

Nathan W. Hartman, Ed.D.

Dauch Family Professor of Advanced Manufacturing

Director, Product Lifecycle Management Center

ORGANIZATIONAL CHANGE THROUGH PLM IN A DIGITAL ENTERPRISE

PLM Center of Excellence

- The mission of Purdue University's Product Lifecycle Management (PLM) Center of Excellence is to promote the advancement and implementation of PLM through research and education in partnership with industry.

The objectives of the Purdue PLM Center are:

- Conducting research that promotes PLM as a methodology and practice
- Establishing industry partnerships that guide, support, and validate PLM research and education activities
- Promoting the evolution and use of model-based digital product data
- Promoting the use and development of tools and practices that emphasize the concept of a “digital twin” for products
- Promote the author/consumer communication model around the use of digital product data
- Assisting with the integration of PLM into curriculum
- Facilitating the pursuit of PLM career opportunities by Purdue graduates
- Enabling PLM adoption by industry



TEXTRON

***Rockwell
Collins***

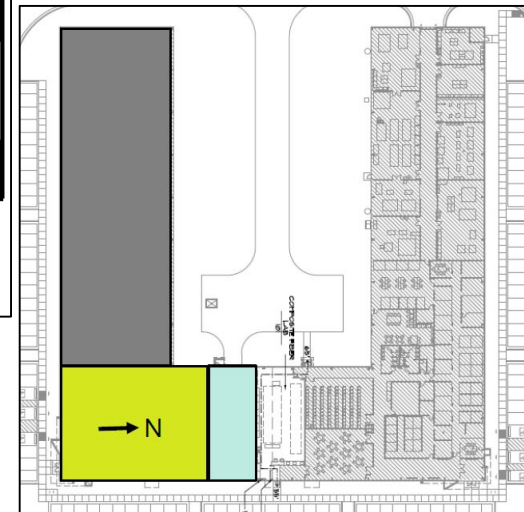


Digital Manufacturing Enterprise Testbed

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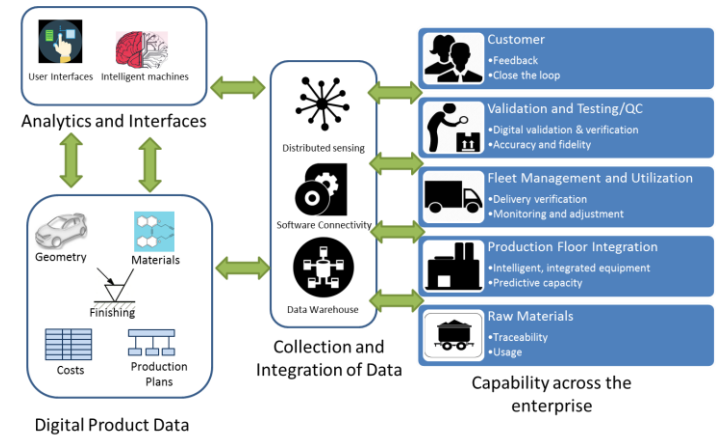


FTE Chart	Minimum	Alternate
Full-Time	5	6
Graduate Student	10	16
Transient / Guest	24	40



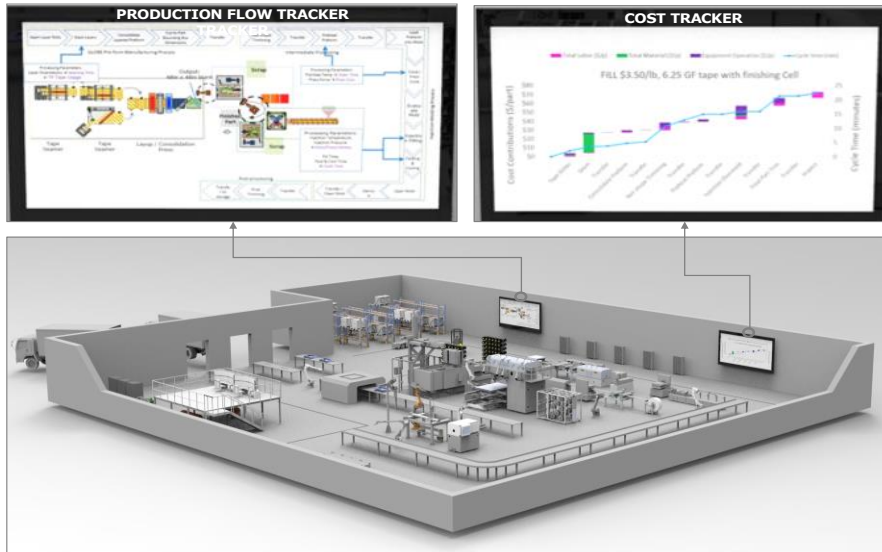
Digital Manufacturing Enterprise Testbed

TESTBED MODULE METAL MANUFACTURING: Facility in IMI , operational Summer 2019. (N. Hartman)



TESTBED MODULE POLYMER & COMPOSITES MANUFACTURING: Facility in IMI, operational Winter 2018/19. (J-A Mansson)

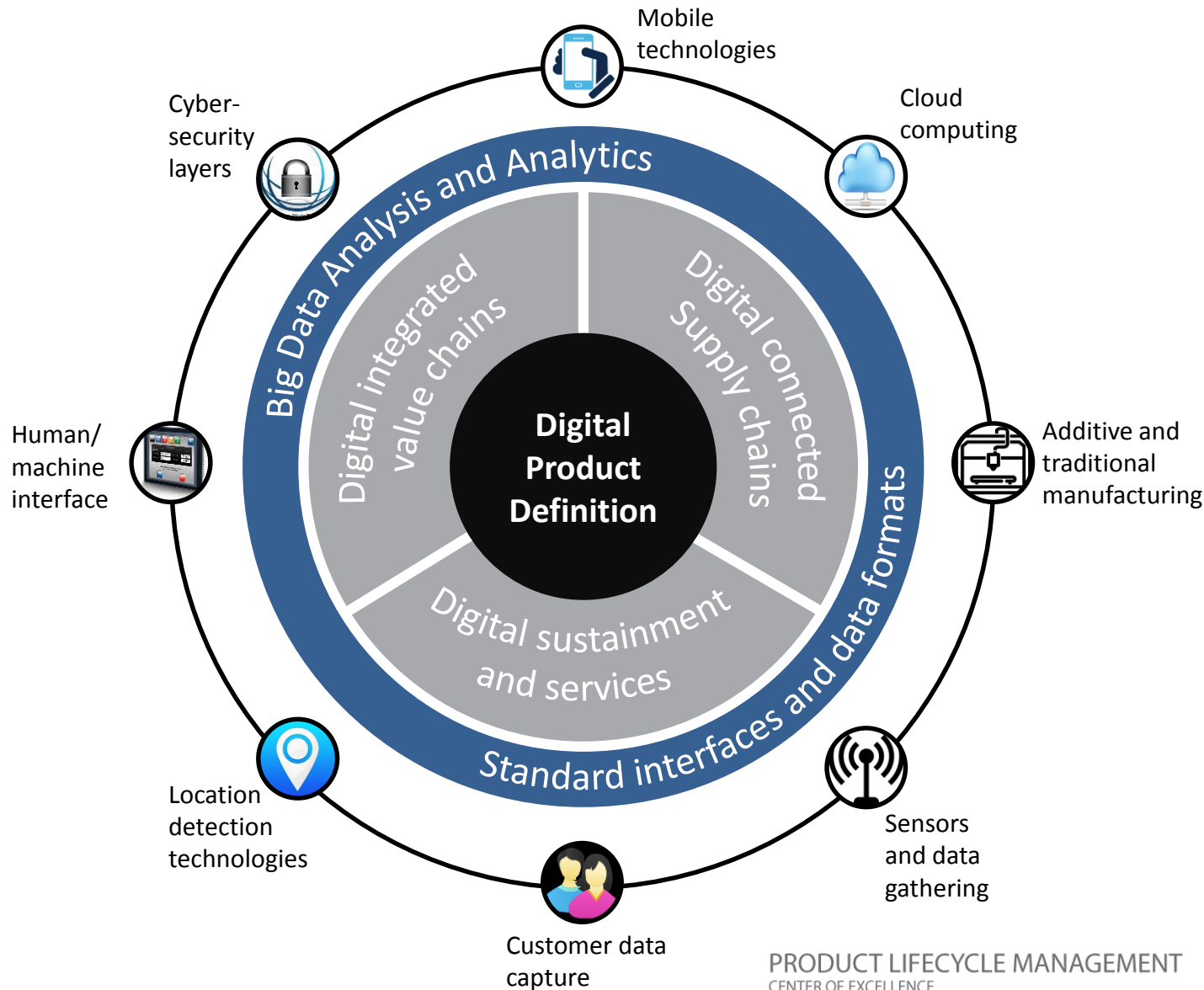
Configurations and Features:



- **Plant / Factory**
 - Representative manufacturing equipment for **material to preform and final part manufacturing**.
 - Capability for **sensor integration for IOT and distributed sensing** in both equipment and material forms
 - Manufacturing line **directly connected to our Technical Cost Modeling** tool for real-time cost monitoring of manufacturing step variations.
 - **Manufacturing agility** is demonstrated by flexible material application and equipment sequences
- **Supply Chain**
 - **Fully integrated value chain demonstration** from raw material via intermediate material forms until molding of final part.
 - **Demonstrating supply chain complexity** with multiple manufacturing steps. Typically representing 3-4 supply chain members.

What is a digital enterprise?

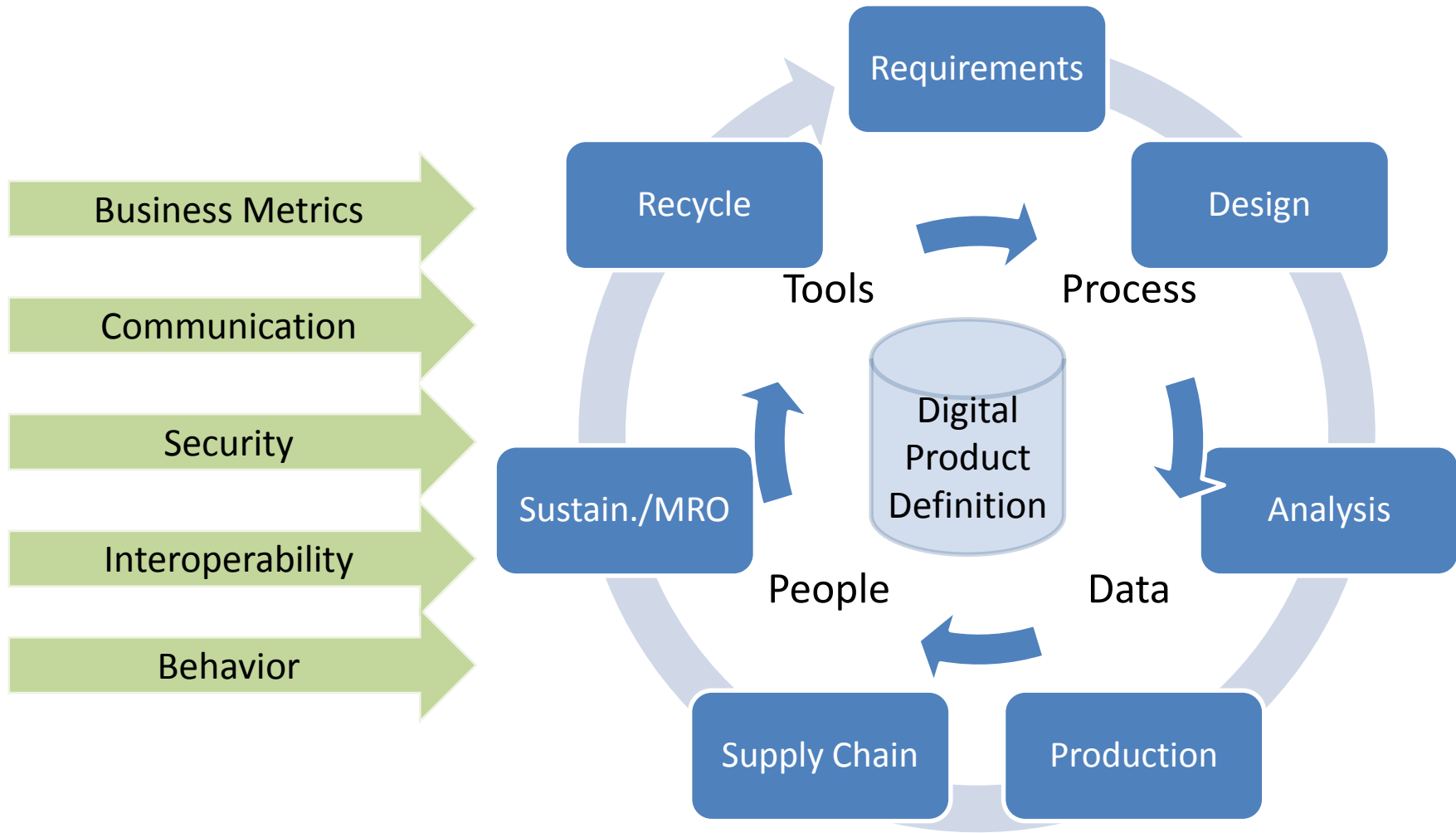
A digital enterprise changes the way people work and how they use information



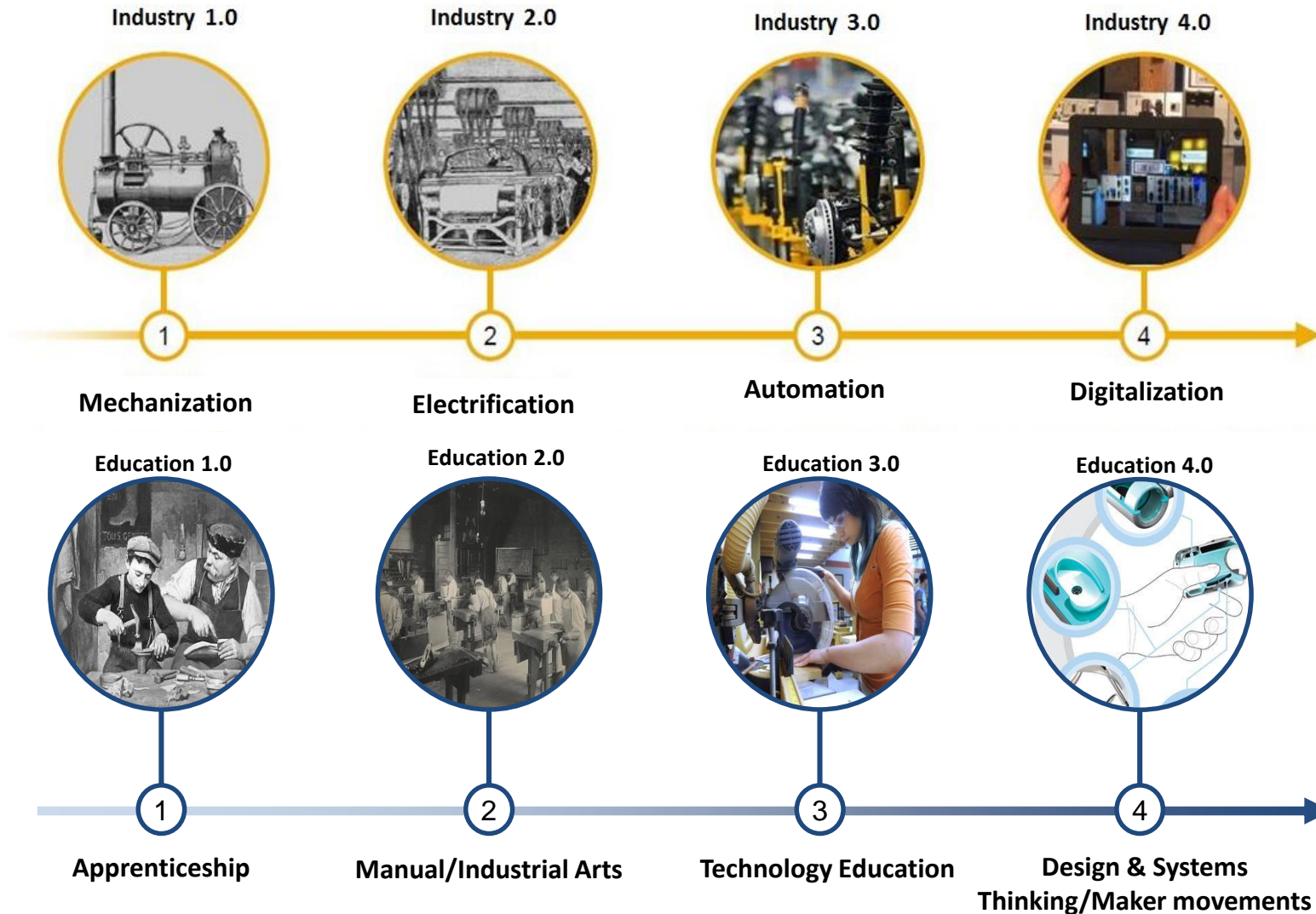
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PLM – a key element to a digital enterprise

PLM architecture forms the backbone for implementation of PLM methods and how product information is moved through the enterprise.



Parallel Revolutions



Agenda

8:00 – 8:30 am	Continental Breakfast and Registration
8:30 – 8:45 am	Welcome, PLM Center Updates, and Meeting Overview <i>Nathan Hartman – <u>Dauch</u> Family Professor of Advanced Manufacturing and Director, Product Lifecycle Management Center</i> A short brief on activities with the PLM Center and an overview of the day's topics.
8:45 – 9:15 am	Legacy, Obsolescence, and Their Impacts on Technology and Methods in Digital Enterprise <i>Stephen Collins – Co-Founder and CEO, <u>Anark</u></i> The effects of merger, acquisition, technology obsolescence and evolution, and bespoke internal technologies can wreak havoc on the ability of a company to transform into a digital enterprise. This presentation will focus on the impacts legacy technologies, methods, and data can have on an organization's ability to make the transformation to being a digital enterprise.
9:15 – 9:45 am	An Industry Case Study in Organizational Change <i>David Ewing – Technical Account Manager, Aras</i> Organizational change often accompanies the selection and implementation of new technology. This presentation will focus on the required organizational changes and methods that pair with technology changes in the PLM space.

Agenda

9:45 – 10:45 am	<p>Panel 1: New and Renewed Technologies and Their Effects on the Organization</p> <p><i>Peter Bilello – President, CIMdata</i> <i>David Ewing – Technical Account Manager, Aras</i> <i>Stephen Collins – Co-Founder and CEO, Anark</i></p> <p>New and old technologies alike have an impact on the organizational functions needed to design, make, and sustain products. This panel will focus on how do specific technologies impact organizational change?</p> <ul style="list-style-type: none">○ 3D printing○ AR/VR○ Mobile technologies○ BI/data analytics○ Machine learning○ “connectedness”
10:45 – 11:15 am	Networking Break
11:15 – 11:45 am	<p>Addressing Siloed Organizations with New Incentives</p> <p><i>Joseph Anderson – Vice President, The Institute for Process Excellence</i></p> <p>Companies organized in traditional siloes can make business process transformation difficult. PLM tools and methods, which can be customized or configured in many different ways, can further exacerbate this problem due to their somewhat inflexible data models, workflows, and UIs. However, it is easy to blame the technology as being the source of the problem. This presentation will explore the role of new data models, new incentives, and new business approaches in addressing these challenges.</p>

Agenda

11:45 am – 1:45 pm	<p>Lunch and Presentation</p> <p>Knocking Down Siloes in the Digital Enterprise While Adopting New Technologies <i>Peter Bilello – President, CIMdata</i></p> <p>Organizational change is a difficult task. Doing it with complex tools, processes, and digital data in the mix makes it even more difficult. This presentation will focus on a look at eliminating siloes in the Digital Enterprise through the adoption of new tools and methods.</p>
1:45 – 2:45 pm	<p>Panel 2: Functional Area Requirements and the Impacts on Digital Enterprise Transformation</p> <p>Organizational transformation is one of the most difficult things for a company to do. Ingrained culture, processes, and mindsets make it difficult, if not impossible, to do something new in many cases. Further compounding the challenge is the role that new digital technologies play in the information flow within an organization, which is often conflicting with traditional information flows, as each functional area had it ownership and requirements for each portion of the process. This panel will explore how the needs of those stakeholders can enable or disable the ability for an organization to make a digital transformation.</p> <p><i>Joseph Anderson – Vice President, The Institute for Process Excellence</i> <i>Brion Carrol – Product & Engineering Services – PLM, Capgemini, USA</i> <i>Krish Suryanarayan - Expert - Digital Manufacturing (Operations Practice), McKinsey & Company</i></p>
2:45 – 3:15 pm	Networking Break

Agenda

3:15 – 3:45 pm	<p>Moving Laggards to Early Adopters (maybe even Innovators)</p> <p><i><u>Krish Suryanarayan</u> - Expert - Digital Manufacturing (Operations Practice), McKinsey & Company</i></p> <p>The presentation will focus on what happens when technology is implemented, or processes are changed, and subject-matter experts (SME) are not engaged soon enough. Most organizational models over time devolve into <u>siloed</u> organizations. As PLM tools function as a repository of product and process information and a backbone for moving information, organizations often have the infrastructure to exchange product and process information across the enterprise if infrastructure, data models, and stakeholders allow. Yet, organizational change that involves altering ingrained processes and practices is often met with resistance and a lack of adoption. Modern enterprises require technically detailed, complex PLM solutions and methods to support increasingly complex products.</p>
3:45 – 4:15 pm	<p>Business Process Transformation in the Digital Enterprise</p> <p><i>Brion Carrol – Product & Engineering Services – PLM, <u>Capgemini</u>, USA</i></p> <p>This presentation will address business process transformation through the adoption of PLM tools and methods within the Digital Enterprise. A particular emphasis will be on the changes in how people work as a result of business transformation and the accompanying technology.</p>
4:15 – 4:30 pm	<p>Summary and Closing Remarks</p> <p><i>Nathan Hartman – Professor, Computer Graphics Technology and Director, Product Lifecycle Management Center</i></p>

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