

# 2021 Market Analysis Review

*CIMdata PLM Market & Industry Forum—June 2021*

## 2021 Market Analysis Review

PLM Market & Industry Forum

A CIMdata PLM Leadership Event

June 2021

Stan Przybylinski, Vice President

Tel: +1.734.668.9922

Email: [s.przybylinski@CIMdata.com](mailto:s.przybylinski@CIMdata.com)

Twitter, Skype: smprezbo

**CIMdata**<sup>®</sup>

Global Leaders in PLM Consulting  
[www.CIMdata.com](http://www.CIMdata.com)

#plm4um

Copyright © 2021 by CIMdata, Inc.

## Our Mission...

*Strategic management consulting for competitive advantage in global markets*

**CIMdata is the leading independent global strategic management consulting and research authority focused exclusively on PLM and the digital transformation it enables.**

**We are dedicated to maximizing our clients' ability to design, deliver, and support innovative products and services through the application of PLM.**

**CIMdata**<sup>®</sup>

Copyright © 2021 by CIMdata, Inc.

2

# 2021 Market Analysis Review

## *CIMdata PLM Market & Industry Forum—June 2021*

### Key Takeaways

#### *2021 Market Analysis Review*

- The April Forum sessions included preliminary market numbers for the previous calendar year
- Only minor changes, growth rate up from 3.46% to 3.79%
- Some big moves by market leaders Ansys, Aras, Autodesk, and PTC
- Solid Q1 results with many raising guidance
- CIMdata updating the 2021 PLM Market Analysis Report series



Copyright © 2021 by CIMdata, Inc.

3

### Agenda

#### *2021 CIMdata PLM Market & Industry Forum – June 2021 Market Analysis Review*

- PLM Market Analysis Review
- 2021 Market News
- Q1 2021 Market Results
- Concluding Remarks



Copyright © 2021 by CIMdata, Inc.

4



# 2021 Market Analysis Review

## CIMdata PLM Market & Industry Forum—June 2021

### Recap of Methodology and Key Inputs

*How CIMdata gathers PLM market data each year*

- Primary, secondary data, combined with expert informants, CIMdata expertise – “touch” approximately 700 companies
- Report estimates in US Dollars with no currency adjustments
- Most PLM revenue estimates in US Dollars, Euros, and Japanese Yen
  - Euro up 1.68%, Yen up almost 5% against the dollar – smaller changes than in recent years
- Some major acquisitions reviewed in April session, able to accommodate changes without artificially inflating the market estimates
- Reviewed COVID-19 impacts on the market in 2020, and on our forecasts out to 2025

CIMdata®

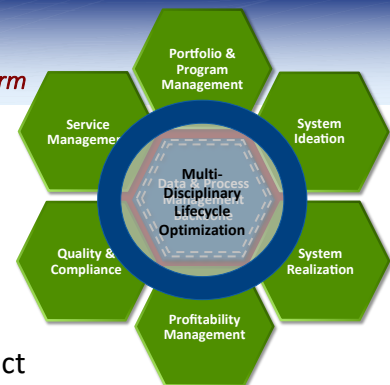
Copyright © 2021 by CIMdata, Inc.

5

### PLM – CIMdata’s Definition

*Digital transformation of the lifecycle—enabled by a product innovation platform*

- Strategic business approach
  - **NOT** just technologies
  - Consistent set of business solutions
- Collaborative creation, use, management & dissemination of product related *intellectual assets*
  - All product/plant definition information – the virtual product
    - AEC, MCAD, EDA, ALM, SE, requirements, simulations, analytics, portfolio, formulas...
  - All product/plant process definitions – the virtual processes
    - Processes that plan, design, produce, operate, support, decommission, recycle...
- An innovation platform that supports the extended enterprise
- Spans the full lifecycle, from idea/concept through life



CIMdata®

Copyright © 2021 by CIMdata, Inc.

6

# 2021 Market Analysis Review

## CIMdata PLM Market & Industry Forum—June 2021

### PLM Market Categories

*Three major segments comprise the PLM Market*

- collaborative Product Definition management
  - Applications and solutions to capture, manage, disseminate, visualize and collaborate on product related intellectual (digital/virtual) information, including related processes
- Tools
  - Applications that are used to create intellectual assets
  - Authoring, analysis, modeling, simulation and documentation of product and plant/facility information
- Digital Manufacturing
  - Process planning, resource definition, factory floor layout and product flow simulation and analysis (including ergonomics)

**CIMdata**<sup>®</sup>

Copyright © 2021 by CIMdata, Inc.

7

### Overall PLM Results

*Growth in 2020 over forecast*

- Overall PLM growth (3.75%) above forecast (-1.7%)
  - Results mixed
  - EDA, SI/Reseller/VAR the biggest surprises
- Autodesk and PTC license model transition affects certain segments
- Continued industry consolidation, new entrants, investor interest and action
  - SI/Reseller/VAR the most active segment, led by Accenture (again)
  - Major PLM players trying to differentiate, expand reach

**CIMdata**<sup>®</sup>

Copyright © 2021 by CIMdata, Inc.

8

# 2021 Market Analysis Review

## CIMdata PLM Market & Industry Forum—June 2021

### 2020 Market Results

Results by segment (US\$ Millions) mostly positive – small changes from initial estimates in April 2021

Segment	2020 Revenues	YoY Growth	April Estimate
cPDM Comprehensive Technology Providers	\$6,939.0	4.2%	4.2%
cPDM-Focused Applications	\$2,665.8	3.9%	3.9%
Digital Manufacturing	\$833.0	-6.0%	-6.0%
SI/Reseller/VAR	\$7,906.6	-3.4%	-4.2%
Tools			
MCAD-Multi Discipline	\$3,841.3	-2.2%	-2.2%
MCAD-Design Focused	\$3,541.3	0.7%	0.7%
Non-Bundled CAM	\$1,455.9	-7.6%	-6.3%
Simulation & Analysis	\$7,477.2	4.2%	4.2%
Other Tools (e.g., ALM)	\$1,796.2	7.6%	7.6%
EDA	\$11,467.3	11.1%	10.4%
AEC	\$5,539.0	9.1%	9.1%
Total	\$53,462.7	3.79%	3.46%

CIMdata®

Copyright © 2021 by CIMdata, Inc.

9

### Market Forecasts

Minor changes based on changes to base year 2021

Segment	2021 Estimate	YoY Growth	5 Year CAGR
cPDM Comprehensive Technology Providers	\$7,408.22	6.8%	7.5%
cPDM-Focused Applications	\$2,829.79	6.2%	7.1%
Digital Manufacturing	\$877.16	5.3%	6.8%
SI/Reseller/VAR	\$8,317.16	5.3%	6.3%
Tools			
MCAD-Multi Discipline	\$3,889.27	1.3%	2.8%
MCAD-Design Focused	\$3,877.68	9.5%	9.7%
Non-Bundled CAM	\$1,521.47	4.5%	5.8%
Simulation & Analysis	\$8,082.88	8.1%	10.0%
Other Tools (e.g., ALM)	\$1,936.35	7.8%	7.9%
EDA	\$12,384.68	8.0%	8.4%
AEC	\$6,325.56	14.2%	14.7%
Total	\$57,450.83	7.5%	8.5%

CIMdata®

Copyright © 2021 by CIMdata, Inc.

10

# 2021 Market Analysis Review

## CIMdata PLM Market & Industry Forum—June 2021

### Comments on Tool Segments

*Detailed charts will be included in the published deck*

Segment	Comments
MCAD-MD	Expect continued slow growth in this segment as auto and A&D hit hard by COVID-19 impacts
MCAD-DF	DF segment often affected by recession; results buoyed by Autodesk and PTC move to subscription; SOLIDWORKS a consistent performer absent a pandemic
CAM	Always hit by recession, will be slower to recover (e.g., machine tool sales down in 2018 and 2019)
S&A	Significant M&A activity in market leaders, trends driving growth will remain strong (smart connected product/Industry 4.0, need for more simulation on the left side of the Vee)
EDA	Only segment not to lower guidance after Q1 2020, strong year, same trends as S&A
AEC	Key to (re)defining the built world, expanding interest in discrete PLM issues; oil & gas affected by energy prices
Other Tools	Again, smart connected products driving investments; Atlassian up 39% in the middle of the pandemic

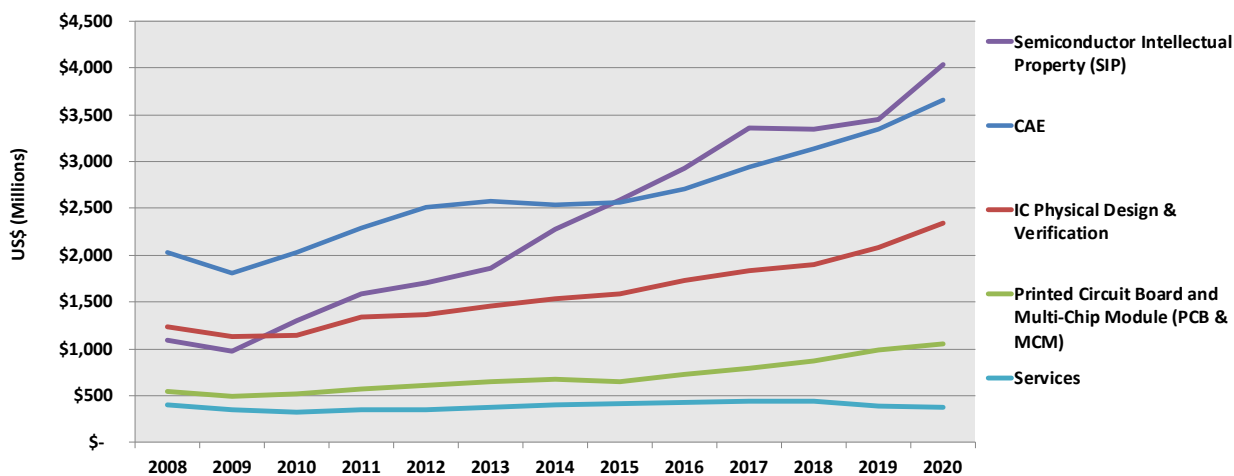
CIMdata®

Copyright © 2021 by CIMdata, Inc.

11

### EDA Market History

*Dominated by intellectual property and CAE, verification growing*



Revenues presented are Electronic Systems Design (ESD) Alliance estimates

CIMdata®

Copyright © 2021 by CIMdata, Inc.

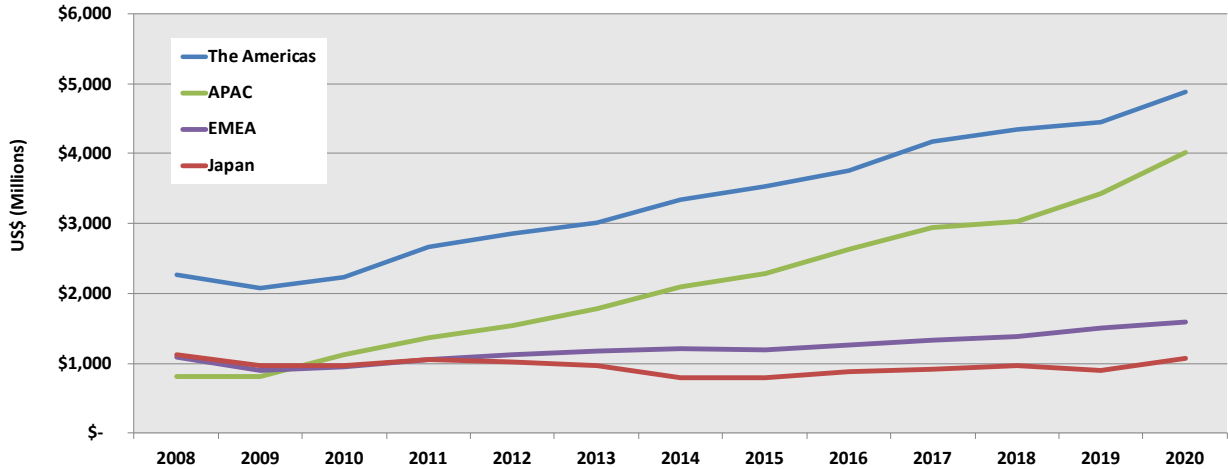
12

# 2021 Market Analysis Review

## CIMdata PLM Market & Industry Forum—June 2021

### EDA Market History

*Strongest growth in the Americas and APAC*



Revenues presented are Electronic Systems Design (ESD) Alliance estimates

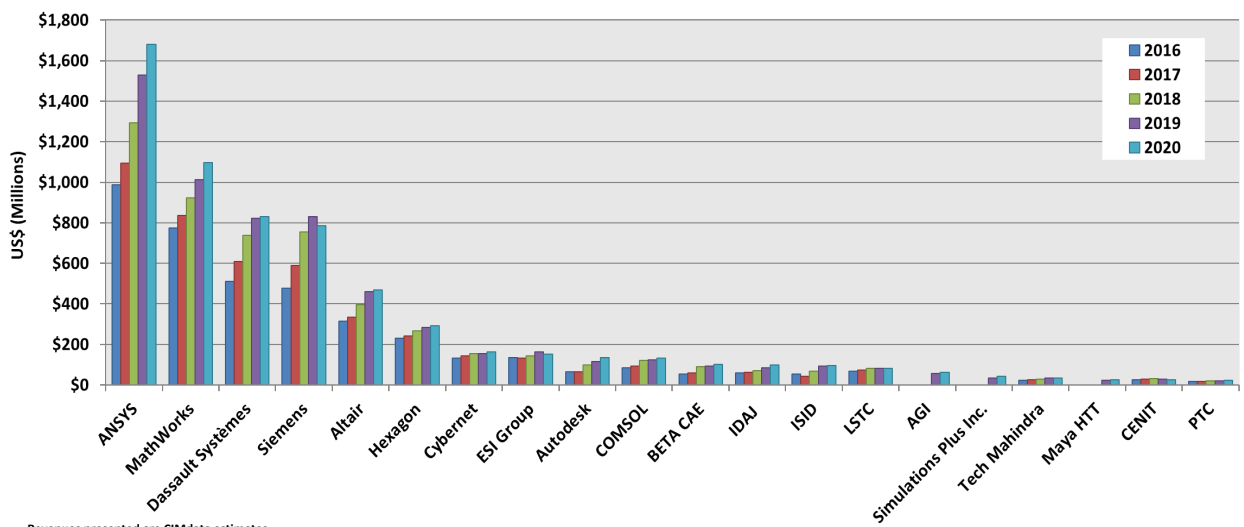


Copyright © 2021 by CIMdata, Inc.

13

### Simulation & Analysis

*Leaders revenue histories*



Revenues presented are CIMdata estimates



Copyright © 2021 by CIMdata, Inc.

14

# 2021 Market Analysis Review

## CIMdata PLM Market & Industry Forum—June 2021

### Agenda

2021 CIMdata PLM Market & Industry Forum – June 2021 Market Analysis Review

- PLM Market Analysis Review
- 2021 Market News
- Q1 2021 Market Results
- Concluding Remarks

CIMdata®

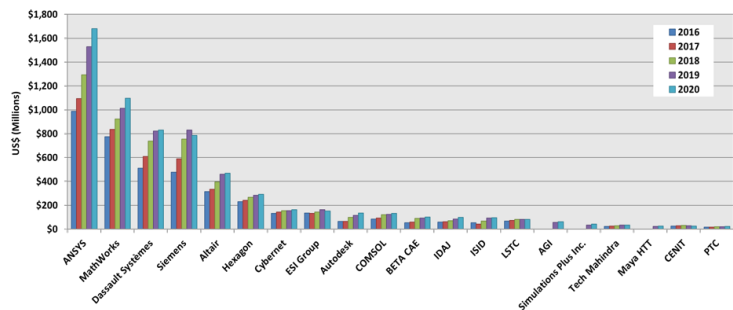
Copyright © 2021 by CIMdata, Inc.

15

### Ansys

*Ubiquitous in 2020*

- Built a simulation & analysis powerhouse
- Acquired Analytical Graphics, Inc. (AGI), mission engineering
- Partnerships with many PLM leaders
  - Ansys Minerva built on Aras Innovator
  - Creo Simulation Live expanding
  - SAP partnerships around digital twin, Intelligent Asset Management (part of Siemens deal)
  - Autodesk partnership bringing Ansys tools to Fusion



Revenues presented are CIMdata estimates

CIMdata®

Copyright © 2021 by CIMdata, Inc.

16

# 2021 Market Analysis Review

## CIMdata PLM Market & Industry Forum—June 2021

### Ansys

*Ubiquitous in 2020, added Phoenix Integration in 2021*

- Multi-physics simulation trend noted by CIMdata in M&A and product development
- How do you bring all of those analytic perspectives to support design evaluation and evolution?
- Process integration and design optimization (PIDO) or multi-disciplinary analysis and optimization (MDAO)
- Phoenix Integration adds this to the Ansys portfolio



CIMdata®

Copyright © 2021 by CIMdata, Inc.

17

### Investor Interest in the cPDM Segment

*Started mid-2020, continued into 2021, led to several investments*

- CIMdata works with many types of investment firms
- In mid-2020 started getting queries on the cPDM space
- Several candidates in focus, many interested in opportunity of combining cPDM with other applications like ERP, MES, and QMS
- Worked with several firms to get them up to speed on PLM, the cPDM segment, and the dynamics of those application domains
- Interest turned into a number of major investments



Sample of Recent Investor Clients

CIMdata®

Copyright © 2021 by CIMdata, Inc.

18

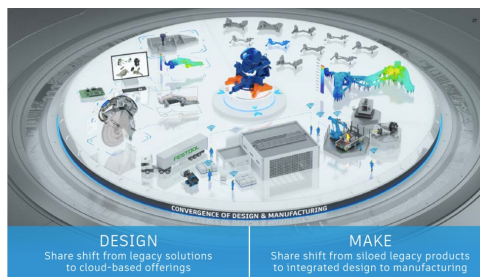
# 2021 Market Analysis Review

## CIMdata PLM Market & Industry Forum—June 2021

### Autodesk

*Building out AEC, leveraging Forge in AEC and manufacturing*

- Announced Autodesk Construction Cloud last year, continued expansion with Pipe and Spacemaker acquisitions
  - Spacemaker generative design for architects, urban planners, ...
- Leveraging the Forge platform for Autodesk Tandem, bringing digital twin to BIM
  - Aggregate data from BIM, IoT, other sources
  - Founding member of the Digital Twin Consortium
- Forge for Manufacturing
- Forge Cloud Data Service
  - Unified data model for Fusion 360
  - Open and extensible – putting data in the center



Autodesk Investor Day 2020 Presentation

CIMdata®

Copyright © 2021 by CIMdata, Inc.

19

### Autodesk

*Building out AEC, leveraging Forge in AEC and manufacturing, adds Upchain for cloud PDM (1 of 2)*

#### Strategic Rationale

Differentiated Cloud PDM	<ul style="list-style-type: none"> <li>▪ Modern Instant-On Cloud Product Data Management (PDM) technology augments existing strength in ADSK Vault</li> <li>▪ Robust competitive CAD integrations</li> <li>▪ Accelerates next gen design/make convergence in Fusion 360</li> <li>▪ Out-of-the-box setup for target verticals like Consumer Products</li> </ul>
PDM Expertise & Strong R&D	<ul style="list-style-type: none"> <li>▪ 140+ employees with ~50% in R&amp;D. Headquartered in Toronto, Canada</li> <li>▪ Modern SaaS architecture with Multi-tenant, rapid-deploy capability</li> <li>▪ Strong engineering and customer success talent</li> </ul>
Accelerates Growth In PDM/PLM	<ul style="list-style-type: none"> <li>▪ Leads prospects and existing Inventor accounts to the Fusion 360 platform</li> <li>▪ Sticky solution provides entry point and eventual expansion into user base as workflows become data centric</li> <li>▪ Boosts expansion into competitive accounts</li> </ul>
Compelling Synergies	<ul style="list-style-type: none"> <li>▪ Autodesk provides means to scale through Enterprise, Channel and geographic expansion</li> <li>▪ Presents new growth opportunities with competitive CAD integrations</li> </ul>

Autodesk Upchain Announcement

CIMdata®

Copyright © 2021 by CIMdata, Inc.

20

# 2021 Market Analysis Review

## CIMdata PLM Market & Industry Forum—June 2021

### Autodesk

*Building out AEC, leveraging Forge in AEC and manufacturing, adds Upchain for cloud PDM (2 of 2)*

The diagram illustrates the integration of Fusion 360 and Upchain across the product lifecycle stages: DESIGN, SIMULATION, and MANUFACTURING.

DESIGN	SIMULATION	MANUFACTURING
Mechanical Design	Mechanical	Subtractive Mfg
Electrical Design	Thermal	Additive Mfg
Industrial Design	Fluids	Adv Materials
Documentation / Viz	Kinematics	Inspection

**upchain** Cloud Product Data Management

Product Lifecycle Management

Legend: Fusion 360 (Green), Upchain (Light Green)

Autodesk Upchain Announcement

CIMdata® Copyright © 2021 by CIMdata, Inc. 21

### SAP/Siemens Creating End-to-End Digital Threads

*Partnership areas of synergy – From an SAP August ASUG Presentation*

The diagram illustrates the integration of Siemens and SAP solutions across the product lifecycle stages: Product Planning, Product Design & Engineering, Production Planning, Production Engineering, Production Execution, and Service and Support.

Product Planning	Product Design & Engineering	Production Planning	Production Engineering	Production Execution	Service and Support
Teamcenter		Seamless Co-existence		SAP S4/HANA	
Collaboration	Design, eBOM, Configuration, Change Management, Documents, CAX intg.		Bill of Asset, AIN, As-Sold, Sales & Production Configuration, CPQ, Enterprise Change, Business Objects, Documents		
Systems Eng	Requirements Engineering and Verification, Systems Engineering		Bill of Asset, AIN, As-Sold, Sales & Production Configuration, CPQ, Enterprise Change, Business Objects, Documents		
Supplier Collab	Design Data Exchange		Supplier Collaboration		
Cost	Should Costing		NPD Costing		
Visualization	As-Designed Visualization		Enterprise Visualization		
Governance	Metrics, Dashboards, Search, Mash ups		Enterprise Performance Management		

Legend: Siemens Solutions (Green), SAP Solutions (Blue)

Service Engineering and Asset Management digital thread currently being developed  
 MBOM, BOP, MES, IoT Offered by Siemens and SAP, Customer will choose the best fit for their business needs  
 Both companies have signed joint development agreement on Integrations. Current Integrations available from both Siemens & SAP

CIMdata® Copyright © 2021 by CIMdata, Inc. 22

# 2021 Market Analysis Review

## CIMdata PLM Market & Industry Forum—June 2021

### Rockwell | PTC Partnership Momentum

From the Rockwell Automation Annual Investor Conference, November 2020

#### Rockwell | PTC partnership momentum



##### FY20 ACCOMPLISHMENTS

- Strong double-digit orders growth, over 200 new logos
- ~50% of wins on top of competitive platforms
- Customers investing in multi-site expansions – sign of real value creation

##### MOMENTUM INTO FY21

- New portfolio capabilities to drive simplification and analytics adoption
- Enhance digital thread capabilities with Windchill and Onshape
- Increased investments to further accelerate growth



CIMdata®

Copyright © 2021 by CIMdata, Inc.

23

### PTC Adds Arena

Joins Onshape in PTC's cloud SaaS portfolio – what did PTC say?

- “Strong tailwinds driving the market forward”
  - Digital Transformation, Increasing Impact of Compliance, Global Supply Chains, Accelerating Speed of Innovation
- “Leader in Cloud PLM and QMS”
- “Highly attractive customer base” mainly in high tech, life sciences, and aerospace and defense (A&D)
- “...’Operations-Centric’ Cloud Platform” – compliments Onshape/Atlas
- Also brings Omnify Empower PLM, can be delivered on-premise or cloud, Microsoft technology stack, more discrete manufacturing than Arena

CIMdata®

Copyright © 2021 by CIMdata, Inc.

24

# 2021 Market Analysis Review

## CIMdata PLM Market & Industry Forum—June 2021

### GI Partners Major Investment in Aras

*April 2021 announcement, estimated at \$860 million*

- Aras joined CIMdata’s list of PLM Mindshare Leaders a few years ago
- Made significant investments to build out the Aras Innovator platform
- Went from “Business of Engineering” to competing head-to-head against other Mindshare Leaders
- GI Partners investment, estimated at \$860 million, lets other investment firms cash out, buys most of outstanding stock
- “We are excited to partner with Peter and the management team to help further extend their cloud technology leadership, world-class support, and operations as the business scales,” said Travis Pearson, Managing Director and Co-Head of Private Equity at GI Partners”

**GI PARTNERS**

**CIMdata**

Copyright © 2021 by CIMdata, Inc.

25

### Agenda

*2021 CIMdata PLM Market & Industry Forum – June 2021 Market Analysis Review*

- PLM Market Analysis Review
- 2021 Market News
- Q1 2021 Market Results
- Concluding Remarks

**CIMdata**

Copyright © 2021 by CIMdata, Inc.

26

# 2021 Market Analysis Review

## CIMdata PLM Market & Industry Forum—June 2021

### 2021 Performance of Public Companies

*Based on the quarterly results presented this year, reporting years vary*

Company	Original 2021 Guidance(M)	YoY Growth*	Q1 YoY Growth	Revised Guidance
Altair	\$502 - \$510	7.7%	14.2%	\$504 - \$512
Ansys	\$1,770.5 - \$1,855.5	7.8%	19% (16% cc)	\$1,790.7 - \$1,855.7
AspenTech	\$704 - \$754	2.0%	24.6%	\$705 - \$729
Autodesk	\$4,265 - \$4,345	14%	11.7%	\$4,305 - \$4,385
Cadence	\$2,860 - \$2,920	7.7%	19%	---
Dassault Systemes	€4,715 - €4,765	12.6%	3%	€4,715 - €4,765
PTC	\$1,690 - \$1,730	11.6%	28% (22% cc)	\$1,710 - \$1,740
Synopsys	\$4,000 - \$4,050	9.2%	19%	\$4,035 - \$4,085
Nemetschek	"High Single Digits"	---	8.1% (12.1% cc)	---
Trimble	\$3,299.7-\$3,399.7	6.7%	12%	\$3,399.7 - \$3,499.7
Hexagon	€4,600 - €5,100	13.0%	11%	---

\*Growth estimated from midpoint



Copyright © 2021 by CIMdata, Inc.

27

### Agenda

*2021 CIMdata PLM Market & Industry Forum – June 2021 Market Analysis Review*

- PLM Market Analysis Review
- 2021 Market News
- Q1 2021 Market Results
- Concluding Remarks



Copyright © 2021 by CIMdata, Inc.

28

# 2021 Market Analysis Review

## CIMdata PLM Market & Industry Forum—June 2021

### Concluding Remarks

*Few numbers changed from the Forum, a lot of big news, and strong early results*

- The overall trends remain strong: Industry 4.0, Digital Transformation, Cloud
- EDA and simulation key to the industrial response
- The market numbers did not change much since our April 2021 estimates
- Some big news from market leaders Ansys, Aras, Autodesk, and PTC
- Strong results in Q1 bode well for 2021

### The CIMdata PLM Market Analysis Report

*Major PLM Foresight deliverables, a growing MAR series*



- CIMdata PLM Market Analysis Report
  - CIMdata Executive PLM Market Report
  - CIMdata PLM Industry Review and Trends Report
  - CIMdata PLM Market and Solution Provider Analysis Report
  - CIMdata PLM Market Geographic Analysis Report
  - CIMdata PLM Market Industry Analysis Report
- Country reports for the Brazil, China, Germany, India, Japan, Russia, South Korea, Italy, United Kingdom, France, and the United States
- CAM MAR (29<sup>th</sup> year)
- Simulation & Analysis (S&A) MAR

# 2021 Market Analysis Review

## CIMdata PLM Market & Industry Forum—June 2021

**CIMdata**

*Strategic consulting for competitive advantage in global markets*



**CIMdata®**

Copyright © 2021 by CIMdata, Inc.

31