



## Engineering, Design, PLM & Simulation Software Market Update

December 2019

# Market Dynamics

## Highlighted Companies



## Inclusion Criteria

Madison Park Group (MPG) actively tracks the design, engineering, manufacturing and PLM software landscape. We have seen the convergence of PLM/CAD, simulation and engineering and believe that it is increasingly difficult to differentiate vendors as pure-play design or engineering vendors. The categories MPG tracks include:

- ✓ 3D computer-aided design (CAD)
- ✓ Product lifecycle management (PLM)
- ✓ Multi-physics computer-aided engineering (CAE)
- ✓ Electronic design automation (EDA)
- ✓ Generative design & topology optimization
- ✓ Product requirements management
- ✓ Finite element analysis (FEA)
- ✓ Printed circuit board design (PCB)
- ✓ Composites & material analysis
- ✓ Model-based systems engineering (MBSE)
- ✓ Computational fluid dynamics simulation (CFD)
- ✓ Thermal simulation and analysis
- ✓ Geotechnical modeling & data management
- ✓ Quality management (QMS)
- ✓ Optical / photonic simulation
- ✓ Computer-aided manufacturing (CAM)
- ✓ Geospatial display and modeling
- ✓ Manufacturing execution (MES)
- ✓ Electromagnetics simulation (EMAG)
- ✓ Additive manufacturing & 3D printing
- ✓ Product cost estimation
- ✓ Maintenance, repair, and operations (MRO)
- ✓ Noise, vibration, and harshness analysis (NVH)
- ✓ Industrial Internet of Things (IIoT)

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# Inside the Industry

## Our Recent Observations

- 1 Industry leaders are relying on acquisitions rather than in-house development to add design & simulation tools and methodologies purpose-built for additive manufacturing
- 2 Rapid advances in autonomous and electric mobility technology are driving usage of new advanced purpose-built design and engineering simulation tools
- 3 Developing multi-disciplinary products increasingly requires multi-physics design, simulation & analysis tools that address mechanical and electrical processes
- 4 Led by generative design tools, AI technologies are transforming CAD design ideation and augmenting engineering, design and manufacturing processes
- 5 Simulation is spreading across the entire design value chain, accelerating product ideation at the early design stages and reducing the need for costly physical testing & prototyping
- 6 High-performance cloud computing has taken root within the CAE ecosystem for advanced simulation, but incumbents continue to strategize cloud migration plans for CAD/PLM
- 7 Rapidly evolving manufacturing technologies and increasingly connected global supply chains have injected cost modeling into early stage product development
- 8 Industrial automation players continue to accelerate realization of digital twins through strategic partnerships with engineering software providers

## In Case You Missed These Transactions

Slide

|                                                                                                                                  |    |
|----------------------------------------------------------------------------------------------------------------------------------|----|
| <b>Siemens</b> acquired <b>MultiMechanics</b><br><i>Advanced material modeling</i>                                               | 23 |
| <b>Siemens</b> acquired <b>Atlas 3D</b><br><i>Additive manufacturing optimization</i>                                            | 23 |
| <b>Altair</b> acquired <b>DEM Solutions</b><br><i>Discrete element modeling</i>                                                  | 8  |
| <b>PTC</b> acquired <b>Onshape</b><br><i>Cloud-based CAD &amp; product development platform</i>                                  | 22 |
| <b>ANSYS</b> acquired <b>Dynardo</b><br><i>Simulation process integration technology</i>                                         | 10 |
| <b>Altair</b> acquired <b>Polliwog</b><br><i>PCB analysis &amp; design</i>                                                       | 8  |
| <b>Synopsys</b> acquired <b>Qtronic</b><br><i>Automotive systems virtual prototyping</i>                                         | 24 |
| <b>Siemens</b> acquired <b>Process Systems Enterprise (PSE)</b><br><i>Advanced process modeling</i>                              | 23 |
| <b>ANSYS</b> acquired <b>Livermore Software Technology Corporation</b><br><i>Advanced dynamics &amp; finite element analysis</i> | 10 |
| <b>Hexagon</b> acquired <b>AMendate</b><br><i>Generative design for additive manufacturing</i>                                   | 20 |
| <b>Dassault</b> acquired <b>Medidata Solutions</b><br><i>Clinical trial execution platform</i>                                   | 17 |
| <b>Dassault</b> acquired <b>Argosim</b><br><i>System requirements validation</i>                                                 | 17 |
| <b>Dassault</b> acquired <b>Trace Software (Assets)</b><br><i>Electrical design and automation</i>                               | 17 |
| <b>Zuken</b> acquired <b>Vitech Solutions</b><br><i>Model-based systems engineering</i>                                          | 25 |

# Deal Highlight: PTC's Acquisition of Onshape

## Is The Dawn of the Engineering Cloud Upon Us?

### Deal Overview



**Purchase Price:** \$470.0 Million  
**% Cash** 100.0%  
**% Stock** -

**Founded:** 2012  
**HQ:** Cambridge, MA  
**Est. Employees:** 110 (▲11%)  
**Revenue:** Undisclosed  
**EBITDA:** Undisclosed  
**Total Funding:** \$169.0 Million  
**Key Investors:**

ANDREESSEN  
HOROWITZ

NORTH BRIDGE  
VENTURE PARTNERS

NEA

### Strategic Perspective

#### Buy vs. Build in the Cloud

- PTC elected to acquire a commercialized platform product over rearchitecting and migrating existing Creo (CAD) code base to the cloud
- PTC now owns the industry's first native cloud-based 3D CAD platform
- The acquisition sets the stage for PTC to evaluate further buy/build/partner paths, specifically in a SaaS-based PLM

#### Expansion Down Market

- Onshape's current customer base consists of approximately +5,000 commercial users and "tens of thousands" of free users primarily in SMB / mid-market manufacturers
- Due to prohibitively expensive implementations for traditional on-premise CAD and PLM platforms, this SMB / mid-market base has gravitated to cloud-based platforms and adopted much earlier than the enterprise market
- Significant first-mover advantage for PTC to address true cloud needs and move down market

#### Shift to SaaS is Underway

- Adding multi-tenant cloud deployment capabilities marks a clear stated shift to a SaaS model after PTC's recent shift to a recurring revenue model
- Though only ~10% of engineering software applications today are deployed via a multi-tenant cloud (Source: IDC), all indications suggest the broader market is on the cusp of a cloud migration given the cost & performance advantages

# Other Highlight M&A Transactions

## Industry Leaders Go Deep into Core and New Markets

| Counterparty     |
|------------------|
| Transaction      |
| Target           |
| Closing Date     |
| Deal Size        |
| EV / LTM Revenue |
| EV / LTM EBITDA  |
| Commentary       |



Acquisition



September 2019

\$775.0 million

~12.40x

n/m

- In September 2019, ANSYS announced the acquisition of Livermore Software Technology Corp. (LSTC), a provider of explicit dynamics and advanced finite element analysis software
- The automotive industry has widely adopted the company's LS-DYNA solution, a highly scalable multi-physics solver used to accurately predict a vehicle's behavior and the effects of occupants during a collision
- Though the company reported ~100 employees at the time of acquisition, ANSYS noted that it expects the transaction to contribute \$60-\$65 million on non-GAAP revenue to its 2020 results and to be neutral to modestly accretive to non-GAAP operating margins, implying a total purchase price of 11.9-12.9x revenue and +35x EBITDA<sup>(a)</sup>
- The acquisition positions ANSYS even more prominently in the automotive market, one of its core verticals, and suggests LSTC was a long-term partner the company did not want to let fall into a competitor's hands



Acquisition



June 2019

\$5.8 billion









8.72x

n/m

- In June 2019, Dassault announced the acquisition of Medidata, a clinical development software platform, for \$5.8 billion or \$92.25 per share
- The acquisition, Dassault's largest to-date, positions life sciences behind transportation & mobility as Dassault's second largest core business, and further moves Dassault towards its vision of evolving into a sciences & mathematics company
- The acquisition positions Dassault to lead the digital transformation in the age of personalized medicine and patient-centric experience by combining advanced modeling, simulation, data science, AI, and collaboration to drive data-driven decision making and tailored treatments for patients, with a vision of effectively generating a digital twin for the human body
- As part of this broader vision in the medical space, the acquisition also coincided with a €65 million investment Dassault led in BioSerenity, a provider of medical wearable devices focused on the data retrieval and interpretation of electrophysiological signals

# Highlight Fundraise Transactions

## Advanced Manufacturing and Simulation Driving Interest

| Company                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Transaction                   | Growth Capital                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Growth Capital                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Growth Capital                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Investor                      |  AUTODESK  NEWSRING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  Capital  Gradient Ventures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Closing Date                  | September 2019                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | July 2019                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | April 2019                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Investment Amount             | \$26.8 million                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | \$20.0 million                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | \$10.0 million                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Pre-Money Valuation           | Undisclosed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | \$70.0 million                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Undisclosed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Company / Product Description | <ul style="list-style-type: none"><li>• In September 2019, aPriori announced a \$26.8 million raise led by Autodesk, with participation from NewSpring Capital and existing investors</li><li>• Founded in 2003, aPriori provides real-time product cost and manufacturability assessment solutions to drive hard-dollar product cost savings for discrete manufacturing and product innovation companies</li><li>• Autodesk's participation in the investment centers around coupling aPriori's costing solutions into generative design workflows within the Fusion 360 platform to be able to assess cost &amp; manufacturability of advanced design topologies</li></ul> | <ul style="list-style-type: none"><li>• In July 2019, nTopology announced a \$20.0 million raise from Canaan Partners</li><li>• Founded in 2015, nTopology leverages advanced computation and a proprietary geometry engine to optimize the topology of designs based on specific parameters</li><li>• Demand for generative design capabilities has surged in the last several years with the rise of 3D printing and advanced manufacturing approaches</li><li>• As evidenced by PTC's 2018 acquisition of Frustum, generative design has become a key strategic priority for 3D CAD vendors</li></ul> | <ul style="list-style-type: none"><li>• In April 2019, OnScale announced a \$10.0 million Series A led by Intel Capital &amp; Gradient Ventures</li><li>• After more than thirty years as a unit within Weidlinger Associates and Thornton Tomasetti, OnScale spun out as an independent company in 2017</li><li>• Over its history within these engineering organizations, the company developed an expansive library of multi-physics CAE solvers through consulting engagements with DARPA, DoD, and others</li><li>• Today OnScale leverages the high performance cloud computing power of AWS &amp; Google Cloud to drive simulations up to 100x faster than legacy CAE offerings</li></ul> |

# Featured Companies

## Business Overview

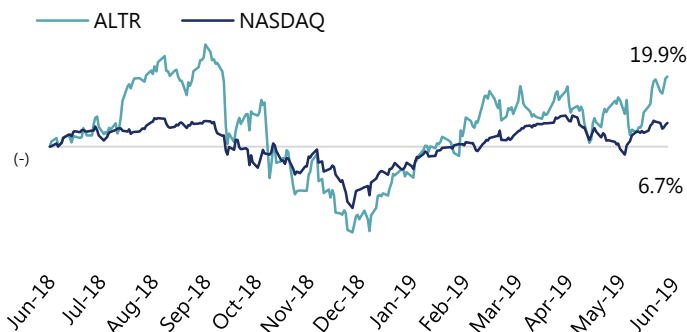
(\$ in millions)

|                                   |                         |
|-----------------------------------|-------------------------|
| <b>Headquarters:</b>              | Troy, MI                |
| <b>Employees (1-Year Growth):</b> | 2,661 (▲8%)             |
| <b>Ownership Status:</b>          | Public (NasdaqGS: ALTR) |
| <b>Disclosed Acquisitions:</b>    | 24                      |
| <b>Enterprise Value (EV):</b>     | \$2,598.9               |
| <b>Est. Revenue:</b>              | \$424.4                 |
| <b>Est. EBITDA:</b>               | \$32.5                  |
| <b>EV / Est. Revenue:</b>         | 6.12x                   |
| <b>EV / Est. EBITDA:</b>          | n/m                     |
| <b>Net Debt (Cash):</b>           | (\$48.1)                |
| <b>Dry Powder:</b>                | \$739.8                 |

### Description:

Provides broad portfolio of simulation technology under a patented units-based software licensing model to apply simulation, machine learning, and optimization throughout product development lifecycles

## Trailing 12-Month Performance (as of 6/30/2019)



## Diversifying CAE Solutions Out of Core Automotive Market

### M&A Activity: Broadening Solver Portfolio

- In November 2019, Altair acquired DEM Solutions, a provider of discrete element method simulation software, for an undisclosed amount
  - The addition of DEM's EDEM software product for bulk material simulation adds systems-level simulation capabilities for optimizing machinery design, material handling, and manufacturing efficiency across a broad range of industry end markets
- In October 2019, Altair acquired Polliwog, a provider of system-level engineering solutions to the printed circuit board (PCB) design and analysis market, for an undisclosed amount
  - The addition of Polliwog's PCB modeling, simulation, and design verification tools allows Altair to better bridge the gap between mechanical and electrical design in integrated products
- In April 2019, Altair acquired the SEAM product for high-frequency noise and vibration prediction from Cambridge Collaborative for an undisclosed amount
  - The addition of SEAM software to Altair's portfolio of simulation and solver solutions creates a more expansive, comprehensive portfolio for solving tough engineering problems in optimizing noise and comfort in cockpits, cabins, and appliances
- Of Altair's 24 acquisitions made since the Company's founding in 1985, 16 have come in the last four years and 7 have come since the Company's November 2017 IPO

### Executive Team: New Sales & Marketing Leadership

- In January 2019, Altair added Amy Messano as Chief Marketing Officer (CMO) and Ubaldo Rodriguez as SVP, Global Sales as the company continues building its global sales & marketing organization for strategic growth
  - Amy previously held the role of VP, Integrated Marketing & Communications at electric vehicle components developer Aptiv
  - Ubaldo previously held the role of VP Sales, Americas for ANSYS



## Business Overview

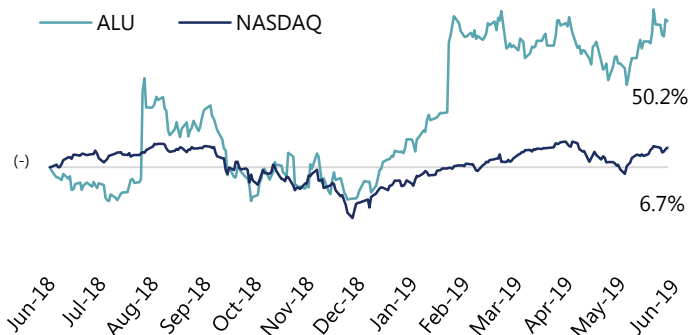
(\$ in millions)

|                                   |                   |
|-----------------------------------|-------------------|
| <b>Headquarters:</b>              | La Jolla, CA      |
| <b>Employees (1-Year Growth):</b> | 747 (▲11%)        |
| <b>Ownership Status:</b>          | Public (ASX: ALU) |
| <b>Disclosed Acquisitions:</b>    | 12                |
| <b>Enterprise Value (EV):</b>     | \$2,830.3         |
| <b>Est. Revenue:</b>              | \$171.8           |
| <b>Est. EBITDA:</b>               | \$67.0            |
| <b>EV / Est. Revenue:</b>         | 16.47x            |
| <b>EV / Est. EBITDA:</b>          | n/m               |
| <b>Net Debt (Cash):</b>           | (\$80.5)          |
| <b>Dry Powder:</b>                | \$997.5           |

### Description:

Printed circuit board (PCB) design software products and electronic component data management

## Trailing 12-Month Performance (as of 6/30/2019)



## Diversifying into Manufacturing Operations

### ► M&A Activity: Expanding into PCB Manufacturing Value Chain

- In April 2019, Altium acquired Gumstix, a small-scale assembler of printed circuit boards, for \$5.0 million
  - The \$5.0 million total consideration is comprised of an upfront cash consideration of \$2.5 million and a three-year maximum earnout of \$2.5 million
  - The company's \$385k gross revenue contribution to Altium during May-June 2019 implies a trailing 12 month revenue of ~\$2.3 million
  - The addition of Gumstix's expertise in development of circuit boards embedded within IoT, industrials, smart homes, medical, military, and automotive applications will inform Altium's vision for a platform to support design to product realization
- The Gumstix deal marks Altium's second consecutive acquisition in the PCB manufacturing domain, following the July 2018 acquisition of PCB contract manufacturer PCB:NG

### ► Product Release: Enhanced Support for Collaboration

- In October 2019, Altium announced the release of Altium Concord Pro, a cloud-based application for eCAD component management
  - Concord Pro ensures that all of an organization's designers, buyers, and manufacturing partners have access to the same set of component data by vastly simplifying the setup, configuration, use, and maintenance of managed component libraries
  - Concord Pro ensures information reliability through built-in-connectivity to Octopart supply chain information
- In October 2019, Altium announced the release of Altium Designer 20
  - The latest release of Altium's PCB design platform includes upgrades to the software's unified design environment, user experience, and improved PCB design capabilities including interactive & high-speed routing and added support for multi-board and high-voltage design

## Business Overview

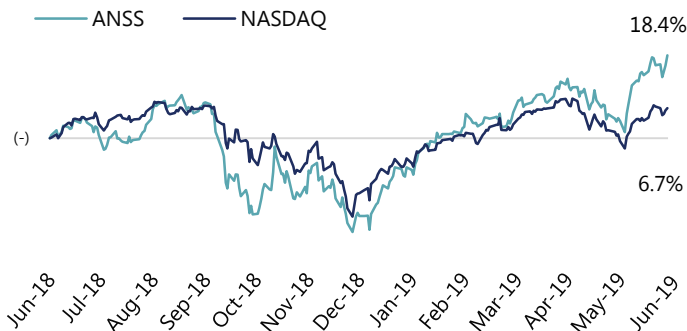
(\$ in millions)

|                                   |                         |
|-----------------------------------|-------------------------|
| <b>Headquarters:</b>              | Canonsburg, PA          |
| <b>Employees (1-Year Growth):</b> | 4,463 (▲10%)            |
| <b>Ownership Status:</b>          | Public (NasdaqGS: ANSS) |
| <b>Disclosed Acquisitions:</b>    | 30                      |
| <b>Enterprise Value (EV):</b>     | \$17,765.1              |
| <b>Est. Revenue:</b>              | \$1,390.6               |
| <b>Est. EBITDA:</b>               | \$554.6                 |
| <b>EV / Est. Revenue:</b>         | 12.77x                  |
| <b>EV / Est. EBITDA:</b>          | 32.0x                   |
| <b>Net Debt (Cash):</b>           | (\$542.2)               |
| <b>Dry Powder:</b>                | \$6,954.6               |

### Description:

Engineering simulation software solutions for product design and development across aerospace & defense, automotive, electronics, semiconductors, energy, consumer products, and more

## Trailing 12-Month Performance (as of 6/30/2019)



## Doubling Down on Solutions for Next Generation Mobility

### M&A Activity: Broadening Solution Portfolio, Largest Acquisition in Over a Decade

- In November 2019, ANSYS acquired Dynardo, a leading provider of simulation process integration and design optimization technology, for an undisclosed amount
  - Dynardo's optiSlang tool creates a more open ecosystem to connect simulation & optimization results to simulation-driven design workflows across the product lifecycle
- In October 2019, ANSYS acquired Livermore Software Technology Corporation (LSTC), developers of LS-DYNA, the market-leading solver for predicting vehicle collision effects, for \$775 million
  - LSTC's explicit dynamics and advanced finite element analysis (FEA) technology reduces or even eliminates the need for costly physical testing in automotive, aerospace, trains, and more
  - The \$775 million total consideration consists of \$465 million (60%) in cash consideration and \$310 million (40%) paid through the issuance of ANSYS common stock
  - The acquisition of LSTC, an ANSYS partner for the last 25 years, marks ANSYS' largest disclosed deal since the \$832 million acquisition of Ansoft (EDA) in 2008
- In May 2019, ANSYS acquired DfR Solutions, developers of Sherlock, an automated electronic design reliability analysis solution, for an undisclosed amount
  - The acquisition aligns with current megatrends like 5G, AI, and cloud computing that are driving more complex semiconductor chip design
- ANSYS' January 2019 acquisition of Helic and February 2019 acquisition of Granta Design were covered in MPG's H2 2018 market update

### Partner Strategy: Focused on Autonomous & Electric Mobility

- In November 2019, ANSYS announced a strategic partnership industrial automation leader Rockwell Automation to co-develop digital twin solutions for manufacturing processes
- In June 2019, ANSYS led a \$7M investment in AV system developer Edge Case Research
- Additionally, ANSYS announced four key strategic partnerships focused on advancing solutions in autonomous mobility across automotive (AVSimulation, BMW Group) and aerospace (Airbus) as well as electric machine design (Motor-CAD)

## Business Overview

(\$ in millions)

|                                   |                           |
|-----------------------------------|---------------------------|
| <b>Headquarters:</b>              | Andover, MA               |
| <b>Employees (1-Year Growth):</b> | 339 (▲49%)                |
| <b>Ownership Status:</b>          | PE-backed (Goldman Sachs) |
| <b>Disclosed Acquisitions:</b>    | 2                         |
| <b>Enterprise Value (EV):</b>     | n/a                       |
| <b>Est. Revenue:</b>              | n/a                       |
| <b>Est. EBITDA:</b>               | n/a                       |
| <b>EV / Est. Revenue:</b>         | n/a                       |
| <b>EV / Est. EBITDA:</b>          | n/a                       |
| <b>Net Debt (Cash):</b>           | n/a                       |
| <b>Dry Powder:</b>                | n/a                       |

### Description:

Open product lifecycle management platform that connects users in all disciplines and functions to critical product data and processes across the lifecycle and throughout the extended supply chain

## Recent Funding / Transaction History

| Date     | Lead Investor                                                                                                                                                           | Amount                    |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| 11/29/18 |                                                                                      | \$70.0 million (Series D) |
| 9/6/17   |                                                                                      | \$40.0 million (Series C) |
| 1/26/15  |   | \$3.0 million (Series B)  |

## Integrating Simulation Data into Product Record

### ► M&A Activity: No Acquisitions in YTD 2019

- The company did not execute an acquisition in YTD 2019
- Aras' last M&A activity came in September 2018 with the acquisition of Comet Solutions

### ► Partner Strategy: Focused on Simulation Process & Data Management

- On the heels of the acquisition of simulation process management software provider Comet Solutions in September 2018, Aras announced three strategic technology partnerships in H1 2019 that extend its support for simulation data management
  - In June 2019, Aras and Modelon partnered to allow Aras to extend its vision for simulation management and mixed-fidelity simulation using a systems-centric, unified data model across all levels of model fidelity, physics, and disciplines
  - In April 2019, Aras and MSC Software partnered to expand connectors in MSC's Nastran finite element analysis (FEA) solver and MSC's Adams tool for advanced rigid and flexible multibody dynamics simulation
  - In February 2019, Aras and Visual Collaboration Technologies partnered to enable enhanced simulation visualization, post-processing, and reporting

### ► Product Release: Platform Refresh

- In June 2019, Aras released the latest version of its software platform Aras Innovator 12
  - Platform enhancements include low-code capabilities for application modeling, graph visualization, and supply chain security
  - Aras Innovator 12 also features significant usability updates to the Aras web interface, enabling greater efficiency for users across the extended enterprise

## Business Overview



(\$ in millions)

|                                   |                        |
|-----------------------------------|------------------------|
| <b>Headquarters:</b>              | Foster City, CA        |
| <b>Employees (1-Year Growth):</b> | 177 (▲3%)              |
| <b>Ownership Status:</b>          | PE-backed (JMI Equity) |
| <b>Disclosed Acquisitions:</b>    | 1                      |
| <b>Enterprise Value (EV):</b>     | n/a                    |
| <b>Est. Revenue:</b>              | n/a                    |
| <b>Est. EBITDA:</b>               | n/a                    |
| <b>EV / Est. Revenue:</b>         | n/a                    |
| <b>EV / Est. EBITDA:</b>          | n/a                    |
| <b>Net Debt (Cash):</b>           | n/a                    |
| <b>Dry Powder:</b>                | n/a                    |

### Description:

Product lifecycle (PLM) and quality management (QMS) solution provider for electronic high tech and medical device companies, allowing participants throughout the product realization process from design to manufacturing to work together

## Recent Funding / Transaction History

| Date    | Lead Investor                                                                       | Amount                    |
|---------|-------------------------------------------------------------------------------------|---------------------------|
| 8/22/17 |  | Undisclosed               |
| 8/13/14 |  | \$8.9 million (Series G)  |
| 5/31/11 | Undisclosed                                                                         | \$3.0 million (Series F)  |
| 5/4/05  |  | \$14.6 million (Series E) |

## High Tech / Electronics PLM Leader Maintaining Cloud Focus

### ▶ M&A Activity: No Acquisitions in YTD 2019

- The company did not execute an acquisition in YTD 2019
- Arena's last M&A activity came in October 2018 with the acquisition of Omnify Software, which was covered MPG's H2 2018 market update

### ▶ Partner Strategy: Focused on Cloud Ecosystem, Geographic Expansion

- In October 2019, Arena announced a strategic partnership with Acumatica, a cloud-based ERP solutions provider
  - The integration allows for part & assembly information to automatically pass to Acumatica Cloud ERP following design approval, giving procurement and production teams immediate and accurate product record access to speed their planning and manufacturing
- In June 2019, Arena announced a strategic partnership with eBOM, a cloud product lifecycle management (PLM) and project management solution provider based in Stockholm, Sweden
  - As part of the partnership, eBOM will take up the role as the master distributor of Arena PLM in EMEA and Israel

### ▶ Product Release: Enhanced Cloud Support for Regulated Industries

- In April 2019, Arena Solutions launched Arena Product Lifecycle Management for AWS GovCloud, a software designed for companies manufacturing products subject to the United States International Traffic in Arms Regulations (ITAR) and Export Administration Regulations (EAR)
  - This solution addresses the need for a secure, transparent single source of product record for companies operating in controlled regulatory spaces

## Business Overview

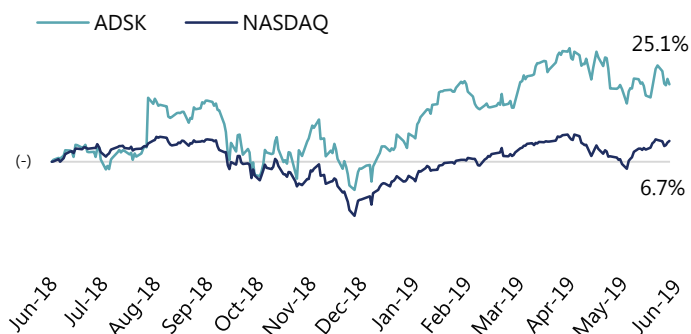
(\$ in millions)

|                                   |                         |
|-----------------------------------|-------------------------|
| <b>Headquarters:</b>              | San Rafael, CA          |
| <b>Employees (1-Year Growth):</b> | 10,694 (▲1%)            |
| <b>Ownership Status:</b>          | Public (NasdaqGS: ADSK) |
| <b>Disclosed Acquisitions:</b>    | 100                     |
| <b>Enterprise Value (EV):</b>     | \$34,381.7              |
| <b>Est. Revenue:</b>              | \$2,930.5               |
| <b>Est. EBITDA:</b>               | \$286.6                 |
| <b>EV / Est. Revenue:</b>         | 11.73x                  |
| <b>EV / Est. EBITDA:</b>          | n/m                     |
| <b>Net Debt (Cash):</b>           | \$1,164.7               |
| <b>Dry Powder:</b>                | \$6,844.3               |

### Description:

Computer-aided design software for architecture, engineering, construction, manufacturing, and media

## Trailing 12-Month Performance (as of 6/30/2019)



## Focusing on Manufacturing & Construction

### ► M&A Activity: No Acquisitions in YTD 2019

- The company did not execute an acquisition in YTD 2019
- Autodesk's last M&A activity came in December 2018 with the acquisition of BuildingConnected, which was covered in MPG's H2 2018 market update

### ► Partner Strategy: Corporate Investments Focused on Intelligent Manufacturing

- In September 2019, Autodesk led a \$26.8 million investment in enterprise product cost management software company aPriori
  - As part of the investment, Autodesk is introducing aPriori's manufacturing cost insights into its generative design capabilities within the Autodesk Fusion 360 platform, providing designers and engineers with a key layer of information in the early stages of the development process
- In June 2019, Autodesk led a \$22.7 million investment in specialty modular construction services company Factory\_OS
  - Founded in 2017, the company began leveraging a modular construction approach to build multi-family homes more affordably and sustainably to address the housing crisis in the San Francisco Bay area
  - With the investment, Autodesk will support the development of the Factory Floor Learning Center, a space dedicated to education and research on industrialized construction and changes needed in public policy to optimize its benefits
  - Citigroup and undisclosed investors also participated in the round
- The investment in Factory\_OS comes on the heels of Autodesk's +\$1 billion construction software acquisition spree (PlanGrid, BuildingConnected) in 2018, which has driven growth in the current FY

## Business Overview

(\$ in millions)

|                                   |             |
|-----------------------------------|-------------|
| <b>Headquarters:</b>              | Exton, PA   |
| <b>Employees (1-Year Growth):</b> | 4,007 (▲2%) |
| <b>Ownership Status:</b>          | Independent |
| <b>Disclosed Acquisitions:</b>    | 30          |
| <b>Enterprise Value (EV):</b>     | n/a         |
| <b>Est. Revenue:</b>              | n/a         |
| <b>Est. EBITDA:</b>               | n/a         |
| <b>EV / Est. Revenue:</b>         | n/a         |
| <b>EV / Est. EBITDA:</b>          | n/a         |
| <b>Net Debt (Cash):</b>           | n/a         |
| <b>Dry Powder:</b>                | n/a         |

### Description:

Software solutions for engineers, architects, geospatial professionals, constructors and owner-operators for the design, construction, and operations of infrastructure

## Funding / Transaction History

| Date | Lead Investor | Amount |
|------|---------------|--------|
| n/a  | n/a           | n/a    |

## Driving Digital Twin for Urban & Civil Engineering

### ► M&A Activity: Focused on Digital Infrastructure Solutions for Cities

- In October 2019, Bentley acquired Citilabs, a provider of simulation software for transportation & mobility, and Orbit Geospatial Technologies, a provider of GIS data management solutions, both for an undisclosed amount
  - The acquisitions bolster Bentley's Digital Cities offering, which combines BIM and GIS to engineer digital twins for cities spanning reality modeling, water, wastewater and stormwater system planning, urban planning and visualization, geotechnical information management, and mobility simulation and analytics
  - Together, the acquisitions focus on advancing mobility digital twins through Orbit GT's automated mobile mapping workflows (digital context) and Citilabs' CUBE simulations (digital components) for predictive transportation scenarios
- In May 2019, Bentley acquired Keynetix, a geotechnical data management software platform, for an undisclosed amount
  - The acquisition expands Bentley's geotechnical offerings and accelerates Bentley's vision of enabling subsurface digital twins for infrastructure projects and assets by capturing and managing underground environment information for Bentley's geotechnical analysis applications, PLAXIS and SoilVision
- Bentley's February 2019 acquisition of SignCAD Systems was covered in MPG's H2 2018 market update

### ► Partner Strategy: Expanding Support for Digital Twin Readiness

- In March 2019, Bentley made a strategic investment of an undisclosed amount in Digital Water Works, a provider of digital twin solutions for smart wet infrastructure
  - As part of the strategic partnership, Bentley will license its OpenFlows and iTwin offerings to Digital Water Works' customers

## Business Overview

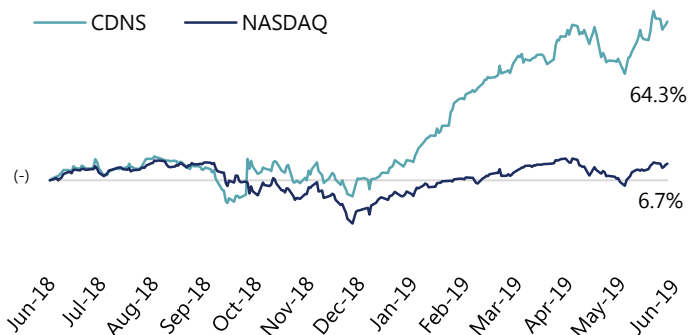
(\$ in millions)

|                                   |                         |
|-----------------------------------|-------------------------|
| <b>Headquarters:</b>              | San Jose, CA            |
| <b>Employees (1-Year Growth):</b> | 6,720 (▲3%)             |
| <b>Ownership Status:</b>          | Public (NasdaqGS: CDNS) |
| <b>Disclosed Acquisitions:</b>    | 39                      |
| <b>Enterprise Value (EV):</b>     | \$18,574.9              |
| <b>Est. Revenue:</b>              | \$2,306.6               |
| <b>Est. EBITDA:</b>               | \$630.2                 |
| <b>EV / Est. Revenue:</b>         | 8.05x                   |
| <b>EV / Est. EBITDA:</b>          | 29.5x                   |
| <b>Net Debt (Cash):</b>           | (\$191.2)               |
| <b>Dry Powder:</b>                | \$7,095.5               |

### Description:

Electronic design automation (EDA) tools, IP portfolio for chip designs, and comprehensive suite of verification tools and hardware to verify the chip, package, board, and system design

## Trailing 12-Month Performance (as of 6/30/2019)



## EDA Leader Gaining in Value Amidst Continued Performance

### ► M&A Activity: No Acquisitions in YTD 2019

- The company did not execute an acquisition in YTD 2019
- Cadence's last M&A activity came in November 2017 with the acquisition of nusemi

### ► Partner Strategy: Enhancing Support for Hyperconnected Embedded Systems

- In February 2019, Cadence led a \$150.0 million financing round in Green Hills Software, a provider of real-time operating systems and software development tools for embedded development
  - Green Hills' products are broadly deployed across multiple application domains, particularly in aerospace and defense, with customers including Boeing and Lockheed Martin, and in automotive, with many top OEM and Tier-1 customers, including Toyota and Ford
  - Green Hills is considered an industry leader in embedded safety and security software solutions, with its INTEGRITY-178B real-time operating system having been certified to EAL6+, the highest Common Criteria security level achieved for an operating system
  - The partnership furthers the Cadence System Design Enablement strategy and build its leading core electronic design automation (EDA), verification hardware, embedded process, and IP solutions to address new market expansion opportunities in the estimated +\$3B embedded system safety and security space
  - The investment represents an approximate 16% ownership interest in Green Hills

## Business Overview

(\$ in millions)

|                                                                      |                |
|----------------------------------------------------------------------|----------------|
| <b>Headquarters:</b>                                                 | Burlington, MA |
| <b>Employees (1-Year Growth):</b>                                    | 445 (■ 0%)     |
| <b>Ownership Status:</b>                                             | Independent    |
| <b>Disclosed Acquisitions:</b>                                       | -              |
| <b>Enterprise Value (EV):</b>                                        | n/a            |
| <b>Est. Revenue:</b>                                                 | n/a            |
| <b>Est. EBITDA:</b>                                                  | n/a            |
| <b>EV / Est. Revenue:</b>                                            | n/a            |
| <b>EV / Est. EBITDA:</b>                                             | n/a            |
| <b>Net Debt (Cash):</b>                                              | n/a            |
| <b>Dry Powder:</b>                                                   | n/a            |
| <b>Description:</b>                                                  |                |
| Software solutions for multi-physics modeling and simulation for R&D |                |

## Funding / Transaction History

| Date | Lead Investor | Amount |
|------|---------------|--------|
| n/a  | n/a           | n/a    |

## Maintaining Organic Growth Path

### ► M&A Activity: No Acquisitions in YTD 2019

- The company did not execute an acquisition in YTD 2019
- COMSOL has not completed an acquisition in the company's history

### ► Product Release: Enhanced Support for PCB Reliability Analysis

- In June 2019, COMSOL announced the latest advances in its COMSOL Multiphysics software to support microwave and RF engineers working on 5G, IoT, automotive radars, and satellite communications
  - With these tools, designers can model different PCB materials and study how they affect the performance of microwave and millimeter wave circuits
- In April 2019, COMSOL announced a major update for its COMSOL Client
  - The latest update included COMSOL Client for Android, which allows researchers, engineers, and students to perform simulation tasks from Android smartphones, tablets, and Chromebooks simply by connecting COMSOL Server software which runs the computations remotely
  - Providing field technicians or sales representatives with the power of COMSOL Multiphysics directly on their Android devices allows them to bring the R&D work on-site or to a sales pitch



## Business Overview

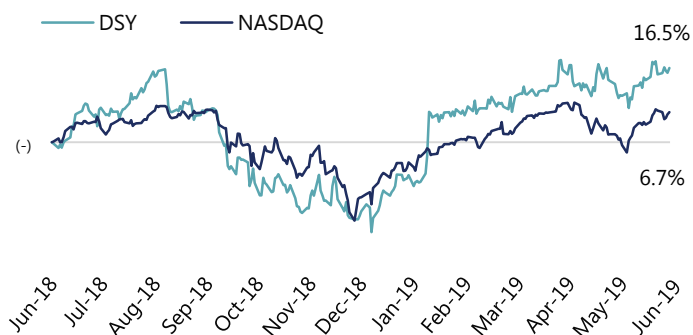
(\$ in millions)

|                                   |                             |
|-----------------------------------|-----------------------------|
| <b>Headquarters:</b>              | Vélizy-Villacoublay, France |
| <b>Employees (1-Year Growth):</b> | 14,147 (▲8%)                |
| <b>Ownership Status:</b>          | Public (PAR: DSY)           |
| <b>Disclosed Acquisitions:</b>    | 47                          |
| <b>Enterprise Value (EV):</b>     | \$36,677.7                  |
| <b>Est. Revenue:</b>              | \$4,274.5                   |
| <b>Est. EBITDA:</b>               | \$1,254.4                   |
| <b>EV / Est. Revenue:</b>         | 8.58x                       |
| <b>EV / Est. EBITDA:</b>          | 29.2x                       |
| <b>Net Debt (Cash):</b>           | (\$2,453.4)                 |
| <b>Dry Powder:</b>                | \$16,538.7                  |

### Description:

3D modeling applications, simulation applications creating virtual twins of products or production systems, social and collaborative applications, and information intelligence applications

## Trailing 12-Month Performance (as of 6/30/2019)



## Largest Acquisition To-Date Fortifies Commitment to Life Sciences

### M&A Activity: Largest Acquisition To-Date, Tuck-ins Address Electrical Complexity

- In June 2019, Dassault acquired Medidata Solutions, a provider of software & data solutions for the life sciences market, for \$5.8 billion
  - At \$92.25 per share, Dassault acquired Medidata at a 17% premium above Medidata's closing price on April 18, the last day before Bloomberg reported Dassault's interest in the company
  - The acquisition marks Dassault's largest ever and the first time the company has leveraged external funding sources for an acquisition (€1B loan and €3B bridge-to-loan facility, alongside available cash)
  - Medidata's clinical trial solutions dovetail with Dassault's science-focused BIOVIA brand and the rest of the 3DEXPERIENCE platform to help connect research, development, manufacturing, clinical trials, and commercial deployment throughout the entire healthcare ecosystem
- In March 2019, Dassault acquired Argosim, a provider of model-based systems engineering and architecture solutions for embedded systems, for an undisclosed amount
  - Dassault intends to leverage the MBSE solutions to ensure consistent requirements in the development of complex autonomous systems and connected products
- In February 2019, Dassault acquired the elecworks product line from Trace Software International, a provider of electrical and automation design software, for an undisclosed amount
  - The acquisition of the elecworks assets will help Dassault's SOLIDWORKS customers address electrical design challenges in the development of smart products
  - Dassault has been selling elecworks under the name of SOLIDWORKS Electrical since 2012

### Partner Strategy: Focused on Linking Design / Development with Industrial Automation

- In February 2019, Dassault entered a global partnership with industrial automation leader ABB
  - The partnership will combine the strengths of ABB's Ability industrial operations management platform with Dassault's 3DEXPERIENCE platform to drive industrial digitalization across factory automation & robotics, process industry automation, and smart building electrification

## Business Overview

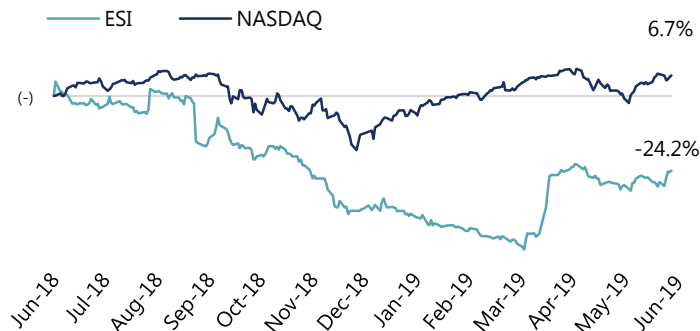
(\$ in millions)

|                                   |                   |
|-----------------------------------|-------------------|
| <b>Headquarters:</b>              | Paris, France     |
| <b>Employees (1-Year Growth):</b> | 1,841 (▼1%)       |
| <b>Ownership Status:</b>          | Public (PAR: ESI) |
| <b>Disclosed Acquisitions:</b>    | 19                |
| <b>Enterprise Value (EV):</b>     | \$244.4           |
| <b>Est. Revenue:</b>              | \$156.1           |
| <b>Est. EBITDA:</b>               | \$16.1            |
| <b>EV / Est. Revenue:</b>         | 1.57x             |
| <b>EV / Est. EBITDA:</b>          | 15.2x             |
| <b>Net Debt (Cash):</b>           | \$52.7            |
| <b>Dry Powder:</b>                | \$65.9            |

### Description:

Virtual prototyping software that simulates a product's behavior during testing, manufacturing, and real-life use

## Trailing 12-Month Performance (as of 6/30/2019)



## Transitioning Leadership

### M&A Activity: No Acquisitions in YTD 2019

- The company did not execute an acquisition in YTD 2019
- ESI's last M&A activity came in February 2017 with the acquisition of Scilab Enterprises

### Executive Team: CEO Succession

- In February 2019, ESI Group named Cristel de Rouvray as CEO
  - An ESI Board member since 1999, Cristel prior served in a number of roles at the company, including Chairwoman of the Compensation, Nomination & Governance Committee, project leader for succession planning, and head of an operational committee for critical human resources-related topics
  - Alain de Rouvray, the Founder and former CEO, will remain as Chairman

### Financial Update: Return to Growth after Decline

- In April 2019, ESI Group announced its annual financial result for the FY ended January 2019
  - Total revenue increased 3.9% to €139.4 million, bolstered by renewed momentum in the Licensing business
  - The Company attributes the progress in sales to a successful business development approach focused on key accounts and the launching of strategic initiatives in emerging areas such as light-weight engineering and immersive human-centric engineering
- In January 2019, ESI Group announced a €40.0 million syndicated credit line from a consortium of European banks
  - The credit line will be used to fund the acceleration of ESI's development plan and diversify its financial partners while opening more opportunities for acquisitions

## Business Overview



(\$ in millions)

|                                   |                           |
|-----------------------------------|---------------------------|
| <b>Headquarters:</b>              | Westmont, IL              |
| <b>Employees (1-Year Growth):</b> | 127 (▲8%)                 |
| <b>Ownership Status:</b>          | PE-backed (TA, Cove Hill) |
| <b>Disclosed Acquisitions:</b>    | 1                         |
| <b>Enterprise Value (EV):</b>     | n/a                       |
| <b>Est. Revenue:</b>              | n/a                       |
| <b>Est. EBITDA:</b>               | n/a                       |
| <b>EV / Est. Revenue:</b>         | n/a                       |
| <b>EV / Est. EBITDA:</b>          | n/a                       |
| <b>Net Debt (Cash):</b>           | n/a                       |
| <b>Dry Powder:</b>                | n/a                       |

### Description:

Multi-physics CAE system simulation software spanning fluid flow, thermal, mechanical, electrical, magnetic, chemistry, and controls primarily for engines, vehicle systems & components, and more

## Funding / Transaction History

| Date    | Lead Investor                                                                                          | Amount                  |
|---------|--------------------------------------------------------------------------------------------------------|-------------------------|
| 5/10/18 |  COVE HILL PARTNERS | Undisclosed (Secondary) |
| 6/30/15 |  TA ASSOCIATES      | Undisclosed (LBO)       |

## Expanding Product Support through Partnerships

### ▶ M&A Activity: No Acquisitions in YTD 2019

- The company did not execute an acquisition in YTD 2019
- Gamma's last M&A activity came in February 2018 with the acquisition of AutoLion

### ▶ Partner Strategy: Continued Focus on Automotive, Expanded Support for Machine Types

- In June 2019, Gamma entered into an R&D partnership with automotive OEM Groupe PSA and engineering institution Centrale Nantes
  - The partnership is aimed at optimizing powertrain design processes and shortening time-to-market for low-emission vehicles by frontloading more and more simulation for development and testing
  - As part of the partnership, engineers and experts at Groupe PSA and Centrale Nantes will execute studies on engine calibration and component modeling for batteries and e-motors using Gamma Technologies' GT-SUITE
- In February 2019, Gamma announced an exclusive partnership with SoftInWay, a provider of turbomachinery design, analysis and optimization software and services
  - Through the partnership, GT-SUITE users can utilize SoftInWay's AxSTREAM turbomachinery component and performance map solvers to generate thousands of designs for turbines, compressors, pumps, and fans
- In January 2019, Gamma announced a collaboration with PDM Analysis, a provider of software for modeling, analysis, and design of rotary screw positive displacement machines
  - The partnership involves integration of GT-SUITE with PDM Analysis' SCORG product, enabling optimized and high-fidelity multi-chamber and system-level modeling of screw type machines, such as screw compressors, expanders, and pumps

## Business Overview

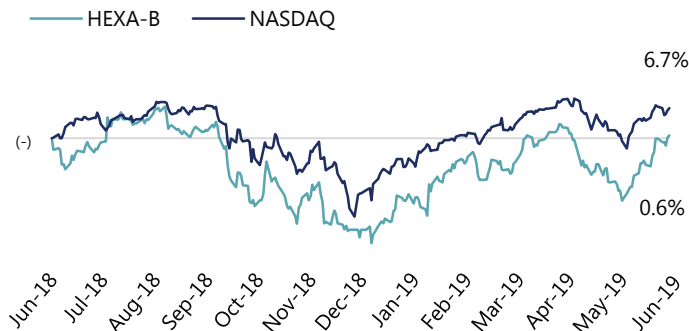
(\$ in millions)

|                                   |                      |
|-----------------------------------|----------------------|
| <b>Headquarters:</b>              | Stockholm, Sweden    |
| <b>Employees (1-Year Growth):</b> | 1,055 (▲2%)          |
| <b>Ownership Status:</b>          | Public (STO: HEXA-B) |
| <b>Disclosed Acquisitions:</b>    | 86                   |
| <b>Enterprise Value (EV):</b>     | \$22,120.4           |
| <b>Est. Revenue:</b>              | \$4,307.9            |
| <b>Est. EBITDA:</b>               | \$1,234.4            |
| <b>EV / Est. Revenue:</b>         | 5.13x                |
| <b>EV / Est. EBITDA:</b>          | 17.9x                |
| <b>Net Debt (Cash):</b>           | \$2,282.9            |
| <b>Dry Powder:</b>                | \$7,854.0            |

### Description:

Global leader in sensor, software, and autonomous solutions for industrial, manufacturing, infrastructure, safety, and mobility applications

## Trailing 12-Month Performance (as of 6/30/2019)



## Investing in MSC Business Following 2017 Acquisition

### ► M&A Activity: Accelerating Shift to Additive Manufacturing

- In June 2019, Hexagon acquired AMendate, a provider of simulation software solutions that support the generation and optimization of designs for additive manufacturing
  - AMendate will join Hexagon Manufacturing Intelligence's MSC Software business unit, which provides computer-aided engineering (CAE) simulation software and services
  - AMendate's generative design solutions help to eliminate inefficient manual effort that slows additive manufacturing workflows, addressing a major obstacle during design for companies shifting to additive manufacturing processes
- Hexagon's January 2019 acquisitions of j5 International and Etalon were covered in MPG's H2 2018 market update

### ► Partner Strategy: Focused on Advancing Autonomous Driving Systems

- In March 2019, Hexagon announced a collaborative partnership between its subsidiary MSC Software and AVL List GmbH in Austria, focused on research, development, and customer projects in the field of simulation and testing of Autonomous Driving (AD) and Advanced Driver Assistance Systems (ADAS) systems
  - AVL is developing a scenario-based open verification and validation toolchain to generate operational scenarios, create the relevant test cases, and execute testing and homologation of automated driving functions in combined virtual and real road environments based on an open and integrated tool environment

### ► Product Release: Enhancing Support for Multi-Physics

- In February 2019, MSC Software announced the debut release of the MSC CoSim engine
  - The software is developed to provide a co-simulation interface for the direct coupling of different solvers / disciplines within a multi-physics framework

## Business Overview



(\$ in millions)

|                                   |                     |
|-----------------------------------|---------------------|
| <b>Headquarters:</b>              | Portland, OR        |
| <b>Employees (1-Year Growth):</b> | 204 (▼10%)          |
| <b>Ownership Status:</b>          | PE-backed (Insight) |
| <b>Disclosed Acquisitions:</b>    | 1                   |
| <b>Enterprise Value (EV):</b>     | n/a                 |
| <b>Est. Revenue:</b>              | n/a                 |
| <b>Est. EBITDA:</b>               | n/a                 |
| <b>EV / Est. Revenue:</b>         | n/a                 |
| <b>EV / Est. EBITDA:</b>          | n/a                 |
| <b>Net Debt (Cash):</b>           | n/a                 |
| <b>Dry Powder:</b>                | n/a                 |

### Description:

Product requirements, risk, and test management platform for defining, aligning, and developing complex products, systems, and software

## Funding / Transaction History

| Date    | Lead Investor                                                                       | Amount                     |
|---------|-------------------------------------------------------------------------------------|----------------------------|
| 6/26/18 |  | \$200.0 million            |
| 5/3/17  | Undisclosed                                                                         | \$10.0 million (Series B2) |
| 3/30/15 |  | \$19.5 million (Series B1) |

## Maintaining Growth Track Under Private Equity Ownership

### ► M&A Activity: No Acquisitions in YTD 2019

- The company did not execute an acquisition in YTD 2019
- Jama's last M&A activity came in January 2018 with the acquisition of Notion Data

### ► Product Release: Enhanced Support for Regulated Industries

- In May 2019, Jama announced an update to its Jama Connect Risk Management Center
  - In the latest update, Jama integrated FMEA templates directly into Jama Connect, transforming Jama Connect into a comprehensive system of record to manage product risk
  - Prior to this update, these capabilities were available exclusively to medical device companies
  - Now the coverage includes all regulated industries, available via both cloud & self-hosted platforms

### ► Executive Team: Expansion of Management Team

- In September 2019, Jama expanded its executive team with the appointments of Josh Turpen as Chief Product Officer (CPO), Stuart Heavyside as President of Field Operations, and Dave Falkingham as VP of EMEA Sales
  - Josh previously held the role of CPO for Cherwell Technologies
  - Stuart previously held the role of SVP of Worldwide Sales for PTC's CAD division
  - Dave previously held the role of Sr. Director of Professional Channel for N. Europe for Dassault

## Business Overview

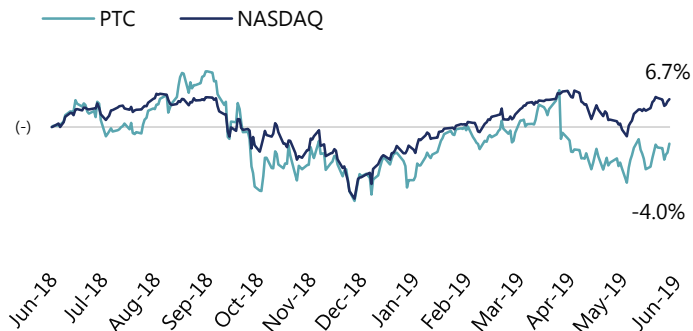
(\$ in millions)

|                                   |                        |
|-----------------------------------|------------------------|
| <b>Headquarters:</b>              | Boston, MA             |
| <b>Employees (1-Year Growth):</b> | 6,574 (▲0%)            |
| <b>Ownership Status:</b>          | Public (NasdaqGS: PTC) |
| <b>Disclosed Acquisitions:</b>    | 35                     |
| <b>Enterprise Value (EV):</b>     | \$8,492.2              |
| <b>Est. Revenue:</b>              | \$1,255.6              |
| <b>Est. EBITDA:</b>               | \$195.1                |
| <b>EV / Est. Revenue:</b>         | 6.76x                  |
| <b>EV / Est. EBITDA:</b>          | n/m                    |
| <b>Net Debt (Cash):</b>           | \$342.1                |
| <b>Dry Powder:</b>                | \$2,205.9              |

### Description:

Portfolio of computer-aided design (CAD) modeling, product lifecycle management (PLM), service lifecycle management (SLM) and industrial-focused AR / VR and IoT solutions

## Trailing 12-Month Performance (as of 6/30/2019)



## Seizing First Mover Advantage into SaaS

### M&A Activity: Largest CAD Acquisition Ever and PTC's Largest To-Date

- In November 2019, PTC acquired Onshape, provider of the first SaaS-based product development platform that unites robust computer aided design (CAD) with powerful data management and collaboration tools, for approximately \$470 million
  - Onshape was founded in 2012 by the team that founded SOLIDWORKS and marks the industry's first native 3D CAD solution
  - Onshape has secured more than \$169 million in funding and has more than 5,000 paid subscribers around the world, primarily SMB & mid-market customers who are early adopters of CAD in the cloud
- Jim Heppelmann, President & CEO of PTC*, commented:
  - "The acquisition of Onshape complements our on-premises business with the industry's only proven, scalable SaaS platform, which we expect will open new CAD and PLM growth opportunities while positioning PTC to be the leader as the market transitions toward the SaaS model."
- In June 2019, PTC acquired TWNKLS, a specialized augmented reality (AR) company, for an undisclosed amount
  - The company leverages deep expertise in PTC's Vuforia platform to develop and implement tailor-made industrial AR applications
- In April 2019, PTC acquired Factoria Solutions, a provider of manufacturing execution systems, for an undisclosed amount
  - The acquisition provides PTC in-house subject matter expertise to better service its customers and partners that are driving growth in smart manufacturing

### Partner Strategy: Continued Push in Industrial Augmented Reality

- In June 2019, PTC led an undisclosed investment in Matterport, a provider of immersive 3D technology and spatial capture solutions
  - The partnership enhances PTC's Vuforia offerings with the ability to better visualize factories

## Business Overview

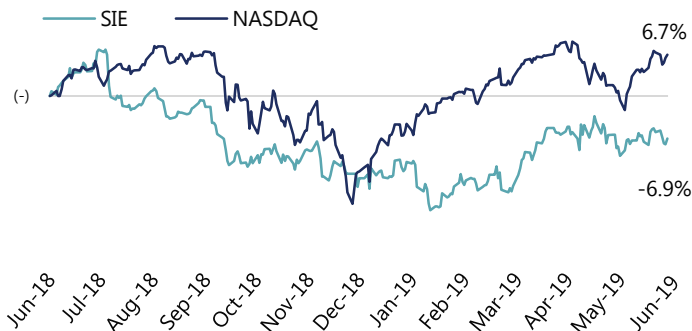
(\$ in millions)

|                                   |                  |
|-----------------------------------|------------------|
| <b>Headquarters:</b>              | Munich, Germany  |
| <b>Employees (1-Year Growth):</b> | 1,631 (▲39%)     |
| <b>Ownership Status:</b>          | Public (DB: SIE) |
| <b>Disclosed Acquisitions:</b>    | 50               |
| <b>Enterprise Value (EV):</b>     | \$127,717.6      |
| <b>Est. Revenue:</b>              | \$94,015.9       |
| <b>Est. EBITDA:</b>               | \$10,087.4       |
| <b>EV / Est. Revenue:</b>         | 1.36x            |
| <b>EV / Est. EBITDA:</b>          | 12.7x            |
| <b>Net Debt (Cash):</b>           | \$30,830.1       |
| <b>Dry Powder:</b>                | \$38,389.1       |

### Description:

Software solutions for engineering, manufacturing, and electronics design

## Trailing 12-Month Performance (as of 6/30/2019)



## Industrial Leader Expanding Scope of Siemens PLM Brand

### M&A Activity: Focused on Advanced Manufacturing Solutions Portfolio

- In November 2019, Siemens acquired MultiMechanics, a provider of materials modeling software, for an undisclosed amount
  - MultiMechanics' solutions will enable virtual failure prediction of advanced materials
- In November 2019, Siemens acquired Atlas 3D, a provider of cloud-based software for additive manufacturing, for an undisclosed amount
  - Atlas 3D's software enables "right first time" 3D printing by interfacing with direct metal laser sintering (DMLS) printers to automatically provide design engineers with the optimal print orientation and requisite support structures for additive parts in near real-time
- In September 2019, Siemens acquired Process Systems Enterprise (PSE), a provider of advanced process modeling software and services, for an undisclosed amount
  - PSE incorporates advanced models & real-time process data to drive plant performance optimization, acting across the Siemens Digital Industries portfolio in a similar vein as Mendix
- In June 2019, Siemens acquired ESTEQ, a South Africa-based PLM and manufacturing operations software provider, for an undisclosed amount
  - Siemens will incorporate ESTEQ into new software focused sales organizations in South Africa and UAE, gaining direct presence to expand and support coverage of these regions

### Partner Strategy: Enabling SaaS through Partners

- In October 2019, Siemens announced a strategic collaboration with Rescale to make Simcenter 3D software and Simcenter Amesim software available through a SaaS deployment and pricing model

### Product Release: Rebranding Towards Broader and Integrated Portfolio

- In September 2019, Siemens announced a rebranding from Siemens PLM Software to Siemens Digital Industries Software, also introducing Xcelerator, a new integrated portfolio of software and services encompassing its PLM, design, manufacturing, and IIoT solution set

## Business Overview

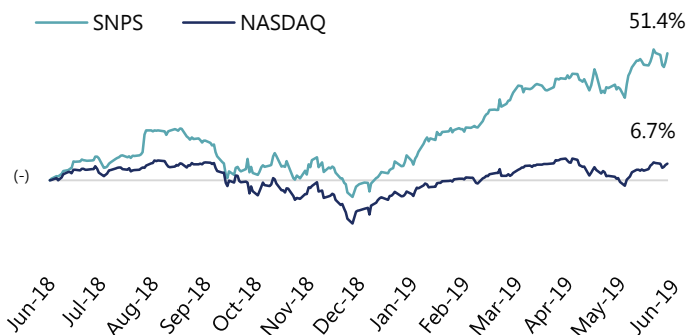
(\$ in millions)

|                                   |                         |
|-----------------------------------|-------------------------|
| <b>Headquarters:</b>              | Mountain View, CA       |
| <b>Employees (1-Year Growth):</b> | 13,236 (▲2%)            |
| <b>Ownership Status:</b>          | Public (NasdaqGM: SNPS) |
| <b>Disclosed Acquisitions:</b>    | 66                      |
| <b>Enterprise Value (EV):</b>     | \$19,865.4              |
| <b>Est. Revenue:</b>              | \$3,304.7               |
| <b>Est. EBITDA:</b>               | \$638.5                 |
| <b>EV / Est. Revenue:</b>         | 6.01x                   |
| <b>EV / Est. EBITDA:</b>          | 31.1x                   |
| <b>Net Debt (Cash):</b>           | (\$544.8)               |
| <b>Dry Powder:</b>                | \$7,818.2               |

### Description:

Silicon chip design, verification, IP integration, and application security testing solutions

## Trailing 12-Month Performance (as of 6/30/2019)



## EDA Leader Making Aggressive Push into Automotive Market

### M&A Activity: Expanded Tool Set for Automotive

- In August 2019, Synopsys acquired QTronic, a provider of simulation, test tools, and services for automotive software and systems, for an undisclosed amount
  - The acquisition addresses the rapid growth of software embedded in vehicles, along with the complex interaction of hardware, software, and physical components, which are creating significant challenges for OEMs and suppliers developing future powertrain, electric vehicle, advanced driver assistance, and autonomous driver systems
  - Synopsys expects QTronic's simulation and test tools to accelerate delivery of a comprehensive automotive virtual prototyping solution for system and software development throughout the automotive electronic supply chain

### Partner Strategy: Enhancing Operating Hardware for Automotive

- In September 2019, Synopsys announced a partnership with Infineon Technologies, a producer of semiconductor solutions and microelectronics, to accelerate AI in automotive applications
  - As part of the partnership, Infineon's AURIX microcontrollers will integrate a new high-performance AI accelerator called Parallel Processing Unit (PPU) that will employ Synopsys' DesignWare ARC EV Processor IP
- In May 2019, Synopsys announced a partnership with Elektrobit, a supplier of embedded and connected software products for the automotive industry, aimed at enabling a transition from physical to virtual system testing for automotive electronic systems
  - As part of the collaboration, the two companies are bringing together Synopsys Virtualizer Development Kits (VDKs), Elektrobit operating systems, development and test tools, and complementary expertise to enable pre-silicon and pre-Electronic Control Unit (ECU) hardware availability and software development



## Business Overview

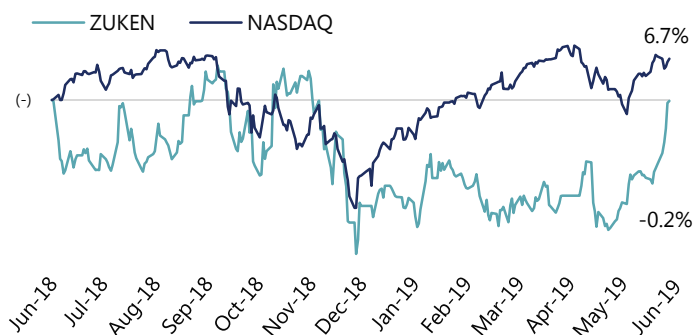
(\$ in millions)

|                                   |                    |
|-----------------------------------|--------------------|
| <b>Headquarters:</b>              | Yokohama, Japan    |
| <b>Employees (1-Year Growth):</b> | 1,274 (▲3%)        |
| <b>Ownership Status:</b>          | Public (TKS: 6497) |
| <b>Disclosed Acquisitions:</b>    | 3                  |
| <b>Enterprise Value (EV):</b>     | \$240.7            |
| <b>Est. Revenue:</b>              | \$249.5            |
| <b>Est. EBITDA:</b>               | \$35.9             |
| <b>EV / Est. Revenue:</b>         | 0.96x              |
| <b>EV / Est. EBITDA:</b>          | 6.7x               |
| <b>Net Debt (Cash):</b>           | (\$240.7)          |
| <b>Dry Powder:</b>                | \$515.7            |

### Description:

Software products and consulting services for electrical and electronic engineering design processes

## Trailing 12-Month Performance (as of 6/30/2019)



## Focused on Support for Multi-Disciplinary Engineering

### M&A Activity: MBSE Capabilities Expand Product Coverage

- In January 2019, Zuken acquired Vitech, a model-based systems engineering platform, for an undisclosed amount
  - As product complexity continues to increase, companies are adopting model-based system engineering (MBSE) tools and processes to better define product requirements, structure, and behavior
  - Zuken expects Vitech's platform to complement and expand Zuken's advanced design technologies portfolio with systems engineering capabilities

### Partner Strategy: Focused on Electronic Data Export

- In October 2019, Zuken announced a partnership with CONTACT Software, product engineering software platform, to enable end-to-end data and process integration across mechanical, electrical, and electronic design
  - The interface module links Zuken's DS-2 platform to CONTACT Elements, supporting the secure synchronization of part master data, parts lists, documents, and design data between Zuken's ECAD systems E3.series (electrical and fluid engineering), ad CR-8000 (PCB design), and CIM Database PLM
- In September 2019, Zuken signed a V6 Community Membership agreement with Dassault Systemes to develop solutions for an end-to-end system design and manufacturing process enabling customers to manage electronic engineering information together with mechanical and software engineering data and configurations
  - The solution, developed by Zuken, will provide electronic library and design data management capabilities within Dassault's 3DEXPERIENCE platform

# Industry Valuation Metrics

# Priority Acquirers & Notable Deals

|                    |
|--------------------|
| Altair             |
| Altium             |
| ANSYS              |
| Aras               |
| Arena Solutions    |
| Autodesk           |
| Bentley            |
| Cadence            |
| Dassault           |
| ESI Group          |
| Gamma Technologies |
| Hexagon            |
| Jama               |
| PTC                |
| Siemens            |
| Synopsys           |
| Zuken              |

| (\$ in Millions)     |                           | Target Overview                                            |                   |         | Transaction Statistics |                                |              |
|----------------------|---------------------------|------------------------------------------------------------|-------------------|---------|------------------------|--------------------------------|--------------|
| Announced            | Target                    | Description                                                | Estimated Revenue | EBITDA  | Deal Value             | Deal Value / Estimated Revenue | EBITDA       |
| <b>Altair</b>        |                           | <b>Total Disclosed M&amp;A Deal Value: \$241.5 Million</b> |                   |         |                        |                                |              |
| 11/07/2019           | DEM Solutions             | Discrete element modelling software                        | n/a               | n/a     | n/a                    | n/a                            | n/a          |
| 10/10/2019           | Polliwog Co.              | EDA verification and evaluation                            | n/a               | n/a     | n/a                    | n/a                            | n/a          |
| 04/01/2019           | Cambridge Collaborative   | High-frequency noise and vibration simulation              | n/a               | n/a     | n/a                    | n/a                            | n/a          |
| 11/05/2018           | Datawatch                 | Enterprise data preparation & visualization                | \$41.7            | (\$9.3) | \$176.0                | 4.22x                          | n/m          |
| 10/17/2018           | SIMSOLID                  | Structural analysis simulation software                    | n/a               | n/a     | \$22.1                 | n/a                            | n/a          |
| 05/10/2018           | Fluidyna GmbH             | Fluid dynamics simulation software                         | n/a               | n/a     | n/a                    | n/a                            | n/a          |
| 03/29/2018           | CANDI Controls            | Real-time device control and data management               | n/a               | n/a     | \$2.4                  | n/a                            | n/a          |
| 09/28/2017           | Runtime                   | EDA software optimizing application computing              | n/a               | n/a     | \$25.7                 | n/a                            | n/a          |
| 09/14/2017           | Componeering              | Composites analysis and design software                    | n/a               | n/a     | n/a                    | n/a                            | n/a          |
| 06/20/2017           | Carriots                  | IoT device enablement platform                             | n/a               | n/a     | \$7.5                  | n/a                            | n/a          |
| 05/24/2017           | MODELiiS                  | EDA for circuit modelling & systems design                 | n/a               | n/a     | \$2.0                  | n/a                            | n/a          |
| 09/14/2016           | Solid Iris Technologies   | Rendering software for architecture applications           | n/a               | n/a     | n/a                    | n/a                            | n/a          |
| 05/10/2016           | CEDRAT                    | Simulation software for mechatronic systems                | n/a               | n/a     | \$5.1                  | n/a                            | n/a          |
| 03/23/2016           | Awe Communications        | Product design software for cellular devices               | n/a               | n/a     | n/a                    | n/a                            | n/a          |
| 09/30/2015           | Click2Cast                | Casting process simulation software                        | n/a               | n/a     | \$0.7                  | n/a                            | n/a          |
| 04/07/2015           | Multiscale Design Systems | Modeling, simulation, and testing software                 | n/a               | n/a     | n/a                    | n/a                            | n/a          |
| 07/17/2014           | Visual Solutions          | Commercial simulation software                             | n/a               | n/a     | n/a                    | n/a                            | n/a          |
| 12/10/2013           | EM Software & Systems     | Consulting services for electromagnetic analysis           | n/a               | n/a     | n/a                    | n/a                            | n/a          |
| 11/08/2012           | Synopsis Consulting       | Business consulting services for product dev.              | n/a               | n/a     | n/a                    | n/a                            | n/a          |
| 01/11/2011           | 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          |
| 01/07/2007           | solidThinking             | Integrated rendering engine design software                | n/a               | n/a     | n/a                    | n/a                            | n/a          |
| 01/01/2007           | Hiqube                    | Simulation-driven business analytics suite                 | n/a               | n/a     | n/a                    | n/a                            | n/a          |
| 03/10/2003           | PBS Works                 | Secure workload management for computing                   | n/a               | n/a     | n/a                    | n/a                            | n/a          |
| <b>Altium</b>        |                           | <b>Total Disclosed M&amp;A Deal Value: \$54.2 Million</b>  |                   |         |                        |                                |              |
| 04/30/2019           | Gumstix                   | Hardware development and manufacturing                     | \$2.3             | n/a     | \$5.0                  | 2.17x                          | n/a          |
| 07/31/2018           | PCB:NG                    | PCB manufacturing                                          | n/a               | n/a     | \$4.8                  | n/a                            | n/a          |
| 05/10/2018           | Fluidyna                  | Predictive aerodynamic simulation tools                    | n/a               | n/a     | n/a                    | n/a                            | n/a          |
| 05/03/2018           | CANDI Controls            | Data protocol management for edge devices                  | n/a               | n/a     | n/a                    | n/a                            | n/a          |
| <b>Total High</b>    |                           |                                                            |                   |         |                        | <b>21.67x</b>                  | <b>24.6x</b> |
| <b>Total Low</b>     |                           |                                                            |                   |         |                        | <b>1.00x</b>                   | <b>7.1x</b>  |
| <b>Total Average</b> |                           |                                                            |                   |         |                        | <b>5.42x</b>                   | <b>16.4x</b> |
| <b>Total Median</b>  |                           |                                                            |                   |         |                        | <b>4.39x</b>                   | <b>16.8x</b> |

# Priority Acquirers & Notable Deals

|                    | (\$ in Millions) |                           | Target Overview                               |                                                |        | Transaction Statistics |                                |        |
|--------------------|------------------|---------------------------|-----------------------------------------------|------------------------------------------------|--------|------------------------|--------------------------------|--------|
|                    | Announced        | Target                    | Description                                   | Estimated Revenue                              | EBITDA | Deal Value             | Deal Value / Estimated Revenue | EBITDA |
| Altair             |                  |                           |                                               |                                                |        |                        |                                |        |
| Altium             |                  |                           |                                               |                                                |        |                        |                                |        |
| ANSYS              |                  |                           |                                               |                                                |        |                        |                                |        |
| Aras               |                  |                           |                                               |                                                |        |                        |                                |        |
| Arena Solutions    |                  |                           |                                               |                                                |        |                        |                                |        |
| Autodesk           |                  |                           |                                               |                                                |        |                        |                                |        |
| Bentley            |                  |                           |                                               |                                                |        |                        |                                |        |
| Cadence            |                  |                           |                                               |                                                |        |                        |                                |        |
| Dassault           |                  |                           |                                               |                                                |        |                        |                                |        |
| ESI Group          |                  |                           |                                               |                                                |        |                        |                                |        |
| Gamma Technologies |                  |                           |                                               |                                                |        |                        |                                |        |
| Hexagon            |                  |                           |                                               |                                                |        |                        |                                |        |
| Jama               |                  |                           |                                               |                                                |        |                        |                                |        |
| PTC                |                  |                           |                                               |                                                |        |                        |                                |        |
| Siemens            |                  |                           |                                               |                                                |        |                        |                                |        |
| Synopsys           |                  |                           |                                               |                                                |        |                        |                                |        |
| Zuken              |                  |                           |                                               |                                                |        |                        |                                |        |
|                    |                  |                           |                                               |                                                |        |                        |                                |        |
| Altium (Cont'd)    |                  |                           |                                               | Total Disclosed M&A Deal Value: \$54.2 Million |        |                        |                                |        |
|                    | 02/21/2018       | TES International         | Thermal solutions for complex flow mapping    | n/a                                            | n/a    | n/a                    | n/a                            | n/a    |
|                    | 08/28/2017       | Upverter                  | Online circuit design platform                | n/a                                            | n/a    | \$5.6                  | n/a                            | n/a    |
|                    | 01/17/2017       | Premier EDA Solutions     | Electronic design automation                  | n/a                                            | n/a    | \$4.0                  | n/a                            | n/a    |
|                    | 09/15/2016       | Transfer                  | Electronics design software                   | n/a                                            | n/a    | \$1.8                  | n/a                            | n/a    |
|                    | 08/23/2016       | Perception Software       | Engineering productivity application          | n/a                                            | n/a    | \$7.9                  | n/a                            | n/a    |
|                    | 08/14/2015       | Octopart                  | Electronics parts search                      | n/a                                            | n/a    | \$18.0                 | n/a                            | n/a    |
|                    | 08/14/2015       | Ciiva                     | Electronic component management               | n/a                                            | n/a    | \$4.0                  | n/a                            | n/a    |
|                    | 09/16/2010       | Morfik Technology         | Cloud application development                 | n/a                                            | n/a    | \$3.1                  | n/a                            | n/a    |
| ANSYS              |                  |                           |                                               | Total Disclosed M&A Deal Value: \$3.2 Billion  |        |                        |                                |        |
|                    | 10/24/2019       | Dynardo                   | Process integration and design tools          | n/a                                            | n/a    | n/a                    | n/a                            | n/a    |
|                    | 09/11/2019       | Livermore Software        | Multi physics simulation software             | \$62.5                                         | n/a    | \$775.0                | 12.40x                         | n/a    |
|                    | 05/02/2019       | DfR Solutions             | EDA design reliability analysis software      | n/a                                            | n/a    | n/a                    | n/a                            | n/a    |
|                    | 02/01/2019       | Granta Design             | Engineering materials information management  | \$20.0                                         | \$2.0  | \$198.7                | 9.94x                          | n/m    |
|                    | 01/21/2019       | Helic                     | Electro-magnetic cross-talk analysis software | n/a                                            | n/a    | n/a                    | n/a                            | n/a    |
|                    | 03/22/2018       | Optis World               | Optics engineering & simulation software      | n/a                                            | n/a    | \$291.0                | n/a                            | n/a    |
|                    | 11/15/2017       | 3DSIM                     | Additive manufacturing process software       | n/a                                            | n/a    | n/a                    | n/a                            | n/a    |
|                    | 07/11/2017       | Computational Engineering | Scientific data visualization software        | n/a                                            | n/a    | \$6.0                  | n/a                            | n/a    |
|                    | 03/17/2017       | CLK Design Automation     | Static timing and power analysis software     | n/a                                            | n/a    | n/a                    | n/a                            | n/a    |
|                    | 11/03/2016       | KPIT                      | Automotive engineering software               | n/a                                            | n/a    | n/a                    | n/a                            | n/a    |
|                    | 09/01/2015       | Delcross                  | CEM & RF analysis software                    | n/a                                            | n/a    | n/a                    | n/a                            | n/a    |
|                    | 07/01/2015       | Gear Design               | Semiconductor & electric design solutions     | n/a                                            | n/a    | \$30.0                 | n/a                            | n/a    |
|                    | 02/05/2015       | Newmerical                | In-flight icing simulation software           | n/a                                            | n/a    | \$10.9                 | n/a                            | n/a    |
|                    | 11/03/2014       | Parsec Holdings           | Technology-driven engineering services        | n/a                                            | n/a    | \$8.4                  | n/a                            | n/a    |
|                    | 05/01/2014       | SpaceClaim                | 3D direct modeling software                   | \$18.0                                         | n/a    | \$84.9                 | 4.72x                          | n/a    |
|                    | 01/03/2014       | Reaction Design           | Chemical modeling & simulation software       | n/a                                            | n/a    | \$19.1                 | n/a                            | n/a    |
|                    | 05/22/2013       | Tedaka Technologies       | Telecom transmission & networking             | n/a                                            | n/a    | \$2.8                  | n/a                            | n/a    |
|                    | 04/03/2013       | Evolutionary Engineering  | Aerospace and mechanical engineering          | n/a                                            | n/a    | \$4.6                  | n/a                            | n/a    |
|                    | 07/01/2012       | Esterel Technologies      | Embedded software design                      | \$21.0                                         | n/a    | \$58.0                 | 2.76x                          | n/a    |
|                    | 06/30/2011       | Apache Design             | Semiconductor design and verification         | \$44.0                                         | n/a    | \$294.9                | 6.70x                          | n/a    |
| Total High         |                  |                           |                                               |                                                |        |                        | 21.67x                         | 24.6x  |
| Total Low          |                  |                           |                                               |                                                |        |                        | 1.00x                          | 7.1x   |
| Total Average      |                  |                           |                                               |                                                |        |                        | 5.42x                          | 16.4x  |
| Total Median       |                  |                           |                                               |                                                |        |                        | 4.39x                          | 16.8x  |

# Priority Acquirers & Notable Deals

|                    |
|--------------------|
| Altair             |
| Altium             |
| ANSYS              |
| Aras               |
| Arena Solutions    |
| Autodesk           |
| Bentley            |
| Cadence            |
| Dassault           |
| ESI Group          |
| Gamma Technologies |
| Hexagon            |
| Jama               |
| PTC                |
| Siemens            |
| Synopsys           |
| Zuken              |

| (\$ in Millions)        |                            | Target Overview                                          |                   |        | Transaction Statistics |                                |              |
|-------------------------|----------------------------|----------------------------------------------------------|-------------------|--------|------------------------|--------------------------------|--------------|
| Announced               | Target                     | Description                                              | Estimated Revenue | EBITDA | Deal Value             | Deal Value / Estimated Revenue | EBITDA       |
| <b>ANSYS (Cont'd)</b>   |                            | <b>Total Disclosed M&amp;A Deal Value: \$3.2 Billion</b> |                   |        |                        |                                |              |
| 08/01/2008              | Ansoft                     | Electronic design automation software                    | \$103.4           | \$41.7 | \$832.0                | 8.05x                          | 19.9x        |
| 11/27/2007              | Emerging Signals           | Railway signaling services                               | n/a               | n/a    | \$2.2                  | n/a                            | n/a          |
| 05/01/2006              | Fluent                     | Computational fluid dynamics                             | n/a               | n/a    | n/a                    | n/a                            | n/a          |
| 02/16/2006              | Aavid Thermal Technologies | Thermal management software solutions                    | n/a               | n/a    | \$565.0                | n/a                            | n/a          |
| 12/01/2005              | Harvard Thermal            | Thermal management software solutions                    | n/a               | n/a    | n/a                    | n/a                            | n/a          |
| 01/05/2005              | Century Dynamics           | Hydro-dynamics simulation                                | n/a               | n/a    | \$10.0                 | n/a                            | n/a          |
| 02/04/2003              | CFX Group                  | Computational fluid dynamics software                    | \$19.0            | n/a    | \$21.7                 | 1.14x                          | n/a          |
| 03/20/2002              | 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          |
| 08/31/2000              | ICEM CFD                   | Aeronautics & automobile design                          | \$6.8             | n/a    | \$12.4                 | 1.82x                          | n/a          |
| <b>Aras Corporation</b> |                            | <b>Total Disclosed M&amp;A Deal Value: n/a</b>           |                   |        |                        |                                |              |
| 09/25/2018              | Comet Solutions            | Process automation for CAE / simulation                  | n/a               | n/a    | n/a                    | n/a                            | n/a          |
| 01/24/2018              | Info Spectrum (Impress)    | MRO management suite                                     | n/a               | n/a    | n/a                    | n/a                            | n/a          |
| <b>Arena Solutions</b>  |                            | <b>Total Disclosed M&amp;A Deal Value: n/a</b>           |                   |        |                        |                                |              |
| 10/24/2018              | Omnify Software            | Electronics & medical device PLM / QMS                   | n/a               | n/a    | n/a                    | n/a                            | n/a          |
| <b>Autodesk</b>         |                            | <b>Total Disclosed M&amp;A Deal Value: \$3.1 Billion</b> |                   |        |                        |                                |              |
| 01/23/2019              | BuildingConnected          | Preconstruction planning solutions                       | n/a               | n/a    | \$275.0                | n/a                            | n/a          |
| 11/20/2018              | PlanGrid                   | Digital blueprint solutions                              | \$100.0           | n/a    | \$875.0                | 8.75x                          | n/a          |
| 07/19/2018              | 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          |
| 11/15/2016              | Seebo                      | IoT development modules                                  | n/a               | n/a    | n/a                    | n/a                            | n/a          |
| 06/01/2016              | CadSoft                    | PCB Design                                               | n/a               | n/a    | n/a                    | n/a                            | n/a          |
| 04/18/2016              | Solid Angle                | Animation & visual effects rendering                     | n/a               | n/a    | n/a                    | n/a                            | n/a          |
| 02/25/2016              | Monolith                   | Voxel modeling                                           | n/a               | n/a    | n/a                    | n/a                            | n/a          |
| 01/01/2016              | Autodesk Substation Design | AutoCAD software developer                               | n/a               | n/a    | n/a                    | n/a                            | n/a          |
| 01/01/2016              | SDS                        | AutoCAD software systems                                 | n/a               | n/a    | n/a                    | n/a                            | n/a          |
| 10/29/2015              | Configure One              | CPQ software                                             | n/a               | n/a    | n/a                    | n/a                            | n/a          |
| <b>Total High</b>       |                            |                                                          |                   |        |                        | <b>21.67x</b>                  | <b>24.6x</b> |
| <b>Total Low</b>        |                            |                                                          |                   |        |                        | <b>1.00x</b>                   | <b>7.1x</b>  |
| <b>Total Average</b>    |                            |                                                          |                   |        |                        | <b>5.42x</b>                   | <b>16.4x</b> |
| <b>Total Median</b>     |                            |                                                          |                   |        |                        | <b>4.39x</b>                   | <b>16.8x</b> |

# Priority Acquirers & Notable Deals

|                                                          | (\$ in Millions) |                       | Target Overview                               |                   |        | Transaction Statistics |                                |              |
|----------------------------------------------------------|------------------|-----------------------|-----------------------------------------------|-------------------|--------|------------------------|--------------------------------|--------------|
|                                                          | Announced        | Target                | Description                                   | Estimated Revenue | EBITDA | Deal Value             | Deal Value / Estimated Revenue | EBITDA       |
| Altair                                                   |                  |                       |                                               |                   |        |                        |                                |              |
| Altium                                                   |                  |                       |                                               |                   |        |                        |                                |              |
| ANSYS                                                    |                  |                       |                                               |                   |        |                        |                                |              |
| Aras                                                     |                  |                       |                                               |                   |        |                        |                                |              |
| Arena Solutions                                          |                  |                       |                                               |                   |        |                        |                                |              |
| Autodesk                                                 |                  |                       |                                               |                   |        |                        |                                |              |
| Bentley                                                  |                  |                       |                                               |                   |        |                        |                                |              |
| Cadence                                                  |                  |                       |                                               |                   |        |                        |                                |              |
| Dassault                                                 |                  |                       |                                               |                   |        |                        |                                |              |
| ESI Group                                                |                  |                       |                                               |                   |        |                        |                                |              |
| Gamma Technologies                                       |                  |                       |                                               |                   |        |                        |                                |              |
| Hexagon                                                  |                  |                       |                                               |                   |        |                        |                                |              |
| Jama                                                     |                  |                       |                                               |                   |        |                        |                                |              |
| PTC                                                      |                  |                       |                                               |                   |        |                        |                                |              |
| Siemens                                                  |                  |                       |                                               |                   |        |                        |                                |              |
| Synopsys                                                 |                  |                       |                                               |                   |        |                        |                                |              |
| Zuken                                                    |                  |                       |                                               |                   |        |                        |                                |              |
| <b>Autodesk (Cont'd)</b>                                 |                  |                       |                                               |                   |        |                        |                                |              |
| <b>Total Disclosed M&amp;A Deal Value: \$3.1 Billion</b> |                  |                       |                                               |                   |        |                        |                                |              |
|                                                          | 10/15/2015       | Indeeo                | Apple graphic design applications             | n/a               | n/a    | n/a                    | n/a                            | n/a          |
|                                                          | 09/24/2015       | NetFabb               | 3D printing software and services             | \$18.6            | n/a    | \$44.5                 | 2.39x                          | n/a          |
|                                                          | 08/27/2015       | SeeControl            | IoT business applications platform            | n/a               | n/a    | n/a                    | n/a                            | n/a          |
|                                                          | 02/09/2015       | Tweak Software        | PLM software hosting                          | n/a               | n/a    | n/a                    | n/a                            | n/a          |
|                                                          | 01/08/2015       | 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                 | n/a                            | n/a          |
|                                                          | 11/20/2014       | Lagoa                 | 3D rendering platform                         | n/a               | n/a    | \$60.0                 | n/a                            | n/a          |
|                                                          | 10/14/2014       | Modio                 | Character animation software                  | n/a               | n/a    | n/a                    | n/a                            | n/a          |
|                                                          | 10/02/2014       | Robobat Polska        | Structural engineering software               | n/a               | n/a    | n/a                    | n/a                            | n/a          |
|                                                          | 06/27/2014       | Shotgun Software      | Animation & creative software                 | n/a               | n/a    | \$54.5                 | n/a                            | n/a          |
|                                                          | 06/27/2014       | The Living            | Building design studio                        | n/a               | n/a    | n/a                    | n/a                            | n/a          |
|                                                          | 06/09/2014       | Bitsquid              | Mobile game engine                            | n/a               | n/a    | n/a                    | n/a                            | n/a          |
|                                                          | 05/29/2014       | Within Technologies   | Engineering design optimization               | n/a               | n/a    | \$88.8                 | n/a                            | n/a          |
|                                                          | 05/14/2014       | NEi Nastran Solver    | Engineering analysis and simulation           | n/a               | n/a    | n/a                    | n/a                            | n/a          |
|                                                          | 04/29/2014       | Ilsefay Technology    | PLM data replication                          | n/a               | n/a    | n/a                    | n/a                            | n/a          |
|                                                          | 03/19/2014       | Creative Market Labs  | Digital content design marketplace            | n/a               | n/a    | n/a                    | n/a                            | n/a          |
|                                                          | 02/06/2014       | Delcam                | Automated multi-vertical CAD/CAM              | \$75.6            | n/a    | \$285.4                | 3.78x                          | n/a          |
|                                                          | 01/06/2014       | Schrauwen Bruneel     | Electronic circuits design software           | n/a               | n/a    | n/a                    | n/a                            | n/a          |
|                                                          | 01/06/2014       | Circuits.io           | Application for designing electronic circuits | n/a               | n/a    | n/a                    | n/a                            | n/a          |
|                                                          | 01/01/2014       | Majestic Systems      | Industrial manufacturing software             | n/a               | n/a    | n/a                    | n/a                            | n/a          |
|                                                          | 12/04/2013       | Azalient              | Traffic simulation modeling                   | n/a               | n/a    | n/a                    | n/a                            | n/a          |
|                                                          | 12/04/2013       | Graitec Innovation    | Structural building construction CAD          | n/a               | n/a    | \$88.1                 | n/a                            | n/a          |
|                                                          | 11/04/2013       | 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          |
|                                                          | 08/19/2013       | Bestech Systems       | Bridge span analysis                          | n/a               | n/a    | n/a                    | n/a                            | n/a          |
|                                                          | 08/19/2013       | Savoy Computing       | Transportation path analysis                  | n/a               | n/a    | n/a                    | n/a                            | n/a          |
|                                                          | 05/19/2013       | Tinkercad             | Cloud-based 3D design tools                   | n/a               | n/a    | n/a                    | n/a                            | n/a          |
|                                                          | 03/19/2013       | Firehole Technologies | Composite materials design                    | n/a               | n/a    | \$10.0                 | n/a                            | n/a          |
| <b>Total High</b>                                        |                  |                       |                                               |                   |        |                        | <b>21.67x</b>                  | <b>24.6x</b> |
| <b>Total Low</b>                                         |                  |                       |                                               |                   |        |                        | <b>1.00x</b>                   | <b>7.1x</b>  |
| <b>Total Average</b>                                     |                  |                       |                                               |                   |        |                        | <b>5.42x</b>                   | <b>16.4x</b> |
| <b>Total Median</b>                                      |                  |                       |                                               |                   |        |                        | <b>4.39x</b>                   | <b>16.8x</b> |

# Priority Acquirers & Notable Deals

|                                               | (\$ in Millions) |                        | Target Overview                         |                   |        | Transaction Statistics |                                |        |
|-----------------------------------------------|------------------|------------------------|-----------------------------------------|-------------------|--------|------------------------|--------------------------------|--------|
|                                               | Announced        | Target                 | Description                             | Estimated Revenue | EBITDA | Deal Value             | Deal Value / Estimated Revenue | EBITDA |
| Altair                                        |                  |                        |                                         |                   |        |                        |                                |        |
| Altium                                        |                  |                        |                                         |                   |        |                        |                                |        |
| ANSYS                                         |                  |                        |                                         |                   |        |                        |                                |        |
| Aras                                          |                  |                        |                                         |                   |        |                        |                                |        |
| Arena Solutions                               |                  |                        |                                         |                   |        |                        |                                |        |
| Autodesk                                      |                  |                        |                                         |                   |        |                        |                                |        |
| Bentley                                       |                  |                        |                                         |                   |        |                        |                                |        |
| Cadence                                       |                  |                        |                                         |                   |        |                        |                                |        |
| Dassault                                      |                  |                        |                                         |                   |        |                        |                                |        |
| ESI Group                                     |                  |                        |                                         |                   |        |                        |                                |        |
| Gamma Technologies                            |                  |                        |                                         |                   |        |                        |                                |        |
| Hexagon                                       |                  |                        |                                         |                   |        |                        |                                |        |
| Jama                                          |                  |                        |                                         |                   |        |                        |                                |        |
| PTC                                           |                  |                        |                                         |                   |        |                        |                                |        |
| Siemens                                       |                  |                        |                                         |                   |        |                        |                                |        |
| Synopsys                                      |                  |                        |                                         |                   |        |                        |                                |        |
| Zuken                                         |                  |                        |                                         |                   |        |                        |                                |        |
| Autodesk (Cont'd)                             |                  |                        |                                         |                   |        |                        |                                |        |
| Total Disclosed M&A Deal Value: \$3.1 Billion |                  |                        |                                         |                   |        |                        |                                |        |
|                                               | 01/31/2013       | Allpoint               | 3D data processing                      | n/a               | n/a    | n/a                    | n/a                            | n/a    |
|                                               | 01/08/2013       | PI-VR                  | Automotive visualization                | n/a               | n/a    | \$49.3                 | n/a                            | n/a    |
|                                               | 10/04/2012       | Qontext                | Enterprise social collaboration         | n/a               | n/a    | \$26.0                 | n/a                            | n/a    |
|                                               | 10/01/2012       | HSMWorks               | Computer aided manufacturing            | n/a               | n/a    | n/a                    | n/a                            | n/a    |
|                                               | 08/28/2012       | Inforbix               | Product data searching                  | n/a               | n/a    | n/a                    | n/a                            | n/a    |
|                                               | 08/13/2012       | Exotic Matter          | 3D fluid solver and dynamics framework  | n/a               | n/a    | n/a                    | n/a                            | n/a    |
|                                               | 07/20/2012       | Socialcam              | Video data capture                      | n/a               | n/a    | \$60.0                 | n/a                            | n/a    |
|                                               | 06/08/2012       | 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    |
|                                               | 11/06/2011       | 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    |
|                                               | 08/25/2011       | Numenus                | High-end visualization                  | n/a               | n/a    | n/a                    | n/a                            | n/a    |
|                                               | 08/22/2011       | Darwin Dimensions      | 3D character modeling                   | n/a               | n/a    | n/a                    | n/a                            | n/a    |
|                                               | 08/01/2011       | Instructables          | User-generated DIY content              | n/a               | n/a    | \$30.2                 | n/a                            | n/a    |
|                                               | 07/19/2011       | Code Mine              | Cloud-based image tools and utilities   | n/a               | n/a    | n/a                    | n/a                            | n/a    |
|                                               | 05/25/2011       | Datastay               | PLM software                            | n/a               | n/a    | n/a                    | n/a                            | n/a    |
|                                               | 03/11/2011       | Blue Ridge Numerics    | Fluid dynamics and simulation           | n/a               | n/a    | \$39.0                 | n/a                            | n/a    |
|                                               | 03/01/2011       | Scaleform              | UI software for consumer electronics    | n/a               | n/a    | \$36.0                 | n/a                            | n/a    |
|                                               | 12/20/2010       | Sim Ops                | 3D gaming technology                    | n/a               | n/a    | n/a                    | n/a                            | n/a    |
|                                               | 07/21/2010       | Illuminate Labs        | Game lighting technology                | n/a               | n/a    | n/a                    | n/a                            | n/a    |
|                                               | 05/01/2010       | 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    |
|                                               | 08/26/2009       | Boss International     | Water analysis & engineering            | n/a               | n/a    | n/a                    | n/a                            | n/a    |
|                                               | 01/20/2009       | 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    |
|                                               | 11/18/2008       | SoftImage              | 3D animation                            | n/a               | n/a    | \$36.0                 | n/a                            | n/a    |
|                                               | 09/11/2008       | Bigvan                 | Develops Computer Aided Design software | n/a               | n/a    | n/a                    | n/a                            | n/a    |
|                                               | 09/08/2008       | 3D Geo                 | 3D urban modeling software              | n/a               | n/a    | n/a                    | n/a                            | n/a    |
| Total High                                    |                  |                        |                                         |                   |        |                        | 21.67x                         | 24.6x  |
| Total Low                                     |                  |                        |                                         |                   |        |                        | 1.00x                          | 7.1x   |
| Total Average                                 |                  |                        |                                         |                   |        |                        | 5.42x                          | 16.4x  |
| Total Median                                  |                  |                        |                                         |                   |        |                        | 4.39x                          | 16.8x  |

# Priority Acquirers & Notable Deals

|                    |
|--------------------|
| Altair             |
| Altium             |
| ANSYS              |
| Aras               |
| Arena Solutions    |
| Autodesk           |
| Bentley            |
| Cadence            |
| Dassault           |
| ESI Group          |
| Gamma Technologies |
| Hexagon            |
| Jama               |
| PTC                |
| Siemens            |
| Synopsys           |
| Zuken              |

| (\$ in Millions)         |                     | Target Overview                                          |                   |        | Transaction Statistics |                                |              |
|--------------------------|---------------------|----------------------------------------------------------|-------------------|--------|------------------------|--------------------------------|--------------|
| Announced                | Target              | Description                                              | Estimated Revenue | EBITDA | Deal Value             | Deal Value / Estimated Revenue | EBITDA       |
| <b>Autodesk (Cont'd)</b> |                     | <b>Total Disclosed M&amp;A Deal Value: \$3.1 Billion</b> |                   |        |                        |                                |              |
| 08/20/2008               | ECS                 | Digital schematic prototyping                            | n/a               | n/a    | n/a                    | n/a                            | n/a          |
| 07/25/2008               | Moldflow            | Design-to-manufacture automation                         | \$61.3            | \$10.3 | \$267.3                | 4.36x                          | n/m          |
| 06/26/2008               | Square One Research | Architectural software                                   | n/a               | n/a    | n/a                    | n/a                            | n/a          |
| 05/07/2008               | Kynogon             | Interactive application intelligence                     | n/a               | n/a    | n/a                    | n/a                            | n/a          |
| 05/07/2008               | Realviz             | Digital content creation                                 | n/a               | n/a    | n/a                    | n/a                            | n/a          |
| 01/11/2008               | Carmel Software     | HVAC mechanical engineering software                     | n/a               | n/a    | n/a                    | n/a                            | n/a          |
| 01/07/2008               | 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          |
| 08/27/2007               | PlasoTech           | 3D simulation application software                       | n/a               | n/a    | n/a                    | n/a                            | n/a          |
| 08/20/2007               | Opticore            | Graphics communication software                          | \$12.9            | \$7.3  | n/a                    | n/a                            | n/a          |
| 08/09/2007               | NavisWorks          | Computer-aided design software                           | \$3.9             | \$2.0  | \$26.2                 | 6.76x                          | 13.3x        |
| 08/01/2007               | Cumulate Labs       | CAD diagramming software                                 | n/a               | n/a    | n/a                    | n/a                            | n/a          |
| 10/01/2006               | ImpactXoft          | Product development software                             | n/a               | n/a    | n/a                    | n/a                            | n/a          |
| 03/31/2006               | Constructware       | Construction collaboration                               | n/a               | n/a    | \$45.7                 | n/a                            | n/a          |
| 01/10/2006               | 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          |
| 08/22/2005               | Solid Dynamics      | Kinematics and dynamics technology                       | \$1.3             | \$0.0  | n/a                    | n/a                            | n/a          |
| 07/06/2005               | c-plan              | Geographic information systems                           | n/a               | n/a    | n/a                    | n/a                            | n/a          |
| 03/01/2005               | Compass Systems     | Data management services                                 | n/a               | n/a    | \$17.2                 | n/a                            | n/a          |
| 03/04/2004               | VIA Development     | Engineering automation software                          | n/a               | n/a    | n/a                    | n/a                            | n/a          |
| 02/24/2004               | Mechsoft            | Automated component creation software                    | n/a               | n/a    | n/a                    | n/a                            | n/a          |
| 03/04/2003               | Linius Technologies | CAD connectivity                                         | n/a               | n/a    | n/a                    | n/a                            | n/a          |
| 12/18/2002               | TruEInnovations     | File and data management software                        | n/a               | n/a    | n/a                    | n/a                            | n/a          |
| 08/06/2002               | CAiCE Software      | Surveying and engineering applications                   | n/a               | n/a    | \$10.0                 | n/a                            | n/a          |
| 02/21/2002               | Revit Technology    | AEC parametric building modeler                          | n/a               | n/a    | \$133.0                | n/a                            | n/a          |
| 08/28/2001               | Buzzsaw             | Construction data management                             | n/a               | n/a    | \$15.0                 | n/a                            | n/a          |
| 03/31/1997               | Softdesk            | Integrated AEC software                                  | \$34.5            | n/a    | \$90.6                 | 2.63x                          | n/a          |
| 03/27/1987               | Cadetron            | Solids modeling                                          | n/a               | n/a    | \$6.0                  | n/a                            | n/a          |
| <b>Total High</b>        |                     |                                                          |                   |        |                        | <b>21.67x</b>                  | <b>24.6x</b> |
| <b>Total Low</b>         |                     |                                                          |                   |        |                        | <b>1.00x</b>                   | <b>7.1x</b>  |
| <b>Total Average</b>     |                     |                                                          |                   |        |                        | <b>5.42x</b>                   | <b>16.4x</b> |
| <b>Total Median</b>      |                     |                                                          |                   |        |                        | <b>4.39x</b>                   | <b>16.8x</b> |



# Priority Acquirers & Notable Deals

|                      | (\$ in Millions) |                               | Target Overview                                  |                   |        | Transaction Statistics              |                                |        |
|----------------------|------------------|-------------------------------|--------------------------------------------------|-------------------|--------|-------------------------------------|--------------------------------|--------|
|                      | Announced        | Target                        | Description                                      | Estimated Revenue | EBITDA | Deal Value                          | Deal Value / Estimated Revenue | EBITDA |
| Altair               |                  |                               |                                                  |                   |        |                                     |                                |        |
| Altium               |                  |                               |                                                  |                   |        |                                     |                                |        |
| ANSYS                |                  |                               |                                                  |                   |        |                                     |                                |        |
| Aras                 |                  |                               |                                                  |                   |        |                                     |                                |        |
| Arena Solutions      |                  |                               |                                                  |                   |        |                                     |                                |        |
| Autodesk             |                  |                               |                                                  |                   |        |                                     |                                |        |
| <b>Bentley</b>       |                  |                               |                                                  |                   |        |                                     |                                |        |
| Cadence              |                  |                               |                                                  |                   |        |                                     |                                |        |
| Dassault             |                  |                               |                                                  |                   |        |                                     |                                |        |
| ESI Group            |                  |                               |                                                  |                   |        |                                     |                                |        |
| Gamma Technologies   |                  |                               |                                                  |                   |        |                                     |                                |        |
| Hexagon              |                  |                               |                                                  |                   |        |                                     |                                |        |
| Jama                 |                  |                               |                                                  |                   |        |                                     |                                |        |
| PTC                  |                  |                               |                                                  |                   |        |                                     |                                |        |
| Siemens              |                  |                               |                                                  |                   |        |                                     |                                |        |
| Synopsys             |                  |                               |                                                  |                   |        |                                     |                                |        |
| Zuken                |                  |                               |                                                  |                   |        |                                     |                                |        |
| <b>Bentley</b>       |                  |                               |                                                  |                   |        | Total Disclosed M&A Deal Value: n/a |                                |        |
|                      | 10/21/2019       | Citilabs                      | Mobility analytics platform                      | n/a               | n/a    | n/a                                 | n/a                            | n/a    |
|                      | 10/21/2019       | Orbit GeoSpatial Technologies | Geospatial 3D mapping software                   | n/a               | n/a    | n/a                                 | n/a                            | n/a    |
|                      | 05/13/2019       | Keynetix                      | Geotechnical data management software            | n/a               | n/a    | n/a                                 | n/a                            | n/a    |
|                      | 02/11/2019       | SignCAD Systems               | Traffic sign design software                     | n/a               | n/a    | n/a                                 | n/a                            | n/a    |
|                      | 11/12/2018       | Alworx                        | Machine learning & IoT technologies              | n/a               | n/a    | n/a                                 | n/a                            | n/a    |
|                      | 10/15/2018       | Agency9                       | Advanced digital twin modelling                  | n/a               | n/a    | n/a                                 | n/a                            | n/a    |
|                      | 10/15/2018       | Legion                        | Pedestrian simulation software                   | n/a               | n/a    | n/a                                 | n/a                            | n/a    |
|                      | 06/20/2018       | Synchro Software              | 4D building information modelling                | n/a               | n/a    | n/a                                 | n/a                            | n/a    |
|                      | 04/26/2018       | Plaxis                        | Geotechnical software tools                      | n/a               | n/a    | n/a                                 | n/a                            | n/a    |
|                      | 04/26/2018       | SoilVision Systems            | Software database for geotechnical engineers     | n/a               | n/a    | n/a                                 | n/a                            | n/a    |
|                      | 01/22/2018       | S-Cube Futuretech             | Structural engineering management tools          | n/a               | n/a    | n/a                                 | n/a                            | n/a    |
|                      | 10/09/2017       | ACTION Modulers               | Water Modeling Software Business                 | n/a               | n/a    | n/a                                 | n/a                            | n/a    |
|                      | 11/01/2016       | Comply Serve                  | Infrastructure compliance management             | n/a               | n/a    | n/a                                 | n/a                            | n/a    |
|                      | 09/14/2015       | E-On Software                 | 3D system simulation                             | n/a               | n/a    | n/a                                 | n/a                            | n/a    |
|                      | 03/09/2015       | EADOC                         | Construction project management software         | n/a               | n/a    | n/a                                 | n/a                            | n/a    |
|                      | 02/10/2015       | Acute3D                       | High-resolution 3D modelling                     | n/a               | n/a    | n/a                                 | n/a                            | n/a    |
|                      | 01/13/2015       | C3 Global                     | Asset performance improvement applications       | n/a               | n/a    | n/a                                 | n/a                            | n/a    |
|                      | 09/25/2014       | BLUERIDGE Analytics           | 3D civil / site design software                  | n/a               | n/a    | n/a                                 | n/a                            | n/a    |
|                      | 11/05/2013       | Engineering Systems           | Structural analysis & design software            | n/a               | n/a    | n/a                                 | n/a                            | n/a    |
|                      | 11/12/2012       | EuResearch                    | Software for pressure vessels & exchangers       | n/a               | n/a    | n/a                                 | n/a                            | n/a    |
|                      | 09/18/2012       | IVARA Corporation             | Asset performance management software            | n/a               | n/a    | n/a                                 | n/a                            | n/a    |
|                      | 05/15/2012       | InspectTech Systems           | Mobile inspection & asset management solutions   | n/a               | n/a    | n/a                                 | n/a                            | n/a    |
|                      | 03/07/2012       | Hannappel Software            | CAD software for electrical installations        | n/a               | n/a    | n/a                                 | n/a                            | n/a    |
|                      | 11/08/2011       | Pointools                     | Point cloud conversion applications and plug-ins | n/a               | n/a    | n/a                                 | n/a                            | n/a    |
|                      | 11/08/2011       | Formation Design Systems      | 3D modelling & analysis software                 | n/a               | n/a    | n/a                                 | n/a                            | n/a    |
|                      | 03/02/2011       | Engineering Dynamics          | Offshore simulation software                     | n/a               | n/a    | n/a                                 | n/a                            | n/a    |
|                      | 07/07/2010       | BLUERIDGE Analytics           | 3D civil / site design software                  | n/a               | n/a    | n/a                                 | n/a                            | n/a    |
|                      | 02/09/2010       | Enterprise Informatics        | Document and records management software         | n/a               | n/a    | n/a                                 | n/a                            | n/a    |
|                      | 02/08/2010       | Exor Corporation              | Infrastructure asset management software         | n/a               | n/a    | n/a                                 | n/a                            | n/a    |
|                      | 10/14/2009       | gINT Software                 | Environmental and geotechnical software          | n/a               | n/a    | n/a                                 | n/a                            | n/a    |
| <b>Total High</b>    |                  |                               |                                                  |                   |        |                                     | 21.67x                         | 24.6x  |
| <b>Total Low</b>     |                  |                               |                                                  |                   |        |                                     | 1.00x                          | 7.1x   |
| <b>Total Average</b> |                  |                               |                                                  |                   |        |                                     | 5.42x                          | 16.4x  |
| <b>Total Median</b>  |                  |                               |                                                  |                   |        |                                     | 4.39x                          | 16.8x  |

# Priority Acquirers & Notable Deals

|                    |
|--------------------|
| Altair             |
| Altium             |
| ANSYS              |
| Aras               |
| Arena Solutions    |
| Autodesk           |
| Bentley            |
| Cadence            |
| Dassault           |
| ESI Group          |
| Gamma Technologies |
| Hexagon            |
| Jama               |
| PTC                |
| Siemens            |
| Synopsys           |
| Zuken              |

| (\$ in Millions)      |                          | Target Overview                                          |                   |         | Transaction Statistics |                                |              |
|-----------------------|--------------------------|----------------------------------------------------------|-------------------|---------|------------------------|--------------------------------|--------------|
| Announced             | Target                   | Description                                              | Estimated Revenue | EBITDA  | Deal Value             | Deal Value / Estimated Revenue | EBITDA       |
| <b>Cadence Design</b> |                          | <b>Total Disclosed M&amp;A Deal Value: \$3.4 Billion</b> |                   |         |                        |                                |              |
| 11/01/2017            | nusemi                   | Communications IP Developer                              | n/a               | n/a     | n/a                    | n/a                            | n/a          |
| 07/05/2016            | Rocketick                | Chip verification software                               | n/a               | n/a     | \$38.0                 | n/a                            | n/a          |
| 01/22/2016            | Sibridge Technologies    | Media software designer                                  | n/a               | n/a     | n/a                    | n/a                            | n/a          |
| 06/16/2014            | Jasper Design Automation | Electronic design automation technology                  | n/a               | n/a     | \$139.4                | n/a                            | n/a          |
| 02/19/2014            | Forte Design Systems     | Semiconductor design software                            | n/a               | n/a     | n/a                    | n/a                            | n/a          |
| 02/12/2014            | TranSwitch               | Intellectual Property Service                            | n/a               | n/a     | n/a                    | n/a                            | n/a          |
| 06/13/2013            | Evatronix                | Mixed signal intellectual property developer             | n/a               | n/a     | n/a                    | n/a                            | n/a          |
| 05/23/2013            | Cosmic Circuits          | Silicon based IP cores manufacturer                      | n/a               | n/a     | \$48.0                 | n/a                            | n/a          |
| 04/22/2013            | Tensilica                | Controllers and processor cores for SoC design           | n/a               | n/a     | \$326.0                | n/a                            | n/a          |
| 07/02/2012            | Sigrity                  | Signal and power integration technology provider         | n/a               | n/a     | \$78.5                 | n/a                            | n/a          |
| 07/11/2011            | Azuro                    | Electronic design automation software                    | n/a               | n/a     | n/a                    | n/a                            | n/a          |
| 05/10/2011            | Altos Design Automation  | Electronic data automation service                       | n/a               | n/a     | n/a                    | n/a                            | n/a          |
| 06/17/2010            | Denali Software          | Electronic design automation software                    | \$41.9            | n/a     | \$309.4                | 7.39x                          | n/a          |
| 03/22/2010            | Taray                    | Computer system designer                                 | n/a               | n/a     | n/a                    | n/a                            | n/a          |
| 03/07/2008            | Chip Estimate            | Integrated circuit prediction technology                 | n/a               | n/a     | n/a                    | n/a                            | n/a          |
| 08/15/2007            | Clear Shape Technologies | DFM software                                             | n/a               | n/a     | \$41.3                 | n/a                            | n/a          |
| 07/12/2007            | Invarium                 | Advanced layout print service                            | n/a               | n/a     | n/a                    | n/a                            | n/a          |
| 01/01/2006            | CommandCAD               | Integrated circuits layout optimization                  | n/a               | n/a     | \$25.8                 | n/a                            | n/a          |
| 04/07/2005            | Verisity                 | Verification process automation                          | \$58.0            | (\$5.6) | \$325.4                | 5.61x                          | n/m          |
| 04/08/2004            | Neoliner                 | Analog silicon design software                           | n/a               | n/a     | \$78.1                 | n/a                            | n/a          |
| 01/04/2004            | Q Design Atuomation      | Integrated circuit layout provider                       | n/a               | n/a     | n/a                    | n/a                            | n/a          |
| 08/26/2003            | Verplex Systems          | Functional verification software                         | n/a               | n/a     | \$85.1                 | n/a                            | n/a          |
| 05/07/2003            | K2 Technologies          | Semiconductor design software                            | n/a               | n/a     | n/a                    | n/a                            | n/a          |
| 04/10/2003            | Get2Chip                 | Architectural platform for chip manufacturers            | n/a               | n/a     | n/a                    | n/a                            | n/a          |
| 03/06/2003            | SpinCircuit              | B2B e-commerce portal operator                           | n/a               | n/a     | n/a                    | n/a                            | n/a          |
| 01/15/2003            | Celestry                 | Physical design software                                 | n/a               | n/a     | \$64.4                 | n/a                            | n/a          |
| 11/22/2002            | Antrim Design Systems    | Analog design software                                   | n/a               | n/a     | n/a                    | n/a                            | n/a          |
| 06/27/2002            | Simplex Solutions        | Electronic chip design and verification software         | n/a               | n/a     | \$329.7                | n/a                            | n/a          |
| 04/24/2002            | Plato Design Systems     | Routing and physical design optimization solution        | n/a               | n/a     | \$75.0                 | n/a                            | n/a          |
| 12/20/2001            | Silicon Perspective      | Electronic design automation software                    | n/a               | n/a     | n/a                    | n/a                            | n/a          |
| <b>Total High</b>     |                          |                                                          |                   |         |                        | <b>21.67x</b>                  | <b>24.6x</b> |
| <b>Total Low</b>      |                          |                                                          |                   |         |                        | <b>1.00x</b>                   | <b>7.1x</b>  |
| <b>Total Average</b>  |                          |                                                          |                   |         |                        | <b>5.42x</b>                   | <b>16.4x</b> |
| <b>Total Median</b>   |                          |                                                          |                   |         |                        | <b>4.39x</b>                   | <b>16.8x</b> |

# Priority Acquirers & Notable Deals

|                    |
|--------------------|
| Altair             |
| Altium             |
| ANSYS              |
| Aras               |
| Arena Solutions    |
| Autodesk           |
| Bentley            |
| Cadence            |
| Dassault           |
| ESI Group          |
| Gamma Technologies |
| Hexagon            |
| Jama               |
| PTC                |
| Siemens            |
| Synopsys           |
| Zuken              |

| (\$ in Millions)               |                           | Target Overview                                           |                   |         | Transaction Statistics |                                |              |
|--------------------------------|---------------------------|-----------------------------------------------------------|-------------------|---------|------------------------|--------------------------------|--------------|
| Announced                      | Target                    | Description                                               | Estimated Revenue | EBITDA  | Deal Value             | Deal Value / Estimated Revenue | EBITDA       |
| <b>Cadence Design (Cont'd)</b> |                           | <b>Total Disclosed M&amp;A Deal Value: \$3.4 Billion</b>  |                   |         |                        |                                |              |
| 02/28/2001                     | CadMos Design Technology  | Noise analysis products                                   | n/a               | n/a     | \$105.3                | n/a                            | n/a          |
| 03/22/2000                     | Westport Technology       | IP Development Services                                   | n/a               | n/a     | \$3.5                  | n/a                            | n/a          |
| 12/01/1999                     | Diablo Research Company   | High tech product development services                    | n/a               | n/a     | \$80.8                 | n/a                            | n/a          |
| 07/16/1999                     | OrCAD                     | Electronic design software                                | \$11.6            | \$17.2  | \$122.2                | 10.55x                         | 7.1x         |
| 05/25/1999                     | Quickturn Design Systems  | Level verification solutions                              | n/a               | n/a     | \$253.0                | n/a                            | n/a          |
| 09/30/1998                     | Ambit Design Systems      | EDA software for electronic design                        | n/a               | n/a     | \$255.0                | n/a                            | n/a          |
| 05/07/1997                     | Cooper & Chyan Technology | Semiconductor designer                                    | n/a               | n/a     | \$422.0                | n/a                            | n/a          |
| 12/05/1991                     | Valid Logic               | CAD Equipment Manufacturer                                | n/a               | n/a     | \$200.0                | n/a                            | n/a          |
| 10/09/1989                     | Gateway Design Automation | CAE Software                                              | n/a               | n/a     | n/a                    | n/a                            | n/a          |
| <b>Dassault</b>                |                           | <b>Total Disclosed M&amp;A Deal Value: \$11.0 Billion</b> |                   |         |                        |                                |              |
| 06/12/2019                     | Medidata Solutions        | Cloud-based solutions for clinical development            | \$661.0           | \$85.4  | \$5,763.8              | 8.72x                          | n/m          |
| 03/05/2019                     | Argosim                   | System requirements validation software                   | n/a               | n/a     | n/a                    | n/a                            | n/a          |
| 02/11/2019                     | Trace Software (Assets)   | Electrical design and automation software                 | n/a               | n/a     | n/a                    | n/a                            | n/a          |
| 12/11/2018                     | IQMS                      | Mid-market manufacturing ERP / MES                        | \$56.0            | n/a     | \$425.0                | 7.59x                          | n/a          |
| 06/14/2018                     | Centric Software          | Lifecycle 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          |
| 09/28/2017                     | Exa Corporation           | Simulation software for vehicle manufacturers             | \$72.7            | \$1.5   | \$400.3                | 5.51x                          | n/m          |
| 06/20/2017                     | Outscale                  | Cloud security and operations management                  | n/a               | n/a     | n/a                    | n/a                            | n/a          |
| 06/01/2017                     | AITAC                     | Marine and offshore engineering software                  | n/a               | n/a     | n/a                    | n/a                            | n/a          |
| 12/09/2016                     | Xflow CFD                 | Dynamic fluid flow simulation                             | n/a               | n/a     | n/a                    | n/a                            | n/a          |
| 07/21/2016                     | Computer Simulation       | Multiphysics simulation                                   | \$51.2            | n/a     | \$247.3                | 4.83x                          | n/a          |
| 06/02/2016                     | Ortems                    | Production scheduling and dispatching                     | \$5.4             | n/a     | n/a                    | n/a                            | n/a          |
| 04/01/2016                     | 3DPLM Software            | Product development and QA                                | n/a               | n/a     | n/a                    | n/a                            | n/a          |
| 04/23/2015                     | Modelon                   | Transportation & mobility modeling                        | n/a               | n/a     | n/a                    | n/a                            | n/a          |
| 09/09/2014                     | Quintiq                   | Production, logistics, and workforce                      | \$97.6            | n/a     | \$322.7                | 3.31x                          | n/a          |
| 07/10/2014                     | Simpack                   | Multi-body industrial simulation                          | n/a               | n/a     | n/a                    | n/a                            | n/a          |
| 01/01/2014                     | Accelrys                  | Process discovery & simulation                            | \$168.5           | (\$2.2) | \$750.0                | 4.45x                          | n/m          |
| 12/05/2013                     | RTT                       | 3D visualization technology                               | \$111.1           | \$9.0   | \$274.1                | 2.47x                          | n/m          |
| 09/04/2013                     | Safety Technology         | Product durability simulation                             | n/a               | n/a     | n/a                    | n/a                            | n/a          |
| <b>Total High</b>              |                           |                                                           |                   |         |                        | <b>21.67x</b>                  | <b>24.6x</b> |
| <b>Total Low</b>               |                           |                                                           |                   |         |                        | <b>1.00x</b>                   | <b>7.1x</b>  |
| <b>Total Average</b>           |                           |                                                           |                   |         |                        | <b>5.42x</b>                   | <b>16.4x</b> |
| <b>Total Median</b>            |                           |                                                           |                   |         |                        | <b>4.39x</b>                   | <b>16.8x</b> |

# Priority Acquirers & Notable Deals

|                    |
|--------------------|
| Altair             |
| Altium             |
| ANSYS              |
| Aras               |
| Arena Solutions    |
| Autodesk           |
| Bentley            |
| Cadence            |
| <b>Dassault</b>    |
| ESI Group          |
| Gamma Technologies |
| Hexagon            |
| Jama               |
| PTC                |
| Siemens            |
| Synopsys           |
| Zuken              |

| (\$ in Millions)         |                           | Target Overview                                           |                   |          | Transaction Statistics |                                |              |
|--------------------------|---------------------------|-----------------------------------------------------------|-------------------|----------|------------------------|--------------------------------|--------------|
| Announced                | Target                    | Description                                               | Estimated Revenue | EBITDA   | Deal Value             | Deal Value / Estimated Revenue | EBITDA       |
| <b>Dassault (Cont'd)</b> |                           | <b>Total Disclosed M&amp;A Deal Value: \$11.0 Billion</b> |                   |          |                        |                                |              |
| 07/25/2013               | SFE                       | Transportation & mobility modeling                        | n/a               | n/a      | n/a                    | n/a                            | n/a          |
| 07/02/2013               | Apriso                    | Manufacturing operations execution                        | n/a               | n/a      | \$205.0                | n/a                            | n/a          |
| 04/25/2013               | Archiveo                  | 3D images & maps                                          | n/a               | n/a      | n/a                    | n/a                            | n/a          |
| 04/25/2013               | Fe-Design                 | Non-parametric optimization                               | n/a               | n/a      | n/a                    | n/a                            | n/a          |
| 04/18/2013               | Simpoe                    | Plastic injection-molding simulation                      | n/a               | n/a      | n/a                    | n/a                            | n/a          |
| 01/07/2013               | SquareClock               | 3D space planning                                         | n/a               | n/a      | n/a                    | n/a                            | n/a          |
| 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          |
| 07/11/2012               | Gemcom                    | Supply chain planning and optimization                    | \$80.4            | n/a      | \$354.9                | 4.41x                          | n/a          |
| 02/09/2012               | 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          |
| 10/04/2011               | Simulayt                  | Draping simulation technology                             | n/a               | n/a      | n/a                    | n/a                            | n/a          |
| 04/27/2011               | Enginuity PLM             | Chemical product development                              | n/a               | n/a      | n/a                    | n/a                            | n/a          |
| 03/17/2011               | Intercim                  | Supply chain operations management                        | n/a               | n/a      | \$36.5                 | n/a                            | n/a          |
| 10/01/2010               | Inceptra LLC              | Product lifecycle management solutions                    | n/a               | n/a      | n/a                    | n/a                            | n/a          |
| 06/22/2010               | Geensoft                  | Embedded systems development                              | n/a               | n/a      | \$6.7                  | n/a                            | n/a          |
| 06/08/2010               | Exalead                   | Unified search platform                                   | n/a               | n/a      | \$164.9                | n/a                            | n/a          |
| 04/01/2010               | IBM (PLM)                 | PLM sales & support operations                            | n/a               | n/a      | \$600.0                | n/a                            | n/a          |
| 07/21/2008               | Engineous                 | Process integration & design software                     | n/a               | n/a      | \$40.0                 | n/a                            | n/a          |
| 01/07/2008               | Deneb Robotics            | Multi-computer manufacturing CAD                          | n/a               | n/a      | \$105.0                | n/a                            | n/a          |
| 09/24/2007               | Seemage                   | Automotive & aerospace ALM                                | n/a               | n/a      | n/a                    | n/a                            | n/a          |
| 06/12/2007               | ICEM                      | Automotive & industrial visualization                     | n/a               | n/a      | \$108.2                | n/a                            | n/a          |
| 05/11/2006               | MatrixOne                 | Collaborative PLM                                         | \$135.5           | (\$18.2) | \$410.0                | 3.03x                          | n/m          |
| 10/04/2005               | Abaqus                    | Advanced finite element analysis                          | \$100.0           | n/a      | \$413.0                | 4.13x                          | n/a          |
| 07/25/2005               | Virtools                  | 3D application development                                | \$3.1             | n/a      | \$14.5                 | 4.63x                          | n/a          |
| 11/01/2000               | Spatial                   | Data translation and visualization technology             | n/a               | n/a      | n/a                    | n/a                            | n/a          |
| 01/01/2000               | SRAC                      | CAD analysis programs                                     | n/a               | n/a      | \$22.0                 | n/a                            | n/a          |
| 07/29/1997               | Solidworks                | Mechanical design software                                | n/a               | n/a      | \$325.0                | n/a                            | n/a          |
| <b>Total High</b>        |                           |                                                           |                   |          |                        | <b>21.67x</b>                  | <b>24.6x</b> |
| <b>Total Low</b>         |                           |                                                           |                   |          |                        | <b>1.00x</b>                   | <b>7.1x</b>  |
| <b>Total Average</b>     |                           |                                                           |                   |          |                        | <b>5.42x</b>                   | <b>16.4x</b> |
| <b>Total Median</b>      |                           |                                                           |                   |          |                        | <b>4.39x</b>                   | <b>16.8x</b> |

# Priority Acquirers & Notable Deals

|                    |
|--------------------|
| Altair             |
| Altium             |
| ANSYS              |
| Aras               |
| Arena Solutions    |
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| Bentley            |
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| Dassault           |
| ESI Group          |
| Gamma Technologies |
| Hexagon            |
| Jama               |
| PTC                |
| Siemens            |
| Synopsys           |
| Zuken              |

| (\$ in Millions)          |                              | Target Overview                                           |                   |        | Transaction Statistics |                                |        |
|---------------------------|------------------------------|-----------------------------------------------------------|-------------------|--------|------------------------|--------------------------------|--------|
| Announced                 | Target                       | Description                                               | Estimated Revenue | EBITDA | Deal Value             | Deal Value / Estimated Revenue | EBITDA |
| <b>ESI Group</b>          |                              | <b>Total Disclosed M&amp;A Deal Value: \$35.7 Million</b> |                   |        |                        |                                |        |
| 02/27/2017                | Scilab Enterprises           | Numerical computation platform                            | n/a               | n/a    | n/a                    | n/a                            | n/a    |
| 09/12/2016                | Correct Checks               | Background screening services                             | n/a               | n/a    | n/a                    | n/a                            | n/a    |
| 02/08/2016                | Mineset                      | Technological data management                             | n/a               | n/a    | \$4.7                  | n/a                            | n/a    |
| 01/06/2016                | ITI                          | Simulation tools & software                               | n/a               | n/a    | \$19.3                 | n/a                            | n/a    |
| 05/13/2015                | Amoeba Technologies          | Cooling simulation & design optimization                  | n/a               | n/a    | n/a                    | n/a                            | n/a    |
| 04/15/2015                | Ciespace                     | Web-based CAE modeling solutions                          | n/a               | n/a    | n/a                    | n/a                            | n/a    |
| 04/01/2015                | Picviz Labs                  | Data mining & cybersecurity services                      | n/a               | n/a    | n/a                    | n/a                            | n/a    |
| 03/27/2015                | Civitec                      | Embedded perception system design                         | n/a               | n/a    | n/a                    | n/a                            | n/a    |
| 02/12/2014                | Cam Mechanical Solutions     | Technical assistance services                             | n/a               | n/a    | n/a                    | n/a                            | n/a    |
| 10/24/2013                | CyDesign Labs                | Modelling systems for engineers                           | n/a               | n/a    | n/a                    | n/a                            | n/a    |
| 09/24/2012                | OpenCFD                      | Open source CFD software package                          | n/a               | n/a    | \$3.1                  | n/a                            | n/a    |
| 12/13/2011                | Efield                       | Integrated modelling & simulation environments            | \$0.5             | n/a    | n/a                    | n/a                            | n/a    |
| 08/16/2011                | ICIDO                        | Virtual reality engineering solutions                     | n/a               | n/a    | n/a                    | n/a                            | n/a    |
| 04/26/2011                | Comet Technology             | Vibro-acoustic simulation software                        | n/a               | n/a    | n/a                    | n/a                            | n/a    |
| 12/01/2008                | Mindware Engineering         | Engineering & customized software services                | \$5.6             | n/a    | \$5.6                  | 1.00x                          | n/a    |
| 12/01/2008                | Vdot                         | Project management & execution platform                   | n/a               | n/a    | n/a                    | n/a                            | n/a    |
| 08/01/2006                | ATE Technology International | Contract for difference (CFD) product distributor         | n/a               | n/a    | n/a                    | n/a                            | n/a    |
| 09/18/2002                | Vibro-Acoustic Sciences      | Digital high-frequency noise simulation software          | n/a               | n/a    | \$3.0                  | n/a                            | n/a    |
| 08/17/2001                | Liquid Process Performance   | Materials & composites simulation software                | n/a               | n/a    | n/a                    | n/a                            | n/a    |
| <b>Gamma Technologies</b> |                              | <b>Total Disclosed M&amp;A Deal Value: n/a</b>            |                   |        |                        |                                |        |
| 02/28/2018                | AutoLion                     | Lithium-ion battery simulation software                   | n/a               | n/a    | n/a                    | n/a                            | n/a    |
| <b>Hexagon</b>            |                              | <b>Total Disclosed M&amp;A Deal Value: \$4.7 Billion</b>  |                   |        |                        |                                |        |
| 06/24/2019                | AMendate                     | Generative design for additive manufacturing              | n/a               | n/a    | n/a                    | n/a                            | n/a    |
| 02/25/2019                | Thermopylae                  | Govt. & defense geospatial applications                   | \$20.0            | n/a    | n/a                    | n/a                            | n/a    |
| 01/17/2019                | j5 International             | Operational risk management software                      | n/a               | n/a    | n/a                    | n/a                            | n/a    |
| 01/01/2019                | Etalon                       | Machine / equipment calibration solutions                 | n/a               | n/a    | n/a                    | n/a                            | n/a    |
| 10/23/2018                | Bricsys                      | CAD software for AEC market                               | \$14.7            | \$1.5  | n/a                    | n/a                            | n/a    |
| 09/14/2018                | External-Array Software      | Metrology software for CMM manufacturers                  | n/a               | n/a    | n/a                    | n/a                            | n/a    |
| <b>Total High</b>         |                              |                                                           |                   |        |                        | 21.67x                         | 24.6x  |
| <b>Total Low</b>          |                              |                                                           |                   |        |                        | 1.00x                          | 7.1x   |
| <b>Total Average</b>      |                              |                                                           |                   |        |                        | 5.42x                          | 16.4x  |
| <b>Total Median</b>       |                              |                                                           |                   |        |                        | 4.39x                          | 16.8x  |

# Priority Acquirers & Notable Deals

|                    | (\$ in Millions) |                                 | Target Overview                                    |                                               |        | Transaction Statistics |                                |        |
|--------------------|------------------|---------------------------------|----------------------------------------------------|-----------------------------------------------|--------|------------------------|--------------------------------|--------|
|                    | Announced        | Target                          | Description                                        | Estimated Revenue                             | EBITDA | Deal Value             | Deal Value / Estimated Revenue | EBITDA |
| Altair             |                  |                                 |                                                    |                                               |        |                        |                                |        |
| Altium             |                  |                                 |                                                    |                                               |        |                        |                                |        |
| ANSYS              |                  |                                 |                                                    |                                               |        |                        |                                |        |
| Aras               |                  |                                 |                                                    |                                               |        |                        |                                |        |
| Arena Solutions    |                  |                                 |                                                    |                                               |        |                        |                                |        |
| Autodesk           |                  |                                 |                                                    |                                               |        |                        |                                |        |
| Bentley            |                  |                                 |                                                    |                                               |        |                        |                                |        |
| Cadence            |                  |                                 |                                                    |                                               |        |                        |                                |        |
| Dassault           |                  |                                 |                                                    |                                               |        |                        |                                |        |
| ESI Group          |                  |                                 |                                                    |                                               |        |                        |                                |        |
| Gamma Technologies |                  |                                 |                                                    |                                               |        |                        |                                |        |
| Hexagon            |                  |                                 |                                                    |                                               |        |                        |                                |        |
| Jama               |                  |                                 |                                                    |                                               |        |                        |                                |        |
| PTC                |                  |                                 |                                                    |                                               |        |                        |                                |        |
| Siemens            |                  |                                 |                                                    |                                               |        |                        |                                |        |
| Synopsys           |                  |                                 |                                                    |                                               |        |                        |                                |        |
| Zuken              |                  |                                 |                                                    |                                               |        |                        |                                |        |
| Hexagon (Cont'd)   |                  |                                 |                                                    | Total Disclosed M&A Deal Value: \$4.7 Billion |        |                        |                                |        |
|                    | 06/21/2018       | Geocloud (Assets)               | Ski slope infrastructure measurement               | n/a                                           | n/a    | n/a                    | n/a                            | n/a    |
|                    | 06/19/2018       | SPRING Technologies             | Machine tool simulation & verification software    | \$9.5                                         | \$0.4  | n/a                    | n/a                            | n/a    |
|                    | 06/02/2018       | AutonomouStuff                  | Integrated autonomous vehicle solutions            | \$45.0                                        | n/a    | n/a                    | n/a                            | n/a    |
|                    | 05/15/2018       | Nextsense                       | Non-contact profile measurement & inspection       | \$13.5                                        | n/a    | n/a                    | n/a                            | n/a    |
|                    | 04/23/2018       | Licom Systems                   | German distributor of Alphacam CAM software        | n/a                                           | n/a    | n/a                    | n/a                            | n/a    |
|                    | 04/05/2018       | ProCAM Group                    | Italian distributor of Vero Software               | n/a                                           | n/a    | n/a                    | n/a                            | n/a    |
|                    | 03/15/2018       | AGTEK                           | Construction project modeling software             | n/a                                           | n/a    | n/a                    | n/a                            | n/a    |
|                    | 01/22/2018       | Plant Design Solutions          | Distributor of CADWorx & Analysis software         | n/a                                           | n/a    | n/a                    | n/a                            | n/a    |
|                    | 01/12/2018       | Industrial Business Solutions   | Digital project completion & commissioning         | n/a                                           | n/a    | n/a                    | n/a                            | n/a    |
|                    | 10/04/2017       | Luciad                          | Real-time geospatial information visualization     | \$21.7                                        | n/a    | n/a                    | n/a                            | n/a    |
|                    | 06/28/2017       | InfraMeasure                    | Laser-based rail measurement system                | n/a                                           | n/a    | n/a                    | n/a                            | n/a    |
|                    | 06/13/2017       | DST Computer Services           | Pipe stress analysis software                      | n/a                                           | n/a    | n/a                    | n/a                            | n/a    |
|                    | 06/05/2017       | FASys Industrie                 | System integration specialist for production tasks | n/a                                           | n/a    | n/a                    | n/a                            | n/a    |
|                    | 05/15/2017       | VIRES                           | Driver-assisted & autonomous simulation            | n/a                                           | n/a    | n/a                    | n/a                            | n/a    |
|                    | 05/05/2017       | Catavolt                        | Mobile app development & edge computing            | n/a                                           | n/a    | n/a                    | n/a                            | n/a    |
|                    | 04/26/2017       | MSC Software                    | Computer aided engineering software                | \$230.0                                       | n/a    | \$834.0                | 3.63x                          | n/a    |
|                    | 01/18/2017       | MiPlan Consulting               | Mobile mine production management software         | n/a                                           | n/a    | n/a                    | n/a                            | n/a    |
|                    | 09/26/2016       | GISquadrat                      | Location-based geospatial software                 | n/a                                           | n/a    | n/a                    | n/a                            | n/a    |
|                    | 08/31/2016       | Apodius                         | Composite component measurement solutions          | n/a                                           | n/a    | n/a                    | n/a                            | n/a    |
|                    | 08/15/2016       | Multivista                      | Construction visual documentation services         | n/a                                           | n/a    | n/a                    | n/a                            | n/a    |
|                    | 08/01/2016       | p3d systems                     | Laser scanning system & 3D modeling software       | n/a                                           | n/a    | n/a                    | n/a                            | n/a    |
|                    | 06/15/2016       | Ingegneria dei Sistemi (Assets) | Radar solutions for structural health monitoring   | \$20.0                                        | n/a    | n/a                    | n/a                            | n/a    |
|                    | 06/13/2016       | Nestix                          | Prefabrication and production control software     | n/a                                           | n/a    | n/a                    | n/a                            | n/a    |
|                    | 03/31/2016       | AICON 3D Systems                | Industrial 3D optical measuring systems            | \$21.1                                        | \$1.8  | n/a                    | n/a                            | n/a    |
|                    | 03/23/2016       | Forming Technologies (FTI)      | Manufacturing software for sheet metal forming     | n/a                                           | n/a    | n/a                    | n/a                            | n/a    |
|                    | 03/02/2016       | M&P Survey Equipment            | Surveying equipment & construction lasers          | n/a                                           | n/a    | n/a                    | n/a                            | n/a    |
|                    | 02/16/2016       | Sigma Space                     | Optoelectronic aerospace instrumentation           | \$25.0                                        | n/a    | n/a                    | n/a                            | n/a    |
|                    | 01/13/2016       | SCCS                            | Provider of survey equipment for Leica             | \$15.0                                        | \$7.8  | n/a                    | n/a                            | n/a    |
|                    | 04/07/2015       | Q-Das                           | Statistical process control (SPC) services         | n/a                                           | n/a    | n/a                    | n/a                            | n/a    |
|                    | 07/21/2014       | Vero Software                   | CAD/CAM software                                   | \$106.2                                       | n/a    | n/a                    | n/a                            | n/a    |
| Total High         |                  |                                 |                                                    |                                               |        |                        | 21.67x                         | 24.6x  |
| Total Low          |                  |                                 |                                                    |                                               |        |                        | 1.00x                          | 7.1x   |
| Total Average      |                  |                                 |                                                    |                                               |        |                        | 5.42x                          | 16.4x  |
| Total Median       |                  |                                 |                                                    |                                               |        |                        | 4.39x                          | 16.8x  |

# Priority Acquirers & Notable Deals

|                                               | (\$ in Millions) |                               | Target Overview                                  |                   |        | Transaction Statistics |                                |        |
|-----------------------------------------------|------------------|-------------------------------|--------------------------------------------------|-------------------|--------|------------------------|--------------------------------|--------|
|                                               | Announced        | Target                        | Description                                      | Estimated Revenue | EBITDA | Deal Value             | Deal Value / Estimated Revenue | EBITDA |
| Altair                                        |                  |                               |                                                  |                   |        |                        |                                |        |
| Altium                                        |                  |                               |                                                  |                   |        |                        |                                |        |
| ANSYS                                         |                  |                               |                                                  |                   |        |                        |                                |        |
| Aras                                          |                  |                               |                                                  |                   |        |                        |                                |        |
| Arena Solutions                               |                  |                               |                                                  |                   |        |                        |                                |        |
| Autodesk                                      |                  |                               |                                                  |                   |        |                        |                                |        |
| Bentley                                       |                  |                               |                                                  |                   |        |                        |                                |        |
| Cadence                                       |                  |                               |                                                  |                   |        |                        |                                |        |
| Dassault                                      |                  |                               |                                                  |                   |        |                        |                                |        |
| ESI Group                                     |                  |                               |                                                  |                   |        |                        |                                |        |
| Gamma Technologies                            |                  |                               |                                                  |                   |        |                        |                                |        |
| Hexagon                                       |                  |                               |                                                  |                   |        |                        |                                |        |
| Jama                                          |                  |                               |                                                  |                   |        |                        |                                |        |
| PTC                                           |                  |                               |                                                  |                   |        |                        |                                |        |
| Siemens                                       |                  |                               |                                                  |                   |        |                        |                                |        |
| Synopsys                                      |                  |                               |                                                  |                   |        |                        |                                |        |
| Zuken                                         |                  |                               |                                                  |                   |        |                        |                                |        |
| Hexagon (Cont'd)                              |                  |                               |                                                  |                   |        |                        |                                |        |
| Total Disclosed M&A Deal Value: \$4.7 Billion |                  |                               |                                                  |                   |        |                        |                                |        |
|                                               | 07/16/2014       | Geodata Diffusion             | Real time kinematic correction services          | \$4.0             | \$1.8  | n/a                    | n/a                            | n/a    |
|                                               | 06/11/2014       | North West Geomatics          | Digital remote sensing/aerial photography        | \$13.5            | n/a    | n/a                    | n/a                            | n/a    |
|                                               | 06/02/2014       | iLab Sistemas                 | Planning/optimization for agro-businesses        | n/a               | n/a    | n/a                    | n/a                            | n/a    |
|                                               | 06/01/2014       | Mintec                        | Software services for mining industry            | n/a               | n/a    | n/a                    | n/a                            | n/a    |
|                                               | 04/30/2014       | Arvus Tecnologia              | Software services for agro businesses            | n/a               | n/a    | n/a                    | n/a                            | n/a    |
|                                               | 03/14/2014       | Veripos                       | Satellite position software/hardware/services    | \$44.0            | \$15.8 | n/a                    | n/a                            | n/a    |
|                                               | 03/13/2014       | SAFEmine                      | Traffic safety products and services             | \$17.2            | n/a    | n/a                    | n/a                            | n/a    |
|                                               | 02/18/2014       | Aibotix                       | Manufacturer of flying robots                    | n/a               | n/a    | n/a                    | n/a                            | n/a    |
|                                               | 12/03/2013       | Pixis                         | Provider of digital engineering services         | n/a               | n/a    | n/a                    | n/a                            | n/a    |
|                                               | 10/07/2013       | Devex Tecnologia e Sistemas   | Mine-management software services                | n/a               | n/a    | n/a                    | n/a                            | n/a    |
|                                               | 06/05/2013       | Geosoft                       | Software for cartography/photogrammetry          | n/a               | n/a    | n/a                    | n/a                            | n/a    |
|                                               | 05/13/2013       | Navegeokom                    | Surveying and mapping products                   | n/a               | n/a    | n/a                    | n/a                            | n/a    |
|                                               | 04/15/2013       | Manfra & Companhia            | Topography software systems                      | \$9.2             | n/a    | n/a                    | n/a                            | n/a    |
|                                               | 01/28/2013       | LISTECH                       | Developer of construction software               | n/a               | n/a    | n/a                    | n/a                            | n/a    |
|                                               | 01/08/2013       | New River Kinematics          | 3D analysis software for metrology application   | \$13.3            | n/a    | n/a                    | n/a                            | n/a    |
|                                               | 12/03/2012       | GTA Geoinformatik             | Provider of 3D city mapping technologies         | n/a               | n/a    | n/a                    | n/a                            | n/a    |
|                                               | 01/19/2012       | Microsurvey Software          | Developer of surveying and mapping software      | \$2.6             | n/a    | n/a                    | n/a                            | n/a    |
|                                               | 08/19/2011       | Sisgraph                      | Supplier of engineering and geospatial software  | \$14.3            | n/a    | n/a                    | n/a                            | n/a    |
|                                               | 07/01/2010       | Intergraph                    | Engineering and geospatial software              | n/a               | n/a    | \$2,130.0              | n/a                            | n/a    |
|                                               | 12/10/2009       | MYCRONA                       | Manufacturer of multi-sensor machines            | n/a               | n/a    | n/a                    | n/a                            | n/a    |
|                                               | 10/05/2009       | 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    |
|                                               | 07/24/2008       | Serein Metrology              | Manufacturer of precision measuring equipment    | \$4.0             | n/a    | n/a                    | n/a                            | n/a    |
|                                               | 06/27/2008       | m&h Group                     | Manufacturer of machine tool probes              | \$13.3            | n/a    | n/a                    | n/a                            | n/a    |
|                                               | 06/24/2008       | Messtechnik Wetzlar           | Software for quality control of mechanical parts | \$3.3             | n/a    | n/a                    | n/a                            | n/a    |
|                                               | 06/23/2008       | Viewserve                     | Web based fleet management system                | \$1.1             | n/a    | n/a                    | n/a                            | n/a    |
|                                               | 06/09/2008       | Advanced Metrology Solutions  | Distributor of precision metrology products      | \$4.5             | n/a    | n/a                    | n/a                            | n/a    |
|                                               | 02/26/2008       | Santiago & Cintra             | Positioning applications for construction/agro   | \$20.7            | n/a    | n/a                    | n/a                            | n/a    |
|                                               | 02/07/2008       | Haselbach Surveying Instrumer | Distributor and seller of surveying equipment    | \$750.0           | n/a    | n/a                    | n/a                            | n/a    |
|                                               | 02/07/2008       | Surveyors Service Company     | Distributor of surveying equipment               | n/a               | n/a    | n/a                    | n/a                            | n/a    |
| Total High                                    |                  |                               |                                                  |                   |        |                        | 21.67x                         | 24.6x  |
| Total Low                                     |                  |                               |                                                  |                   |        |                        | 1.00x                          | 7.1x   |
| Total Average                                 |                  |                               |                                                  |                   |        |                        | 5.42x                          | 16.4x  |
| Total Median                                  |                  |                               |                                                  |                   |        |                        | 4.39x                          | 16.8x  |

# Priority Acquirers & Notable Deals

|                    |
|--------------------|
| Altair             |
| Altium             |
| ANSYS              |
| Aras               |
| Arena Solutions    |
| Autodesk           |
| Bentley            |
| Cadence            |
| Dassault           |
| ESI Group          |
| Gamma Technologies |
| Hexagon            |
| Jama               |
| PTC                |
| Siemens            |
| Synopsys           |
| Zuken              |

| (\$ in Millions)        |                                | Target Overview                                          |                   |        | Transaction Statistics |                                |              |
|-------------------------|--------------------------------|----------------------------------------------------------|-------------------|--------|------------------------|--------------------------------|--------------|
| Announced               | Target                         | Description                                              | Estimated Revenue | EBITDA | Deal Value             | Deal Value / Estimated Revenue | EBITDA       |
| <b>Hexagon (Cont'd)</b> |                                | <b>Total Disclosed M&amp;A Deal Value: \$4.7 Billion</b> |                   |        |                        |                                |              |
| 12/01/2007              | Leica Geosystems Hungary       | Surveying and construction equipment                     | n/a               | n/a    | n/a                    | n/a                            | n/a          |
| 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          |
| 09/04/2007              | CogniTens                      | 3D non-contact measurement systems                       | \$8.0             | n/a    | \$20.0                 | 2.50x                          | n/a          |
| 07/24/2007              | Jingjiang Measuring Tools      | Manufacturer of linear measuring tools                   | \$10.9            | n/a    | n/a                    | n/a                            | n/a          |
| 06/19/2007              | IONIC Software                 | Software for geospatial information systems              | \$12.6            | n/a    | n/a                    | n/a                            | n/a          |
| 05/22/2007              | Transmetal                     | Distributor of metrology products                        | \$5.4             | n/a    | n/a                    | n/a                            | n/a          |
| 05/18/2007              | Jigsaw Technologies            | GPS-based machine automation software                    | \$9.0             | n/a    | n/a                    | n/a                            | n/a          |
| 05/16/2007              | GAMFI International            | Construction laser tools and instruments                 | \$1.5             | n/a    | n/a                    | n/a                            | n/a          |
| 05/09/2007              | D&P Systems                    | Developer of multidimensional systems                    | n/a               | n/a    | n/a                    | n/a                            | n/a          |
| 05/01/2007              | Allen Precision Equipment      | Surveying and construction products                      | \$24.0            | n/a    | n/a                    | n/a                            | n/a          |
| 04/13/2007              | Topolaser System               | Distributor of survey equipment                          | n/a               | n/a    | n/a                    | n/a                            | n/a          |
| 04/01/2007              | Acquis                         | Data editing and management software                     | \$3.0             | n/a    | n/a                    | n/a                            | n/a          |
| 01/15/2007              | Svensk ByggnadsGeodesi         | Software systems for measuring and planning              | \$6.8             | \$0.8  | n/a                    | n/a                            | n/a          |
| 01/01/2007              | Willi Geßwein                  | Manufacturer of surveying instruments                    | \$1.3             | n/a    | n/a                    | n/a                            | n/a          |
| 10/01/2005              | Leica Geosystems               | Surveying and mapping equipment                          | n/a               | n/a    | \$1,140.0              | n/a                            | n/a          |
| 05/01/2002              | Newport                        | Metrological tools and technology                        | n/a               | n/a    | n/a                    | n/a                            | n/a          |
| 05/03/2001              | Brown & Sharpe                 | Manufacturer of metrological tools                       | n/a               | n/a    | \$170.0                | n/a                            | n/a          |
| <b>Jama Software</b>    |                                | <b>Total Disclosed M&amp;A Deal Value: n/a</b>           |                   |        |                        |                                |              |
| 01/16/2018              | Notion Data                    | Product analytics platform                               | n/a               | n/a    | n/a                    | n/a                            | n/a          |
| <b>PTC</b>              |                                | <b>Total Disclosed M&amp;A Deal Value: \$2.1 Billion</b> |                   |        |                        |                                |              |
| 11/01/2019              | Onshape                        | Cloud-based 3D CAD platform                              | n/a               | n/a    | \$470.0                | n/a                            | n/a          |
| 06/11/2019              | TWNKLS                         | Augmented reality solutions & services                   | n/a               | n/a    | n/a                    | n/a                            | n/a          |
| 04/26/2019              | Factoria Solutions             | Manufacturing execution & operations mgmt.               | n/a               | n/a    | n/a                    | n/a                            | n/a          |
| 11/19/2018              | Frustum                        | Topology optimization & generative design                | n/a               | n/a    | \$69.6                 | n/a                            | n/a          |
| 02/16/2018              | Waypoint Labs                  | Augmented reality for frontline workers                  | \$20.0            | n/a    | n/a                    | n/a                            | n/a          |
| <b>Total High</b>       |                                |                                                          |                   |        |                        | <b>21.67x</b>                  | <b>24.6x</b> |
| <b>Total Low</b>        |                                |                                                          |                   |        |                        | <b>1.00x</b>                   | <b>7.1x</b>  |
| <b>Total Average</b>    |                                |                                                          |                   |        |                        | <b>5.42x</b>                   | <b>16.4x</b> |
| <b>Total Median</b>     |                                |                                                          |                   |        |                        | <b>4.39x</b>                   | <b>16.8x</b> |



# Priority Acquirers & Notable Deals

|                    |
|--------------------|
| Altair             |
| Altium             |
| ANSYS              |
| Aras               |
| Arena Solutions    |
| Autodesk           |
| Bentley            |
| Cadence            |
| Dassault           |
| ESI Group          |
| Gamma Technologies |
| Hexagon            |
| Jama               |
| PTC                |
| Siemens            |
| Synopsys           |
| Zuken              |

| (\$ in Millions) |                        | Target Overview                               |                   |        | Transaction Statistics |                                |        |
|------------------|------------------------|-----------------------------------------------|-------------------|--------|------------------------|--------------------------------|--------|
| Announced        | Target                 | Description                                   | Estimated Revenue | EBITDA | Deal Value             | Deal Value / Estimated Revenue | EBITDA |
| PTC (Cont'd)     |                        | Total Disclosed M&A Deal Value: \$2.6 Billion |                   |        |                        |                                |        |
| 01/12/2016       | Kepware                | Manufacturing device connectivity             | \$20.0            | n/a    | \$118.0                | 5.90x                          | n/a    |
| 11/03/2015       | Vuforia                | Vision-based AR platform                      | n/a               | n/a    | \$64.8                 | n/a                            | n/a    |
| 05/05/2015       | ColdLight Solutions    | Machine learning predictive analytics         | \$7.1             | n/a    | \$103.8                | 14.56x                         | n/a    |
| 01/01/2015       | Caugmate               | Augmented reality technologies services       | n/a               | n/a    | n/a                    | n/a                            | n/a    |
| 07/23/2014       | ITA Holdings           | Sensor connectivity                           | n/a               | n/a    | \$170.0                | n/a                            | n/a    |
| 07/01/2014       | Atego                  | Model-based systems applications              | \$20.0            | n/a    | \$49.3                 | 2.47x                          | n/a    |
| 12/30/2013       | ThingWorx              | IoT platform for machines                     | \$6.0             | n/a    | \$130.0                | 21.67x                         | n/a    |
| 09/10/2013       | NetIDEAS               | Product development and PLM                   | \$1.0             | n/a    | \$20.0                 | 20.00x                         | n/a    |
| 07/16/2013       | Enigma                 | Manufacturing content management              | n/a               | n/a    | \$10.0                 | n/a                            | n/a    |
| 10/02/2012       | Servigistics           | Strategic service management                  | \$80.0            | n/a    | \$220.0                | 2.75x                          | n/a    |
| 09/06/2011       | 4CS                    | Warranty lifecycle management                 | n/a               | n/a    | \$14.9                 | n/a                            | n/a    |
| 01/01/2011       | Mortice Kern Systems   | Configuration management software             | \$67.9            | \$10.1 | \$304.0                | 4.48x                          | n/m    |
| 02/08/2010       | Planet Metrics         | Carbon information management                 | n/a               | n/a    | n/a                    | n/a                            | n/a    |
| 06/08/2009       | Relux                  | Reliability analysis software                 | n/a               | n/a    | \$24.3                 | n/a                            | n/a    |
| 02/12/2009       | Synapsis               | Manufacturing supply chain optimization       | n/a               | n/a    | \$7.5                  | n/a                            | n/a    |
| 12/10/2008       | Synapsis Technology    | Software applications and consulting services | n/a               | n/a    | \$7.5                  | n/a                            | n/a    |
| 02/07/2008       | Digital Human          | Human simulation model                        | n/a               | n/a    | \$1.1                  | n/a                            | n/a    |
| 12/03/2007       | CoCreate Software      | Flexible CAD & PLM for electronics            | \$78.0            | n/a    | \$247.5                | 3.17x                          | n/a    |
| 11/07/2007       | LBS                    | Integrated logistics support software         | n/a               | n/a    | n/a                    | n/a                            | n/a    |
| 09/24/2007       | NetRegulus             | Enterprise regulatory management              | n/a               | n/a    | \$2.3                  | n/a                            | n/a    |
| 05/16/2007       | NC Graphics            | High-speed machining and engineering tools    | n/a               | n/a    | n/a                    | n/a                            | n/a    |
| 04/26/2006       | 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    |
| 07/19/2005       | Arbortext              | Code authoring & publishing                   | \$40.0            | n/a    | \$190.0                | 4.75x                          | n/a    |
| 06/06/2005       | Aptavis Technologies   | Life cycle management software                | n/a               | n/a    | n/a                    | n/a                            | n/a    |
| 04/08/2004       | OHIO Design Automation | Electronics design collaboration software     | n/a               | n/a    | \$12.0                 | n/a                            | n/a    |
| 03/09/1999       | Auxilium               | Manufacturing collaboration                   | n/a               | n/a    | \$79.0                 | n/a                            | n/a    |
| 10/06/1998       | InPart                 | Industrial 3D CAD                             | n/a               | n/a    | \$26.4                 | n/a                            | n/a    |
| 08/02/1995       | Rasna                  | Design optimization & simulation              | \$22.7            | n/a    | \$163.4                | 7.19x                          | n/a    |
| Total High       |                        |                                               |                   |        |                        | 21.67x                         | 24.6x  |
| Total Low        |                        |                                               |                   |        |                        | 1.00x                          | 7.1x   |
| Total Average    |                        |                                               |                   |        |                        | 5.42x                          | 16.4x  |
| Total Median     |                        |                                               |                   |        |                        | 4.39x                          | 16.8x  |

# Priority Acquirers & Notable Deals

|                    | (\$ in Millions)                               |                            | Target Overview                                |                   |         | Transaction Statistics |                                |        |
|--------------------|------------------------------------------------|----------------------------|------------------------------------------------|-------------------|---------|------------------------|--------------------------------|--------|
|                    | Announced                                      | Target                     | Description                                    | Estimated Revenue | EBITDA  | Deal Value             | Deal Value / Estimated Revenue | EBITDA |
| Altair             | Siemens                                        |                            |                                                |                   |         |                        |                                |        |
| Altium             | Total Disclosed M&A Deal Value: \$13.9 Billion |                            |                                                |                   |         |                        |                                |        |
| ANSYS              | 11/15/2019                                     | MultiMechanics             | Materials modeling software                    | n/a               | n/a     | n/a                    | n/a                            | n/a    |
| Aras               | 11/12/2019                                     | Atlas 3D                   | Additive manufacturing optimization software   | n/a               | n/a     | n/a                    | n/a                            | n/a    |
|                    | 09/17/2019                                     | Process Systems Enterprise | Advanced modeling software                     | n/a               | n/a     | n/a                    | n/a                            | n/a    |
| Arena Solutions    | 07/05/2019                                     | Innovation Systems (IST)   | Industrial transport planning software         | n/a               | n/a     | n/a                    | n/a                            | n/a    |
|                    | 06/11/2019                                     | ESTEQ (South Africa)       | Developer and distributor of PLM and MOM       | n/a               | n/a     | n/a                    | n/a                            | n/a    |
| Autodesk           | 06/07/2019                                     | Saab Medav (Assets)        | NVH testing products and services              | n/a               | n/a     | n/a                    | n/a                            | n/a    |
|                    | 12/03/2018                                     | Comsa                      | Wire-harness engineering software              | n/a               | n/a     | n/a                    | n/a                            | n/a    |
| Bentley            | 10/01/2018                                     | Mendix                     | Low code application development platform      | n/a               | n/a     | \$730.0                | n/a                            | n/a    |
|                    | 09/19/2018                                     | Lightwork Design           | 3D rendering designs and visualization systems | n/a               | n/a     | n/a                    | n/a                            | n/a    |
| Cadence            | 07/27/2018                                     | Omatic                     | Factory optimization system                    | n/a               | n/a     | n/a                    | n/a                            | n/a    |
|                    | 06/26/2018                                     | Comfy                      | Smart building management software             | n/a               | n/a     | n/a                    | n/a                            | n/a    |
| Dassault           | 06/22/2018                                     | Austemper Design           | Electronic design tools for circuit components | n/a               | n/a     | n/a                    | n/a                            | n/a    |
|                    | 03/29/2018                                     | Agilion                    | Real-time location systems (RTLS)              | n/a               | n/a     | n/a                    | n/a                            | n/a    |
| ESI Group          | 02/07/2018                                     | Sarokal Test Systems       | Testing equipment platform for ASIC & FPGA     | n/a               | n/a     | n/a                    | n/a                            | n/a    |
|                    | 01/31/2018                                     | Milanovic Engineering      | Engineering and manufacturing services         | n/a               | n/a     | n/a                    | n/a                            | n/a    |
| Gamma Technologies | 12/01/2017                                     | 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    |
| Hexagon            | 10/09/2017                                     | Wi-Tronix                  | Predictive maintenance for rail services       | n/a               | n/a     | n/a                    | n/a                            | n/a    |
|                    | 08/30/2017                                     | Tass International         | Design and testing software for automotive     | n/a               | n/a     | n/a                    | n/a                            | n/a    |
| Jama               | 03/31/2017                                     | Mentor Graphics            | Electronic design automation                   | \$1,282.5         | \$267.2 | \$4,500.0              | 3.51x                          | 16.8x  |
|                    | 11/07/2016                                     | Conworx Technology         | Lab device interfaces                          | n/a               | n/a     | n/a                    | n/a                            | n/a    |
| PTC                | 03/01/2016                                     | CD-adapco                  | Specialized simulation based on CFD            | \$190.0           | n/a     | \$970.0                | 5.11x                          | n/a    |
|                    | 03/01/2016                                     | Neo New Oncology           | Medical diagnostic technology                  | n/a               | n/a     | n/a                    | n/a                            | n/a    |
| Synopsys           | 11/25/2015                                     | Polarion Software          | Application lifecycle management               | n/a               | n/a     | n/a                    | n/a                            | n/a    |
|                    | 07/02/2015                                     | Zenco Systems              | Traffic enforcement technology                 | n/a               | n/a     | n/a                    | n/a                            | n/a    |
| Zuken              | 03/03/2015                                     | 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    |
| Siemens            | 01/22/2014                                     | 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    |
|                    | 06/25/2013                                     | Sky Eye                    | Transport fleet management                     | n/a               | n/a     | n/a                    | n/a                            | n/a    |
| Total High         |                                                |                            |                                                |                   |         |                        | 21.67x                         | 24.6x  |
| Total Low          |                                                |                            |                                                |                   |         |                        | 1.00x                          | 7.1x   |
| Total Average      |                                                |                            |                                                |                   |         |                        | 5.42x                          | 16.4x  |
| Total Median       |                                                |                            |                                                |                   |         |                        | 4.39x                          | 16.8x  |

# Priority Acquirers & Notable Deals

|                    |
|--------------------|
| Altair             |
| Altium             |
| ANSYS              |
| Aras               |
| Arena Solutions    |
| Autodesk           |
| Bentley            |
| Cadence            |
| Dassault           |
| ESI Group          |
| Gamma Technologies |
| Hexagon            |
| Jama               |
| PTC                |
| Siemens            |
| Synopsys           |
| Zuken              |

| (\$ in Millions)        |                    | Target Overview                                           |                   |        | Transaction Statistics |                                |              |
|-------------------------|--------------------|-----------------------------------------------------------|-------------------|--------|------------------------|--------------------------------|--------------|
| Announced               | Target             | Description                                               | Estimated Revenue | EBITDA | Deal Value             | Deal Value / Estimated Revenue | EBITDA       |
| <b>Siemens (Cont'd)</b> |                    | <b>Total Disclosed M&amp;A Deal Value: \$13.9 Billion</b> |                   |        |                        |                                |              |
| 06/03/2013              | Preactor           | Manufacturing planning & scheduling                       | n/a               | n/a    | n/a                    | n/a                            | n/a          |
| 05/02/2013              | Invensys Rail      | Railway design & system automation                        | \$1,179.5         | n/a    | \$2,660.0              | 2.26x                          | n/a          |
| 11/15/2012              | LMS                | PLM simulation & testing                                  | \$241.7           | n/a    | \$870.0                | 3.60x                          | n/a          |
| 09/28/2012              | VRcontext          | Visualization technology                                  | n/a               | n/a    | n/a                    | n/a                            | n/a          |
| 01/06/2012              | eMeter             | Energy information management                             | n/a               | n/a    | n/a                    | n/a                            | n/a          |
| 12/01/2011              | Vistagy            | Specialized engineering environments                      | \$18.0            | n/a    | n/a                    | n/a                            | n/a          |
| 08/16/2011              | Advanced Telemetry | Energy management                                         | n/a               | n/a    | n/a                    | n/a                            | n/a          |
| 10/01/2009              | Energy4u           | Energy IT services                                        | n/a               | n/a    | n/a                    | n/a                            | n/a          |
| 09/30/2009              | YSNC               | Machine engineering                                       | n/a               | n/a    | n/a                    | n/a                            | n/a          |
| 04/01/2009              | 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          |
| 05/07/2007              | UGS                | 2D & 3D PLM and industry automation                       | \$1,150.0         | n/a    | \$3,500.0              | 3.04x                          | n/a          |
| 02/02/2007              | 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          |
| 09/28/2005              | Garderos           | Local area network management                             | n/a               | n/a    | n/a                    | n/a                            | n/a          |
| 08/14/2005              | Transmitton        | Railway infrastructure management                         | n/a               | n/a    | n/a                    | n/a                            | n/a          |
| 04/08/2005              | Myrio              | IP video networking                                       | n/a               | n/a    | \$50.0                 | n/a                            | n/a          |
| 12/06/2004              | Chantry Networks   | Mobility-enabled wireless networking                      | n/a               | n/a    | \$85.0                 | n/a                            | n/a          |
| 04/01/2003              | Cycos              | Unified messaging systems                                 | n/a               | n/a    | \$45.6                 | n/a                            | n/a          |
| 04/23/2002              | Symbian            | Mobile operating system                                   | n/a               | n/a    | \$309.0                | n/a                            | n/a          |
| <b>Synopsys</b>         |                    | <b>Total Disclosed M&amp;A Deal Value: \$3.8 Billion</b>  |                   |        |                        |                                |              |
| 10/02/2019              | Qtronic            | Automotive virtual prototyping solutions                  | n/a               | n/a    | n/a                    | n/a                            | n/a          |
| 08/13/2018              | Source III         | Specialist simulation and test data management            | n/a               | n/a    | n/a                    | n/a                            | n/a          |
| 03/21/2018              | Silicon and Beyond | SerDes technology used in data-intensive application      | n/a               | n/a    | n/a                    | n/a                            | n/a          |
| 02/08/2018              | Phoenix Software   | Manufacturing automation software                         | n/a               | n/a    | n/a                    | n/a                            | n/a          |
| 01/10/2018              | Kilopass           | SoC system developer                                      | n/a               | n/a    | n/a                    | n/a                            | n/a          |
| 12/11/2017              | Black Duck         | Open source security and license management               | \$75.0            | n/a    | \$548.0                | 7.31x                          | n/a          |
| 10/11/2017              | Sidense            | Embedded non-volatile memory IP                           | n/a               | n/a    | n/a                    | n/a                            | n/a          |
| 09/18/2017              | QuantumWise        | Materials modeling simulation                             | n/a               | \$35.0 | n/a                    | n/a                            | n/a          |
| <b>Total High</b>       |                    |                                                           |                   |        |                        | <b>21.67x</b>                  | <b>24.6x</b> |
| <b>Total Low</b>        |                    |                                                           |                   |        |                        | <b>1.00x</b>                   | <b>7.1x</b>  |
| <b>Total Average</b>    |                    |                                                           |                   |        |                        | <b>5.42x</b>                   | <b>16.4x</b> |
| <b>Total Median</b>     |                    |                                                           |                   |        |                        | <b>4.39x</b>                   | <b>16.8x</b> |

# Priority Acquirers & Notable Deals

|                                               | (\$ in Millions) |                              | Target Overview                                |                   |         | Transaction Statistics |                                |        |
|-----------------------------------------------|------------------|------------------------------|------------------------------------------------|-------------------|---------|------------------------|--------------------------------|--------|
|                                               | Announced        | Target                       | Description                                    | Estimated Revenue | EBITDA  | Deal Value             | Deal Value / Estimated Revenue | EBITDA |
| Altair                                        |                  |                              |                                                |                   |         |                        |                                |        |
| Altium                                        |                  |                              |                                                |                   |         |                        |                                |        |
| ANSYS                                         |                  |                              |                                                |                   |         |                        |                                |        |
| Aras                                          |                  |                              |                                                |                   |         |                        |                                |        |
| Arena Solutions                               |                  |                              |                                                |                   |         |                        |                                |        |
| Autodesk                                      |                  |                              |                                                |                   |         |                        |                                |        |
| Bentley                                       |                  |                              |                                                |                   |         |                        |                                |        |
| Cadence                                       |                  |                              |                                                |                   |         |                        |                                |        |
| Dassault                                      |                  |                              |                                                |                   |         |                        |                                |        |
| ESI Group                                     |                  |                              |                                                |                   |         |                        |                                |        |
| Gamma Technologies                            |                  |                              |                                                |                   |         |                        |                                |        |
| Hexagon                                       |                  |                              |                                                |                   |         |                        |                                |        |
| Jama                                          |                  |                              |                                                |                   |         |                        |                                |        |
| PTC                                           |                  |                              |                                                |                   |         |                        |                                |        |
| Siemens                                       |                  |                              |                                                |                   |         |                        |                                |        |
| Synopsys                                      |                  |                              |                                                |                   |         |                        |                                |        |
| Zuken                                         |                  |                              |                                                |                   |         |                        |                                |        |
| Synopsis (Cont'd)                             |                  |                              |                                                |                   |         |                        |                                |        |
| Total Disclosed M&A Deal Value: \$3.8 Billion |                  |                              |                                                |                   |         |                        |                                |        |
|                                               | 01/10/2017       | Forcheck                     | Security software                              | n/a               | n/a     | n/a                    | n/a                            | n/a    |
|                                               | 11/30/2016       | Cigital                      | Software security consulting services          | n/a               | n/a     | n/a                    | n/a                            | n/a    |
|                                               | 11/30/2016       | Codiscope                    | Complementary security tools                   | n/a               | n/a     | n/a                    | n/a                            | n/a    |
|                                               | 05/23/2016       | Gold Standard Simulations    | Simulation tools for design technology         | n/a               | n/a     | n/a                    | n/a                            | n/a    |
|                                               | 05/17/2016       | Simpleware                   | 3D image processing software                   | n/a               | n/a     | n/a                    | n/a                            | n/a    |
|                                               | 03/02/2016       | WinterLogic                  | Electronic design automation (EDA) tool        | n/a               | n/a     | n/a                    | n/a                            | n/a    |
|                                               | 12/18/2015       | Red Lizard Software          | Source code analysis tools                     | n/a               | n/a     | n/a                    | n/a                            | n/a    |
|                                               | 11/06/2015       | Protecode                    | License management tools                       | n/a               | n/a     | n/a                    | n/a                            | n/a    |
|                                               | 08/03/2015       | Atrenta                      | Semiconductor realization solutions            | n/a               | n/a     | n/a                    | n/a                            | n/a    |
|                                               | 07/20/2015       | Seeker Security              | Computer security testing services             | n/a               | n/a     | n/a                    | n/a                            | n/a    |
|                                               | 06/29/2015       | Codenomicon                  | Automated interface testing tools              | \$11.1            | n/a     | n/a                    | n/a                            | n/a    |
|                                               | 06/29/2015       | Elliptic Technologies        | Security software and semiconductor IP engines | n/a               | n/a     | n/a                    | n/a                            | n/a    |
|                                               | 03/25/2014       | Coverity                     | Source code analysis tools                     | \$70.0            | n/a     | \$375.0                | 5.36x                          | n/a    |
|                                               | 02/28/2014       | Brandenburg                  | Automotive design software                     | n/a               | n/a     | n/a                    | n/a                            | n/a    |
|                                               | 02/07/2014       | Target Compiler Technologies | Application-specific processor design          | n/a               | n/a     | n/a                    | n/a                            | n/a    |
|                                               | 10/04/2012       | EVE-USA                      | SoC verification platform                      | n/a               | n/a     | n/a                    | n/a                            | n/a    |
|                                               | 08/01/2012       | Ciranova                     | EDA software                                   | n/a               | n/a     | n/a                    | n/a                            | n/a    |
|                                               | 05/08/2012       | RSoft Design Group           | Developer of designing software.               | n/a               | n/a     | n/a                    | n/a                            | n/a    |
|                                               | 02/22/2012       | Magma Design Automation      | Chip design software                           | \$146.4           | \$16.3  | \$523.0                | 3.57x                          | n/m    |
|                                               | 02/15/2012       | Luminescent Technologies     | Lithography enhancement services               | n/a               | n/a     | n/a                    | n/a                            | n/a    |
|                                               | 01/23/2012       | ExpertIO                     | Internet protocol verification services        | n/a               | n/a     | n/a                    | n/a                            | n/a    |
|                                               | 01/01/2012       | Mojave Design                | Physical verification technology               | n/a               | n/a     | n/a                    | n/a                            | n/a    |
|                                               | 10/07/2011       | Extreme DA                   | Electronic design automation                   | n/a               | n/a     | n/a                    | n/a                            | n/a    |
|                                               | 09/02/2011       | nSys Design Systems          | Provider of business verification services.    | n/a               | n/a     | n/a                    | n/a                            | n/a    |
|                                               | 10/07/2010       | Optical Research Associates  | Optical application software                   | n/a               | n/a     | n/a                    | n/a                            | n/a    |
|                                               | 06/10/2010       | Virage Logic                 | Semiconductor intellectual property (IP)       | \$72.0            | (\$5.6) | \$315.0                | 4.38x                          | n/m    |
|                                               | 06/10/2010       | Synfora                      | Algorithmic synthesis tools                    | n/a               | n/a     | n/a                    | n/a                            | n/a    |
|                                               | 06/01/2010       | Nusym Technology             | Verification closure solutions                 | n/a               | n/a     | n/a                    | n/a                            | n/a    |
|                                               | 03/23/2010       | CoWare                       | Electronic system-level design software        | n/a               | n/a     | n/a                    | n/a                            | n/a    |
|                                               | 02/02/2010       | VaST Systems Technology      | Embedded system design automation solutions    | n/a               | n/a     | n/a                    | n/a                            | n/a    |
| Total High                                    |                  |                              |                                                |                   |         |                        | 21.67x                         | 24.6x  |
| Total Low                                     |                  |                              |                                                |                   |         |                        | 1.00x                          | 7.1x   |
| Total Average                                 |                  |                              |                                                |                   |         |                        | 5.42x                          | 16.4x  |
| Total Median                                  |                  |                              |                                                |                   |         |                        | 4.39x                          | 16.8x  |

# Priority Acquirers & Notable Deals

|                    |
|--------------------|
| Altair             |
| Altium             |
| ANSYS              |
| Aras               |
| Arena Solutions    |
| Autodesk           |
| Bentley            |
| Cadence            |
| Dassault           |
| ESI Group          |
| Gamma Technologies |
| Hexagon            |
| Jama               |
| PTC                |
| Siemens            |
| Synopsys           |
| Zuken              |

| (\$ in Millions)  |                                | Target Overview                                   |                   |          | Transaction Statistics |                                |        |
|-------------------|--------------------------------|---------------------------------------------------|-------------------|----------|------------------------|--------------------------------|--------|
| Announced         | Target                         | Description                                       | Estimated Revenue | EBITDA   | Deal Value             | Deal Value / Estimated Revenue | EBITDA |
| Synopsis (Cont'd) |                                | Total Disclosed M&A Deal Value: \$3.8 Billion     |                   |          |                        |                                |        |
| 11/03/2009        | Gemini Design Technology       | EDA software                                      | n/a               | n/a      | n/a                    | n/a                            | n/a    |
| 05/08/2009        | Chipidea Mikroelektronika      | Mixed-signal semiconductor design software        | n/a               | n/a      | \$22.0                 | n/a                            | n/a    |
| 05/08/2009        | MIPS Technologies (Assets)     | Software design solutions for semiconductor       | n/a               | n/a      | \$22.0                 | n/a                            | n/a    |
| 12/18/2008        | Pro Design Electronic          | Hardware verification services                    | n/a               | n/a      | n/a                    | n/a                            | n/a    |
| 10/02/2007        | Sandwork Design                | Transistor-level debugging & waveform analysis    | n/a               | n/a      | \$24.0                 | n/a                            | n/a    |
| 06/18/2007        | ArchPro Design Automation      | Advanced EDA products                             | n/a               | n/a      | \$13.0                 | n/a                            | n/a    |
| 01/01/2007        | TeraRoute                      | Routing software                                  | n/a               | n/a      | n/a                    | n/a                            | n/a    |
| 12/07/2005        | Hpl Technologies               | Yield optimization software                       | \$9.3             | (\$27.2) | \$13.0                 | 1.39x                          | n/m    |
| 05/11/2005        | Nassda                         | Full-chip circuit verification software           | \$45.6            | (\$70.8) | \$200.2                | 4.39x                          | n/m    |
| 01/01/2005        | TriCN Associates               | Accounting, tax, and finance service              | n/a               | n/a      | n/a                    | n/a                            | n/a    |
| 11/02/2004        | Integrated Systems Engineering | ECAD software                                     | n/a               | n/a      | \$107.5                | n/a                            | n/a    |
| 11/02/2004        | Leda Design                    | Digital library platform developer                | n/a               | n/a      | n/a                    | n/a                            | n/a    |
| 10/19/2004        | Cascade IP                     | Digital IP solutions                              | n/a               | n/a      | n/a                    | n/a                            | n/a    |
| 10/13/2004        | Monterey Design Systems        | SoC verification platform                         | n/a               | n/a      | n/a                    | n/a                            | n/a    |
| 03/15/2004        | IRoC (Memory BIST Division)    | Electronic design automation (EDA) tool           | n/a               | n/a      | n/a                    | n/a                            | n/a    |
| 02/26/2004        | Analog Design Automation       | Automated circuit optimization software           | n/a               | n/a      | \$13.0                 | n/a                            | n/a    |
| 02/23/2004        | Accelerant Networks            | Manufacturer of computer transceivers             | n/a               | n/a      | \$22.5                 | n/a                            | n/a    |
| 01/01/2004        | Progressant Technologies       | Manufacturer of resistance transistor             | n/a               | n/a      | n/a                    | n/a                            | n/a    |
| 06/25/2003        | InnoLogic Systems              | Equivalence checking technology                   | n/a               | n/a      | n/a                    | n/a                            | n/a    |
| 03/03/2003        | Numerical Technologies         | Lithography tool vendor                           | n/a               | n/a      | \$250.0                | n/a                            | n/a    |
| 07/23/2002        | InSilicon                      | Communications products                           | n/a               | n/a      | \$74.6                 | n/a                            | n/a    |
| 06/06/2002        | Avanti                         | Engineering & environmental regulatory support    | n/a               | n/a      | \$735.0                | n/a                            | n/a    |
| 03/04/2002        | Co-Design                      | Developer of design language and tools            | n/a               | n/a      | \$36.0                 | n/a                            | n/a    |
| 11/13/2001        | C Level Design                 | Graphic design and web marketing service          | n/a               | n/a      | n/a                    | n/a                            | n/a    |
| 11/01/1998        | Everest Design Automation      | Complex chip assembly software                    | n/a               | n/a      | n/a                    | n/a                            | n/a    |
| 03/03/1997        | EPIC Design                    | Simulation and analysis tools for chip management | n/a               | n/a      | \$427.1                | n/a                            | n/a    |
| 05/10/1995        | Silicon Architect              | Designer of Structured ASIC Methodology           | n/a               | n/a      | n/a                    | n/a                            | n/a    |
| 02/18/1994        | Logic Modeling                 | Provider of high-level design automation software | n/a               | n/a      | \$118.0                | n/a                            | n/a    |
| Total High        |                                |                                                   |                   |          |                        | 21.67x                         | 24.6x  |
| Total Low         |                                |                                                   |                   |          |                        | 1.00x                          | 7.1x   |
| Total Average     |                                |                                                   |                   |          |                        | 5.42x                          | 16.4x  |
| Total Median      |                                |                                                   |                   |          |                        | 4.39x                          | 16.8x  |

# Priority Acquirers & Notable Deals

|                    |
|--------------------|
| Altair             |
| Altium             |
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| Hexagon            |
| Jama               |
| PTC                |
| Siemens            |
| Synopsys           |
| <b>Zuken</b>       |

| (\$ in Millions)     |           | Target Overview                                     |                   |        | Transaction Statistics                         |                                |              |
|----------------------|-----------|-----------------------------------------------------|-------------------|--------|------------------------------------------------|--------------------------------|--------------|
| Announced            | Target    | Description                                         | Estimated Revenue | EBITDA | Deal Value                                     | Deal Value / Estimated Revenue | EBITDA       |
| <b>Zuken</b>         |           |                                                     |                   |        | <b>Total Disclosed M&amp;A Deal Value: n/a</b> |                                |              |
| 01/29/2019           | Vitech    | Systems engineering solutions                       | n/a               | n/a    | n/a                                            | n/a                            | n/a          |
| 01/11/2018           | Alphatech | CAD Provider in Japan                               | n/a               | n/a    | n/a                                            | n/a                            | n/a          |
| 12/10/2015           | CAETEK    | Schematic red liner design and implementation softv | n/a               | n/a    | n/a                                            | n/a                            | n/a          |
| <b>Total High</b>    |           |                                                     |                   |        |                                                | <b>21.67x</b>                  | <b>24.6x</b> |
| <b>Total Low</b>     |           |                                                     |                   |        |                                                | <b>1.00x</b>                   | <b>7.1x</b>  |
| <b>Total Average</b> |           |                                                     |                   |        |                                                | <b>5.42x</b>                   | <b>16.4x</b> |
| <b>Total Median</b>  |           |                                                     |                   |        |                                                | <b>4.39x</b>                   | <b>16.8x</b> |

# Other Notable M&A

| (\$ in Millions) |                     |                             | Target Overview                               |                   |                  | Transaction Statistics |                                |                  |
|------------------|---------------------|-----------------------------|-----------------------------------------------|-------------------|------------------|------------------------|--------------------------------|------------------|
| Announced        | Acquirer            | Target                      | Description                                   | Estimated Revenue | Estimated EBITDA | Deal Value             | Deal Value / Estimated Revenue | Estimated EBITDA |
| 11/06/2019       | Harris              | BobCAD-CAM                  | CNC programming and CAD/CAM software          | n/a               | n/a              | n/a                    | n/a                            | n/a              |
| 10/19/2019       | CATI                | Fisher Unitech              | 3D CAD software / hardware support & services | n/a               | n/a              | n/a                    | n/a                            | n/a              |
| 10/04/2019       | Wipro               | ITI                         | CAD product data interoperability solutions   | n/a               | n/a              | \$45.0                 | n/a                            | n/a              |
| 10/03/2019       | Seequent            | Geoslope                    | Geotechnical analysis software                | n/a               | n/a              | n/a                    | n/a                            | n/a              |
| 04/18/2019       | Roper Industries    | Foundry                     | Computer graphics and VFX software            | \$61.0            | \$20.0           | \$537.0                | 8.80x                          | n/m              |
| 01/28/2019       | Rockwell Automation | Emulate3D                   | Industrial / factory digital twin software    | n/a               | n/a              | n/a                    | n/a                            | n/a              |
| 12/20/2018       | Seequent            | Geosoft                     | Geological modeling and geoscience software   | n/a               | n/a              | n/a                    | n/a                            | n/a              |
| 08/16/2018       | Sphera Solutions    | Sparesfinder                | MRO data management                           | n/a               | n/a              | n/a                    | n/a                            | n/a              |
| 07/24/2018       | Spectris            | VI-grade                    | Vehicle simulation solutions                  | n/a               | n/a              | n/a                    | n/a                            | n/a              |
| 03/01/2018       | AVEVA               | Schneider Electric (Assets) | Industrial software                           | \$1,088.3         | n/a              | \$4,190.0              | 3.85x                          | n/a              |
| 11/07/2017       | Schneider Electric  | IGE+XAO                     | Electrical engineering CAD & PLM software     | \$35.0            | \$10.2           | \$220.9                | 6.30x                          | 21.6x            |
| 05/18/2017       | Innovyze            | XP Solutions                | Stormwater / floodwater modeling              | n/a               | n/a              | \$49.0                 | n/a                            | n/a              |
| 03/31/2017       | CATI                | 3DVision Technologies       | 3D modeling software and services VAR         | n/a               | n/a              | n/a                    | n/a                            | n/a              |
| 01/18/2017       | IFS                 | Mxi Technologies            | Aviation maintenance management               | n/a               | n/a              | n/a                    | n/a                            | n/a              |
| 01/17/2017       | TriMech             | Computer-Aided Products     | 3D printing & CAD software training services  | n/a               | n/a              | n/a                    | n/a                            | n/a              |
| Total High       |                     |                             |                                               |                   |                  |                        | 8.80x                          | 21.6x            |
| Total Low        |                     |                             |                                               |                   |                  |                        | 3.85x                          | 21.6x            |
| Total Average    |                     |                             |                                               |                   |                  |                        | 6.32x                          | 21.6x            |
| Total Median     |                     |                             |                                               |                   |                  |                        | 6.30x                          | 21.6x            |

# Notable Fundraises

| (\$ in Millions)     |                |                                                  |                                  |                   |                |                     |                   |                      |                |
|----------------------|----------------|--------------------------------------------------|----------------------------------|-------------------|----------------|---------------------|-------------------|----------------------|----------------|
| Company Overview     |                |                                                  |                                  | Fundraise Summary |                |                     |                   |                      |                |
| Company              | Employee Count | Description                                      | Lead Investor(s)                 | Last Fundraise    | Amount Raised  | Pre-Money Valuation | Implied Ownership | Step-up Over Last Rd | Raised To-Date |
| <b>Early Stage</b>   |                |                                                  |                                  |                   |                |                     |                   |                      |                |
| Link3D               | 19             | Additive manufacturing workflow & MES            | AI Capital                       | Oct-19            | \$7.0          | n/a                 | n/a               | n/a                  | \$7.0          |
| Tulip Interfaces     | 88             | Manufacturing app development                    | DMG Mori                         | Sep-19            | \$21.1         | \$170.0             | 11.0%             | 1.92x                | \$88.4         |
| ComplianceQuest      | 50             | Force.com-based QMS                              | Insight Venture Partners         | Sep-19            | \$36.0         | n/a                 | n/a               | n/a                  | \$36.0         |
| Backbone PLM         | 66             | Consumer goods PLM & manufacturing management    | Grotech Ventures, Foundry Group  | Aug-19            | \$18.0         | n/a                 | n/a               | n/a                  | \$23.0         |
| nTopology            | 70             | Generative design & topology optimization        | Canaan Partners                  | Jul-19            | \$20.0         | \$70.0              | 22.2%             | n/a                  | \$30.7         |
| Suuchi               | 84             | Fashion PLM & supply chain management            | Edison Partners                  | Apr-19            | \$8.0          | \$32.0              | 20.0%             | n/a                  | \$8.0          |
| Dyndrite             | 23             | 3D printing workflow                             | Gradient Ventures                | Apr-19            | \$10.0         | \$30.0              | 25.0%             | n/a                  | \$13.0         |
| OnScale              | 63             | HPC-based cloud CAE simulation                   | Intel Capital, Gradient Ventures | Apr-19            | \$10.0         | n/a                 | n/a               | n/a                  | \$29.6         |
| Vention              | 68             | 3D CAD for machine assembly                      | Bain Capital Ventures            | Jan-19            | \$12.6         | n/a                 | n/a               | n/a                  | n/a            |
| PropelPLM            | 69             | Force.com-based PLM / QMS / PIM                  | Norwest Venture Partners         | Nov-18            | \$18.0         | \$42.0              | 30.0%             | 2.08x                | \$28.2         |
| Upchain              | 80             | Cloud-based PLM                                  | First Ascent Ventures            | Nov-18            | \$5.7          | n/a                 | n/a               | n/a                  | \$10.7         |
| Cognata              | 39             | Autonomous vehicle simulation                    | Scale Venture Partners           | Oct-18            | \$18.5         | n/a                 | n/a               | n/a                  | \$23.5         |
| <b>Median</b>        | <b>67</b>      |                                                  |                                  |                   | <b>\$15.3</b>  | <b>\$42.0</b>       | <b>22.2%</b>      | <b>2.00x</b>         | <b>\$23.5</b>  |
| <b>Late Stage</b>    |                |                                                  |                                  |                   |                |                     |                   |                      |                |
| aPriori              | 168            | Product cost management                          | Autodesk, NewSpring Capital      | Aug-19            | \$26.8         | n/a                 | n/a               | n/a                  | \$74.3         |
| CATI                 | 190            | 3D printing and design software / hardware VAR   | CIVC Partners                    | Apr-19            | n/a            | n/a                 | n/a               | n/a                  | n/a            |
| Aras                 | 367            | Open enterprise PLM                              | Goldman Sachs                    | Nov-18            | \$70.0         | \$350.0             | 16.7%             | 1.45x                | \$135.3        |
| SigmaTEK Systems     | 196            | Computer-aided nesting                           | Battery Ventures                 | Oct-18            | n/a            | n/a                 | n/a               | n/a                  | n/a            |
| Ikon Science         | 165            | Geological prediction                            | Great Hill Partners              | Oct-18            | n/a            | n/a                 | n/a               | n/a                  | n/a            |
| Rescale              | 139            | HPC simulation infrastructure                    | Initialized Capital              | Jul-18            | \$32.0         | \$150.0             | 17.6%             | 2.94x                | \$52.4         |
| CompuSoft            | 162            | Kitchen & bathroom design CAD                    | TA Associates                    | Jul-18            | n/a            | n/a                 | n/a               | n/a                  | n/a            |
| Jama Software        | 213            | Product requirements management                  | Insight Venture Partners         | Jun-18            | \$200.0        | n/a                 | n/a               | n/a                  | \$43.4         |
| Zemax                | 98             | Optical & illumination design                    | EQT Partners                     | Jun-18            | n/a            | n/a                 | n/a               | n/a                  | n/a            |
| Gamma Technologies   | 131            | Multi-physics CAE simulation                     | Cove Hill Partners               | May-18            | n/a            | n/a                 | n/a               | n/a                  | n/a            |
| Seequent             | 335            | Geological modeling & data management            | Accel-KKR                        | Apr-18            | n/a            | n/a                 | n/a               | n/a                  | n/a            |
| Arena Solutions      | 194            | Cloud-based PLM / QMS / ALM                      | JMI Equity                       | Aug-17            | n/a            | n/a                 | n/a               | n/a                  | \$55.2         |
| Sparta Systems       | 322            | Enterprise quality management                    | New Mountain Capital             | Aug-17            | n/a            | n/a                 | n/a               | n/a                  | n/a            |
| EtQ                  | 347            | Enterprise quality management                    | Technology Crossover Ventures    | Aug-17            | \$130.0        | n/a                 | n/a               | n/a                  | n/a            |
| 20-20 Technologies   | 656            | Interior design CAD                              | Golden Gate Capital              | May-17            | \$280.0        | n/a                 | n/a               | n/a                  | \$81.0         |
| Innovyze             | 165            | Smart water infrastructure modeling & simulation | EQT Partners                     | May-17            | \$270.0        | n/a                 | n/a               | n/a                  | n/a            |
| Exocad               | 65             | Dentistry CAD / CAM                              | Carlyle Group                    | Sep-16            | \$129.1        | n/a                 | n/a               | n/a                  | n/a            |
| Bamboo Rose          | 223            | Retail PLM & supply chain management             | McCarthy Capital                 | Jul-16            | n/a            | n/a                 | n/a               | n/a                  | n/a            |
| Autoform Engineering | 234            | Sheet metal formation simulation                 | Astorg Partners                  | Jun-16            | \$721.0        | n/a                 | n/a               | n/a                  | n/a            |
| <b>Median</b>        | <b>194</b>     |                                                  |                                  |                   | <b>\$130.0</b> | <b>\$250.0</b>      | <b>17.1%</b>      | <b>2.20x</b>         | <b>\$64.8</b>  |



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