PLM Migration and Integration strategies using eQube-MI

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eQube-MI

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• Establishes a secured, scalable, and robust infrastructure to facilitate:
  • Right information at the right time: application integration for seamless information flow among the various COTS and legacy applications – Enterprise Services Bus (ESB)
  • Information collaboration across geographically dispersed supply-chains
  • Single version of truth: master data management so only the system of record holds and controls the ‘truth’
    • Reuse of engineering parts (Common Parts)
    • EBOM synchronization with downstream applications
  • Synchronization leading to orderly migration
    • Teamcenter Enterprise to Teamcenter
    • Legacy data migration to new platform – ERP, PLM, MES etc.
• Makers of the eQube Platform
• eQube® - a platform for Enterprise Software Infrastructure
  • eQube-MI – for application migration, synchronization, and integration
  • eQube-BI – “Rapid-BI” solution for enterprise-wide visibility with Big Data analytics
  • eQube-DP – for profiling data – data quality assessment, correction, and repair
  • eQube-TM – for transformation modeling – establishing a knowledge-base of systems by visually mapping object / data model of systems for transformations
• World Wide Customer Base
  • Aerospace & Defense, High-tech, Automotive & Transportation, CPG & Retail
  • 190 large customers worldwide. More than 48,000 BI seats in use.
• eQube-BI is also marketed by Siemens PLM as Teamcenter Reporting and Analytics
eQube® Platform

Offerings
- eQube-BI
- eQube-MI
- eQube-TM
- eQube-DP

eQube® Platform
- BI Engine
- MI Engine
- UI services
- eQube® Server
- Scheduling Services
- Event Management Services
- Data Access Services

Sources
- Databases

Web Services
- Web Services

Adapter Framework
- PLM ERP MES
- Teamcenter SAP
- BaaN ECAD
- IFS Primavera
- MFG Planning
Migration / Integration Methodology

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Data Profiler

Transformation Modelling

Enterprise Service Bus
Migration and Integration

Enterprise-wide BI - Reporting/Analytics
eQube Teamcenter Connectors

• Teamcenter – Unified – 10.x, 9.x, 8.x, 2007
• Teamcenter – Enterprise – 3.1 through 8.x
• Teamcenter – Engineering – 9.x, 10.x, 2005, 2007
• Teamcenter – Project
• Teamcenter – Systems Engineering
• Teamcenter – Product Master Management
eQube connectors for other enterprise systems

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- Released in the market:
  - Various relational databases
  - SAP – ECC 6
  - IFS
  - Mentor Graphics
  - Solumina
  - IBM – Product Manager
  - Microsoft Project (standalone and Server)
  - MS - Excel
  - OpenText - ECM
  - Text

- Planned releases (3-12 months):
  - Primavera P6
  - DOORS
  - Sharepoint Portal
  - Clear case and Clear quest
  - BAAN
eQube-MI as migration platform

- Application synchronization leading to orderly migration
  - Teamcenter Enterprise to Teamcenter
  - Transitioning from any PDM / PLM system to Teamcenter
  - Consolidation of multiple legacy systems into Teamcenter
  - Platform for legacy system migration (any domain – PLM, ERP, MES, Quality systems)
eQube-MI as Enterprise Services Bus

- Master data management

- Backbone to integrate enterprise systems (ERP, PLM, MES, Quality System, etc.)

- Orchestration of enterprise wide business processes

- Secured, scalable, and robust infrastructure for supply-chain wide collaboration

- Provides flexible, scalable, and robust message-driven infrastructure
Key differentiators…

- Proven migration methodology “IETLV”
- Comprehensive eQube offerings to support IETLV methodology
- Successful migration strategies
  - Big bang with deltas
  - Transitioning by programs/projects/domains and timeframes
- Innovative Implementation methodology for “orderly migration to Teamcenter”
- Customer references
  - 20+ successful implementations
Key differentiators...

- Innovative adaptor / connectors architecture
  - That is truly ‘loosely coupled’
  - That does not require programming (“last mile issue”)
  - Native connectivity to enterprise apps by leveraging APIs and Web-services
    - Leverages security logic and application context
- Ability to integrate with application’s workflow and events without customizing the application
- Ability to model and configure processes in BPM module
  - Ability to configure business logic dynamically without a need to write code
- Ability to establish and manage transaction boundary across applications
- Integrated solution offering using eQube-DP, TM, MI, and BI (Proven methodology – I-E-T-L-V)
eQube-MI - Customer Case Studies

• BAE Systems – MAI (Typhoon program), UK
• GDC4S, Phoenix
• Lockheed Martin Aero (F-35 program)
• Rolls Royce
• BAE SUBS
• L-3 CSW
• B/E Aerospace
• L-3 Greenville
**eQube-MI @ BAE-MAI (Typhoon), UK**

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**eQube-MI**

- Kick-off – Nov 2008
- Deployed to production in Jan 2010.

- BAE moved from IBM Product manager to Teamcenter Enterprise on Eurofighter Typhoon.

- eQube-MI was used to integrate 15 existing applications in bi-directional & real time mode with Teamcenter Enterprise.

- Some Key systems
  - HMSCAPP, HMSNCM
  - BAAN
  - Data Exchange with partner companies using PDM STEP
  - Many legacy systems

- Transaction volumes
  - 1500+/ day peaking to 5000/day
  - 24 by 7 operation

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**Teamcenter MRO**

Physical Prod Structure

- Data Exchange with Partner Companies
- STEP based Engineering Data Exchange with Partner Companies
- Data Exchanged - REA (with lifecycles), EC items, CAD Models, CR and CP data
- Trigger - REA lifecycle, triggers, Triggers from CR/CP process.

**HMSNCM**

Non Conformance Management System

- Data Exchanged - Deviation and Waiver requests
- Trigger - Creation, Modification or deletion of Non-Conformance records in HMSNCM

**SAP Process Planning (HMSCAPP)**

Process Planning System

- Data Exchanged - EC Data Gross BoM and item process planning
- Trigger - EC Lifecycle entering Planning Process and EC Release

**BAAN**

ERP System

- Data Exchanged - EC Data Gross BoM and item process planning
- Trigger - EC Release

**DPOS**

Standard Parts Catalogue

- Data Exchanged - Bought Out Parts information
- Trigger - Nightly Batch Job

**WDMS**

Electrical Definition & Planning System

- Data Exchanged - REA and Product structure
- Trigger - REA Lifecycle trigger and Teamcenter UI initiated

**ASTRAL**

Initial Provisioning / Spares Definition System

- Data Exchanged - Part Data and LSAR Data
- Trigger - Teamcenter UI initiated

**DMS**

Shop Floor Build Management System

- Data Exchanged - Physical Product structure
- Trigger - As the Parts are assembled on the shop floor

**TRC**

Customer Level Change Management System

- Data Exchanged - Physical Product structure
- Trigger - As the Parts are assembled on the shop floor

**DEPRT**

Catia BOM translator for none drawn parts

- Data Exchanged - Product structure for Bought Out items
- Trigger - Teamcenter UI initiated

**EOS**

Shop Floor Electronic Drawing Viewing System

- Data Exchanged - EC and Item information with the Drawing as a TIFF file
- Trigger - EC Release

**ACS**

Design / Build Reconciliation System

- Data Exchanged - REA, EC and Product Structure data - Neutral and Physical
- Trigger - EC Release, Physical Structure completing
eQube-MI @ BAE-MAI (Salam), UK

- eQube-MI
  - Kick-off: Q2 -2011
  - Deployed to Production: Q4-2011

- eQube-MI is used to keep the two geographically separate Teamcenter Enterprise instances in synch.

- The communication between 2 eQube-MI instances happens over very high latency unreliable communications channel.

- The data security and access control rules defined in Teamcenter are fully enforced and maintained.
eQube-MI

- Kick-off: Q3 2009
- Deployed in Production: Q4 2009
- Initial focus on “Master Data Management” for
  - Parts
  - EBOM
- Systems participating in MDM are:
  - Mentor DMS (ECAD)
  - TcEnt
  - TcEng
  - Solumina
  - IFS
  - Ariba
- Average volume per week is 200 transactions
eQube-MI @ LM on F-35 - Coexistence of TcEnt and TcUA

"Synchronization leading to orderly migration" using eQube-MI

• LM has chosen eQube-MI to provide synchronization between TcEnt and TcUA

• eQube-MI solution will cater to complex business processes spawning both systems

• This will provide LM with a core infrastructure for seamless coexistence of TcEnt and TcUA, till TcEnt is fully sunset

• This is a real-time integration solution with expected data volumes of tens of thousands of transactions per day
eQube-MI @ LM on F-35 - HMSCAPP

- **eQube-MI**
  - Kick-off: Q2 2010
    - LM chose eQube-MI for MBOM and BOP sync / integration between HMSCAPP and Tc8.3.x
  - 11 interfaces sync data and ownership between two systems
  - 40k plans (Approx) will be migrated from HMSCAPP as initial load
  - Kick-off: Q2 2012
    - Tooling interfaces transfer tooling BOM and visualization data from TcEnt to Tc8.x
    - Expected go-live with R2. Combined transaction volume is expected to be 2000 per week

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eQube-MI @ LM on F-35 - FACO

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eQube-MI

- Kick-off: Q4 2011
- LM’s sustainment group chose entire eQube platform for integrating FACO’s and international partners to their PLM

- This interface delivers released data via STEP format to various partners

- The data is collated from both Teamcenter instances and consolidated EBOM and Engineering changes are delivered

- TcEnt and TcUA is mapped to a common data model using eQube-CTM

- eQube-MI leverages these maps to transform the data into a neutral CDM format

- This interface will go live in Q3 - 2013

HMSCAPP

eQube®-MI

Tooling

Planning data sync

Release Data

STEP Data for Partners

Teamcenter

HMSCAPP

CDM

Tooling and Planning structures

HMSCAPP
eQube-MI @ Rolls-Royce

- Kick-off: Q3-2011
- eQube-MI selected as the primary tool for migration to Teamcenter 8.3.3

- Migration scope include
  - 2 Sites in UK
  - 2 Sites in US
  - 1 Site in Germany
  - 1 Site in Canada

- Migration from 30 different applications
  - Metaphase 3.1, Optegra, CODAC, Documentum, SAP and other legacy systems
  - Data exists since late 60s.
  - Data Profiling and cleansing using eQube®-DP
  - Scope includes Change data, Parts, EBOM with configuration History, Drawings, Documents, Plan data, BOPs etc.
eQube-MI @ BAE Subs

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FORAN & Teamcenter integration using eQube-MI

- BAE Subs selected eQube-MI based solution for FORAN & Teamcenter bidirectional integration
- eQube-MI solution will cater to complex business uses cases spawning across both systems
- This will ensure that the Teamcenter will be the master system for the product BOM and configuration.
- Some of the use cases/interfaces will be triggered interactively by users
- This is real-time integration solution with expected data volumes of thousands of transactions per day
eQube-MI @ L-3 CSW, Salt Lake City

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eQube-MI

- Kick-off: Q4-2011
- Gone live: June 2013
- L-3 CSW chose eQube-MI to help them migrate to Tc9.1
- eQube-MI to migrate around 28 million records to Tc9.1. The expected load time is 13 days
- Source data resides in SQL server, Tc8.1 and file system
- Functional domains getting affected are:
  - EBOM with effectivities
  - MBOM
  - Classification
  - Standard parts
  - Routings/Materials
eQube-MI @ B/E Aerospace

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eQube-MI

• Kick-off: Q1-2011
• Gone live: June 2013 (DP2 - SPG)

• B/E Aero to migrate 15 million (approx) objects to Tc8.1.1
• From 6 data sources
  • Agile (EBOM)
  • JD Edwards (MBOM)
  • Access
  • Excels
  • Tc8.1 + NX
  • Network Files
• Agile BOM and NX BOM is to be consolidated

• After SPG Site DP2 migration, DP3 Prod date: Q4-2013
  • The solution will then be deployed by 3 other sites
eQube-MI @ L-3 Greenville, TX

- Kick-off – Q4 2010
- Production date: Feb 2011 (4 months)
- L-3 Chose eQube-MI to migrate legacy CICS data to Teamcenter Eng 10.0.3.9
- Migration requirements
  - 50+ years of data
  - 1.8 Million objects
  - Custom classes
  - Sensitive Date values were to be preserved
  - End-to-End validation
- eQube-BI was used for performing end-to-end validation
Thank You