PLM Leadership

Using Agile Methods to Speed Time to Value in a PLM Deployment

CIMdata PLM Leadership Webinar Series
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#cimdatawebinar

Tom Gill, Senior Consultant, Practice Manager, PLM Enterprise Value & Integration
email: t.gill@cimdata.com
Tel: +1.734.668.9922

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www.CIMdata.com

Presenter's Profile

Your presenter's professional background

- Tom Gill, Senior Consultant, PLM Enterprise Value & Integration practice manager
  - Over 25 years of experience applying computer-based solutions to engineering and manufacturing. Before joining CIMdata in 2010, he worked as an independent PLM consultant, after spending over 20 years at high-volume manufacturing companies. Tom has a B.S. in Mechanical Engineering from the University of Maine.

PEVI Knowledge Council

Objectives

- To develop and publish thought leadership, and to perform supporting industrial research on integrating PLM into the product lifecycle
- To understand the issues and best practices related to improving and maximizing the value of PLM
- Support both Solution Providers and Industrial Organizations

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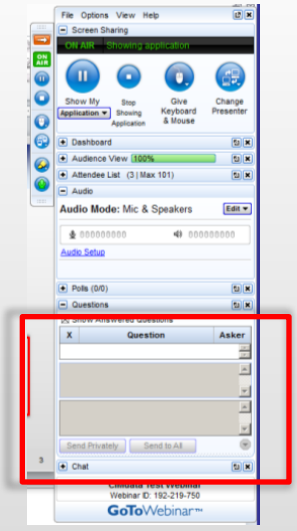
Questions?

Please use the GoToWebinar Question panel

- Please enter questions in the GoToWebinar Question panel
- We will answer as many questions as time allows…
- Those that can't be answered live will be answered by email



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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 the PLM market.

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

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Our Services...

Creating, disseminating, and applying our intellectual capital



Research
- *Market research & analysis*
- *Technology research & analysis*
- *Reports & publications*
- *Market news*
- *Member services...*

Education
- Executive seminars
- PLM Certificate Programs
- Technology seminars
- Int'l conferences & workshops
- Best practices training...

Consulting
- Strategy & vision
- Needs assessment
- Solution evaluation
- Best practices
- Quality assurance
- Program management
- Market planning...

Delivering strategic advice and counsel through a comprehensive, integrated set of research, education, and consulting services

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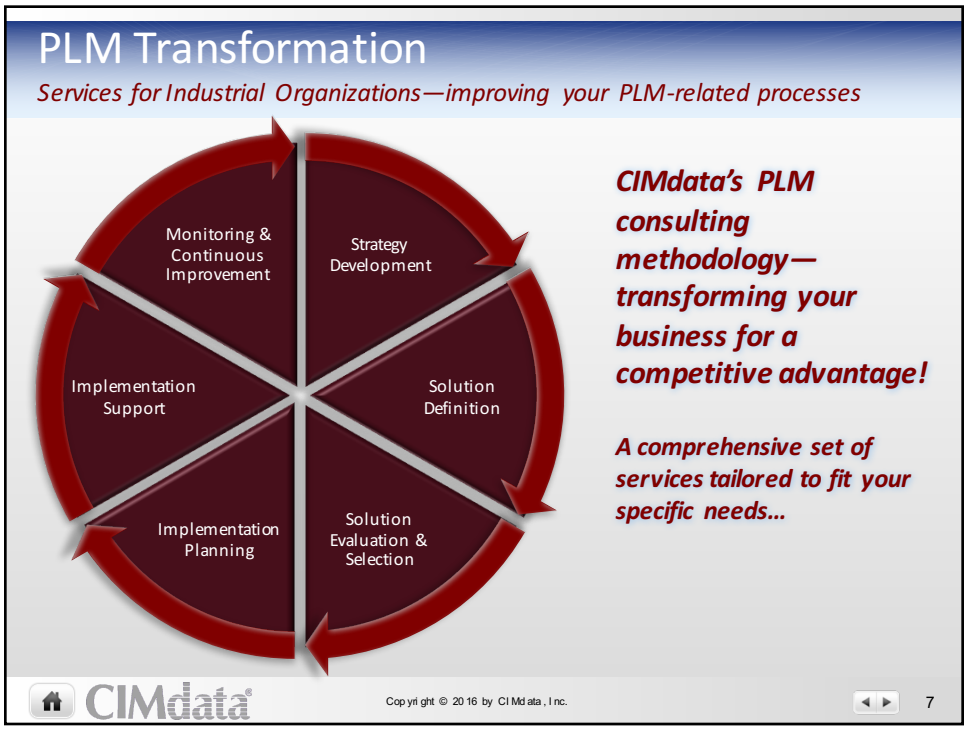

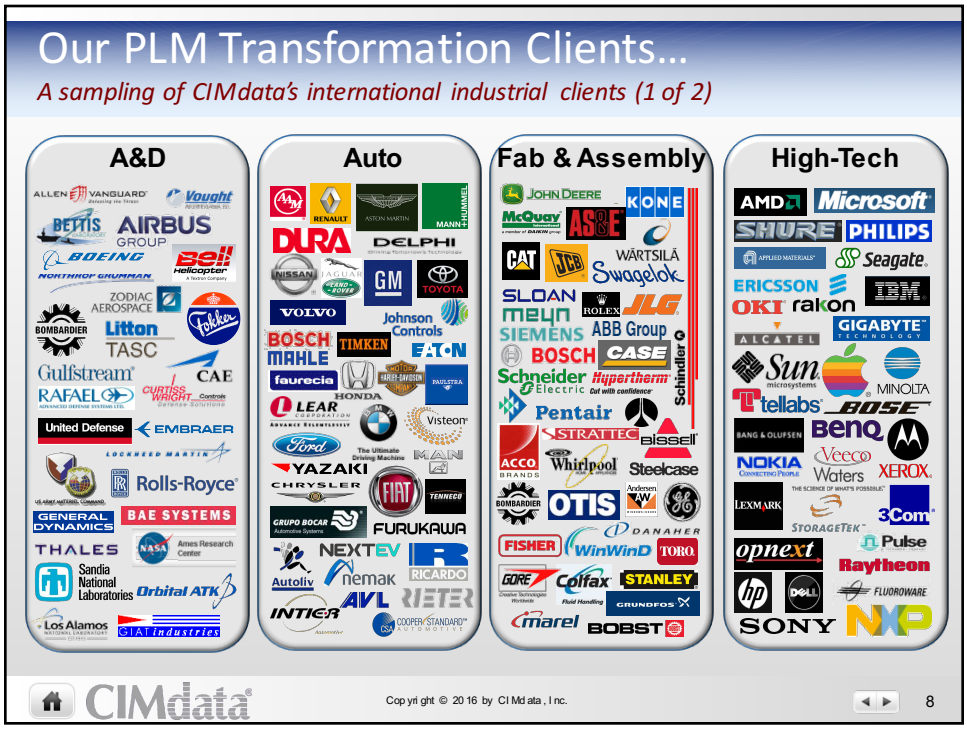

Our PLM Transformation Clients…

A sampling of CIMdata's international industrial clients (2 of 2)

CPG/F&B/Process

Kimberly-Clark, Dow, GMCR, Altria, JTI, Coca-Cola, P&G, McCormick, CSM, Goodyear, LEGO, DSM, amcor, Imperial Tobacco

Medical/Pharma

Baxter, Edwards, Alcon, Siemens, Medrad, Dräger, DePuy, Playtex, Bang & Olufsen, Johnson & Johnson, smith&nephew, Ethicon Endo-Surgery, Abbott, A Promise for Life, GE, BD

Emerging Ind.

National Oilwell Varco, PBMR, Outotec, EDF, Iberdrola, Areva, Doosan, Doosan Power Systems, EAB Engineering, Rijkswaterstaat, adidas, Nike, JPL, Samsonite, IHC Merwede

Other

Savonia, VTT, Kongsberg, IDS Infotech Ltd., Cranfield University, KACST, NTNU – Trondheim Norwegian University of Science and Technology, 財團法人資訊工業策進會, Lincoln Laboratory Massachusetts Institute of Technology

Key Takeaways

Agile Software Development for PLM Solution Configuration

- Agile Development is a proven software development methodology commonly used in commercial software development that can be successfully used for configuring a PLM solution
- Using Agile to deploy a PLM solution can improve deployment time, quality, and user satisfaction
- There are risks in applying an agile methodology to a PLM deployment, but they can be mitigated

What is Agile Software Development?

Starting to replace Waterfall development within the Enterprise

- Agile is a common commercial software development methodology that is becoming common in PLM deployments
- Agile has several dialects, but they all focus on incremental delivery and enable the product to be adapted to ever changing requirements
  - Scrum, Extreme Programming (XP), Adaptive Software Development, Agile Unified Process…
- Definition crystalized with the release of The Agile Manifesto in 2001
- Lean manufacturing for software development

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Waterfall Software Development

Most common PLM deployment method

- Waterfall consists of 6 sequential phases with feedback loops
  - Requirements gathering->Design->Implementation->Testing->Installation -> Maintenance
- Benefits
  - Required discipline improves design quality
  - Formal design specification supports knowledge transfer
  - Project progress is easier to measure
  - Can leverage junior developers
  - Less wasted code
- Issues
  - Customers don't really know what they want
  - Business environment is dynamic, and specifications become obsolete
  - Changes in requirements break the model
  - Testing occurs after coding-quality is inspected in

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Contrasting Methodologies

Waterfall vs. Agile

Waterfall

- Best for:
  - Software rollouts
  - Data migration

Agile

- Best for:
  - Development efforts when end state isn't defined
  - Mid-stream requirement changes

Success factors

- Experienced leader needed
- End user involvement
- Business goals clearly defined

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Agile Core Values

From The Agile Manifesto

- *Individuals and interactions* over Processes and tools
- *Working software* over Comprehensive documentation
- *Customer collaboration* over Contract negotiation
- *Responding to change* over Following a plan

It's about doing the right thing, not doing things right

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12 Principles from The Agile Manifesto
(1 of 2)

- **Customer satisfaction by early and continuous delivery of valuable software**
- Welcome changing requirements, even in late development
- Working software is delivered frequently (weeks rather than months)
- **Close, daily cooperation between business people and developers**
- Projects are built around motivated individuals, who should be trusted
- Face-to-face conversation is the best form of communication (co-location)

Source: https://en.wikipedia.org/wiki/Agile_software_development

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12 Principles from The Agile Manifesto
(2 of 2)

- **Working software is the principal measure of progress**
- Sustainable development, able to maintain a constant pace
- Continuous attention to technical excellence and good design
- **Simplicity—the art of maximizing the amount of work not done—is essential**
- Best architectures, requirements, and designs emerge from self-organizing teams
- Regularly, the team reflects on how to become more effective, and adjusts accordingly

Source: https://en.wikipedia.org/wiki/Agile_software_development

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Common Agile Terms & Definitions

Learn the Agile lingo (1 of 3)

- Product Owner
  - The person with the authority to manage the scope and schedule of the product or subset of the product
- Scrum
  - Short daily meeting (AKA standup) where the team (product owners, subject matter experts, developers, testers, etc.) communicates what happened the day before, what is planned, and what are roadblocks
  - Scrum master role coordinates activities, resolves issues
- User story
  - A description of functional requirements from an end user's perspective, used by scrum team to configure or customize a PLM solution
  - Developers assess complexity and assign a value representing effort which is used to develop user story implementation plan
  - Risk: Does not include non-functional requirements

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Common Agile Terms & Definitions

Learn the Agile lingo (2 of 3)

- Sprint
  - A time block (typically 2 or 3 weeks) used by the scrum team to implement user stories into tested, working software
  - Sprint planning activity (AKA backlog grooming) occurs before the sprint; additional user stories are usually not added, but existing may expand
  - Sprints are also used to identify new user stories
- Product release
  - Within PLM solution deployments, several sprints are combined into a product release that is rolled out to end users
  - Release cadence needs to be short enough to maintain project momentum, but not cause excessive organizational turmoil
- Minimum viable product
  - The minimum functionality that will satisfy the user stories and enable product deployment

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Common Agile Terms & Definitions

Learn the Agile lingo (3 of 3)

- Backlog
  - A queue of user stories to be satisfied, that are not currently being worked on
  - Backlog grooming is the process of prioritizing user stories to fit within sprint time blocks
- Velocity
  - The rate that user stories are processed, typically story points per day per developer
- Retrospective
  - Reflection time at the end of a sprint or product release to assess what went well, what went wrong, and what will be done differently
- Roadmap
  - High level plan that defines scope and timeline of project

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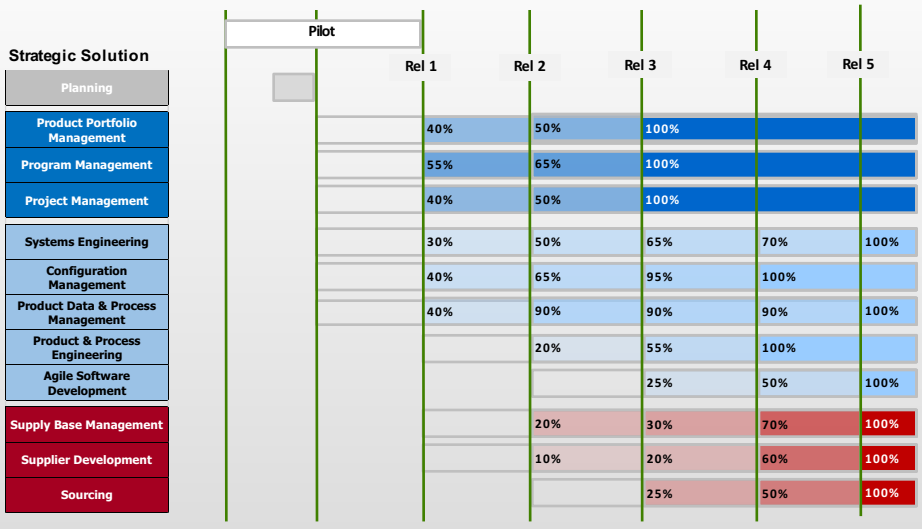
Typical PLM Implementation Roadmap

Complexity comes in many forms—the best approach...make the complex simple



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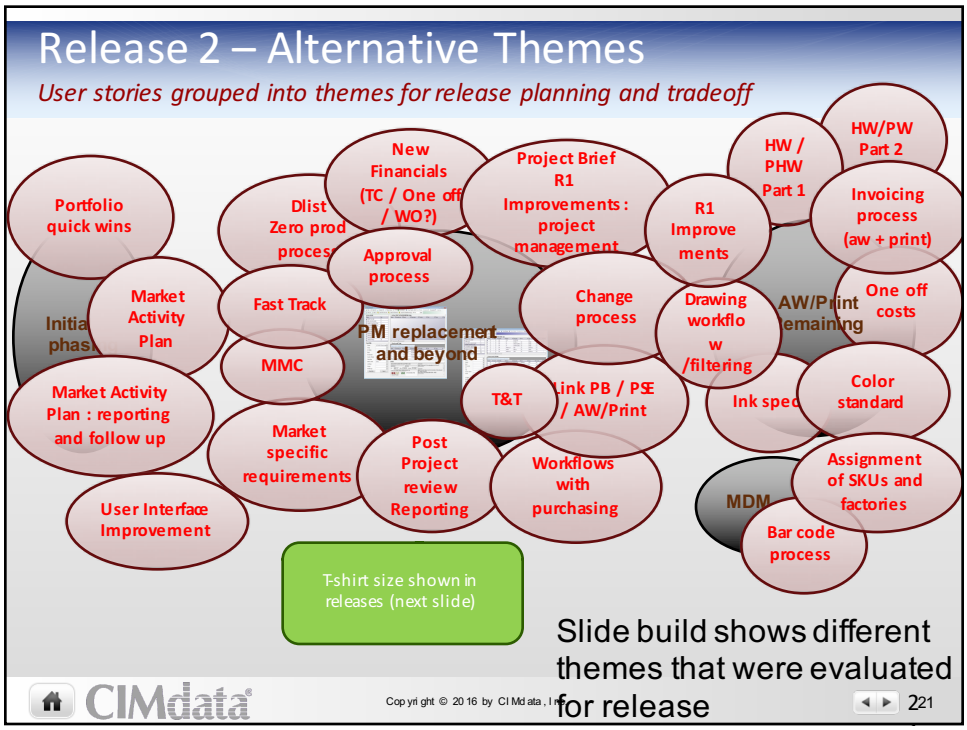

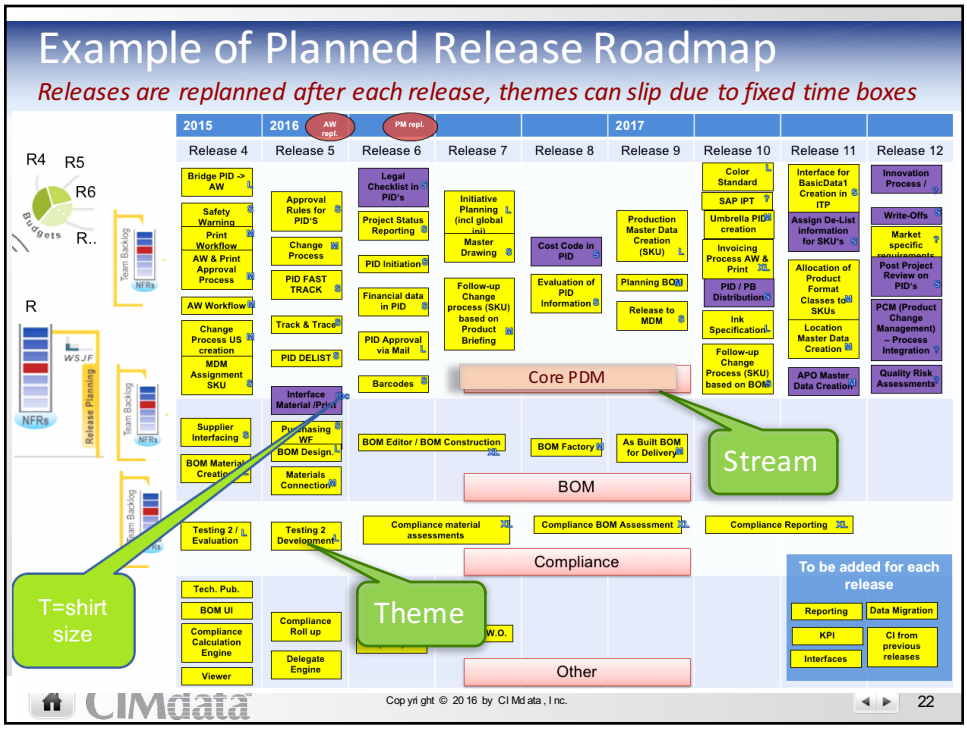

How Does Agile Improve PLM Deployments?

- An excellent fit for managing the configuration of software
- Business and Software Development work closely as a team
- Product owners are from the business, understand the customer, and have the final word
- Short time between working software increments enables gap identification and adjustments to the project
- Rapid cadence keeps team focused on product
- Supports parallelized development enabling faster time to value
- Supports continuous development, PLM is never "Done"

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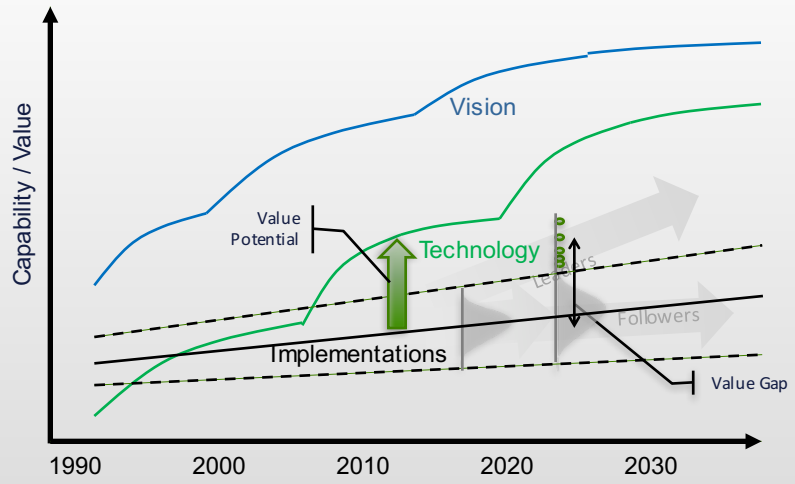
PLM Value Gap

PLM implementation isn't a one time activity



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Microsoft Agile Case Study

Using Agile to Consolidate Multiple PDMs

- Objective: Consolidate multiple PDMs from hardware groups including Surface, Xbox, and Nokia, into a single platform using an agile methodology
- Results
  - Time to first release of OnePDM in production – 6 months
  - Time to replace two legacy PDM solutions – 12 months
  - "The ability to see how things are going to be in short cycles enables us to immediately say this process isn't going to work or we need this information. That way, we're able to correct changes before the end of the line when the system is dumped on us."– Phil Nixon, Microsoft
  - "We built the same capabilities or better in nine months than what it had taken us about seven or eight years to create with the previous systems," – Boris Cononetz, Microsoft

Source:http://www.deskeng.com/de/microsoft-flexes-its-agile-muscles/

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Using Agile for PLM Deployment

Risks and mitigations

Risk	Mitigation
It's Agile, we don't need to plan	A product roadmap and sound architecture are required, resolution and detail are added as the project progresses
Sponsors or Organization lose interest as deployment progresses incrementally	Implement cultural change plan
User story backlog is incomplete	Reallocate business resources to generate user stories Leverage developer retrospective time
We don't need to document	Documentation needs to be provided to support knowledge sharing
Code quality issues, duplicates, naming, style	Develop coding standards before project starts Refactor
Regulatory requirements conflict with Agile	Use a methodology that supports requirements

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Key Success Factors

Key lessons learned from real industrial implementations

- Strong and consistent management support and leadership throughout the project
  - This may take years!
  - This means investment in people, software, infrastructure, etc.
  - Waterfall can still work; chose a methodology and stick with it
- Make PLM part of everyone's objectives
  - People need to be rewarded for doing the right thing
- Create a "pull" for PLM; create the need throughout the organization
- Don't underestimate data migration, system training, the need for cultural change, and implementation planning
  - These items can be incorporated into the Agile process

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Concluding Remarks

Developing and implementing a sustainable PLM strategy is a requirement

- PLM needs to be built on a solid foundation of business justification as well as a set of strategy elements that have been designed to evolve as the business evolves
- The Agile software development approach enables software development to effectively respond to changing needs and requirements, but still requires planning and architectural design
- By putting working software in front of users quickly, feedback enables faster product evolution, reducing time to value, while improving quality, and user satisfaction
- Adopting agile software development has risks, but mitigations are well understood and the value is well proven

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PEVI Knowledge Council Workshop

The Politics of Enterprise Software and Fighting for a Sustainable PLM Initiative

CIMdata announces a business critical workshop designed to help Executives, PLM leaders and program managers get and maintain executive support, funding, and staff so a PLM solution can be selected, deployed, and sustainably supported.

- November 2, The Inn at St. John's | Plymouth | Michigan

Special Discount: 15% off!
Sign up and pay by September 16th 2016

SPECIAL OFFER

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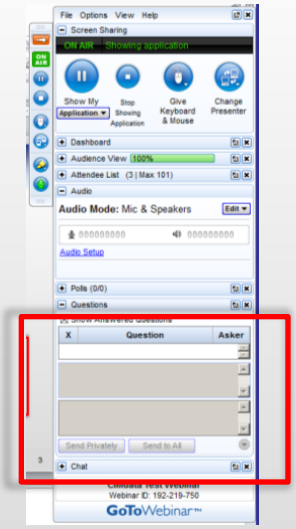
Questions?

Please use the GoToMeeting chat panel

- We're hoping that the anonymity of the chat window might help participants ask more questions
- If you want to ask a question on the record, we'll certainly let everyone know you're asking
- The most important thing is interaction – let us hear from you on the call



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Next CIMdata Leadership Webinar

- Please join us on August 11, 2016 for the next complimentary CIMdata Educational Webinar
- Venkatesh "Venki" Agaram, Ph.D, MBA, Director - Quality & Reliability Engineering Practice, CIMdata
- "Failure Knowledge Capture and Reuse for Designing Dependable Software-Intensive Products"
- Sign up on CIMdata.com

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CIMdata

Strategic consulting for competitive advantage in global markets

World Headquarters
3909 Research Park Drive
Ann Arbor, MI 48108 USA
Tel:+1.734.668.9922
Fax:+1.734.668.1957

Main Office - Europe
Oogststraat 20
6004 CV Weert, NL
Tel:+31 (0) 495.533.666

Main Office - Asia-Pacific
Takegahana-Nishimachi 310-31
Matsudo, Chiba 271-0071 JAPAN
Tel: +81.47.361.5850
Fax: +81.47.362.0472

www.CIMdata.com

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