

MBSE Industry Research: Value Positioning & Readiness for Success PLM Road Map & PDT North America 2025

CIMdata

PLM Road Map™ & PDT North America 2025
PLM's Integral Role in Digital Transformation: From Strategy to Execution
Elevating PLM to an Enterprise Business Solution,
the PLM Professional's Road Map to Success
May 7 & 8

**The Current Reality and Future Trends in
Model-Based Systems Engineering
Insights from Industry Research**

James Roche, Aerospace & Defense Practice Director
Sandeepak Natu, Simulation-Driven Systems Development Practice Co-Director
Don Tolle, Simulation-Driven Systems Development Practice Co-Director

www.CIMdata.com
Copyright © 2025

CIMdata Defining What Comes Next in Digital Transformation

Strategic management consulting for competitive advantage in global markets

**The leading independent authority on PLM and its
digital transformation. We provide research, education,
and strategic consulting to clients around the world.**

**OUR MISSION:
Maximizing clients' ability to design, acquire, deliver,
and support innovative products and services.**

www.CIMdata.com
Copyright © 2025

MBSE Industry Research: Value Positioning & Readiness for Success

PLM Road Map & PDT North America 2025

CIMdata

Researchers' Profiles



James Roche, Executive Consultant, A&D Practice Director

Over 35 years of experience in transformation and IT enablement of product development and manufacturing processes. PLM Practice Manager at CSC Consulting and at A.T. Kearney, where he led development and delivery of PLM services for international clients in the aero, auto, consumer products, high-tech, and medical device industries. Previously with EDS, he served as chief architect for General Motors' worldwide engineering systems.



Sandeepak Natu, Co-Director, Simulation-Driven Systems Development Practice

Over 25 years of experience in engineering simulation, consulting, solution selling, and business development. Gained his initial professional experience with Fluent India as part of technical support and services teams with focus on academic support and process industry. Helped numerous multinational companies establish their initial computational modeling teams in India.

3Copyright © 2025

CIMdata

Researchers' Profiles



Don Tolle, Co-Director, Simulation-Driven Systems Development Practice


Over 40 years of experience in engineering design, simulation and test domains, including software product development, MBx implementation consulting, go to market strategy development and strategic partnering/M&A. Broad scope of senior positions with PLM/CAE/Test software & engineering services providers. 13+ years with CIMdata leading up the S&A and SDSA Consulting Practices.

Participant in industry working groups – INCOSE, NAFEMS, and A&D PLM Action Group.

4Copyright © 2025

MBSE Industry Research: Value Positioning & Readiness for Success


PLM Road Map & PDT North America 2025




Agenda

- Introduction
- Research Findings
 - Value Positioning
 - Value Footprint Over Time
 - Readiness Assessment
 - Future Investment
 - Technology Considerations
- Concluding Remarks
- Questions & Answers

5 Copyright © 2025














Aerospace & Defense PLM Action Group

 *Founded in February 2014*

Mission

An association of aerospace & defense companies within CIMdata's globally recognized PLM Community Program, which functions as a **PLM advocacy group** to . . .

Members

Project Workstreams

- PLM Technology Obsolescence Management
- Global Collaboration
- Model-based Definition (MBD)
- Multiple View Bill of Material (Multi-view BoM)
- Model-Based Systems Engineering (MBSE)
- Interoperability Standards
- Digital Twin/Digital Thread

Collaborative Research with Solution Providers

- Digital Thread
- Model-based Systems Engineering

Website: www.ad-pag.com

6 Copyright © 2025

MBSE Industry Research: Value Positioning & Readiness for Success

PLM Road Map & PDT North America 2025



Collaborative Research Program



Study Model-Based Systems Engineering (MBSE) current state and future trends

Objective

The A&D PLM Action Group members and the PLM solution provider sponsors shared a common objective for this research –

To gain understanding of needs and opportunities within industry that will inform MBSE solution strategy and roadmap and implementation planning

Sponsors













7

Copyright © 2025



Information Gathering



Subject matter expert interviews & an online survey of committed professionals

Survey

- A total of 82 complete and validated online survey responses were received and analyzed
- The survey was intentionally designed to be a challenge for the respondent
 - Answering the questions required a deep understanding of the status and plans for MBSE realization within the respondent's company
 - The average time to complete the survey was approximately 30 minutes
- This strategy achieved the desired effect
 - Only experts on the topic of MBSE invested the time and effort needed to complete the survey

Interviews

- A total of 18 in-depth interviews were conducted by CIMdata with five communities:
 - 4 PLM solution provider sponsors
 - 4 other "providers of interest"
 - 2 solution provider sponsor key customers
 - 6 AD PAG member companies
 - 2 renowned experts from academia
- The 8 A&D companies interviewed included
 - 6 of the Top 20
 - 4 of the Top 10
- Learnings from the interviews guided the line of inquiry in the web-based survey

8

Copyright © 2025

MBSE Industry Research: Value Positioning & Readiness for Success

PLM Road Map & PDT North America 2025



Analysis


Compares and contrasts perspectives of industrial users and solution providers

- In addition to the four sponsors,








four “Providers of Interest” participated

 - Dassault Systemes
 - IBM
 - HCLTech
 - TCS
- In depth interviews with experts from 8 industrial user companies and 8 solution providers provided a statistically significant sample size
 - Able to compare perspectives of industrial users and solution providers
 - Survey responses validated and augmented results from the interviews

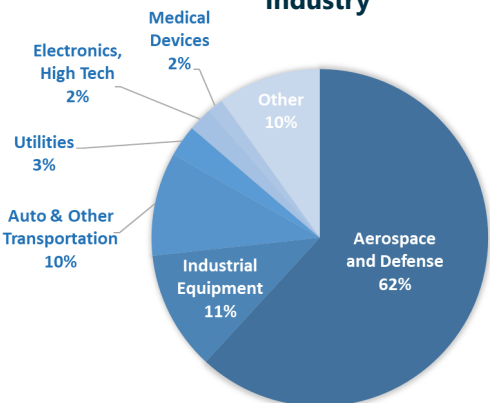
9
Copyright © 2025



Survey Respondent Demographics

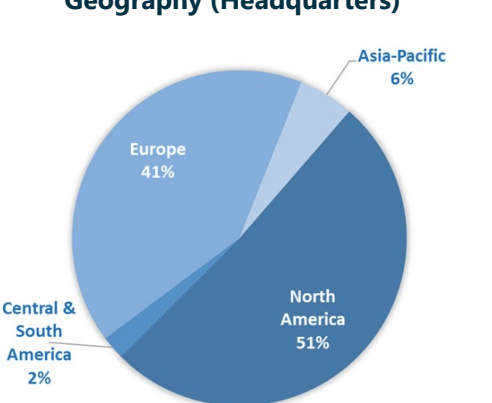

Heavily aerospace & defense with global representation

Industry



Industry	Percentage
Aerospace and Defense	62%
Industrial Equipment	11%
Auto & Other Transportation	10%
Other	10%
Utilities	3%
Electronics, High Tech	2%
Medical Devices	2%

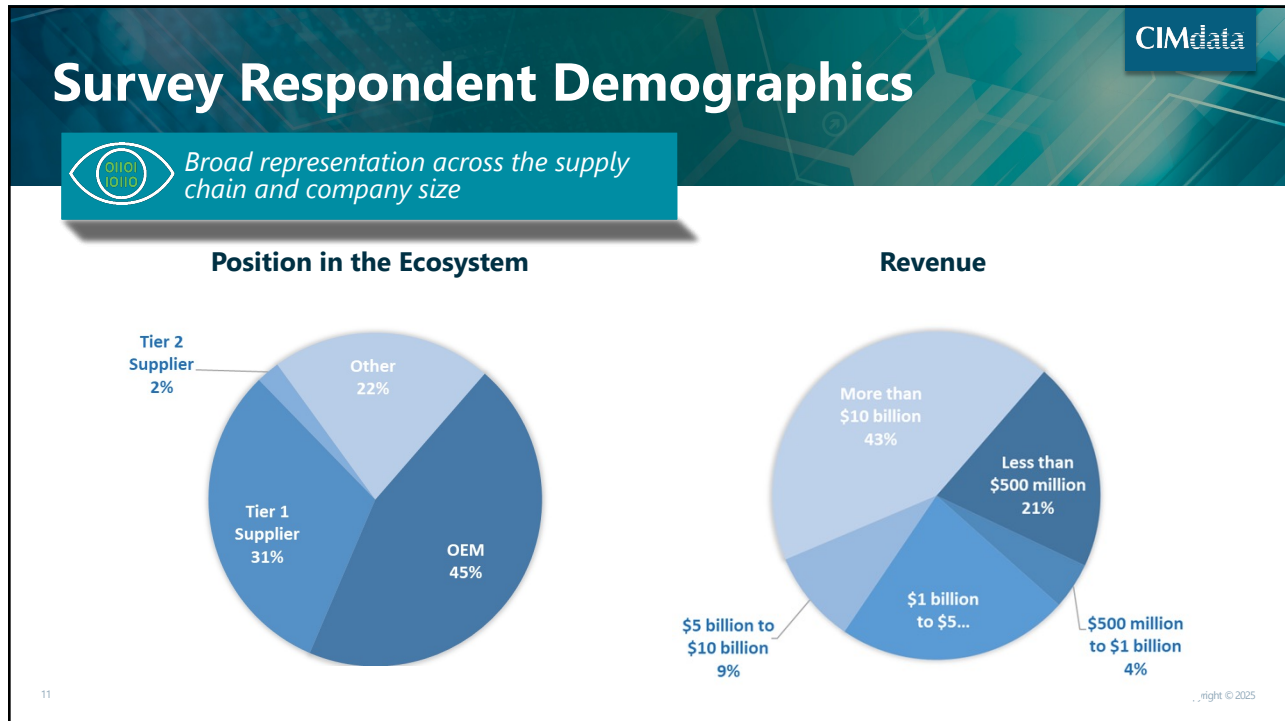
Geography (Headquarters)



Geography	Percentage
North America	51%
Europe	41%
Asia-Pacific	6%
Central & South America	2%

10
Copyright © 2025

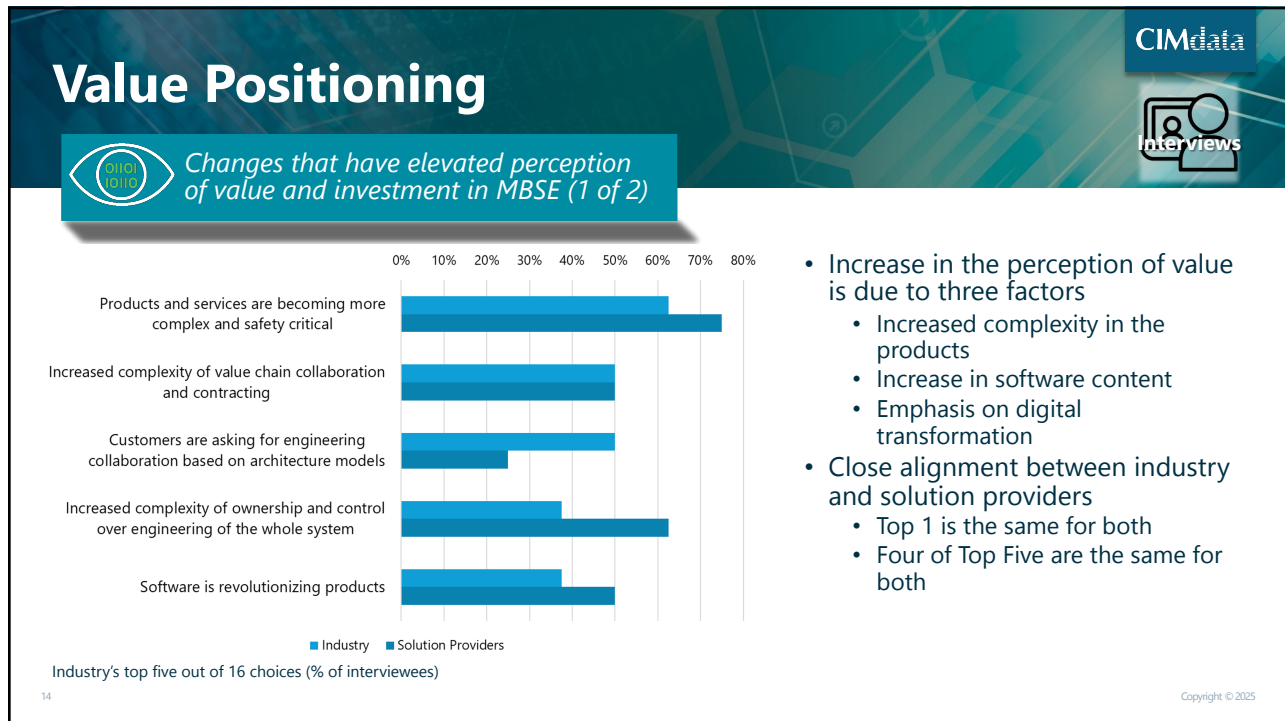
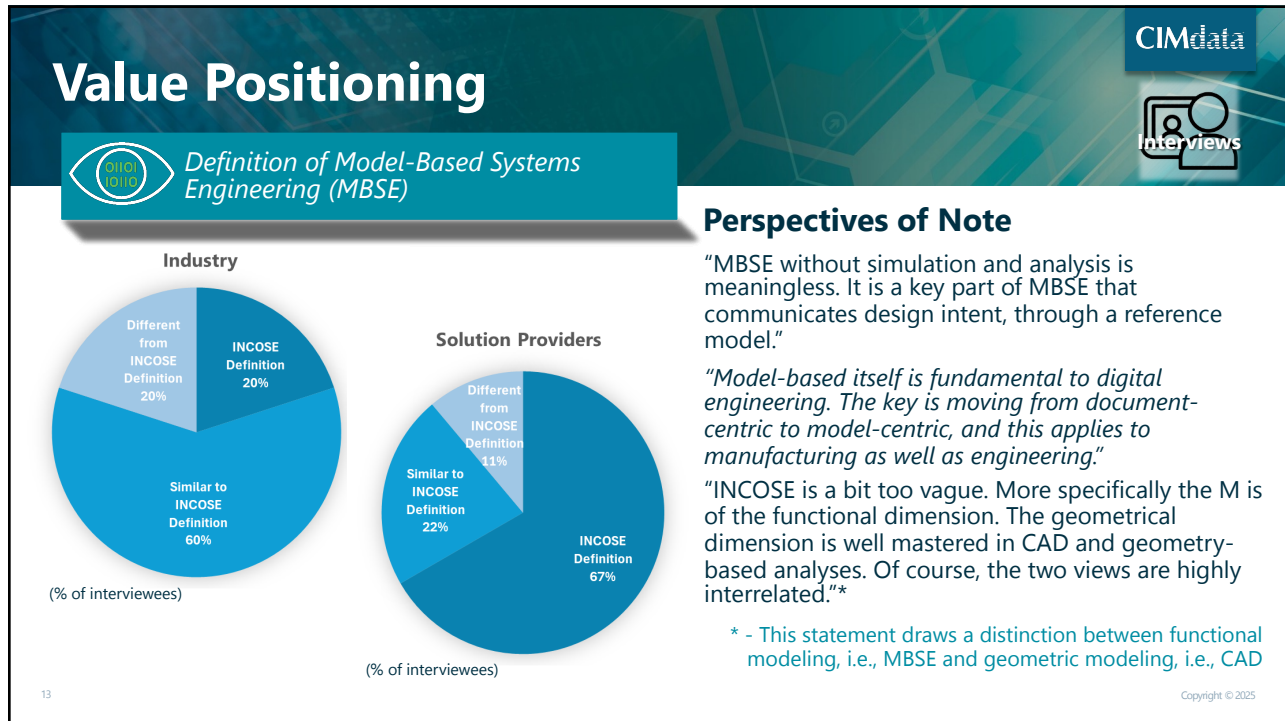
MBSE Industry Research: Value Positioning & Readiness for Success PLM Road Map & PDT North America 2025



-
- Agenda**
- Introduction
 - Research Findings
 - Value Positioning
 - Value Footprint Over Time
 - Readiness Assessment
 - Future Investment
 - Technology Considerations
 - Concluding Remarks
 - Questions & Answers
- 12 Copyright © 2025

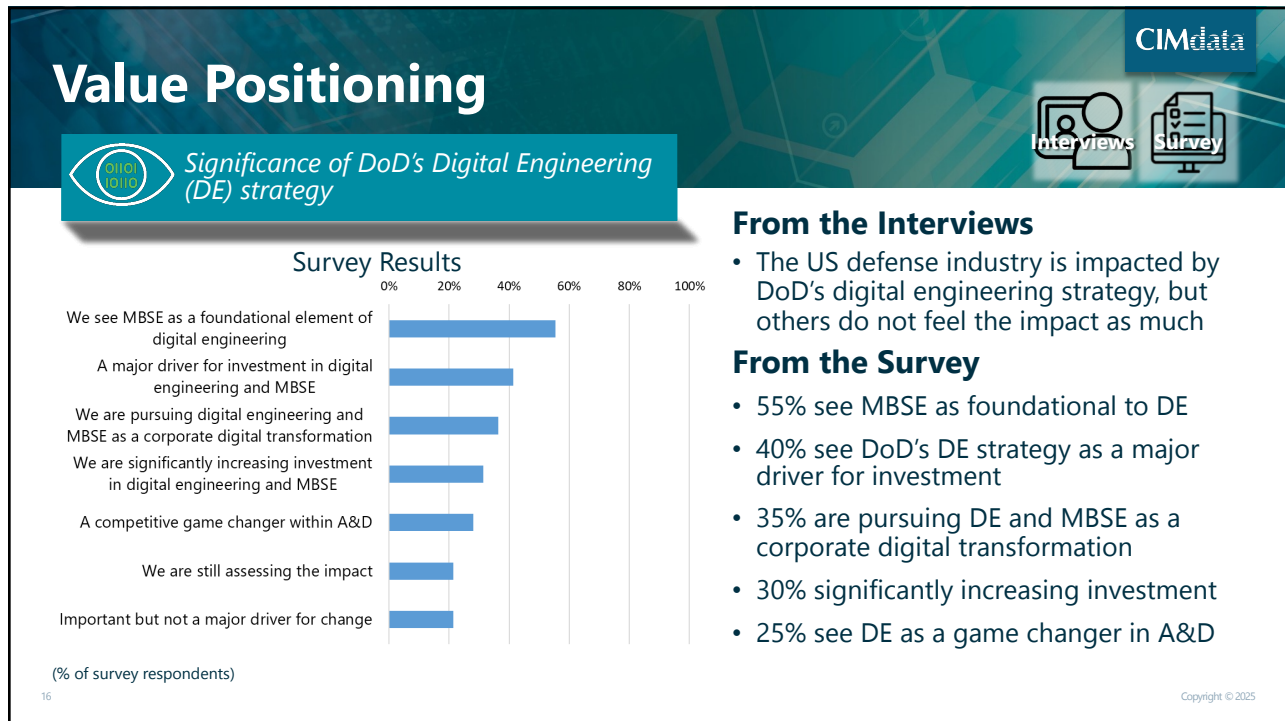
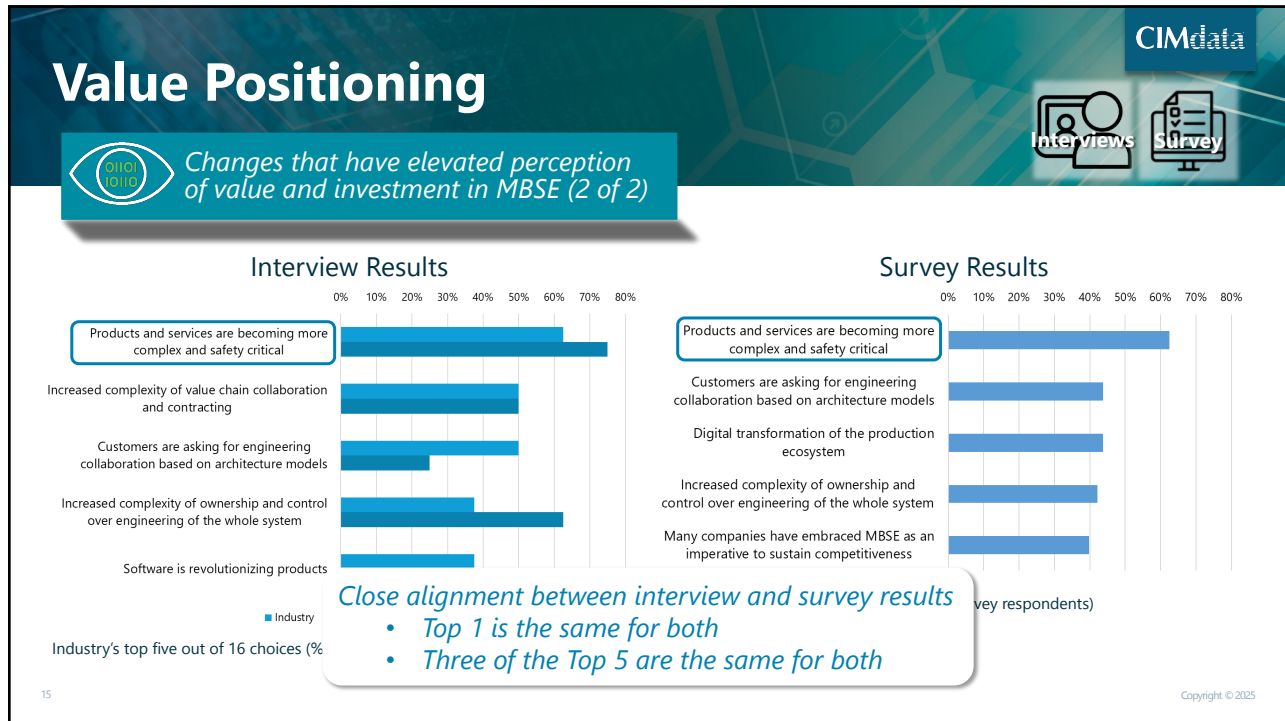
MBSE Industry Research: Value Positioning & Readiness for Success

PLM Road Map & PDT North America 2025



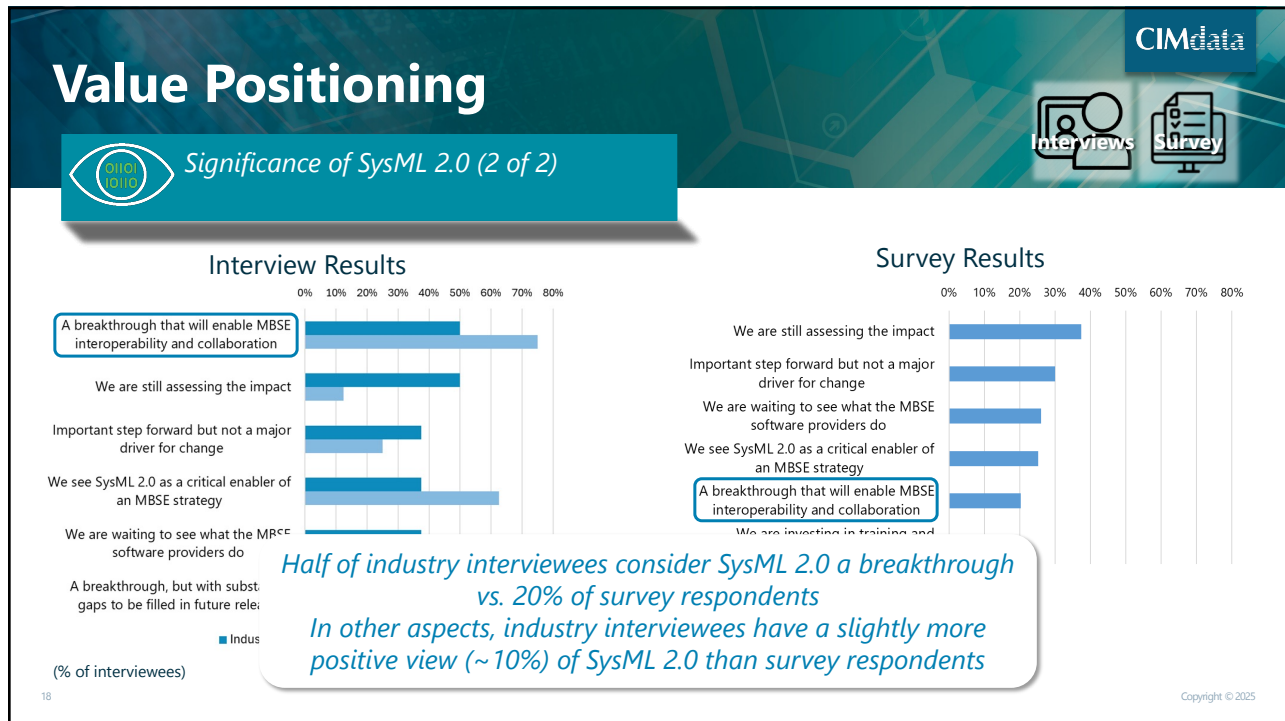
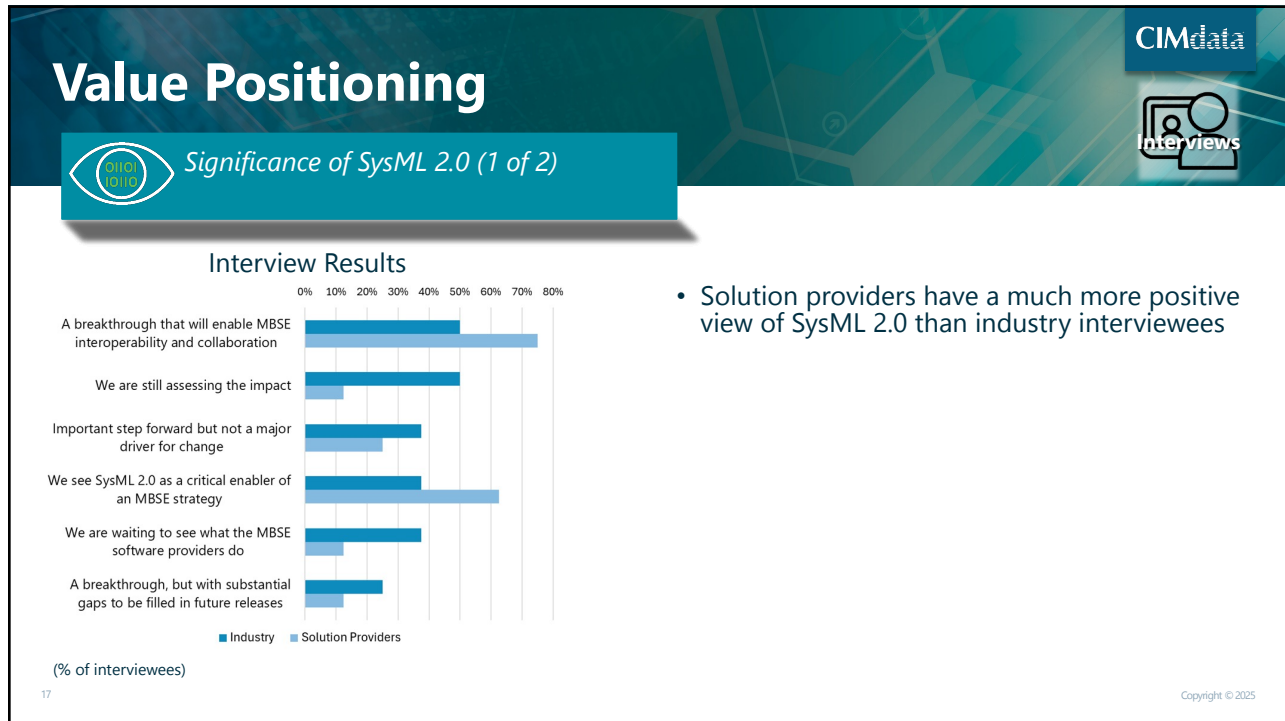
MBSE Industry Research: Value Positioning & Readiness for Success

PLM Road Map & PDT North America 2025



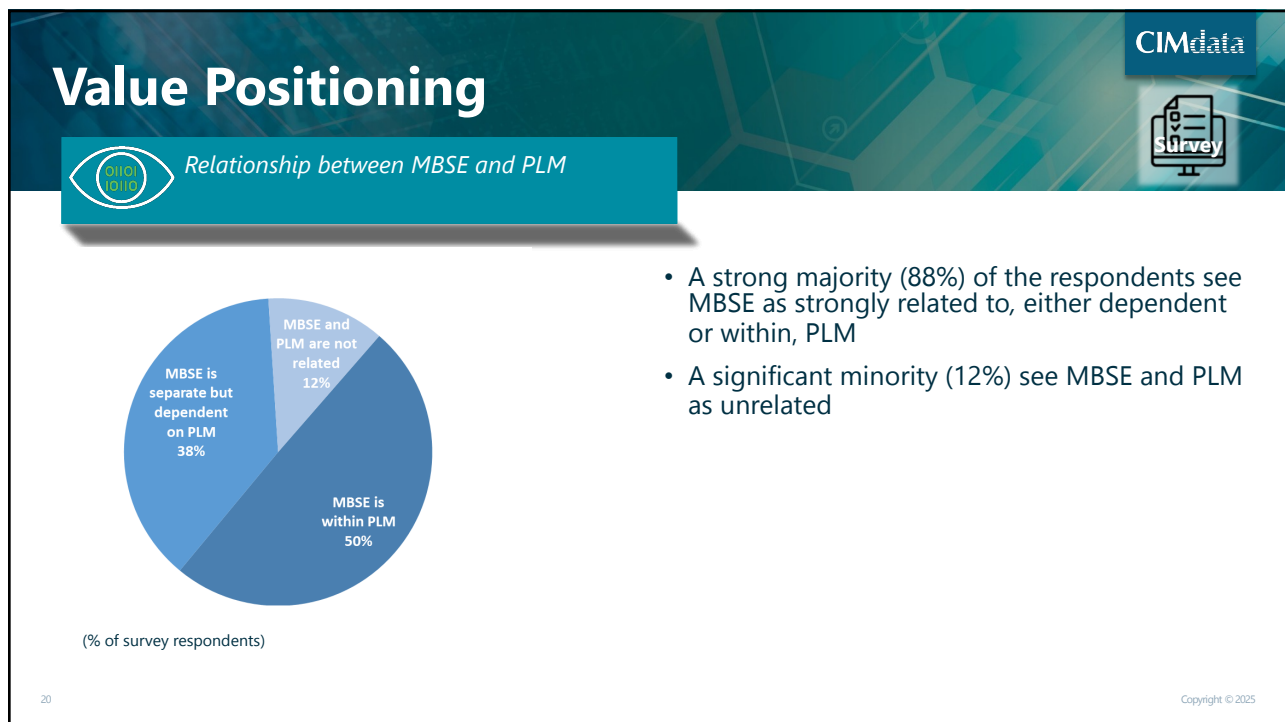
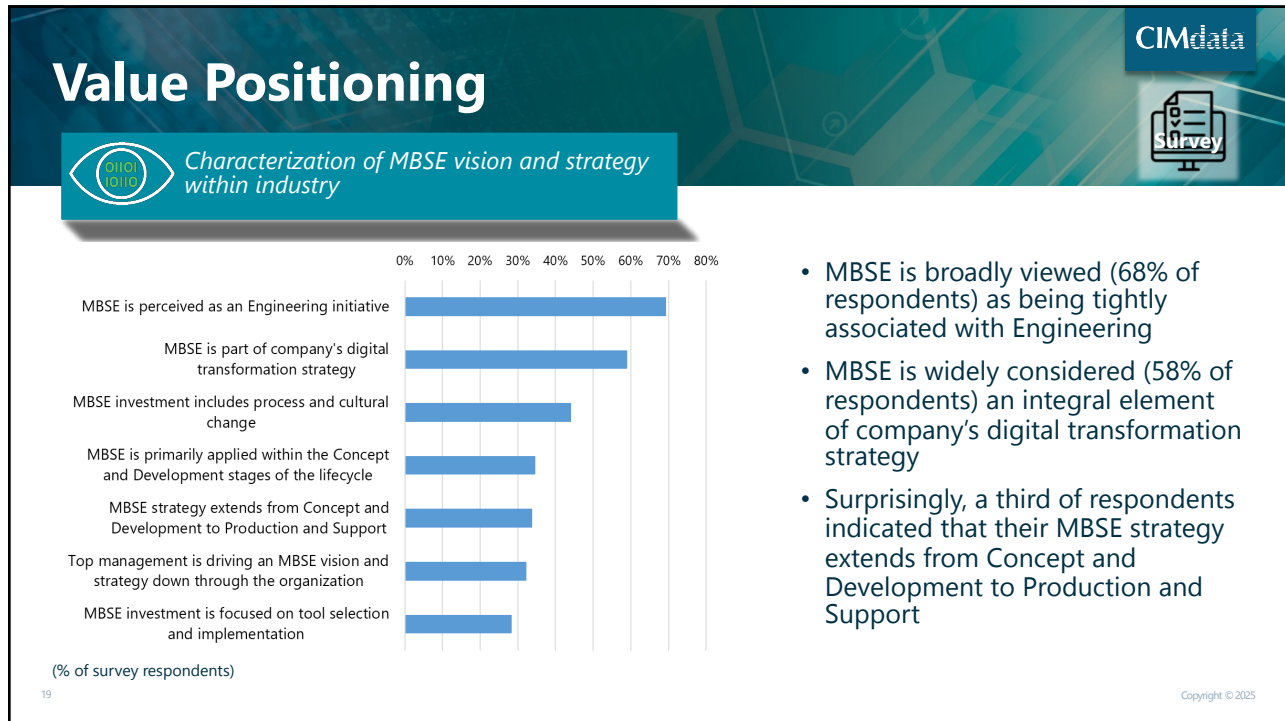
MBSE Industry Research: Value Positioning & Readiness for Success

PLM Road Map & PDT North America 2025



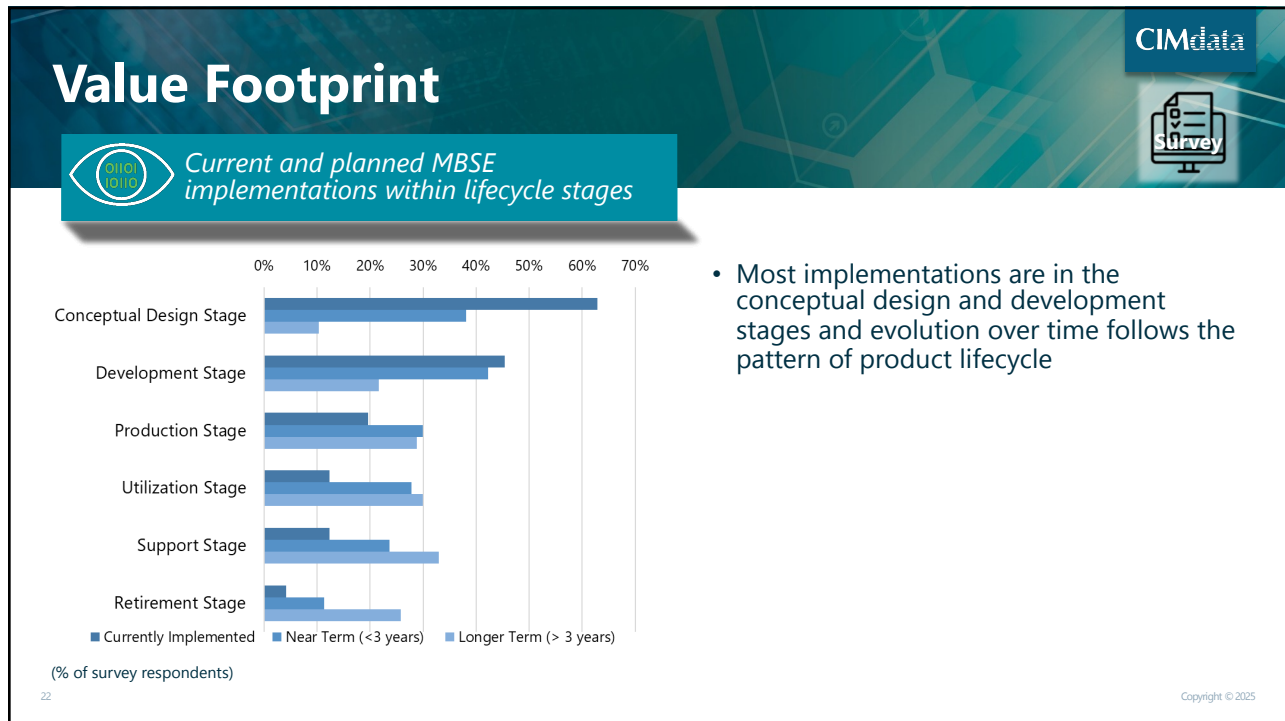
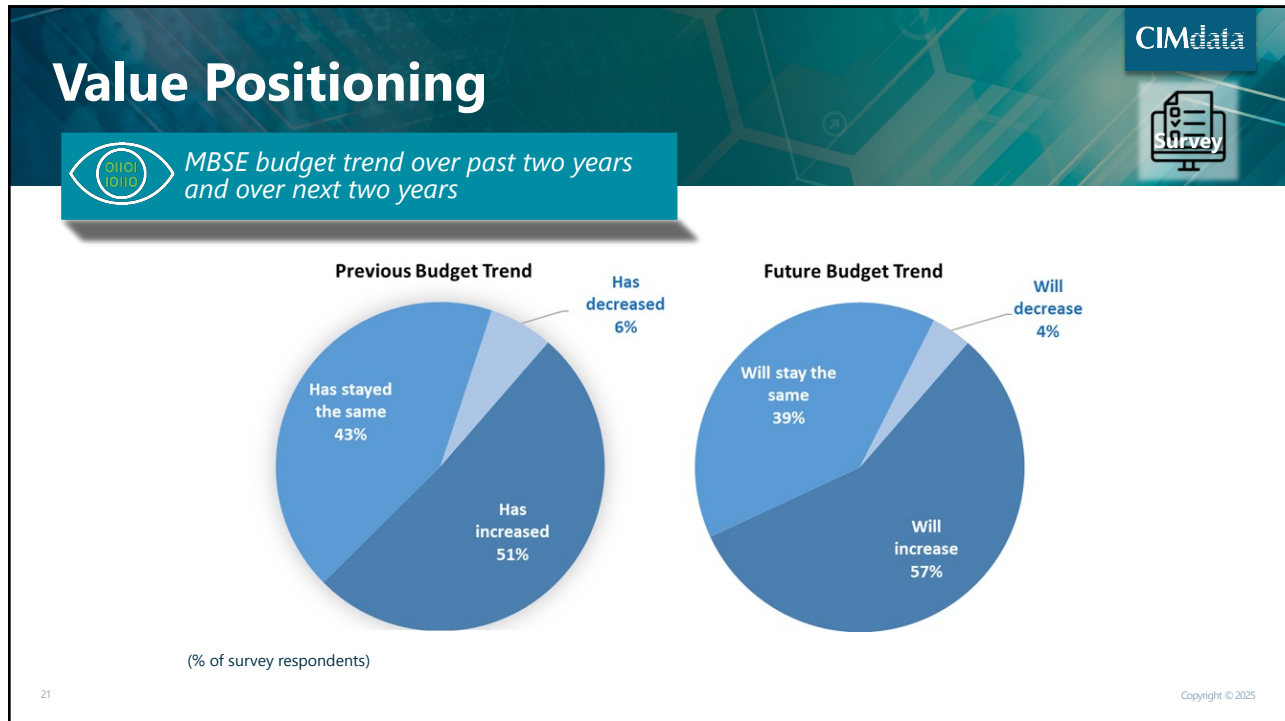
MBSE Industry Research: Value Positioning & Readiness for Success

PLM Road Map & PDT North America 2025



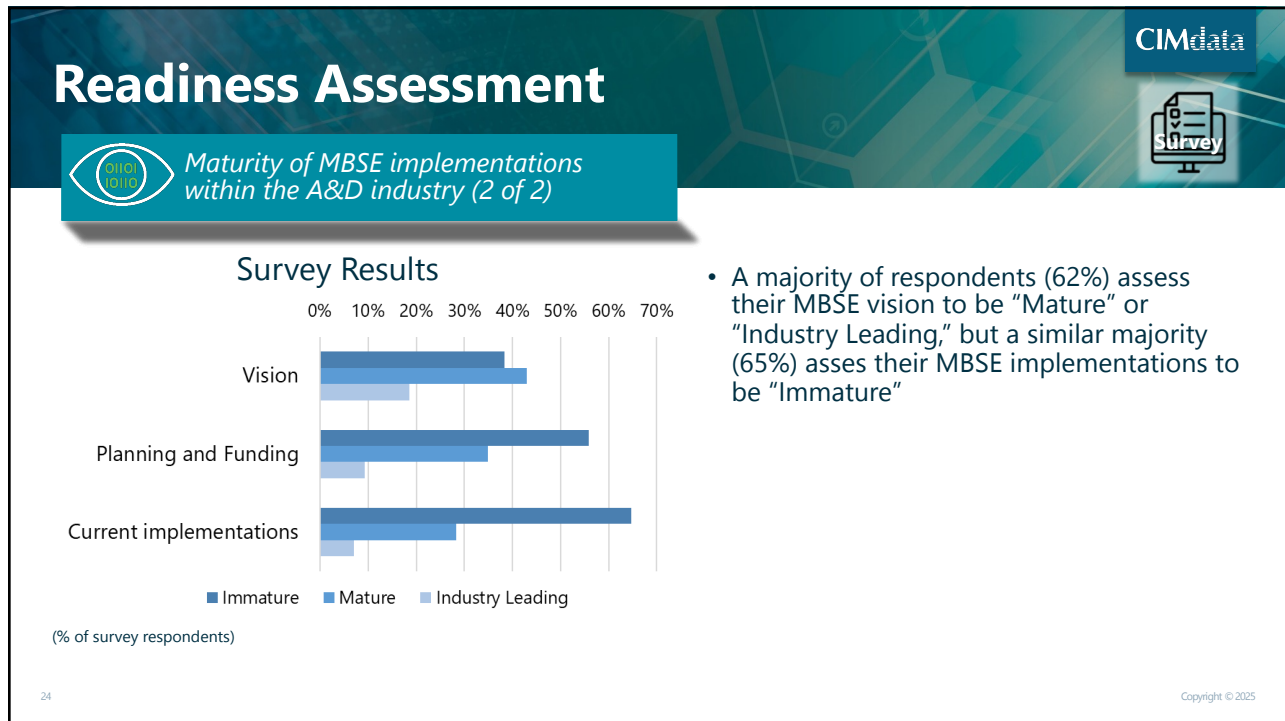
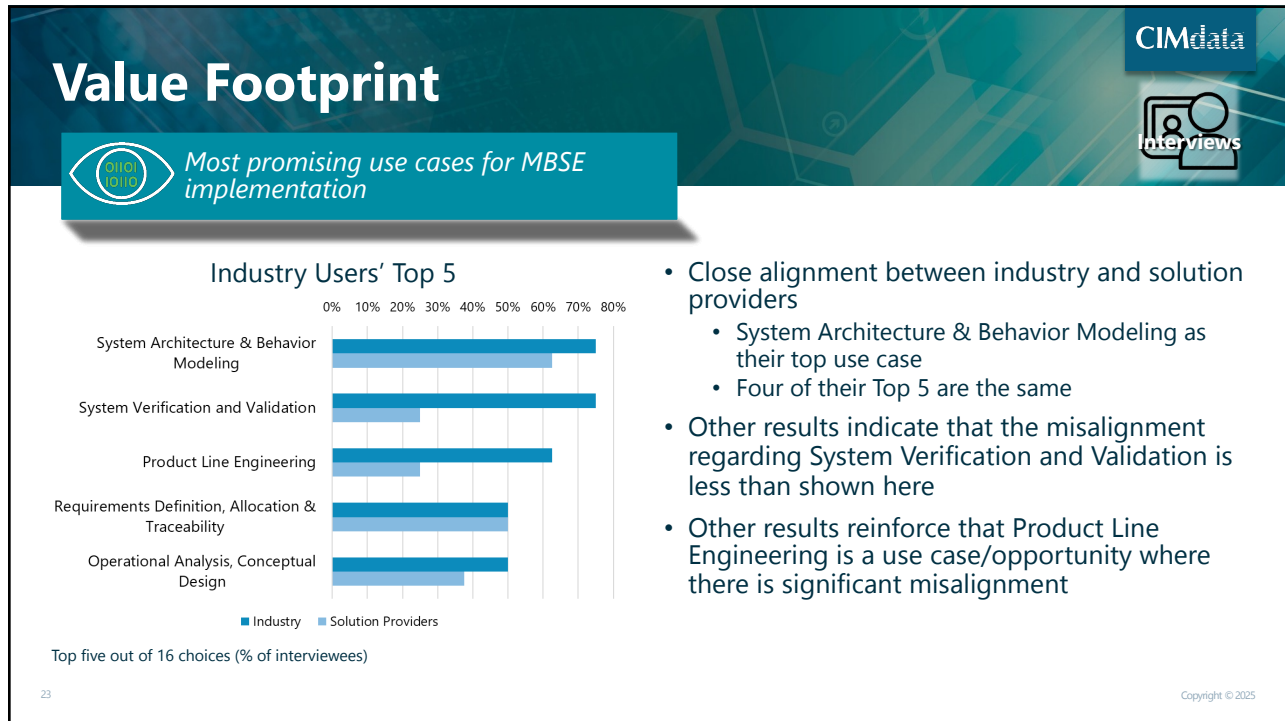
MBSE Industry Research: Value Positioning & Readiness for Success

PLM Road Map & PDT North America 2025



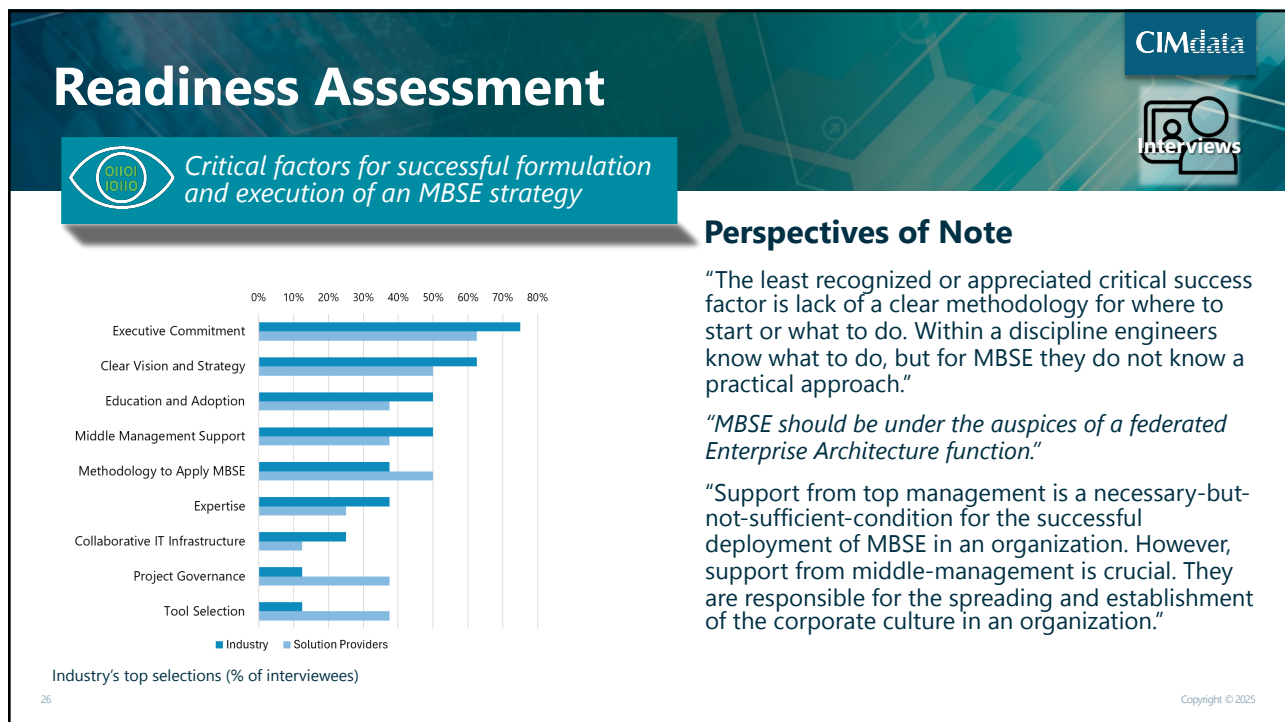
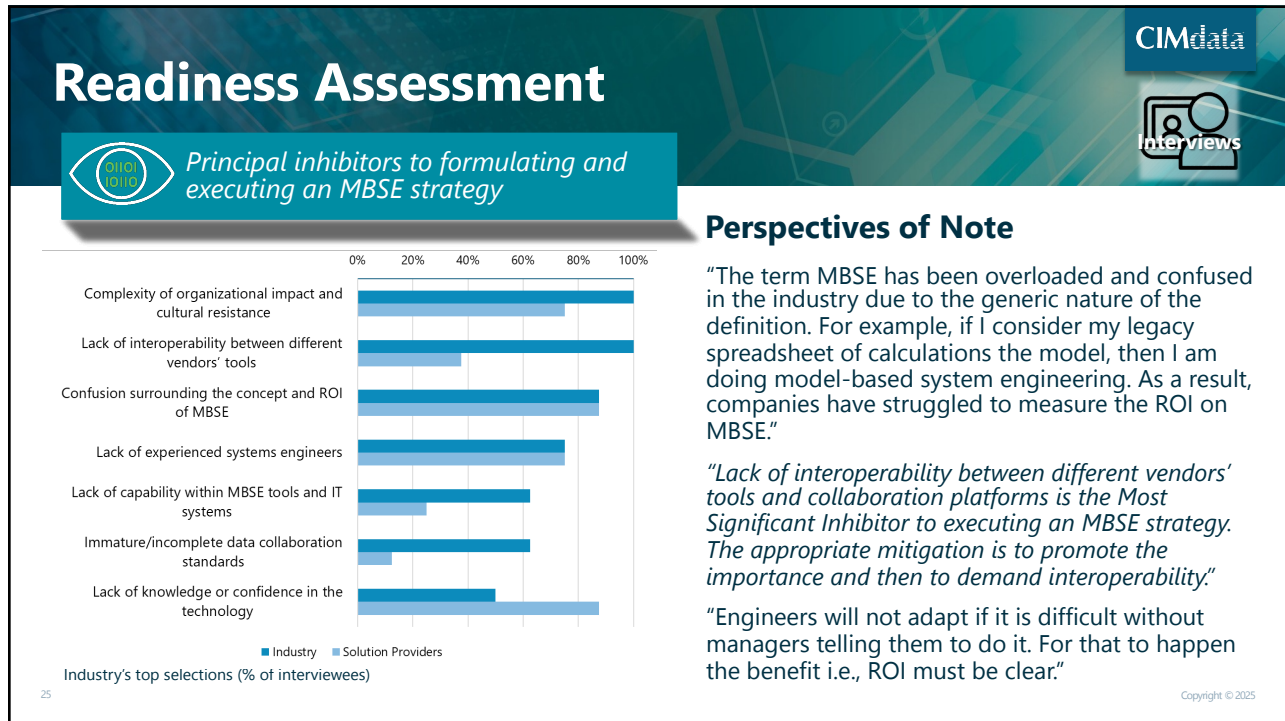
MBSE Industry Research: Value Positioning & Readiness for Success

PLM Road Map & PDT North America 2025



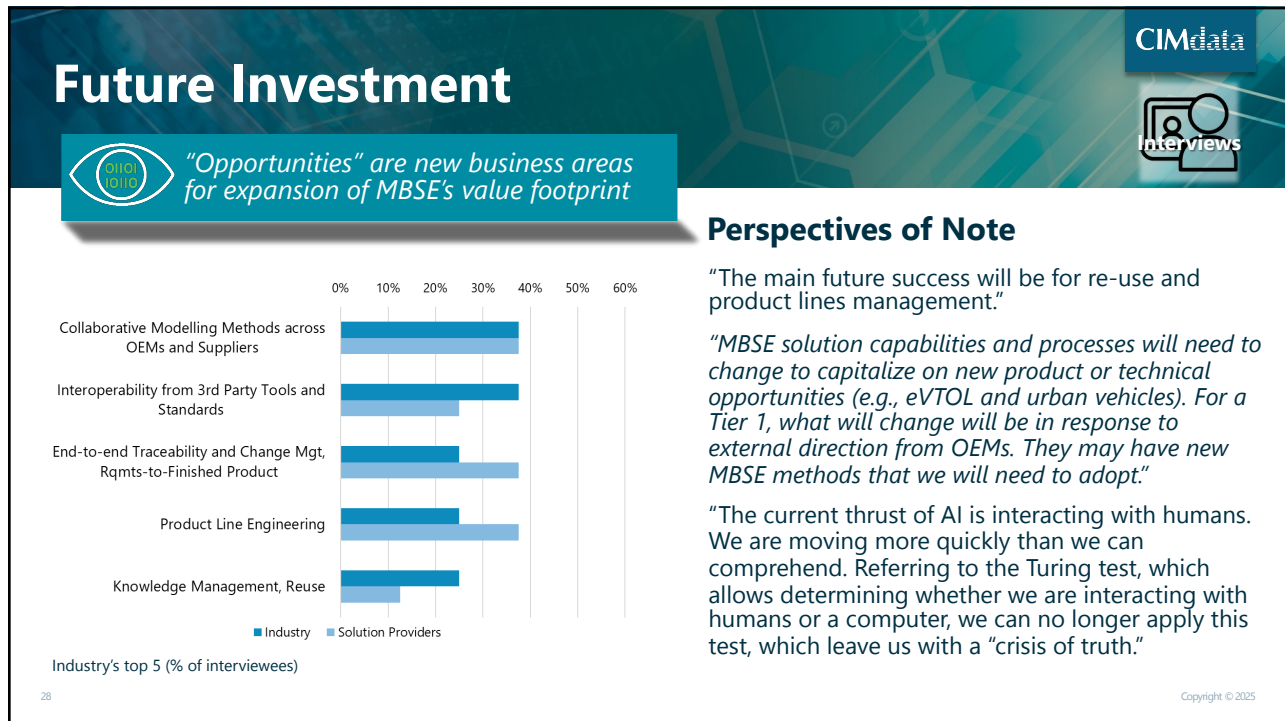
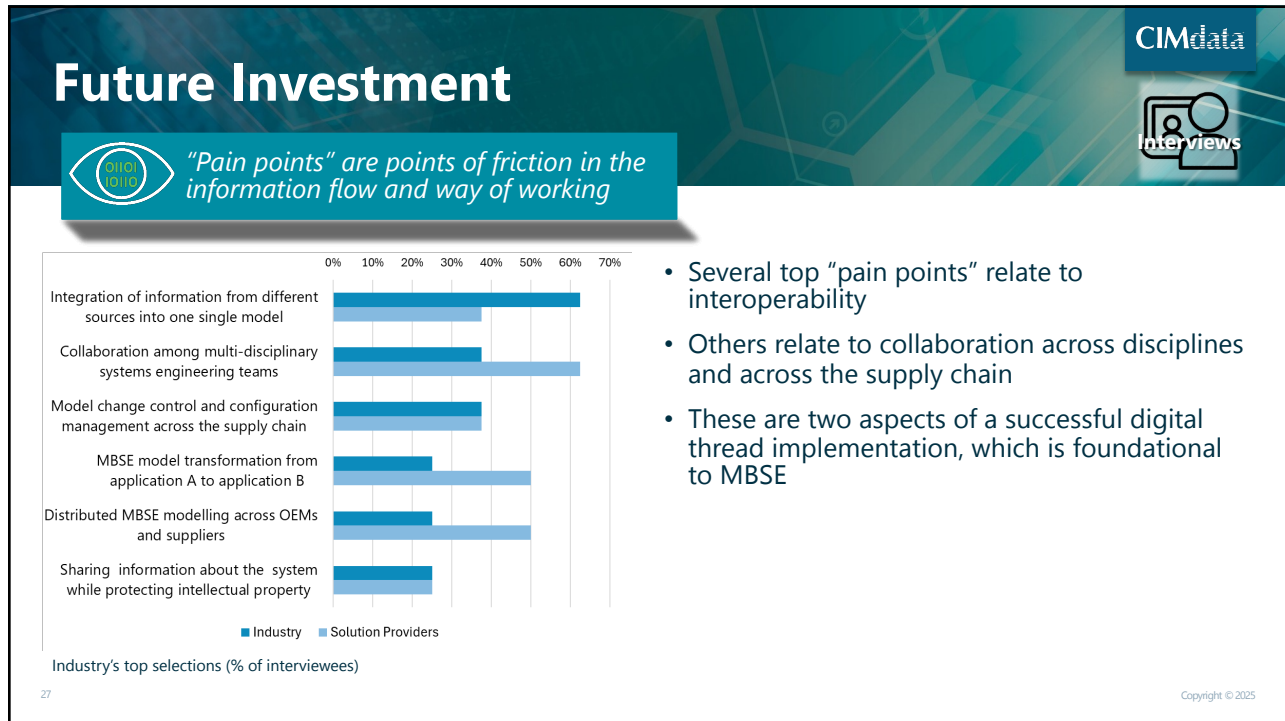
MBSE Industry Research: Value Positioning & Readiness for Success

PLM Road Map & PDT North America 2025



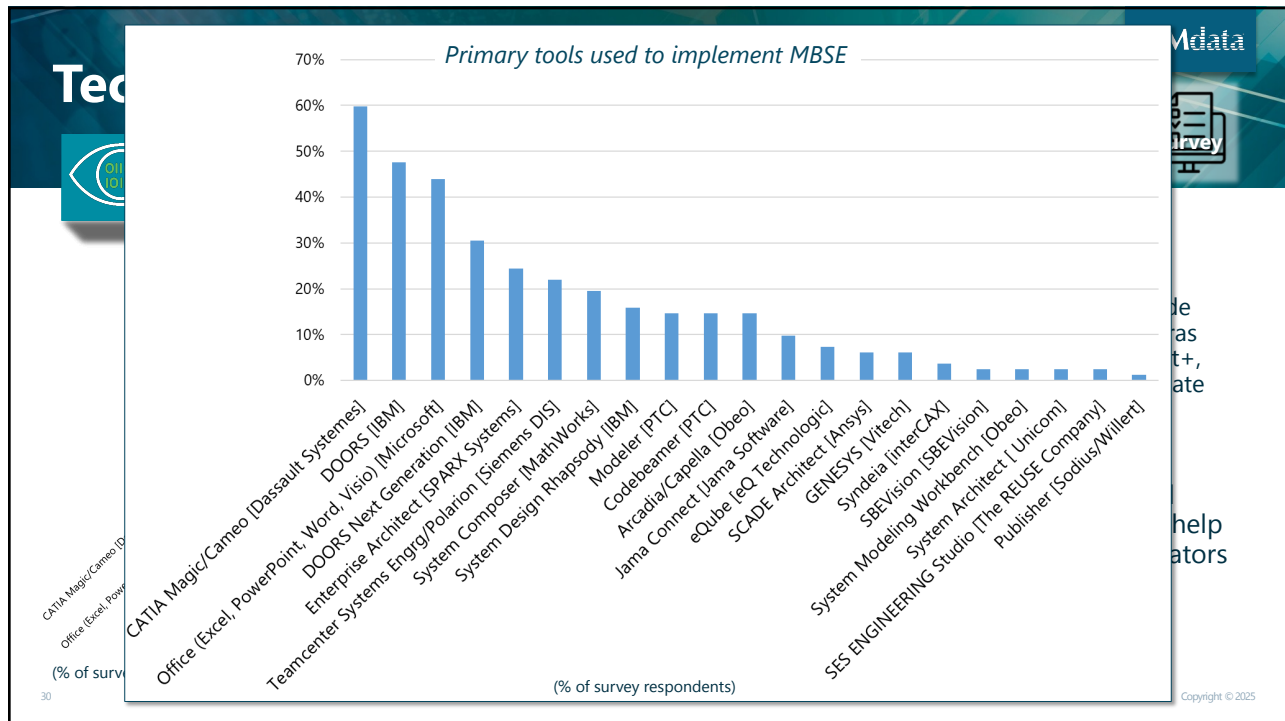
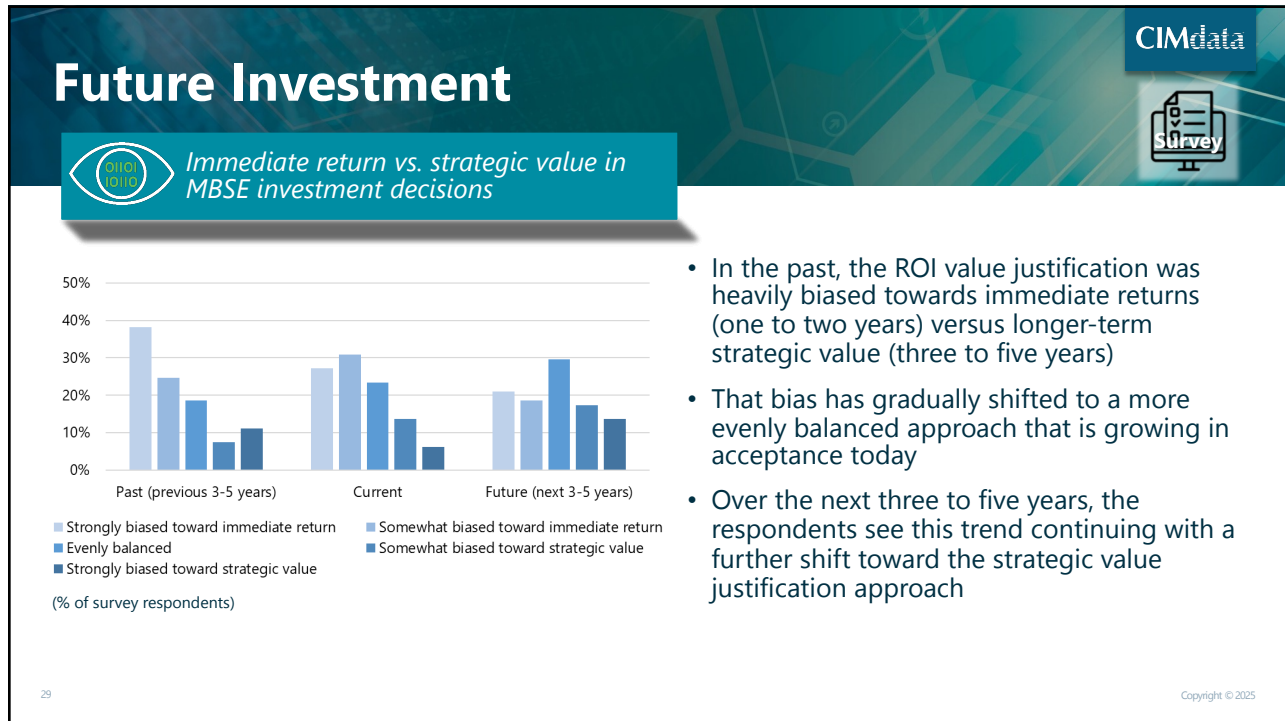
MBSE Industry Research: Value Positioning & Readiness for Success

PLM Road Map & PDT North America 2025



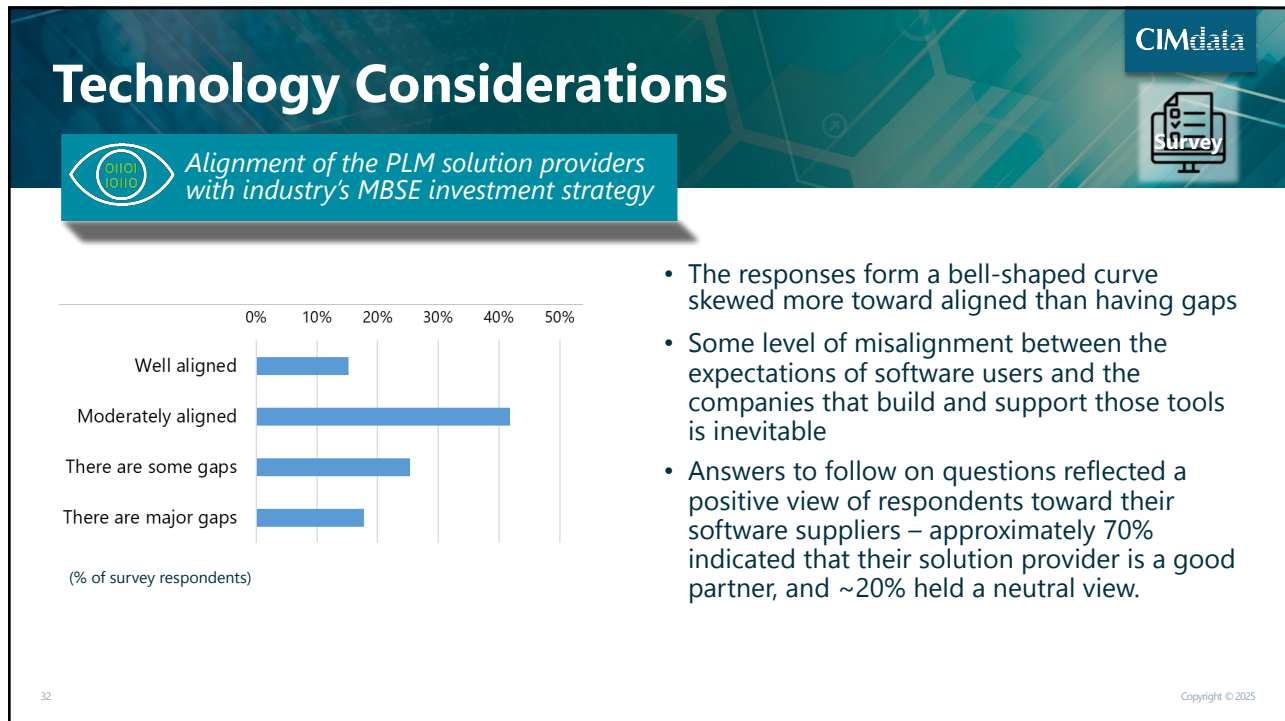
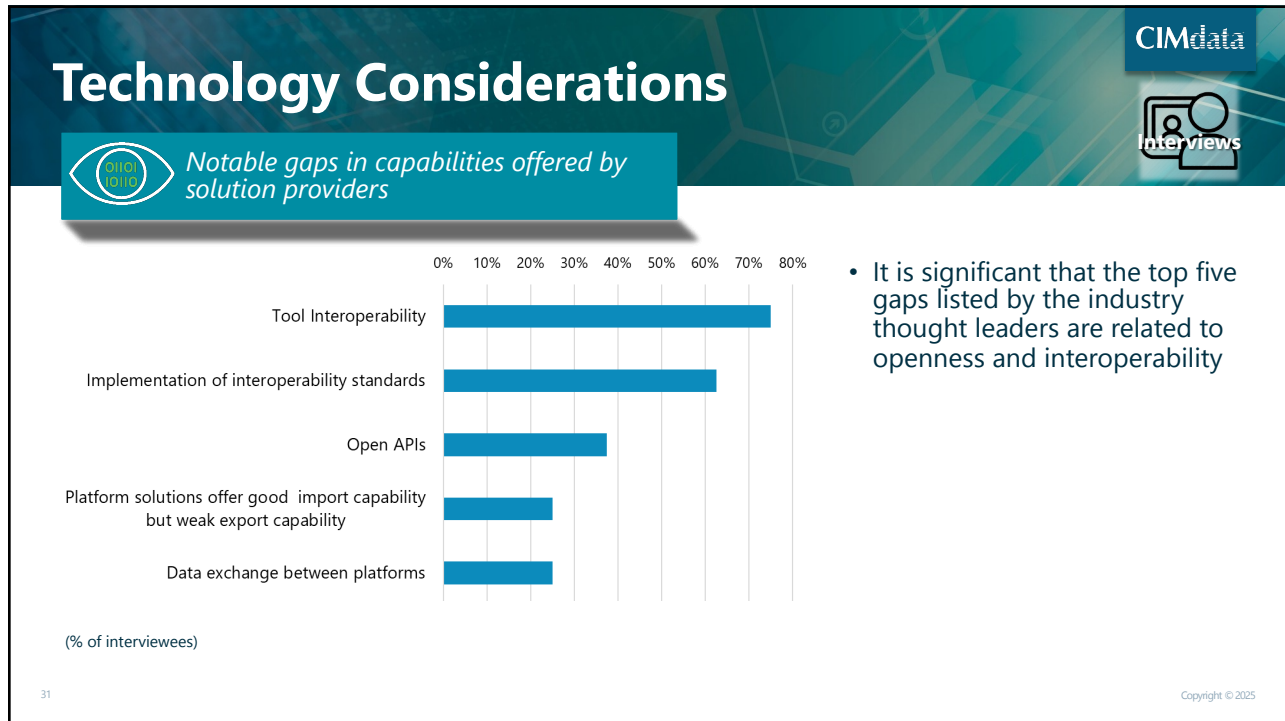
MBSE Industry Research: Value Positioning & Readiness for Success

PLM Road Map & PDT North America 2025




MBSE Industry Research: Value Positioning & Readiness for Success

PLM Road Map & PDT North America 2025



MBSE Industry Research: Value Positioning & Readiness for Success

PLM Road Map & PDT North America 2025




Agenda


- Introduction
- Research Findings
 - Value Positioning
 - Value Footprint Over Time
 - Readiness Assessment
 - Future Investment
 - Technology Considerations
- Concluding Remarks
- Questions & Answers

33

Copyright © 2025



Concluding Remarks



Key considerations for formulating an MBSE strategy (1 of 3)


- MBSE is gaining traction in the A&D industry due to factors such as increasing product complexity, the growing role of software in products, and the influence of the DoD's digital engineering strategy
 - Investment in MBSE is increasing and expected to continue to grow
- The top MBSE use cases currently focus on traditional systems engineering processes such as Requirements Definition and Allocation, System Architecture Definition, and Design Verification and Validation
- Future implementations are expected to include non-traditional applications such as Software Design, Product Line Engineering, and Design for Safety and Security

34


Copyright © 2025

MBSE Industry Research: Value Positioning & Readiness for Success

PLM Road Map & PDT North America 2025




Concluding Remarks

 Key considerations for formulating an MBSE strategy (2 of 3)

- The A&D industry is still in the initial phases of MBSE adoption, with maturity levels differing significantly across companies and programs
- Organizational impact and cultural resistance pose the most significant challenge to successful MBSE implementation
- Essential success factors for MBSE adoption include a well-defined vision and strategy, strong executive commitment, appropriate methodologies, development of MBSE expertise, education and training initiatives, middle management support, and robust tool integration and standardization
 - The keys to middle management support are compelling ROI and risk mitigation

35 Copyright © 2025



Concluding Remarks

 Key considerations for formulating an MBSE strategy (3 of 3)

- A wide array of commercial and in-house software tools are used for MBSE
- The research highlights a crucial need for enhanced interoperability between different tools and platforms, facilitated by open APIs and adherence to standards
- Justifications for MBSE investments are shifting from immediate returns to a more balanced approach that considers long-term strategic value
 - This change reflects the increasing recognition of MBSE's potential to drive innovation and efficiency in the A&D industry over time
- There is a strong need for collaboration between industrial users and their solution providers to address existing gaps and advance MBSE capabilities in a way that benefits the entire industry

36 Copyright © 2025

MBSE Industry Research: Value Positioning & Readiness for Success

PLM Road Map & PDT North America 2025



Thank You to Our Sponsors

 *For contributing their knowledge and for funding this important work*











37 Copyright © 2025



To Learn More...

- Access A&D PLM Action Group resources at QR code below
 - A&D PLM Action Group Model-Based Systems Engineering Research: Report of Findings, Dec 2024
 - Is PLM Becoming Digital Engineering?, AD PAG Insight, Sep 2024
 - The Emerging SysML 2.0 Standard: Will It Enable Multi-Party Digital Design Collaboration?, AD PAG Insight, Jul 2024
 - MBSE Data Interoperability Specification Report, report, Dec 2020
 - MBSE Data Interoperability: Architecture Model Exchange Solutions, presentation, Nov 2020
 - Model-Based Systems Engineering (MBSE) Data Interoperability, position paper, Jan 2019
- Access CIMdata resources at www.CIMdata.com
 - The Elevation and Expansion of Model-Based Systems Engineering: And What to Do About It, webinar, Aug 2024
 - The Elevation and Expansion of Model-Based Systems Engineering: Initial Findings from Industry Research, webinar, Sep 2024
- Contact for further discussion
 - James Roche, Aerospace & Defense Practice Director, j.roche@CIMdata.com
 - Sandeepak Natu, Simulation-Driven Systems Development Practice Co-Director, s.natu@CIMdata.com
 - Don Tolle, Simulation-Driven Systems Development Practice Co-Director, d.tolle@CIMdata.com





38 Copyright © 2025

MBSE Industry Research: Value Positioning & Readiness for Success PLM Road Map & PDT North America 2025

CIMdata

Questions & Answers

 Please tell us what's on your mind



39 Copyright © 2025

CIMdata Defining What Comes Next in Digital Transformation

 Strategic management consulting for competitive advantage in global markets

Serving clients from offices in North America, Europe, and Asia-Pacific

World Headquarters Ann Arbor, Michigan USA Tel: +1.734.668.9922	EMEA Headquarters Paris, FRANCE Tel: +33 (0) 663.406.725	Asia-Pacific Headquarters Tokyo, Japan Tel: +81.47.361.5850
--	---	--

www.CIMdata.com

Copyright © 2025