Challenge, Change, & Innovation in PLM, Manufacturing, & Compliance

Brion Booth
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Varian Medical Systems
Varian Saves Lives!

Varian Medical Systems: **Focus on saving lives.** Through collaboration with customers & partners, the people at Varian develop technology leading solutions for advancing cancer treatment, radio surgery, X-ray imaging, and security.

- Treat over 250,000 patients/day
- FY 2012 Revenues ~$2.6 B
- 5,800 employees
- Manufacturing sites - NA, China, Europe
- 60 Sales/support offices globally

Security and Inspection products

Oncology Systems

X-Ray & Imaging Systems
How did it all get started at Varian?

PLM & manufacturing challenges & opportunities lead us to improve core engineering and manufacturing processes

3 Basic Philosophies:
• What is my stuff?
• How much does my stuff cost?
• Where is my stuff?

Reach RoHS Compliance
• Lack of process compliance
• Inadequate tools & infrastructure
• Looming regulatory requirements
• Big workload to become compliant

Engineering Change & BOM
• Paper based and manual
• Backlogs due to process inefficiencies
• Inconsistencies across organizations
• Manual configuration management

Mfg. Shop Floor
• Paper based/manual processing error prone & abused.
• Lack of integration between systems
• Transaction timing
• OLTP/UX in ERP not mfg focused

Mfg Process Control, & Compliance
• Limited process enforcement
• Regulatory data silo’d & not easily reported
• Routers didn’t represent the build process – financial only.
Benchmarking …

Results in Med Device

Results in Ops

Results in Pharma
Business Transformation: Digital Product Collaboration

**PLM Outcomes:**

- Leverage and reuse product engineering data
  - Establish continuous data stream
    - Design → Manufacturing → Service
    - 3D Model → Material → EBOM → MBOM
  - Re-use of parts and information
- Enable one global engineering platform
  - Capture Electronic E-BOM’s and parts
  - Building block for “virtual product”
  - Quicker access to product and process information
  - Global version/revision control

Device Master Record (DMR): Drawing → SAP Platform becomes the system of record
PLM Systems Landscape

Integrated SAP Software was platform of choice for REACH RoHS and EC process

- Simple application architecture, no additional cost for hardware, software and integration.
- Included NetWeaver Business Client (NWBC) UX and logic services to streamline PLM process. Several new engineering screens, workflows, & interfaces.

Data resides in SAP ERP (Material, BOM, Vendor, DIR etc)
Business Transformation: Manufacturing Execution

- Foundation
- Traceability
- Test and Repair
- ECM
- Labor Tracking
- Production Transfer
- Return and Repair
- SAP MII Integration
- Software Development Kit
- Plant Connectivity (PCo)
- Time Sensitive Material
- Floor Stock Management
- OEE
- Tool Management
- Reporting (SAP BusinessObjects)
- Globalization
- NC Management

Improve: Quality, First Pass Yield, Cycle Time, Error reduction, Avoidables, Data Availability, Analytics & Reporting, User Experience & Integration, SPC (Instantaneous)
Business Transformation: Manufacturing Integration & Intelligence (MII)

SAP MII extracts data from SAP ERP and provides real-time visibility and distribution to Plant Floor Systems of:

- Planned Orders
- Bills of Material
- Production & Process Orders
- Material Inventory Levels
- Inspection Lots Data
- Master Recipes
- Material Details
- Batch Details
- Resources & Functional Locations
- Maintenance Work Order & Notification details
- Material & Order Costs

Manufacturing Integration & Intelligence Business Logic Services

- Visualization
- Quality Engine
- KPIs / Metrics / Alerts
- Composition Environment

Data Services

SAP MII’s ability to perform transaction execution into SAP also enables automated, plant-level creation of:

- Production Confirmations
- Process Messages
- Material Receipts
- Material Consumptions
- Material Transfers
- Inspection results recording
- Quality Notifications
- Batch Characteristic recording
- Work Orders & results recording
- Maintenance Notifications
Highlights

1. Establish a System of Record and also provide a structure for navigation and search across product information

2. Foundation for Configuration Management

3. Foundation for full traceability
PLM Benefits: Compliance, Revenue Protection, Cost Avoidance, Agility, Process Consistency,

Protect EU Revenue
✓ ~30% of total Varian revenue in 2014 and thereafter

Speed of design process
✓ Increase component selection and alternate

Optimize component spend
✓ Leverage standard components and reuse

Automate component data acquisition
✓ PartMiner interface with SAP, capture AML, data sheets & pricing
Mfg Execution Benefits: Paperless Processing, Process Enforcement, Compliance & Analytics

**Real Time SPC:**
- Manual/automatic data collection - Any source
- Process control
- Event driven NC, Rwk, Notification
- Workflow
- **MII - Automatic from AtP**

**Standard in ME:**
- Analysis on all things manufacturing
- MII & BOBJ options available
Device History Record

- Created in *real time* – can view anytime.
- Ties together BOM levels/ops by SN
- Customized through MII & DHTMLX extensions