

Systems Engineering KC

Systems Engineering Knowledge Council Workshop

A CIMdata PLM Foresight Event
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Our Mission...

Strategic management consulting for competitive advantage in global markets

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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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The Chevy Volt

An example of the impact of software as the solution

“When you push the start button, you’ve got 10 million lines of software running. On an F-15, it’s about eight million lines of code. You’re really driving a modern data center, and a lot can go wrong.”



Jon Bereisa, former G.M. systems engineer who helped design the Volt and was among the lead developers of the company’s mid-1990s experiment in electric vehicles

http://www.nytimes.com/2012/03/25/sunday-review/the-electric-car-unplugged.html?_r=1&ref=business



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Software—Becoming the Difference

Risks must be managed to achieve the benefits

- Product features are designed using a combination of mechanical and electronic components, plus the controlling software
- Software-driven electronics are an increasingly major part of new designs
 - Software is replacing hardware
- All industries are being impacted
 - Multi-use personal electronics
 - Programmable functions in appliances, home lighting systems, ...
 - User choice in-flight entertainment



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Systems Engineering

A strategic framework to support development of product systems

- An **interdisciplinary approach** and means to enable the realization of successful systems
 - It focuses on **defining customer needs and required functionality** early in the development cycle, **documenting requirements**, then proceeding with **design synthesis and system validation** while considering the **complete problem**:
 - Operations
 - Cost & Schedule
 - Performance
 - Training & Support
 - Test
 - Disposal
 - Manufacturing
 - It **integrates all the disciplines and specialty groups** into a team effort forming a **structured development process** that proceeds **from concept to production to operation**
 - It considers both the **business and the technical needs of all customers** with the goal of providing a quality product that meets the user needs


Sound familiar?


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Our Definition of PLM...

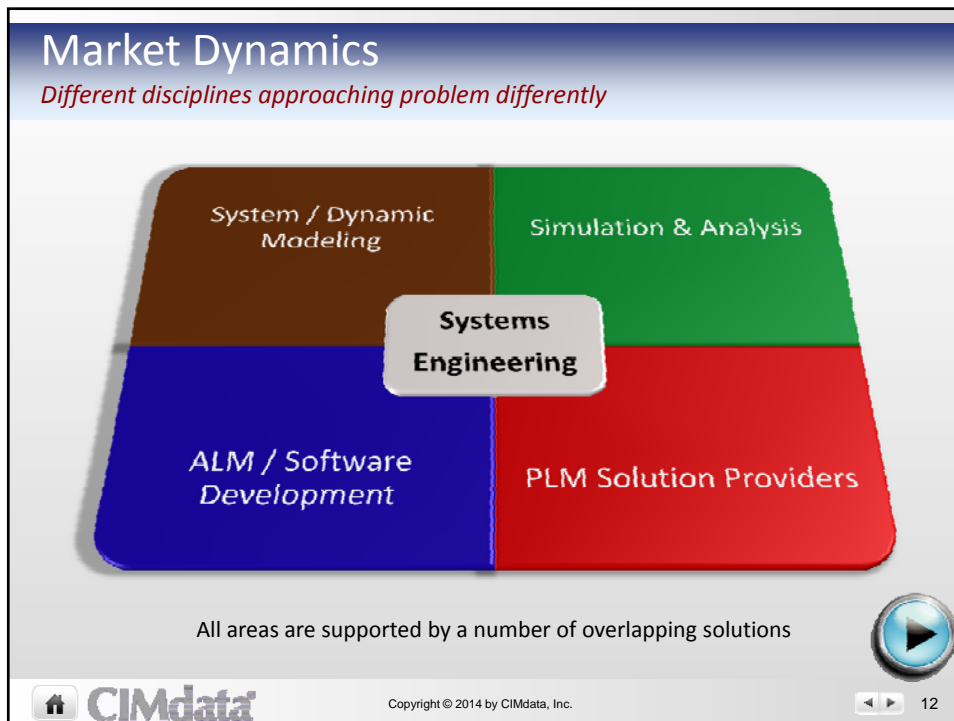
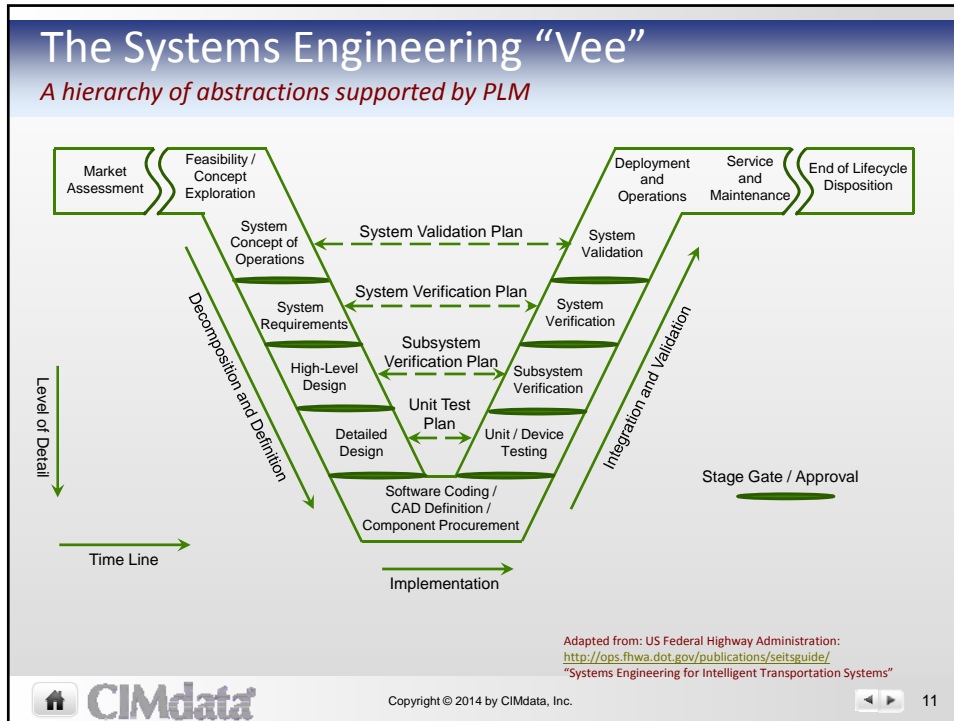
PLM—integrating people, processes, information, and business systems

- 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
 - MDA, AEC, EDA, CASE, analysis, documentation, ...
 - All product/plant process definitions—the virtual processes
 - Processes that plan, design, produce, operate, support, decommission, recycle ...
- Supports the extended enterprise
- Spans full product/plant lifecycle, from concept to end of life



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CIMdata Membership Services

A rich set of community and knowledge council services



The diagram features a central green circle labeled "PLM Community" which is divided into "Solution Providers" and "Industry Consortium". Surrounding this central hub are six blue circles, each representing a service: "Future Councils...", "Social Product Development & Collaboration", "Simulation & Analysis", "Systems Engineering", "Digital Manufacturing", and "PLM Enterprise Value & Integration".

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Influencers

Just some of the groups working on this issue



A collection of logos for various industry groups and standards organizations, including: ASDL (Aerospace Systems Design Laboratory), NAFEMS, INCOSE (International Council on Systems Engineering), OMG (Object Management Group), MBSE, SEBoK (Guide to the Systems Engineering Body of Knowledge), NDIA (National Defense Industrial Association), Software Engineering Institute, and SE-CMM (Systems Engineering Capability Maturity Model, Version 1.1).

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Systems Engineering Council

A CIMdata Knowledge Council

- SE Council builds a systems framework
 - An integrated environment that defines strategies, processes, and tools to support a systems approach
 - One that manages the complexity of multi-disciplinary system-level product performance and integrates with other elements of the PLM environment
- The council focuses on systems engineering support & adoption
 - Deploying an actionable maturity model (scorecard) on systems engineering to assess leading-edge requirements and best practices
 - Maps user needs to solution provider offerings
- The council is open to industrial and solution provider participants, through corporate or individual sponsorships



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CIMdata's Systems Engineering Council

Activities and research priorities driven by participants

Emerging Council priorities:

- Define strategies for systems engineering
- Define & execute a capability maturity model (scorecard) for systems engineering
 - Short enough to allow companies to respond easily
 - Providing actionable recommendations to allow an organization to advance their maturity
- Define systems engineering analytics (metrics, benefits, etc.)

*It's not just about systems.
It's how you best do systems engineering.*



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SE Knowledge Council Members

PLM solution providers & industrial companies

- IBM Rational
- Siemens PLM Software
- PTC
- ANSYS
- Caterpillar
- ESI
- Autodesk
- Altair
- Advisory: Airbus, Boeing, Embraer, Gulfstream



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