MODEL-BASED DEFINITION ACROSS THE LIFECYCLE

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Major topics

• What is PLM?
• Collaboration
• MBD/information model/interfaces (human and machine)
• MBE becoming a business environment (merger with ERP and analytics)
• Managing attributes, not files
• Supply network integration/need model-based processes
• Ongoing challenges
What is PLM?

The digital product definition forms the core of how product and process information is moved through an organization.
The collaboration journey...

Yesterday

- Collaboration meant face-to-face communication
- Communications often in serial fashion
- You trusted the data because you trusted the person that generated the data
The collaboration journey...

Tomorrow

The **3D digital definition** becomes the *conduit* in a standards-based communication process.

The product *model* is the basis for a **secure**, **authoritative** source of product definition.

You come to *trust the process* that generates product data (because the person may be unknown).
Evolution of model-based representations

An exercise in information flow: right place, right form, right time

- Increased sophistication in the digital product and process representations and their fidelity to the physical world.

Cycle:
1. Lifecycle based
2. Virtual environment based
3. MBx based
4. CAD based
5. Drawing based
6. MBx based
7. CAD based
8. Drawing based
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106. CAD based
107. Drawing based
The communications spectrum...

A complete MBD supports lifecycle communication

SHAPE

BEHAVIOR

CONTEXT

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<th>Property</th>
<th>Test Standard</th>
<th>UNI/ASTM</th>
<th>Unit</th>
<th>Value</th>
<th>Testing Frequency</th>
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<td>2025</td>
<td>g/cm³</td>
<td>10</td>
<td>per production run</td>
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HUMAN TO HUMAN

HUMAN TO MACHINE

MACHINE TO HUMAN

MACHINE TO MACHINE
MBD and the digital enterprise

Making PLM a business platform

- The merger and sharing of data between historical PDM and ERP systems to make a next-generation PLM platform.
- Real-time intelligence to deliver product data in context.
- Ontologies that drive product data interoperability that include behavior and context, as well as shape definition.
- A holistic model-based definition that can accurately and dynamically carry non-engineering attributes.
- Understanding the impacts of product data as a form of intellectual “currency” in the sociotechnical system.
Moving away from files...

Proprietary formats lead to interoperability and archival challenges.
Integrating the supply chain
Production, Sustainment, Recycling

- Internal production
- Design-Make
- Make-to-model
Ongoing challenges

- Driving product lifecycle data with high fidelity representations
- Product data complexity
  - Shape
  - Behavior
  - Context
- Product complexity: combination of mechanical, electrical, and software
- The merger of PLM and Systems Engineering
- Modular data structures to support the distributed enterprise
- Mobility, Collaboration, and Interfaces
- High Performance Computing and Analytics
  - Business drivers
  - Closing the PLM information gap ➔ making it circular
  - Data mining linked to the model-based representation
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