

Connecting ERP-PLM Case Study : DC

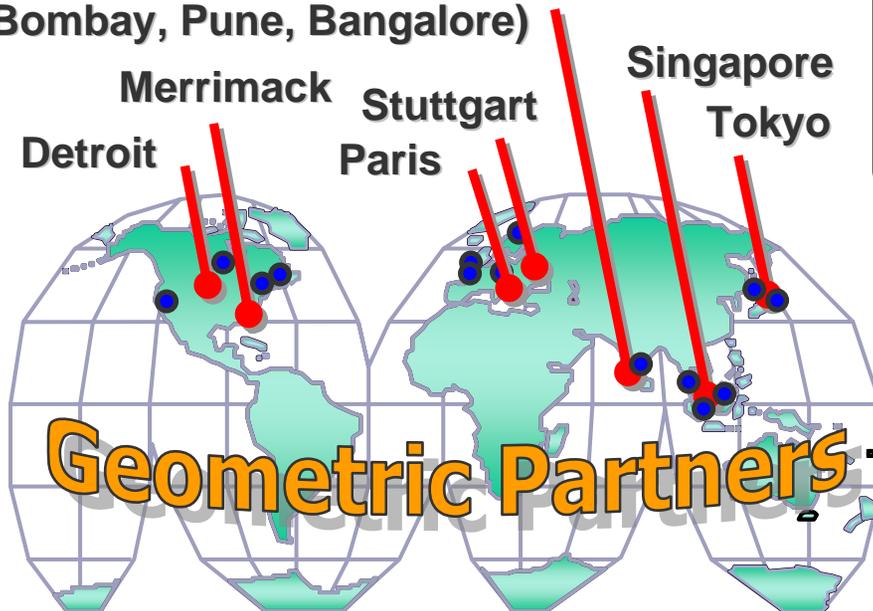
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Geometric: Global PLM service provider

- Focused on Product Lifecycle Management (PLM)
- In 1984, Geometric began as the CAD/CAM division of Godrej & Boyce
 - 21 years of CAD/CAM/CAE/PDM software development expertise
 - Godrej & Boyce is a engineering & manufacturing leader in India
- Over 1500 employees worldwide, Revenues in FY05 - US\$38 Mil.
- Partnership with major CAD/PLM vendors across the world.



Offshore Development Centers (Bombay, Pune, Bangalore)



Geometric-Partners

In addition, Geometric has co-located staff at partner sites working on:

- Presales support
- Projects
- Offshore coordination

Geometric – Relationship with UGS

- Relationship since 1998 for product development
- Relationship since 2002 with UGS Services
- UGS Practice – Current team-size – 160 + consultants working for UGS Product development and services engagements

Product Development Engagements

- CAD/CAE development for NX & I-deas
- Teamcenter Enterprise / Engineering
- Teamcenter Sourcing
- Migration Tools Development

Services Engagements

- Teamcenter Customization & Implementation
- Teamcenter Integrations
- NX/Knowledge Fusion Customization
- Migrations from TDM, Metaphase, Legacy, other PDMs to Teamcenter
 - Certified Migration Partner
 - I-deas to NX Migrations

PLM Services to UGS Clients World-wide

Ford, GM, P & G, Jones Apparel, Nissan, Mazda, Visteon, BMW, AMAT, Denso, Emerson, SAAB Aero, American Axle, Mercury Marine ...



Why companies want to connect ERP and PLM?

- 70 % reduction in time and cost of re-keying the data in both the Systems.
- 75 % reduction in BOM-error costs.
- 15 % reduction in inventory due to improved part reuse.
- 8 % reduction in scrap due to communication of product changes from design to procurement.



Source :PLM-ERP integration : Business Efficiency and Value (CIMData-Report)

Case Study

PLM-ERP connection Solution At Daimler Chrysler



Geometric works in partnership with T-Systems on PLM-implementation project at DC.

PLM-ERP setup at DC

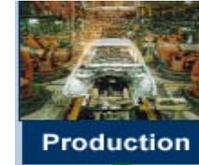
PLM



(TCEnt customization)

- Digitised product definition
- Product/Process documentations
- Manufacturing facility
- Product configuration
- Design-Release Workflow.

ERP/ERM



- Many decentralised ERP/BOM systems for different business units
- Change Management Systems.
- Part Number/Change Number generation systems (standardisation)
- Packaging Evaluations

Expected Interface characteristics from this connection

- Reliability.
- Security.
- Platform independence.
- Real time Event driven Data synchronisation
- Scalability
- Adaptability for system software upgrades on both sides.
- Use of universal standards

Introduction to MQS

MQSeries® is a messaging product that enables application integration by helping business applications to exchange information across different platforms by sending and receiving data as messages.

Messaging

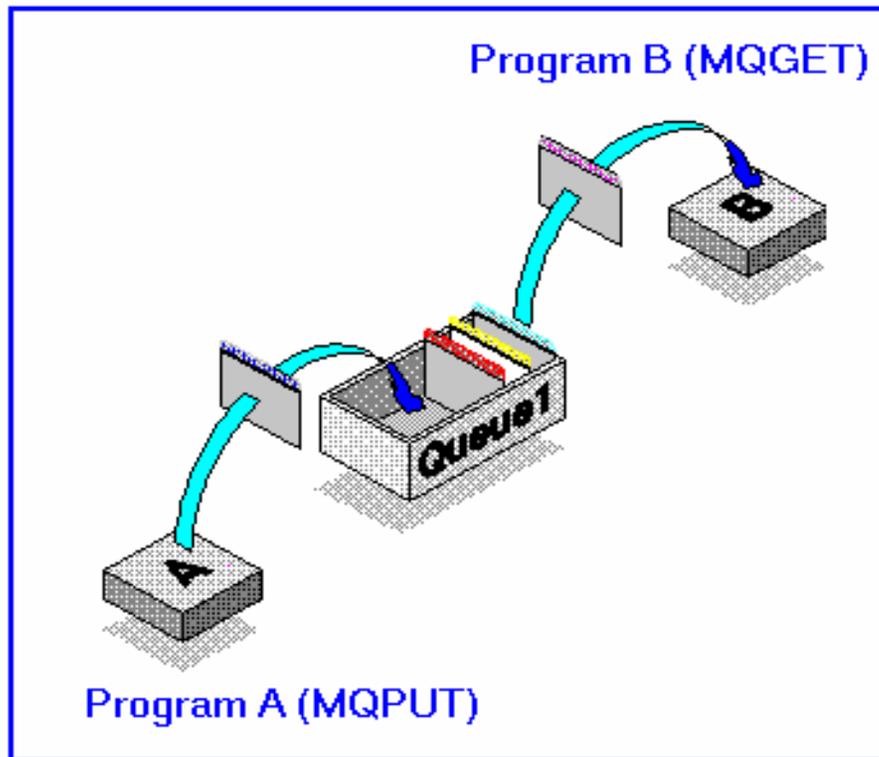
- Messaging is an asynchronous method of passing information between programs.
- Asynchronous communication provides time independence so that programs do not have to execute serially and wait for each other.

Queuing

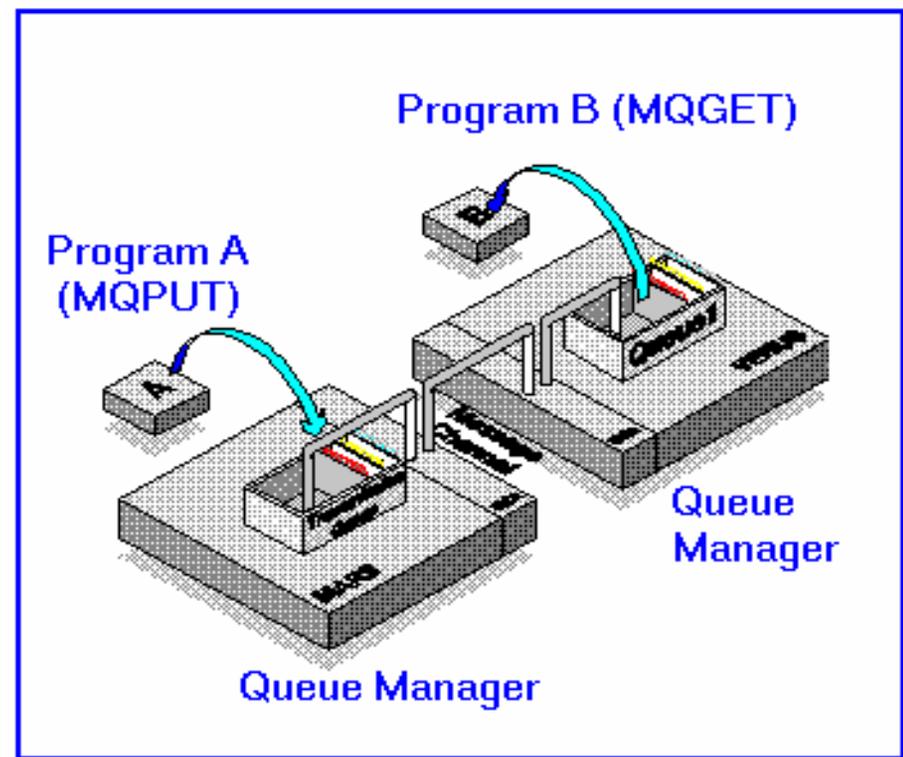
- Queuing is a method of passing information through logical message queues.
- Queuing frees the communicating parties from establishing connections with one another and other complexities of communicating directly.

Introduction to MQS

(Program to Program communication)

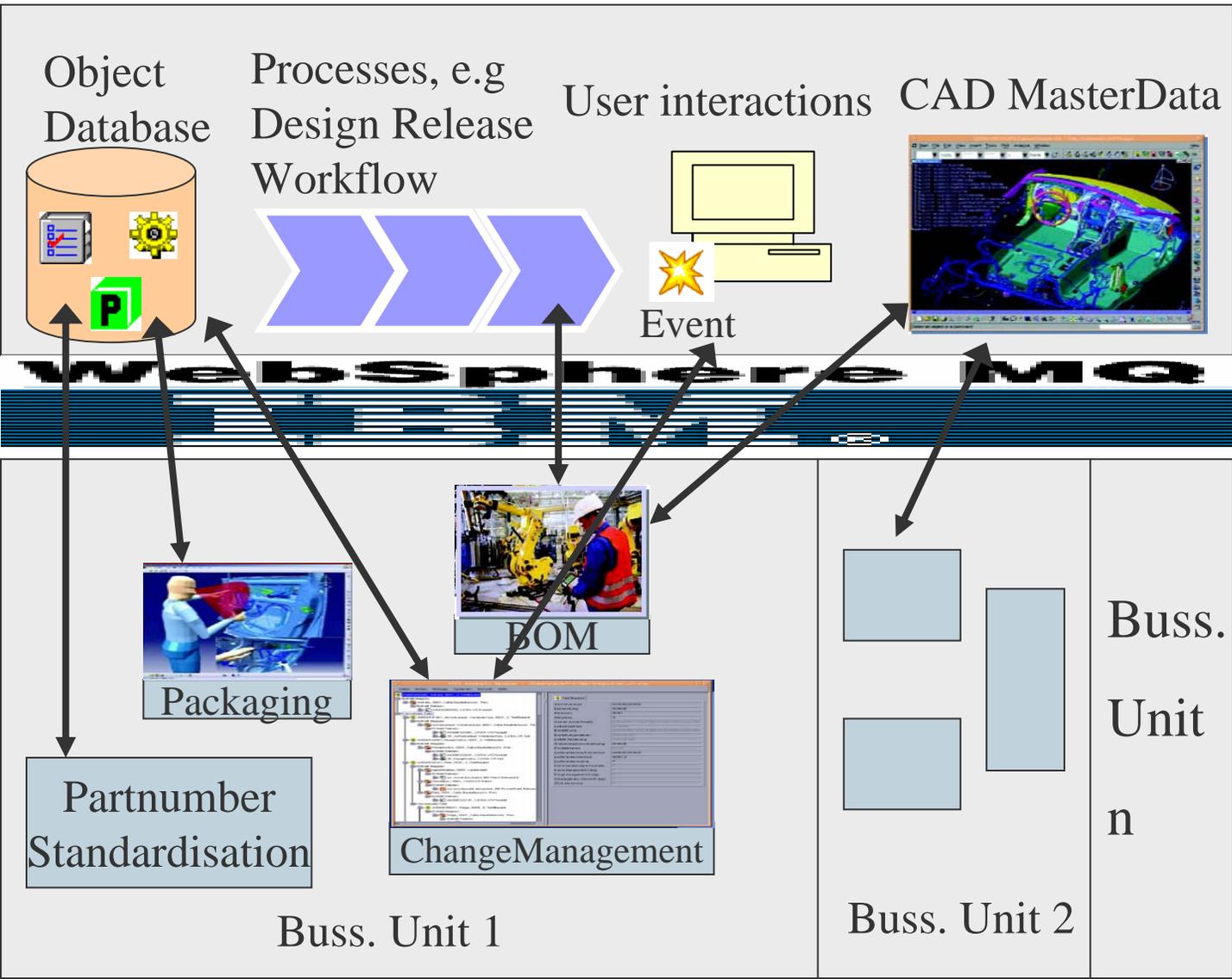


One System



Two Systems

Information flow



PLM(EDM)
System based on
TC Enterprise

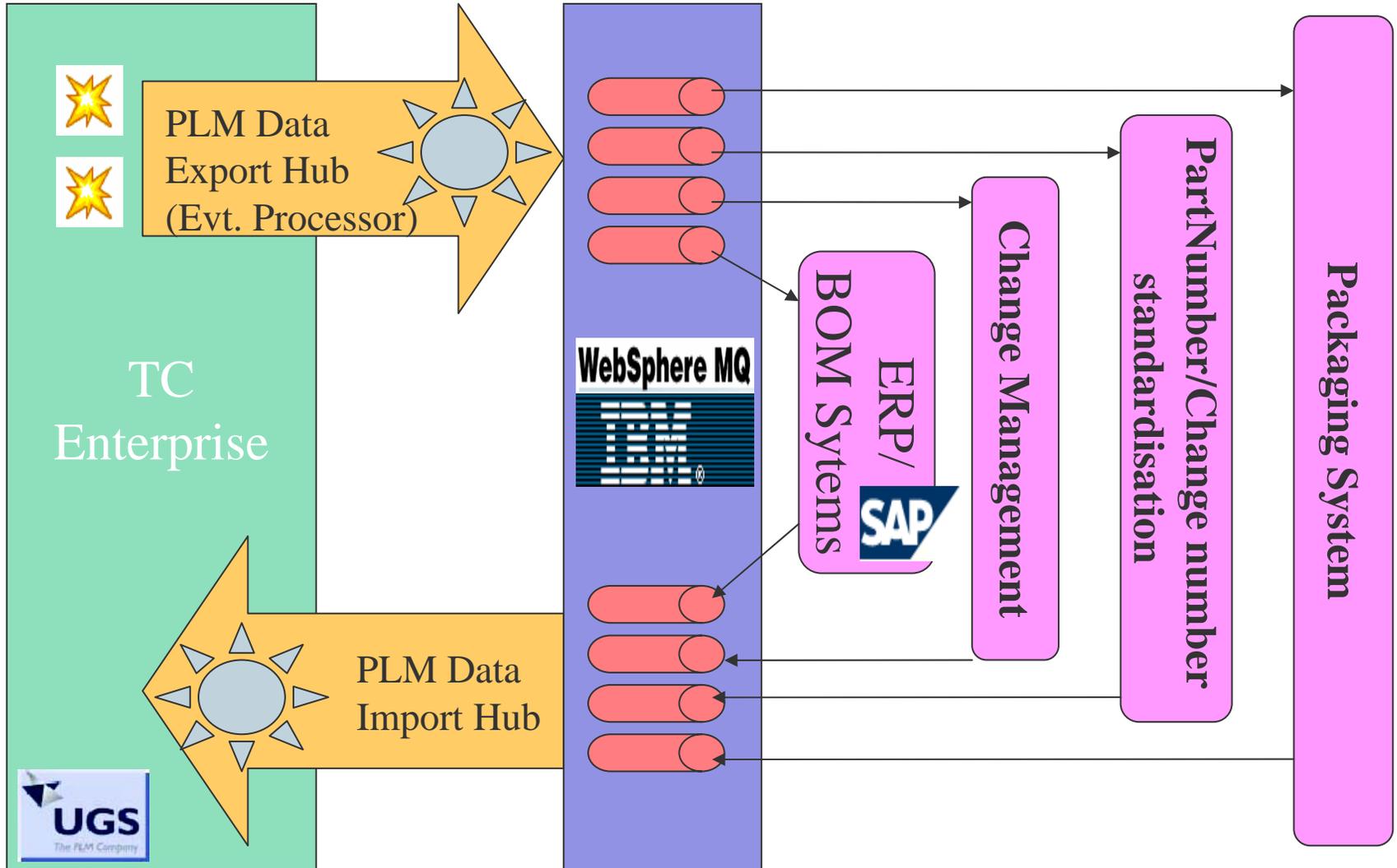
Middleware

Decentralised
ERP/ERM
systems
For different
buss. units

Important Business Processes supported by interface data transfer

- Release workflow: Design release workflow interacts with ERP/BOM systems by supplying BOM-information (with Part-Master data) and seeking approval from these systems, integrated within the design release process.
- Close process-integration between company-wide Change Management process and the design release process in PLM.
- The updates in part-weights (calculated, predicted, weighed) are communicated to ERM systems.
- Supports part sharing within different business units by synchronising the respective BOM systems within the scope of Release Workflow.

Interface Architecture



Benefits Related to MQSeries:

- Use of trigger monitor at both ends makes it nearly real-time communication.
- The solution (and also its development) is completely platform independent since MQS itself runs on various platforms. Also the interface development at both the ends can be independent of each other till the integration tests.
- It's a secured communication with data encryption supports in communication between two MQS Servers.
- MQS middleware ensures no-data-loss in the overall communication link making it a reliable communication.
- There are various tools available for administrators to monitor or analyse data flowing in MQS queues.

Benefits Related to TCEnterprise

- Event processor makes it asynchronous (no blocking of user interface) and also scalable (upsizing for more data volume)
- There are several OOTB utilities for event administration to monitor the interface.
- Use of Review process from TeamCenter-LCM module is ideal for capturing the interface step in Release Workflow.
- The message-specification is based on the universal XML-standard, therefore its easier to be supported by the external applications; also TCEnt supports XML with its PLM-XML standard.

Future

Where we go from here?

- Adding more connections to the existing interface hub. (also non-ERP systems.)
- More and More use of out-of-the-box PLM-XML support from UGS.
- More and More use of Service Oriented Architecture for defining interface processes.

ERP-PLM integration Market

- Markets at \$1 billion in 2004 are anticipated to become \$4.1 billion by 2011. Automation of structured transaction data, automation of unstructured information, and integration of information across platforms and across applications demands the use of middleware. Integration tools are used to make networks work. Middleware implementation depends on groups of people defining goals together to achieve a common goal. That goal is sometimes elusive.
- The messaging is the core of real time computing. The ability to transmit securely over networks depends on messages. Routers have handled information as packets, but this is shifting. Mission critical messaging markets at \$2.1 billion in 2004 are anticipated to reach \$3.3 billion by 2011.
- Enterprise application integration (EAI) combined license and services market forecasts analysis indicates that revenue of \$2.5 billion in 2003 is expected to go to
- \$5.9 billion by 2009.

Source : Wintergreen market research

Recomended Reading

Other Case studies on PLM-ERP integration:

- 1. IBM Case Study on Siemens-ICN.
- 2. IBM Case Study on Dassault Aviation.
- 3. Integration at Garrett Engine boosting Systems by Gedas USA inc.

Reports:

- CIMData Report: PLM-ERP integration, Buss. Efficiency and Value

Thank you

