Leveraging the Camstar Enterprise Platform for Manufacturing Execution in the Medical Device Industry

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PL MOM Industry Management MDD
Agenda

Product Strategy
Product Overview
Roadmap
New Web UX on CEP V8
Best Practice: Rapid Implementation Methodology
Feedback Q&A
Product Strategy
A Global Manufacturing Network, not just a Factory

83% of 250 executives overall agreed or strongly agreed that the ability to flexibly and dynamically move production from one existing facility to another, or to change the product mix at an existing facility to match demand, is critical to achieving their growth goals.

As manufacturing activity expands from single site centric to multisite/multi-enterprise we find more and more that manufacturers are looking at new architectural approaches to overcome complexity.

The new era of manufacturing will be marked by highly agile, networked enterprises that use information and analytics as skillfully as they employ talent and machinery to deliver products and services to diverse global markets.
Camstar Product Strategy

Camstar Enterprise Platform™

RICH INDUSTRY FUNCTIONALITY

- Medical Device
- Semiconductor BE
- Semiconductor FE
- High Tech/Electronics

ENTERPRISE-CLASS MES/MOM

2. Closed-Loop Manufacturing
3. Global Performance Management
4. Global Quality Management
5. Global Product Pedigree
Solutions are Market Driven

Industry & Product Strategy
Requirements collection
- Voice from the zones
- Prioritization

Voice of the Customer
Solution Feedback System
- Market Surveys
- Customers Interview

Industry Product Advisory Councils

Industry Regulations & Standards

Camstar Medical Device Suite

Product Roadmap
18-month forecast
- Product Driven
- Follows Siemens strategy

Product Development
- Industry Solution
- Agile product Dev.
- Cross Industry Coordination

Abbott

Roche

FDA

TÜV

OAGi

IEC

Cross Industry Coordination
Product Overview
Camstar Enterprise Platform - Product Portfolio

Camstar Manufacturing
- Robust MES Foundation
- Globally-unified Platform

Camstar Quality
- Event Management
- Nonconformance Management

Camstar Interoperability
- Enterprise and shop floor integration
- Provides catalog of adapters

Camstar Change
- Master Data Management
- Deploying the changes to the remote factory systems

Camstar Intelligence
- Advanced Reporting
- Predefined Catalog of Reports
Camstar Enterprise Platform – Solution Footprint

Siemens TeamCenter
- Ideation
- New Product Introduction
- Design & Materials
- Service & Support
- Engineering
- Retire

Siemens - Camstar Interoperability
- Engineering
- Operational Reporting
- Event Management
- WIP Tracking
- Genealogy
- Process Specification
- Workflow Router
- Lean Flow
- Data Collection
- Rework/Return/RMA
- Resource Tracking
- Dispatch Management
- Electronic Procedures
- Electronic Signatures
- Operator Certification
- Maintenance Mgt
- Label Printing
- SPCSQC
- AQL Sampling

Siemens - Camstar Change
- Activation

Siemens - Camstar Intelligence
- Performance Monitoring

Siemens - Camstar Quality
- Nonconformance Mgt

Siemens - Camstar Manufacturing
- Maintenance Mgt
- Label Printing
- SPCSQC
- AQL Sampling

Siemens Automation
- Siemens S7 PLCs
- Siemens PCS7 DCS
- Siemens WinCC
- WinCC Historian

Industry Suites
- Medical Device Suite
- Semiconductor Suite
- Electronics Suite

ERP
- Sales
- Human Resources
- Finance/Accounting
- Inventory/Warehouse Mgt
- Order Management
- Production Planning/MRP

Siemens PLM Software
CEP Workspaces – Accelerating Value Creation

Core Products (CM, CQ, CC)

Industry/Process (MedDev, Semi)

Sub-Industry/Process (MedDev Batch, Semi FE)

Pre-Configured Extensions

Customer

Workspace ID

CDOs, CLFs, WSs, PPs
Architecture for Scalable Industry Penetration

CEP Open Infrastructure
(Security, Services, Scalability, Notification, Interoperability, Multi-Tenancy)

Customer-Specific
Medical Device
Camstar Manufacturing
CEP Object Model Configuration

Customer-Specific
Medical Device Batch
Camstar Quality
CEP Business Logic Configuration

Customer-Specific
Semiconductor
Camstar Change
CEP User Experience Configuration

Customer-Specific
Semiconductor FE
Camstar Interoperability
CEP System Administration

Customer-Specific
TBD
Camstar Intelligence
CEP Reporting & Analytics
Designed to maximize flexibility through configuration

Create complex processes using modeling tools, **not by writing code**

**BENEFITS**

- Increased speed of deployment
- Reduced cost deployment
- On-going support
- Reduced cost of upgrade
High level introduction to the Camstar architecture
Camstar Manufacturing - Functional Layers

Manufacturing Activity
• Unit/Lot History
• Resource History
• Production Data
• Quality/Defect Data

Manufacturing Model
• Workflows
• Resources
• Part Numbers
• Quality Specs

User Interface
• Operation Interaction
• Screen Preferences
• Interface Ease of Use

Object Model
• Modeling Objects
• Transactions
• Services
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How we help our customers: The 5M’S Points of Control

- eDHR Control
  - Execute
  - and
  - Enforce
  - the DMR

- Man
  - Right Operator, Properly Certified

- Material
  - Real-Time Material Issue Control

- Machine
  - Correct Equipment, Properly Certified

- Method
  - Route/eWork Instruction Enforcement

- Measure
  - Real-Time Data Collection
Roadmap
Roadmap
Camstar Foundation and Medical Devices Suite

Med Dev on CEP V7 SU7
- Ongoing Implementation (released V8)
  - RAD framework / Apollo Adoption
  - Enhanced UEX
  - Mobile Support
  - Component Replace
  - OEE Visualization Modernization
  - Chinese & Japanese Language Support
  - CEP CIO - PR fixes

Med Dev on CEP V8
- GA RAD Framework / Apollo Adoption
  - Align to PL theme
  - Designer 2.0
  - Portal Studio 2.0
  - Mobile support
  - Named user licensing
  - Kitting

Med Dev on CEP V8 SU1
- RAD framework / Apollo Adoption - Ph2
- Enhanced UEX – Ph2
- Mobile Support – Ph2
- Modelling Data Filtering – Bulk Add
- eKanban

Med Dev on CEP V8 SU2
- RAD framework / Apollo Adoption - Ph2
- Enhanced UEX – Ph2
- Mobile support – Ph2
- Lot to Load
- No Downtime for DB Update
- Criteria Matrix POC

Med Dev on CEP V8 SU3
- RAD framework / Apollo Adoption - Ph2
- Enhanced UEX – Ph2
- Mobile support – Ph2
- TC Integration Enhancements
- Next Gen SPC
Camstar Manufacturing Enhancements – CEP V7 SU7
Top Features

Component Replace
Helps customer who have complex assembly and repair operations or repair depots

• Allows for easily removing and replacing a component from a nested subassembly
• Single screen to remove and replace a component

Final Good BOM
• Chassis
• Motherboard
  • Network Assembly
  • Processing Chip
  • Graphics Unit
• Power Pack
  • Capacitor
  • Ribbon Cable Assembly
• Hard drives

Quality Inspection
GU is to Replace !!
**Camstar Manufacturing Enhancements – CEP V8**

**Top Features**

**Kitting – CEP V8**

Defining kits of components that can be consumed from during the assembly process

- Ability to pre-allocate components needed for manufacturing to a kit
- Manufacturing process consumes components from the kit

**How this help?**

Provides enforcement that the right components from the kit are consumed
Camstar Manufacturing Enhancements – CEP V8
Top Features – How the UX is going to change (1/2)

CEP V7 - Classic Camstar Operational Web Page

Mainly used for desktop Client
No Siemens PL Look&Feel
Menus on top
Wide transaction area on the right
Camstar Manufacturing Enhancements – V8
Top Features – How the UX is going to change (2/2)

CEP V8 - New UX based on RAD Framework / Apollo

Mobile Ready
Using Siemens PL
Look&Feel
Focus is on modern, clean, flat design
New menu and transaction bars on left/right
New Web UX on CEP V8
Fundamental Principals

- Preserve compatibility
- Performance
- Enable Touch
- Enable Mobile
- Barcode scanning
- Code Refactoring
- improved search
- Wizard
- Siemens Branding

The new UX targeted for CEP V8 must preserve the compatibility with CEP V6 / CEP V7

Runtime performance will be improved

On all applicable pages and enable a touch friendly experience on desktop monitors

For all applicable pages and multiple device sizes, with responsive design behavior

Support barcode scanning

Refactor high usage pages to improve the UX

Implement improved search capability

Introduce wizards where applicable

Integrate tightly with Siemens product branding
Summary of Planned Delivery

NEW UX released with CEP V8

1. **New Responsive Framework**
   Page rendering adapts to device resolution/orientation, auto convert of most existing V6/V7 pages

2. **Newly Redesigned Pages for Tablet Landscape/Desktop**
   eProc, Operational View, Audit Trail, Search, others

3. **New Siemens Branding and Styling**
   Horizon Styling, Standard Header, etc

4. **Adoption of Apollo Controls**
   Left side Menu, Right side Command Bar, Tab Controls, etc
Mobile UX Support Progress: Responsive Design

eProcedure Example: Prototype Portrait and Dedicated Tablet Landscape/Desktop Mode
Connect to Camstar using any mobile device
Get your line assigned automatically
Operator tasks are at fingertips
Scan labels using the mobile's camera
Alert Supervisors with direct notifications
Best Practice: Rapid Implementation Methodology
Implementation Challenges

1. **Timing:**
   Long duration leads to higher costs, less ROI, longer time to value.

2. **Skills:**
   Implementation of MES requires many client & supplier resources with many skills.

3. **Costs:**
   Implementation of MES is expensive. Most MES are toolkits → Customization

- Average project implementation is 6 months to first Go-Live. Validation can be as large as the development / configuration. Some orthopedic device clients have 10,000 product variations require months to configure a system.

- Average project implementation requires 6-7 resources fulltime during the project time. The validation team can be as large as the deployment team. One client had a team of 17 doing just configuration of new products for months.

- Implementation of a MES system requires substantial investments in infrastructure, internal resources to configure and then validate customizations.
Goals: Reduce Risks

Development-Configuration
No Development, prebuilt ERP integration
Configuration done by Siemens

Validation
Validation is pre-built based on best practices
Risk Based Approach

Duration
Minimal Design, No Development, Less Validation
Fewer resources for a shorter duration
Goals:
Reduce Timing

Design
- Training
- Solution Design
- Adoption Design
- Technical Design
- Software Installation
1 Month

Configuration
- Model Configuration
- Model Demonstration
- Adoption Configuration
- Pre-built ERP Integration
1 Month

Test / Validation
- User Acceptance Testing
- Pre-built Master
- Validation Plan, FEMA, IQ, OQ, Validation Report
1 Month
### Standard Approach vs. RIM Approach

#### 6 Month Duration

- **Siemens**
- **Client**

#### 3 Month Duration

- **Siemens**
- **Client**

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- **Shorter Duration**
- **Siemens has more responsibility**
- **Siemens provides validation**
- **No development, less testing / validation**
RIM Modeling / Adoption / Validation

RIM Modeling Package:
• Siemens implements client manufacturing / business process into Camstar.
• Scope based on average client of 150 product / workflow combinations.
• Client maintains the Camstar Solution after initial modeling.

RIM Adoption Package:
• Siemens provides a standard implementation of Ancile for context sensitive help and learning assets.
• Siemens will provide assets for the most common 10-15 transactions.

RIM Validation Package:
• Review client validation strategy & Siemens’ master validation plan.
• FMEA – Support and review risk analysis.
• IQ – Predefined checklist, process and report.
• OQ – Supplier Audit, Test scripts, tests results and report for Integration.
• PQ – Support client running in parallel with paper based system; verification of configuration.
• Validation report
RIM Applicability

- RIM does not allow for customization by site – **Camstar tremendous Out of the Box (OOB)** functionality and flexibility allows for implementation **WITHOUT** customizations.

- Rim does not allow for equipment integration or other business system integrations – **Equipment integrations and integrations to other business systems (PLM, QMS, CMMS, Training and Calibrations System) is accomplished in a later phase.**

- Rim can be applied to a client that has developed a “Global Solution” that is being implemented to multiple locations – **Clients that take a Program Approach to Global MES Implementation as best practice develop a client specific customization and constrain sites to that solution.**

- RIM is **INDEPENDENT** of Architecture – Rim can be applied to a centralized, locally installed or managed services environment.

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**RIM relies on Siemens PLM Intellectual Property. For instance, Siemens Master Validation Plan and associated documents are only delivered as part of Siemens PLM Services engagement.**
RIM Measured Results

1. Speed implementations – time to first
   - 50%

2. Reduce level of client resources for implementation by allowing Siemens to provide a turnkey solution – fewer resources for a shorter duration.
   - 75%

3. Reduce the overall total cost (internal & external) of implementation. Reduce the upfront cost through Managed Services and Subscription
   - 66%

Any percentages are based on past projects using Siemens Professional Services and customer input regarding their internal costs.
Conclusions
Feedback and Q&A
Thank You!