



Engineering, Design, PLM & Simulation Software Market Update

H1 2018



INSIDE THE INDUSTRY

Industry Wide Trends

- 1 Manufacturing / engineering software vendors are rapidly altering product positioning to offer more comprehensive, horizontal solutions
- 2 Dassault, Siemens PLM and PTC all appear to be focused on digital transformation and digital twins, but have simultaneously allocated corporate development activity / capital to other initiatives
- 3 Smaller, more nimble PLM vendors are taking advantage of the SMB / SME market space that larger vendors are unable to address due to prohibitively expensive implementation costs
- 4 Traditional engineering software vendors are utilizing M&A to simultaneously expand into broad new offering areas and strategically incorporate specialty offerings in their product mixes
- 5 Significant focus on extending and enhancing depth of product integrations with core solutions in CAD, CAM, and CAE as well as ALM and other adjacencies
- 6 Traditionally mechanical-focused vendors are showing continued, albeit preliminary, signs of interest in the convergence of electronics, software and traditional mechanical design
- 7 Companies are now offering cloud-based HPC access to advanced simulation and CAE products from larger vendors – It is still too early to tell if large organizations will leverage these offerings
- 8 Engineering software and PLM companies are looking for ways to better leverage sensor data throughout the lifecycle of products, from improved design and redesign through maintenance and repair and are making acquisitions to support this effort

In Case You Missed These Transactions

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Rockwell to take a \$1 billion stake in PTC <i>Pursuing smarter manufacturing processes</i>	15
Hexagon acquired SPRING Technologies <i>Computer numerical control (CNC) software</i>	13
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Hexagon acquired AutonomouStuff <i>Automotive platform supplying components for autonomous systems</i>	13
Hexagon acquired Nextsense <i>Non-contact profile measurement and surface inspection services</i>	13
Altair acquired FluidDyna <i>GPU-based fluid dynamics and numerical simulation technologies</i>	7
Altair acquired CANDI Controls <i>Cloud-based monitoring and control solutions for systems and equipment</i>	7
Hexagon acquired Licom Systems <i>Software focused on woodworking, metal and stone cutting</i>	13
Hexagon acquired ProCAM Group <i>CAD software for the mechanical industries</i>	13
Siemens acquired Agilion <i>Real-time location technology systems for industrials and transportation</i>	16
Ansys acquired Optis World <i>Physics-based software designed to simulate light and human vision</i>	8
Hexagon acquired Agtek Development Company <i>Construction cost estimation software</i>	13
PTC acquired Waypoint Labs <i>Augmented reality for frontline workers</i>	15

EMERGING TRENDS

GROWING VENDOR & CUSTOMER APPETITE FOR ELECTRONICS & IOT

Rockwell Automation's \$1 Billion Investment in PTC^(a)

- The \$1 billion equity investment will garner Rockwell Automation a 8.4% ownership stake through the issuance of new shares, at \$94.50 per share (an 8.6% premium to the June 8, 2018 PTC closing share price)
- Public commentary cites the relationship extending beyond a financial transaction, as Rockwell will begin reselling PTC's offerings to Rockwell's broad customer base
- The organizations will further pursue technical collaboration, leveraging each organizations industry expertise in IoT, augmented reality, industrial automation, and engineering information

PTC and Rockwell Automation Announce Strategic Partnership to Drive Industrial Innovation and Accelerate Growth

June 11, 2018

Rockwell Automation to Make \$1B Equity Investment in PTC

Companies to Showcase Combined Offering During Live TechEd Webcast Today at 8:00 am PT / 11:00 am ET

NEEDHAM, Mass. & MILWAUKEE --(BUSINESS WIRE)-- PTC Inc. (NASDAQ: PTC) and Rockwell Automation, Inc. (NYSE: ROK) today announced that they have entered into a definitive agreement for a strategic partnership that is expected to accelerate growth for both companies and enable them to be the partner of choice for customers around the world who want to transform their physical operations with digital technology. As part of the partnership, Rockwell Automation will make a \$1 billion equity investment in PTC, and Rockwell Automation's Chairman and CEO, Blake Moret, will join PTC's board of directors effective with the closing of the equity transaction.

Terms

Under the terms of the agreement relating to the equity investment, Rockwell Automation will make a \$1 billion equity investment in PTC by acquiring 10,582,010 newly issued shares at a price of \$94.50, representing an approximate 8.4% ownership interest in PTC based on PTC's current outstanding shares pro forma for the share issuance to Rockwell Automation. The price per share represents an 8.6% premium to PTC's closing stock price on June 8, 2018, the last trading day prior to today's announcement. Rockwell Automation intends to fund the investment through a combination of cash on hand and commercial paper borrowings. Rockwell Automation will account for its ownership interest in PTC as an Available for Sale security, reported at fair value.

Siemens PLM Strengthens its Offering for Electronics^(b)

- Siemens acquired Austemper Design Systems, a startup software company that offers analysis, auto-correction and simulation technology
- Austemper Design Systems technology allows customers to strengthen integrated circuit (IC) designs for functional safety in applications such as automotive, industrial and aerospace systems
- The acquisition strengthens Mentor's integrated circuit (IC) design and verification technology for automotive and increases its functional safety testing via Siemens' digital twin offering

Siemens acquires Austemper Design Systems for breakthrough IC functional safety technology

SIEMENS
Ingenuity for life

- Acquisition strengthens Mentor integrated circuit (IC) design and verification technology for automotive, enhances ISO 26262 functional safety testing via Siemens' digital twin offering

NEWS PROVIDED BY
Siemens
Jun 22, 2018, 10:00 ET

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PLANO, Texas, June 22, 2018 /PRNewswire/ -- Siemens has entered into an agreement to acquire Austin, Texas-based Austemper Design Systems Inc., a startup software company that offers analysis, auto-correction and simulation technology. This technology allows customers to test and harden IC designs for functional safety in applications such as automotive, industrial and aerospace systems where functional safety and high reliability are mandatory for compliance to safety standards like ISO 26262.

ICs in these applications require three types of functional safety verification: for systemic faults, malicious faults and random hardware faults. Mentor's existing Questa™ software is a leading technology for functional verification of systemic faults and provides solutions for verification of malicious faults for IC security. The software technology from Austemper adds state-of-the-art safety analysis, auto-correction and fault simulation technology to address random hardware faults - expanding on Mentor's existing functional safety leadership offerings of the Tessent™ product suite and the Veloce™ platform to provide the most complete end-to-end solution.

EMERGING TRENDS (CONT'D)

BIG BETS IN THE DESIGN & SIMULATION SEGMENT

ANSYS Acquires Optis for \$300 million^(c)

- The acquisition of Optis illustrates a continued focus on specialty design solutions which enable more comprehensive simulation, planning and processes
- Optis' offerings center around the scientific simulation of light, human vision, and physics-based visualization
- Expands ANSYS' capabilities in the area of optical simulation and puts the company in a position to directly benefit from an increased focus on autonomy, and the abundance of sensor data that informs design, health and safety testing, and operation of autonomous vehicles

ANSYS to Acquire Optical Simulation Leader OPTIS

Acquisition will extend ANSYS' portfolio to physics-based optical simulation and enhance ANSYS' sensor simulation capabilities for autonomous vehicles



NEWS PROVIDED BY
ANSYS, Inc. →
Mar 22, 2018, 05:03 ET

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PITTSBURGH, March 22, 2018 /PRNewswire/ -- ANSYS (NASDAQ: ANSS), the global leader and innovator of engineering simulation software, announced today that it has entered into a definitive agreement to acquire OPTIS, a premier provider of software for scientific simulation of light, human vision and physics-based visualization. The acquisition of OPTIS will extend ANSYS' industry-leading multiphysics-based portfolio into the increasingly important area of optical simulation. The transaction is expected to close in the second quarter of 2018. Management will provide further details regarding the transaction and its impact on the 2018 financial outlook after the closing.

Headquartered in La Ferté, France, OPTIS develops physics-based software that simulates light and human vision. Other vendors consider the aesthetics of light, but OPTIS bases its solutions on real-world physics to give the most accurate simulation possible. Its customers include a who's who of the automotive industry, including Audi, Ford, Toyota and Ferrari as well as business leaders in other fields like Boeing, Airbus, GE, Swarovski and L'Oréal.



Insight Partners Lead \$200 Million Investment in Jama^(d)

- The investment allows more aggressive expansion globally, building on strong reported financial and customer growth over the past year
- Continued evidence of private investors interest in product development-focused solutions
- "Product development organizations are facing the challenges of increasing complexity, regulation, and cross-functional collaboration, putting pressure on outdated tools and processes. Jama is enabling the world's most innovative companies to compete and win in the digitally converged future." - Richard Wells, Insight Partners

Investment Led by Insight Venture Partners Backs Jama's Vision, Builds on Strong Growth Momentum

Jama Software, the leading product development platform provider for building complex products and integrated systems, today announced a \$200 million growth equity investment led by Insight Venture Partners with participation from Madrona Venture Group. The investment will propel Jama's long-term global growth and drive the expansion of the [Predictive Product Development](#) software category.

"Traditional product development processes and tools are not keeping up with the growing complexity of creating new breakthrough products. Jama gives product development organizations a single platform, enabling customers to realize revenue potential faster and achieve an ongoing competitive advantage," said Scott Roth, Jama Software CEO. "The investment from Insight Venture Partners will speed our product roadmap, as well as support ongoing global expansion."

The investment comes as Jama closed out a record-breaking fiscal year. Highlights include:

- 80% annual growth in adoption of Jama's platform by market-leading product development organizations across every industry, including Wells Fargo, NASA Kennedy Space Center, Qualcomm, Eli Lilly, Roche, Canon, Caterpillar, and Jabra;
- Significant feature enhancements to the Company's flagship Jama Connect product, including Live Traceability, which connects test plan and result details to requirements, as well as an easily accessible Review Center;
- Jama's acquisition of Notion – a business intelligence platform purpose-built for product development teams – recently relaunched as Jama Analyze™;
- The one-year anniversary of Jama's European HQ in Amsterdam and the addition of key executive leaders in engineering, business development and marketing.

MARKET DYNAMICS

Inclusion Criteria

Madison Park Group (MPG) actively tracks the design, engineering, manufacturing & PLM software landscape. Increasingly we see the convergence of PLM/CAD, simulation and engineering and believe that it is increasingly difficult to differentiate vendors as pure-play design vendors. The features that MPG tracks include:

- | | | | |
|-------------------------------|---------------------------------------|------------------------------|----------------------------------|
| ✓ Design collaboration | ✓ Collaborative design | ✓ Manufacturing execution | ✓ Safety procedure development |
| ✓ Infrastructure mapping | ✓ Data management & archiving | ✓ 3D commercial applications | ✓ Advanced process control |
| ✓ Geospatial display | ✓ Product portfolio mgmt | ✓ Manufacturing process mgmt | ✓ Process simulation and control |
| ✓ Information feed modelling | ✓ Full-systems engineering | ✓ Product exportability | ✓ Printed circuit board editing |
| ✓ Metrology and manufacturing | ✓ Design rule analysis / verification | ✓ Flow dynamics modelling | ✓ Electronic circuit simulation |

Companies Profiled

ADDNODE GROUP



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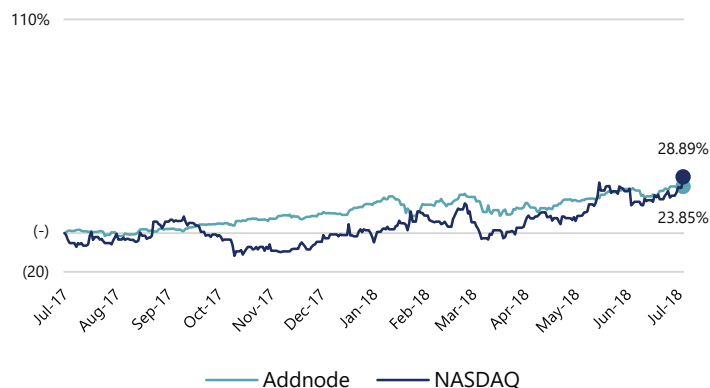
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Business Overview

(\$ in millions)

Enterprise Value (EV):	\$312
LTM Revenue:	\$312
LTM EBITDA:	\$25
EV / LTM Revenue:	1.00x
EV / LTM EBITDA:	12.7x
Net Debt (Cash):	\$59
Dry Powder ⁽¹⁾ :	\$244
Acquisitions Since 2010	27
Ownership Status:	Public (OM:ANOD B)
Headquarters:	Stockholm, Sweden

Trailing 12 Month Performance



Under the Radar Design & Engineering Software Consolidator

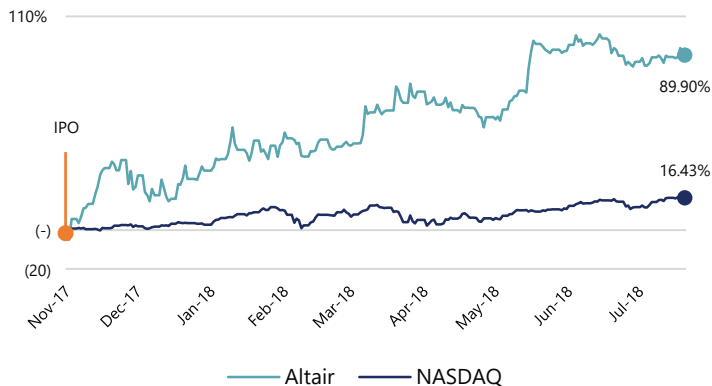
- Addnode Group is a Sweden-based conglomerate that is actively consolidating businesses in three key areas:
 - Design Management* - focuses on capabilities for project collaboration and data management; the division had \$102.1 million of revenue in 2017
 - Product Lifecycle Management* - focuses on design, simulation, IoT and product life cycle management customers; the division had \$103.6 million of revenue in 2017
 - Process Management* - focuses on government management, e-archiving, information management and citizen dialogue solutions; the division had \$79.3 million of revenue in 2017
- Emblematic acquisitions:
 - Addnode acquired Intrinsys which provides Product Lifecycle Management (PLM) solutions to the automotive, aerospace, Formula 1, yachting and oil/gas sectors (acquired in Aug 2017)
 - ✓ Acquired for \$13.4 million
 - ✓ Founded in 2001 and had approximately 50 employees at the time of the transaction
 - Addnode acquired Infrostrait which is a value-added reseller of Dassault Systemes PLM and specialist BIM offerings focused on the Nordic region (acquired in Mar 2017)
 - ✓ The transaction was completed through TechniaTranscat (a subsidiary of Addnode)
 - ✓ Acquired for \$2.8 million
 - ✓ Founded in 1996
- Past acquisitions have ranged in size from \$1 million - 40 million in enterprise value

Business Overview

(\$ in millions)

Enterprise Value (EV):	\$2,309
LTM Revenue:	\$348
LTM EBITDA:	(\$17)
EV / LTM Revenue:	6.64x
EV / LTM EBITDA:	n/m
Net Debt (Cash):	\$63
Dry Powder ⁽¹⁾ :	\$438
Acquisitions Since 2010	16
Ownership Status:	Public (NasdaqGS:ALTR)
Headquarters:	Troy, MI

Trailing 12 Month Performance



IPO Proceeds Unlock Capital To Pursue M&A

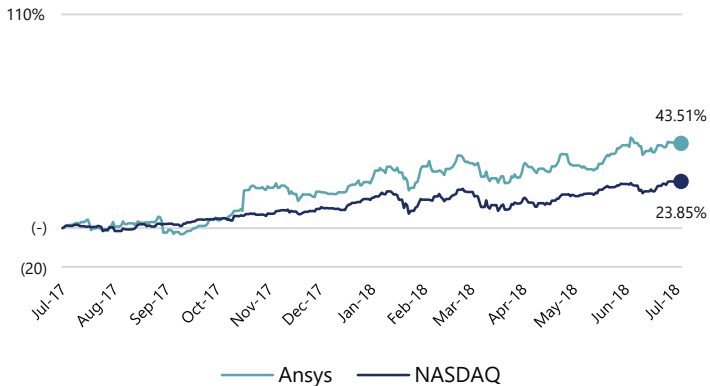
- Altair priced its IPO at \$13.00 per share in November of 2017 raising \$156 million of capital
 - Relatively un-noticed IPO with little marketing
 - Per-share equity value has increased 86.2% since its first day of trading
 - Proceeds were used for debt repayment and acquisition financing
- The company executed a follow-on public offering of 5,600,000 shares priced at \$35.00 per share in June of 2018, increases the total offering size to \$196 million
 - 3,292,580 additional shares are being offered by Altair
 - 2,307,420 additional shares are being offered by existing stockholders
- Following the IPO, Altair has completed several transactions to bolster its product offering
 - Altair acquired FluidDyna following an earlier strategic investment (acquired in May 2018)
 - ✓ Used to solve large-scale internal and external aerodynamics problems using ultra-fast prediction and evaluation tools
 - Altair acquired CANDI Controls' intellectual property assets to complement Altair's prior acquisition of the Carriots IoT platform (acquired in May 2018)
 - ✓ Platform supports multiple data protocols for edge gateway computers to communicate with IoT devices
 - Altair acquired TES International's technology and intellectual property (acquired in Feb 2018)
 - ✓ Provides thermal solutions for applications with complex flow interactions, which couple with Altair's Electromagnetic Compatibility (EMC) and Electronic Design Automation (EDA) technologies
- Has historically pursued acquisitions that help strengthen its core simulation business, as well as their offerings for the IoT space

Business Overview

(\$ in millions)

Enterprise Value (EV):	\$14,139
LTM Revenue:	\$1,125
LTM EBITDA:	\$458
EV / LTM Revenue:	12.57x
EV / LTM EBITDA:	n/m
Net Debt (Cash):	\$890
Dry Powder ⁽¹⁾ :	\$6,010
Acquisitions Since 2010	15
Ownership Status:	Public (NasdaqGS: ANSS)
Headquarters:	Canonburg, PA

Trailing 12 Month Performance



Optics and 3D Simulation Take Center Stage

- ANSYS acquired France-based OPTIS for \$300 million (acquired in May 2018)
 - Delivers a variety of virtual simulation technologies focused on light simulation, physics-based visualization and human vision
 - Optis also provides its VRX product for autonomous vehicle sensors and simulation, which strengthens ANSYS' data gathering and intelligent design capabilities
 - A limited number of providers are focused on optical engineering simulation
 - Expands ANSYS' simulation tool offerings to a wide range of domains
 - Founded in 1989 and had approximately 240 employees at the time of the transaction
- ANSYS acquired 3D Sim to bring domain and process-specific simulation tools for 3D printing in-house (acquired in Nov 2017)
 - Ansys has recognized that 3D printed parts will have geometric features that traditional FEA techniques may have difficulty analyzing
 - 3D Sim historically focused on providing simulation tools to handle complex shapes and functional requirements traditional solutions could not handle
 - With this acquisition, Ansys is moving closer to early-stage design of 3D parts: topology optimization, validation, and physics-based simulation
 - Represents a competitive shift seen across all core vendors
 - Founded in 2013 and had approximately 10 employees at the time of the transaction

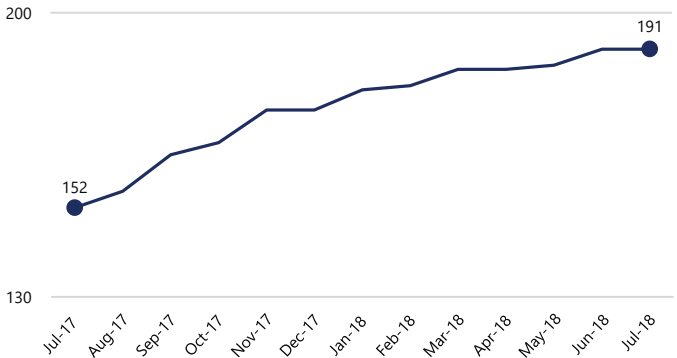


Business Overview

(\$ in millions)

Enterprise Value (EV):	n/a
LTM Revenue:	n/a
LTM EBITDA:	n/a
EV / LTM Revenue:	n/a
EV / LTM EBITDA:	n/a
Net Debt (Cash):	n/a
Dry Powder:	n/a
Acquisitions Since 2010	1
Ownership Status:	PE-Backed (Silver Lake)
Headquarters:	Andover, MA

Trailing 12 Month Employee Growth



Acquisition Allows Greater Leverage of PLM Data

- Aras is using part of the \$40 million it received last year from Silver Lake and GE to make technology, intellectual property acquisitions and acquire technology and industry leaders
- Aras acquired Impresa, a Maintenance, Repair, and Overhaul (MRO) vendor, from Info Spectrum (acquired in Jan 2018)
 - Provides Aras with a suite of MRO capabilities that help manufacturers and owner-operators digitally transform the development and maintenance of their products
- The company appears to be continuing its focus on the mechanical space, providing it numerous entry points into larger organizations
- The Silver Lake investment poses a strong commitment to aggressively pursue Dassault's Enovia and Siemens Teamcenter offerings, albeit a clear organic growth or acquisition strategy has yet to emerge

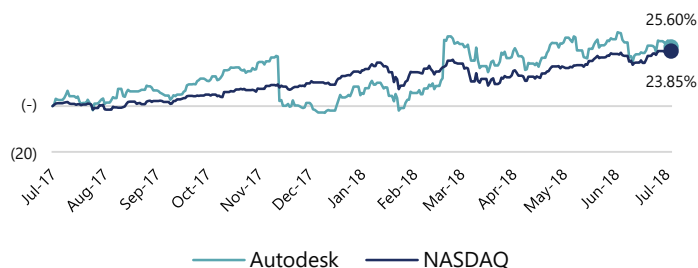
Business Overview

(\$ in millions)

Enterprise Value (EV):	\$29,723
LTM Revenue:	\$2,131
LTM EBITDA:	(\$229)
EV / LTM Revenue:	13.95x
EV / LTM EBITDA:	n/m
Net Debt (Cash):	(\$294)
Dry Powder ⁽¹⁾ :	\$4,507
Acquisitions Since 2010	61
Ownership Status:	Public (NasdaqGS: ADSK)
Headquarters:	San Rafael, CA

Trailing 12 Month Performance

110%



Refocus on BIM and Partnership Investments

- After a dearth of acquisitions, Autodesk has made its first engineering software acquisition since November 2016
 - Autodesk acquired Assemble Systems to augment its BIM offerings (acquired in Jul 2018)
 - ✓ SaaS solution utilized by construction professional to hold BIM models, drawings and point clouds
 - ✓ Features include bid management, estimating, finance, project management, scheduling, and site management capabilities
 - ✓ Assemble System's offerings will be integrated with Autodesk's BIM 360 platform
 - ✓ Founded in 2011 and had approximately 50 employees at the time of acquisition
- Autodesk has shifted its product strategy to making strategic investments in addition to sporadic acquisitions
 - Manufacton (strategic investment made in Sep 2017)
 - ✓ SaaS (mobile/web) platform that helps construction firms plan, track, and manage both prefabrication and regular material handling
 - ✓ Enhances project visibility for all constituents: coordinators, detailers, procurement, shop foremen, field superintendents, and project leads
 - ✓ Founded in 2014 and had approximately 10 employees at the time of investment
 - SMartvid.io (strategic investment made in Jul 2017)
 - ✓ Provides a video recognition platform which analyzes video taken on construction sites
 - ✓ Detects safety risks, monitors quality and tracks project progress as milestones are reached
 - ✓ Founded in 2015 and had approximately 25 employees at the time of investment

Source(s): LinkedIn, CapIQ, Pitchbook, corporate website, market data as of 07/20/2018

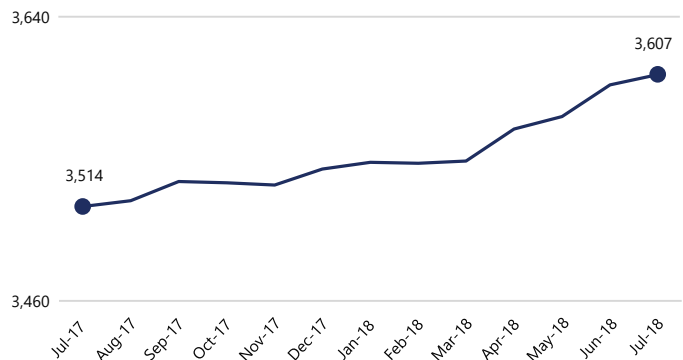
(1) Dry powder defined as cash + available debt capacity + available stock; debt capacity defined as greater of 5.0x LTM EBITDA or 150% of recurring revenue less outstanding debt; available stock represents 20% of outstanding market capitalization

Business Overview

(\$ in millions)

Enterprise Value (EV):	n/a
LTM Revenue:	n/a
LTM EBITDA:	n/a
EV / LTM Revenue:	n/a
EV / LTM EBITDA:	n/a
Net Debt (Cash):	n/a
Dry Powder:	n/a
Acquisitions Since 2010	n/a
Ownership Status:	Private
Headquarters:	Exton, PA

Trailing 12 Month Employee Growth



Foundational BIM Offering Enhanced Via M&A

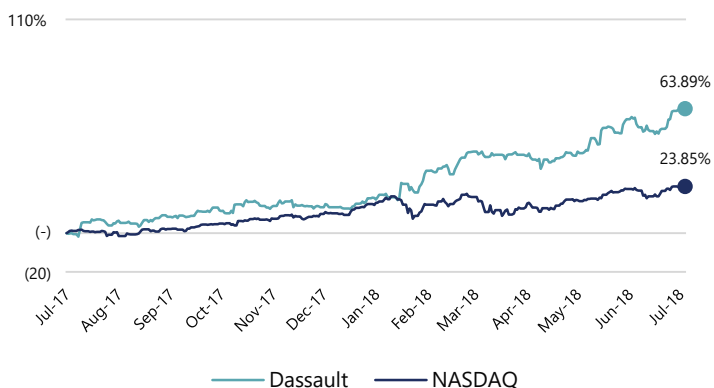
- Bentley is well-known for its Building Information Modeling (BIM) software, which is used in the Architecture, Engineering and Construction (AEC) fields as well as by geospatial professionals
- M&A activity has recently helped Bentley solidify their market positioning
 - Bentley acquired Plaxis for its geotechnical simulation software (acquired in Apr 2018)
 - ✓ Software suite enabling 2-dimensional and 3-dimensional geotechnical analysis of soil structure and related environment conditions
 - ✓ Founded in 1993 and had approximately 75 employees at the time of acquisition
 - Bentley acquired SoilVision for its soil engineering software (acquired in Apr 2018)
 - ✓ 1-dimensional, 2-dimensional, and 3-dimensional geotechnical modelling software that helps engineers numerically model slope stability
 - ✓ Founded in 1997 and had approximately 15 employees at the time of acquisition
 - Bentley acquired S-Cube Futuretech (acquired in Jan 2018)
 - ✓ S-Cube's applications expand Bentley's offerings specific to the concrete engineering design and documentation software needs in India, South East Asia, and the Middle East
 - ✓ Founded in 2012 and had approximately 15 employees at the time of acquisition

Business Overview

(\$ in millions)

Enterprise Value (EV):	\$36,536
LTM Revenue:	\$3,791
LTM EBITDA:	\$1,053
EV / LTM Revenue:	9.64x
EV / LTM EBITDA:	n/m
Net Debt (Cash):	\$2,158
Dry Powder ⁽¹⁾ :	\$14,732
Acquisitions Since 2010	34
Ownership Status:	Public (ENXTPA: DSY)
Headquarters:	Velizy-Villacoublay, France

Trailing 12 Month Performance



Rapid Product Expansion Via M&A and New Releases

- Dassault acquires Centric Software marking its foray into retail PLM (acquired in Jun 2018)
 - The acquisition of Centric supports Dassault's expansion into adjacent markets, via Centric's solutions for enterprise-class merchandise planning, product lifecycle management (PLM), sourcing, business planning, quality, and collection management capabilities in the retail apparel sector
 - According to Dassault press releases, the transaction structure included the cash purchase of 58-69% of Centric's equity today (subject to current owners' preference), and an advance payment on the remaining shares to be acquired in 2020 and 2021
 - Total transaction composition is dependent on Centric's growth and profitability in the coming two years, but will exist in the range of 4.00x-6.00x 2019 and 2020 revenue
 - Founded in 1998 and had approximately 275 employees at the time of acquisition
- Dassault acquired No Magic with its model-based engineering capabilities (acquired in Nov 2017)
 - Provides a suite of products that assist companies in using model-based systems engineering (MBSE) to improve their software development
 - As products become more electronic, software enabled tools like No Magic will become increasingly important as systems require more rigorous requirements and traceability to match their component complexity
 - Founded in 1995 and had approximately 325 employees at the time of acquisition
- Dassault acquired EXA for \$400 million (acquired in Nov 2017)
 - EXA's had FY2017 revenue of \$72.6 million, up 11.1% YoY from FY 2016 revenue of \$65.4 million
 - The acquisition capitalizes on an expanding market for computational fluid dynamics
 - Founded in 1991 and had approximately 350 employees at the time of acquisition
- Dassault introduced the 3D Experience Marketplace in Feb 2018, which represents an expansion in its ecosystem and further enables businesses to collaborate with adjacent industrial service providers

Source(s): LinkedIn, CapIQ, Pitchbook, corporate website, market data as of 07/20/2018

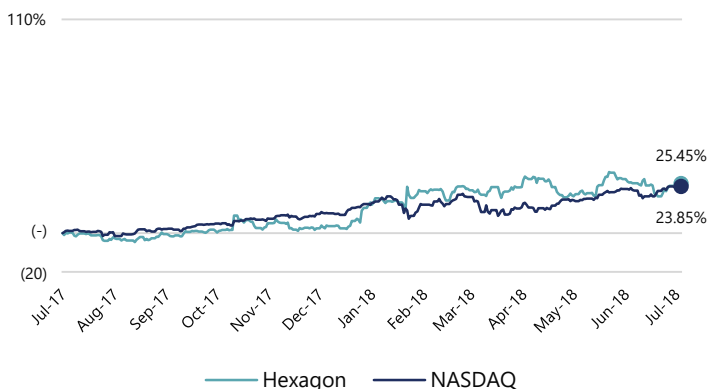
(1) Dry powder defined as cash + available debt capacity + available stock; debt capacity defined as greater of 5.0x LTM EBITDA or 150% of recurring revenue less outstanding debt; available stock represents 20% of outstanding market capitalization

Business Overview

(\$ in millions)

Enterprise Value (EV):	\$22,698
LTM Revenue:	\$4,102
LTM EBITDA:	\$1,232
EV / LTM Revenue:	5.53x
EV / LTM EBITDA:	18.4x
Net Debt (Cash):	(\$2,256)
Dry Powder ⁽¹⁾ :	\$8,445
Acquisitions Since 2010	38
Ownership Status:	Public (STO: HEXA-B)
Headquarters:	Stockholm, Sweden

Trailing 12 Month Performance



Using M&A To Extend Tools into the Field

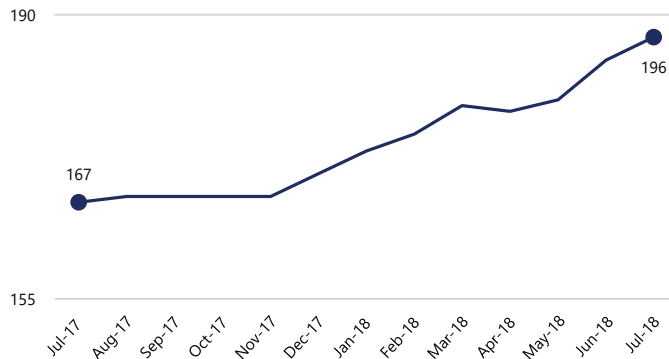
- Hexagon acquired SPRING Technologies to expand Hexagon's Manufacturing Intelligence division capabilities (acquired in Jun 2018)
 - Provides software that enables machine tool simulation, toolpath verification and optimization, and machine tool management for the aerospace, automotive, medical, energy and transportation industries
 - Headquartered in France, with offices located in the United States, Germany and China
 - Founded in 1983 and had approximately 100 employees at the time of acquisition
- Hexagon acquired AutonomouStuff to offer a platform which supplies components for autonomous systems (acquired in Jun 2018)
 - Provides engineering services, software, and components for autonomous systems
 - Founded in 2010 and had approximately 50 employees at the time of acquisition
- Hexagon acquired Nextsense to expand its measurement/inspection services (acquired in May 2018)
 - Extends Hexagon's automotive fit and finish capabilities, necessary for developing smart factories
 - Founded in 2007 and had approximately 75 employees at the time of acquisition
- Hexagon acquired Licom Systems to expand its machine control capabilities (acquired in Apr 2018)
 - Provides enhanced solutions for the woodworking, metalworking, and stone-cutting industries
 - Founded in 1996 and had approximately 10 employees at the time of acquisition
- Hexagon acquired ProCAM Group, a Vero Software solutions reseller (acquired in Apr 2018)
 - Provides Hexagon a larger presence in the Italian market
 - Founded in 1995 and had approximately 15 employees at the time of acquisition
- Hexagon acquired AGTEK to expand its construction management offerings (acquired in Mar 2018)
 - US-based software company specializing in planning and productivity solutions for the heavy civil construction industry primarily through the Earthwork 4D offering
 - Founded in 1981 and had approximately 25 employees at the time of acquisition

Business Overview

(\$ in millions)

Enterprise Value (EV):	n/a
LTM Revenue:	n/a
LTM EBITDA:	n/a
EV / LTM Revenue:	n/a
EV / LTM EBITDA:	n/a
Net Debt (Cash):	n/a
Dry Powder:	n/a
Acquisitions Since 2010	n/a
Ownership Status:	PE-Backed (Insight)
Headquarters:	Portland, OR

Trailing 12 Month Employee Growth



Product Requirements Management Gaining Traction

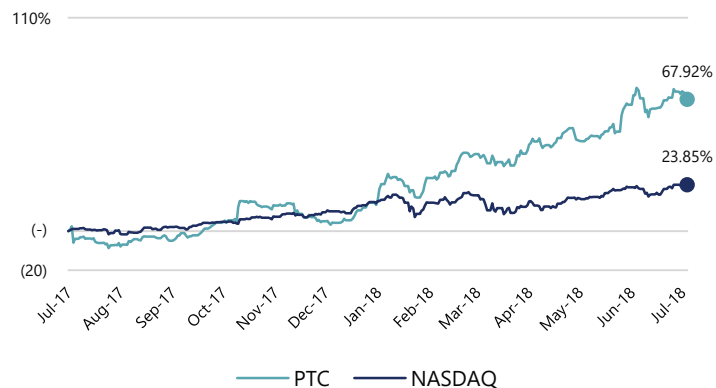
- Jama Software recently received \$200 million of capital investment from Insight Venture Partners and the Madrona Venture Group
 - Enables further global expansion and accelerates Jama's product development timeline
 - Jama's Predictive Product Development technology, and its new product JAMA Analyze, leverage previous design data to more effectively plan the product development process for new designs
 - This new approach to product development could dramatically alter the design/redesign process across a broad range of industries
 - The investment provides significant capital to continue competing with IBM's DORS
- Jama Software acquired Notion Data (acquired in Jan 2018)
 - Notion was a relatively small provider of business-intelligence dashboards for metrics-focused product teams
 - Offers out-of-the box integrations with the leading tools for modern product development teams such as Jira, GitHub, Slack and Pivotal Tracker
 - Notion's team and technology are being used by Jama to turn data into actionable insights that help product development teams improve their performance
 - Notion's technology is a basis for the new Jama Analyze product
 - Founded in 2015
- Jama is having success expanding it's offering as a standard product requirements tool for integrated product development companies
 - Although DORS is still well entrenched in heavy manufacturing, many other categories appear to be migrating to Jama's offerings

Business Overview

(\$ in millions)

Enterprise Value (EV):	\$12,565
LTM Revenue:	\$1,236
LTM EBITDA:	\$144
EV / LTM Revenue:	10.17x
EV / LTM EBITDA:	n/m
Net Debt (Cash):	(\$372)
Dry Powder ⁽¹⁾ :	\$2,862
Acquisitions Since 2010	14
Ownership Status:	Public (NasdaqGS: PTC)
Headquarters:	Needham, MA

Trailing 12 Month Performance



Strong Message: The Future is IIoT and Industrial Automation

- On June 2018 Rockwell Automation announced a strategic investment of \$1 billion in PTC through a new share offering
 - Creates a strong link between the IoT design software provider and industrial automation giant, with both organizations planning collaboration efforts to better utilize each entities' institutional knowledge
 - The organizations plan to align and integrate PTC's ThingWorx, Kepware industrial connectivity, and Vuforia augmented reality (AR) platforms with Rockwell Automation's FactoryTalk MES, FactoryTalk Analytics, and Industrial Automation solutions
 - The investment represents more than a financial relationship, as Rockwell will now be acting as a re-seller of PTC solutions
- PTC acquired Waypoint, marking PTC's 3rd acquisition in augmented reality (acquired in Apr 2018)
 - Although a startup out of Cambridge, MA, PTC has acquired Waypoint labs for its augmented reality (AR) technology
 - AR is critical to truly being able to leverage a digital twin strategy for MRO, which is becoming a common area of increased interest
 - Founded in 2017 and had approximately 2 employees at the time of acquisition
- PTC and Ansys announced at LiveWorx18 that both companies will begin delivering Ansys' Discovery Live simulation capabilities within PTC's Creo 3D CAD Software
 - Enables unified modeling and simulation environments
 - "With the combined solution engineers will be able to see the real-time results of simulation during the modeling process, enabling them to understand design changes in their models. This capability has the potential to dramatically improve engineering productivity and quality and the combined solution can be a differentiator in the market. Partnering with ANSYS makes tremendous sense on every level."

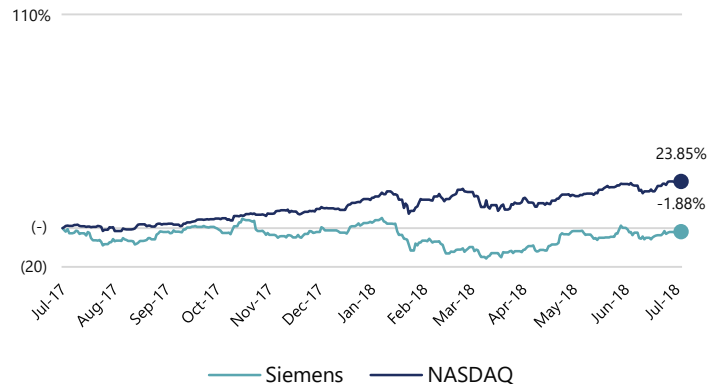
- Jim Heppelmann, President and CEO, PTC

Business Overview

(\$ in millions)

Enterprise Value (EV):	\$140,497
LTM Revenue:	\$97,957
LTM EBITDA:	\$11,081
EV / LTM Revenue:	1.43x
EV / LTM EBITDA:	12.7x
Net Debt (Cash):	(\$26,456)
Dry Powder ⁽¹⁾ :	\$57,047
Acquisitions Since 2010	27
Ownership Status:	Public (DB: SIE)
Headquarters:	Munich, Germany

Trailing 12 Month Performance



Continued Focus on EDA Expansion Through M&A

- Siemen continues to make acquisitions in Electronic Design Automation (EDA)
 - Siemens acquired Austemper Design Systems to expand its capabilities in auto-correction and simulation (acquired in Jun 2018)
 - ✓ Software offerings let customers test and harden IC designs for functional safety in applications such as automotive, industrial and aerospace systems
 - ✓ Expands Siemen's Mentor offering capabilities beyond just systemic and malicious fault mitigation, to also meet random hardware fault needs
 - ✓ Founded in 2015 and had approximately 5 employees at the time of acquisition
 - Siemens acquired Solido Design Automation which provides variation-aware design and characterization software (acquired in Nov 2017)
 - ✓ Products enable EDA companies to perform variation-aware design, with designers addressing the impact of variability to improve IC performance, power, area, and yield
 - ✓ Founded in 2005 and had approximately 25 employees at the time of acquisition
- Siemens has recently launched its own Additive Manufacturing Network:
 - Provides an online collaboration platform designed to bring on-demand design and engineering expertise, knowledge, digital tools, and production capabilities for industrial 3D printing to the global manufacturing industry

Source(s): LinkedIn, CapIQ, Pitchbook, corporate website, market data as of 07/20/2018

(1) Dry powder defined as cash + available debt capacity + available stock; debt capacity defined as greater of 5.0x LTM EBITDA or 150% of recurring revenue less outstanding debt; available stock represents 20% of outstanding market capitalization

PRECEDENT M&A TRANSACTIONS

PRIORITY ACQUIRERS & NOTABLE DEALS

Addnode	(\$ in Millions)		Target Overview				Transaction Summary														
	Announced	Target	Description	LTM		Deal Value	Consideration (%)		Deal Value / LTM												
				Revenue	EBITDA		Cash	Stock	Revenue	EBITDA											
Addnode											Total Disclosed M&A Deal Value: \$112.3 Million										
Altair	12/11/2017	InPort Intelligent Port Systems	Logistic systems for the port/ship industries	\$2.3	\$0.4	n/a	-	-	n/a	n/a											
	10/2/2017	Apricon	Tools for project and document management	\$1.0	\$0.1	n/a	-	-	n/a	n/a											
	9/22/2017	Adtollo	Mapping and surveying software	\$2.8	\$0.5	n/a	-	-	n/a	n/a											
Altium	8/1/2017	Intrinsys Limited	Product lifecycle management software	\$23.4	\$3.6	\$30.3	-	-	1.30x	8.4x											
	7/31/2017	Service Works Grop	Facilities management software	\$8.9	\$1.8	\$23.3	-	-	2.63x	13.0x											
	6/29/2017	Forsler & Stjerna Konsult	Public administration / traffic mgmt software	\$2.3	\$0.6	n/a	-	-	n/a	n/a											
ANSYS	5/18/2017	Canela	Pharmaceutical management software	\$1.3	\$0.1	n/a	-	-	n/a	n/a											
	12/15/2016	Projktstyrning Prima	IT solutions to industrial companies	n/a	n/a	n/a	-	-	n/a	n/a											
	8/22/2016	Stamford	Retail and real estate software	\$3.7	\$0.6	n/a	-	-	n/a	n/a											
Aras	7/1/2016	EssVision	Case management software solutions	n/a	n/a	n/a	-	-	n/a	n/a											
	2/1/2016	5D Systemkonsult	Property management systems software	\$2.9	\$0.5	\$3.4	-	-	1.19x	6.7x											
	7/1/2015	Transcat PLM	Software for product lifecycle management	n/a	n/a	\$18.2	-	-	n/a	n/a											
Aspentech	10/2/2014	Projektstyrning Prima	IT solutions to industrial companies	n/a	n/a	n/a	-	-	n/a	n/a											
	6/2/2014	Symetri	3D computer-aided design software	\$11.7	n/a	\$4.7	-	-	0.40x	n/a											
	2/3/2014	S-Group Solutions	Management system for the fire and rescue	\$76.1	\$12.1	n/a	-	-	n/a	n/a											
Autodesk	1/1/2014	EG Engineering	Design, analysis and simulation services	\$0.4	(\$0.0)	n/a	-	-	n/a	n/a											
	11/1/2013	CAD Expert	Software for computer-aided design	\$0.3	\$0.1	n/a	-	-	n/a	n/a											
	7/2/2013	Joint Collaboration	Solutions for oil, gas, construction industries	n/a	n/a	\$31.5	-	-	n/a	n/a											
Dassault	5/27/2013	Basepoint Kajaani	Software for infrastructure planning	n/a	n/a	n/a	-	-	n/a	n/a											
	3/4/2013	Abou	e-services to municipalities	n/a	n/a	n/a	-	-	n/a	n/a											
	10/1/2012	Spatial Technology	Spatial enterprise software	\$1.5	n/a	n/a	-	-	n/a	n/a											
Hexagon	6/7/2011	CDLIGHT	Manufacturing and construction applications	n/a	n/a	n/a	-	-	n/a	n/a											
	11/15/2010	Tekis, Decerno, and Mittbygge	IT services for municipality business systems	n/a	n/a	\$20.4	-	-	n/a	n/a											
	11/15/2010	Kartena	Geospatial solutions and software	n/a	n/a	n/a	-	-	n/a	n/a											
PTC	9/30/2010	Faester Sci	Property management systems software	n/a	n/a	n/a	-	-	n/a	n/a											
	7/2/2010	Symetri	3D computer-aided design software	\$11.4	n/a	\$2.6	-	-	0.22x	n/a											
	4/13/2010	Map Factory	Provider of GPS software	\$0.9	n/a	n/a	-	-	n/a	n/a											
Siemens	11/6/2009	Evitbe	Communications and event admin software	\$4.5	\$1.0	n/a	-	-	n/a	n/a											
	10/16/2008	Strand Interconnect	Thin film processeing technology	n/a	n/a	n/a	-	-	n/a	n/a											
	8/15/2008	IT Energy	IT consulting services for construction/design	n/a	n/a	n/a	-	-	n/a	n/a											
	7/4/2008	Ravalik Oy	Design and data management solutions	n/a	n/a	n/a	-	-	n/a	n/a											
	2/4/2008	Sikroma	3D modelling software	\$0.6	\$0.2	n/a	-	-	n/a	n/a											
	8/21/2007	SolidEngineer	Product and assets lifecycle management	n/a	n/a	n/a	-	-	n/a	n/a											
	4/27/2007	Curalia	Software integration services	n/a	n/a	\$1.5	-	-	n/a	n/a											
	1/1/2007	SolidEngineer	Product and assets lifecycle management	\$6.8	\$0.3	n/a	-	-	n/a	n/a											
	Total High								21.67x	24.6x											
	Total Low								0.22x	3.3x											
	Total Average								4.55x	13.3x											
	Total Median								3.42x	13.1x											

PRIORITY ACQUIRERS & NOTABLE DEALS (CONT'D)

Addnode	(\$ in Millions)		Target Overview				Transaction Summary				
	Announced	Target	Description	LTM		Deal Value	Consideration (%)		Deal Value / LTM		
				Revenue	EBITDA		Cash	Stock	Revenue	EBITDA	
Altair	Addnode (Cont'd)					Total Disclosed M&A Deal Value: \$112.3 Million					
	8/30/2006	Ida Infront	Workflow management and e-gov services	\$11.6	\$2.5	\$8.2	-	-	0.71x	3.3x	
	5/4/2006	Centus	IT consultancy services	\$2.7	n/a	\$1.8	-	-	0.67x	n/a	
	9/21/2005	Prosilia Software	IT consultancy services	\$2.7	n/a	n/a	-	-	n/a	n/a	
	9/1/2005	Atex	Content management IT services	n/a	n/a	n/a	-	-	n/a	n/a	
	8/26/2003	Mogul	IT consultancy services	n/a	n/a	n/a	-	-	n/a	n/a	
	5/24/2000	Adera OOPix	Object-oriented systems development	n/a	n/a	\$8.3	-	-	n/a	n/a	
ANSYS	4/15/2000	Itage	eBusiness and knowledge management	n/a	n/a	\$3.5	-	-	n/a	n/a	
	2/1/2000	Adera Stockholm	Public relation consultancy services	\$2.2	n/a	\$6.6	-	-	3.00x	n/a	
	Altair					Total Disclosed M&A Deal Value: \$43.3 Million					
Aras	5/10/2018	Fluidyna GmbH	Fluid dynamics simulation software	n/a	n/a	n/a	-	-	n/a	n/a	
	3/29/2018	CANDI Controls	Real-time device control and data management	n/a	n/a	\$2.4	-	-	n/a	n/a	
	9/28/2017	Runtime	EDA software optimizing application computing	n/a	n/a	\$25.7	-	-	n/a	n/a	
	9/14/2017	Componeering	Composites analysis and design software	n/a	n/a	n/a	-	-	n/a	n/a	
Aspentech	6/20/2017	Carriots	IoT device enablement platform	n/a	n/a	\$7.5	-	-	n/a	n/a	
	5/24/2017	MODELiS	EDA for circuit modelling & systems design	n/a	n/a	\$2.0	-	-	n/a	n/a	
	9/14/2016	Solid Iris Technologies	Rendering software for architecture applications	n/a	n/a	n/a	-	-	n/a	n/a	
	5/10/2016	CEDRAT	Simulation software for mechatronic systems	n/a	n/a	\$5.1	-	-	n/a	n/a	
Autodesk	3/23/2016	Awe Communications	Product design software for cellular devices	n/a	n/a	n/a	-	-	n/a	n/a	
	9/30/2015	Click2Cast	Casting process simulation software	n/a	n/a	\$0.7	-	-	n/a	n/a	
	4/7/2015	Multiscale Design Systems	Modeling, simulation, and testing software	n/a	n/a	n/a	-	-	n/a	n/a	
	7/17/2014	Visual Solutions	Commercial simulation software	n/a	n/a	n/a	-	-	n/a	n/a	
Dassault	12/10/2013	EM Software & Systems	Consulting services for electromagnetic analysis	n/a	n/a	n/a	-	-	n/a	n/a	
	11/8/2012	Synopsis Consulting	Business consulting services for product dev.	n/a	n/a	n/a	-	-	n/a	n/a	
	1/11/2011	ACUSIM Software	Computation fluid dynamics software	n/a	n/a	n/a	-	-	n/a	n/a	
	10/28/2010	SimLab Corporation	Auto industry modeling and simulation software	n/a	n/a	n/a	-	-	n/a	n/a	
Hexagon	1/7/2007	solidThinking	Integrated rendering engine design software	n/a	n/a	n/a	-	-	n/a	n/a	
	1/1/2007	Hiqube	Simulation-driven business analytics suite	n/a	n/a	n/a	-	-	n/a	n/a	
	3/10/2003	PBS Works	Secure workload management for computing	n/a	n/a	n/a	-	-	n/a	n/a	
PTC	Altium					Total Disclosed M&A Deal Value: \$44.4 Million					
	5/10/2018	Fluidyna	Predictive aerodynamic simulation tools	n/a	n/a	n/a	-	-	n/a	n/a	
	5/3/2018	CANDI Controls	Data protocol management for edge devices	n/a	n/a	n/a	-	-	n/a	n/a	
Siemens	Total High					21.67x					24.6x
	Total Low					0.22x					3.3x
	Total Average					4.55x					13.3x
	Total Median					3.42x					13.1x

PRIORITY ACQUIRERS & NOTABLE DEALS (CONT'D)

	(\$ in Millions)		Target Overview				Transaction Summary			
	Announced	Target	Description	LTM		Deal Value	Consideration (%)		Deal Value / LTM	
				Revenue	EBITDA		Cash	Stock	Revenue	EBITDA
Addnode										
Altair										
Altium	Altium (Cont'd) Total Disclosed M&A Deal Value: \$44.4 Million									
	2/21/2018	TES International	Thermal solutions for complex flow mapping	n/a	n/a	n/a	-	-	n/a	n/a
	8/28/2017	Upverter	Online circuit design platform	n/a	n/a	\$5.6	-	-	n/a	n/a
	1/17/2017	Premier EDA Solutions	Electronic design automation	n/a	n/a	\$4.0	-	-	n/a	n/a
	9/15/2016	Transfer	Electronics design software	n/a	n/a	\$1.8	-	-	n/a	n/a
	8/23/2016	Perception Software	Engineering productivity application	n/a	n/a	\$7.9	100.0%	-	n/a	n/a
	8/14/2015	Octopart	Electronics parts search	n/a	n/a	\$18.0	84.9%	15.1%	n/a	n/a
ANSYS	8/14/2015	Ciiva	Electronic component management	n/a	n/a	\$4.0	100.0%	-	n/a	n/a
	9/16/2010	Morfik Technology	Cloud application development	n/a	n/a	\$3.1	100.0%	-	n/a	n/a
ANSYS Total Disclosed M&A Deal Value: \$2.3 Billion										
Aras	3/22/2018	Optis World	Optics engineering & simulation software	n/a	n/a	\$300.0	-	-	n/a	n/a
Aspentech	11/15/2017	3DSIM	Additive manufacturing process software	n/a	n/a	n/a	-	-	n/a	n/a
	7/11/2017	Computational Engineering	Scientific data visualization software	n/a	n/a	\$6.0	-	-	n/a	n/a
	3/17/2017	CLK Design Automation	Static timing and power analysis software	n/a	n/a	n/a	-	-	n/a	n/a
	11/3/2016	KPIT	Automotive engineering software	n/a	n/a	n/a	-	-	n/a	n/a
	9/1/2015	Delcross	CEM & RF analysis software	n/a	n/a	n/a	-	-	n/a	n/a
	7/1/2015	Gear Design	Semiconductor & electric design solutions	n/a	n/a	\$30.0	-	-	n/a	n/a
	2/5/2015	Newmerical	In-flight icing simulation software	n/a	n/a	\$10.9	-	-	n/a	n/a
Autodesk	11/3/2014	Parsec Holdings	Technology-driven engineering services	n/a	n/a	\$8.4	-	-	n/a	n/a
	5/1/2014	SpaceClaim	3D direct modeling software	\$18.0	n/a	\$84.9	100.0%	-	4.72x	n/a
	1/3/2014	Reaction Design	Chemical modeling & simulation software	n/a	n/a	\$19.1	-	-	n/a	n/a
	5/22/2013	Tedaka Technologies	Telecom transmission & networking	n/a	n/a	\$2.8	-	-	n/a	n/a
Dassault	4/3/2013	Evolutionary Engineering	Aerospace and mechanical engineering	n/a	n/a	\$4.6	-	-	n/a	n/a
	7/1/2012	Esterel Technologies	Embedded software design	\$21.0	n/a	\$58.0	100.0%	-	2.76x	n/a
	6/30/2011	Apache Design	Semiconductor design and verification	\$44.0	n/a	\$294.9	100.0%	-	6.70x	n/a
	8/1/2008	Ansoft	Electronic design automation software	\$103.4	\$41.7	\$832.0	-	-	8.05x	19.9x
	11/27/2007	Emerging Signals	Railway signalling services	n/a	n/a	\$2.2	-	-	n/a	n/a
Hexagon	5/1/2006	Fluent	Computational fluid dynamics	n/a	n/a	n/a	-	-	n/a	n/a
	2/16/2006	Aavid Thermal Technologies	Thermal management software solutions	n/a	n/a	\$565.0	-	-	n/a	n/a
	12/1/2005	Harvard Thermal	Thermal management software solutions	n/a	n/a	n/a	-	-	n/a	n/a
	1/5/2005	Century Dynamics	Hydro-dynamics simulation	n/a	n/a	\$10.0	-	-	n/a	n/a
PTC	2/4/2003	CFX Group	Computational fluid dynamics software	\$19.0	n/a	\$21.7	-	-	1.14x	n/a
	3/20/2002	IceBreaker	Online informational management software	n/a	n/a	n/a	-	-	n/a	n/a
	11/14/2001	Cadoc	CAD & acoustic testing	n/a	n/a	\$3.9	-	-	n/a	n/a
Siemens	Total High								21.67x	24.6x
	Total Low								0.22x	3.3x
	Total Average								4.55x	13.3x
	Total Median								3.42x	13.1x

PRIORITY ACQUIRERS & NOTABLE DEALS (CONT'D)

Addnode	(\$ in Millions)		Target Overview				Transaction Summary					
	Announced	Target	Description	LTM		Deal Value	Consideration (%)		Deal Value / LTM			
				Revenue	EBITDA		Cash	Stock	Revenue	EBITDA		
Altair	ANSYS (Cont'd)										Total Disclosed M&A Deal Value: \$2.3 Billion	
	8/31/2000	ICEM CFD	Aeronautics & automobile design	\$6.8	n/a	\$12.4	-	-	1.82x	n/a		
Altium	Aras Corporation										Total Disclosed M&A Deal Value: n/a	
	1/24/2018	Info Spectrum (Impressa)	MRO management suite	n/a	n/a	n/a	-	-	n/a	n/a		
ANSYS	Aspentech										Total Disclosed M&A Deal Value: \$398.7 Million	
	2/5/2018	Apex Optimisation	Advanced process control software	n/a	n/a	\$23.0	-	-	n/a	n/a		
	12/5/2017	RtTech Software	Industrial Internet of Things (IIoT) cloud software	n/a	n/a	n/a	-	-	n/a	n/a		
	10/27/2016	Mtelli	Mechanical equipment monitoring software	n/a	n/a	\$37.4	-	-	n/a	n/a		
Aras	6/6/2016	Fidelis Group	Asset reliability software and related services	n/a	n/a	\$10.0	-	-	n/a	n/a		
	3/12/2015	Blowdown Software Technology	Depressurization software technology	n/a	n/a	n/a	-	-	n/a	n/a		
	4/1/2014	Sulsim Software	Simulation of gas plant processing feeds	n/a	n/a	n/a	-	-	n/a	n/a		
	2/28/2013	Refining Advantage	Pipeline and dock scheduling software	n/a	n/a	n/a	-	-	n/a	n/a		
Aspentech	9/28/2012	PSVPlus	Plant-management software	n/a	n/a	n/a	-	-	n/a	n/a		
	2/29/2012	SolidSim Engineering	Engineering software	n/a	n/a	n/a	-	-	n/a	n/a		
	6/7/2007	Plant Solutions	Software/services for oil and gas industries	n/a	n/a	n/a	-	-	n/a	n/a		
	5/10/2002	Hyprotech	Modeling and simulation software	\$49.0	n/a	\$106.1	-	-	2.17x	n/a		
Autodesk	6/30/2001	Houston Consulting Group	Planning and scheduling software	n/a	n/a	\$8.0	-	-	n/a	n/a		
	9/5/2000	Icarus	Computer-aided design software	\$11.3	n/a	\$24.5	-	-	2.17x	n/a		
	6/1/2000	Petrolsoft	Supply chain software for petroleum industry	\$4.0	n/a	\$54.5	-	-	13.63x	n/a		
	5/27/1998	Chesapeake Decision Sciences	Software for supply-chain planning	n/a	n/a	\$135.2	-	-	n/a	n/a		
Dassault	4/25/1995	Industrial Systems	Process Information Management software	n/a	n/a	n/a	-	-	n/a	n/a		
	Autodesk										Total Disclosed M&A Deal Value: \$2.0 Billion	
	7/19/2018	Assemble Systems	BIM solutions for construction management	n/a	n/a	n/a	-	-	n/a	n/a		
	11/13/2017	BioLite	Carbon credit license permits	n/a	n/a	n/a	-	-	n/a	n/a		
Hexagon	11/15/2016	Seebo	IoT development modules	n/a	n/a	n/a	-	-	n/a	n/a		
	6/1/2016	CadSoft	PCB Design	n/a	n/a	n/a	-	-	n/a	n/a		
	4/18/2016	Solid Angle	Animation & visual effects rendering	n/a	n/a	n/a	-	-	n/a	n/a		
	2/25/2016	Monolith	Voxel modeling	n/a	n/a	n/a	-	-	n/a	n/a		
PTC	1/1/2016	Autodesk Substation Design	AutoCAD software developer	n/a	n/a	n/a	-	-	n/a	n/a		
	1/1/2016	SDS	AutoCAD software systems	n/a	n/a	n/a	-	-	n/a	n/a		
Siemens	Total High										21.67x	24.6x
	Total Low										0.22x	3.3x
	Total Average										4.55x	13.3x
	Total Median										3.42x	13.1x

PRIORITY ACQUIRERS & NOTABLE DEALS (CONT'D)

	(\$ in Millions)		Target Overview				Transaction Summary			
	Announced	Target	Description	LTM		Deal Value	Consideration (%)		Deal Value / LTM	
				Revenue	EBITDA		Cash	Stock	Revenue	EBITDA
Addnode										
Altair										
Altium	10/29/2015	Configure One	CPQ software	n/a	n/a	n/a	-	-	n/a	n/a
	10/15/2015	Indeeo	Apple graphic design applications	n/a	n/a	n/a	-	-	n/a	n/a
	9/24/2015	NetFabb	3D printing software and services	\$18.6	n/a	\$44.5	-	-	2.39x	n/a
	8/27/2015	SeeControl	IoT business applications platform	n/a	n/a	n/a	-	-	n/a	n/a
	2/9/2015	Tweak Software	PLM software hosting	n/a	n/a	n/a	-	-	n/a	n/a
ANSYS	1/8/2015	Syntheticity	Urban planning data processing	n/a	n/a	n/a	-	-	n/a	n/a
	12/10/2014	Magestic Systems	3D nesting of composites	\$3.0	n/a	\$10.0	-	-	3.33x	n/a
	11/21/2014	Terrible Labs	Mobile and web application development	n/a	n/a	n/a	-	-	n/a	n/a
	11/20/2014	TeamUp Technologies	Three dimensional cloud platform	n/a	n/a	\$60.0	-	100.0%	n/a	n/a
	11/20/2014	Lagoa	3D rendering platform	n/a	n/a	\$60.0	-	-	n/a	n/a
Aras	10/14/2014	Modio	Character animation software	n/a	n/a	n/a	-	-	n/a	n/a
	10/2/2014	Robobat Polska	Structural engineering software	n/a	n/a	n/a	-	-	n/a	n/a
	6/27/2014	Shotgun Software	Animation & creative software	n/a	n/a	\$54.5	-	-	n/a	n/a
	6/27/2014	The Living	Building design studio	n/a	n/a	n/a	-	-	n/a	n/a
	6/9/2014	Bitsquid	Mobile game engine	n/a	n/a	n/a	-	-	n/a	n/a
Aspentech	5/29/2014	Within Technologies	Engineering design optimization	n/a	n/a	\$88.8	-	-	n/a	n/a
	5/14/2014	NEi Nastran Solver	Engineering analysis and simulation	n/a	n/a	n/a	-	-	n/a	n/a
	4/29/2014	Illesfay Technology	PLM data replication	n/a	n/a	n/a	-	-	n/a	n/a
	3/19/2014	Creative Market Labs	Digital content design marketplace	n/a	n/a	n/a	-	-	n/a	n/a
	2/6/2014	Delcam	Automated multi-vertical CAD/CAM	\$75.6	n/a	\$285.4	-	-	3.78x	n/a
Autodesk	1/6/2014	Schrauwen Bruneel	Electronic circuits design software	n/a	n/a	n/a	-	-	n/a	n/a
	1/6/2014	Circuits.io	Application for designing electronic circuits	n/a	n/a	n/a	-	-	n/a	n/a
	1/1/2014	Majestic Systems	Industrial manufacturing software	n/a	n/a	n/a	-	-	n/a	n/a
	12/4/2013	Azaliient	Traffic simulation modeling	n/a	n/a	n/a	-	-	n/a	n/a
	12/4/2013	Graitec Innovation	Structural building construction CAD	n/a	n/a	\$88.1	-	-	n/a	n/a
Dassault	11/4/2013	Virtual Shape	Automotive modeling & design	n/a	n/a	n/a	-	-	n/a	n/a
	10/14/2013	for-each	Software focused on mobile development	n/a	n/a	n/a	-	-	n/a	n/a
	8/19/2013	Bestech Systems	Bridge span analysis	n/a	n/a	n/a	-	-	n/a	n/a
	8/19/2013	Savoy Computing	Transportation path analysis	n/a	n/a	n/a	-	-	n/a	n/a
	5/19/2013	Tinkercad	Cloud-based 3D design tools	n/a	n/a	n/a	-	-	n/a	n/a
Hexagon	3/19/2013	Firehole Technologies	Composite materials design	n/a	n/a	\$10.0	-	-	n/a	n/a
	1/31/2013	Allpoint	3D data processing	n/a	n/a	n/a	-	-	n/a	n/a
	1/8/2013	PI-VR	Automotive visualization	n/a	n/a	\$49.3	-	-	n/a	n/a
	10/4/2012	Qontext	Enterprise social collaboration	n/a	n/a	\$26.0	-	-	n/a	n/a
	10/1/2012	HSMWorks	Computer aided manufacturing	n/a	n/a	n/a	-	-	n/a	n/a
PTC										
Siemens										
Total High									21.67x	24.6x
Total Low									0.22x	3.3x
Total Average									4.55x	13.3x
Total Median									3.42x	13.1x

PRIORITY ACQUIRERS & NOTABLE DEALS (CONT'D)

Addnode	(\$ in Millions)		Target Overview				Transaction Summary					
	Announced	Target	Description	LTM		Deal Value	Consideration (%)		Deal Value / LTM			
				Revenue	EBITDA		Cash	Stock	Revenue	EBITDA		
	Autodesk (Cont'd)										Total Disclosed M&A Deal Value: \$2.0 Billion	
	8/28/2012	Inforbix	Product data searching	n/a	n/a	n/a	-	-	n/a	n/a		
	8/13/2012	Exotic Matter	3D fluid solver and dynamics framework	n/a	n/a	n/a	-	-	n/a	n/a		
Altium	7/20/2012	Socialcam	Video data capture	n/a	n/a	\$60.0	-	-	n/a	n/a		
	6/8/2012	Vela Systems	Construction field software	n/a	n/a	\$76.0	-	-	n/a	n/a		
	12/22/2011	T-Splines	Surface modeling software	n/a	n/a	n/a	-	-	n/a	n/a		
	12/16/2011	Horizontal Systems	BIM platform	n/a	n/a	n/a	-	-	n/a	n/a		
ANSYS	11/6/2011	GRIP Entertainment	Artificial intelligence games	n/a	n/a	n/a	-	-	n/a	n/a		
	10/21/2011	Micro Application	CAD/CAM for fabrication & construction	n/a	n/a	\$23.0	-	-	n/a	n/a		
	8/25/2011	Numenus	High-end visualization	n/a	n/a	n/a	-	-	n/a	n/a		
	8/22/2011	Darwin Dimensions	3D character modeling	n/a	n/a	n/a	-	-	n/a	n/a		
	8/1/2011	Instructables	User-generated DIY content	n/a	n/a	\$30.2	-	-	n/a	n/a		
Aras	7/19/2011	Code Mine	Cloud-based image tools and utilities	n/a	n/a	n/a	-	-	n/a	n/a		
	5/25/2011	Datastay	PLM software	n/a	n/a	n/a	-	-	n/a	n/a		
	3/11/2011	Blue Ridge Numerics	Fluid dynamics and simulation	n/a	n/a	\$39.0	-	-	n/a	n/a		
	3/1/2011	Scaleform	UI software for consumer electronics	n/a	n/a	\$36.0	-	-	n/a	n/a		
Aspentech	12/20/2010	Sim Ops	3D gaming technology	n/a	n/a	n/a	-	-	n/a	n/a		
	7/21/2010	Illuminate Labs	Game lighting technology	n/a	n/a	n/a	-	-	n/a	n/a		
	5/1/2010	3am Solutions (Assets)	Project visualization	n/a	n/a	n/a	-	-	n/a	n/a		
	12/17/2009	PlanPlatform	2D & 3D engineering software	n/a	n/a	\$25.0	-	-	n/a	n/a		
	8/26/2009	Boss International	Water analysis & engineering	n/a	n/a	n/a	-	-	n/a	n/a		
Autodesk	1/20/2009	ALGOR	Mechanical/civil engineering software	n/a	n/a	\$30.4	-	-	n/a	n/a		
	12/22/2008	BIMWorld	BIM solutions	n/a	n/a	n/a	-	-	n/a	n/a		
	12/22/2008	Logimetrix	Design/engineering automation	n/a	n/a	n/a	-	-	n/a	n/a		
Dassault	11/18/2008	SoftImage	3D animation	n/a	n/a	\$36.0	-	-	n/a	n/a		
	9/11/2008	Bigvan	Develops Computer Aided Design software	n/a	n/a	n/a	-	-	n/a	n/a		
	9/8/2008	3D Geo	3D urban modeling software	n/a	n/a	n/a	-	-	n/a	n/a		
	8/20/2008	ECS	Digital schematic prototyping	n/a	n/a	n/a	-	-	n/a	n/a		
	7/25/2008	Moldflow	Design-to-manufacture automation	\$61.3	\$10.3	\$267.3	-	-	4.36x	n/m		
Hexagon	6/26/2008	Square One Research	Architectural software	n/a	n/a	n/a	-	-	n/a	n/a		
	5/7/2008	Kynogon	Interactive application intelligence	n/a	n/a	n/a	-	-	n/a	n/a		
	5/7/2008	Realviz	Digital content creation	n/a	n/a	n/a	-	-	n/a	n/a		
	1/11/2008	Carmel Software	HVAC mechanical engineering software	n/a	n/a	n/a	-	-	n/a	n/a		
PTC	1/7/2008	Hanna Strategies	AutoCAD and AutoDesk software	n/a	n/a	\$13.5	-	-	n/a	n/a		
	10/16/2007	Skymatter	Mudbox 3D modelling software	n/a	n/a	\$19.0	-	-	n/a	n/a		
	10/10/2007	Intelisolve	Hydrology and hydraulic analysis software	n/a	n/a	n/a	-	-	n/a	n/a		
Siemens	Total High								21.67x	24.6x		
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PRIORITY ACQUIRERS & NOTABLE DEALS (CONT'D)

Addnode	(\$ in Millions)		Target Overview				Transaction Summary					
	Announced	Target	Description	LTM		Deal Value	Consideration (%)		Deal Value / LTM			
				Revenue	EBITDA		Cash	Stock	Revenue	EBITDA		
	Autodesk (Cont'd)										Total Disclosed M&A Deal Value: \$2.0 Billion	
Altair	8/27/2007	PlassoTech	3D simulation application software	n/a	n/a	n/a	-	-	n/a	n/a		
	8/20/2007	Opticore	Graphics communication software	\$12.9	\$7.3	n/a	-	-	n/a	n/a		
Altium	8/9/2007	NavisWorks	Computer-aided design software	\$3.9	\$2.0	\$26.2	-	-	6.76x	13.3x		
	8/1/2007	Cumulate Labs	CAD diagramming software	n/a	n/a	n/a	-	-	n/a	n/a		
	10/1/2006	ImpactXoft	Product development software	n/a	n/a	n/a	-	-	n/a	n/a		
	3/31/2006	Constructware	Construction collaboration	n/a	n/a	\$45.7	-	-	n/a	n/a		
ANSYS	1/10/2006	Alias Systems	Digital content creation	n/a	n/a	\$197.0	-	-	n/a	n/a		
	10/19/2005	Engineering Intent	Enterprise engineering automation services	n/a	n/a	n/a	-	-	n/a	n/a		
	8/22/2005	Solid Dynamics	Kinematics and dynamics technology	\$1.3	\$0.0	n/a	-	-	n/a	n/a		
	7/6/2005	c-plan	Geographic information systems	n/a	n/a	n/a	-	-	n/a	n/a		
	3/1/2005	Compass Systems	Data management services	n/a	n/a	\$17.2	-	-	n/a	n/a		
	3/4/2004	VIA Development	Engineering automation software	n/a	n/a	n/a	-	-	n/a	n/a		
Aras	2/24/2004	Mechsoft	Automated component creation software	n/a	n/a	n/a	-	-	n/a	n/a		
	3/4/2003	Linius Technologies	CAD connectivity	n/a	n/a	n/a	-	-	n/a	n/a		
Aspentech	12/18/2002	TruElnnovations	File and data management software	n/a	n/a	n/a	-	-	n/a	n/a		
	8/6/2002	CAiCE Software	Surveying and engineering applications	n/a	n/a	\$10.0	-	-	n/a	n/a		
	2/21/2002	Revit Technology	AEC parametric building modeler	n/a	n/a	\$133.0	-	-	n/a	n/a		
	8/28/2001	Buzzsaw	Construction data management	n/a	n/a	\$15.0	-	-	n/a	n/a		
	3/31/1997	Softdesk	Integrated AEC software	\$34.5	n/a	\$90.6	-	-	2.63x	n/a		
Autodesk	3/27/1987	Cadetron	Solids modeling	n/a	n/a	\$6.0	-	-	n/a	n/a		
	Dassault										Total Disclosed M&A Deal Value: \$5.6 Billion	
Dassault	6/14/2018	Centric Software	Lifecycyle management software	\$61.0	n/a	n/a	-	-	n/a	n/a		
	10/25/2017	No Magic	Model-based systems for engineering design	n/a	n/a	n/a	-	-	n/a	n/a		
	9/28/2017	Exa Corporation	Simulation software for vehicle manufacturers	\$72.7	\$1.5	\$400.3	-	-	5.51x	n/m		
	6/20/2017	Outscale	Cloud security and operations management	n/a	n/a	n/a	-	-	n/a	n/a		
Hexagon	6/1/2017	AITAC	Marine and offshore engineering software	n/a	n/a	n/a	-	-	n/a	n/a		
	12/9/2016	Xflow CFD	Dynamic fluid flow simulation	n/a	n/a	n/a	-	-	n/a	n/a		
	7/21/2016	Computer Simulation	Multiphysics simulation	\$51.2	n/a	\$247.3	-	-	4.83x	n/a		
	6/2/2016	Ortems	Production scheduling and dispatching	\$5.4	n/a	n/a	-	-	n/a	n/a		
	4/1/2016	3DPLM Software	Product development and QA	n/a	n/a	n/a	-	-	n/a	n/a		
PTC	4/23/2015	Modelon	Transportation & mobility modeling	n/a	n/a	n/a	-	-	n/a	n/a		
	9/9/2014	Quintiq	Production, logistics, and workforce	\$97.6	n/a	\$322.7	-	-	3.31x	n/a		
	7/10/2014	Simpack	Multi-body industrial simulation	n/a	n/a	n/a	-	-	n/a	n/a		
Siemens	Total High										21.67x	24.6x
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PRIORITY ACQUIRERS & NOTABLE DEALS (CONT'D)

	(\$ in Millions)		Target Overview				Transaction Summary			
	Announced	Target	Description	LTM		Deal Value	Consideration (%)		Deal Value / LTM	
				Revenue	EBITDA		Cash	Stock	Revenue	EBITDA
Addnode										
Altair										
Altium	4/29/2014	BIOVIA	Data mining and analysis software	\$168.5	\$28.5	\$750.0	-	-	4.45x	n/m
	1/1/2014	Accelrys	Process discovery & simulation	\$168.5	(\$2.2)	\$750.0	-	-	4.45x	n/m
	12/5/2013	RTT	3D visualization technology	\$111.1	\$9.0	\$274.1	-	-	2.47x	n/m
	9/4/2013	Safety Technology	Product durability simulation	n/a	n/a	\$1.0	-	-	n/a	n/a
	7/25/2013	SFE	Transportation & mobility modeling	n/a	n/a	n/a	-	-	n/a	n/a
ANSYS	7/2/2013	Apriso	Manufacturing operations execution	n/a	n/a	\$205.0	-	-	n/a	n/a
	4/25/2013	Archivideo	3D images & maps	n/a	n/a	n/a	-	-	n/a	n/a
	4/25/2013	Fe-Design	Non-parametric optimization	n/a	n/a	n/a	-	-	n/a	n/a
	4/18/2013	Simpo	Plastic injection-molding simulation	n/a	n/a	n/a	-	-	n/a	n/a
	1/7/2013	SquareClock	3D space planning	n/a	n/a	n/a	-	-	n/a	n/a
Aras	12/21/2012	Tuscany Design Automation	Visualization services for circuit design	n/a	n/a	n/a	-	-	n/a	n/a
	12/21/2012	Pinpoint	Semiconductor design collaboration	n/a	n/a	n/a	-	-	n/a	n/a
	7/11/2012	Gemcom	Supply chain planning and optimization	\$80.4	n/a	\$354.9	-	-	4.41x	n/a
	2/9/2012	Netvibes	Personalized dashboard publishing	n/a	n/a	n/a	-	-	n/a	n/a
	10/27/2011	Elsys	Electrical engineering schematics	n/a	n/a	n/a	-	-	n/a	n/a
Aspentech	10/4/2011	Simulayt	Draping simulation technology	n/a	n/a	n/a	-	-	n/a	n/a
	4/27/2011	Enginuity PLM	Chemical product development	n/a	n/a	n/a	-	-	n/a	n/a
	3/17/2011	Intercim	Supply chain operations management	n/a	n/a	\$36.5	-	-	n/a	n/a
	10/1/2010	Inceptra LLC	Product lifecycle management solutions	n/a	n/a	n/a	-	-	n/a	n/a
	6/22/2010	Geensoft	Embedded systems development	n/a	n/a	\$6.7	-	-	n/a	n/a
Autodesk	6/8/2010	Exalead	Unified search platform	n/a	n/a	\$164.9	-	-	n/a	n/a
	4/1/2010	IBM (PLM)	PLM sales & support operations	n/a	n/a	\$600.0	-	-	n/a	n/a
	7/21/2008	Engineous	Process integration & design software	n/a	n/a	\$40.0	-	-	n/a	n/a
	1/7/2008	Deneb Robotics	Multi-computer manufacturing CAD	n/a	n/a	\$105.0	-	-	n/a	n/a
	9/24/2007	Seemage	Automotive & aerospace ALM	n/a	n/a	n/a	-	-	n/a	n/a
Dassault	6/12/2007	ICEM	Automotive & industrial visualization	n/a	n/a	\$108.2	-	-	n/a	n/a
	5/11/2006	MatrixOne	Collaborative PLM	\$135.5	(\$18.2)	\$410.0	-	-	3.03x	n/m
	10/4/2005	Abaqus	Advanced finite element analysis	\$100.0	n/a	\$413.0	-	-	4.13x	n/a
	7/25/2005	Virtools	3D application development	\$3.1	n/a	\$14.5	-	-	4.63x	n/a
	11/1/2000	Spatial	Data translation and visualization technology	n/a	n/a	n/a	-	-	n/a	n/a
PTC	1/1/2000	SRAC	CAD analysis programs	n/a	n/a	\$22.0	-	-	n/a	n/a
	7/29/1997	Solidworks	Mechanical design software	n/a	n/a	\$325.0	-	-	n/a	n/a
	Total High								21.67x	24.6x
	Total Low								0.22x	3.3x
	Total Average								4.55x	13.3x
Siemens	Total Median								3.42x	13.1x

PRIORITY ACQUIRERS & NOTABLE DEALS (CONT'D)

Addnode	(\$ in Millions)		Target Overview				Transaction Summary					
	Announced	Target	Description	LTM		Deal Value	Consideration (%)		Deal Value / LTM			
				Revenue	EBITDA		Cash	Stock	Revenue	EBITDA		
	Hexagon										Total Disclosed M&A Deal Value: \$4.7 Billion	
Altair	6/19/2018	SPRING Technologies	Machine tool simulation & verification software	n/a	n/a	n/a	-	-	n/a	n/a		
	6/2/2018	AutonomouStuff	Supplies parts used within autonomy systems	\$45.0	n/a	n/a	-	-	n/a	n/a		
	5/15/2018	Nextsense	Measurement and surface inspection services	\$13.5	n/a	n/a	-	-	n/a	n/a		
	4/23/2018	Licom Systems	Software for wood, metal and stone cutting	n/a	n/a	n/a	-	-	n/a	n/a		
	4/5/2018	ProCAM Group	CAD software for the mechanical industries	n/a	n/a	n/a	-	-	n/a	n/a		
Altium	3/15/2018	Agtek Development Company	Construction cost estimation software	n/a	n/a	n/a	-	-	n/a	n/a		
	10/4/2017	Luciad	Geospatial software services	\$24.0	n/a	n/a	-	-	n/a	n/a		
	6/5/2017	FASys Industrie	Provider of software services	n/a	n/a	n/a	-	-	n/a	n/a		
	5/5/2017	Catavolt	Enterprise mobile application development	n/a	n/a	n/a	-	-	n/a	n/a		
	4/26/2017	MSC Software	Computer aided engineering software	\$230.0	n/a	\$834.0	-	-	3.63x	n/a		
ANSYS	8/31/2016	Apodius	Manufacturer of measurement products	n/a	n/a	n/a	-	-	n/a	n/a		
	8/15/2016	Multivista	Provider of visual documentation services	n/a	n/a	n/a	-	-	n/a	n/a		
	6/15/2016	Ingegneria dei Sistemi	Provider of systems engineering services	\$20.0	n/a	n/a	-	-	n/a	n/a		
	3/31/2016	AICON 3D Systems	Optical camer 3D measurement systems	\$21.1	\$1.8	n/a	-	-	n/a	n/a		
	3/23/2016	Forming Technologies	Developer of manufacturing software	n/a	n/a	n/a	-	-	n/a	n/a		
Aspentech	2/16/2016	Sigma Space	Optoelectronic aerospace instrumentation	\$25.0	n/a	n/a	-	-	n/a	n/a		
	1/13/2016	SCCS	Provider of survey equipment	\$25.3	\$7.8	n/a	-	-	n/a	n/a		
	4/7/2015	Q-Das	Statistical process control (SPC) services	n/a	n/a	n/a	-	-	n/a	n/a		
	7/21/2014	Vero Software	CAD/CAM software	\$106.2	n/a	n/a	-	-	n/a	n/a		
	7/16/2014	Geodata Diffusion	Real time kinematic correction services	\$4.0	\$1.8	n/a	-	-	n/a	n/a		
Autodesk	6/11/2014	North West Geomatics	Digital remote sensing/aerial photography	\$13.5	n/a	n/a	-	-	n/a	n/a		
	6/2/2014	iLab Sistemas	Planning/optimization for agro-businesses	n/a	n/a	n/a	-	-	n/a	n/a		
	6/1/2014	Mintec	Software services for mining industry	n/a	n/a	n/a	-	-	n/a	n/a		
	4/30/2014	Arvus Tecnologia	Software services for agro businesses	n/a	n/a	n/a	-	-	n/a	n/a		
	3/14/2014	Veripos	Satellite position software/hardware/services	\$44.0	\$15.8	n/a	-	-	n/a	n/a		
Dassault	3/13/2014	SAFEmine	Traffic safety products and services	\$17.2	n/a	n/a	-	-	n/a	n/a		
	2/18/2014	Aibotix	Manufacturer of flying robots	n/a	n/a	n/a	-	-	n/a	n/a		
	12/3/2013	Pixis	Provider of digital engineering services	n/a	n/a	n/a	-	-	n/a	n/a		
	10/7/2013	Devex Tecnologia e Sistemas	Mine-management software services	n/a	n/a	n/a	-	-	n/a	n/a		
	6/5/2013	Geosoft	Software for cartography/photogrammetry	n/a	n/a	n/a	-	-	n/a	n/a		
Hexagon	5/13/2013	Navegeom	Surveying and mapping products	n/a	n/a	n/a	-	-	n/a	n/a		
	4/15/2013	Manfra & Companhia	Topography software systems	\$9.2	n/a	n/a	-	-	n/a	n/a		
	1/28/2013	LISTECH	Developer of construction software	n/a	n/a	n/a	-	-	n/a	n/a		
	1/8/2013	New River Kinematics	3D analysis software for metrology application	\$13.3	n/a	n/a	-	-	n/a	n/a		
	12/3/2012	GTA Geoinformatik	Provider of 3D city mapping technologies	n/a	n/a	n/a	-	-	n/a	n/a		
PTC												
	Total High									21.67x	24.6x	
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Addnode	(\$ in Millions)		Target Overview				Transaction Summary				
	Announced	Target	Description	LTM		Deal Value	Consideration (%)		Deal Value / LTM		
				Revenue	EBITDA		Cash	Stock	Revenue	EBITDA	
	Hexagon (Cont'd)									Total Disclosed M&A Deal Value: \$4.7 Billion	
Altair	1/19/2012	Microsurvey Software	Developer of surveying and mapping software	\$2.6	n/a	n/a	-	-	n/a	n/a	
	8/19/2011	Sisgraph	Supplier of engineering and geospatial software	\$14.3	n/a	n/a	-	-	n/a	n/a	
	7/1/2010	Intergraph	Engineering and geospatial software	n/a	n/a	\$2,130.0	-	-	n/a	n/a	
Altium	12/10/2009	MYCRONA	Manufacturer of multi-sensor machines	n/a	n/a	n/a	-	-	n/a	n/a	
	10/5/2009	Mahr Multisensor	Industrial measuring instruments	n/a	n/a	n/a	-	-	n/a	n/a	
	10/14/2008	Rinex Technology	Yield mapping tools for agro businesses	\$4.5	n/a	n/a	-	-	n/a	n/a	
ANSYS	7/24/2008	Serein Metrology	Manufacturer of precision measuring equipment	\$4.0	n/a	n/a	-	-	n/a	n/a	
	6/27/2008	m&h Group	Manufacturer of machine tool probes	\$13.3	n/a	n/a	-	-	n/a	n/a	
	6/24/2008	Messtechnik Wetzlar	Software for quality control of mechanical parts	\$3.3	n/a	n/a	-	-	n/a	n/a	
	6/23/2008	Viewserve	Web based fleet management system	\$1.1	n/a	n/a	-	-	n/a	n/a	
	6/9/2008	Advanced Metrology Solutions	Distributor of precision metrology products	\$4.5	n/a	n/a	-	-	n/a	n/a	
	2/26/2008	Santiago & Cintra	Positioning applications for construction/agro	\$20.7	n/a	n/a	-	-	n/a	n/a	
Aras	2/7/2008	Haselbach Surveying Instruments	Distributor and seller of surveying equipment	\$750.0	n/a	n/a	-	-	n/a	n/a	
	2/7/2008	Surveyors Service Company	Distributor of surveying equipment	n/a	n/a	n/a	-	-	n/a	n/a	
	12/1/2007	Leica Geosystems Hungary	Surveying and construction equipment	n/a	n/a	n/a	-	-	n/a	n/a	
Aspentech	11/28/2007	NovAtel	Satellite system components	\$76.0	\$17.8	\$438.9	-	-	5.78x	24.6x	
	11/21/2007	Junglas	Construction and machine control equipment	n/a	n/a	n/a	-	-	n/a	n/a	
	11/21/2007	Rudolf & August Rost Vertriebs	Surveying and construction equipment	n/a	n/a	n/a	-	-	n/a	n/a	
	11/19/2007	Elcome Technologies	GPS and navigation surveying services	\$14.8	n/a	n/a	-	-	n/a	n/a	
	9/4/2007	CogniTens	3D non-contact measurement systems	\$8.0	n/a	\$20.0	-	-	2.50x	n/a	
	7/24/2007	Jingjiang Measuring Tools	Manufacturer of linear measuring tools	\$10.9	n/a	n/a	-	-	n/a	n/a	
Autodesk	6/19/2007	IONIC Software	Software for geospatial information systems	\$12.6	n/a	n/a	-	-	n/a	n/a	
	5/22/2007	Transmetal	Distributor of metrology products	\$5.4	n/a	n/a	-	-	n/a	n/a	
	5/18/2007	Jigsaw Technologies	GPS-based machine automation software	\$9.0	n/a	n/a	-	-	n/a	n/a	
Dassault	5/16/2007	GAMFI International	Construction laser tools and instruments	\$1.5	n/a	n/a	-	-	n/a	n/a	
	5/9/2007	D&P Systems	Developer of multidimensional systems	n/a	n/a	n/a	-	-	n/a	n/a	
	5/1/2007	Allen Precision Equipment	Surveying and construction products	\$24.0	n/a	n/a	-	-	n/a	n/a	
Hexagon	4/13/2007	Topolaser System	Distributor of survey equipment	n/a	n/a	n/a	-	-	n/a	n/a	
	4/1/2007	Acquis	Data editing and management software	\$3.0	n/a	n/a	-	-	n/a	n/a	
	1/15/2007	Svensk ByggnadsGeodesi	Software systems for measuring and planning	\$6.8	\$0.8	n/a	-	-	n/a	n/a	
	1/1/2007	Willi Geßwein	Manufacturer of surveying instruments	\$1.3	n/a	n/a	-	-	n/a	n/a	
	10/1/2005	Leica Geosystems	Surveying and mapping equipment	n/a	n/a	\$1,140.0	-	-	n/a	n/a	
	5/1/2002	Newport	Metrological tools and technology	n/a	n/a	n/a	-	-	n/a	n/a	
PTC	5/3/2001	Brown & Sharpe	Manufacturer of metrological tools	n/a	n/a	\$170.0	-	-	n/a	n/a	
Siemens	Total High								21.67x	24.6x	
	Total Low								0.22x	3.3x	
	Total Average								4.55x	13.3x	
	Total Median								3.42x	13.1x	

PRIORITY ACQUIRERS & NOTABLE DEALS (CONT'D)

	(\$ in Millions)		Target Overview				Transaction Summary			
	Announced	Target	Description	LTM		Deal Value	Consideration (%)		Deal Value / LTM	
				Revenue	EBITDA		Cash	Stock	Revenue	EBITDA
Addnode	PTC									
	Total Disclosed M&A Deal Value: \$2.0 Billion									
Altair	2/16/2018	Waypoint Labs	Augmented reality for frontline workers	\$20.0	n/a	n/a	-	-	n/a	n/a
Altium	1/12/2016	Kepware	Manufacturing device connectivity	\$20.0	n/a	\$118.0	100.0%	-	5.90x	n/a
	11/3/2015	Vuforia	Vision-based AR platform	n/a	n/a	\$64.8	100.0%	-	n/a	n/a
	5/5/2015	ColdLight Solutions	Machine learning predictive analytics	\$7.1	n/a	\$103.8	100.0%	-	14.56x	n/a
	1/1/2015	Caugmate	Augmented reality technologies services	n/a	n/a	n/a	-	-	n/a	n/a
	7/23/2014	ITA Holdings	Sensor connectivity	n/a	n/a	\$170.0	100.0%	-	n/a	n/a
ANSYS	7/1/2014	Atego	Model-based systems applications	\$20.0	n/a	\$49.3	100.0%	-	2.47x	n/a
	12/30/2013	ThingWorx	IoT platform for machines	\$6.0	n/a	\$130.0	100.0%	-	21.67x	n/a
	9/10/2013	NetIDEAS	Product development and PLM	\$1.0	n/a	\$20.0	-	-	20.00x	n/a
	7/16/2013	Enigma	Manufacturing content management	n/a	n/a	\$10.0	-	-	n/a	n/a
	10/2/2012	Servigistics	Strategic service management	\$80.0	n/a	\$220.0	100.0%	-	2.75x	n/a
Aras	9/6/2011	4CS	Warranty lifecycle management	n/a	n/a	\$14.9	100.0%	-	n/a	n/a
	1/1/2011	Mortice Kern Systems	Configuration management software	\$67.9	\$10.1	\$304.0	100.0%	-	4.48x	n/m
	2/8/2010	Planet Metrics	Carbon information management	n/a	n/a	n/a	-	-	n/a	n/a
	6/8/2009	Relex	Reliability analysis software	n/a	n/a	\$24.3	-	-	n/a	n/a
	2/12/2009	Synapsis	Manufacturing supply chain optimization	n/a	n/a	\$7.5	-	-	n/a	n/a
Aspentech	12/10/2008	Synapsis Technology	Software applications and consulting services	n/a	n/a	\$7.5	-	-	n/a	n/a
	2/7/2008	Digital Human	Human simulation model	n/a	n/a	\$1.1	-	-	n/a	n/a
	12/3/2007	CoCreate Software	Flexible CAD & PLM for electronics	\$78.0	n/a	\$247.5	-	-	3.17x	n/a
	11/7/2007	LBS	Integrated logistics support software	n/a	n/a	n/a	-	-	n/a	n/a
	9/24/2007	NetRegulus	Enterprise regulatory management	n/a	n/a	\$2.3	-	-	n/a	n/a
Autodesk	5/16/2007	NC Grpahics	High-speed machining and engineering tools	n/a	n/a	n/a	-	-	n/a	n/a
	4/26/2006	Mathsoft	Calculation management	\$24.0	\$0.9	\$63.0	-	-	2.62x	n/m
	11/28/2005	Cadtrain	E-learning courses for engineers	n/a	n/a	n/a	-	-	n/a	n/a
	7/19/2005	Arbortext	Code authoring & publishing	\$40.0	n/a	\$190.0	-	-	4.75x	n/a
	6/6/2005	Aptavis Technologies	Life cycle management software	n/a	n/a	n/a	-	-	n/a	n/a
Dassault	4/8/2004	OHIO Design Automation	Electronics design collaboration software	n/a	n/a	\$12.0	-	-	n/a	n/a
	3/9/1999	Auxilium	Manufacturing collaboration	n/a	n/a	\$79.0	-	-	n/a	n/a
	10/6/1998	InPart	Industrial 3D CAD	n/a	n/a	\$26.4	-	-	n/a	n/a
	8/2/1995	Rasna	Design optimization & simulation	\$22.7	n/a	\$163.4	-	-	7.19x	n/a
		Siemens								
	Total Disclosed M&A Deal Value: \$13.2 Billion									
PTC	6/26/2018	Comfy	Smart building management software	n/a	n/a	n/a	-	-	n/a	n/a
	6/22/2018	Austemper Design	Electronic design tools for circuit components	n/a	n/a	n/a	-	-	n/a	n/a
Siemens	Total High								21.67x	24.6x
	Total Low								0.22x	3.3x
	Total Average								4.55x	13.3x
	Total Median								3.42x	13.1x

PRIORITY ACQUIRERS & NOTABLE DEALS (CONT'D)

	(\$ in Millions)		Target Overview				Transaction Summary			
	Announced	Target	Description	LTM		Deal Value	Consideration (%)		Deal Value / LTM	
				Revenue	EBITDA		Cash	Stock	Revenue	EBITDA
Addnode										
Altair										
Altium	3/29/2018	Agilion	Real-time location systems (RTLS)	n/a	n/a	n/a	-	-	n/a	n/a
	2/7/2018	Sarokal Test Systems	Testing equipment platform for ASIC & FPGA	n/a	n/a	n/a	-	-	n/a	n/a
	1/31/2018	Milanovic Engineering	Engineering and manufacturing services	n/a	n/a	n/a	-	-	n/a	n/a
	12/1/2017	Solido Design Automation	Variation-aware design and characterization	n/a	n/a	n/a	-	-	n/a	n/a
	10/16/2017	Mentor Infolytica	Electromagnetic and thermal analysis	n/a	n/a	n/a	-	-	n/a	n/a
ANSYS	10/9/2017	Wi-Tronix	Predictive maintenance for rail services	n/a	n/a	n/a	-	-	n/a	n/a
	8/30/2017	Tass International	Design and testing software for automobiles	n/a	n/a	n/a	-	-	n/a	n/a
	3/31/2017	Mentor Graphics	Electronic design automation	\$1,282.5	\$267.2	\$4,500.0	100.0%	-	3.51x	16.8x
	11/7/2016	Conworx Technology	Lab device interfaces	n/a	n/a	n/a	-	-	n/a	n/a
	3/1/2016	CD-adapco	Specialized simulation based on CFD	\$190.0	n/a	\$970.0	-	-	5.11x	n/a
Aras	3/1/2016	Neo New Oncology	Medical diagnostic technology	n/a	n/a	n/a	-	-	n/a	n/a
	11/25/2015	Polarion Software	Application lifecycle management	n/a	n/a	n/a	-	-	n/a	n/a
	7/2/2015	Zenco Systems	Traffic enforcement technology	n/a	n/a	n/a	-	-	n/a	n/a
	3/3/2015	AxIT	Order management & logistics	n/a	n/a	n/a	-	-	n/a	n/a
	10/15/2014	Camstar	Manufacturing execution systems	n/a	n/a	\$160.0	-	-	n/a	n/a
Aspentech	1/22/2014	IBS	Industrial productivity software	n/a	n/a	n/a	-	-	n/a	n/a
	12/19/2013	TESIS PLMware	Product lifecycle management	n/a	n/a	n/a	-	-	n/a	n/a
	6/25/2013	Sky Eye	Transport fleet management	n/a	n/a	n/a	-	-	n/a	n/a
	6/3/2013	Preactor	Manufacturing planning & scheduling	n/a	n/a	n/a	-	-	n/a	n/a
	5/2/2013	Invensys Rail	Railway design & system automation	\$1,179.5	n/a	\$2,660.0	-	-	2.26x	n/a
Autodesk	11/15/2012	LMS	PLM simulation & testing	\$241.7	n/a	\$870.0	-	-	3.60x	n/a
	9/28/2012	VRcontext	Visualization technology	n/a	n/a	n/a	-	-	n/a	n/a
	1/6/2012	eMeter	Energy information management	n/a	n/a	n/a	-	-	n/a	n/a
	12/1/2011	Vistagy	Specialized engineering environments	\$18.0	n/a	n/a	-	-	n/a	n/a
	8/16/2011	Advanced Telemetry	Energy management	n/a	n/a	n/a	-	-	n/a	n/a
Dassault	10/1/2009	Energy4u	Energy IT services	n/a	n/a	n/a	-	-	n/a	n/a
	9/30/2009	YSNC	Machine engineering	n/a	n/a	n/a	-	-	n/a	n/a
	4/1/2009	Elan Software	Process control software	n/a	n/a	n/a	-	-	n/a	n/a
	11/17/2008	Syncos	Digital manufacturing engineering	n/a	n/a	n/a	-	-	n/a	n/a
	5/7/2007	UGS	2D & 3D PLM and industry automation	\$1,150.0	n/a	\$3,500.0	-	-	3.04x	n/a
Hexagon	2/2/2007	ETM	Supervisory & data acquisition systems	n/a	n/a	n/a	-	-	n/a	n/a
	10/31/2006	VistaScape	Surveillance video analysis	n/a	n/a	n/a	-	-	n/a	n/a
	9/28/2005	Garderos	Local area network management	n/a	n/a	n/a	-	-	n/a	n/a
	8/14/2005	Transmitton	Railway infrastructure management	n/a	n/a	n/a	-	-	n/a	n/a
	4/8/2005	Myrio	IP video networking	n/a	n/a	\$50.0	-	-	n/a	n/a
Siemens	Total High								21.67x	24.6x
	Total Low								0.22x	3.3x
	Total Average								4.55x	13.3x
	Total Median								3.42x	13.1x

PRIORITY ACQUIRERS & NOTABLE DEALS (CONT'D)

Addnode
Altair
Altium
ANSYS
Aras
Aspentech
Autodesk
Dassault
Hexagon
PTC
Siemens

(\$ in Millions)		Target Overview				Transaction Summary			
		Description	LTM		Deal Value	Consideration (%)		Deal Value / LTM	
Announced	Target		Revenue	EBITDA		Cash	Stock	Revenue	EBITDA
Siemens (Cont'd)						Total Disclosed M&A Deal Value: \$13.2 Billion			
12/6/2004	Chantry Networks	Mobility-enabled wireless networking	n/a	n/a	\$85.0	-	-	n/a	n/a
4/1/2003	Cycos	Unified messaging systems	n/a	n/a	\$45.6	-	-	n/a	n/a
4/23/2002	Symbian	Mobile operating system	n/a	n/a	\$309.0	-	-	n/a	n/a
Total High								21.67x	24.6x
Total Low								0.22x	3.3x
Total Average								4.55x	13.3x
Total Median								3.42x	13.1x

COMPARABLE PUBLIC COMPANIES

(\$ in Millions USD)	Market Data			Operating Data										Valuation Ratios					
	Price \$	Equity	Enterprise	Revenue			Revenue Growth		EBITDA			EBITDA Margin		EV / Revenue			EV / EBITDA		
Company	7/20/2018	Value	Value	LTM	CY 2018E	CY 2019E	'17-'18	'18 - '19	LTM	CY 2018E	CY 2019E	CY 2018E	CY 2019E	LTM	2018E	2019E	LTM	2018E	2019E
Addnode (OM: ANOD B)	\$11.11	\$371	\$312	\$312	\$318	\$331	11.9%	4.1%	\$25	\$33	\$35	10.3%	10.6%	1.00x	0.98x	0.94x	12.7x	9.5x	8.9x
Altair (NasdaqGS:ALTR)	\$34.77	\$2,371	\$2,309	\$348	\$373	\$421	11.8%	12.8%	(\$17)	\$34	\$54	9.1%	12.7%	6.63x	6.19x	5.49x	n/m	n/m	n/m
Altium (ASX:ALU)	\$15.99	\$2,083	\$2,047	\$126	\$149	\$174	18.3%	17.3%	\$46	\$51	\$63	34.4%	36.0%	16.30x	13.78x	11.75x	n/m	n/m	n/m
Ansys (NasdaqGS:ANSS)	\$178.92	\$15,029	\$14,139	\$1,125	\$1,229	\$1,351	12.2%	10.0%	\$458	\$563	\$616	45.8%	45.6%	12.57x	11.51x	10.46x	n/m	25.1x	22.9x
Aspentech (NasdaqGS:AZPN)	\$98.85	\$7,058	\$7,157	\$497	\$513	\$544	4.4%	6.2%	\$216	\$246	\$265	48.0%	48.6%	14.39x	13.96x	13.15x	n/m	29.1x	27.0x
Autodesk (NasdaqGS:ADSK)	\$134.32	\$29,430	\$29,723	\$2,131	\$2,455	\$3,139	19.5%	27.9%	\$25	\$308	\$920	12.6%	29.3%	13.95x	12.11x	9.47x	n/m	n/m	n/m
Dassault (ENXTPA:DSY)	\$150.92	\$38,696	\$36,536	\$3,791	\$3,992	\$4,365	5.6%	9.3%	\$1,053	\$1,337	\$1,522	33.5%	34.9%	9.64x	9.15x	8.37x	n/m	27.3x	24.0x
ESI Group (ENXTPA:ESI)	\$49.88	\$279	\$318	\$158	\$165	\$177	3.6%	7.2%	\$14	\$18	\$23	11.1%	12.8%	2.01x	1.93x	1.80x	22.4x	17.4x	14.1x
Hexagon (OM:HEXA B)	\$56.72	\$20,442	\$22,698	\$4,102	\$4,311	\$4,587	6.8%	6.4%	\$1,232	\$1,391	\$1,518	32.3%	33.1%	5.53x	5.26x	4.95x	18.4x	16.3x	15.0x
PTC (NasdaqGS:PTC)	\$96.54	\$12,193	\$12,565	\$1,236	\$1,281	\$1,423	8.0%	11.1%	\$144	\$336	\$425	26.2%	29.9%	10.17x	9.81x	8.83x	n/m	n/m	29.6x
Siemens (DB:SIE)	\$136.92	\$114,041	\$140,497	\$97,957	\$99,169	\$103,664	1.8%	4.5%	\$11,081	\$12,778	\$14,185	12.9%	13.7%	1.43x	1.42x	1.36x	12.7x	11.0x	9.9x
High							19.5%	27.9%				48%	49%	16.30x	13.96x	13.15x	22.4x	29.1x	29.6x
Low							1.8%	4.1%				9%	11%	1.00x	0.98x	0.94x	12.7x	9.5x	8.9x
Average							9.5%	10.6%				25%	28%	8.51x	7.83x	6.96x	16.5x	19.4x	18.9x
Median							8.0%	9.3%				26%	30%	9.64x	9.15x	8.37x	15.6x	17.4x	18.9x

OUR STRATEGY

ADVISORS TO THE ENGINEERING COMMUNITY

Design Software
Leaders



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Comprehensive Approach to Advisory Services

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- Arena PLM Solutions CEO, Craig Livingston 



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Managing Director

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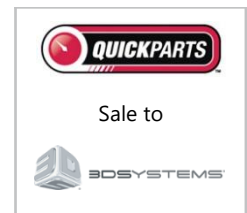
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"Our software and operating experience with CAD , PLM and Simulation companies and deep investment banking experience allow us to uniquely understand our clients and their products and offer a variety of strategic solutions for fundraising as well as exits."

- Ralph Verrilli, Managing Director at Madison Park Group

Track Record of Diverse Transaction Structures in CAD, PLM, Engineering and Simulation



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