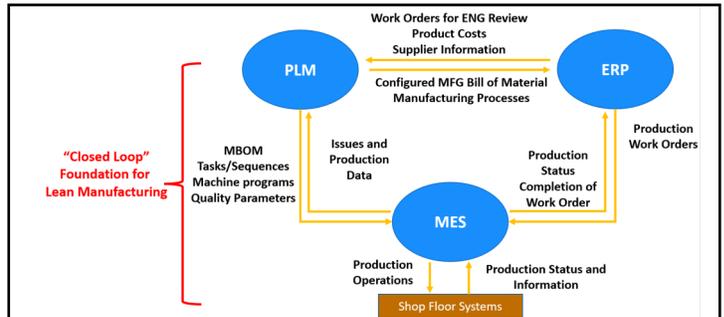




The benefits of integrating PLM, ERP and MES

Currently, organizations are having conversations centered around the topic of Business Transformation and how important the concept of developing a “Digital Twin” strategy is to enabling this transformation. A key to effectively creating a “Digital Twin” for your organization, is to ensure that the “Digital Twin” spans the lifecycle of your product from concept to design through manufacturing and into service. It is essential to tie the information together by integrating key enterprise IT Systems—Product Development Management (PLM) and Enterprise Resource Planning (ERP) to Manufacturing Execution Systems (MES). The integration of the information coming from ERP-PLM-MES is the foundation of having a closed loop Bill of Material Process (BOM).



System / Technology Capabilities

- ◆ **Product Lifecycle Management (PLM)** where the product design and configuration information are maintained – This technology is centered around the “Product” definition (The What)
- ◆ **Enterprise Resource Planning (ERP)** where financial data, inventory, and customer data is maintained and where business management tends to look to assess day-to-day business operations as a system of record – Transaction Centric (The Why)
- ◆ **Manufacturing Execution System (MES)** where operational instructions are defined, maintained, and executed, and where the “as-built” data on product content, quality, and genealogy is maintained – Operational Centric (The How To)

Added Value of Integrating PLM / ERP / MES

Bill of Material (BOM) is the connection point for traceability between PLM, MES, and ERP. Integration supports highly detailed relationships while providing traceability across all BOMs within the organization. These integrations facilitate data sharing for Process Management initiatives like:

- ◆ Lean Manufacturing
- ◆ Cost Management
- ◆ Resource Allocation
- ◆ Just-in-time Inventory Management

- PLM-MES interfaces include:
 - Bill of Material (MBOM)
 - Bills of Process (BoP)
 - Process lists
 - Work instructions
 - Engineering change orders

- MES-PLM interfaces include:
 - Closed-loop product and process data
 - Change requests with mark-ups
 - Updated work instructions
 - Selected and evaluated KPIs
 - Non-conformance failure modes

Added Value of MES

MES is a layer of communication that enables data exchange between, Organizational Level (supported by an ERP) and Shop-floor control systems. MES provides the ability to:

- ◆ Evaluate the optimal sequence planning taking into account:
- ◆ Basic features of the process (Processing and setup times, and Workstation capacity, etc.)
- ◆ Manage and allocate resources such as the staff and the material necessary for the manufacturing process

Key MES Capabilities include:

Dispatching Production Units	Maintenance Management	Labor Management
Quality Management	Resource Allocation & Status	Product Tracking & Genealogy
Data Collection & Acquisition	Process Management	Performance Analysis

From our perspective, delivering game changing business transformation requires an organization to enable and implement a “Digital Twin” strategy. If you’d like to discuss implementing these capabilities in your organization give us a call!

Next Month: Managing Your Innovation and Product Roadmaps



