laws of the Corporation, the by-laws may be adopted, amended or repealed by the board of directors.

(b) Location of Corporate Books

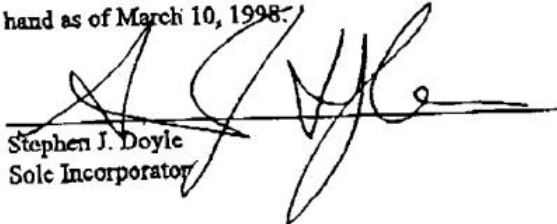
Subject to any applicable requirements of the General Corporation Law of the State of Delaware, the books of the Corporation may be kept outside the State of Delaware at such location or locations as may be designated from time to time by the board of directors or in the by-laws of the Corporation.

TENTH: Whenever a compromise or arrangement is proposed between the Corporation and its creditors or any class of them or between the Corporation and its stockholders or any class of them, any court of equitable jurisdiction within the State of Delaware may, on the application in a summary way of the Corporation or of any creditor or stockholder thereof or on the application of any receiver or receivers appointed for the Corporation under Section 291 of Title 8 of the Delaware Code or on the application of trustees in dissolution or of any receiver or receivers appointed for the Corporation under Section 279 of Title 8 of the Delaware Code, order a meeting of the creditors or class of creditors, and/or of the stockholders or class of stockholders of the Corporation, as the case may be, to be summoned in such manner as the said court directs. If a majority in number representing three-fourths in value of the creditors or class of creditors, and/or of the stockholders or class of stockholders of the Corporation, as the case may be, agree to any compromise or arrangement and to any reorganization of the Corporation, as the case may be, and the said compromise or arrangement, the said compromise or arrangement and the said reorganization shall, if sanctioned by the court to which the said application has been made, be binding on all the creditors or class of creditors, and/or on all the stockholders or class of stockholders, of the Corporation, as the case may be, and also on the Corporation.

ELEVENTH: The Corporation reserves the right to amend, alter, change or repeal any provision contained in this Certificate of Incorporation in the manner now or hereafter prescribed by the General Corporation Law of the State of Delaware and this Certificate of Incorporation, and all rights conferred upon stockholders herein are granted subject to this reservation. Notwithstanding any provision of law, any other provision of this Certificate of Incorporation or any provision of the by-laws of the Corporation, the affirmative vote of the holders of at least seventy-five percent of the shares of capital stock of the Corporation issued and outstanding and entitled to vote shall be required to amend or repeal, or to adopt any provision inconsistent with, any provision of Article FIFTH, Article SIXTH or this Article ELEVENTH.

TWELFTH: The name of the sole incorporator of the Corporation is Stephen J. Doyle and his mailing address is Aspen Technology, Inc., Ten Canal Park, Cambridge, Massachusetts 02141.

IN WITNESS WHEREOF, I have hereunto set my hand as of March 10, 1998:


Stephen J. Doyle
Sole Incorporator

**CERTIFICATE OF MERGER
OF
ASPEN TECHNOLOGY, INC., A MASSACHUSETTS CORPORATION,
WITH AND INTO
ASPEN TECHNOLOGY, INC., A DELAWARE CORPORATION**

The undersigned corporation organized and existing under and by virtue of the General Corporation Law of the State of Delaware DOES HEREBY CERTIFY:

FIRST: The name and state of incorporation of each of the constituent corporations of the merger are as follows:

<u>Name</u>	<u>State of Incorporation</u>
Aspen Technology, Inc.	Delaware
Aspen Technology, Inc.	Massachusetts

SECOND: An agreement and plan of merger (the "Plan of Merger") has been approved, adopted, certified, executed and acknowledged by each of the constituent corporations in accordance with the requirements of Section 252 of the General Corporation Law of the State of Delaware.

THIRD: The name of the surviving corporation is "Aspen Technology, Inc."

FOURTH: The certificate of incorporation of Aspen Technology, Inc., a Delaware corporation, as in effect immediately prior to the merger, shall be the certificate of incorporation of the surviving corporation.

FIFTH: An executed copy of the Plan of Merger is on file at the principal place of business of the surviving corporation, which is located at Ten Canal Park, Cambridge, Massachusetts 02141.

SIXTH: A copy of the Plan of Merger will be furnished by the surviving corporation, on request and without cost, to any stockholder of either constituent corporation.

SEVENTH: The authorized capital stock of Aspen Technology, Inc., a Massachusetts corporation, consists of (i) 40,000,000 shares of common stock, \$.10 par value per share, of which 21,441,366 shares have been issued and are outstanding, (ii) 400,000 shares of Series A participating cumulative preferred stock, \$.10 par value per share, of which no shares are outstanding, and (iii) 9,600,000 shares of undesignated preferred stock. The authorized capital stock of Aspen Technology, Inc., a Delaware corporation, consists of (i) 40,000,000 shares of common stock, \$.10 par value per share, of which 100 shares have been issued, are outstanding and are owned by Aspen Technology, Inc., a Massachusetts corporation and (ii) 10,000,000 shares of undesignated preferred stock.

Dated: March 12, 1998

ASPEN TECHNOLOGY, INC.

[SEAL]

By: 

President
Joseph F. Boston

Attest:

By: 

Secretary
Stephen J. Doyle

ASPEN TECHNOLOGY, INC.**CERTIFICATE OF DESIGNATION
OF
SERIES A PARTICIPATING CUMULATIVE PREFERRED STOCK****SECTION 1. Designation and Number of Shares**

The shares of this series of Preferred Stock shall be designated as Series A participating cumulative preferred stock, \$.10 par value per share ("Series A Preferred Stock"). The number of shares initially constituting the Series A Preferred Stock shall be 400,000; *provided, however*, that, if more than a total of 400,000 shares of Series A Preferred Stock shall be issuable upon the exercise of Rights (the "Rights") issued pursuant to the Rights Agreement dated as of March 11, 1998, between the Corporation and American Stock Transfer and Trust Company, a limited power banking trust company licensed by the New York State Banking Authority, as Rights Agent (the "Rights Agreement"), the board of directors, pursuant to Section 151(g) of the General Corporation Law of the State of Delaware, shall direct by resolution or resolutions that a certificate be properly executed, acknowledged, filed and recorded, in accordance with the provisions of Section 103 thereof, providing for the total number of shares of Series A Preferred Stock authorized to be issued to be increased (to the extent that the Certificate of Incorporation then permits) to the largest number of whole shares (rounded up to the nearest whole number) issuable upon exercise of such Rights.

SECTION 2. Dividends or Distributions

(a) Subject to the prior and superior rights of holders of shares of any other series of Preferred Stock or other class of capital stock of the Corporation ranking prior and superior to the shares of Series A Preferred Stock with respect to dividends, holders of Series A Preferred Stock shall be entitled to receive, when, as and if declared by the board of directors, out of the assets of the Corporation legally available therefor, (i) quarterly dividends payable in cash on the last day of each fiscal quarter in each year, or such other dates as the board of directors of the Corporation shall approve (each such date being referred to herein as a "Quarterly Dividend Payment Date"), commencing on the first Quarterly Dividend Payment Date after the first issuance of a share or a fraction of a share of Series A Preferred Stock, in the amount of \$1.00 per whole share (rounded to the nearest cent) less the amount of all cash dividends declared on the Series A Preferred Stock pursuant to the following clause (ii) since the immediately preceding Quarterly Dividend Payment Date or, with respect to the first Quarterly Dividend Payment Date, since the first issuance of any share or fraction of a share of Series A Preferred Stock (the total of which shall not, in any event, be less than zero) and (ii) dividends payable in cash on the payment date for each cash dividend declared on the Corporation's common stock, \$.10 par value per share ("Common Stock"), in an amount per whole share (rounded to the nearest cent) equal to the Formula Number (as hereinafter defined) then in effect times the cash dividends then to be paid on each share of Common Stock. In addition, if the Corporation shall pay any dividend or make any distribution on the Common Stock payable in assets, securities or other forms of noncash consideration (other than dividends or distributions solely in shares of Common Stock), then, in each such case, the Corporation shall simultaneously pay or make on each outstanding whole share of Series A Preferred Stock a dividend or distribution in like kind equal to the Formula Number then in effect times such dividend or distribution on each share of the Common Stock. As used herein, the "Formula Number" shall be 100; *provided, however*, that if at any time on or after March 13, 1998, the Corporation shall (i) declare or pay any dividend on the Common Stock payable in shares of Common Stock or make any

distribution on the Common Stock in shares of Common Stock, (ii) subdivide (by a stock split or otherwise) the outstanding shares of Common Stock into a larger number of shares of Common Stock or (iii) combine (by a reverse stock split or otherwise) the outstanding shares of Common Stock into a smaller number of shares of Common Stock, then in each such event the Formula Number shall be adjusted to a number determined by multiplying the Formula Number in effect immediately prior to such event by a fraction, the numerator of which is the number of shares of Common Stock that are outstanding immediately after such event and the denominator of which is the number of shares of Common Stock that are outstanding immediately prior to such event (and rounding the result to the nearest whole number); and *provided further* that, if at any time on or after March 13, 1998, the Corporation shall issue any shares of its capital stock in a merger, reclassification, or change of the outstanding shares of Common Stock then in each such event the Formula Number shall be appropriately adjusted to reflect such merger, reclassification or change so that each share of Series A Preferred Stock continues to be the economic equivalent of a Formula Number of shares of Common Stock prior to such merger, reclassification or change.

(b) The Corporation shall declare a dividend or distribution on the Series A Preferred Stock as provided in Section 2(a) immediately prior to or at the same time it declares a dividend or distribution on the Common Stock (other than a dividend or distribution solely in shares of Common Stock); *provided, however,* that, in the event no dividend or distribution (other than a dividend or distribution in shares of Common Stock) shall have been declared on the Common Stock during the period between any Quarterly Dividend Payment Date and the next subsequent Quarterly Dividend Payment Date, a dividend of \$1.00 per share on the Series A Preferred Stock shall nevertheless be payable on such subsequent Quarterly Dividend Payment Date. The board of directors may fix a record date for the determination of holders of Series A Preferred Stock entitled to receive a dividend or distribution declared thereon, which record date shall be the same as the record date for any corresponding dividend or distribution on Common Stock.

(c) Dividends shall begin to accrue and be cumulative on outstanding shares of Series A Preferred Stock from and after the Quarterly Dividend Payment Date next preceding the date of original issue of such shares of Series A Preferred Stock; *provided, however,* that dividends on such shares which are originally issued after the record date for the determination of holders of shares of Series A Preferred Stock entitled to receive a quarterly dividend and on or prior to the next succeeding Quarterly Dividend Payment Date shall begin to accrue and be cumulative from and after such Quarterly Dividend Payment Date. Notwithstanding the foregoing, dividends on shares of Series A Preferred Stock that are originally issued prior to the record date for the determination of holders of shares of Series A Preferred Stock entitled to receive a quarterly dividend on the first Quarterly Dividend Payment Date shall be calculated as if cumulative from and after the last day of the fiscal quarter next preceding the date of original issuance of such shares. Accrued but unpaid dividends shall not bear interest. Dividends paid on the shares of Series A Preferred Stock in an amount less than the total amount of such dividends at the time accrued and payable on such shares shall be allocated pro rata on a share-by-share basis among all such shares at the time outstanding.

(d) So long as any shares of Series A Preferred Stock are outstanding, no dividends or other distributions shall be declared, paid or distributed, or set aside for payment or distribution, on Common Stock unless, in each case, the dividend required by this Section 2 to be declared on Series A Preferred Stock shall have been declared.

(e) Holders of Series A Preferred Stock shall not be entitled to receive any dividends or other distributions except as provided herein.

SECTION 3. Voting Rights

Holders of Series A Preferred Stock shall have the following voting rights:

(a) Each holder of Series A Preferred Stock shall be entitled to a number of votes equal to the Formula Number then in effect, for each share of Series A Preferred Stock held of record on each matter on which holders of Common Stock or stockholders generally are entitled to vote, multiplied by the maximum number of votes per share which any holder of Common Stock or stockholders generally then have with respect to such matter (assuming any holding period or other requirement to vote a greater number of shares is satisfied).

(b) Except as otherwise provided herein or by applicable law, holders of Series A Preferred Stock and holders of Common Stock shall vote together as one class for the election of directors and on all other matters submitted to a vote of stockholders of the Corporation.

(c) If, at the time of any annual meeting of stockholders for the election of directors, the equivalent of six quarterly dividends (whether or not consecutive) payable on any share or shares of Series A Preferred Stock are in default, the number of directors constituting the board of directors of the Corporation shall be increased by two. In addition to voting together with holders of Common Stock for the election of other directors of the Corporation, holders of Series A Preferred Stock, voting separately as a class, shall be entitled at said meeting of stockholders (and at each subsequent annual meeting of stockholders), unless all dividends in arrears have been paid or declared and set apart for payment prior thereto, to vote for the election of two directors, the holders of Series A Preferred Stock being entitled to cast a number of votes per share of Series A Preferred Stock equal to the Formula Number. Until the default in payments of all dividends which permitted the election of said directors shall cease to exist, any director who shall have been so elected pursuant to the next preceding sentence may be removed at any time, either with or without cause, only by the affirmative vote of holders of Series A Preferred Stock at the time entitled to cast a majority of the votes entitled to be cast for the election of any such director at a special meeting of such holders called for that purpose, and any vacancy thereby created may be filled by the vote of such holders. If and when such default shall cease to exist, holders of Series A Preferred Stock shall be divested of the foregoing special voting rights, subject to reversion in the event of each and every subsequent like default in payments of dividends. Upon the termination of the foregoing special voting rights, the terms of office of all persons who may have been elected directors pursuant to said special voting rights shall forthwith terminate, and the number of directors constituting the board of directors shall be reduced by two. The voting rights granted by this Section 3(c) shall be in addition to any other voting rights granted to holders of Series A Preferred Stock in this Section 3.

(d) Except as provided herein, in Section 11 or by applicable law, holders of Series A Preferred Stock shall have no special voting rights and their consent shall not be required (except to the extent they are entitled to vote with holders of Common Stock as set forth herein) for authorizing or taking any corporate action.

SECTION 4. Certain Restrictions

(a) Whenever quarterly dividends or other dividends or distributions payable on the Series A Preferred Stock as provided in Section 2 are in arrears, thereafter and until all accrued and unpaid dividends and distributions, whether or not declared, on shares of Series A Preferred Stock outstanding shall have been paid in full, the Corporation shall not

(i) declare or pay dividends on, make any other distributions on, or redeem or purchase or otherwise acquire for consideration any shares of capital stock ranking junior (either as to dividends or upon liquidation, dissolution or winding up) to the Series A Preferred Stock;

(ii) declare or pay dividends on or make any other distributions on any shares of capital stock ranking on a parity (either as to dividends or upon liquidation, dissolution or winding up) with the Series A Preferred Stock, except dividends paid ratably on the Series A Preferred Stock and all such parity capital stock on which dividends are payable or in arrears in proportion to the total amounts to which the holders of all such shares are then entitled;

(iii) redeem or purchase or otherwise acquire for consideration shares of any capital stock ranking on a parity (either as to dividends or upon liquidation, dissolution or winding up) with the Series A Preferred Stock; *provided* that the Corporation may at any time redeem, purchase or otherwise acquire shares of any such parity capital stock in exchange for shares of any capital stock of the Corporation ranking junior (either as to dividends or upon dissolution, liquidation or winding up) to the Series A Preferred Stock; or

(iv) purchase or otherwise acquire for consideration any shares of Series A Preferred Stock, or any shares of capital stock ranking on a parity with the Series A Preferred Stock, except in accordance with a purchase offer made in writing or by publication (as determined by the board of directors) to all holders of such shares upon such terms as the board of directors, after consideration of the respective annual dividend rates and other relative rights and preferences of the respective series and classes, shall determine in good faith will result in fair and equitable treatment among the respective series or classes.

(b) The Corporation shall not permit any subsidiary of the Corporation to purchase or otherwise acquire for consideration any shares of capital stock of the Corporation unless the Corporation could, under paragraph (a) of this Section 4, purchase or otherwise acquire such shares at such time and in such manner.

SECTION 5. Liquidation Rights

Upon the liquidation, dissolution or winding up of the Corporation, whether voluntary or involuntary, no distribution shall be made (a) to holders of shares of capital stock ranking junior (either as to dividends or upon liquidation, dissolution or winding up) to the Series A Preferred Stock unless, prior thereto, the holders of Series A Preferred Stock shall have received an amount equal to the accrued and unpaid dividends and distributions thereon, whether or not declared, to the date of such payment, plus an amount equal to the greater of (i) \$10.00 per whole share and (ii) an aggregate amount per share equal to the Formula Number then in effect multiplied by the aggregate amount to be distributed per share to holders of Common Stock or (ii) to the holders of capital stock ranking on a parity (either as to dividends or upon liquidation, dissolution or winding up) with the Series A Preferred Stock, except distributions made ratably on the Series A Preferred Stock and all other such parity capital stock in proportion to the total amounts to which the holders of all such shares are entitled upon such liquidation, dissolution or winding up.

SECTION 6. Consolidation, Merger, etc.

In case the Corporation shall enter into any consolidation, merger, combination or other transaction in which shares of Common Stock are exchanged for or changed into other capital stock or securities, cash or any other property, then in any such case the then-outstanding shares of Series A Preferred Stock shall at the same time be similarly exchanged or changed into an amount per share equal to the Formula Number then in effect multiplied by the aggregate amount of capital stock, securities, cash or any other property (payable

in kind), as the case may be, into which or for which each share of Common Stock is exchanged or changed. In the event both Section 2 and this Section 6 would apply to a transaction, this Section 6 shall control.

SECTION 7. No Redemption: No Sinking Fund

(a) Series A Preferred Stock shall not be subject to redemption by the Corporation or at the option of any holder of Series A Preferred Stock; *provided, however*, that the Corporation may purchase or otherwise acquire outstanding shares of Series A Preferred Stock in the open market or by offer to any holder or holders of Series A Preferred Stock.

(b) Series A Preferred Stock shall not be subject to or entitled to the operation of a retirement or sinking fund.

SECTION 8. Ranking

Series A Preferred Stock shall rank junior to all other series of Preferred Stock of the Corporation, unless the board of directors shall specifically determine otherwise in fixing the powers, preferences and relative, participating, optional and other special rights of the shares of such series and the qualifications, limitations and restrictions thereof.

SECTION 9. Fractional Shares

Series A Preferred Stock shall be issuable upon exercise of the Rights issued pursuant to the Rights Agreement in whole shares or in any fraction of a share that is one one-hundredth (1/100th) of a share or any integral multiple of such fraction that shall entitle the holder, in proportion to such holder's fractional shares, to receive dividends, exercise voting rights, participate in distributions and to have the benefit of all other rights of holders of Series A Preferred Stock. In lieu of fractional shares, the Corporation, prior to the first issuance of a share or a fraction of a share of Series A Preferred Stock, may elect (a) to make a cash payment as provided in the Rights Agreement for fractions of a share other than one one-hundredth (1/100th) of a share or any integral multiple thereof or (b) to issue depository receipts evidencing such authorized fraction of a share of Series A Preferred Stock pursuant to an appropriate agreement between the Corporation and a depository selected by the Corporation; *provided* that such agreement shall provide that the holders of such depository receipts shall have all the rights, privileges and preferences to which they are entitled as holders of the Series A Preferred Stock.

SECTION 10. Reacquired Shares

Any shares of Series A Preferred Stock purchased or otherwise acquired by the Corporation in any manner whatsoever shall be retired and canceled promptly after the acquisition thereof. All such shares shall upon their cancellation become authorized but unissued shares of Preferred Stock, without designation as to series until such shares are once more designated as part of a particular series by the board of directors pursuant to the provisions of Section (b) of Article FOURTH of the Certificate of Incorporation.

SECTION 11. Amendment

None of the powers, preferences and relative, participating, optional and other special rights of the Series A Preferred Stock as provided herein or otherwise in the Certificate of Incorporation shall be amended in any manner that would alter or change the powers, preferences, rights or privileges of the holders of Series A Preferred Stock so as to affect them adversely without the affirmative vote of the holders of at least

66 2/3% of the outstanding shares of Series A Preferred Stock, voting as a separate class; *provided, however,* that no such amendment approved by the holders of at least 66 2/3% of the outstanding shares of Series A Preferred Stock shall be deemed to apply to the powers, preferences, rights or privileges of any holder of Series A Preferred Stock originally issued upon exercise of the Rights after the time of such approval without the approval of such holder.

IN WITNESS WHEREOF, Aspen Technology, Inc. has caused this Certificate of Designation of Series A Participating Cumulative Preferred Stock to be executed on its behalf by its President and its Secretary as of March 12, 1998.

ASPEN TECHNOLOGY, INC.

By: J.F. Boston
President - J. F. BOSTON

Attest:

By: [Signature]
Stephen J. Doyle
Secretary

**CERTIFICATE OF CORRECTION
FILED TO CORRECT A CERTAIN ERROR IN
THE CERTIFICATE OF DESIGNATION
OF
ASPEN TECHNOLOGY, INC.
FILED IN THE OFFICE OF
THE SECRETARY OF STATE OF DELAWARE
ON MARCH 12, 1998**

Aspen Technology, Inc., a corporation organized and existing under and by virtue of the General Corporation Law of the State of Delaware,

DOES HEREBY CERTIFY:

1. The name of the corporation is Aspen Technology, Inc.
2. That a Certificate of Designation was filed by the Secretary of State of Delaware on March 12, 1998, and that said Certificate requires correction as permitted by Section 103 of the General Corporation Law of the State of Delaware.
3. The inaccuracy or defect of said Certificate to be corrected is as follows:

"SECTION 1. Designation and Number of Shares

The shares of this series of Preferred Stock shall be designated as Series A participating cumulative preferred stock, \$.10 par value per share ("Series A Preferred Stock"). The number of shares initially constituting the Series A Preferred Stock shall be 400,000; *provided, however*, that, if more than a total of 400,000 shares of Series A Preferred Stock shall be issuable upon the exercise of Rights (the "Rights") issued pursuant to the Rights Agreement dated as of March 11, 1998, between the Corporation and American Stock Transfer and Trust Company, a limited power banking trust company licensed by the New York State Banking Authority, as Rights Agent (the "Rights Agreement"), the board of directors, pursuant to Section 151(g) of the General Corporation Law of the State of Delaware, shall direct by resolution or resolutions that a certificate be properly executed, acknowledged, filed and recorded, in accordance with the provisions of Section 103 thereof, providing for the total number of shares of Series A Preferred Stock authorized to be issued to be increased (to the extent that the Certificate of Incorporation then permits) to the largest number of whole shares (rounded up to the nearest whole number) issuable upon exercise of such Rights."

4. The corrected SECTION 1 should read as follows:

"SECTION 1. Designation and Number of Shares

The shares of this series of Preferred Stock shall be designated as Series A participating cumulative preferred stock, \$.10 par value per share ("Series A Preferred Stock"). The number of shares initially constituting the Series A Preferred Stock shall be 400,000; *provided, however*, that, if more than a total of 400,000 shares of Series A Preferred Stock shall be issuable upon the exercise of Rights (the "Rights") issued pursuant to the Rights Agreement dated as of March 12, 1998, between the Corporation and American Stock Transfer and Trust Company, a limited power banking trust company licensed by the New York State

Banking Authority, as Rights Agent (the "Rights Agreement"), the board of directors, pursuant to Section 151(g) of the General Corporation Law of the State of Delaware, shall direct by resolution or resolutions that a certificate be properly executed, acknowledged, filed and recorded, in accordance with the provisions of Section 103 thereof, providing for the total number of shares of Series A Preferred Stock authorized to be issued to be increased (to the extent that the Certificate of Incorporation then permits) to the largest number of whole shares (rounded up to the nearest whole number) issuable upon exercise of such Rights."

IN WITNESS WHEREOF, said Aspen Technology, Inc. has caused this Certificate to be signed by Stephen J. Doyle, its Secretary, this first day of June, 1998.

ASPEN TECHNOLOGY, INC.

By: _____
Secretary

CERTIFICATE OF MERGER
OF
B-JAC INTERNATIONAL, INC., A VIRGINIA CORPORATION,
WITH AND INTO
ASPEN TECHNOLOGY, INC., A DELAWARE CORPORATION

The undersigned corporation organized and existing under and by virtue of the General Corporation Law of the State of Delaware DOES HEREBY CERTIFY:

FIRST: The name and state of incorporation of each of the constituent corporations of the merger are as follows:

<u>Name</u>	<u>State of Incorporation</u>
Aspen Technology, Inc.	Delaware
B-JAC International, Inc.	Virginia

SECOND: An agreement and plan of merger (the "Plan of Merger") has been approved, adopted, certified, executed and acknowledged by each of the constituent corporations in accordance with the requirements of Section 252 of the General Corporation Law of the State of Delaware.

THIRD: The name of the surviving corporation is "Aspen Technology, Inc."

FOURTH: The certificate of incorporation of Aspen Technology, Inc., as in effect immediately prior to the merger, shall be the certificate of incorporation of the surviving corporation.

FIFTH: An executed copy of the Plan of Merger is on file at the principal place of business of the surviving corporation, which is located at Ten Canal Park, Cambridge, Massachusetts 02141.

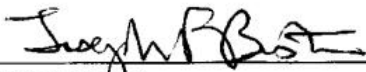
SIXTH: A copy of the Plan of Merger will be furnished by the surviving corporation, on request and without cost, to any stockholder of either constituent corporation.

SEVENTH: The authorized capital stock of Aspen Technology, Inc. consists of (i) 40,000,000 shares of common stock, \$.10 par value per share, of which 24,491,695 shares have been issued and are outstanding, (ii) 400,000 shares of Series A participating cumulative preferred stock, \$.10 par value per share, of which no shares are outstanding, and (iii) 9,600,000 shares of undesignated preferred stock. The authorized capital stock of B-JAC International, Inc. consists of 25,000 shares of common stock, \$.01 par value per share, of which 10,000 shares are issued and outstanding.


Dated: June 30, 1998

ASPEN TECHNOLOGY, INC.

[SEAL]

By: 
Joseph F. Boston
President

Attest:

By: 
Stephen J. Doyle
Secretary

STATE OF DELAWARE
SECRETARY OF STATE
DIVISION OF CORPORATIONS
FILED 02:00 PM 06/30/1998
981254766 - 2859683

CERTIFICATE OF CHANGE OF LOCATION OF REGISTERED
OFFICE AND REGISTERED AGENT
OF

ASPEN TECHNOLOGY, INC.

The Board of Directors of:

ASPEN TECHNOLOGY, INC.,

a Corporation of the State of Delaware, on this 10th day of
May, A.D. 1999, does hereby resolve and order that the
location of the Registered Office of this Corporation within this
State be, and the same hereby is:

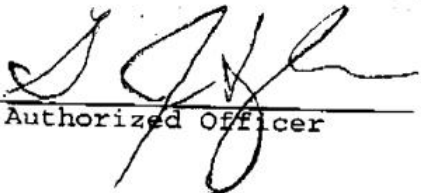
1013 Centre Road, in the City of Wilmington, in the County
of New Castle, Delaware, 19805.

The name of the Registered Agent therein and in charge thereof
upon whom process against the Corporation may be served, is:
CORPORATION SERVICE COMPANY.

ASPEN TECHNOLOGY, INC.,

a Corporation of the State of Delaware, does hereby certify that the
foregoing is a true copy of a resolution adopted by the Board of
Directors at a meeting held as herein stated.

IN WITNESS WHEREOF, said corporation has caused this
Certificate to be signed by Stephen J. Doyle, Senior V.P.,
this 10th day of May A.D. 1999.



Authorized Officer

CERTIFICATE OF CHANGE OF REGISTERED AGENT
AND
REGISTERED OFFICE

Aspen Technology, Inc., a corporation organized and existing under and by virtue of the General Corporation Law of the State of Delaware, DOES HEREBY CERTIFY:

The present registered agent of the corporation is Corporation Service Company and the present registered office of the corporation is in the county of New Castle.

The Board of Directors of Aspen Technology, Inc. adopted the following resolution on the 1st day of May, 2001.

Resolved, that the registered office of Aspen Technology, Inc. in the state of Delaware be and it hereby is changed to Corporation Trust Center, 1209 Orange Street, in the City of Wilmington, County of New Castle, and the authorization of the present registered agent of this corporation be and the same is hereby withdrawn, and THE CORPORATION TRUST COMPANY, shall be and is hereby constituted and appointed the registered agent of this corporation at the address of its registered office.

IN WITNESS WHEREOF, Aspen Technology, Inc. has caused this statement to be signed by Michael J. Muscatello, its Secretary, this 22nd day of May, 2001.



Michael J. Muscatello

Title: Secretary

ASPEN TECHNOLOGY, INC.

CERTIFICATE OF DESIGNATIONS
OF
SERIES B-1 CONVERTIBLE
PREFERRED STOCK
AND
SERIES B-2 CONVERTIBLE
PREFERRED STOCK

(Pursuant to Section 151 of the Delaware General
Corporation Law)

Aspen Technology, Inc., a Delaware corporation (the "Corporation"), in accordance with the provisions of Section 103 of the Delaware General Corporation Law (the "DGCL") does hereby certify that, in accordance with Section 141(c) of the DGCL, the following resolution was duly adopted by the Board of Directors of the Corporation as of February 4, 2002:

RESOLVED, that two series of Preferred Stock, Series B-1 Convertible Preferred Stock, par value \$0.10 per share and Series B-2 Convertible Preferred Stock, par value \$0.10 per share, of the Corporation are hereby created and the designation, number of shares, powers, preferences, rights, qualifications, limitations and restrictions thereof (in addition to any provisions set forth in the Certificate of Incorporation of the Corporation which are applicable to the Preferred Stock of all classes and series) are as follows:

**SERIES B-1 CONVERTIBLE PREFERRED STOCK
AND
SERIES B-2 CONVERTIBLE PREFERRED STOCK**

1. Designation, Amount, Par Value and Stated Value. The following two (2) series of preferred stock shall be designated as (i) the Corporation's Series B-1 Convertible Preferred Stock (the "**Series B-1 Preferred Stock**"), and the number of shares so designated shall be 30,000 and (ii) the Corporation's Series B-2 Convertible Preferred Stock (the "**Series B-2 Preferred Stock**"), and the number of shares so designated shall be 20,000. The Series B-1 Preferred Stock and Series B-2 Preferred Stock are sometimes collectively referred to as the "**Series B Preferred Stock**." Each share of Series B Preferred Stock shall have a par value of \$0.10 per share and a stated value equal to \$1,000 plus any amount added to the Stated Value pursuant to Section 3(c) hereof or Section 2(c) of the Registration Rights Agreement (the "**Stated Value**").

2. **Definitions.** In addition to the terms defined elsewhere in this Certificate of Designations, (a) the terms set forth in Exhibit A hereto have the meanings indicated therein, and (b) the following terms have the meanings indicated:

“Conversion Price” means the Initial Conversion Price as of the applicable Original Issue Date, as adjusted pursuant to Section 15 below.

“Equity Conditions” means, with respect to a specified issuance of Common Stock, that each of the following conditions is satisfied: (i) the number of authorized but unissued and otherwise unreserved shares of Common Stock is sufficient for such issuance; (ii) such shares of Common Stock are registered for resale by the Holders and may be sold by the Holders pursuant to an effective Underlying Shares Registration Statement, all such shares may be sold without volume restrictions pursuant to Rule 144(k) under the Securities Act or all Underlying Shares owned by each Holder may be sold without volume restrictions pursuant to Rule 144 under the Securities Act; (iii) the Common Stock is listed or quoted (and is not suspended from trading) on an Eligible Market and such shares of Common Stock are approved for listing upon issuance; (iv) such issuance would be permitted in full without violating Section 16 hereof or the rules or regulations of any Trading Market; (v) no Bankruptcy Event has occurred; (vi) the Corporation is not in default with respect to any material obligation hereunder or under any other Transaction Document; and (vii) none of the following events have occurred and are continuing (A) an event constituting a Triggering Event or (B) an event that with the passage of time and without being cured would constitute a Triggering Event other than a pending, proposed or intended Change of Control.

“Holder” means any holder of Series B Preferred Stock.

“Initial Conversion Price” means (i) in the case of Series B-1 Preferred Stock, \$19.9703, and (ii) in the case of Series B-2 Preferred Stock, the greater of (x) the lesser of (a) 117.5% of the average of the daily Volume Weighted Average Prices over the twenty (20) consecutive Trading Day period ending on February 27, 2002 (including such date) or (b) 112.5% of the average of the daily Volume Weighted Average Prices over the three (3) consecutive Trading Day period ending on February 27, 2002 (including such date), or (y) \$15.00 (as adjusted for any stock splits, stock dividends, stock combinations or similar events occurring after the Original Issue Date of the Series B-1 Preferred Stock and prior to the Original Issue Date of the Series B-2 Preferred Stock).

“Initial Purchase Price” means (i) in the case of Series B-1 Preferred Stock, \$1,000, and (ii) in the case of Series B-2 Preferred Stock, the greater of (x) the lesser of (a) the average of the daily Volume Weighted Average Prices over the twenty (20) consecutive Trading Day period ending on February 27, 2002 (including such date) or (b) the average of the daily Volume Weighted Average Prices over the three (3) consecutive Trading Day period ending on February 27, 2002 (including such date), or (y) \$15.00 (as adjusted for any stock splits, stock dividends, stock combinations or similar events occurring after the Original Issue Date of the Series B-1 Preferred Stock and prior to the Original Issue Date of the Series B-2 Preferred Stock).

“**Junior Securities**” means the Common Stock and all other equity or equity equivalent securities of the Corporation.

“**Original Issue Date**” means the date of the first issuance of any shares of the Series B-1 Preferred Stock or Series B-2 Preferred Stock, as applicable, regardless of the number of transfers of any particular shares of such Series B Preferred Stock and regardless of the number of certificates that may be issued to evidence such Series B Preferred Stock.

“**Purchase Agreement**” means the Securities Purchase Agreement, dated February 6, 2002, among the Corporation and the original purchasers of the Series B Preferred Stock.

3. Dividends.

(a) Holders shall be entitled to receive, out of funds legally available therefor, and the Corporation shall pay, cumulative dividends on the Series B Preferred Stock at the rate per share (as a percentage of the Stated Value per share) of 4% per annum, payable quarterly in arrears commencing on June 30, 2002 and thereafter on each March 31, June 30, September 30 and December 31, except if such date is not a Trading Day, in which case such dividend shall be payable on the next succeeding Trading Day (each, a “**Dividend Payment Date**”). Dividends on the Series B Preferred Stock shall be calculated on the basis of a 365-day year, shall accrue daily commencing on the Original Issue Date for the applicable series of Series B Preferred Stock, and shall be deemed to accrue from such date whether or not earned or declared and whether or not there are profits, surplus or other funds of the Corporation legally available for the payment of dividends.

(b) Subject to the conditions and limitations set forth below, the Corporation may pay required dividends (i) in cash or (ii) in Common Stock. The Corporation must deliver written notice (the “**Dividend Notice**”) to the Holders indicating the manner in which it intends to pay dividends at least ten Trading Days prior to each Dividend Payment Date, but the Corporation may indicate in any such notice that the election contained therein shall continue for subsequent Dividend Payment Dates until revised. Failure to timely provide such written notice shall be deemed an election by the Corporation to pay the dividend in Common Stock, unless payment of dividends in such manner is not permitted at the time of a dividend, in which case such dividend shall be payable in cash. All dividends payable in respect of the Series B Preferred Stock on any Dividend Payment Date must be paid in the same manner.

(c) Notwithstanding the foregoing, the Corporation may not pay dividends by issuing Common Stock unless, at such time, the Equity Conditions are satisfied with respect to such Common Stock dividend shares and all of the Underlying Shares then issuable upon conversion in full of all outstanding Series B Preferred Stock. If the Corporation is required to pay dividends in cash on any Dividend Payment Date and does not timely make such payment, any Holder may (but shall not be required to) treat such cash amount as if it had been added to the Stated Value as of such Dividend Payment Date. If the Corporation may not legally pay dividends on any Dividend Payment Date, such amount shall be added to the Stated Value as of such Dividend Payment Date.

(d) So long as any Series B Preferred Stock is outstanding, (i) neither the Corporation nor any Subsidiary shall, directly or indirectly, redeem, purchase or otherwise acquire any Junior Securities or set aside any monies for such a redemption, purchase or other acquisition in excess of \$10,000,000 per calendar year, provided that the Corporation shall be entitled to carry forward any amount not used in any calendar year to subsequent calendar years, and (ii) the Corporation shall not pay or declare any dividend or make any distribution on any Junior Securities, except pro rata stock dividends on the Common Stock payable in additional shares of Common Stock and dividends due and paid in the ordinary course on preferred stock of the Corporation, in each case only at such times as the Corporation is in compliance with its payment and other obligations hereunder.

(e) In the event that the Corporation elects to pay dividends in shares of Common Stock, the number of shares of Common Stock to be issued to each Holder as such dividend shall be (i) determined by dividing the total dividend then payable to such Holder by the Dividend Market Price (as defined below) as of the applicable Dividend Payment Date, and rounding up to the nearest whole share, and (ii) paid to such Holder in accordance with Section 3(f) below. The term "**Dividend Market Price**" shall mean the average of the Volume Weighted Average Prices of Common Stock for the five (5) consecutive Trading Days prior to the applicable Dividend Payment Date (not including such date).

(f) In the event that any dividends are paid in Common Stock the Corporation shall, on or before the third (3rd) Trading Day following the payment date of such dividend, (i) issue and deliver to such Holder a certificate, registered in the name of the Holder or its designee, for the number of shares of Common Stock to which the Holder shall be entitled or (ii) if and when the applicable shares of Common Stock may be held in a balance account with The Depository Trust Corporation through its Deposit Withdrawal Agent Commission System and after the Holder has notified the Corporation that this clause (ii) shall apply, credit the number of shares of Common Stock to which the Holder shall be entitled to the Holder's or its designee's balance account with The Depository Trust Corporation through its Deposit Withdrawal Agent Commission System.

4. Registration of Series B Preferred Stock. The Corporation shall register shares of the Series B Preferred Stock, upon records to be maintained by the Corporation for that purpose (the "**Series B Preferred Stock Register**"), in the name of the record Holders thereof from time to time. The Corporation may deem and treat the registered Holder of shares of Series B Preferred Stock as the absolute owner thereof for the purpose of any conversion hereof or any distribution to such Holder, and for all other purposes, absent actual notice to the contrary.

5. Registration of Transfers. The Corporation shall register the transfer of any shares of Series B Preferred Stock in the Series B Preferred Stock Register, upon surrender of certificates evidencing such Shares to the Corporation at its address specified herein. Upon any such registration or transfer, a new certificate evidencing the shares of Series B Preferred Stock so transferred shall be issued to the transferee and a new certificate evidencing the remaining portion of the shares not so transferred, if any, shall be issued to the transferring Holder.

6. Liquidation.

(a) In the event of any liquidation, dissolution or winding up of the Corporation, either voluntary or involuntary (a "**Liquidation Event**"), the Holders of Series B Preferred Stock shall be entitled to receive, prior and in preference to any distribution of any of the assets or surplus funds of the Corporation to the holders of Junior Securities by reason of their ownership thereof, an amount per share in cash equal to the Stated Value for each share of Series B Preferred Stock then held by them (as adjusted for any stock splits, stock dividends, stock combinations and similar transactions with respect to the Series B Preferred Stock), plus all accrued but unpaid dividends on such Series B Preferred Stock as of the date of such event (the "**Series B Stock Liquidation Preference**"). If, upon the occurrence of a Liquidation Event, the assets and funds thus distributed among the holders of the Series B Preferred Stock shall be insufficient to permit the payment to such Holders of the full Series B Stock Liquidation Preference, then the entire assets and funds of the Corporation legally available for distribution shall be distributed ratably among the Holders of the Series B Preferred Stock in proportion to the aggregate Series B Stock Liquidation Preference that would otherwise be payable to each of such Holders.

(b) In the event of a Liquidation Event, following completion of the distributions required by the first sentence of paragraph (a) of this Section 6, if assets or surplus funds remain in the Corporation, the holders of the Common Stock shall share ratably in all remaining assets of the Corporation, based on the number of shares of Common Stock then outstanding.

(c) The Corporation shall mail written notice of any Liquidation Event to each record Holder not less than 20 Trading Days prior to the payment date or effective date thereof.

7. Conversion.

(a) Conversion at Option of Holder. At the option of any Holder, any Series B Preferred Stock held by such Holder may be converted into Common Stock based on the applicable Conversion Price then in effect for such series of Series B Preferred Stock. A Holder may convert Series B Preferred Stock into Common Stock pursuant to this paragraph at any time and from time to time after the applicable Original Issue Date, by delivering to the Corporation a Conversion Notice, in the form attached hereto as Exhibit B, appropriately completed and duly signed, and the date any such Conversion Notice is delivered to the Corporation (as determined in accordance with the notice provisions hereof) is a "Conversion Date."

(b) Conversion at Option of Corporation. If, at any time after the Effective Date, the Closing Price on each of twenty (20) consecutive Trading Days (a "**Qualifying Period**") exceeds 135% of the applicable Conversion Price for a series of Series B Preferred Stock (each, a "**Threshold Price**"), the Corporation may require the Holders to convert the shares of such series into Common Stock based on the applicable Conversion Price. The Corporation may require a conversion pursuant to this paragraph by delivering irrevocable

written notice of such election to the Holders, and the fifth Trading Day after the date any such notice is delivered to the Holders (as determined in accordance with the notice provisions hereof) will be the “**Conversion Date**” for such required conversion. Notwithstanding the foregoing, (i) if the Corporation has publicly announced a pending, proposed or intended Change of Control and the Qualifying Period includes any Trading Days on or after the date of such public announcement, then to the extent that a Holder has not had the ability to sell all or a portion of the Underlying Shares pursuant to Rule 144 under the Securities Act or an effective Underlying Share Registration Statement for at least 20 Trading Days after the date of the public announcement of such Change of Control, the Conversion Date with respect to those shares of Series B Preferred Stock that are convertible into the portion of the Underlying Shares that are not so saleable shall be deferred until the date on which such Underlying Shares shall have been so saleable for a period of 20 Trading Days from the date of such public announcement (and if no such period of 20 Trading Days occurs prior to the Change of Control with respect to any such Underlying Shares then the notice of conversion applicable to those shares of Series B Preferred Stock convertible into such Underlying Shares shall be void) and (ii) the Corporation may not require any conversion under this paragraph (and any notice thereof will be void), unless from the beginning of such period of 20 consecutive Trading Days through the Conversion Date, (A) the Equity Conditions are satisfied with respect to all of the Underlying Shares then issuable upon conversion in full of all outstanding Series B Preferred Stock, and (B) the Closing Price equals or exceeds the applicable Threshold Price.

8. Mechanics of Conversion.

(a) The number of Underlying Shares issuable upon any conversion of shares of either series of Series B Preferred Stock hereunder shall equal (i) the Stated Value of such share of Series B Preferred Stock to be converted, divided by the applicable Conversion Price on the Conversion Date, plus (ii) the amount of any accrued but unpaid dividends on such share of Series B Preferred Stock through the Conversion Date, divided by the applicable Conversion Price on the Conversion Date.

(b) Upon conversion of any Series B Preferred Stock, the Corporation shall promptly (but in no event later than three Trading Days after the Conversion Date) issue or cause to be issued and cause to be delivered to or upon the written order of the Holder and in such name or names as the Holder may designate a certificate for the Underlying Shares issuable upon such conversion, free of restrictive legends unless such Underlying Shares are not then freely transferable without volume restrictions pursuant to Rule 144(k) under the Securities Act. The Holder, or any Person so designated by the Holder to receive Underlying Shares, shall be deemed to have become holder of record of such Underlying Shares as of the Conversion Date. If and when such Underlying Shares may be freely transferred pursuant to Rule 144 under the Securities Act or pursuant to an effective Underlying Shares Registration Statement, the Corporation shall use its best efforts to deliver Underlying Shares hereunder electronically through the Depository Trust Corporation or another established clearing corporation performing similar functions, and shall issue such Underlying Shares in the same manner as dividend payment shares are issued pursuant to Section 3(f) above.

(c) A Holder shall not be required to deliver the original certificate(s) evidencing the Series B Preferred Stock being converted in order to effect a conversion of such

Series B Preferred Stock. Execution and delivery of the Conversion Notice shall have the same effect as cancellation of the original certificate(s) and issuance of a new certificate evidencing the remaining shares of Series B Preferred Stock. Upon surrender of a certificate following one or more partial conversions, the Corporation shall promptly deliver to the Holder a new certificate representing the remaining shares of Series B Preferred Stock.

(d) The Corporation's obligations to issue and deliver Underlying Shares upon conversion of Series B Preferred Stock in accordance with the terms hereof are absolute and unconditional, irrespective of any action or inaction by any Holder to enforce the same, any waiver or consent with respect to any provision hereof, the recovery of any judgment against any Person or any action to enforce the same, or any setoff, counterclaim, recoupment, limitation or termination, or any breach or alleged breach by any Holder or any other Person of any obligation to the Corporation or any violation or alleged violation of law by any Holder or any other Person, and irrespective of any other circumstance which might otherwise limit such obligation of the Corporation to any Holder in connection with the issuance of such Underlying Shares.

9. Redemption Rights.

(a) Holders Redemption Rights.

(i) Subject to the provisions of Section 9(a)(iii) below, if, at any time on or after the eighteen (18) month anniversary of the applicable Original Issue Date of a Series B Preferred Stock, the average of the Closing Prices for twenty (20) consecutive Trading Days immediately preceding such eighteen (18) month anniversary or any date thereafter is below the applicable Conversion Price of such series of Series B Preferred Stock, the Holder of such Series B Preferred Stock, upon 15 Trading Days advance notice (the "**Redemption Notice**") to the Corporation, shall have the right to request the Corporation to redeem that number of shares of Series B Preferred Stock held by such Holders as is set forth in the Redemption Notice at a per share price (the "**Redemption Price**") equal to the Stated Value of such shares of Series B Preferred Stock to be redeemed plus all accrued but unpaid dividends thereon to the date of payment.

(ii) Notwithstanding anything to the contrary in Section 9(a)(i), the Holders of the Series B Preferred Stock (x) may not deliver a Redemption Notice with respect to a particular series of Series B Preferred Stock until after the date that is eighteen (18) months after the Original Issue Date of such series of Series B Preferred Stock, (y) may not deliver a Redemption Notice covering in aggregate more than \$15,000,000 of Stated Value, with respect to the Series B-1 Preferred Stock, and \$10,000,000 of Stated Value, with respect to the Series B-2 Preferred Stock, until after the date that is twenty-four (24) months after the Original Issue Date of such series of Series B Preferred Stock, and (z) may deliver a Redemption Notice with respect to a particular series of Series B Preferred Stock after the date that is twenty-four (24) months after the Original Issue Date of such series of Series B Preferred Stock, irrespective of whether the average of

the Closing Prices for the twenty (20) consecutive Trading Days is below the applicable Conversion Price of such series of Series B Preferred Stock and without limit as to Stated Value.

(iii) Within three (3) Trading Days of receipt of a Redemption Notice, the Corporation will deliver written notice to each Holder of the applicable series of Series B Preferred Stock (the "**Corporation Notice**"), confirming pursuant to the Redemption Notice the aggregate amount of such Series B Preferred Stock being redeemed, the Redemption Date and the applicable Redemption Prices. Notwithstanding the aggregate shares set forth in the Redemption Notice, each Holder of such series of Series B Preferred Stock shall have the right to elect to have all or any number of shares of the applicable series of Series B Preferred Stock held by such Holder redeemed on the Redemption Date at the applicable Redemption Price by notifying the Corporation within five (5) Trading Days of receipt of the Corporation Notice of its election to do so, and specifying the number of shares as to which such election is made. In the event that the aggregate number of shares of Series B Preferred Stock to be redeemed on such Redemption Date exceeds the aggregate limitations set forth in Section 9(a)(ii), the number of shares to be redeemed from each Holder shall be reduced pro rata based upon the aggregate number of shares of the applicable series of Series B Preferred Stock held by each Holder requesting redemption.

(iv) The Redemption Notice will specify the effective date of the redemption, which must be a Trading Day at least 15 Trading Days after the date such notice is delivered (the "**Redemption Date**"), and the entire Redemption Price may be paid at the Corporation's option in cash or in Common Stock. The Corporation must deliver written notice to the Holders indicating the manner in which it intends to pay the Redemption Price at least three (3) Trading Days after receipt of the Redemption Notice. Failure to timely provide such written notice shall be deemed an election by the Corporation to make the payment in Common Stock. Notwithstanding the foregoing, the Corporation may not pay the Redemption Price by issuing Common Stock unless, at such time, the Equity Conditions are satisfied with respect to such Common Stock.

(v) Upon receipt of payment of the Redemption Price, each Holder will deliver the original certificate(s) evidencing the Series B Preferred Stock so redeemed to the Corporation, unless such Holder is awaiting receipt of a new certificate evidencing such shares from the Corporation pursuant to another provision hereof. At any time on or prior to the Corporation Redemption Date, the Holders may convert any or all of the shares of Series B Preferred Stock, and the Corporation shall honor any such conversions in accordance with the terms hereof.

(vi) In the event that the Corporation elects to pay the Redemption Price in shares of Common Stock, the number of shares of Common Stock to be issued to each Holder as payment of the Redemption Price shall be determined by dividing the total Redemption Price then payable to such Holder by

the Redemption Market Price (as defined below) as of the applicable Redemption Date, and rounding up to the nearest whole share. Such shares shall be issued to such Holder in the same manner as dividend payment shares are issued pursuant to Section 3(f) above. The term “**Redemption Market Price**” shall mean the average of the Volume Weighted Average Prices of Common Stock for the ten (10) consecutive Trading Days prior to the applicable Redemption Date (not including such date).

(b) Mandatory Redemption. On the seven year anniversary of the Original Issue Date of the Series B-1 Preferred Stock (the “**Mandatory Redemption Date**”), the Corporation shall redeem all of the then outstanding Series B Preferred Stock at a price equal to 100% of the Stated Value of such shares of Series B Preferred Stock plus all accrued but unpaid dividends thereon to the date of payment in cash or Common Stock (or a combination thereof) at the election of the Corporation. The Corporation must deliver written notice to the Holders indicating the manner in which it intends to pay the Redemption Price at least twenty (20) Trading Days prior to the Mandatory Redemption Date. Failure to timely provide such written notice shall be deemed an election by the Corporation to make the payment in Common Stock. Notwithstanding the foregoing, the Corporation may not pay the Redemption Price by issuing Common Stock except to the extent the Equity Conditions are satisfied with respect to such Common Stock. Upon receipt of payment of the Redemption Price, each Holder will deliver the original certificate(s) evidencing the Series B Preferred Stock so redeemed to the Corporation, unless such Holder is awaiting receipt of a new certificate evidencing such shares from the Corporation pursuant to another provision hereof. At any time on or prior to the Mandatory Redemption Date, the Holders may convert any or all of the shares of Series B Preferred Stock, and the Corporation shall honor any such conversions in accordance with the terms hereof.

10. Triggering Events. At any time or times following the occurrence of a Triggering Event (other than a Change of Control), each Holder shall have the option to elect, by notice to the Corporation (an “**Event Notice**”), to require the Corporation to repurchase all or any portion of (i) the Series B Preferred Stock then held by such Holder, at a price per share equal to the greater of (A) 115% of the Stated Value plus all accrued but unpaid dividends thereon through the date of payment, or (B) the Event Equity Value of the Underlying Shares issuable upon conversion of such Series B Preferred Stock (including such accrued but unpaid dividends thereon), and (ii) any Underlying Shares issued to such Holder upon conversion of Series B Preferred Stock, at a price per share equal to the Event Equity Value of such Underlying Shares. The aggregate amount payable pursuant to the preceding sentence is referred to as the “**Event Price**.” The Corporation shall pay the aggregate Event Price to each Holder no later than the third Trading Day following the date of delivery of the Event Notice, and upon receipt thereof such Holder shall deliver original certificates evidencing the shares of Series B Preferred Stock and Underlying Shares so repurchased to the Corporation (to the extent such certificates have been delivered to the Holder).

11. Voting Rights. Except as otherwise provided herein or as required by applicable law, the Holders of the Series B Preferred Stock shall be entitled to vote on all matters on which holders of Common Stock are entitled to vote, including, without limitation, the election of directors. For such purposes, each Holder shall be entitled to a number of votes in respect of the shares of Series B Preferred Stock owned by it equal to the number of shares of Common Stock

into which such shares of Series B Preferred Stock are convertible as of the record date for the determination of stockholders entitled to vote on such matter, or if no record date is established, at the date such vote is taken or any written consent of stockholders is solicited. Except as otherwise provided herein, in any relevant agreement or as required by applicable law, the holders of the Series B Preferred Stock and Common Stock, respectively, shall vote together as a single class on all matters submitted to a vote or consent of stockholders; provided that so long as any shares of Series B Preferred Stock are outstanding, the Corporation shall not, without the affirmative vote of the Holders of a majority of the shares of Series B Preferred Stock then outstanding, (a) alter or change adversely the powers, preferences or rights given to the Series B Preferred Stock or alter or amend this Certificate of Designations (whether by merger, reorganization, consolidation or otherwise), (b) authorize or create any class of stock ranking as to dividends or distribution of assets upon a Liquidation Event or Change of Control senior to the Series B Preferred Stock, (c) amend its certificate of incorporation or bylaws so as to affect adversely any rights of the Holders (whether by merger, reorganization, consolidation or otherwise), (d) increase the authorized number of shares of Series B Preferred Stock, or (e) enter into any agreement with respect to the foregoing.

12. Charges, Taxes and Expenses. Issuance of certificates for shares of Series B Preferred Stock and for Underlying Shares issued on conversion of (or otherwise in respect of) the Series B Preferred Stock shall be made without charge to the Holders for any issue or transfer tax, withholding tax, transfer agent fee or other incidental tax or expense in respect of the issuance of such certificates, all of which taxes and expenses shall be paid by the Corporation; provided, however, that the Corporation shall not be required to pay any tax that may be payable in respect of any transfer involved in the registration of any certificates for Common Stock or Series B Preferred Stock in a name other than that of the Holder. The Holder shall be responsible for all other tax liability that may arise as a result of holding or transferring the Series B Preferred Stock or receiving Underlying Shares in respect of the Series B Preferred Stock.

13. Replacement Certificates. If any certificate evidencing Series B Preferred Stock or Underlying Shares is mutilated, lost, stolen or destroyed, the Corporation shall issue or cause to be issued in exchange and substitution for and upon cancellation hereof, or in lieu of and substitution for such certificate, a new certificate, but only upon receipt of evidence reasonably satisfactory to the Corporation of such loss, theft or destruction and customary and reasonable indemnity, if requested. Applicants for a new certificate under such circumstances shall also comply with such other reasonable regulations and procedures and pay such other reasonable third-party costs as the Corporation may prescribe.

14. Reservation of Underlying Shares. The Corporation covenants that it shall at all times reserve and keep available out of the aggregate of its authorized but unissued and otherwise unreserved Common Stock, solely for the purpose of enabling it to issue the Underlying Shares as required hereunder (i) a sufficient number of authorized but unissued and otherwise unreserved shares of Common Stock available to issue Underlying Shares upon any conversion of Shares or, if the number of shares so reserved is insufficient to make available a sufficient number of authorized but unissued and otherwise unreserved shares of Common Stock for such issuance within 60 days after the occurrence of such deficiency, and (ii) at least 5,825,000 authorized but unissued and otherwise unreserved shares of Common Stock (as

adjusted for any stock splits, stock combinations or similar events) less any shares of Common Stock issued upon conversion of the Shares, as dividends on the Shares, upon exercise of the Warrants or upon a redemption of the Shares. The Corporation covenants that all Underlying Shares so issuable and deliverable shall, upon issuance in accordance with the terms hereof, be duly and validly authorized, issued and fully paid and nonassessable.

15. Certain Adjustments. The Conversion Price is subject to adjustment from time to time as set forth in this Section 15.

(a) Stock Dividends and Splits. If the Corporation, at any time while Series B Preferred Stock is outstanding, (i) pays a stock dividend on its Common Stock or otherwise makes a distribution on any class of capital stock that is payable in shares of Common Stock (other than regular dividends on the Series B Preferred Stock), (ii) subdivides outstanding shares of Common Stock into a larger number of shares, or (iii) combines outstanding shares of Common Stock into a smaller number of shares, then in each such case the applicable Conversion Price for each series of Series B Preferred Stock shall be multiplied by a fraction of which the numerator shall be the number of shares of Common Stock outstanding immediately before such event and of which the denominator shall be the number of shares of Common Stock outstanding immediately after such event. Any adjustment made pursuant to clause (i) of this paragraph shall become effective immediately after the record date for the determination of stockholders entitled to receive such dividend or distribution, and any adjustment pursuant to clause (ii) or (iii) of this paragraph shall become effective immediately after the effective date of such subdivision or combination.

(b) Pro Rata Distributions. If the Corporation, at any time while Series B Preferred Stock is outstanding, distributes to all holders of Common Stock (i) evidences of its indebtedness, (ii) any security (other than a distribution of Common Stock covered by the preceding paragraph), (iii) rights or warrants to subscribe for or purchase any security, or (iv) any other asset other than cash paid as a dividend (in each case, "**Distributed Property**"), then, at the request of any Holder delivered before the 90th day after the record date fixed for determination of stockholders entitled to receive such distribution, the Corporation will deliver to such Holder, within five Trading Days after such request (or, if later, on the effective date of such distribution), the Distributed Property that such Holder would have been entitled to receive in respect of the Underlying Shares for which such Holder's Series B Preferred Stock could have been converted immediately prior to such record date. If such Distributed Property is not delivered to a Holder pursuant to the preceding sentence, then upon any conversion of Series B Preferred Stock that occurs after such record date, such Holder shall be entitled to receive, in addition to the Underlying Shares otherwise issuable upon such conversion, the Distributed Property that such Holder would have been entitled to receive in respect of such number of Underlying Shares had the Holder been the record holder of such Underlying Shares immediately prior to such record date.

(c) Change of Control Transactions. If, at any time while Series B Preferred Stock is outstanding, the Corporation proposes to enter into a transaction that would constitute a Change of Control, the Corporation shall mail written notice of the proposed Change of Control transaction to each record Holder not less than 20 Trading Days prior to the effective date thereof. Each Holder shall have the right to receive on the date of the consummation of such

Change of Control, at its option, either (i) for each Underlying Share that would have been issuable upon such conversion of the shares of Series B Preferred Stock upon the effective time of such Change of Control, the same kind and amount of securities, cash or property as it would have been entitled to receive upon the occurrence of such Change of Control if it had been, immediately prior to such Change of Control, the holder of one share of Common Stock or (ii) for each share of Series B Preferred Stock, cash in an amount equal to 115% of the Stated Value plus all accrued but unpaid dividends thereon through the date of payment. If holders of Common Stock are given any choice as to the securities, cash or property to be received in a Change of Control transaction, then each Holder shall be given the same choice as to the consideration it receives pursuant to clause (i) above. Each Holder shall make the election of which consideration it has elected to receive at least three (3) Trading Days prior to the effective date of a Change of Control. Failure of any Holder to timely provide written notice of its election shall be deemed an election by such Holder to receive the consideration specified in clause (ii) above.

(d) Subsequent Equity Sales.

(i) If, at any time while any shares of either series of Series B Preferred Stock are outstanding, the Corporation or any Subsidiary issues additional shares of Common Stock or rights, warrants, options or other securities or debt convertible, exercisable or exchangeable for shares of Common Stock or otherwise entitling any Person to acquire shares of Common Stock (collectively, "**Common Stock Equivalents**") at an effective net price to the Corporation per share of Common Stock (the "**Effective Price**") less than the lesser of (A) the Initial Purchase Price for a series of Series B Preferred Stock or (B) then-applicable Conversion Price for a series of Series B Preferred Stock, then the applicable Conversion Price for such series of Series B Preferred Stock shall be reduced to equal the Effective Price. For purposes of this paragraph, in connection with any issuance of any Common Stock Equivalents, (A) the maximum number of shares of Common Stock potentially issuable at any time upon conversion, exercise or exchange of such Common Stock Equivalents (the "**Deemed Number**") shall be deemed to be outstanding upon issuance of such Common Stock Equivalents, (B) the Effective Price applicable to such Common Stock shall equal the minimum dollar value of consideration payable to the Corporation to purchase such Common Stock Equivalents and to convert, exercise or exchange them into Common Stock (net of any discounts, fees, commissions and other expenses), divided by the Deemed Number, (C) no further adjustment shall be made to the Conversion Price upon the actual issuance of Common Stock upon conversion, exercise or exchange of such Common Stock Equivalents, and (D) upon the expiration or termination of any Common Stock Equivalent that does not result in the issuance of any Common Stock or additional Common Stock Equivalent, any adjustment that has been made under this paragraph (d) in respect of the issuance of such Common Stock Equivalent shall be readjusted as if such Common Stock Equivalent had not been issued (but shall in no event affect previously converted stock).

(ii) If, at any time while Series B Preferred Stock is outstanding, the Corporation or any Subsidiary issues Common Stock Equivalents with an Effective Price or a number of underlying shares that floats or resets or otherwise varies or is subject to adjustment based (directly or indirectly) on market prices of the Common Stock (a “**Floating Price Security**”), then for purposes of applying the preceding paragraph in connection with any subsequent conversion, the Effective Price will be determined separately on each Conversion Date and will be deemed to equal the lowest Effective Price at which any holder of such Floating Price Security is entitled to acquire Common Stock on such Conversion Date (regardless of whether any such holder actually acquires any shares on such date).

(iii) Notwithstanding the foregoing, no adjustment will be made under this paragraph (d) in respect of the issuance of Excluded Stock.

(e) Calculations. All calculations under this Section 15 shall be made to the nearest cent or the nearest 1/100th of a share, as applicable. The number of shares of Common Stock outstanding at any given time shall not include shares owned or held by or for the account of the Corporation, and the disposition of any such shares shall be considered an issue or sale of Common Stock.

(f) Notice of Adjustments. Upon the occurrence of each adjustment pursuant to this Section 15, the Corporation at its expense will promptly compute such adjustment in accordance with the terms hereof and prepare a certificate describing in reasonable detail such adjustment and the transactions giving rise thereto, including all facts upon which such adjustment is based. Upon written request, the Corporation will promptly deliver a copy of each such certificate to each Holder and to the Corporation’s Transfer Agent.

(g) Notice of Corporate Events. If the Corporation (i) declares a dividend or any other distribution of cash, securities or other property in respect of its Common Stock, including without limitation any granting of rights or warrants to subscribe for or purchase any capital stock of the Corporation or any Subsidiary, (ii) authorizes or approves, enters into any agreement contemplating or solicits stockholder approval for any Fundamental Transaction or (iii) authorizes the voluntary dissolution, liquidation or winding up of the affairs of the Corporation, then the Corporation shall deliver to each Holder a notice describing the material terms and conditions of such transaction, at least 20 calendar days prior to the applicable record or effective date on which a Person would need to hold Common Stock in order to participate in or vote with respect to such transaction, and the Corporation will take all steps reasonably necessary in order to insure that each Holder is given the practical opportunity to convert its Series B Preferred Stock prior to such time so as to participate in or vote with respect to such transaction; provided, however, that the failure to deliver such notice or any defect therein shall not affect the validity of the corporate action required to be described in such notice.

16. Limitation on Conversion.

(a) Notwithstanding anything to the contrary contained herein, the number of shares of Common Stock that may be acquired by any Holder upon any conversion of Series B

Preferred Stock (or otherwise in respect of the Series B Preferred Stock) shall be limited to the extent necessary to insure that, following such conversion (or other issuance), the total number of shares of Common Stock then beneficially owned by such Holder and its Affiliates and any other Persons whose beneficial ownership of Common Stock would be aggregated with the Holder's for purposes of Section 13(d) of the Exchange Act, does not exceed 4.999% (the "**Maximum Percentage**") of the total number of issued and outstanding shares of Common Stock (including for such purpose the shares of Common Stock issuable upon such conversion). For such purposes, beneficial ownership shall be determined in accordance with Section 13(d) of the Exchange Act and the rules and regulations promulgated thereunder. Each delivery of a Conversion Notice by a Holder will constitute a representation by such Holder that it has evaluated the limitation set forth in this paragraph and determined that issuance of the full number of Underlying Shares requested in such Conversion Notice is permitted under this paragraph. By written notice to the Corporation, any Holder may waive the provisions of this Section or increase or decrease the Maximum Percentage to any other percentage specified in such notice, but (i) any such waiver or increase will not be effective until the 61st day after such notice is delivered to the Corporation, and (ii) any such waiver or increase or decrease will apply only to such Holder and not to any other Holder and (iii) any such waiver or increase shall not be effective to the extent such waiver or increase would cause the Corporation to violate the Nasdaq Stockholder Approval Rule.

(b) For purposes of this Section 16, in determining the number of outstanding shares of Common Stock, a Holder may rely on the number of outstanding shares of Common Stock as reflected in (1) the Corporation's most recent Form 10-Q, Form 10-K or other public filing with the Commission, as the case may be, (2) a more recent public announcement by the Corporation, or (3) any other notice by the Corporation or its transfer agent setting forth the number of shares of Common Stock outstanding. Upon the written request of any Holder, the Corporation shall promptly, but in no even later than one (1) Trading Day following the receipt of such notice, confirm in writing to any such Holder the number of shares of Common Stock then outstanding.

17. Fractional Shares. The Corporation shall not be required to issue or cause to be issued fractional Underlying Shares on conversion of Series B Preferred Stock. If any fraction of an Underlying Share would, except for the provisions of this Section, be issuable upon conversion of Series B Preferred Stock, the number of Underlying Shares to be issued will be rounded up to the nearest whole share.

18. Notices. Any and all notices or other communications or deliveries hereunder (including without limitation any Conversion Notice) shall be in writing and shall be deemed given and effective on the earliest of (i) the date of transmission, if such notice or communication is delivered via facsimile at the facsimile number specified in this Section prior to 5:30 p.m. (New York City time) on a Trading Day, (ii) the next Trading Day after the date of transmission, if such notice or communication is delivered via facsimile at the facsimile number specified in this Section on a day that is not a Trading Day or later than 5:30 p.m. (New York City time) on any Trading Day, (iii) the Trading Day following the date of mailing, if sent by nationally recognized overnight courier service, or (iv) upon actual receipt by the party to whom such notice is required to be given. The addresses for such communications shall be: (i) if to the Corporation, to 10 Canal Park, Cambridge, Massachusetts 02141, facsimile: (617) 949-1722,

attention: Chief Executive Officer and General Counsel, or (ii) if to a Holder, to the address or facsimile number appearing on the Corporation's stockholder records or such other address or facsimile number as such Holder may provide to the Corporation in accordance with this Section.

19. Miscellaneous.

(a) The headings herein are for convenience only, do not constitute a part of this Certificate of Designations and shall not be deemed to limit or affect any of the provisions hereof.

(b) Any of the rights of the Holders of Series B Preferred Stock set forth herein may be waived by the affirmative vote of the holders of a majority of the shares of Series B Preferred Stock then outstanding. No waiver of any default with respect to any provision, condition or requirement of this Certificate of Designations shall be deemed to be a continuing waiver in the future or a waiver of any subsequent default or a waiver of any other provision, condition or requirement hereof, nor shall any delay or omission of either party to exercise any right hereunder in any manner impair the exercise of any such right.

IN WITNESS WHEREOF, Aspen Technology, Inc. has caused this Certificate of Designations to be duly executed as of this 6th day of February, 2002.

ASPEN TECHNOLOGY, INC.

By: /s/ Lisa W. Zappala

Name: Lisa W. Zappala

Title: Senior Vice President, Finance
and Chief Financial Officer

ADDITIONAL DEFINITIONS

"Affiliate" means any Person that, directly or indirectly through one or more intermediaries, controls or is controlled by or is under common control with a Person, as such terms are used in and construed under Rule 144. With respect to a Purchaser, any investment fund or managed account that is managed on a discretionary basis by the same investment manager as such Purchaser will be deemed to be an Affiliate of such Purchaser.

"Bankruptcy Event" means any of the following events: (a) the Corporation or any Material Subsidiary commences a case or other proceeding under any bankruptcy, reorganization, arrangement, adjustment of debt, relief of debtors, dissolution, insolvency or liquidation or similar law of any jurisdiction relating to the Corporation or any Material Subsidiary thereof; (b) there is commenced against the Corporation or any Material Subsidiary any such case or proceeding that is not dismissed within 60 days after commencement; (c) the Corporation or any Material Subsidiary is adjudicated insolvent or bankrupt or any order of relief or other order approving any such case or proceeding is entered; (d) the Corporation or any Material Subsidiary suffers any appointment of any custodian or the like for it or any substantial part of its property that is not discharged or stayed within 60 days; (e) the Corporation or any Material Subsidiary makes a general assignment for the benefit of creditors; (f) the Corporation or any Material Subsidiary fails to pay, or states in writing that it is unable to pay or is unable to pay, its debts generally as they become due; or (g) the Corporation or any Subsidiary, by any act or failure to act, expressly indicates its consent to, approval of or acquiescence in any of the foregoing or takes any corporate or other action that effects any of the foregoing.

"Change of Control" means the occurrence of any of the following in one or a series of related transactions: (i) an acquisition after the date hereof by an individual or legal entity or "group" (as described in Rule 13d-5(b)(1) under the Exchange Act) of a majority of the voting rights or equity interests in the Corporation; (ii) a replacement of more than one-half of the members of the Corporation's Board of Directors that is not approved by those individuals who are members of the Board of Directors on the date hereof (or other directors previously approved by such individuals); (iii) a merger or consolidation of the Corporation or a sale of all or substantially all of the assets of the Corporation in one or a series of related transactions, unless following such transaction or series of transactions, the holders of the Corporation's securities prior to the first such transaction continue to hold, directly or indirectly, at least a majority of the voting rights and equity interests in the surviving entity or acquirer of such assets; (iv) a recapitalization, reorganization or other transaction involving the Corporation that constitutes or results in a transfer of a majority of the voting rights or equity interests in the Corporation to Persons other than holders of the Corporation's voting equity securities prior to such transaction; or (v) consummation of a "Rule 13e-3 transaction" as defined in Rule 13e-3 under the Exchange Act with respect to the Corporation other than a Rule 13e-3 transaction in which no Purchaser's interest in the Corporation has been adversely changed or diluted in any material manner.

"Closing Price" means, for any date, the price determined by the first of the following clauses that applies: (a) if the Common Stock is then listed or quoted on an Eligible Market or any other national securities exchange, the last closing price per share of the Common Stock for such date (or the nearest preceding date) on the primary Eligible Market or exchange on which the Common Stock is then listed or quoted; (b) if prices for the Common Stock are then quoted on the OTC Bulletin Board, the average of the highest closing bid price and the lowest closing ask price per share of the Common Stock for such date (or the nearest preceding date) so quoted; (c) if prices for the Common Stock are then reported in the "Pink Sheets" published by the National Quotation Bureau Incorporated (or a similar organization or agency succeeding to its functions of reporting prices), the most recent bid price per share of the Common Stock so reported; or (d) in all other cases, the fair market value of a share of Common Stock as determined by an independent appraiser selected in good faith by a majority-in-interest of the Purchasers and the Corporation.

"Commission" means the Securities and Exchange Commission.

"Common Stock" means the common stock of the Corporation, par value \$0.10 per share.

"Effective Date" means the date that an Underlying Shares Registration Statement is declared effective by the Commission.

"Eligible Market" means the New York Stock Exchange, the American Stock Exchange, the Nasdaq National Market or the Nasdaq SmallCap Market.

"Event Equity Value" means 115% of the average of the Closing Prices for the five Trading Days preceding the date of delivery of the notice requiring payment of the Event Equity Value, provided that if the Corporation does not make such required payment (together with any other payments, expenses and liquidated damages then due and payable under the Transaction Documents) when due or, in the event the Corporation disputes in good faith the occurrence of the Triggering Event pursuant to which such notice relates, does not instead deposit such required payment (together with such other payments, expenses and liquidated damages then due) in escrow with an independent third-party escrow agent within five Trading Days of the date such required payment is due, then the Event Equity Value shall be 115% of the greater of (a) the average of the Closing Prices for the five Trading Days preceding the date of delivery of the notice requiring payment of the Event Equity Value and (b) the average of the Closing Prices for the five Trading Days preceding the date on which such required payment (together with such other payments, expenses and liquidated damages) is paid in full.

"Exchange Act" means the Securities Exchange Act of 1934, as amended.

"Excluded Stock" means any shares of Common Stock issued or issuable (A) upon exercise, conversion or exchange of any Common Stock Equivalents described in Schedule 3.1(g) to the Purchase Agreement (provided that such exercise or conversion occurs in accordance with the terms thereof, without amendment or modification, and that the applicable exercise or conversion price or ratio is described in such schedule); (B) to officers, directors, employees or consultants of the Corporation pursuant to a stock option plan, employee stock

purchase plan or other equity incentive plan approved by the Board of Directors of the Corporation; (C) pursuant to as part of a bona fide firm commitment underwritten public offering with a nationally recognized underwriter (including any "at the market offering," as defined in Rule 415(a)(4) under the Securities Act, only if such offering does not constitute an "equity line" and generates aggregate gross proceeds of at least \$50 million); (D) in connection with any transaction with a strategic investor, vendor, lessor, customer, supplier, marketing partner, developer or integrator or any similar arrangement, in each case the primary purpose of which is not to raise equity capital; (E) in connection with a transaction involving a merger or acquisition of an entity, business or assets (not principally for the purpose of obtaining cash); or (F) in connection with any other transaction for consideration other than cash up to 108,166 shares of Common Stock in the aggregate (as adjusted for stock splits, stock combinations and similar events).

"Material Subsidiary" means any significant subsidiary, as defined in Rule 1-02(w) of Regulation S-X promulgated by the Commission, of the Corporation.

"Person" means an individual or corporation, partnership, trust, incorporated or unincorporated association, joint venture, limited liability Corporation, joint stock Corporation, government (or an agency or subdivision thereof) or other entity of any kind.

"Purchaser" has the meaning set forth in the Purchase Agreement.

"Registration Rights Agreement" means the Registration Rights Agreement, dated as of February 6, 2002 among the Corporation and the Purchasers.

"Required Effectiveness Date" means the date on which an Underlying Shares Registration Statement is required to become effective pursuant to the Registration Rights Agreement.

"Rule 144" means Rule 144 promulgated by the Commission pursuant to the Securities Act, as such Rule may be amended from time to time, or any similar rule or regulation hereafter adopted by the Commission having substantially the same effect as such Rule.

"Securities" means the Shares, the Warrants and the Underlying Shares.

"Securities Act" means the Securities Act of 1933, as amended.

"Shares" means, collectively, the shares of Series B-1 Preferred Stock and Series B-2 Preferred Stock.

"Subsidiary" means any subsidiary, as defined in Rule 1-02(x) of Regulation S-X promulgated by the Commission, of the Corporation.

"Trading Day" means (a) any day on which the Common Stock is traded on its primary Trading Market, or (b) if the Common Stock is not then listed or quoted on any national securities exchange, market or trading or quotation facility, then a day on which trading occurs on the New York Stock Exchange (or any successor thereto).

"Trading Market" means the Nasdaq National Market or any other Eligible Market on which the Common Stock is then listed or quoted.

"Transaction Documents" means the Purchase Agreement, the Registration Rights Agreement, this Certificate of Designations and the Warrants.

"Triggering Event" means any of the following events: (a) immediately prior to any Bankruptcy Event; (b) the Common Stock is not listed or quoted, or is suspended from trading, on an Eligible Market for a period of five consecutive Trading Days or ten aggregate Trading Days in any 365 day period; (c) the Corporation fails for any reason to deliver a certificate evidencing any Securities to a Purchaser within ten Trading Days after delivery of such certificate is required pursuant to any Transaction Document or the exercise or conversion rights of the Holders pursuant to the Transaction Documents are otherwise suspended for any reason; (d) the Corporation fails to have available both (i) a sufficient number of authorized but unissued and otherwise unreserved shares of Common Stock available to issue Underlying Shares upon any exercise of the Warrants or any conversion of Shares and does not make available a sufficient number of authorized but unissued and otherwise unreserved shares of Common Stock for such issuance within 60 days after the occurrence of such deficiency and (ii) at least 5,825,000 authorized but unissued and otherwise unreserved shares of Common Stock (as adjusted for any stock splits, stock combinations or similar events), less reductions reasonably agreed to by the Purchasers to reflect shares of Common Stock issued upon conversion of the Shares (and, therefore, reduced aggregate dividend payments), as dividends on the Shares, upon exercise of the Warrants or upon a redemption of the Shares; (e) at any time after the Required Effectiveness Date, any Common Stock issuable pursuant to the Transaction Documents is not listed on an Eligible Market; (f) any other Event (as defined in the Registration Rights Agreement) occurs and remains uncured for 60 days; (g) the Corporation fails to make any cash payment required under the Transaction Documents and such failure is not cured within five days after notice of such default is first given to the Corporation by a Purchaser; (h) the Corporation defaults in the timely performance of any other obligation under the Transaction Documents and such default continues uncured for a period of 20 days after the date on which notice of such default is first given to the Corporation by a Purchaser (it being understood that no prior notice need be given in the case of a default that cannot reasonably be cured within 20 days), or (i) any Change of Control event.

"Underlying Shares" means the shares of Common Stock issuable upon conversion of, or in redemption of, the Shares, as payment of dividends on the Shares and upon exercise of the Warrants, and any securities issued in exchange for, or upon conversion or in respect of, such shares.

"Underlying Shares Registration Statement" means a registration statement meeting the requirements set forth in the Registration Rights Agreement and covering the resale of the Underlying Shares by the Purchasers.

"Volume Weighted Average Price" means, with respect to a Trading Day, the average of the daily volume weighted average trading price (the total dollar amount traded on each day divided by trading volume for such day) of the Common Stock for the regular Trading Day

session as reported at 4:15 (New York time) as reported by Bloomberg, LP function key HP by using W to calculate the daily weighted average.

"Warrants" means the Common Stock purchase warrants issued pursuant to the Purchase Agreement.

FORM OF CONVERSION NOTICE

(To be executed by the registered Holder
in order to convert shares of Series B Preferred Stock)

The undersigned hereby elects to convert the number of shares of Series B Convertible Preferred Stock indicated below into shares of common stock, par value \$0.10 per share (the "**Common Stock**"), of Aspen Technology, Inc., a Delaware corporation (the "**Corporation**"), according to the conditions hereof, as of the date written below.

Date to Effect Conversion

Number and series of shares of Series B Preferred Stock
owned prior to Conversion

Number and series of shares of Series B Preferred Stock to
be Converted

Stated Value of shares of Series B Preferred Stock to be
Converted (including _____ of dividends
added under Section 2(b) of the Registration Rights
Agreement)

Number of shares of Common Stock to be Issued

Applicable Conversion Price

Number and series of shares of Series B Preferred Stock
subsequent to Conversion

Name of Holder

By: _____

Name: _____

Title: _____

**CERTIFICATE OF CORRECTION
FILED TO CORRECT A CERTAIN ERROR IN THE
CERTIFICATE OF DESIGNATIONS OF
SERIES B-1 CONVERTIBLE PREFERRED STOCK AND
SERIES B-2 CONVERTIBLE PREFERRED STOCK OF
ASPEN TECHNOLOGY, INC.**

Aspen Technology Inc., a corporation organized and existing under the by virtue of the General Corporation Law of the State of Delaware DOES HEREBY CERTIFY:

1. The name of the corporation is Aspen Technology, Inc.

2. That a Certificate of Designations of Series B-1 Convertible Preferred Stock and Series B-2 Convertible Preferred Stock was filed with the Secretary of State of the State of Delaware on February 6, 2002, and that said Certificate requires correction as permitted by Section 103 of the General Corporation Law of the State of Delaware.

3. The inaccuracy or defect of said Certificate to be corrected is set forth in Section 2 of the Certificate as follows:

“**Initial Purchase Price**” means (i) in the case of Series B-1 Preferred Stock, \$1,000, and (ii) in the case of Series B-2 Preferred Stock, the greater of (x) the lesser of (a) the average of the daily Volume Weighted Average Prices over the twenty (20) consecutive Trading Day period ending on February 27, 2002 (including such date) or (b) the average of the daily Volume Weighted Average Prices over the three (3) consecutive Trading Day period ending on February 27, 2002 (including such date), or (y) \$15.00 (as adjusted for any stock splits, stock dividends, stock combinations or similar events occurring after the Original Issue Date of the Series B-1 Preferred Stock and prior to the Original Issue Date of the Series B-2 Preferred Stock).”

4. The corrected portion of Section 2 should read as follows:

“**Initial Purchase Price**” means (i) in the case of Series B-1 Preferred Stock, \$17.75, and (ii) in the case of Series B-2 Preferred Stock, the greater of (x) the lesser of (a) the average of the daily Volume Weighted Average Prices over the twenty (20) consecutive Trading Day period ending on February 27, 2002 (including such date) or (b) the average of the daily Volume Weighted Average Prices over the three (3) consecutive Trading Day period ending on February 27, 2002 (including such date), or (y) \$15.00 (as adjusted for any stock splits, stock dividends, stock combinations or similar events occurring after the Original Issue Date of the Series B-1 Preferred Stock and prior to the Original Issue Date of the Series B-2 Preferred Stock).”

IN WITNESS WHEREOF, Aspen Technology, Inc. has caused this Certificate to be signed by its Chief Financial Officer this 12th day of February, 2002.

ASPEN TECHNOLOGY, INC.

By: /s/ Lisa W. Zappala
Lisa W. Zappala
Chief Financial Officer

ASPEN TECHNOLOGY, INC.

CERTIFICATE OF DESIGNATIONS
OF
SERIES B-I CONVERTIBLE PREFERRED STOCK
AND
SERIES B-II CONVERTIBLE PREFERRED STOCK

(Pursuant to Section 151 of the Delaware General Corporation Law)

Aspen Technology, Inc., a Delaware corporation (the "Corporation"), in accordance with the provisions of Section 103 of the Delaware General Corporation Law (the "DGCL") does hereby certify that, in accordance with Section 141(c) of the DGCL, the following resolution was duly adopted by the Board of Directors of the Corporation as of March 14, 2002:

RESOLVED, that two series of Preferred Stock, Series B-I Convertible Preferred Stock, par value \$0.10 per share, and Series B-II Convertible Preferred Stock, par value \$0.10 per share, of the Corporation are hereby created and the designation, number of shares, powers, preferences, rights, qualifications, limitations and restrictions thereof (in addition to any provisions set forth in the Certificate of Incorporation of the Corporation which are applicable to the Preferred Stock of all classes and series) are as follows:

SERIES B-I CONVERTIBLE PREFERRED STOCK
AND
SERIES B-II CONVERTIBLE PREFERRED STOCK

1. Designation, Amount, Par Value and Stated Value. The following two series of preferred stock shall be designated as (i) the Corporation's Series B-I Convertible Preferred Stock (the "**Series B-I Preferred Stock**"), and the number of shares so designated shall be 40,000, and (ii) the Corporation's Series B-II Convertible Preferred Stock (the "**Series B-II Preferred Stock**"), and the number of shares so designated shall be 20,000. The Series B-I Preferred Stock and Series B-II Preferred Stock are sometimes collectively referred to as the "**Series B Preferred Stock**." Each share of Series B Preferred Stock shall have a par value of \$0.10 per share and a stated value equal to \$1,000 plus any amount added to the Stated Value pursuant to Section 3(c) hereof or Section 2(f) of the Registration Rights Agreement (the "**Stated Value**").

2. Definitions. In addition to the terms defined elsewhere in this Certificate of Designations, (a) the terms set forth in Exhibit A hereto have the meanings indicated therein and (b) the following terms have the meanings indicated:

"**Conversion Price**" means the Initial Conversion Price as of the applicable Deemed Issue Date, as adjusted pursuant to Section 15 below.

"**Deemed Issue Date**" means (i) February 6, 2002, with respect to the 30,000 shares of Series B-I Preferred Stock originally issued on March 19, 2002 in exchange for shares of the Series B-I Convertible Preferred Stock of the Corporation, (ii) March 19, 2002, with respect to the 10,000 shares of Series B-I originally issued on such date, and (iii) February 28, 2002, with respect to the Series B-II Preferred Stock, in each case regardless of the number of transfers of any particular shares of such Series B Preferred Stock and regardless of the number of certificates that may be issued to evidence such Series B Preferred Stock.

“Equity Conditions” means, with respect to a specified issuance of shares of Common Stock, that each of the following conditions is satisfied: (i) the number of authorized but unissued and otherwise unreserved shares of Common Stock is sufficient for such issuance; (ii) such shares of Common Stock are registered for resale by the Holders and may be sold by the Holders pursuant to an effective Underlying Shares Registration Statement, such shares may be sold without volume restrictions pursuant to Rule 144(k) under the Securities Act or all Underlying Shares owned by each Holder may be sold without volume restrictions pursuant to Rule 144 under the Securities Act; (iii) the Common Stock is listed or quoted (and is not suspended from trading) on an Eligible Market and such shares of Common Stock are approved for listing upon issuance; (iv) such issuance would be permitted in full without violating Section 16 hereof or the rules or regulations of any Trading Market; (v) no Bankruptcy Event has occurred; (vi) the Corporation is not in default with respect to any material obligation hereunder or under any other Transaction Document; and (vii) none of the following events have occurred and are continuing (A) an event constituting a Triggering Event or (B) an event that with the passage of time and without being cured would constitute a Triggering Event other than a pending, proposed or intended Change of Control.

“Holder” means any holder of Series B Preferred Stock.

“Initial Conversion Price” means (i) in the case of Series B-I Preferred Stock, \$19.9703, and (ii) in the case of Series B-II Preferred Stock, \$17.66.

“Initial Purchase Price” means (i) in the case of Series B-I Preferred Stock, \$17.75, and (ii) in the case of Series B-II Preferred Stock, \$15.69.

“Junior Securities” means the Common Stock and all other equity or equity equivalent securities of the Corporation, other than Series C Preferred Stock.

“Purchase Agreement” means the Amended and Restated Securities Purchase Agreement, dated March 19, 2002, among the Corporation and the original purchasers of the Series B Preferred Stock, as amended from time to time.

“Series C Preferred Stock” means the Series C preferred stock of the Corporation to be authorized and issued as contemplated by the Purchase Agreement.

3. Dividends.

(a) Holders shall be entitled to receive, out of funds legally available therefor, and the Corporation shall pay, cumulative dividends on the Series B Preferred Stock at the rate per share (as a percentage of the Stated Value per share) of 4% per annum, payable quarterly in arrears commencing on June 30, 2002 and thereafter on each March 31, June 30, September 30 and December 31, except if such date is not a Trading Day, in which case such dividend shall be payable on the next succeeding Trading Day (each, a **“Dividend Payment Date”**). Dividends on the Series B Preferred Stock shall be calculated on the basis of a 365-day year, shall accrue daily commencing on the Deemed Issue Date for the applicable shares of Series B Preferred Stock, and shall be deemed to accrue from such date whether or not earned or declared and whether or not there are profits, surplus or other funds of the Corporation legally available for the payment of dividends.

(b) Subject to the conditions and limitations set forth below, the Corporation may pay required dividends (i) in cash or (ii) in Common Stock. The Corporation must deliver written notice (the **“Dividend Notice”**) to the Holders indicating the manner in which it intends to pay dividends at least ten Trading Days prior to each Dividend Payment Date, but the Corporation may indicate in any such notice that the election contained therein shall continue for subsequent Dividend Payment Dates until revised.

Failure to timely provide such written notice shall be deemed an election by the Corporation to pay the dividend in Common Stock, unless payment of dividends in such manner is not permitted at the time of a dividend, in which case such dividend shall be payable in cash. All dividends payable in respect of the Series B Preferred Stock on any Dividend Payment Date must be paid in the same manner.

(c) Notwithstanding the foregoing, the Corporation may not pay dividends by issuing Common Stock unless, at such time, the Equity Conditions are satisfied with respect to such Common Stock dividend shares and all of the Underlying Shares then issuable upon conversion in full of all outstanding Series B Preferred Stock. If the Corporation is required to pay dividends in cash on any Dividend Payment Date and does not timely make such payment, any Holder may (but shall not be required to) treat such cash amount as if it had been added to the Stated Value as of such Dividend Payment Date. If the Corporation may not legally pay dividends on any Dividend Payment Date, such amount shall be added to the Stated Value as of such Dividend Payment Date.

(d) So long as any Series B Preferred Stock is outstanding, (i) neither the Corporation nor any Subsidiary shall, directly or indirectly, redeem, purchase or otherwise acquire any Junior Securities or set aside any monies for such a redemption, purchase or other acquisition in excess of \$10,000,000 per calendar year, provided that the Corporation shall be entitled to carry forward any amount not used in any calendar year to subsequent calendar years, and (ii) the Corporation shall not pay or declare any dividend or make any distribution on any Junior Securities, except pro rata stock dividends on the Common Stock payable in additional shares of Common Stock and dividends due and paid in the ordinary course on preferred stock of the Corporation, in each case only at such times as the Corporation is in compliance with its payment and other obligations hereunder.

(e) In the event that the Corporation elects to pay dividends in shares of Common Stock, the number of shares of Common Stock to be issued to each Holder as such dividend shall be (i) determined by dividing the total dividend then payable to such Holder by the Dividend Market Price (as defined below) as of the applicable Dividend Payment Date, and rounding up to the nearest whole share, and (ii) paid to such Holder in accordance with Section 3(f) below. The term “**Dividend Market Price**” shall mean the average of the Volume Weighted Average Prices of Common Stock for the five consecutive Trading Days prior to the applicable Dividend Payment Date (not including such date).

(f) In the event that any dividends are paid in Common Stock the Corporation shall, on or before the third Trading Day following the payment date of such dividend, (i) issue and deliver to such Holder a certificate, registered in the name of the Holder or its designee, for the number of shares of Common Stock to which the Holder shall be entitled or (ii) if and when the applicable shares of Common Stock may be held in a balance account with The Depository Trust Corporation through its Deposit Withdrawal Agent Commission System and after the Holder has notified the Corporation that this clause (ii) shall apply, credit the number of shares of Common Stock to which the Holder shall be entitled to the Holder’s or its designee’s balance account with The Depository Trust Corporation through its Deposit Withdrawal Agent Commission System.

4. Registration of Series B Preferred Stock. The Corporation shall register shares of the Series B Preferred Stock, upon records to be maintained by the Corporation for that purpose (the “**Series B Preferred Stock Register**”), in the name of the record Holders thereof from time to time. The Corporation may deem and treat the registered Holder of shares of Series B Preferred Stock as the absolute owner thereof for the purpose of any conversion hereof or any distribution to such Holder, and for all other purposes, absent actual notice to the contrary.

5. Registration of Transfers. The Corporation shall register the transfer of any shares of Series B Preferred Stock in the Series B Preferred Stock Register, upon surrender of certificates evidencing such shares to the Corporation at its address specified herein. Upon any such registration or transfer, a new

certificate evidencing the shares of Series B Preferred Stock so transferred shall be issued to the transferee and a new certificate evidencing the remaining portion of the shares not so transferred, if any, shall be issued to the transferring Holder.

6. Liquidation.

(a) In the event of any liquidation, dissolution or winding up of the Corporation, either voluntary or involuntary (a "**Liquidation Event**"), the Holders of Series B Preferred Stock shall be entitled to receive, prior and in preference to any distribution of any of the assets or surplus funds of the Corporation to the holders of Junior Securities by reason of their ownership thereof, an amount per share in cash equal to the Stated Value for each share of Series B Preferred Stock then held by them (as adjusted for any stock splits, stock dividends, stock combinations and similar transactions with respect to the Series B Preferred Stock), plus all accrued but unpaid dividends on such Series B Preferred Stock as of the date of such event (the "**Series B Stock Liquidation Preference**"). If, upon the occurrence of a Liquidation Event, the assets and funds thus distributed among the Holders of the Series B Preferred Stock shall be insufficient to permit the payment to such Holders of the full Series B Stock Liquidation Preference, then the entire assets and funds of the Corporation legally available for distribution shall be distributed ratably among the Holders of the Series B Preferred Stock in proportion to the aggregate Series B Stock Liquidation Preference that would otherwise be payable to each of such Holders.

(b) In the event of a Liquidation Event, following completion of the distributions required by the first sentence of paragraph (a) of this Section 6, if assets or surplus funds remain in the Corporation, the holders of the Common Stock shall share ratably in all remaining assets of the Corporation, based on the number of shares of Common Stock then outstanding.

(c) The Corporation shall mail written notice of any Liquidation Event to each record Holder not less than 20 Trading Days prior to the payment date or effective date thereof.

7. Conversion.

(a) Conversion at Option of Holder. At the option of any Holder, any Series B Preferred Stock held by such Holder may be converted into Common Stock based on the applicable Conversion Price then in effect for such series of Series B Preferred Stock. A Holder may convert Series B Preferred Stock into Common Stock pursuant to this paragraph at any time and from time to time after the applicable Deemed Issue Date, by delivering to the Corporation a Conversion Notice, in the form attached hereto as Exhibit B, appropriately completed and duly signed, and the date any such Conversion Notice is delivered to the Corporation (as determined in accordance with the notice provisions hereof) is a "**Conversion Date.**"

(b) Conversion at Option of Corporation. If, at any time after the Effective Date, the Closing Price on each of 20 consecutive Trading Days (a "**Qualifying Period**") exceeds 135% of the applicable Conversion Price for a series of Series B Preferred Stock (each, a "**Threshold Price**"), the Corporation may require the Holders to convert the shares of such series into Common Stock based on the applicable Conversion Price. The Corporation may require a conversion pursuant to this paragraph by delivering irrevocable written notice of such election to the Holders, and the fifth Trading Day after the date any such notice is delivered to the Holders (as determined in accordance with the notice provisions hereof) will be the "**Conversion Date**" for such required conversion. Notwithstanding the foregoing, (i) if the Corporation has publicly announced a pending, proposed or intended Change of Control and the Qualifying Period includes any Trading Days on or after the date of such public announcement, then to the extent that a Holder has not had the ability to sell all or a portion of the Underlying Shares pursuant to Rule 144 under the Securities Act or an effective Underlying Share Registration Statement for at least 20 Trading Days after the date of the public announcement of such Change of Control, the Conversion Date

with respect to those shares of Series B Preferred Stock that are convertible into the portion of the Underlying Shares that are not so saleable shall be deferred until the date on which such Underlying Shares shall have been so saleable for a period of 20 Trading Days from the date of such public announcement (and if no such period of 20 Trading Days occurs prior to the Change of Control with respect to any such Underlying Shares then the notice of conversion applicable to those shares of Series B Preferred Stock convertible into such Underlying Shares shall be void) and (ii) the Corporation may not require any conversion under this paragraph (and any notice thereof will be void), unless from the beginning of such period of 20 consecutive Trading Days through the Conversion Date, (A) the Equity Conditions are satisfied with respect to all of the Underlying Shares then issuable upon conversion in full of all outstanding Series B Preferred Stock, and (B) the Closing Price equals or exceeds the applicable Threshold Price.

8. Mechanics of Conversion.

(a) The number of Underlying Shares issuable upon any conversion of shares of either series of Series B Preferred Stock hereunder shall equal (i) the Stated Value of such share of Series B Preferred Stock to be converted, divided by the applicable Conversion Price on the Conversion Date, plus (ii) the amount of any accrued but unpaid dividends on such share of Series B Preferred Stock through the Conversion Date, divided by the applicable Conversion Price on the Conversion Date.

(b) Upon conversion of any Series B Preferred Stock, the Corporation shall promptly (but in no event later than three Trading Days after the Conversion Date) issue or cause to be issued and cause to be delivered to or upon the written order of the Holder and in such name or names as the Holder may designate a certificate for the Underlying Shares issuable upon such conversion, free of restrictive legends unless such Underlying Shares are not then freely transferable without volume restrictions pursuant to Rule 144(k) under the Securities Act. The Holder, or any Person so designated by the Holder to receive Underlying Shares, shall be deemed to have become holder of record of such Underlying Shares as of the Conversion Date. If and when such Underlying Shares may be freely transferred pursuant to Rule 144 under the Securities Act or pursuant to an effective Underlying Shares Registration Statement, the Corporation shall use its best efforts to deliver Underlying Shares hereunder electronically through the Depository Trust Corporation or another established clearing corporation performing similar functions, and shall issue such Underlying Shares in the same manner as dividend payment shares are issued pursuant to Section 3(f) above.

(c) A Holder shall not be required to deliver the original certificate(s) evidencing the Series B Preferred Stock being converted in order to effect a conversion of such Series B Preferred Stock. Execution and delivery of the Conversion Notice shall have the same effect as cancellation of the original certificate(s) and issuance of a new certificate evidencing the remaining shares of Series B Preferred Stock. Upon surrender of a certificate following one or more partial conversions, the Corporation shall promptly deliver to the Holder a new certificate representing the remaining shares of Series B Preferred Stock.

(d) The Corporation's obligations to issue and deliver Underlying Shares upon conversion of Series B Preferred Stock in accordance with the terms hereof are absolute and unconditional, irrespective of any action or inaction by any Holder to enforce the same, any waiver or consent with respect to any provision hereof, the recovery of any judgment against any Person or any action to enforce the same, or any setoff, counterclaim, recoupment, limitation or termination, or any breach or alleged breach by any Holder or any other Person of any obligation to the Corporation or any violation or alleged violation of law by any Holder or any other Person, and irrespective of any other circumstance which might otherwise limit such obligation of the Corporation to any Holder in connection with the issuance of such Underlying Shares.

9. Redemption Rights.

(a) Holders' Redemption Rights.

(i) Subject to the provisions of Section 9(a)(iii) below, if, at any time on or after August 7, 2003, in the case of the Series B-I Preferred Stock, and August 28, 2003, in the case of the Series B-II Preferred Stock (either such date being referred to as an "Initial Redemption Date"), the average of the Closing Prices for 20 consecutive Trading Days immediately preceding the applicable Initial Redemption Date or any date thereafter is below the applicable Conversion Price of such series of Series B Preferred Stock, the Holder of such Series B Preferred Stock, upon 15 Trading Days' advance notice (the "**Redemption Notice**") to the Corporation, shall have the right to request the Corporation to redeem that number of shares of Series B Preferred Stock held by such Holders as is set forth in the Redemption Notice at a per share price (the "**Redemption Price**") equal to the Stated Value of such shares of Series B Preferred Stock to be redeemed plus all accrued but unpaid dividends thereon to the date of payment.

(ii) Notwithstanding anything to the contrary in Section 9(a)(i), the Holders of the Series B Preferred Stock (x) may not deliver a Redemption Notice with respect to a particular series of Series B Preferred Stock until after the applicable Initial Redemption Date, (y) may not deliver a Redemption Notice covering in aggregate more than \$20,000,000 of Stated Value, with respect to the Series B-I Preferred Stock, until after February 7, 2004, and \$10,000,000 of Stated Value, with respect to the Series B-II Preferred Stock, until after February 28, 2004, and (z) may deliver a Redemption Notice with respect to a particular series of Series B Preferred Stock after February 7, 2004 or February 28, 2004, as applicable, irrespective of whether the average of the Closing Prices for the 20 consecutive Trading Days is below the applicable Conversion Price of such series of Series B Preferred Stock and without limit as to Stated Value.

(iii) Within three Trading Days of receipt of a Redemption Notice, the Corporation will deliver written notice to each Holder of the applicable series of Series B Preferred Stock (the "**Corporation Notice**"), confirming pursuant to the Redemption Notice the aggregate amount of such Series B Preferred Stock being redeemed, the Redemption Date (as defined below) and the applicable Redemption Prices. Notwithstanding the aggregate shares set forth in the Redemption Notice, each Holder of such series of Series B Preferred Stock shall have the right to elect to have all or any number of shares of the applicable series of Series B Preferred Stock held by such Holder redeemed on the Redemption Date at the applicable Redemption Price by notifying the Corporation within five Trading Days of receipt of the Corporation Notice of its election to do so, and specifying the number of shares as to which such election is made. In the event that the aggregate number of shares of Series B Preferred Stock to be redeemed on such Redemption Date exceeds the aggregate limitations set forth in Section 9(a)(ii), the number of shares to be redeemed from each Holder shall be reduced pro rata based upon the aggregate number of shares of the applicable series of Series B Preferred Stock held by each Holder requesting redemption.

(iv) The Redemption Notice will specify the effective date of the redemption, which must be a Trading Day at least 15 Trading Days after the date such notice is delivered (the "**Redemption Date**"), and the entire Redemption Price may be paid at the Corporation's option in cash, in Common Stock or in Series C Preferred Stock. The Corporation must deliver written notice to the Holders indicating the manner in which it intends to pay the Redemption Price at least three Trading Days after receipt of the Redemption Notice. Failure to timely provide such written notice shall be deemed an election by the Corporation to make the payment in Common Stock. Notwithstanding the foregoing, the Corporation (a) may not pay the Redemption Price by issuing Common Stock unless, at such time, the Equity Conditions are satisfied with respect to such

Common Stock and (b) may not pay the Redemption Price by issuing Series C Preferred Stock unless, at such time, the Equity Conditions are not satisfied.

(v) Upon receipt of payment of the Redemption Price, each Holder will deliver the original certificate(s) evidencing the Series B Preferred Stock so redeemed to the Corporation, unless such Holder is awaiting receipt of a new certificate evidencing such shares from the Corporation pursuant to another provision hereof. At any time on or prior to the Redemption Date, the Holders may convert any or all of the shares of Series B Preferred Stock, and the Corporation shall honor any such conversions in accordance with the terms hereof.

(vi) In the event that the Corporation elects to pay the Redemption Price in shares of Common Stock, the number of shares of Common Stock to be issued to each Holder as payment of the Redemption Price shall be determined by dividing the total Redemption Price then payable to such Holder by the Redemption Market Price (as defined below) as of the applicable Redemption Date, and rounding up to the nearest whole share. Such shares shall be issued to such Holder in the same manner as dividend payment shares are issued pursuant to Section 3(f) above. The term "**Redemption Market Price**" shall mean the average of the Volume Weighted Average Prices of Common Stock for the ten consecutive Trading Days prior to the applicable Redemption Date (not including such date).

(vii) In the event that the Corporation elects to pay the Redemption Price in shares of Series C Preferred Stock, the number of shares of Series C Preferred Stock to be issued to each Holder in payment of the Redemption Price shall be determined by dividing the total Redemption Price then payable to such Holder with respect to all of such Holder's shares of Series B Preferred Stock by \$10,000 (the initial stated value per share of the Series C Preferred Stock) and rounding downward to the nearest whole number of shares of Series C Preferred Stock. In addition, the Corporation shall pay to Holder in cash the amount, if any, by which the Redemption Price payable to such Holder exceeds the aggregate stated value of the Series C Preferred Stock issued pursuant to the preceding sentence. If the total Redemption Price payable to a Holder is less than \$10,000, then the Corporation shall pay such amount to such Holder entirely in cash.

(b) **Mandatory Redemption.** On February 7, 2009 (the "**Mandatory Redemption Date**"), the Corporation shall redeem all of the then outstanding Series B Preferred Stock at a price equal to 100% of the Stated Value of such shares of Series B Preferred Stock plus all accrued but unpaid dividends thereon to the date of payment in cash, Common Stock or Series C Preferred Stock (or a combination thereof) at the election of the Corporation. The Corporation must deliver written notice to the Holders indicating the manner in which it intends to pay the Redemption Price at least 20 Trading Days prior to the Mandatory Redemption Date. Failure to timely provide such written notice shall be deemed an election by the Corporation to make the payment in Common Stock. Notwithstanding the foregoing, the Corporation (i) may not pay the Redemption Price by issuing Common Stock unless, at such time, the Equity Conditions are satisfied with respect to such Common Stock and (ii) may not pay the Redemption Price by issuing Series C Preferred Stock unless, at such time, the Equity Conditions are not satisfied. Upon receipt of payment of the Redemption Price, each Holder will deliver the original certificate(s) evidencing the Series B Preferred Stock so redeemed to the Corporation, unless such Holder is awaiting receipt of a new certificate evidencing such shares from the Corporation pursuant to another provision hereof. In the event that the Corporation elects to pay the Redemption Price in shares of Common Stock or Series C Preferred Stock, the number of such shares shall be determined in the manner described in Section 9(a)(vi) or (vii), as the case may be. At any time on or prior to the Mandatory Redemption Date, the Holders may convert any or all of the shares of Series B Preferred Stock, and the Corporation shall honor any such conversions in accordance with the terms hereof.

10. Triggering Events. At any time or times following the occurrence of a Triggering Event (other than a Change of Control), each Holder shall have the option to elect, by notice to the Corporation (an “**Event Notice**”), to require the Corporation to repurchase all or any portion of (i) the Series B Preferred Stock then held by such Holder, at a price per share equal to the greater of (A) 115% of the Stated Value plus all accrued but unpaid dividends thereon through the date of payment, or (B) the Event Equity Value of the Underlying Shares issuable upon conversion of such Series B Preferred Stock (including such accrued but unpaid dividends thereon), and (ii) any Underlying Shares issued to such Holder upon conversion of Series B Preferred Stock, at a price per share equal to the Event Equity Value of such Underlying Shares. The aggregate amount payable pursuant to the preceding sentence is referred to as the “**Event Price**.” The Corporation shall pay the aggregate Event Price to each Holder in cash or Series C Preferred Stock (or a combination thereof), at the election of the Corporation, by no later than the third Trading Day following the date of delivery of the Event Notice, and upon receipt thereof such Holder shall deliver original certificates evidencing the shares of Series B Preferred Stock and Underlying Shares so repurchased to the Corporation (to the extent such certificates have been delivered to the Holder). In the event that the Corporation elects to pay the Redemption Price in shares of Series C Preferred Stock, the number of such shares shall be determined in the manner described in Section 9(a)(vii).

11. Voting Rights. Except as otherwise provided herein or as required by applicable law, the Holders of the Series B Preferred Stock shall be entitled to vote on all matters on which holders of Common Stock are entitled to vote, including, without limitation, the election of directors. For such purposes, each Holder shall be entitled to a number of votes in respect of the shares of Series B Preferred Stock owned by it equal to the number of shares of Common Stock into which such shares of Series B Preferred Stock are convertible as of the record date for the determination of stockholders entitled to vote on such matter, or if no record date is established, at the date such vote is taken or any written consent of stockholders is solicited. Except as otherwise provided herein, in any relevant agreement or as required by applicable law, the holders of the Series B Preferred Stock and Common Stock, respectively, shall vote together as a single class on all matters submitted to a vote or consent of stockholders; provided that so long as any shares of Series B Preferred Stock are outstanding, the Corporation shall not, without the affirmative vote of the Holders of a majority of the shares of Series B Preferred Stock then outstanding, (a) alter or change adversely the powers, preferences or rights given to the Series B Preferred Stock or alter or amend this Certificate of Designations (whether by merger, reorganization, consolidation or otherwise), (b) authorize or create any class of stock ranking as to dividends or distribution of assets upon a Liquidation Event or Change of Control senior to the Series B Preferred Stock, (c) amend its certificate of incorporation or bylaws so as to affect adversely any rights of the Holders (whether by merger, reorganization, consolidation or otherwise), (d) increase the authorized number of shares of Series B Preferred Stock, or (e) enter into any agreement with respect to the foregoing.

12. Charges, Taxes and Expenses. Issuance of certificates for shares of Series B Preferred Stock and for Underlying Shares issued on conversion of (or otherwise in respect of) the Series B Preferred Stock shall be made without charge to the Holders for any issue or transfer tax, withholding tax, transfer agent fee or other incidental tax or expense in respect of the issuance of such certificates, all of which taxes and expenses shall be paid by the Corporation; provided, however, that the Corporation shall not be required to pay any tax that may be payable in respect of any transfer involved in the registration of any certificates for Common Stock or Series B Preferred Stock in a name other than that of the Holder. The Holder shall be responsible for all other tax liability that may arise as a result of holding or transferring the Series B Preferred Stock or receiving Underlying Shares in respect of the Series B Preferred Stock.

13. Replacement Certificates. If any certificate evidencing Series B Preferred Stock or Underlying Shares is mutilated, lost, stolen or destroyed, the Corporation shall issue or cause to be issued in exchange and substitution for and upon cancellation hereof, or in lieu of and substitution for such

certificate, a new certificate, but only upon receipt of evidence reasonably satisfactory to the Corporation of such loss, theft or destruction and customary and reasonable indemnity, if requested. Applicants for a new certificate under such circumstances shall also comply with such other reasonable regulations and procedures and pay such other reasonable third-party costs as the Corporation may prescribe.

14. Reservation of Underlying Shares. The Corporation covenants that it shall at all times reserve and keep available out of the aggregate of its authorized but unissued and otherwise unreserved Common Stock, solely for the purpose of enabling it to issue the Underlying Shares as required hereunder (i) a sufficient number of authorized but unissued and otherwise unreserved shares of Common Stock available to issue Underlying Shares upon any conversion of Shares or, if the number of shares so reserved is insufficient to make available a sufficient number of authorized but unissued and otherwise unreserved shares of Common Stock for such issuance within 60 days after the occurrence of such deficiency, and (ii) at least 6,401,394 authorized but unissued and otherwise unreserved shares of Common Stock (as adjusted for any stock splits, stock combinations or similar events) less any shares of Common Stock issued upon conversion of the Shares, as dividends on the Shares, upon exercise of the Warrants or upon a redemption of the Shares. The Corporation covenants that all Underlying Shares so issuable and deliverable shall, upon issuance in accordance with the terms hereof, be duly and validly authorized, issued and fully paid and nonassessable.

15. Certain Adjustments. The Conversion Price is subject to adjustment from time to time as set forth in this Section 15.

(a) Stock Dividends and Splits. If the Corporation, at any time while Series B Preferred Stock is outstanding, (i) pays a stock dividend on its Common Stock or otherwise makes a distribution on any class of capital stock that is payable in shares of Common Stock (other than regular dividends on the Series B Preferred Stock), (ii) subdivides outstanding shares of Common Stock into a larger number of shares, or (iii) combines outstanding shares of Common Stock into a smaller number of shares, then in each such case the applicable Conversion Price for each series of Series B Preferred Stock shall be multiplied by a fraction of which the numerator shall be the number of shares of Common Stock outstanding immediately before such event and of which the denominator shall be the number of shares of Common Stock outstanding immediately after such event. Any adjustment made pursuant to clause (i) of this paragraph shall become effective immediately after the record date for the determination of stockholders entitled to receive such dividend or distribution, and any adjustment pursuant to clause (ii) or (iii) of this paragraph shall become effective immediately after the effective date of such subdivision or combination.

(b) Pro Rata Distributions. If the Corporation, at any time while Series B Preferred Stock is outstanding, distributes to all holders of Common Stock (i) evidences of its indebtedness, (ii) any security (other than a distribution of Common Stock covered by the preceding paragraph), (iii) rights or warrants to subscribe for or purchase any security, or (iv) any other asset other than cash paid as a dividend (in each case, "**Distributed Property**"), then, at the request of any Holder delivered before the ninetieth day after the record date fixed for determination of stockholders entitled to receive such distribution, the Corporation will deliver to such Holder, within five Trading Days after such request (or, if later, on the effective date of such distribution), the Distributed Property that such Holder would have been entitled to receive in respect of the Underlying Shares for which such Holder's Series B Preferred Stock could have been converted immediately prior to such record date. If such Distributed Property is not delivered to a Holder pursuant to the preceding sentence, then upon any conversion of Series B Preferred Stock that occurs after such record date, such Holder shall be entitled to receive, in addition to the Underlying Shares otherwise issuable upon such conversion, the Distributed Property that such Holder would have been entitled to receive in respect of such number of Underlying Shares had the Holder been the record holder of such Underlying Shares immediately prior to such record date.

(c) Certain Transactions.

(i) If, at any time while Series B Preferred Stock is outstanding, the Corporation proposes to enter into a transaction that would constitute a Change of Control, the Corporation shall mail written notice of the proposed Change of Control transaction to each record Holder not less than 20 Trading Days prior to the effective date thereof. Each Holder shall have the right to receive on the date of the consummation of such Change of Control, at its option, either (A) for each Underlying Share that would have been issuable upon such conversion of the shares of Series B Preferred Stock upon the effective time of such Change of Control, the same kind and amount of securities, cash or property as it would have been entitled to receive upon the occurrence of such Change of Control if it had been, immediately prior to such Change of Control, the holder of one share of Common Stock or (B) for each share of Series B Preferred Stock, cash in an amount equal to 115% of the Stated Value plus all accrued but unpaid dividends thereon through the date of payment. If holders of Common Stock are given any choice as to the securities, cash or property to be received in a Change of Control transaction, then each Holder shall be given the same choice as to the consideration it receives pursuant to clause (A) above. Each Holder shall make the election of which consideration it has elected to receive at least three Trading Days prior to the effective date of a Change of Control. Failure of any Holder to timely provide written notice of its election shall be deemed an election by such Holder to receive the consideration specified in clause (B) above. Notwithstanding the foregoing, if a Holder elects to receive cash pursuant to clause (B) of the preceding sentence or is deemed to have so elected, the Corporation may elect instead to have such successor to the Corporation or surviving entity in the Change of Control issue to the Holder a new series of Preferred Stock with a stated value equal to 115% of the Stated Value of the Series B Preferred Stock, plus all accrued but unpaid dividends thereon, and consistent with terms substantially equivalent to the terms of the Series B-I Preferred Stock or Series B-II Preferred Stock, as the case may be, held by such Holder and evidencing the Holder's right to convert such Preferred Stock into the consideration described in clause (A) of this subparagraph (i). To the extent the Corporation elects to have the successor to the Corporation or the surviving entity issue a new series of Preferred Stock, the terms of any agreement pursuant to which a Change of Control is effected shall include terms requiring any such successor or surviving entity to comply with the provisions substantially equivalent to the provisions of this paragraph (c) and providing that the Series B Preferred Stock (or any such replacement security) will be similarly adjusted upon any subsequent transaction analogous to a Change of Control.

(ii) Any recapitalization, reorganization, reclassification, consolidation, merger, sale of all or substantially all of the Corporation's assets to another Person or other transaction which is effected in such a way that holders of Common Stock are entitled to receive (either directly or upon subsequent liquidation) stock, securities or assets with respect to or in exchange for Common Stock is referred to herein as "**Organic Change.**" Prior to the consummation of any (A) sale of all or substantially all of the Corporation's assets to an acquiring Person or (B) other Organic Change following which the Corporation is not a surviving entity, other than in each case an Organic Change that is a Change of Control (which shall be subject to Section 15(c)(i)), the Corporation will secure from the Person purchasing such assets or the successor, or, if applicable, the parent of the successor, resulting from such Organic Change (in each case, the "**Acquiring Entity**") a written agreement (in form and substance reasonably satisfactory to the holders of at least a majority of the shares of Series B Preferred Stock then outstanding) to deliver to each holder of Series B Preferred Stock in exchange for such shares, a security of the Acquiring Entity evidenced by a written instrument substantially similar in form and substance to such Series B Preferred Stock, including, without limitation, having a stated value and liquidation preference equal to the Stated Value and the Series B Stock Liquidation Preference of the Series B Preferred Stock held by such holder, and

reasonably satisfactory to the holders of at least a majority of the Series B Preferred Stock then outstanding.

(d) Subsequent Equity Sales.

(i) If, at any time while any shares of either series of Series B Preferred Stock are outstanding, the Corporation or any Subsidiary issues additional shares of Common Stock or rights, warrants, options or other securities or debt convertible, exercisable or exchangeable for shares of Common Stock or otherwise entitling any Person to acquire shares of Common Stock (collectively, "**Common Stock Equivalents**") at an effective net price to the Corporation per share of Common Stock (the "**Effective Price**") less than the lesser of (A) the Initial Purchase Price for a series of Series B Preferred Stock or (B) then-applicable Conversion Price for a series of Series B Preferred Stock, then the applicable Conversion Price for such series of Series B Preferred Stock shall be reduced to equal the Effective Price. For purposes of this paragraph, in connection with any issuance of any Common Stock Equivalents, (A) the maximum number of shares of Common Stock potentially issuable at any time upon conversion, exercise or exchange of such Common Stock Equivalents (the "**Deemed Number**") shall be deemed to be outstanding upon issuance of such Common Stock Equivalents, (B) the Effective Price applicable to such Common Stock shall equal the minimum dollar value of consideration payable to the Corporation to purchase such Common Stock Equivalents and to convert, exercise or exchange them into Common Stock (net of any discounts, fees, commissions and other expenses), divided by the Deemed Number, (C) no further adjustment shall be made to the Conversion Price upon the actual issuance of Common Stock upon conversion, exercise or exchange of such Common Stock Equivalents, and (D) upon the expiration or termination of any Common Stock Equivalent that does not result in the issuance of any Common Stock or additional Common Stock Equivalent, any adjustment that has been made under this paragraph (d) in respect of the issuance of such Common Stock Equivalent shall be readjusted as if such Common Stock Equivalent had not been issued (but shall in no event affect previously converted stock).

(ii) If, at any time while Series B Preferred Stock is outstanding, the Corporation or any Subsidiary issues Common Stock Equivalents with an Effective Price or a number of underlying shares that floats or resets or otherwise varies or is subject to adjustment based (directly or indirectly) on market prices of the Common Stock (a "**Floating Price Security**"), then for purposes of applying the preceding paragraph in connection with any subsequent conversion, the Effective Price will be determined separately on each Conversion Date and will be deemed to equal the lowest Effective Price at which any holder of such Floating Price Security is entitled to acquire Common Stock on such Conversion Date (regardless of whether any such holder actually acquires any shares on such date).

(iii) Notwithstanding the foregoing, no adjustment will be made under this paragraph (d) in respect of the issuance of Excluded Stock.

(e) Calculations. All calculations under this Section 15 shall be made to the nearest cent or the nearest 1/100th of a share, as applicable. The number of shares of Common Stock outstanding at any given time shall not include shares owned or held by or for the account of the Corporation, and the disposition of any such shares shall be considered an issue or sale of Common Stock.

(f) Notice of Adjustments. Upon the occurrence of each adjustment pursuant to this Section 15, the Corporation at its expense will promptly compute such adjustment in accordance with the terms hereof and prepare a certificate describing in reasonable detail such adjustment and the transactions giving rise thereto, including all facts upon which such adjustment is based. Upon written request, the

Corporation will promptly deliver a copy of each such certificate to each Holder and to the Corporation's Transfer Agent.

(g) Notice of Corporate Events. If the Corporation (i) declares a dividend or any other distribution of cash, securities or other property in respect of its Common Stock, including without limitation any granting of rights or warrants to subscribe for or purchase any capital stock of the Corporation or any Subsidiary, (ii) authorizes or approves, enters into any agreement contemplating or solicits stockholder approval for any Fundamental Transaction or (iii) authorizes the voluntary dissolution, liquidation or winding up of the affairs of the Corporation, then the Corporation shall deliver to each Holder a notice describing the material terms and conditions of such transaction, at least 20 calendar days prior to the applicable record or effective date on which a Person would need to hold Common Stock in order to participate in or vote with respect to such transaction, and the Corporation will take all steps reasonably necessary in order to insure that each Holder is given the practical opportunity to convert its Series B Preferred Stock prior to such time so as to participate in or vote with respect to such transaction; provided, however, that the failure to deliver such notice or any defect therein shall not affect the validity of the corporate action required to be described in such notice.

16. Limitation on Conversion.

(a) Notwithstanding anything to the contrary contained herein, the number of shares of Common Stock that may be acquired by any Holder upon any conversion of Series B Preferred Stock (or otherwise in respect of the Series B Preferred Stock) shall be limited to the extent necessary to insure that, following such conversion (or other issuance), the total number of shares of Common Stock then beneficially owned by such Holder and its Affiliates and any other Persons whose beneficial ownership of Common Stock would be aggregated with the Holder's for purposes of Section 13(d) of the Exchange Act, does not exceed 4.999% (the "**Maximum Percentage**") of the total number of issued and outstanding shares of Common Stock (including for such purpose the shares of Common Stock issuable upon such conversion). For such purposes, beneficial ownership shall be determined in accordance with Section 13(d) of the Exchange Act and the rules and regulations promulgated thereunder. Each delivery of a Conversion Notice by a Holder will constitute a representation by such Holder that it has evaluated the limitation set forth in this paragraph and determined that issuance of the full number of Underlying Shares requested in such Conversion Notice is permitted under this paragraph. By written notice to the Corporation, any Holder may waive the provisions of this Section or increase or decrease the Maximum Percentage to any other percentage specified in such notice, but (i) any such waiver or increase will not be effective until the 61st day after such notice is delivered to the Corporation, and (ii) any such waiver or increase or decrease will apply only to such Holder and not to any other Holder and (iii) any such waiver or increase shall not be effective to the extent such waiver or increase would cause the Corporation to violate the Nasdaq Stockholder Approval Rule.

(b) For purposes of this Section 16, in determining the number of outstanding shares of Common Stock, a Holder may rely on the number of outstanding shares of Common Stock as reflected in (1) the Corporation's most recent Form 10-Q, Form 10-K or other public filing with the Commission, as the case may be, (2) a more recent public announcement by the Corporation, or (3) any other notice by the Corporation or its transfer agent setting forth the number of shares of Common Stock outstanding. Upon the written request of any Holder, the Corporation shall promptly, but in no even later than one Trading Day following the receipt of such notice, confirm in writing to any such Holder the number of shares of Common Stock then outstanding.

17. Fractional Shares. The Corporation shall not be required to issue or cause to be issued fractional Underlying Shares on conversion of Series B Preferred Stock. If any fraction of an Underlying

Share would, except for the provisions of this Section, be issuable upon conversion of Series B Preferred Stock, the number of Underlying Shares to be issued will be rounded up to the nearest whole share.

18. Notices. Any and all notices or other communications or deliveries hereunder (including without limitation any Conversion Notice) shall be in writing and shall be deemed given and effective on the earliest of (i) the date of transmission, if such notice or communication is delivered via facsimile at the facsimile number specified in this Section prior to 5:30 p.m. (New York City time) on a Trading Day, (ii) the next Trading Day after the date of transmission, if such notice or communication is delivered via facsimile at the facsimile number specified in this Section on a day that is not a Trading Day or later than 5:30 p.m. (New York City time) on any Trading Day, (iii) the Trading Day following the date of mailing, if sent by nationally recognized overnight courier service, or (iv) upon actual receipt by the party to whom such notice is required to be given. The addresses for such communications shall be (i) if to the Corporation, to Ten Canal Park, Cambridge, Massachusetts 02141, facsimile: (617) 949-1722, Attention: Chief Executive Officer and General Counsel, or (ii) if to a Holder, to the address or facsimile number appearing on the Corporation's stockholder records or such other address or facsimile number as such Holder may provide to the Corporation in accordance with this Section.

19. Miscellaneous.

(a) The headings herein are for convenience only, do not constitute a part of this Certificate of Designations and shall not be deemed to limit or affect any of the provisions hereof.

(b) Any of the rights of the Holders of Series B Preferred Stock set forth herein may be waived by the affirmative vote of the Holders of a majority of the shares of Series B Preferred Stock then outstanding. No waiver of any default with respect to any provision, condition or requirement of this Certificate of Designations shall be deemed to be a continuing waiver in the future or a waiver of any subsequent default or a waiver of any other provision, condition or requirement hereof, nor shall any delay or omission of either party to exercise any right hereunder in any manner impair the exercise of any such right.

* * *

IN WITNESS WHEREOF, Aspen Technology, Inc. has caused this Certificate of Designations to be duly executed as of March 19, 2002.

ASPEN TECHNOLOGY, INC.

By: /s/ Lisa W. Zappala
Lisa W. Zappala
Senior Vice President and
Chief Financial Officer

ADDITIONAL DEFINITIONS

“**Affiliate**” means any Person that, directly or indirectly through one or more intermediaries, controls or is controlled by or is under common control with a Person, as such terms are used in and construed under Rule 144. With respect to a Purchaser, any investment fund or managed account that is managed on a discretionary basis by the same investment manager as such Purchaser will be deemed to be an Affiliate of such Purchaser.

“**Bankruptcy Event**” means any of the following events: (a) the Corporation or any Material Subsidiary commences a case or other proceeding under any bankruptcy, reorganization, arrangement, adjustment of debt, relief of debtors, dissolution, insolvency or liquidation or similar law of any jurisdiction relating to the Corporation or any Material Subsidiary thereof; (b) there is commenced against the Corporation or any Material Subsidiary any such case or proceeding that is not dismissed within 60 days after commencement; (c) the Corporation or any Material Subsidiary is adjudicated insolvent or bankrupt or any order of relief or other order approving any such case or proceeding is entered; (d) the Corporation or any Material Subsidiary suffers any appointment of any custodian or the like for it or any substantial part of its property that is not discharged or stayed within 60 days; (e) the Corporation or any Material Subsidiary makes a general assignment for the benefit of creditors; (f) the Corporation or any Material Subsidiary fails to pay, or states in writing that it is unable to pay or is unable to pay, its debts generally as they become due; or (g) the Corporation or any Subsidiary, by any act or failure to act, expressly indicates its consent to, approval of or acquiescence in any of the foregoing or takes any corporate or other action that effects any of the foregoing.

“**Change of Control**” means the occurrence of any of the following in one or a series of related transactions: (i) an acquisition after the date hereof by an individual or legal entity or “group” (as described in Rule 13d-5(b)(1) under the Exchange Act) of a majority of the voting rights or equity interests in the Corporation; (ii) a replacement of more than one-half of the members of the Corporation’s Board of Directors that is not approved by those individuals who are members of the Board of Directors on the Deemed Issue Date (or other directors previously approved by such individuals); (iii) a merger or consolidation of the Corporation or a sale of all or substantially all of the assets of the Corporation in one or a series of related transactions, unless following such transaction or series of transactions, the holders of the Corporation’s securities prior to the first such transaction continue to hold, directly or indirectly, at least a majority of the voting rights and equity interests in the surviving entity or acquirer of such assets; (iv) a recapitalization, reorganization or other transaction involving the Corporation that constitutes or results in a transfer of a majority of the voting rights or equity interests in the Corporation to Persons other than holders of the Corporation’s voting equity securities prior to such transaction; or (v) consummation of a “Rule 13e-3 transaction” as defined in Rule 13e-3 under the Exchange Act with respect to the Corporation other than a Rule 13e-3 transaction in which no Holder’s interest in the Corporation has been adversely changed or diluted in any material manner.

“**Closing Price**” means, for any date, the price determined by the first of the following clauses that applies: (a) if the Common Stock is then listed or quoted on an Eligible Market or any other national securities exchange, the last closing price per share of the Common Stock for such date (or the nearest preceding date) on the primary Eligible Market or exchange on which the Common Stock is then listed or quoted; (b) if prices for the Common Stock are then quoted on the OTC Bulletin Board, the average of the highest closing bid price and the lowest closing ask price per share of the Common Stock for such date (or the nearest preceding date) so quoted; (c) if prices for the Common Stock are then reported in the “Pink Sheets” published by the National Quotation Bureau Incorporated (or a similar organization or agency succeeding to its functions of reporting prices), the most recent bid price per share of the Common

Stock so reported; or (d) in all other cases, the fair market value of a share of Common Stock as determined by an independent appraiser selected in good faith by a majority-in-interest of the Purchasers and the Corporation.

“**Commission**” means the Securities and Exchange Commission.

“**Common Stock**” means the common stock of the Corporation, par value \$0.10 per share.

“**Effective Date**” means the date that an Underlying Shares Registration Statement is declared effective by the Commission.

“**Eligible Market**” means the New York Stock Exchange, the American Stock Exchange, the Nasdaq National Market or the Nasdaq SmallCap Market.

“**Event Equity Value**” means 115% of the average of the Closing Prices for the five Trading Days preceding the date of delivery of the notice requiring payment of the Event Equity Value, provided that if the Corporation does not make such required payment (together with any other payments, expenses and liquidated damages then due and payable under the Transaction Documents) when due or, in the event the Corporation disputes in good faith the occurrence of the Triggering Event pursuant to which such notice relates, does not instead deposit such required payment (together with such other payments, expenses and liquidated damages then due) in escrow with an independent third-party escrow agent within five Trading Days of the date such required payment is due, then the Event Equity Value shall be 115% of the greater of (a) the average of the Closing Prices for the five Trading Days preceding the date of delivery of the notice requiring payment of the Event Equity Value and (b) the average of the Closing Prices for the five Trading Days preceding the date on which such required payment (together with such other payments, expenses and liquidated damages) is paid in full.

“**Exchange Act**” means the Securities Exchange Act of 1934, as amended.

“**Excluded Stock**” means any shares of Common Stock issued or issuable: (A) upon exercise, conversion or exchange of any Common Stock Equivalents described in Schedule 3.1(g) to the Purchase Agreement (provided that such exercise or conversion occurs in accordance with the terms thereof, without amendment or modification, and that the applicable exercise or conversion price or ratio is described in such schedule); (B) to officers, directors, employees or consultants of the Corporation pursuant to a stock option plan, employee stock purchase plan or other equity incentive plan approved by the Board of Directors of the Corporation; (C) pursuant to as part of a bona fide firm commitment underwritten public offering with a nationally recognized underwriter (including any “at the market offering,” as defined in Rule 415(a)(4) under the Securities Act, only if such offering does not constitute an “equity line” and generates aggregate gross proceeds of at least \$50 million); (D) in connection with any transaction with a strategic investor, vendor, lessor, customer, supplier, marketing partner, developer or integrator or any similar arrangement, in each case the primary purpose of which is not to raise equity capital; (E) in connection with a transaction involving a merger or acquisition of an entity, business or assets (not principally for the purpose of obtaining cash); or (F) in connection with any other transaction for consideration other than cash up to 108,166 shares of Common Stock in the aggregate (as adjusted for stock splits, stock combinations and similar events).

“**Material Subsidiary**” means any significant subsidiary, as defined in Rule 1-02(w) of Regulation S-X promulgated by the Commission, of the Corporation.

“**Person**” means an individual or corporation, partnership, trust, incorporated or unincorporated association, joint venture, limited liability Corporation, joint stock Corporation, government (or an agency or subdivision thereof) or other entity of any kind.

“**Purchaser**” has the meaning set forth in the Purchase Agreement.

“**Registration Rights Agreement**” means the Amended and Restated Registration Rights Agreement, dated as of March 19, 2002 among the Corporation and the Purchasers, as amended from time to time.

“**Required Effectiveness Date**” means the date on which an Underlying Shares Registration Statement is required to become effective pursuant to the Registration Rights Agreement.

“**Rule 144**” means Rule 144 promulgated by the Commission pursuant to the Securities Act, as such Rule may be amended from time to time, or any similar rule or regulation hereafter adopted by the Commission having substantially the same effect as such Rule.

“**Securities**” means the Shares, the Warrants and the Underlying Shares.

“**Securities Act**” means the Securities Act of 1933, as amended.

“**Shares**” means, collectively, the shares of Series B-I Preferred Stock and Series B-II Preferred Stock.

“**Subsidiary**” means any subsidiary, as defined in Rule 1-02(x) of Regulation S-X promulgated by the Commission, of the Corporation.

“**Trading Day**” means (a) any day on which the Common Stock is listed or quoted and traded on its primary Trading Market or (b) if the Common Stock is not then listed or quoted and traded on any Eligible Market, then a day on which trading occurs on the New York Stock Exchange (or any successor thereto).

“**Trading Market**” means the Nasdaq National Market or any other Eligible Market on which the Common Stock is then listed or quoted.

“**Transaction Documents**” means the Purchase Agreement, the Registration Rights Agreement, this Certificate of Designations and the Warrants.

“**Triggering Event**” means any of the following events: (a) immediately prior to any Bankruptcy Event; (b) the Common Stock is not listed or quoted, or is suspended from trading, on an Eligible Market for a period of five consecutive Trading Days or ten aggregate Trading Days in any 365-day period; (c) the Corporation fails for any reason to deliver a certificate evidencing any Securities to a Purchaser within ten Trading Days after delivery of such certificate is required pursuant to any Transaction Document or the exercise or conversion rights of the Holders pursuant to the Transaction Documents are otherwise suspended for any reason; (d) the Corporation fails to have available both (i) a sufficient number of authorized but unissued and otherwise unreserved shares of Common Stock available to issue Underlying Shares upon any exercise of the Warrants or any conversion of Shares and does not make available a sufficient number of authorized but unissued and otherwise unreserved shares of Common Stock for such issuance within 60 days after the occurrence of such deficiency and (ii) at least 6,401,394 authorized but unissued and otherwise unreserved shares of Common Stock (as adjusted for any stock splits, stock combinations or similar events), less reductions reasonably agreed to by the Purchasers to reflect shares of Common Stock issued upon conversion of the Shares (and, therefore, reduced aggregate dividend payments), as dividends on the Shares, upon exercise of the Warrants or upon a redemption of the Shares; (e) at any time after the Required Effectiveness Date, any Common Stock issuable pursuant to the Transaction Documents is not listed on an Eligible Market; (f) any other Event (as defined in the Registration Rights Agreement) occurs and remains uncured for 60 days; (g) the Corporation fails to

make any cash payment required under the Transaction Documents and such failure is not cured within five days after notice of such default is first given to the Corporation by a Purchaser; (h) the Corporation defaults in the timely performance of any other obligation under the Transaction Documents and such default continues uncured for a period of 20 days after the date on which notice of such default is first given to the Corporation by a Purchaser (it being understood that no prior notice need be given in the case of a default that cannot reasonably be cured within 20 days), or (i) any Change of Control event.

“Underlying Shares” means the shares of Common Stock issuable upon conversion of, or in redemption of, the Shares, as payment of dividends on the Shares and upon exercise of the Warrants, and any securities issued in exchange for, or upon conversion or in respect of, such shares.

“Underlying Shares Registration Statement” means a registration statement meeting the requirements set forth in the Registration Rights Agreement and covering the resale of the Underlying Shares by the Purchasers.

“Volume Weighted Average Price” means, with respect to a Trading Day, the average of the daily volume weighted average trading price (the total dollar amount traded on each day divided by trading volume for such day) of the Common Stock for the regular Trading Day session as reported at 4:15 p.m. (New York time) as reported by Bloomberg, LP function key HP by using W to calculate the daily weighted average.

“Warrants” means the Common Stock purchase warrants, as amended from time to time, issued pursuant to the Purchase Agreement.

FORM OF CONVERSION NOTICE

(To be executed by the registered Holder
in order to convert shares of Series B Preferred Stock)

The undersigned hereby elects to convert the number of shares of Series B Preferred Stock indicated below into shares of Common Stock of Aspen Technology, Inc., a Delaware corporation, according to the conditions hereof, as of the date written below.

Series of Series B Preferred Stock to be converted (*check*): Series B-I
 Series B-II

Date to effect conversion

Number and series of shares of Series B Preferred Stock owned prior to conversion

Number and series of shares of Series B Preferred Stock to be converted

Stated Value of shares of Series B Preferred Stock to be converted (including
\$ _____ of dividends added under Section 2(f) of the Registration
Rights Agreement)

Number of shares of Common Stock to be issued

Applicable Conversion Price

Number and series of shares of Series B Preferred Stock subsequent to conversion

Name of Holder

By: _____
Name: _____
Title: _____

ASPEN TECHNOLOGY, INC.

CERTIFICATE OF DESIGNATIONS
OF
SERIES C PREFERRED STOCK

(Pursuant to Section 151 of the Delaware General Corporation Law)

Aspen Technology, Inc., a Delaware corporation (the "Corporation"), in accordance with the provisions of Section 103 of the Delaware General Corporation Law (the "DGCL") does hereby certify that, in accordance with Section 141(c) of the DGCL, the following resolution was duly adopted by the Board of Directors of the Corporation as of March 14, 2002:

RESOLVED, that a series of Preferred Stock, Series C Preferred Stock, par value \$0.10 per share, of the Corporation is hereby created and the designation, number of shares, powers, preferences, rights, qualifications, limitations and restrictions thereof (in addition to any provisions set forth in the Certificate of Incorporation of the Corporation which are applicable to the Preferred Stock of all classes and series) are as follows:

SERIES C PREFERRED STOCK

1. Designation, Amount, Par Value and Stated Value. The following series of preferred stock shall be designated as the Corporation's Series C Preferred Stock (the "**Series C Preferred Stock**"), and the number of shares so designated shall be 60,000. Each share of Series C Preferred Stock shall have a par value of \$0.10 per share and a stated value equal to \$10,000 plus any amount added to the Stated Value pursuant to Section 3(b) hereof (the "**Stated Value**").

2. Definitions. In addition to the terms defined elsewhere in this Certificate of Designations, the following terms have the meanings indicated:

"**Change of Control**" means the occurrence of any of the following in one or a series of related transactions: (i) an acquisition after the date hereof by an individual or legal entity or "group" (as described in Rule 13d-5(b)(1) under the Exchange Act) of a majority of the voting rights or equity interests in the Corporation; (ii) a replacement of more than one-half of the members of the Corporation's Board of Directors that is not approved by those individuals who are members of the Board of Directors as of March 19, 2002 (or other directors previously approved by such individuals); (iii) a merger or consolidation of the Corporation or a sale of all or substantially all of the assets of the Corporation in one or a series of related transactions, unless following such transaction or series of transactions, the holders of the Corporation's securities prior to the first such transaction continue to hold, directly or indirectly, at least a majority of the voting rights and equity interests in the surviving entity or acquirer of such assets; (iv) a recapitalization, reorganization or other transaction involving the Corporation that constitutes or results in a transfer of a majority of the voting rights or equity interests in the Corporation to Persons other than holders of the Corporation's voting equity securities prior to such transaction; or (v) consummation of a "Rule 13e-3 transaction" as defined in Rule 13e-3 under the Exchange Act with respect to the Corporation other than a Rule 13e-3 transaction in which no Holder's interest in the Corporation has been adversely changed or diluted in any material manner.

"**Common Stock**" means the common stock of the Corporation, par value \$0.10 per share.

“**Eligible Market**” means the New York Stock Exchange, the American Stock Exchange, the Nasdaq National Market or the Nasdaq SmallCap Market.

“**Exchange Act**” means the Securities Exchange Act of 1934, as amended.

“**Holder**” means any holder of Series C Preferred Stock.

“**Junior Securities**” means the Common Stock and all other equity or equity equivalent securities of the Corporation.

“**Person**” means an individual or corporation, partnership, trust, incorporated or unincorporated association, joint venture, limited liability corporation, joint stock corporation, government (or an agency or subdivision thereof) or other entity of any kind.

“**Trading Day**” means (a) any day on which the Common Stock is listed or quoted and traded on its primary Trading Market or (b) if the Common Stock is not then listed or quoted and traded on any Eligible Market, then a day on which trading occurs on the New York Stock Exchange (or any successor thereto).

“**Trading Market**” means the Nasdaq National Market or any other Eligible Market on which the Common Stock is then listed or quoted.

3. Dividends.

(a) Holders shall be entitled to receive, out of funds legally available therefor, and the Corporation shall pay, cumulative dividends on the Series C Preferred Stock at the rate per share (as a percentage of the Stated Value per share) of 12% per annum, payable quarterly in arrears commencing on the last day of each month, except if such date is not a Trading Day, in which case such dividend shall be payable on the next succeeding Trading Day (each, a “**Dividend Payment Date**”). Dividends on a share of Series C Preferred Stock shall be calculated on the basis of a 365-day year, shall accrue daily commencing on the such share is initially issued by the Corporation for such share, and shall be deemed to accrue from such date whether or not earned or declared and whether or not there are profits, surplus or other funds of the Corporation legally available for the payment of dividends.

(b) Subject to the conditions and limitations set forth below, the Corporation may pay required dividends (i) in cash or (ii) by an addition to the Stated Value. The Corporation must deliver written notice (the “**Dividend Notice**”) to the Holders indicating the manner in which it intends to pay dividends at least ten Trading Days prior to each Dividend Payment Date, but the Corporation may indicate in any such notice that the election contained therein shall continue for subsequent Dividend Payment Dates until revised. Failure to timely provide such written notice shall be deemed an election by the Corporation to pay the dividend by addition to the Stated Value. All dividends payable in respect of the Series C Preferred Stock on any Dividend Payment Date must be paid in the same manner. If the Corporation may not legally pay dividends on any Dividend Payment Date, such amount shall be added to the Stated Value as of such Dividend Payment Date.

(c) So long as any Series C Preferred Stock is outstanding, (i) neither the Corporation nor any subsidiary (as defined in Rule 1-02(x) of Regulation S-X promulgated by the Securities and Exchange Commission) of the Corporation shall, directly or indirectly, redeem, purchase or otherwise acquire any Junior Securities or set aside any monies for such a redemption, purchase or other acquisition and (ii) the Corporation shall not pay or declare any dividend or make any distribution on any Junior Securities, except pro rata stock dividends on the Common Stock payable in additional shares of Common Stock and dividends due and paid in the ordinary course on preferred stock of the Corporation,

in each case only at such times as the Corporation is in compliance with its payment and other obligations hereunder.

4. Registration of Series C Preferred Stock. The Corporation shall register shares of the Series C Preferred Stock, upon records to be maintained by the Corporation for that purpose (the "**Series C Preferred Stock Register**"), in the name of the record Holders thereof from time to time. The Corporation may deem and treat the record Holder of shares of Series C Preferred Stock as the absolute owner thereof for the purpose of any conversion hereof or any distribution to such Holder, and for all other purposes, absent actual notice to the contrary.

5. Registration of Transfers. The Corporation shall register the transfer of any shares of Series C Preferred Stock in the Series C Preferred Stock Register, upon surrender of certificates evidencing such shares to the Corporation at its address specified herein. Upon any such registration or transfer, a new certificate evidencing the shares of Series C Preferred Stock so transferred shall be issued to the transferee and a new certificate evidencing the remaining portion of the shares not so transferred, if any, shall be issued to the transferring Holder.

6. Liquidation.

(a) In the event of any liquidation, dissolution or winding up of the Corporation, either voluntary or involuntary (a "**Liquidation Event**"), the Holders of Series C Preferred Stock shall be entitled to receive, prior and in preference to any distribution of any of the assets or surplus funds of the Corporation to the holders of Junior Securities by reason of their ownership thereof, an amount per share in cash equal to the Stated Value for each share of Series C Preferred Stock then held by them (as adjusted for any stock splits, stock dividends, stock combinations and similar transactions with respect to the Series C Preferred Stock), plus all accrued but unpaid dividends on such Series C Preferred Stock as of the date of such event (the "**Series C Stock Liquidation Preference**"). If, upon the occurrence of a Liquidation Event, the assets and funds thus distributed among the Holders of the Series C Preferred Stock shall be insufficient to permit the payment to such Holders of the full Series C Stock Liquidation Preference, then the entire assets and funds of the Corporation legally available for distribution shall be distributed ratably among the Holders of the Series C Preferred Stock in proportion to the aggregate Series C Stock Liquidation Preference that would otherwise be payable to each of such Holders.

(b) In the event of a Liquidation Event, following completion of the distributions required by the first sentence of paragraph (a) of this Section 6, if assets or surplus funds remain in the Corporation, the holders of Junior Securities shall share ratably in all remaining assets of the Corporation.

(c) The Corporation shall mail written notice of any Liquidation Event to each record Holder not less than 20 Trading Days prior to the payment date or effective date thereof.

7. Redemption Rights.

(a) The Corporation may, at its option, redeem all or any number of the shares of Series C Preferred Stock then outstanding at any time or from time to time, upon at least 15 Trading Days' advance notice to the Holders (the "**Redemption Notice**"), at a price per share (the "**Redemption Price**") equal to the Stated Value of such share plus all accrued but unpaid dividends thereon to the date fixed for redemption. The Redemption Notice shall specify the date fixed for redemption, the aggregate Redemption Price for all of the shares to be redeemed, and the aggregate number of shares to be redeemed. The Redemption Price for any share of Series C Preferred Stock shall be paid entirely in cash.

(b) In case of any redemption of fewer than all of the then-outstanding shares of Series C Preferred Stock, the shares to be redeemed shall be selected, as nearly as practicable, as follows:

(i) The aggregate Redemption Price shall be prorated among the record Holders in proportion to the aggregate Stated Values (computed as of the date fixed for redemption) of the shares of Series C Preferred Stock registered in their respective names in the Series C Preferred Stock Register.

(ii) The Redemption Price so prorated to a record Holder shall be applied to redeem shares of Series C Preferred Stock in order of descending per share Stated Value, such that the Redemption Price prorated to such record Holder is first applied to the redemption of the record Holder's shares having the highest per share Stated Value, any remaining prorated Redemption Price is then applied to the redemption of the record Holder's shares having the next highest per share Stated Value, and so forth, until all the Redemption Price prorated to such record Holder has been applied to the redemption of whole shares of such record Holder's Series C Preferred Stock. No share of Series C Preferred Stock shall be subject to redemption in part.

(iii) The Redemption Notice delivered to a Holder shall specify, in addition to the information specified in Section 7(a), the number of shares of such Holder to be redeemed and the certificate number(s) of the certificate(s) evidencing those shares.

(c) Upon receipt of payment of the Redemption Price, each Holder shall deliver the original certificate(s) evidencing the Series C Preferred Stock so redeemed to the Corporation, unless such Holder is awaiting receipt of a new certificate evidencing such shares from the Corporation pursuant to another provision hereof. Upon receipt of such a certificate from a Holder, the Corporation shall issue to such Holder a new certificate evidencing the remaining shares of Series C Preferred Stock, if any, represented by such certificate but not redeemed.

(d) Any shares of Series C Preferred Stock redeemed in accordance with this Section 7 shall be retired and cancelled and shall not be reissued, and the Corporation (without the need for stockholder action) may from time to time take such appropriate action as may be necessary to reduce the authorized number of shares of Series C Preferred Stock accordingly.

8. Voting Rights.

(a) Except as otherwise provided herein or as required by applicable law, the Holders of the Series C Preferred Stock shall not be entitled to vote on any matters on which holders of Common Stock are entitled to vote.

(b) So long as any shares of Series C Preferred Stock are outstanding, the Corporation shall not, without the affirmative vote of the Holders of a majority of the shares of Series C Preferred Stock then outstanding, (i) alter or change adversely the powers, preferences or rights given to the Series C Preferred Stock or alter or amend this Certificate of Designations (whether by merger, reorganization, consolidation or otherwise), (ii) authorize or create any class of stock ranking as to dividends or distribution of assets upon a Liquidation Event senior to the Series C Preferred Stock, (iii) amend its certificate of incorporation or bylaws so as to affect adversely any rights of the Holders (whether by merger, reorganization, consolidation or otherwise), (iv) increase the authorized number of shares of Series C Preferred Stock, or (v) enter into any agreement with respect to the foregoing.

So long as any shares of Series C Preferred Stock are outstanding, (i) the record Holders of Series C Preferred Stock, exclusively and as a separate class, shall be entitled to elect a number of directors equal to the greater of (A) two or (B) 20% of the total number of directors of the Corporation, rounded up to the nearest whole number, and (ii) the record holders of Common Stock, exclusively and as a separate class, shall, subject to the rights of any additional series of Preferred Stock that may be established from time to time, be entitled to elect the balance of the total number of directors of the Corporation. At any meeting

held for the purpose of electing directors, the presence in person or by proxy of the Holders of a majority of the shares of Series C Preferred Stock then outstanding shall constitute a quorum of the Series C Preferred Stock for the purpose of electing directors by Holders. A vacancy in any directorship filled by the Holders shall be filled only by vote or written consent in lieu of a meeting of the Holders or by any remaining director or directors elected by the Holders pursuant to this Section 8(c). To the extent all outstanding shares of Series C Preferred Stock are redeemed at any time in accordance with the provisions of Section 7 hereof, the rights of the Holders under this Section 8(c) shall terminate on the redemption date for those shares and any director previously elected by the Holders pursuant to this Section 8(c) resign as of such redemption date.

9. Certain Transactions.

(a) If, at any time while Series C Preferred Stock is outstanding, the Corporation proposes to enter into a transaction that would constitute a Change of Control, the Corporation shall mail written notice of the proposed Change of Control transaction to each record Holder not less than 20 Trading Days prior to the effective date thereof. Each Holder shall have the right to receive on the date of the consummation of such Change of Control, at the election of the Corporation, either (i) for each share of Series C Preferred Stock, cash in an amount equal to the Stated Value plus all accrued but unpaid dividends thereon through the date of payment, or (ii) a new series of preferred stock in the successor corporation or surviving entity in the Change of Control with a stated value equal to the Stated Value of the Series C Preferred Stock, plus all accrued but unpaid dividends thereon, and consistent with terms substantially equivalent to the terms of the Series C Preferred Stock held by such Holder and evidencing the Holder's right to convert such preferred stock into the consideration described in clause (i) of this Section 9. To the extent the Corporation elects to have the successor to the Corporation or the surviving entity issue a new series of preferred stock, the terms of any agreement pursuant to which a Change of Control is effected shall include terms requiring any such successor or surviving entity to comply with the provisions substantially equivalent to the provisions of this Section 9 and providing that the Series C Preferred Stock (or any such replacement security) will be similarly adjusted upon any subsequent transaction analogous to a Change of Control.

(b) Any recapitalization, reorganization, reclassification, consolidation, merger, sale of all or substantially all of the Corporation's assets to another Person or other transaction which is effected in such a way that holders of Common Stock are entitled to receive (either directly or upon subsequent liquidation) stock, securities or assets with respect to or in exchange for Common Stock is referred to herein as "**Organic Change.**" Prior to the consummation of any (i) sale of all or substantially all of the Corporation's assets to an acquiring Person or (ii) other Organic Change following which the Corporation is not a surviving entity, other than in each case an Organic Change that is a Change of Control (which shall be subject to Section 9(a)), the Corporation will secure from the Person purchasing such assets or the successor, or, if applicable, the parent of the successor, resulting from such Organic Change (in each case, the "**Acquiring Entity**") a written agreement (in form and substance reasonably satisfactory to the holders of at least a majority of the shares of Series C Preferred Stock then outstanding) to deliver to each holder of Series C Preferred Stock in exchange for such shares, a security of the Acquiring Entity evidenced by a written instrument substantially similar in form and substance to the Series C Preferred Stock, including, without limitation, having a stated value and liquidation preference equal to the Stated Value and the Series C Stock Liquidation Preference of the Series C Preferred Stock held by such holder, and reasonably satisfactory to the holders of at least a majority of the Series C Preferred Stock then outstanding.

10. Charges, Taxes and Expenses. Issuance of certificates for shares of Series C Preferred Stock shall be made without charge to the Holders for any issue or transfer tax, withholding tax, transfer agent fee or other incidental tax or expense in respect of the issuance of such certificates, all of which taxes and

expenses shall be paid by the Corporation; provided, however, that the Corporation shall not be required to pay any tax that may be payable in respect of any transfer involved in the registration of any certificates for Series C Preferred Stock in a name other than that of the Holder. The Holder shall be responsible for all other tax liability that may arise as a result of holding or transferring the Series C Preferred Stock.

11. Replacement Certificates. If any certificate evidencing Series C Preferred Stock is mutilated, lost, stolen or destroyed, the Corporation shall issue or cause to be issued in exchange and substitution for and upon cancellation hereof, or in lieu of and substitution for such certificate, a new certificate, but only upon receipt of evidence reasonably satisfactory to the Corporation of such loss, theft or destruction and customary and reasonable indemnity, if requested. Applicants for a new certificate under such circumstances shall also comply with such other reasonable regulations and procedures and pay such other reasonable third-party costs as the Corporation may prescribe.

12. Notices. Any and all notices or other communications or deliveries hereunder shall be in writing and shall be deemed given and effective on the earliest of (i) the date of transmission, if such notice or communication is delivered via facsimile at the facsimile number specified in this Section prior to 5:30 p.m. (New York City time) on a Trading Day, (ii) the next Trading Day after the date of transmission, if such notice or communication is delivered via facsimile at the facsimile number specified in this Section on a day that is not a Trading Day or later than 5:30 p.m. (New York City time) on any Trading Day, (iii) the Trading Day following the date of mailing, if sent by nationally recognized overnight courier service, or (iv) upon actual receipt by the party to whom such notice is required to be given. The addresses for such communications shall be: (i) if to the Corporation, to Ten Canal Park, Cambridge, Massachusetts 02141, facsimile: (617) 949-1722, Attention: Chief Executive Officer and General Counsel, or (ii) if to a Holder, to the address or facsimile number appearing on the Corporation's stockholder records or such other address or facsimile number as such Holder may provide to the Corporation in accordance with this Section 11.

13. Miscellaneous.

(a) The headings herein are for convenience only, do not constitute a part of this Certificate of Designations and shall not be deemed to limit or affect any of the provisions hereof.

(b) Any of the rights of the Holders of Series C Preferred Stock set forth herein may be waived by the affirmative vote of the Holders of a majority of the shares of Series C Preferred Stock then outstanding. No waiver of any default with respect to any provision, condition or requirement of this Certificate of Designations shall be deemed to be a continuing waiver in the future or a waiver of any subsequent default or a waiver of any other provision, condition or requirement hereof, nor shall any delay or omission of either party to exercise any right hereunder in any manner impair the exercise of any such right.

* * *

IN WITNESS WHEREOF, Aspen Technology, Inc. has caused this Certificate of Designations to be duly executed as of March 19, 2002.

ASPEN TECHNOLOGY, INC.

By: /s/ Lisa W. Zappala
Lisa W. Zappala
Senior Vice President and
Chief Financial Officer

**CERTIFICATE OF AMENDMENT
OF
CERTIFICATE OF INCORPORATION
OF
ASPEN TECHNOLOGY, INC.**

Aspen Technology, Inc., a corporation organized and existing under the Delaware General Corporation Law (the "Corporation"), does hereby certify:

FIRST: That, at a meeting of the Board of Directors of the Corporation held on October 10, 2001, the following resolution was duly adopted pursuant to Section 242 of the Delaware General Corporation Law proposing and declaring advisable the following amendment to the Certificate of Incorporation, as amended, of the Corporation:

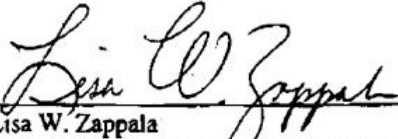
RESOLVED: That the first paragraph of Article FOURTH of the Certificate of Incorporation, as amended, be amended to read in its entirety as follows:

"FOURTH: The Corporation is authorized to issue two classes of capital stock, one of which is designated as common stock, \$.10 par value per share ("Common Stock"), and the other of which is designated as preferred stock, \$.10 par value per share ("Preferred Stock"). The total number of shares of both classes of capital stock that the Corporation shall have authority to issue is 130,000,000 shares, consisting of 120,000,000 shares of Common Stock and 10,000,000 shares of Preferred Stock. The Preferred Stock may be issued from time to time in one or more series as set forth in Section (b) of this Article FOURTH. The following is a statement of the designations and the powers, preferences and rights of, and the qualifications, limitations or restrictions applicable to, each class of capital stock of the corporation."

SECOND: That the foregoing amendment to the Corporation's Certificate of Incorporation, as amended, was adopted by the holders of a majority of the outstanding shares of Common Stock at the Annual Meeting of Stockholders of the Corporation held on December 11, 2001 pursuant to notice duly given.

IN WITNESS WHEREOF, Aspen Technology, Inc. has caused this Certificate to be signed by its Senior Vice President and Chief Financial Officer on March 21, 2002.

ASPEN TECHNOLOGY, INC.

By: 
Lisa W. Zappala
Senior Vice President and Chief Financial Officer

CERTIFICATE OF ELIMINATION

OF

ASPEN TECHNOLOGY, INC.

SERIES B-1 CONVERTIBLE PREFERRED STOCK AND

SERIES B-2 CONVERTIBLE PREFERRED STOCK

Aspen Technology, Inc., a corporation organized and existing under the Delaware General Corporation Law (the "Corporation"), does hereby certify:

FIRST: That at a meeting of the Board of Directors of the Corporation held on March 21, 2002, the following resolutions were duly adopted pursuant to Section 151 of the Delaware General Corporation Law proposing the elimination of the Series B-1 Convertible Preferred Stock and Series B-2 Convertible Preferred Stock of the Corporation:

RESOLVED: That no shares of the Corporation's Series B-1 Convertible Preferred Stock and Series B-2 Convertible Preferred Stock are outstanding and none will be issued subject to the Certificate of Designations of the Series B-1 Convertible Preferred Stock and Series B-2 Convertible Preferred Stock filed with the Secretary of State of the State of Delaware on February 6, 2002 (as corrected by the Certificate of Correction filed with the Secretary of State of the State of Delaware on February 12, 2002) with respect to such Series B-1 Convertible Preferred Stock and Series B-2 Convertible Preferred Stock.

RESOLVED: That a Certificate of Elimination be executed, which shall have the effect when filed with the Secretary of State of the State of Delaware of eliminating from the Certificate of Incorporation, as amended, of the Corporation all matters set forth in the Certificate of Designations with respect to such Series B-1 Convertible Preferred Stock and Series B-2 Convertible Preferred Stock.

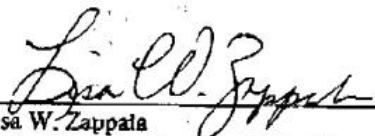
SECOND: None of the authorized shares of the Series B-1 Convertible Preferred Stock and Series B-2 Convertible Preferred Stock of the Corporation are outstanding and none will be issued subject to the Certificate of Designations of the Series B-1 Convertible Preferred Stock and Series B-2 Convertible Preferred Stock filed with the Secretary of State of the State of Delaware on February 6, 2002 (as corrected by the Certificate of Correction filed with the Secretary of State of the State of Delaware on February 12, 2002).

THIRD: In accordance with the provisions of Section 151 of the Delaware General Corporation Law, the Certificate of Incorporation, as amended, of the Corporation is hereby amended to eliminate therefrom all matters set forth in the Certificate of Designations of the Series B-1 Convertible Preferred Stock and Series B-2 Convertible Preferred Stock with respect to such Series B-1 Convertible Preferred Stock and Series B-2 Convertible Preferred Stock.

IN WITNESS WHEREOF, Aspen Technology, Inc. has caused this certificate to be signed by its Senior Vice President and Chief Financial Officer on March 21, 2002.

ASPEN TECHNOLOGY, INC.

By:


Lisa W. Zappala

Senior Vice President and Chief Financial Officer

STATE OF DELAWARE
CERTIFICATE OF MERGER OF
DOMESTIC CORPORATION AND
FOREIGN CORPORATION

Pursuant to Title 8, Section 252) of the Delaware General Corporation Law, the undersigned corporation executed the following Certificate of Merger:

FIRST: The name of the surviving corporation is Aspen Technology, Inc., a Delaware corporation, and the name of the corporation being merged into this surviving corporation is Chesapeake Properties, Inc., a New Jersey corporation.

SECOND: The Agreement of Merger has been approved, adopted, certified, executed and acknowledged by each of the constituent corporations.

THIRD: The name of the surviving corporation is Aspen Technology, Inc., a Delaware corporation.

FOURTH: The Certificate of Incorporation of the surviving corporation shall be its Certificate of Incorporation.

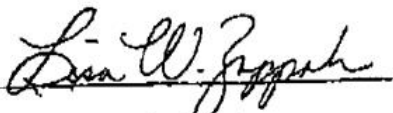
FIFTH: The authorized stock and par value of the non-Delaware company is 100 shares - no par value.

SIXTH: The merger is to become effective on June 28, 2002 , for accounting purposes only

SEVENTH: The Agreement of Merger will be furnished by the surviving corporation on request, without cost, to any stockholder of the constituent corporations.

EIGHTH: The Agreement of Merger is on file at the office of the surviving corporation, Aspen Technology, Inc., the address of which is 1293 Eldridge Parkway, Houston, Texas 77077.

IN WITNESS WHEREOF, said surviving corporation has caused this certificate to be signed by an authorized officer, the 24th day of June, 2002.

BY: 
Name: Liss W. Zappala
Title: Sr. VP & CFO

STATE OF DELAWARE
CERTIFICATE OF MERGER OF
DOMESTIC CORPORATION AND
FOREIGN CORPORATION

Pursuant to Title 8, Section 252 of the Delaware General Corporation Law, the undersigned corporation executed the following Certificate of Merger:

FIRST: The name of the surviving corporation is Aspen Technology, Inc., a Delaware corporation, and the name of the corporation being merged into this surviving corporation is Neural-Ware, Inc., a Pennsylvania corporation.

SECOND: The Agreement of Merger has been approved, adopted, certified, executed and acknowledged by each of the constituent corporations.

THIRD: The name of the surviving corporation is Aspen Technology, Inc., a Delaware corporation.

FOURTH: The Certificate of Incorporation of the surviving corporation shall be its Certificate of Incorporation.

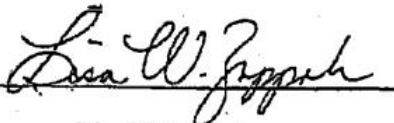
FIFTH: The authorized stock and par value of the non-Delaware company is 1000 - no par value.

SIXTH: The merger is to become effective on June 28, 2002, for accounting purposes only.

SEVENTH: The Agreement of Merger will be furnished by the surviving corporation on request, without cost, to any stockholder of the constituent corporations.

EIGHTH: The Agreement of Merger is on file at the office of the surviving corporation, Aspen Technology, Inc., the address of which is 1293 Eldridge Parkway, Houston, Texas 77077.

IN WITNESS WHEREOF, said surviving corporation has caused this certificate to be signed by an authorized officer, the 24th day of June, 2002.

BY: 

Name: Lisa W. Zappala

Title: Sr. VP & CFO

CERTIFICATE OF OWNERSHIP AND MERGER

merging

PETROVANTAGE, INC., a Delaware corporation

into

ASPEN TECHNOLOGY, INC., a Delaware corporation

Aspen Technology, Inc., a corporation organized and existing under and by virtue of the General Corporation Law of the State of Delaware (the "Corporation"), does hereby certify:

FIRST: That the Corporation was incorporated on March 11, 1998, pursuant to the General Corporation Law of the State of Delaware.

SECOND: That the Corporation owns all of the outstanding shares of common stock, \$0.0001 par value per share, of PetroVantage, Inc., a corporation incorporated on July 13, 2000, pursuant to the General Corporation Law of the State of Delaware.

THIRD: That the Board of Directors of the Corporation, at a meeting of the Board of Directors on November 6, 2002, duly adopted the following resolutions:

RESOLVED: That pursuant to Section 253 of the General Corporation Law of the State of Delaware, the Corporation is hereby authorized to effect a merger (the "Merger") of PetroVantage, Inc., a Delaware corporation and wholly owned subsidiary of the Corporation ("PetroVantage"), with and into the Corporation.

RESOLVED: That the Chief Executive Officer, the Chief Strategy Officer and Secretary, and the Chief Financial Officer of the Corporation are severally authorized to execute a Certificate of Ownership and Merger with respect to the Merger, to cause the same to be filed with the Secretary of State of the State of Delaware, and to take all such other actions and to execute all such other instruments and agreements as they or any of them may deem appropriate to effect such filing and the Merger.

RESOLVED: That the Merger shall be effective immediately upon filing of the Certificate of Ownership and Merger with the Secretary of State of the State of Delaware.

FOURTH: That this Certificate of Ownership and Merger shall be effective upon the filing of the Certificate of Ownership and Merger with the Secretary of State of the State of Delaware.

IN WITNESS WHEREOF, the Corporation has caused this Certificate to be signed by its Senior Vice President and Chief Financial Officer this 16th day of December, 2002.

ASPEN TECHNOLOGY, INC.

By: /s/ Lisa W. Zappala
Lisa W. Zappala
Senior Vice President and
Chief Financial Officer

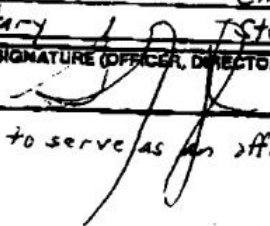
SEND INVOICE AND PAYMENT ONLY - NO ATTACHMENTS - NO ADDITIONAL PAGES

NATURE OF BUSINESS		PRINCIPAL PLACE OF BUSINESS OUTSIDE OF DELAWARE			
DIRECTORS		NAME	STREET/CITY/STATE/ZIP		DATE TERM EXPIRES
1.	Lawrence Evans	AspenTech	10 Canal Park	Cambridge MA	02139
2.	Stephen Boyle	"	"	"	"
3.	Gretchen Briebach	"	"	"	"
4.	Charles Moore	"	"	"	"
5.					
6.					

DO NOT WRITE IN THIS SPACE - FOR BANK USE ONLY

* Treasurer Lisa Zappala

OFFICERS		NAME	STREET/CITY/STATE/ZIP		DATE TERM EXPIRES
1.	President	Charles Moore	c/o AspenTech	10 Canal Park	Cambridge MA
2.	Secretary	Stephen Boyle	"	"	"

X ORIGINAL SIGNATURE (OFFICER, DIRECTOR OR INCORPORATOR)  TITLE Secretary DATE 12/20/

* Each to serve as an officer until his or her successor is duly elected and qualified.

**CERTIFICATE OF AMENDMENT
OF
CERTIFICATE OF INCORPORATION
OF
ASPEN TECHNOLOGY, INC.**

**Pursuant to Section 242 of the General Corporation Law
of the State of Delaware**

Aspen Technology, Inc., a corporation organized and existing under and by virtue of the General Corporation Law of the State of Delaware (the "Corporation"), does hereby certify as follows:

At a meeting of the Board of Directors of the Corporation a resolution was duly adopted, pursuant to Section 242 of the General Corporation Law of the State of Delaware, setting forth an amendment to the Certificate of Incorporation of the Corporation, as amended to date, and declaring said amendment to be advisable. The stockholders of the Corporation duly adopted said amendment at a special meeting of stockholders in accordance with Section 242 of the General Corporation Law of the State of Delaware. The resolution setting forth the amendment is as follows:

RESOLVED: That the first paragraph of Article FOURTH of the Certificate of Incorporation of the Corporation, as amended, be amended to read in its entirety as follows:

"FOURTH: The Corporation is authorized to issue two classes of capital stock, one of which is designated as common stock, \$0.10 par value per share ("Common Stock"), and the other of which is designated as preferred stock, \$0.10 par value per share ("Preferred Stock"). The total number of shares of both classes of capital stock that the Corporation shall have authority to issue is 220,000,000 shares, consisting of 210,000,000 shares of Common Stock and 10,000,000 shares of Preferred Stock. The Preferred Stock may be issued from time to time in one or more series as set forth in Section (b) of this Article FOURTH. The following is a statement of the designations and the powers, preferences and rights of, and the qualifications, limitations or restrictions applicable to, each class of capital stock of the Corporation."

IN WITNESS WHEREOF, the Corporation has caused this Certificate of Amendment to be signed by its President and Chief Executive Officer as of August 13, 2003.

ASPEN TECHNOLOGY, INC.

By: /s/ David L. McQuillin
David L. McQuillin
President and Chief Executive Officer

ASPEN TECHNOLOGY, INC.

**CERTIFICATE OF DESIGNATIONS
OF
SERIES D-1 CONVERTIBLE PREFERRED STOCK
AND
SERIES D-2 CONVERTIBLE PREFERRED STOCK
(Pursuant to Section 151 of the Delaware General Corporation Law)**

Aspen Technology, Inc., a Delaware corporation (the "Corporation"), in accordance with the provisions of Section 103 of the Delaware General Corporation Law, does hereby certify that the following resolution was duly adopted by the Board of Directors of the Corporation as of June 1, 2003, in accordance with Section 141(c) of the Delaware General Corporation Law:

RESOLVED, that two series of Preferred Stock, Series D-1 Convertible Preferred Stock, par value \$0.10 per share, and Series D-2 Convertible Preferred Stock, par value \$0.10 per share, of the Corporation are hereby created and the designation, number of shares, powers, preferences, rights, qualifications, limitations and restrictions thereof (in addition to any provisions set forth in the Certificate of Incorporation of the Corporation that are applicable to the Preferred Stock of all classes and series) are as follows:

**SERIES D-1 CONVERTIBLE PREFERRED STOCK
AND
SERIES D-2 CONVERTIBLE PREFERRED STOCK**

A total of 302,000 shares of the authorized and unissued Preferred Stock of the Corporation are hereby designated "Series D-1 Convertible Preferred Stock" ("Series D-1 Preferred Stock") and a total of 65,000 shares of the authorized and unissued Preferred Stock of the Corporation are hereby designated "Series D-2 Convertible Preferred Stock" ("Series D-2 Preferred Stock," and together with the Series D-1 Preferred Stock, "Series D Preferred Stock"), with each series having the following rights, preferences, powers, privileges and restrictions, qualifications and limitations:

1. Dividends

(a) Dividend Rate. The holders of shares of Series D Preferred Stock shall be entitled, out of funds legally available therefor, to receive cumulative dividends at the rate per annum equal to 8% (subject to adjustment in accordance with Section 6(a) and 6(b) below) of \$333.00 per share (subject to appropriate adjustment in the event of any stock dividend, stock split, reverse stock split, combination, split-up, recapitalization and like occurrences on or after the Series D Original Issue Date (as defined below) affecting such shares, the "Stated Value"), payable only when, as and if declared by the Board of Directors of the Corporation. Such dividends shall be calculated on the basis of a 365-day year, shall accumulate daily commencing on the Series D Original Issue Date, shall compound quarterly to the extent not previously paid, and shall accumulate from the date of issuance of a share of Series D Preferred Stock until such share is no longer outstanding. Furthermore, such dividends shall be deemed to accumulate from the Series D Original Issue Date whether or not earned or declared and whether or not there are profits, surplus or other funds of the Corporation legally available for the payment of dividends.

(b) Dividend Payments

(i) Dividends declared on Series D Preferred Stock by the Board of Directors of the Corporation pursuant to Subsection 1(a) above shall be payable in cash, except that, in the sole discretion of the Corporation (subject to Subsection 1(b)(ii) below), such dividends may be paid in Common Stock, par value \$0.10 per share, of the Corporation ("Common Stock") as follows: Following the end of any calendar quarter, commencing with the quarter ending March 31, 2004, if the Board elects to pay a dividend, then the Corporation shall deliver, by no later than the twentieth day following the end of such calendar quarter (such twentieth day after the calendar quarter being the "Quarterly Deadline"), a written notice to each of the holders of Series D Preferred Stock advising such holders that the Corporation has elected, pursuant to this paragraph (i), to pay all or any portion of the dividends accumulated on the Series D Preferred Stock through the final day of such calendar quarter (such final day of the calendar quarter being the "Record Date"). If the Corporation delivers such a notice, the Corporation shall pay such dividend on the twenty-fourth Trading Day following the applicable Quarterly Deadline. Any such dividend shall be payable in cash, except to the extent that the notice delivered with respect thereto specifies that an amount (which may be up to all) of such dividend shall be paid by the delivery of shares of Common Stock to holders of Series D Preferred Stock as of the Record Date (or, if such day is not a Trading Day, then the immediately preceding Trading Day, as defined below). If the Corporation elects to pay less than all of such accumulated dividends, an equal amount of the dividends declared shall be paid with respect to each share of Series D Preferred Stock and the form of payment (that is, cash, Common Stock or a combination thereof) shall be identical with respect to each share of Series D Preferred Stock. The number of shares of Common Stock issuable in payment of any such dividends to be paid in Common Stock shall be calculated as set forth in Subsection 1(b)(iii) below, and the shares shall be delivered as set forth in Subsection 1(b)(iv) below.

(ii) Notwithstanding any other provision hereof, the Corporation shall not be entitled to pay a dividend in Common Stock with respect to shares of Series D Preferred Stock pursuant to Subsection 1(b)(i) above or Section 4(b) below unless, with respect to such shares all of the following conditions are satisfied (with clause (E) only being applicable to Series D-1 Preferred Stock):

- (A) the Common Stock is listed on the Nasdaq National Market, the American Stock Exchange or the New York Stock Exchange at all times, without interruption, between the date on which the Corporation gives notice under Subsection 1(b)(i) through the date that the certificate representing the shares of Common Stock being issued in payment of such dividend is actually delivered to the applicable holder of Series D Preferred Stock;
- (B) as of such delivery date, the Corporation has not received any written notice or warning from such trading or quotation facility with respect to the potential delisting of the Common Stock, which notice or warning continues to be unresolved or otherwise in effect as of such delivery date such that the Common Stock could not be listed and sold within 90 days thereafter by reason of such notice or warning;
- (C) the shares of Common Stock issued in payment of such dividend shall be the subject of a registration statement filed under the Securities Act of 1933, as amended (the "Securities Act"), which registration statement shall be effective

as of the issue date, or all such shares may be sold pursuant to Rule 144(k) under the Securities Act;

- (D) none of the following have occurred on or prior to such the issue date (1) the Corporation or any significant subsidiary of the Corporation, as defined in Rule 1-02(w) of Regulation S-X, (a "Material Subsidiary") commences a case or other proceeding under any bankruptcy, reorganization, arrangement, adjustment of debt, relief of debtors, dissolution, insolvency or liquidation or similar law of any jurisdiction relating to the Corporation or any Material Subsidiary thereof; (2) there is commenced against the Corporation or any Material Subsidiary any such case or proceeding that is not dismissed within 60 days after commencement; (3) the Corporation or any Material Subsidiary is adjudicated insolvent or bankrupt or any order of relief or other order approving any such case or proceeding is entered; (4) the Corporation or any Material Subsidiary suffers any appointment of any custodian or the like for it or any substantial part of its property that is not discharged or stayed within 60 days; (5) the Corporation or any Material Subsidiary makes a general assignment for the benefit of creditors; (6) the Corporation or any Material Subsidiary fails to pay, or states in writing that it is unable to pay or is unable to pay, its debts generally as they become due; or (7) the Corporation or any subsidiary of the Corporation, by any act or failure to act, expressly indicates its consent to, approval of or acquiescence in any of the foregoing or takes any corporate or other action that effects any of the foregoing; and
- (E) solely with respect to the holders of Series D-1 Preferred Stock, the receipt of the Common Stock by such holders of Series D-1 Preferred Stock will be exempt from the provisions of Section 16(b) of the Securities Exchange Act of 1934, as amended (or any successor thereto) (the "Exchange Act").

(iii) If a dividend on the Series D Preferred Stock is paid in shares of Common Stock, the number of shares of Common Stock to be issued to a holder of Series D Preferred Stock shall equal the quotient of (A) the amount of the dividend payable to such holder divided by (B) the arithmetic average of the Average Daily Prices for twenty consecutive Trading Days commencing on the Trading Day immediately following the applicable Quarterly Deadline. The Corporation shall issue, as of such dividend payment date, a certificate, registered in the name of the holder or its nominee, for the number of shares of Common Stock to which the holder shall be entitled.

(iv) If any dividend on Series D Preferred Stock is paid in shares of Common Stock, the Corporation shall, on or before the twenty-fourth Trading Day following the applicable Quarterly Deadline, (A) issue and deliver to such holder a certificate, registered in the name of such holder, for the number of shares of Common Stock to which such holder shall be entitled or (B) if and when the applicable shares of Common Stock may be held in a balance account with The Depository Trust Corporation through its Deposit Withdrawal Agent Commission System and after such holder has notified the Corporation that this clause (B) shall apply, credit the number of shares of Common Stock to which such holder shall be entitled to such holder's balance account with The Depository Trust Corporation through its Deposit Withdrawal Agent Commission System.

(v) No fractional shares of Common Stock shall be issued in payment of dividends on the Series D Preferred Stock pursuant to this Section 1(b). In lieu of any fractional shares to

which the holder would otherwise be entitled, the Corporation shall pay cash equal to such fraction multiplied by the then-effective Series D Conversion Price.

(vi) For purposes hereof, the following definitions shall apply:

- (A) "Trading Day" shall mean (I) any day on which the Common Stock is traded on the Nasdaq National Market, (II) if the Common Stock is not then listed on the Nasdaq National Market, any day on which the Common Stock is traded on any other national securities exchange, market, or trading or quotation facility, or (III) if the Common Stock is not then listed or quoted on any national securities exchange, market, or trading or quotation facility, then a day on which trading occurs on the New York Stock Exchange (or any successor thereto); and
- (B) "Average Daily Price" shall mean, with respect to a Trading Day, the daily volume weighted average trading price (the total dollar amount traded on that day divided by trading volume for that day) of the Common Stock on that Trading Day and for the regular Trading Day session as reported at 4:15 P.M., Eastern time, by Bloomberg, LP function key HP by using W to calculate the daily weighted average, or such other price as may be determined by an alternative methodology agreed upon from time to time by the Corporation and the holders of a majority of the outstanding shares of Series D-1 Preferred Stock and the holders of a majority of the outstanding shares of Series D-2 Preferred Stock.

(c) Prohibition on Other Dividends. So long as any of the shares of Series D Preferred Stock are outstanding, the Corporation shall not declare, pay or set aside any dividends (other than dividends payable in shares of Common Stock, and then only at such times as the Corporation is in compliance with its obligations hereunder) on shares of Common Stock or Junior Stock unless dividends equal to the full amount of accumulated and unpaid dividends on the Series D Preferred Stock have been declared and have been, or are then being simultaneously, paid. For purposes hereof, "Junior Stock" shall mean the Series A Preferred Stock and any other class or series of equity securities of the Corporation not expressly ranking senior to or on parity with the Series D Preferred Stock with respect to payment of dividends or rights upon liquidation, dissolution or winding up. "Parity Stock" shall mean any class or series of equity securities of the Corporation expressly on parity with the Series D Preferred Stock, as to the payment of dividends and as to distribution of assets upon liquidation, dissolution or winding up, whether the dividend rates, dividend payment dates or redemption or liquidation prices per share thereof be different from those of the Series D Preferred Stock, if the holders of such class of stock or series and the Series D Preferred Stock shall be entitled to the receipt of dividends and of amounts distributable upon liquidation, dissolution or winding up in proportion to their respective amounts of accumulated but unpaid dividends per share or liquidation preferences, without preference or priority one over the other. The Series D-1 Preferred Stock shall be Parity Stock with respect to the Series D-2 Preferred Stock, and the Series D-2 Preferred Stock shall be Parity Stock with respect to the Series D-1 Preferred Stock.

2. Liquidation, Dissolution or Winding Up; Certain Mergers, Consolidations and Asset Sales

(a) Payments to Holders of Series D Preferred Stock. In the event of any Liquidation (as hereinafter defined), the holders of shares of Series D Preferred Stock then outstanding shall be entitled to be paid out of the assets of the Corporation available for distribution to its stockholders,

before any payment shall be made to the holders of Common Stock or Junior Stock by reason of their ownership thereof, an amount per share equal to the greater of (i) the Stated Value, plus any accumulated but unpaid dividends with respect thereto, and (ii) such amount per share as would have been payable had each such share been converted into Common Stock pursuant to Section 4 below immediately prior to such Liquidation (the amount payable pursuant to this sentence is hereinafter referred to as the "Series D Liquidation Amount"). If upon any such Liquidation the remaining assets of the Corporation available for distribution to its stockholders shall be insufficient to pay the holders of shares of Series D Preferred Stock and any Parity Stock (as defined below) the full amount to which they shall be entitled, the holders of shares of Series D Preferred Stock and any Parity Stock shall share ratably in any distribution of the remaining assets and funds of the Corporation in proportion to the respective amounts that would otherwise be payable in respect of the shares held by them upon such distribution if all amounts payable on or with respect to such shares were paid in full. A "Liquidation" shall mean any of the following: (A) a liquidation, dissolution or winding up of the Corporation, whether voluntary or involuntary, or (B) a Deemed Liquidation Event (as defined below).

(b) Payments to Holders of Junior Stock. After the payment of all preferential amounts required to be paid to the holders of Series D Preferred Stock, any Parity Stock and any other class or series of stock of the Corporation ranking on liquidation senior to the Series D Preferred Stock, upon the dissolution, liquidation or winding up of the Corporation, the holders of shares of Junior Stock then outstanding shall be entitled to receive the remaining assets and funds of the Corporation available for distribution to its stockholders.

(c) Deemed Liquidation Events

(i) The following events shall be deemed to be a liquidation of the Corporation for purposes of this Section 2 (a "Deemed Liquidation Event"):

(A) a merger, consolidation, recapitalization, reorganization or other transaction in which:

(I) the Corporation is a constituent party or

(II) a subsidiary of the Corporation is a constituent party and the Corporation issues shares of its capital stock pursuant to such merger or consolidation,

except any such merger, consolidation, recapitalization, reorganization or other transaction involving the Corporation or a subsidiary in which the holders of capital stock of the Corporation immediately prior to such merger or consolidation continue to hold immediately following such merger or consolidation, recapitalization, reorganization or other transaction, at least 51%, by voting power and economic interest, of the capital stock of (1) the surviving or resulting corporation or (2) if the surviving or resulting corporation is a wholly owned subsidiary of another corporation immediately following such merger or consolidation, the parent corporation of such surviving or resulting corporation; or

(B) the sale, in a single transaction or series of related transactions, by the Corporation of all or substantially all the assets of the Corporation (except where such sale is to a wholly owned subsidiary of the Corporation).

(ii) The Corporation shall not effect any transaction constituting a Deemed Liquidation Event pursuant to Subsection 2(c)(i)(A) above unless (A) the agreement or plan of merger or consolidation provides that the consideration payable to the stockholders of the Corporation shall be allocated among the holders of capital stock of the Corporation in accordance with Subsections 2(a) and 2(b) above or (B) the holders of at least a majority of the then-outstanding shares of Series D-1 Preferred Stock and the then-outstanding shares of Series D-2 Preferred Stock specifically consent in writing to the allocation of such consideration in a manner different from that provided in Subsections 2(a) and 2(b) above.

(iii) In the event of a Deemed Liquidation Event pursuant to Subsection 2(c)(i)(B) above, the Corporation shall use its reasonable best efforts to distribute to each holder of Series D Preferred Stock, in respect of each share of Series D Preferred Stock held by such holder, the Series D Liquidation Amount within ten Trading Days of the consummation of such Deemed Liquidation Event. If such distribution has not occurred, then (A) the Corporation shall deliver a written notice to each of the holders of Series D Preferred Stock no later than fifteen Trading Days after the Deemed Liquidation Event advising such holders of their right (and the requirements to be met to secure such right) pursuant to the terms of the following clause (B) to require the redemption of such shares of Series D Preferred Stock, and (B) if the holders of at least a majority of the then-outstanding shares of Series D-1 Preferred Stock or Series D-2 Preferred Stock so request in a written instrument delivered to the Corporation (a "Required Distribution Notice") not later than thirty Trading Days after such Deemed Liquidation Event (which period shall be extended by any period of noncompliance of the Corporation with clause (A) above), the Corporation shall use the consideration received by the Corporation, directly or indirectly, as a result of such Deemed Liquidation Event (net of any liabilities associated with the assets sold or technology licensed, as determined in good faith by the members of the Board of Directors of the Corporation), to the extent legally available therefor (the "Net Proceeds"), to redeem, on a date not later than forty-five Trading Days after such Deemed Liquidation Event (the "Liquidation Redemption Date"), all outstanding shares of Series D-1 Preferred Stock and/or Series D-2 Preferred Stock, as applicable, at a price per share equal to the Series D Liquidation Amount. In the event of a redemption pursuant to the preceding sentence, if the Net Proceeds are not sufficient to redeem all outstanding shares of Series D-1 Preferred Stock and/or Series D-2 Preferred Stock, as applicable, the Corporation shall redeem a pro rata portion of each holder's shares of Series D-1 Preferred Stock or Series D-2 Preferred Stock, as applicable. In no event shall a holder of Series D Preferred Stock receive more than such holder would receive if all holders of Series D Preferred Stock gave a Required Distribution Notice. The provisions of Section 6 below shall apply, with such necessary changes in the details thereof as are necessitated by the context, to the redemption of the Series D Preferred Stock pursuant to this Subsection 2(c)(iii). Prior to the distribution or redemption provided for in this Subsection 2(c)(iii), the Corporation shall not expend or dissipate the consideration received for such Deemed Liquidation Event, except to discharge expenses incurred in the ordinary course of business.

(iv) The amount deemed paid or distributed to the holders of capital stock of the Corporation upon any such merger, consolidation, sale or redemption shall be the cash or the value of the property, rights or securities paid or distributed to such holders by the Corporation or the acquiring person, firm or other entity. The value of such property, rights or securities shall be determined in good faith by the Board of Directors of the Corporation.

(d) The Corporation shall mail written notice of any Liquidation to each holder of Series D Preferred Stock not less than twenty days prior to the payment date or effective date thereof.

3. Voting

(a) General Voting Rights. On any matter (other than, in the case of the Series D-1 Preferred Stock, the election of the directors) presented to the stockholders of the Corporation for their action or consideration at any meeting of stockholders of the Corporation (or by written action of stockholders in lieu of meeting), each holder of outstanding shares of Series D Preferred Stock shall be entitled to the number of votes equal to the number of whole shares of Common Stock into which the shares of Series D Preferred Stock held by such holder are convertible (subject to the limitations of Section 12 below) as of the record date for determining stockholders entitled to vote on such matter; *provided, however*, in no event shall any share of Series D Preferred Stock be entitled to more votes than the Maximum Per Share Preferred Vote (as defined below). Except as provided by law or by the provisions of Subsection 3(b) or 3(c) below, holders of Series D Preferred Stock shall vote together with the holders of Common Stock, and with the holders of any other series of Preferred Stock the terms of which so provide, as a single class.

As used herein, the "Maximum Per Share Preferred Vote" for each share of Series D-1 Preferred Stock shall be the lesser of (i) 125.66 or such greater number of votes as may be specifically permitted under then applicable rules or regulation of the Nasdaq National Market or other applicable market or exchange, and (ii) the number of shares of Common Stock into which each share of Series D-1 Preferred Stock is convertible as of 5:00 P.M. on the record date for the vote.

(b) Elections of Directors. Except as otherwise provided below in this Section 3(b), the holders of the shares of Series D-1 Preferred Stock, exclusively and as a separate class, shall be entitled to elect a number of directors of the Corporation as provided below, and the holders of the shares of Common Stock and of any other class or series of voting stock (but excluding the Series D-1 Preferred Stock), exclusively and as a separate class, shall, subject to the rights of any additional series of Preferred Stock that may be established from time to time, be entitled to elect the balance of the total number of directors of the Corporation. For so long as at least 60,060 shares of Series D-1 Preferred Stock are outstanding, the holders of Series D-1 Preferred Stock shall be entitled to elect a number of directors equal to, rounding to the closest whole number, with .5 being rounded up, (except that rounding shall be down to the closest whole number in the event that rounding up would permit the Series D-1 Preferred Stock to elect fifty percent (50%) or more of the board of directors), the product of (i) the total number of directors to be on the Board of Directors immediately following an election of directors, multiplied by (ii) a fraction, of which (A) the numerator shall be the aggregate Maximum Per Share Preferred Votes for all shares of Series D-1 Preferred Stock outstanding at the time of the vote and (B) the denominator shall be the sum of (x) the total number of shares of Common Stock outstanding as of the record date for the vote, (y) the aggregate Maximum Per Share Preferred Votes for all shares of Series D-1 Preferred Stock outstanding as of 5:00 P.M. on the record date for the vote, and (z) for each other security of the Corporation, including the Series D-2 Preferred Stock, entitled to vote in an election for directors as of the record date for the vote, the least of (I) the maximum vote permitted under the Certificate of Incorporation, (II) the maximum vote permitted under any Certificate of Designation of this Corporation and (III) the maximum vote permitted under any applicable law, rule or regulation. At any meeting held for the purpose of electing directors, the presence in person or by proxy of the holders of a majority of the shares of Series D-1 Preferred Stock then outstanding shall constitute a quorum of the Series D-1 Preferred Stock for the purpose of electing directors by holders of the Series D-1 Preferred Stock. A vacancy in any directorship filled by the holders of Series D-1 Preferred Stock shall be filled only by vote or written consent in lieu of a meeting of the holders of the Series D-1 Preferred Stock or by any remaining director or directors elected by the holders of Series D-1 Preferred Stock pursuant to this Subsection 3(b).

(c) Series Voting Rights. The Corporation shall not, without the written consent or affirmative vote of the holders of a majority of the shares of (i) Series D-1 Preferred Stock then outstanding, and (ii) with respect to Subsection 3(c)(i) through Subsection 3(c)(v) (inclusive) below, Series D-2 Preferred Stock, in each case given in writing or by vote at a meeting, consenting or voting (as the case may be) separately as a class:

- (i) amend the Certificate of Incorporation, including this Certificate of Designation, so as to amend, alter or repeal the powers, preferences or special rights of the Series D Preferred Stock in a manner that adversely affects the rights, preferences or privileges of the holders of Series D Preferred Stock, *provided* that nothing in this Subsection 3(c)(i) shall prohibit the Corporation from effecting a Deemed Liquidation Event so long as the Corporation complies with the provisions of Subsections 2(c)(ii) through (iv) (inclusive) above;
- (ii) authorize, designate or issue any Parity Stock or any class of stock of the Corporation ranking senior to the Series D Preferred Stock as to the payment of dividends and as to distribution of assets upon Liquidation (“Senior Stock”);
- (iii) amend the Certificate of Incorporation to authorize any additional shares of Series D Preferred Stock, Parity Stock or Senior Stock;
- (iv) amend, alter or repeal any provision of this Certificate of Designations, *provided* that nothing in this Subsection 3(c)(iv) shall prohibit the Corporation from effecting a Deemed Liquidation Event so long as the Corporation complies with the provisions of Subsections 2(c)(ii) through (iv) (inclusive) above;
- (v) amend, alter or repeal the Bylaws of the Corporation in any way that is inconsistent with this Certificate of Designations;
- (vi) take any action to decrease the number of directors of the Corporation to less than five;
- (vii) apply any of its assets in excess of \$7,500,000 in any 12-month period to the redemption, retirement, purchase or acquisition, directly or indirectly (including through a Corporation Subsidiary), of any shares of capital stock of the Corporation (including securities convertible into or exchangeable for such capital stock), other than (A) redemptions of Preferred Stock in accordance with the terms of the Certificate of Incorporation, (B) repurchases of Common Stock from employees and consultants who received the stock in connection with their performance of services at cost upon termination of employment or service, (C) redemptions, retirements, repurchases or acquisitions of 5¼% Convertible Subordinated Debentures due June 15, 2005 of the Corporation (“Convertible Debentures”), and (D) repurchases made with the proceeds of an issuance of Junior Stock, except where such proceeds are used to repurchase securities from any officer or director of the Corporation;
- (viii) acquire all or substantially all of the assets or stock of any class of any other corporation, or any equity interest in any partnership, limited liability company, joint venture, association, joint stock company or trust where the aggregate consideration paid by the Corporation (as determined in good faith by the directors of the Corporation at the time definitive agreements are entered into) for such

acquisition is greater than \$80,000,000; or

- (ix) incur any indebtedness for borrowed money, which for purposes of this paragraph shall exclude the Convertible Debentures, or permit any Corporation Subsidiary to incur any indebtedness (other than indebtedness of Corporation Subsidiaries owed to the Corporation or other intercompany indebtedness), in excess of, at any time, the greater of (A) \$50,000,000; or (B) \$65,000,000 less the aggregate principal amount of the then-outstanding Convertible Debentures.

For purposes of this Subsection 3(c), the term "Corporation Subsidiary" shall mean any corporation, partnership, trust, limited liability company or other non-corporate business enterprise in which the Corporation (or another Corporation Subsidiary) holds stock or other ownership interests representing (1) more than 50% of the voting power of all outstanding stock or ownership interests of such entity or (2) the right to receive more than 50% of the net assets of such entity available for distribution to the holders of outstanding stock or ownership interests upon a liquidation or dissolution of such entity. The rights of the holders of the Series D-1 Preferred Stock under Subsections 3(c)(vi) through (3)(c)(viii) above shall terminate on the first date on which there are fewer than 30,030 outstanding shares of Series D-1 Preferred Stock.

At any meeting held for the purpose of voting on any of the matters for which the holders of the Series D-1 Preferred Stock or Series D-2 Preferred Stock have class voting rights, the presence in person or by proxy of the holders of a majority of the shares of Series D-1 Preferred Stock then outstanding or the Series D-2 Preferred Stock then outstanding, as the case may be, shall constitute a quorum of the Series D-1 Preferred Stock or Series D-2 Preferred Stock for the purpose of voting on matters to which these class voting rights apply.

4. Optional Conversion

The holders of the Series D Preferred Stock shall have conversion rights as follows (the "Conversion Rights"):

(a) Right to Convert. Each share of Series D Preferred Stock shall be convertible, at the option of the holder thereof, at any time and from time to time, and without the payment of additional consideration by the holder thereof, into such number of fully paid and non-assessable shares of Common Stock as is determined by dividing the Stated Value of such shares by the Series D Conversion Price (as defined below) in effect on the Conversion Date (as defined below). The "Series D Conversion Price" initially shall be \$3.33. Such initial Series D Conversion Price, and the rate at which shares of Series D Preferred Stock may be converted into shares of Common Stock, shall be subject to adjustment as provided below. In the event of a notice of redemption of any shares of Series D Preferred Stock pursuant to Section 6 below, the Conversion Rights of the shares of Series D Preferred Stock designated for redemption shall terminate at 5:00 p.m., Eastern time, on the last full day preceding the applicable Redemption Date (as defined below), unless the Redemption Price (as defined below) is not paid or tendered for payment on the Redemption Date, in which case the Conversion Rights for such shares shall continue until such price is paid, or tendered for payment, in full. In the event of a liquidation, dissolution or winding up of the Corporation, (i) the Conversion Rights shall terminate at 5:00 p.m., Eastern time, on the last full day preceding the date fixed for the payment of any such amounts distributable on such event to the holders of Series D Preferred Stock (unless such amounts are not paid or tendered for payment on the Redemption Date, in which case the Conversion Rights for such shares shall continue until such amounts are paid, or tendered for payment, in full) and (ii) the Corporation shall provide to each holder of shares of Series D Preferred Stock notice of such liquidation, dissolution or winding up,

which notice shall (A) be sent at least 20 days (unless a greater period is required by law) prior to the termination of the Conversion Rights and (B) state the amount per share of Series D Preferred Stock that will be paid or distributed on such liquidation, dissolution or winding up and in reasonable detail the manner of calculation thereof. For the purposes of this Subsection 4(a), "Redemption Date" shall mean any Mandatory Redemption Date (as defined below) or Optional Redemption Date (as defined below) and "Redemption Price" shall mean, as applicable, the Mandatory Redemption Price (as defined below) or the Optional Redemption Price (as defined below).

(b) Payment in Lieu of Accumulated dividends. Upon conversion of a share of Series D Preferred Stock in accordance with this Section 4, as part of the conversion, the Corporation shall pay to the holder thereof an amount equal to the total accumulated but unpaid dividends on such share. The Corporation shall pay such amount in cash or if the conditions set forth in Section 1(b)(ii) above are satisfied, in Common Stock, in its sole discretion. If the Corporation elects to pay such amount in shares of Common Stock, the number of shares of Common Stock to be issued shall equal the quotient of (i) such amount divided by (ii) the arithmetic average of the Average Daily Prices for five consecutive Trading Days, the last day of which shall be the second Trading Day preceding the date on which the amount is paid. To the extent the Corporation elects to pay such accumulated but unpaid dividends in shares of Common Stock, (i) the Corporation shall immediately notify such holder within two Trading Days of the Conversion Date in accordance with the notice provisions of Section 13 below and (ii) such election may not be revoked or otherwise changed by the Corporation. In the event the Corporation fails to deliver a notice that it intends to pay dividends in Common Stock within two Trading Days as required above, the Corporation shall pay such dividend in cash. All accrued but unpaid dividends paid by the Corporation in Common Stock pursuant to this Subsection 4(b) shall be paid by the Corporation on the tenth Trading Day following the applicable Conversion Date. All accumulated but unpaid dividends paid by the Corporation in cash pursuant to this Subsection 4(b) shall be paid by the Corporation on the fourth Trading Day following the applicable Conversion Date.

(c) Fractional Shares. No fractional shares of Common Stock shall be issued upon conversion of the Series D Preferred Stock pursuant to this Section 4. In lieu of any fractional shares to which the holder would otherwise be entitled, the Corporation shall pay cash equal to such fraction multiplied by the then-effective Series D Conversion Price. The Corporation shall, as soon as practicable after the Conversion Date, and in no event later than three Trading Days after the Conversion Date, pay to such holder any cash payable in lieu of any such fraction of a share.

(d) Mechanics of Conversion

(i) In order for a holder of Series D Preferred Stock to convert shares of Series D Preferred Stock into shares of Common Stock, such holder shall deliver to the office of the transfer agent for the Series D Preferred Stock (or at the principal office of the Corporation if the Corporation serves as its own transfer agent) a written notice (the "Conversion Notice") that such holder elects to convert all or any number of the shares of the Series D Preferred Stock represented by such certificate or certificates. The Conversion Notice shall state such holder's name or the names of the nominees in which such holder wishes the certificate or certificates for shares of Common Stock to be issued. If required by the Corporation, certificates surrendered for conversion shall be accompanied by a written instrument evidencing such holder's desire to convert a specified number of shares of Series D Preferred Stock, duly executed by the registered holder or such holder's attorney duly authorized in writing. The date specified by the holder in the notice shall be the conversion date or, if no date is specified in the Conversion Notice, the conversion date shall be the date the Conversion

Notice is delivered to the Corporation (as determined in accordance with the notice provisions hereof; such date, the "Conversion Date"). The shares of Common Stock issuable upon conversion of the shares represented by the certificate or certificates delivered to the Corporation shall be deemed to be outstanding as of the Conversion Date. On or before the Conversion Date, the holders shall surrender a certificate or certificates for the shares to be converted (or an affidavit of loss and indemnity agreement relating thereto) to the office of the transfer agent for the Series D Preferred (or at the principal office of the Corporation if the Corporation serves as its own transfer agent). Upon surrender of a certificate following one or more partial conversions, the Corporation shall promptly deliver to such holder a new certificate representing the remaining shares of Series D Preferred Stock. Upon conversion of any Series D Preferred Stock, the Corporation shall promptly (but in no event later than three Trading Days after the Conversion Date) issue or cause to be issued and cause to be delivered to, or upon the written order of, such holder (or former holder, as the case may be) of Series D Preferred Stock and in such name or names as such holder may designate, a certificate for the shares of Common Stock issuable upon such conversion, free of restrictive legends unless such shares of Common Stock are not then freely transferable without volume restrictions pursuant to Rule 144(k) under the Securities Act. Such holder, or any person so designated by such holder to receive such shares of Common Stock, shall be deemed to have become holder of record of such shares of Common Stock as of the Conversion Date. If and when such shares of Common Stock may be freely transferred pursuant to Rule 144 under the Securities Act or pursuant to an effective registration statement, the Corporation shall use its best efforts to deliver such shares of Common Stock electronically through the Depository Trust Corporation or another established clearing corporation performing similar functions, and shall issue such shares of Common Stock in the same manner as dividend payment shares are issued pursuant to Section 1(b)(iii) above.

(ii) The Corporation covenants that it shall at all times when the Series D Preferred Stock shall be outstanding, reserve and keep available out of its authorized but unissued stock, for the purpose of effecting the conversion of the Series D Preferred Stock, such number of its duly authorized but unissued and otherwise unreserved shares of Common Stock as shall from time to time be sufficient to effect the conversion of all outstanding Series D Preferred Stock or, if the number of shares of Common Stock so reserved is insufficient, the Corporation shall take any corporation action that is necessary to make available a sufficient number of authorized but unissued and otherwise unreserved shares of Common Stock within 90 days after the occurrence of such deficiency. Before taking any action that would cause an adjustment reducing the Series D Conversion Price below the then par value of the Common Stock, the Corporation shall take any corporate action that may, in the opinion of its counsel, be necessary in order that the Corporation may validly and legally issue fully paid and non-assessable shares of Common Stock at such adjusted Series D Conversion Price.

(iii) Upon any such conversion, shares of Common Stock issued upon conversion of such shares of Series D Preferred Stock shall not be deemed Additional Shares of Common Stock (as defined below) and no adjustment to the Series D Conversion Price shall be made for any accumulated but unpaid dividends on the Series D Preferred Stock surrendered for conversion or on the Common Stock delivered upon conversion.

(iv) All shares of Series D Preferred Stock that shall have been surrendered for conversion as herein provided shall no longer be deemed to be outstanding and all rights with respect to such shares, including the rights, if any, to receive notices and to vote, shall immediately cease and terminate on the Conversion Date, except for the right of the holders thereof to receive shares of Common Stock and cash, if any, in accordance with

Subsections 4(b) and 4(c) above. Any shares of Series D Preferred Stock so converted shall be retired and canceled and shall not be reissued, and the Corporation (without the need for action by the holders of Series D Preferred Stock or any other stockholders) may from time to time take such appropriate action as may be necessary to reduce the authorized number of shares of Series D Preferred Stock accordingly.

(v) The Corporation shall pay any and all issue and other similar taxes that may be payable in respect of any issuance or delivery of shares of Common Stock upon conversion of shares of Series D Preferred Stock pursuant to this Section 4. The Corporation shall not, however, be required to pay any tax that may be payable in respect of any transfer involved in the issuance and delivery of shares of Common Stock in a name other than that in which the shares of Series D Preferred Stock so converted were registered, and no such issuance or delivery shall be made unless and until the person or entity requesting such issuance has paid to the Corporation the amount of any such tax or has established, to the reasonable satisfaction of the Corporation, that such tax has been paid.

(e) Adjustments to Series D Conversion Price for Diluting Issues

(i) Special Definitions. For purposes of this Section 4, the following definitions shall apply:

- (A) "Option" shall mean any rights, options or warrants to subscribe for, purchase or otherwise acquire Common Stock or Convertible Securities.
- (B) "Series D Original Issue Date" shall mean the date on which a share of Series D Preferred Stock was first issued, regardless of the number of times the transfer of such share shall be made on the Corporation's stock transfer records and regardless of the number of certificates that may be issued to evidence such share.
- (C) "Convertible Securities" shall mean any evidences of indebtedness, shares or other securities directly or indirectly convertible into or exchangeable for Common Stock, but excluding Options.
- (D) "Additional Shares of Common Stock" shall mean all shares of Common Stock issued (or, pursuant to Subsection 4(e)(iii) below, deemed to be issued) by the Corporation after the Series D Original Issue Date, other than shares of Common Stock issued, issuable or deemed issued:
 - (I) as a dividend or distribution on Series D Preferred Stock;
 - (II) by reason of a dividend, stock split, split-up or other distribution on shares of Common Stock that is covered by Subsection 4(f) or 4(g) below;
 - (III) to employees or directors of, or consultants to, the Corporation or any of its subsidiaries pursuant to a plan, agreement or arrangement approved by the Board of Directors of the Corporation and by a majority of the directors of the Corporation who are eligible to serve on the Audit Committee of such Board under the then-applicable rules of the Securities and Exchange Commission and the Nasdaq National Market

(or other market or exchange on which the Common Stock is then traded or authorized for quotation);

(IV) to Accenture LLP pursuant to agreements in effect on June 1, 2003; or

(V) in connection with any transaction with any strategic investor, vendor or customer, lessor, customer, supplier, marketing partner, developer or integrator or any similar arrangement, in each case the primary purpose of which is not to raise equity capital, provided such issuance is approved by the Board of Directors of the Corporation and by a majority of the directors of the Corporation who are eligible to serve on the Audit Committee of such Board under the then-applicable rules of the Securities and Exchange Commission and the Nasdaq National Market (or other market or exchange on which the Common Stock is then traded or authorized for quotation).

(ii) No Adjustment of Series D Conversion Price. No adjustment in the Series D Conversion Price shall be made as the result of the issuance of Additional Shares of Common Stock if the consideration per share (determined pursuant to Subsection 4(e)(v) below) for such Additional Share of Common Stock issued or deemed to be issued by the Corporation is equal to or greater than the applicable Series D Conversion Price in effect immediately prior to the issuance or deemed issuance of such Additional Shares of Common Stock. In addition, no adjustment in the Series D Conversion Price shall be made (A) with respect to the Series D-1 Preferred Stock, if prior to such issuance or deemed issuance of Additional Shares of Common Stock, the Corporation receives written notice from the holders of at least a majority of the shares of Series D-1 Preferred Stock then outstanding agreeing that no such adjustment shall be made as a result of such issuance or deemed issuance and (B) with respect to the Series D-2 Preferred Stock, if prior to such issuance or deemed issuance of Additional Shares of Common Stock, the Corporation receives written notice from the holders of at least a majority of the shares of Series D-2 then outstanding agreeing that no such adjustment shall be made as a result of such issuance or deemed issuance.

(iii) Issue of Securities to be a Deemed Issue of Additional Shares of Common Stock

(A) If the Corporation at any time or from time to time after the Series D Original Issue Date shall issue any Options or Convertible Securities (excluding Options or Convertible Securities that, upon exercise, conversion or exchange thereof, would entitle the holder thereof to receive shares of Common Stock that are specifically excepted from the definition of Additional Shares of Common Stock by Subsection 4(e)(i)(D) above) or shall fix a record date for the determination of holders of any class of securities entitled to receive any such Options or Convertible Securities, then the maximum number of shares of Common Stock (as set forth in the instrument relating thereto without regard to any provision contained therein for a subsequent adjustment of such number) issuable upon the exercise of such Options or, in the case of Convertible Securities and Options therefor, the conversion or exchange of such Convertible Securities, shall be deemed to be Additional Shares of Common Stock issued as of the time of such issue or, in case such a record date shall have been fixed, as of the close of business on such record date.

(B) If the terms of any Option or Convertible Security, the issuance of which

resulted in an adjustment to the Series D Conversion Price pursuant to the terms of Subsection 4(e)(iv) below, are revised (either automatically pursuant to the provisions contained therein or as a result of an amendment to such terms) to provide for either (1) any increase or decrease in the number of shares of Common Stock issuable upon the exercise, conversion or exchange of any such Option or Convertible Security or (2) any increase or decrease in the consideration payable to the Corporation upon such exercise, conversion or exchange, then, effective upon such increase or decrease becoming effective, the Series D Conversion Price computed upon the original issue of such Option or Convertible Security (or upon the occurrence of a record date with respect thereto) shall be readjusted prospectively to such Series D Conversion Price as would have obtained had such revised terms been in effect upon the original date of issuance of such Option or Convertible Security. Notwithstanding the foregoing, no adjustment pursuant to this clause (B) shall have the effect of increasing the Series D Conversion Price to an amount that exceeds the lower of (i) the Series D Conversion Price on the original adjustment date, or (ii) the Series D Conversion Price that would have resulted from any issuances of Additional Shares of Common Stock between the original adjustment date and such readjustment date.

- (C) If the terms of any Option or Convertible Security (excluding Options or Convertible Securities that, upon exercise, conversion or exchange thereof, would entitle the holder thereof to receive shares of Common Stock that are specifically excepted from the definition of Additional Shares of Common Stock by Subsection 4(e)(i)(D) above), the issuance of which did not result in an adjustment to the Series D Conversion Price pursuant to the terms of Subsection 4(e)(iv) below (either because the consideration per share (determined pursuant to Subsection 4(e)(v) below) of the Additional Shares of Common Stock subject thereto was equal to or greater than the Series D Conversion Price then in effect, or because such Option or Convertible Security was issued before the Series D Original Issue Date), are revised after the Series D Original Issue Date (either automatically pursuant to the provisions contained therein or as a result of an amendment to such terms) to provide for either (1) any increase or decrease in the number of shares of Common Stock issuable upon the exercise, conversion or exchange of any such Option or Convertible Security or (2) any increase or decrease in the consideration payable to the Corporation upon such exercise, conversion or exchange, then such Option or Convertible Security, as so amended, and the Additional Shares of Common Stock subject thereto (determined in the manner provided in Subsection 4(e)(iii)(A) above) shall be deemed to have been issued effective upon such increase or decrease becoming effective.
- (D) Upon the expiration or termination of any unexercised Option or unconverted or unexchanged Convertible Security that resulted (either upon its original issuance or upon a revision of its terms) in an adjustment to the Series D Conversion Price pursuant to the terms of Subsection 4(e)(iv) below, the Series D Conversion Price shall be readjusted prospectively to such Series D Conversion Price as would have obtained had such Option or Convertible Security never been issued.
- (E) No adjustment in the Series D Conversion Price shall be made upon the issue

of shares of Common Stock or Convertible Securities upon the exercise of Options or the issue of shares of Common Stock upon the conversion or exchange of Convertible Securities.

(iv) Adjustment of Series D Conversion Price Upon Issuance of Additional Shares of Common Stock. In the event the Corporation shall at any time after the Series D Original Issue Date issue Additional Shares of Common Stock (including Additional Shares of Common Stock deemed to be issued pursuant to Subsection 4(e)(iii) above), without consideration or for a consideration per share less than the applicable Series D Conversion Price in effect immediately prior to such issue, then the Series D Conversion Price shall be reduced, concurrently with such issue, to a price (calculated to the nearest cent) determined by multiplying such Series D Conversion Price by a fraction, (A) the numerator of which shall be (1) the number of shares of Common Stock outstanding immediately prior to such issue plus (2) the number of shares of Common Stock that the aggregate consideration received or to be received by the Corporation for the total number of Additional Shares of Common Stock so issued would purchase at such Series D Conversion Price; and (B) the denominator of which shall be the number of shares of Common Stock outstanding immediately prior to such issue plus the number of such Additional Shares of Common Stock so issued; provided that, (i) for the purpose of this Subsection 4(e)(iv), all shares of Common Stock issuable upon conversion or exercise of shares of Series D Preferred Stock, Options or Convertible Securities outstanding immediately prior to such issue or upon exercise of such securities shall be deemed to be outstanding, and (ii) the number of shares of Common Stock deemed issuable upon conversion of such outstanding shares of Series D Preferred Stock shall be determined without giving effect to any adjustments to the Series D Conversion Price resulting from the issuance of Additional Shares of Common Stock that is the subject of this calculation.

(v) Determination of Consideration. For purposes of this Subsection 4(e), the consideration received by the Corporation for the issue of any Additional Shares of Common Stock shall be computed as follows:

(A) Cash and Property. Such consideration shall:

- (I) insofar as it consists of cash, be computed at the aggregate amount of cash received by the Corporation, excluding amounts paid or payable for accrued interest;
- (II) insofar as it consists of property other than cash, be computed at the fair market value thereof at the time of such issue, as determined in good faith by the non-management members of the Board of Directors of the Corporation; and
- (III) in the event Additional Shares of Common Stock are issued together with other shares or securities or other assets of the Corporation for consideration that covers both, be the proportion of such consideration so received, computed as provided in clauses (I) and (II) above, as determined in good faith by non-management members of the Board of Directors of the Corporation.

(B) Options and Convertible Securities. The consideration per share received by the Corporation for Additional Shares of Common Stock deemed to have been issued pursuant to Subsection 4(e)(iii) above, relating to Options and

Convertible Securities, shall be determined by dividing

- (I) the total amount, if any, received or receivable by the Corporation as consideration for the issue of such Options or Convertible Securities, plus the minimum aggregate amount of additional consideration (as set forth in the instruments relating thereto, without regard to any provision contained therein for a subsequent adjustment of such consideration) payable to the Corporation upon the exercise of such Options or the conversion or exchange of such Convertible Securities, or in the case of Options for Convertible Securities, the exercise of such Options for Convertible Securities and the conversion or exchange of such Convertible Securities, by
- (II) the maximum number of shares of Common Stock (as set forth in the instruments relating thereto, without regard to any provision contained therein for a subsequent adjustment of such number) issuable upon the exercise of such Options or the conversion or exchange of such Convertible Securities.

(vi) Multiple Closing Dates. In the event the Corporation shall issue on more than one date Additional Shares of Common Stock that are comprised of shares of the same series or class of Preferred Stock and that would result in an adjustment to the Series D Conversion Price pursuant to the terms of Subsection 4(e)(iv) above, and such issuance dates occur within a period of no more than 60 days, then, upon the final such issuance, the Series D Conversion Price shall be readjusted prospectively to give effect to all such issuances as if they occurred on the date of the final such issuance (and without giving effect to any adjustments as a result of such prior issuances within such period).

(f) Adjustment for Stock Splits and Combinations. If the Corporation shall at any time or from time to time after the Series D Original Issue Date (i) effect a subdivision of the outstanding Common Stock (whether by stock split, stock dividend or otherwise) without a corresponding subdivision of the Series D Preferred Stock, or (ii) combine the outstanding shares of Series D Preferred Stock (whether by reverse stock split or otherwise) without a corresponding combination of the Common Stock, the Series D Conversion Price in effect immediately before that subdivision or combination shall be proportionately decreased. If the Corporation shall at any time or from time to time after the Series D Original Issue Date (x) combine the outstanding shares of Common Stock (whether by reverse stock split or otherwise) without a corresponding combination of the Series D Preferred Stock, or (y) effect a subdivision of the outstanding shares of Series D Preferred Stock (whether by stock split, stock dividend or otherwise) without a corresponding subdivision of the Common Stock, the Series D Conversion Price in effect immediately before the combination or subdivision shall be proportionately increased. Any adjustment under this paragraph shall become effective at the close of business on the date the subdivision or combination becomes effective.

(g) Adjustment for Certain Dividends and Distributions. In the event the Corporation at any time, or from time to time after the Series D Original Issue Date shall make or issue, or fix a record date for the determination of holders of Common Stock entitled to receive, a dividend or other distribution payable in additional shares of Common Stock, then and in each such event the Series D Conversion Price in effect immediately before such event shall be decreased as of the time of such issuance or, in the event such a record date shall have been fixed, as of the close of business on such a record date, by multiplying the Series D Conversion Price then in effect by a fraction:

- (i) the numerator of which shall be the total number of shares of Common Stock issued and outstanding immediately prior to the time of such issuance or the close of business on such record date, and
- (ii) the denominator of which shall be the total number of shares of Common Stock issued and outstanding immediately prior to the time of such issuance or the close of business on such record date plus the number of shares of Common Stock issuable in payment of such dividend or distribution;

provided, however, that if such record date shall have been fixed and such dividend is not fully paid or if such distribution is not fully made on the date fixed therefor, the Series D Conversion Price shall be recomputed accordingly as of the close of business on such record date and thereafter the Series D Conversion Price shall be adjusted pursuant to this paragraph as of the time of actual payment of such dividends or distributions; and provided further, however, that no such adjustment shall be made if the holders of Series D Preferred Stock simultaneously receive (i) a dividend or other distribution of shares of Common Stock in a number equal to the number of shares of Common Stock as they would have received if all outstanding shares of Series D Preferred Stock had been converted into Common Stock on the date of such event or (ii) a dividend or other distribution of shares of Series D Preferred Stock that are convertible, as of the date of such event, into such number of shares of Common Stock as is equal to the number of additional shares of Common Stock being issued with respect to each share of Common Stock in such dividend or distribution.

(h) Adjustments for Other Dividends and Distributions. In the event the Corporation at any time or from time to time after the Series D Original Issue Date shall make or issue, or fix a record date for the determination of holders of Common Stock entitled to receive, a dividend or other distribution payable in securities of the Corporation (other than shares of Common Stock) or in cash or other property, then and in each such event provision shall be made so that the holders of the Series D Preferred Stock shall receive upon conversion thereof, in addition to the number of shares of Common Stock receivable thereupon, the kind and amount of securities of the Corporation, cash or other property that they would have been entitled to receive had the Series D Preferred Stock been converted into Common Stock on the date of such event and had they thereafter, during the period from the date of such event to and including the conversion date, retained such securities receivable by them as aforesaid during such period, giving application to all adjustments called for during such period under this paragraph with respect to the rights of the holders of the Series D Preferred Stock; provided, however, that no such provision shall be made if the holders of Series D Preferred Stock receive, simultaneously with the distribution to the holders of Common Stock, a dividend or other distribution of such securities, cash or other property in an amount equal to the amount of such securities, cash or other property as they would have received if all outstanding shares of Series D Preferred Stock had been converted into Common Stock on the date of such event.

(i) Adjustment for Merger or Reorganization, etc. Subject to the provisions of Subsection 2(c) above, if there shall occur any reorganization, recapitalization, reclassification, consolidation or merger involving the Corporation (which is not a Liquidation) in which the Common Stock (but not the Series D Preferred Stock) is converted into or exchanged for securities, cash or other property (other than a transaction covered by paragraph (e), (f) or (g) of this Section 4), then, following any such reorganization, recapitalization, reclassification, consolidation or merger, each share of Series D Preferred Stock shall be convertible into the kind and amount of securities, cash or other property that a holder of the number of shares of Common Stock of the Corporation issuable upon conversion of one share of Series D Preferred Stock immediately prior to such

reorganization, recapitalization, reclassification, consolidation or merger would have been entitled to receive pursuant to such transaction; and, in such case, appropriate adjustment (as determined in good faith by the Board of Directors of the Corporation) shall be made in the application of the provisions in this Section 4 with respect to the rights and interests thereafter of the holders of the Series D Preferred Stock, to the end that the provisions set forth in this Section 4 (including provisions with respect to changes in and other adjustments of the Series D Conversion Price) shall thereafter be applicable, as nearly as reasonably may be, in relation to any securities or other property thereafter deliverable upon the conversion of the Series D Preferred Stock.

(j) Rounding of Calculations; Minimum Adjustments. All calculations under this Section 4 shall be made to the nearest one tenth of a cent. No adjustment in the Series D Conversion Price is required if the amount of such adjustment would be less than \$0.01; provided, however, that any adjustments which by reason of this Subsection 4(j) are not required to be made will be carried forward and given effect in any subsequent adjustment. The number of shares of Common Stock outstanding at any given time shall not include shares owned or held by or for the account of the Corporation, and the disposition of any such shares shall be considered an issue or sale of Common Stock.

(k) Certificate as to Adjustments. Upon the occurrence of each adjustment pursuant to this Section 4, the Corporation at its expense will promptly compute such adjustment in accordance with the terms hereof and prepare a certificate describing in reasonable detail such adjustment and the transactions giving rise thereto, including all facts upon which such adjustment is based. Upon written request, the Corporation will promptly deliver a copy of each such certificate to each holder of Series D Preferred Stock and to the Corporation's Transfer Agent. The Corporation shall, as promptly as reasonably practicable after the written request at any time of any holder of Series D Preferred Stock (but in any event not later than 10 days thereafter), furnish or cause to be furnished to such holder a certificate setting forth (i) the Series D Conversion Price then in effect, and (ii) the number of shares of Common Stock and the amount, if any, of other securities, cash or property that then would be received upon the conversion of Series D Preferred Stock.

(l) Notice of Record Date. In the event:

- (i) the Corporation shall take a record of the holders of its Common Stock (or other stock or securities at the time issuable upon conversion of the Series D Preferred Stock) for the purpose of entitling or enabling them to receive any dividend or other distribution, or to receive any right to subscribe for or purchase any shares of stock of any class or any other securities, or to receive any other right; or
- (ii) of any capital reorganization of the Corporation, any reclassification of the Common Stock of the Corporation, any consolidation or merger of the Corporation with or into another corporation (other than a consolidation or merger in which the Corporation is the surviving entity and its Common Stock is not converted into or exchanged for any other securities or property), or any transfer of all or substantially all of the assets of the Corporation; or
- (iii) of the voluntary or involuntary dissolution, liquidation or winding-up of the Corporation,

then, and in each such case, the Corporation will send or cause to be sent to the holders of the Series D Preferred Stock a notice specifying, as the case may be, (i) the record date for such dividend, distribution or right, and the amount and character of such dividend, distribution or

right, or (ii) the effective date on which such reorganization, reclassification, consolidation, merger, transfer, dissolution, liquidation or winding-up is to take place, and the time, if any is to be fixed, as of which the holders of Common Stock (or such other stock or securities at the time issuable upon the conversion of the Series D Preferred Stock) shall be entitled to exchange their shares of Common Stock (or such other stock or securities) for securities or other property deliverable upon such reorganization, reclassification, consolidation, merger, transfer, dissolution, liquidation or winding-up. Any notice required under this Subsection 4(l) shall be sent at least 20 days prior to the record date or effective date for the event specified in such notice.

5. Redemption at the Option of the Corporation

(a) Mandatory Redemption Event. All or any portion of the outstanding shares of Series D Preferred Stock shall be redeemed at a price per share equal to (i) 125% of Stated Value plus (ii) all accumulated but unpaid dividends (the "Mandatory Redemption Price") in accordance with this Section 5 pursuant to written notice (the "Mandatory Redemption Notice") delivered to the holders of Series D Preferred Stock by the Corporation, in its sole discretion, at any time or from time to time after the third anniversary of the Series D Original Issue Date; provided that the Corporation shall be entitled to deliver a Mandatory Redemption Notice only if the Average Daily Price on each Trading Day for a period of at least 45 consecutive Trading Days (such period ending no earlier than four Trading Days prior to the date of such Mandatory Redemption Notice) has exceeded \$7.60 (subject to appropriate adjustment in the event of any stock dividend, stock split, reverse stock split, combination, split-up, recapitalization and like occurrences on or after the Series D Original Issue Date affecting such shares). Any Mandatory Redemption Notice delivered pursuant to this Subsection 5(a) shall specify a date (a "Mandatory Redemption Date") as of which such redemption shall be effected. Each Mandatory Redemption Date shall be a Trading Day not less than 20 Trading Days nor more than 30 Trading Days following the date on which the related Mandatory Redemption Notice is sent by the Corporation. On each Mandatory Redemption Date, the Corporation shall redeem, on a pro rata basis in accordance with the number of shares of Series D Preferred Stock owned by each holder, that number of outstanding shares of Series D Preferred Stock specified in the related Mandatory Redemption Notice.

(b) Mandatory Redemption Notice. Any Mandatory Redemption Notice shall be delivered to each holder of record of Series D Preferred Stock, as applicable, in accordance with the notice provisions set forth in Section 13 below. Each Mandatory Redemption Notice shall state:

- (i) the Mandatory Redemption Date;
- (ii) the Mandatory Redemption Price;
- (iii) the number of shares of Series D Preferred Stock held by the holder that the Corporation shall redeem on the Mandatory Redemption Date;
- (iv) the date upon which the holder's right to convert such shares terminates (as determined in accordance with Section 4 above); and
- (v) that the holder is to surrender to the Corporation, in the manner and at the place designated, its certificate or certificates (or an affidavit of loss and indemnity agreement for such certificates) representing the shares of Series D Preferred Stock to be redeemed.

(c) Surrender of Certificates; Payment. On or before the applicable Mandatory Redemption

Date, each holder of shares of Series D Preferred Stock to be redeemed on such Mandatory Redemption Date, unless such holder has exercised its right to convert such shares as provided in Section 4 above, shall surrender the certificate or certificates (or deliver an affidavit of loss and indemnity agreement for such certificates) representing such shares to the Corporation in the manner and at the place designated in the Mandatory Redemption Notice, and thereupon the Mandatory Redemption Price for such shares shall be payable to the order of the person whose name appears on such certificate or certificates as the owner thereof, and each surrendered certificate shall be canceled and retired. In the event less than all of the shares of Series D Preferred Stock represented by a certificate are redeemed, a new certificate representing the unredeemed shares of Series D Preferred Stock shall promptly be issued to such holder.

(d) Rights Subsequent to Mandatory Redemption. If the Mandatory Redemption Notice shall have been duly given, and if on the applicable Mandatory Redemption Date the Mandatory Redemption Price payable upon redemption of the shares of Series D Preferred Stock to be redeemed on such Mandatory Redemption Date is paid or tendered for payment, then notwithstanding that the certificates evidencing any of the shares of Series D Preferred Stock so called for redemption shall not have been surrendered, dividends with respect to such shares of Preferred Stock shall cease to accumulate after such Mandatory Redemption Date and all rights with respect to such shares shall forthwith after the Mandatory Redemption Date terminate, except only the right of the holders to receive the Mandatory Redemption Price without interest upon surrender of their certificate or certificates therefor.

(e) Redeemed or Otherwise Acquired Shares. Any shares of Series D Preferred Stock that are redeemed pursuant to this Section 5 or Section 6 below or otherwise acquired by the Corporation or any of its subsidiaries shall be automatically and immediately canceled and shall not be reissued, sold or transferred as shares of Series D Preferred Stock. Neither the Corporation nor any of its subsidiaries may exercise any voting or other rights granted to the holders of Series D Preferred Stock following any redemption.

(f) Other Redemptions or Acquisitions. Neither the Corporation nor any subsidiary shall redeem or otherwise acquire any series of Series D Preferred Stock, except (i) as expressly authorized herein, (ii) with the written consent of the holders of at least a majority of the then-outstanding shares of (A) Series D-1 Preferred Stock and (B) Series D-2 Preferred Stock, or (iii) pursuant to a purchase offer made pro rata to all holders of Series D Preferred Stock on the basis of the number of shares of Series D Preferred Stock owned by each such holder.

6. Redemption at the Option of the Holders of Series D Preferred Stock

(a) Right to Redeem. Shares of Series D-1 Preferred Stock shall be redeemed by the Corporation at a price per share equal to the Stated Value plus accumulated but unpaid dividends (the "Optional Redemption Price") at any time and from time to time no earlier than the sixth anniversary of the Series D Original Issue Date after receipt by the Corporation from the holders of at least a majority of the then-outstanding shares of Series D-1 Preferred Stock of written notice (a "Series D-1 Optional Redemption Notice") requesting redemption of all or any portion of the outstanding shares of Series D-1 Preferred Stock. Shares of Series D-2 Preferred Stock shall be redeemed by the Corporation at a price per share equal to the Optional Redemption Price at any time and from time to time no earlier than the sixth anniversary of the Series D Original Issue Date after receipt by the Corporation from holder(s) holding in the aggregate shares of Series D-2 Preferred Stock then outstanding with a Stated Value in excess of \$3,000,000 (or if less than \$3,000,000, all of such holder's shares of Series D-2 Preferred Stock) of written notice (a "Series D-2 Optional Redemption Notice" and together with a Series D-1 Optional Redemption Notice, an "Optional

Redemption Notice”) requesting redemption of all or any portion of such holder’s outstanding shares of Series D-2 Preferred Stock. Notwithstanding any other provision of this Section 6, until the seventh anniversary of the Series D Original Issue Date, the aggregate number of shares of (i) Series D-1 Preferred Stock or (ii) Series D-2 Preferred Stock that the Corporation may be required to redeem under this Section 6 shall not exceed 50% of the number of shares of Series D-1 Preferred Stock or Series D-2 Preferred Stock, respectively, outstanding as of the sixth anniversary of the Series D Original Issue Date. The process for effecting any such redemption shall be as follows:

(i) Within 15 days after the receipt of an Optional Redemption Notice, the Corporation shall send to each holder of Series D Preferred Stock a notice (the “Corporation Notice”) which shall (A) state the number of shares of Series D Preferred Stock that are the subject of the applicable Optional Redemption Notice, and (B) specify a date (an “Optional Redemption Date”) as of which a redemption pursuant to this Section 6 shall be effected and the date by which a holder may elect to join in the redemption pursuant to subsection (b)(ii) below. Each Optional Redemption Date shall be a Trading Day not less than 40 days or more than 120 days following the date on which the related Corporation Notice is sent by the Corporation.

(ii) Within 20 days after receipt of the Corporation Notice, each holder of Series D Preferred Stock may provide notice to the Corporation that such holder wishes to include all or a portion of its shares of Series D Preferred Stock in such Optional Redemption Notice and stating the number of shares to be so included (and, thereafter such shares shall be deemed to be included in such Optional Redemption Notice).

(iii) Within 50 days after receiving the Optional Redemption Notice and at least 10 days prior to the Optional Redemption Date, the Corporation shall provide each holder of Series D Preferred Shares with written notice (“Closing Notice”) that states (i) the applicable Optional Redemption Price, (ii) the applicable Optional Redemption Date, (iii) the number of shares requested to be redeemed on that Optional Redemption Date, (iv) the number of shares of Series D Preferred Stock to be redeemed on such date, and (v) that the holder is to surrender to the Corporation, in the manner and at the place designated, its certificate or certificates (or affidavit of loss and indemnity agreement) representing the shares of Series D Preferred Stock to be redeemed.

(iv) Subject to the limitations above in this Section 6, on the applicable Optional Redemption Date, the Corporation shall redeem, on a pro rata basis in accordance with the number of shares of Series D Preferred Stock owned by each holder for which redemption was requested, that number of outstanding shares of Series D Preferred Stock specified or deemed to be included in the Optional Redemption Notice. In the event the Corporation does not have sufficient funds legally available to redeem on such Optional Redemption Date all shares of Series D Preferred Stock to be redeemed on such Optional Redemption Date, the Corporation shall redeem a pro rata portion of each holder’s shares out of funds legally available therefor, based on the respective amounts that would otherwise be payable in respect of the shares to be redeemed if the legally available funds were sufficient to redeem all such shares, and shall redeem the remaining shares to have been redeemed as soon as practicable after the Corporation has funds legally available therefor. If the Corporation has not redeemed all outstanding shares of Series D Preferred Stock which are to be redeemed within 120 days following the date on which the related Optional Redemption Notice is sent by the Corporation, the Dividend Rate with regard to any shares of Series D Preferred Stock that remain outstanding shall be 14% per annum from the date of the Optional Redemption Notice until such date as such shares are actually redeemed.

(b) Optional Redemption Notice and Other Notices. Any Optional Redemption Notice shall be delivered to the Corporation, and any Corporation Notice or Closing Notice shall be delivered to each holder of record of Series D Preferred Stock, as applicable, in accordance with the notice provisions set forth in Section 13 below.

(c) Surrender of Certificates; Payment. On or before the applicable Optional Redemption Date, each holder of shares of Series D Preferred Stock to be redeemed on such Optional Redemption Date, unless such holder has exercised its right to convert such shares as provided in Section 4 above, shall surrender the certificate or certificates (or deliver an affidavit of loss and indemnity agreement for such certificates) representing such shares to the Corporation, in the manner and at the place designated by the Corporation in its notice pursuant to this Section 6, and thereupon the Optional Redemption Price for such shares shall be payable to the order of the person whose name appears on such certificate or certificates as the owner thereof, and each surrendered certificate shall be canceled and retired. In the event less than all of the shares of Series D Preferred Stock represented by a certificate are redeemed, a new certificate representing the unredeemed shares of Series D Preferred Stock shall promptly be issued to such holder.

(d) Rights Subsequent to Optional Redemption. If the Optional Redemption Notice shall have been duly given, and if on the applicable Optional Redemption Date the Optional Redemption Price payable upon redemption of the shares of Series D Preferred Stock to be redeemed on such Optional Redemption Date is paid or tendered for payment, then notwithstanding that the certificates evidencing any of the shares of Series D Preferred Stock so called for redemption shall not have been surrendered, dividends with respect to such shares of Preferred Stock shall cease to accumulate after such Optional Redemption Date and all rights with respect to such shares shall forthwith after the Optional Redemption Date terminate, except only the right of the holders to receive the Optional Redemption Price without interest upon surrender of their certificate or certificates therefor.

7. Waivers

The holders of Series D Preferred Stock shall also be entitled to, and shall not be deemed to have waived, any other applicable rights granted to such holders under the Delaware General Corporation Law. Any of the rights of the holders of Series D-1 Preferred Stock or Series D-2 Preferred Stock set forth herein may be waived by the affirmative consent or vote of the holders of at least a majority of the then outstanding shares of Series D-1 Preferred Stock or Series D-2 Preferred Stock, respectively, subject to applicable law.

8. No Impairment

The Corporation will not, by amendment of its Certificate of Incorporation or through any reorganization, transfer of assets, consolidation, merger, dissolution, issue or sale of securities or any other voluntary action, avoid or seek to avoid the observance or performance of any of the terms to be observed or performed hereunder by the Corporation without the written consent of the holders of at least a majority of the then-outstanding shares of Series D Preferred Stock, but will at all times in good faith assist in the carrying out of all the provisions of this Certificate of Designations and in the taking of all such action as may be necessary or appropriate in order to protect the rights of the holders of the Series D Preferred Stock against impairment.

9. Registration of Series D Preferred Stock

The Corporation shall register shares of the Series D Preferred Stock, upon records to be maintained by the Corporation for that purpose (the "Series D Preferred Stock Register"), in the name of the record holders thereof from time to time. The Corporation may deem and treat the registered holder of shares of

Series D Preferred Stock as the absolute owner thereof for the purpose of any conversion hereof or any distribution to such holder, and for all other purposes, absent actual notice to the contrary.

10. Registration of Transfers

The Corporation shall register the transfer of any shares of Series D Preferred Stock in the Series D Preferred Stock Register, upon surrender of certificates evidencing such Shares to the Corporation at its address specified herein. Upon any such registration or transfer, a new certificate evidencing the shares of Series D Preferred Stock so transferred shall be issued to the transferee and a new certificate evidencing the remaining portion of the shares not so transferred, if any, shall be issued to the transferring holder.

11. Replacement Certificates

If any certificate evidencing Series D Preferred Stock, or Common Stock issued upon conversion thereof, is mutilated, lost, stolen or destroyed, the Corporation shall issue or cause to be issued in exchange and substitution for and upon cancellation hereof, or in lieu of and substitution for such certificate, a new certificate, but only upon receipt of an affidavit of loss and indemnity agreement reasonably satisfactory to the Corporation evidencing such loss, theft or destruction and customary and reasonable indemnity, if requested. Applicants for a new certificate under such circumstances shall also comply with such other reasonable regulations and procedures and pay such other reasonable third-party costs as the Corporation may prescribe.

12. Limitation on Conversion

(a) Notwithstanding anything to the contrary contained herein, the number of shares of Common Stock that may be acquired by any holder of Series D-2 Preferred Stock upon any conversion of Series D-2 Preferred Stock (or otherwise in respect of the Series D-2 Preferred Stock) shall be limited to the extent necessary to insure that, following such conversion (or other issuance), the total number of shares of Common Stock then beneficially owned by such holder and its affiliates and any other persons whose beneficial ownership of Common Stock would be aggregated with such holder's for purposes of Section 13(d) of the Exchange Act, does not exceed 4.99% (the "Maximum Percentage") of the total number of issued and outstanding shares of Common Stock (including for such purpose the shares of Common Stock issuable upon such conversion). Each delivery of a Conversion Notice by a holder of Series D-2 Preferred Stock will constitute a representation by such holder that it has evaluated the limitation set forth in this paragraph and determined that issuance of the full number of shares of Common Stock requested in such Conversion Notice is permitted under this paragraph. By written notice to the Corporation, any holder of Series D-2 Preferred Stock may waive the provisions of this Section or increase or decrease the Maximum Percentage to any other percentage specified in such notice, but (i) any such waiver or increase will not be effective until the 61st day after such notice is delivered to the Corporation, and (ii) any such waiver or increase or decrease will apply only to such holder and not to any other holder of Series D-2 Preferred Stock. For purposes of this Section 12, beneficial

ownership shall be determined in accordance with Section 13(d) of the Exchange Act and the rules and regulations promulgated thereunder.

(b) For purposes of this Section 12, in determining the number of outstanding shares of Common Stock, a holder of Series D Preferred Stock may rely on the number of outstanding shares of Common Stock as reflected in (1) the Corporation's most recent Form 10-Q, Form 10-K or other public filing with the Commission, as the case may be, (2) a more recent public announcement by the Corporation, or (3) any other notice by the Corporation or its transfer agent setting forth the number of shares of Common Stock outstanding. Upon the written request of any holder of Series D Preferred Stock, the Corporation shall promptly, but in no event later than one Trading Day following the receipt of such notice, confirm in writing to any such holder the number of shares of Common Stock then outstanding.

13. Notices

Any and all notices or other communications or deliveries hereunder (including without limitation any Conversion Notice) shall be in writing and shall be deemed given and effective on the earliest of (i) the date of transmission, if such notice or communication is delivered via facsimile at the facsimile number specified in this Section prior to 5:30 p.m. (New York City time) on a Trading Day and electronic confirmation of receipt is received by the sender, (ii) the next Trading Day after the date of transmission, if such notice or communication is delivered via facsimile at the facsimile number specified in this Section on a day that is not a Trading Day or later than 5:30 p.m. (New York City time) on any Trading Day, (iii) the Trading Day following the date of mailing, if sent by nationally recognized overnight courier service, or (iv) upon actual receipt by the party to whom such notice is required to be given. The addresses for such communications shall be: (i) if to the Corporation, to 10 Canal Park, Cambridge, Massachusetts 02141, facsimile: (617) 949-1722, attention: Chief Executive Officer and General Counsel, or (ii) if to a holder of Series D Preferred Stock, to the address or facsimile number appearing on the Corporation's stockholder records or such other address or facsimile number as such holder may provide to the Corporation in accordance with this Section.

14. Preemptive Rights

Each holder of the Series D Preferred Stock shall have preemptive rights, the terms of which are specified in the Investor Rights Agreement among the Corporation and the holders of Series D Preferred Stock dated August 14, 2003 (as amended from time to time in accordance with its terms, and subject to the limitations and other terms set forth in such Investor Rights Agreement, including the right to waive any term thereof).

IN WITNESS WHEREOF, the Corporation has caused this Certificate of Designations to be signed by its President as of August 13, 2003.

ASPEN TECHNOLOGY, INC.

By: /s/ David L. McQuillin
David L. McQuillin
President and Chief Executive Officer

State of Delaware
Secretary of State
Division of Corporations
Delivered 05:43 PM 06/28/2005
FILED 05:33 PM 06/28/2005
SRV 050539864 - 2859683 FILE

CERTIFICATE OF OWNERSHIP AND MERGER

MERGING

ASPENTECH, INC.
(a Texas corporation)

INTO

ASPEN TECHNOLOGY, INC.
(a Delaware corporation and the surviving corporation)

Aspen Technology, Inc., a corporation organized and existing under the laws of the State of Delaware (the "Corporation"), DOES HEREBY CERTIFY:

FIRST: That the Corporation was incorporated on March 11, 1998 pursuant to the General Corporation Law of the State of Delaware.

SECOND: That the Corporation owns all of the outstanding shares of common stock, no par value per share, of AspenTech, Inc. (formerly Setpoint, Inc.), a corporation incorporated on February 1, 1977, pursuant to the Business Corporation Act of the State of Texas.

THIRD: That the Board of Directors of the Corporation duly adopted the following resolutions at a meeting of the Board of Directors on May 13, 2005:

RESOLVED: That pursuant to Section 253 of the General Corporation Law of the State of Delaware and in accordance with the Business Corporation Act of the State of Texas, the Corporation is hereby authorized to effect a merger (the "Merger") of AspenTech, Inc., a Texas corporation and wholly owned subsidiary of the Corporation ("AspenTech"), with and into the Corporation.

RESOLVED: That the President and Chief Executive Officer, the Senior Vice President - Finance and Chief Financial Officer, the Vice President and Treasurer, and the Secretary of the Corporation are severally authorized (i) to execute a Certificate of Ownership and Merger with respect to the Merger and to cause the same to be filed with the Secretary of State of the State of Delaware, (ii) to execute Articles of Merger with respect to the Merger and to cause the same to be filed with the Secretary of State of the State of Texas, and (iii) to take all such other actions and to execute all such other instruments and agreements as they or any of them may deem appropriate to effect such filing and the Merger.

RESOLVED: That the Merger shall be effective as of June 30, 2005, at 4:00 p.m. EDT, in accordance with the Certificate of Ownership and Merger filed with the Secretary of State of the State of Delaware and the Articles of Merger filed with the Secretary of State of the State of Texas.

RESOLVED: That the officers are severally authorized and directed, in the name and on behalf of the Corporation, to execute, acknowledge, seal and deliver any and all agreements, instruments and documents, and to take any action appropriate or desirable in connection with the Merger and the foregoing resolutions; and that the execution and delivery of such agreements, instruments and documents and the taking of such actions by any such officer shall be conclusive evidence of his or her determination and approval and of the due authorization and approval of the Board of Directors.

FOURTH: That this Certificate of Ownership and Merger shall be effective on June 30, 2005.

IN WITNESS WHEREOF, the Corporation has caused this Certificate to be signed by its Senior Vice President - Finance and Chief Financial Officer this 28th day of June, 2005.

ASPEN TECHNOLOGY, INC.

By: 

Charles F. Kane

Senior Vice President - Finance and
Chief Financial Officer

CERTIFICATE OF MERGER

OF

ASPEN TECHNOLOGY RECEIVABLES I LLC
(a Delaware limited liability company)

INTO

ASPEN TECHNOLOGY, INC.
(a Delaware corporation)

Each of Aspen Technology Receivables I LLC (the "LLC"), a limited liability company formed and existing under and by virtue of the Delaware Limited Liability Company Act, and Aspen Technology, Inc. (the "Corporation"), a corporation organized and existing under and by virtue of the General Corporation Law of the State of Delaware, does hereby certify:

FIRST: That the name, state of domicile and state of formation or organization of each of the LLC and the Corporation (such entities being all of the domestic limited liability companies and other business entities which are to merge or consolidate (the "Constituent Entities")) is as follows:

<u>Name</u>	<u>State of Domicile</u>	<u>State of Formation or Organization</u>
Aspen Technology Receivables I LLC	Delaware	Delaware
Aspen Technology, Inc.	Delaware	Delaware

SECOND: That an Agreement and Plan of Merger between the parties to the merger has been approved, adopted, certified, executed and acknowledged by each of the Constituent Entities in accordance with the requirements of Subsection (c) of Section 18-209 of the Delaware Limited Liability Company Act and Subsection (c) of Section 264 of the General Corporation Law of the State of Delaware.

THIRD: That the name of the surviving corporation in the merger is Aspen Technology, Inc.

FOURTH: That the Certificate of Incorporation of the Corporation, which will survive the merger, shall be the Certificate of Incorporation of the surviving Corporation.

FIFTH: That the executed Agreement and Plan of Merger is on file at the principal place of business of the surviving Corporation. The address of said principal place of business is 200 Wheeler Road, Burlington, MA 01803.

SIXTH: That a copy of the Agreement and Plan of Merger will be furnished by the surviving Corporation, on request and without cost, to any stockholder of any constituent corporation or any member of any constituent limited liability company or any person having an interest in any other business entity which is to merge or consolidate.

SEVENTH: That this Certificate of Merger shall be effective upon filing of the same with the office of the Secretary of State of the State of Delaware.

[REMINDER OF PAGE INTENTIONALLY BLANK]

IN WITNESS WHEREOF, the LLC has caused this Certificate to be executed by its President as an authorized person, and attested by its Secretary and the Corporation has caused this Certificate to be executed by its President and attested by its Secretary, this 19th day of May, 2008.

Aspen Technology Receivables I LLC

By: /s/ Mark E. Fusco

Name: Mark E. Fusco
Title: President

ATTEST:

/s/ Frederic G. Hammond
Frederic G. Hammond
Secretary

Aspen Technology, Inc.

By: /s/ Mark E. Fusco

Name: Mark E. Fusco
Title: President

ATTEST:

/s/ Frederic G. Hammond
Frederic G. Hammond
Secretary

CERTIFICATE OF MERGER

OF

ASPEN TECHNOLOGY RECEIVABLES II LLC
(a Delaware limited liability company)

INTO

ASPEN TECHNOLOGY, INC.
(a Delaware corporation)

Each of Aspen Technology Receivables II LLC (the "LLC"), a limited liability company formed and existing under and by virtue of the Delaware Limited Liability Company Act, and Aspen Technology, Inc. (the "Corporation"), a corporation organized and existing under and by virtue of the General Corporation Law of the State of Delaware, does hereby certify:

FIRST: That the name, state of domicile and state of formation or organization of each of the LLC and the Corporation (such entities being all of the domestic limited liability companies and other business entities which are to merge or consolidate (the "Constituent Entities")) is as follows:

<u>Name</u>	<u>State of Domicile</u>	<u>State of Formation or Organization</u>
Aspen Technology Receivables II LLC	Delaware	Delaware
Aspen Technology, Inc.	Delaware	Delaware

SECOND: That an Agreement and Plan of Merger between the parties to the merger has been approved, adopted, certified, executed and acknowledged by each of the Constituent Entities in accordance with the requirements of Subsection (c) of Section 18-209 of the Delaware Limited Liability Company Act and Subsection (c) of Section 264 of the General Corporation Law of the State of Delaware.

THIRD: That the name of the surviving corporation in the merger is Aspen Technology, Inc.

FOURTH: That the Certificate of Incorporation of the Corporation, which will survive the merger, shall be the Certificate of Incorporation of the surviving Corporation.

FIFTH: That the executed Agreement and Plan of Merger is on file at the principal place of business of the surviving Corporation. The address of said principal place of business is 200 Wheeler Road, Burlington, MA 01803.

SIXTH: That a copy of the Agreement and Plan of Merger will be furnished by the surviving Corporation, on request and without cost, to any stockholder of any constituent corporation or any member of any constituent limited liability company or any person having an interest in any other business entity which is to merge or consolidate.

SEVENTH: That this Certificate of Merger shall be effective upon filing of the same with the office of the Secretary of State of the State of Delaware.

[REMINDER OF PAGE INTENTIONALLY BLANK]

IN WITNESS WHEREOF, the LLC has caused this Certificate to be executed by its President as an authorized person, and attested by its Secretary and the Corporation has caused this Certificate to be executed by its President and attested by its Secretary, this 19th day of May, 2008.

Aspen Technology Receivables II LLC

By: /s. Mark E. Fusco

Name: Mark E. Fusco
Title: President

ATTEST:

/s/ Frederic G. Hammond
Frederic G. Hammond

Secretary Aspen Technology, Inc.

By: /s. Mark E. Fusco

Name: Mark E. Fusco
Title: President

ATTEST:

/s/ Frederic G. Hammond
Frederic G. Hammond
Secretary

CERTIFICATE OF MERGER
OF
ASPEN TECHNOLOGY FUNDING 2006-II LLC
(a Delaware limited liability company)
INTO
ASPEN TECHNOLOGY, INC.
(a Delaware corporation)

Each of Aspen Technology Funding 2006-II LLC (the "LLC"), a limited liability company formed and existing under and by virtue of the Delaware Limited Liability Company Act, and Aspen Technology, Inc. (the "Corporation"), a corporation organized and existing under and by virtue of the General Corporation Law of the State of Delaware, does hereby certify:

FIRST: That the name, state of domicile and state of formation or organization of each of the LLC and the Corporation (such entities being all of the domestic limited liability companies and other business entities which are to merge or consolidate (the "Constituent Entities")) is as follows:

<u>Name</u>	<u>State of Domicile</u>	<u>State of Formation or Organization</u>
Aspen Technology Funding 2006-II LLC	Delaware	Delaware
Aspen Technology, Inc.	Delaware	Delaware

SECOND: That an Agreement and Plan of Merger between the parties to the merger has been approved, adopted, certified, executed and acknowledged by each of the Constituent Entities in accordance with the requirements of Subsection (c) of Section 18-209 of the Delaware Limited Liability Company Act and Subsection (c) of Section 264 of the General Corporation Law of the State of Delaware.

THIRD: That the name of the surviving corporation in the merger is Aspen Technology, Inc.

FOURTH: That the Certificate of Incorporation of the Corporation, which will survive the merger, shall be the Certificate of Incorporation of the surviving Corporation.

FIFTH: That the executed Agreement and Plan of Merger is on file at the principal place of business of the surviving Corporation. The address of said principal place of business is 200 Wheeler Road, Burlington, MA 01803.

SIXTH: That a copy of the Agreement and Plan of Merger will be furnished by the surviving Corporation, on request and without cost, to any stockholder of any constituent corporation or any member of any constituent limited liability company or any person having an interest in any other business entity which is to merge or consolidate.

SEVENTH: That this Certificate of Merger shall be effective upon filing of the same with the office of the Secretary of State of the State of Delaware.

[REMINDER OF PAGE INTENTIONALLY BLANK]

IN WITNESS WHEREOF, the LLC has caused this Certificate to be executed by its President as an authorized person, and attested by its Secretary and the Corporation has caused this Certificate to be executed by its President and attested by its Secretary, this 19th day of May, 2008.

Aspen Technology Funding 2006-II LLC

By: /s/ Mark E. Fusco

Name: Mark E. Fusco
Title: President

ATTEST:

/s/ Frederic G. Hammond
Frederic G. Hammond
Secretary

Aspen Technology, Inc.

By: /s/ Mark E. Fusco

Name: Mark E. Fusco
Title: President

ATTEST:

/s/ Frederic G. Hammond
Frederic G. Hammond
Secretary

CERTIFICATE OF MERGER
OF
ASPEN TECHNOLOGY FUNDING 2006-I LLC
(a Delaware limited liability company)
INTO
ASPEN TECHNOLOGY, INC.
(a Delaware corporation)

Each of Aspen Technology Funding 2006-I LLC (the "LLC"), a limited liability company formed and existing under and by virtue of the Delaware Limited Liability Company Act, and Aspen Technology, Inc. (the "Corporation"), a corporation organized and existing under and by virtue of the General Corporation Law of the State of Delaware, does hereby certify:

FIRST: That the name, state of domicile and state of formation or organization of each of the LLC and the Corporation (such entities being all of the domestic limited liability companies and other business entities which are to merge or consolidate (the "Constituent Entities")) is as follows:

<u>Name</u>	<u>State of Domicile</u>	<u>State of Formation or Organization</u>
Aspen Technology Funding 2006-I LLC	Delaware	Delaware
Aspen Technology, Inc.	Delaware	Delaware

SECOND: That an Agreement and Plan of Merger between the parties to the merger has been approved, adopted, certified, executed and acknowledged by each of the Constituent Entities in accordance with the requirements of Subsection (c) of Section 18-209 of the Delaware Limited Liability Company Act and Subsection (c) of Section 264 of the General Corporation Law of the State of Delaware.

THIRD: That the name of the surviving corporation in the merger is Aspen Technology, Inc.

FOURTH: That the Certificate of Incorporation of the Corporation, which will survive the merger, shall be the Certificate of Incorporation of the surviving Corporation.

FIFTH: That the executed Agreement and Plan of Merger is on file at the principal place of business of the surviving Corporation. The address of said principal place of business is 200 Wheeler Road, Burlington, MA 01803.

SIXTH: That a copy of the Agreement and Plan of Merger will be furnished by the surviving Corporation, on request and without cost, to any stockholder of any constituent corporation or any member of any constituent limited liability company or any person having an interest in any other business entity which is to merge or consolidate.

SEVENTH: That this Certificate of Merger shall be effective upon filing of the same with the office of the Secretary of State of the State of Delaware.

[REMINDER OF PAGE INTENTIONALLY BLANK]

IN WITNESS WHEREOF, the LLC has caused this Certificate to be executed by its President as an authorized person, and attested by its Secretary and the Corporation has caused this Certificate to be executed by its President and attested by its Secretary, this 19th day of May, 2008.

Aspen Technology Funding 2006-I LLC

By: /s/ Mark E. Fusco
Name: Mark E. Fusco
Title: President

ATTEST:

/s/ Frederic G. Hammond
Frederic G. Hammond
Secretary

Aspen Technology, Inc.

By: /s/ Mark E. Fusco
Name: Mark E. Fusco
Title: President

ATTEST:

/s/ Frederic G. Hammond
Frederic G. Hammond
Secretary

CERTIFICATE OF MERGER
OF
COPPERMINE LLC
(a Delaware limited liability company)
INTO
ASPEN TECHNOLOGY, INC.
(a Delaware corporation)

Each of Coppermine LLC (the "LLC"), a limited liability company formed and existing under and by virtue of the Delaware Limited Liability Company Act, and Aspen Technology, Inc. (the "Corporation"), a corporation organized and existing under and by virtue of the General Corporation Law of the State of Delaware, does hereby certify:

FIRST: That the name, state of domicile and state of formation or organization of each of the LLC and the Corporation (such entities being all of the domestic limited liability companies and other business entities which are to merge or consolidate (the "Constituent Entities")) is as follows:

<u>Name</u>	<u>State of Domicile</u>	<u>State of Formation or Organization</u>
Coppermine LLC	Delaware	Delaware
Aspen Technology, Inc.	Delaware	Delaware

SECOND: That an Agreement and Plan of Merger between the parties to the merger has been approved, adopted, certified, executed and acknowledged by each of the Constituent Entities in accordance with the requirements of Subsection (c) of Section 18-209 of the Delaware Limited Liability Company Act and Subsection (c) of Section 264 of the General Corporation Law of the State of Delaware.

THIRD: That the name of the surviving corporation in the merger is Aspen Technology, Inc.

FOURTH: That the Certificate of Incorporation of the Corporation, which will survive the merger, shall be the Certificate of Incorporation of the surviving Corporation.

FIFTH: That the executed Agreement and Plan of Merger is on file at the principal place of business of the surviving Corporation. The address of said principal place of business is 200 Wheeler Road, Burlington, MA 01803.

SIXTH: That a copy of the Agreement and Plan of Merger will be furnished by the surviving Corporation, on request and without cost, to any stockholder of any constituent corporation or any member of any constituent limited liability company or any person having an interest in any other business entity which is to merge or consolidate.

SEVENTH: That this Certificate of Merger shall be effective upon filing of the same with the office of the Secretary of State of the State of Delaware.

[REMINDER OF PAGE INTENTIONALLY BLANK]

IN WITNESS WHEREOF, the LLC has caused this Certificate to be executed by the Secretary of Aspen Technology, Inc., the sole member of Coppermine LLC, as an authorized person and the Corporation has caused this Certificate to be executed by its Secretary this 30th day of May, 2008.

Coppermine LLC

By Aspen Technology, Inc.,
Its Sole Member

By: /s/ Frederic G. Hammond
Name: Frederic G. Hammond
Title: Secretary

Aspen Technology, Inc.

By: /s/ Frederic G. Hammond
Name: Frederic G. Hammond
Title: Secretary

**CERTIFICATE OF OWNERSHIP AND MERGER
MERGING**

**ASPENTECH EMEA, INC.
(a Delaware corporation)**

**EA SYSTEMS INC.
(a Delaware corporation)**

**PROCESSCITY, INC.
(a Delaware corporation)**

**PETROLSOFT CORPORATION
(a California corporation)**

AND

**ASPENTECH SECURITIES CORP.
(a Massachusetts Corporation)**

INTO

**ASPEN TECHNOLOGY, INC.
(a Delaware corporation)**

Aspen Technology, Inc., a corporation organized and existing under and by virtue of the General Corporation Law of the State of Delaware (the "Corporation"), does hereby certify:

FIRST: That the Corporation was incorporated on the 11th day of March, 1998, pursuant to the General Corporation Law of the State of Delaware.

SECOND: That the Corporation owns all of the outstanding shares of each class of the stock of AspenTech EMEA, Inc., a corporation incorporated on the 24th day of September, 1998 pursuant to the General Corporation Law of the State of Delaware, ("EMEA"); EA Systems Inc., a corporation incorporated on the 7th day of October, 1994 pursuant to the General Corporation Law of the State of Delaware, ("EA Systems"); ProcessCity, Inc., a corporation incorporated on the 23rd day of June, 1999 pursuant to the General Corporation Law of the State of Delaware, ("ProcessCity"); Petrolsoft Corporation, a corporation incorporated on the 28th day of April, 1992, pursuant to the Corporations Code of the State of California ("Petrolsoft") and AspenTech Securities Corp., a corporation incorporated on the 11th day of March, 1997 pursuant to the General Laws of the Commonwealth of Massachusetts ("AspenTech").

THIRD: That the Board of Directors of the Corporation, at a meeting duly held on the 24th day of April, 2008, duly adopted the following resolutions:

RESOLVED: That, pursuant to Section 1110 of the California Corporation Code, Section 46D of Chapter 156D of the Massachusetts General Laws and Section 253 of the Delaware General Corporation Law, the Corporation be and hereby is, authorized to merge EMEA, EA Systems, ProcessCity, Delaware corporations, Petrolsoft, a California corporation and AspenTech Securities Corp., a Massachusetts corporation, all of which are wholly owned subsidiaries of the Corporation (collectively, the "Subsidiary Corporations"), into the Corporation.

RESOLVED: That the President and Secretary of the Corporation be, and each of them acting alone hereby is, authorized, in the name and on behalf of the Corporation, to prepare and file (i) a Certificate of Ownership and Merger ("Certificate of Ownership and Merger") with the Secretary of State of Delaware, (ii) Articles of Merger ("Articles") with the Massachusetts Secretary of State and (iii) Certificate of Ownership ("Certificate of Ownership") with the California Secretary of State, and take all such other actions and to execute all such other instruments and agreements as they or any of them may deem appropriate to effect such merger;

RESOLVED: That the merger of the Subsidiary Corporations into the Corporation shall be effective upon the filing of (i) a Certificate of Ownership with the California Secretary of State, (ii) Articles of Merger with the Massachusetts Secretary of State and (iii) a Certificate of Ownership and Merger with the Secretary of State of Delaware.

IN WITNESS WHEREOF, the Corporation has caused this Certificate to be signed by its authorized officer this 30th day of May, 2008.

Aspen Technology, Inc.

By: s/ Frederic G. Hammond
Name: Frederic G. Hammond
Title: Secretary

**CERTIFICATE OF OWNERSHIP AND MERGER
MERCING**

HOUSTON CONSULTING GROUP, INC.
(a Delaware corporation)

INTO

ASPEN TECHNOLOGY, INC.
(a Delaware corporation)

Aspen Technology, Inc., a corporation organized and existing under and by virtue of the General Corporation Law of the State of Delaware (the "Corporation"), does hereby certify:

FIRST: That the Corporation was incorporated on the 11th day of March, 1998, pursuant to the General Corporation Law of the State of Delaware.

SECOND: That the Corporation owns all of the outstanding shares of each class of the stock of Houston Consulting Group, Inc., a corporation incorporated on the 13th day of June, 2001 pursuant to the General Corporation Law of the State of Delaware ("Houston").

THIRD: That the Board of Directors of the Corporation, at a meeting duly held on the 12th day of March, 2009, duly adopted the following resolutions:


RESOLVED: That, pursuant to Section 253 of the Delaware General Corporation Law, the Corporation be and hereby is, authorized to merge Houston which is a wholly owned subsidiary of the Corporation, into the Corporation.

RESOLVED: That the President and Secretary of the Corporation be, and each of them acting alone hereby is, authorized, in the name and on behalf of the Corporation, to prepare and file (i) a Certificate of Ownership and Merger ("Certificate of Ownership and Merger") with the Secretary of State of Delaware, and take all such other actions and to execute all such other instruments and agreements as they or any of them may deem appropriate to effect such merger;

RESOLVED: That the merger of Houston into the Corporation shall be effective upon the filing of a Certificate of Ownership and Merger with the Secretary of State of Delaware.

IN WITNESS WHEREOF, the Corporation has caused this Certificate to be signed by its authorized officer this 12 day of March, 2009.

Aspen Technology, Inc.

By: 
Name: Frederic G. Hammond
Title: Secretary

CERTIFICATE OF CHANGE OF LOCATION OF REGISTERED OFFICE
AND OF REGISTERED AGENT

ASPEN TECHNOLOGY, INC.

It is hereby certified that:

1. The name of the corporation (hereinafter called the "corporation") is:

ASPEN TECHNOLOGY, INC.

2. The registered office of the corporation within the State of Delaware is hereby changed to 2711 Centerville Road, Suite 400, City of Wilmington 19808, County of New Castle.

3. The registered agent of the corporation within the State of Delaware is hereby changed to Corporation Service Company, the business office of which is identical with the registered office of the corporation as hereby changed.

4. The corporation has authorized the changes hereinbefore set forth by resolution of its Board of Directors.

Executed on July 8, 2009.

/s/ Frederic G. Hammond
Name: Frederic G. Hammond
Title: Senior Vice President
& General Counsel

**STATE OF DELAWARE
CERTIFICATE OF MERGER OF
DOMESTIC LIMITED LIABILITY COMPANY
INTO A
DOMESTIC CORPORATION**

Pursuant to Title 8, Section 264(c) of the Delaware General Corporation Law and Title 6, Section 18-209 of the Delaware Limited Liability Company Act, the undersigned corporation executed the following Certificate of Merger:

FIRST: The name of the surviving corporation is Aspen Technology, Inc.
_____, a Delaware Corporation, and the name of the
limited liability company being merged into this surviving corporation is _____
Boulder LLC

SECOND: The Agreement of Merger has been approved, adopted, certified, executed and acknowledged by the surviving corporation and the merging limited liability company.

THIRD: The name of the surviving corporation is Aspen Technology, Inc.
_____.

FOURTH: The Agreement of Merger is on file at 200 Wheeler Road, Burlington,
MA 01803, the place of business of the surviving corporation.

FIFTH: A copy of the Agreement of Merger will be furnished by the corporation on request, without cost, to any stockholder of any constituent corporation or member of any constituent limited liability company.

SIXTH: The Certificate of Incorporation of the surviving corporation shall be its Certificate of Incorporation

IN WITNESS WHEREOF, said Corporation has caused this certificate to be signed by an authorized officer, the 17th day of February, A.D., 2010.

By: _____

Authorized Officer

Name: Frederic G. Hammond

Print or Type

Title: Secretary

ASPEN TECHNOLOGY, INC.

List of Subsidiaries as of June 30, 2021

	Name of Subsidiary	State or Country of Incorporation
1	Apex Optimisation Limited	United Kingdom
2	Apex Optimisation SRO	Czech Republic
3	Apex Optimisation Technologies B.V.	Netherlands
4	Apex Optimisation (UK) Ltd	United Kingdom
5	Argent & Waugh Limited	United Kingdom
6	Aspen Tech de Mexico, S. de R.L. de C.V.	Mexico
7	Aspen Tech India Private Ltd.	India
8	Aspen Technology (Asia) Inc.	Delaware
9	Aspen Technology Australia Pty. Ltd.	Australia
10	Aspen Technology International, Inc.	Delaware
11	Aspen Technology LLC	Russia
12	Aspen Technology S.A.S.	Colombia
13	Aspen Technology S.L.	Spain
14	Aspen Technology Services Corporation	Delaware
15	AspenTech (Beijing) Ltd.	PRC
16	AspenTech (Shanghai) Ltd.	PRC
17	AspenTech (Thailand) Ltd.	Thailand
18	AspenTech Africa (Pty.) Ltd.	South Africa
19	AspenTech Argentina S.R.L.	Argentina
20	AspenTech Canada Corporation	Canada
21	AspenTech Canada Holdings, LLC	Delaware
22	AspenTech Europe BV	Netherlands
23	AspenTech Europe, SA/NV	Belgium
24	AspenTech Holding Corporation	Delaware
25	AspenTech Japan Co. Ltd.	Japan
26	AspenTech Ltd.	United Kingdom
27	AspenTech Pte. Ltd.	Singapore
28	AspenTech S.r.l.	Italy
29	AspenTech Software Brasil Ltda.	Brazil
30	AspenTech Software Corporation	Delaware
31	AspenTech Solutions Sdn. Bhd.	Malaysia
32	AspenTech Venezuela C.A.	Venezuela
33	Camo Analytics AS	Norway
34	CAMO Smart Software Inc.	New Jersey
35	Camo Software Japan Co Ltd	Japan
36	Hyprotech UK Limited	United Kingdom
37	Mnubo Solutions Inc. d/b/a Mnubo, Inc.	Canada
38	Mtelligence Corporation	Delaware
39	Optiplant Inc.	Delaware
40	Sabisu Ltd.	United Kingdom
41	The Fidelis Group, LLC	Texas

Consent of Independent Registered Public Accounting Firm

We consent to the incorporation by reference in the registration statements (No. 333-169657, 333-215818 and 333-228978) on Form S-8 of our reports dated August 18, 2021, with respect to the consolidated financial statements and financial statement Schedule II – Valuation and Qualifying Accounts of Aspen Technology, Inc. and the effectiveness of internal control over financial reporting.

/s/ KPMG LLP

Boston, Massachusetts

August 18, 2021

**CERTIFICATION OF PRINCIPAL EXECUTIVE OFFICER
PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002**

I, Antonio J. Pietri, certify that:

1. I have reviewed this Annual Report on Form 10-K of Aspen Technology, 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(s) 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(s) 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 the 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.

Date: August 18, 2021

/s/ ANTONIO. J. PIETRI

Antonio J. Pietri
President and Chief Executive Officer
(Principal Executive Officer)

**CERTIFICATION OF PRINCIPAL FINANCIAL OFFICER
PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002**

I, Chantelle Breithaupt, certify that:

1. I have reviewed this Annual Report on Form 10-K of Aspen Technology, 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(s) 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(s) 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 the 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.

Date: August 18, 2021

/s/ CHANTELE BREITHAUPT

Chantelle Breithaupt
Senior Vice President and Chief Financial Officer
(Principal Financial Officer)

**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 Annual Report on Form 10-K of Aspen Technology, Inc. (the "Company") for the year ended June 30, 2021, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), each of the undersigned hereby certifies in his capacity as an officer of the Company, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that, to his knowledge:

1. The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
2. The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: August 18, 2021

/s/ ANTONIO J. PIETRI

Antonio J. Pietri
President and Chief Executive Officer
(Principal Executive Officer)

Date: August 18, 2021

/s/ CHANTELE BREITHAAPT

Chantelle Breithaupt
Senior Vice President and Chief Financial Officer
(Principal Financial Officer)

A signed original of this written statement required by Section 906 has been provided to Aspen Technology, Inc. and will be retained by Aspen Technology, Inc. and furnished to the Securities and Exchange Commission or its staff upon request.