TE and IBM Solutions in EAI

Jyväskylän yliopisto 29.3.2004
Agenda

- Digital Innovations EAI
- Integration Technology Evolution
- WebSphere MQ Family
- EAI - Case UPM-Kymmene
  - Main concept, benefits and scope
  - Message network
  - Project milestones
  - Customer comments
- TE Integration Services
  - Business Integration Solutions
  - EAI Integration Solution
  - Solution Model
- EAI Services Customer Case
TE and IBM Solutions in EAI

Digital Innovations EAI › Integration Technology Evolution › WebSphere MQ Family › Case UPM-Kymmene › TE Integration Services › EAI Services Customer Case
Digital Innovations EAI unit - Business Concept

- The Digital Innovations EAI unit concentrates on developing integration solutions using selected technologies. The unit offers consulting, project delivery, education and maintenance for TietoEnator’s named customers.
- Digital Innovations EAI unit implements its solutions co-operation with TietoEnator’s BAs.
- Our partners are IBM, SeeBeyond, Microsoft, BEA Systems, webMethods and TIBCO.
Some of our customers
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Interapplication Spaghetti
Message Oriented Middleware
Message Brokers

- Business Rules
- Transformation
- Intelligent Routing
Start-to-End Process Management

- B2C
  - Step 1
  - Step 2
  - Step 3
  - Step 4
  - Step 5
  - Step 6

- B2B
  - Step 7
  - Step 8
  - Step 9
  - Step 10

- EAI
  - Application X
  - Application Y
  - Business partners are part of the overall business process
  - MQSeries Workflow

- Visible, adaptable, measurable, auditable
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Customer Case
Message Queue Interface

Program A sends a message to program B via Queue 1
Time-independent Applications

Availability choices

Everything Constantly Available

Logical Connection

Busy

Not Available

Queue

Everything Conditionally Available

Not Available
WebSphere MQ API
Basic Elements

System 1

Program A
Put Q2
Put Q1
MQI
Messaging and Queuing
XQ
Q1
Channel
TCP/IP, APPC, NetBIOS, DECnet, ...

System 2

Program C
Get Q2
MQI
Messaging and Queuing
Q2
Messaging Styles

'Fire and Forget'

Program A \(\xrightarrow{\text{Put Invoice-Q}}\) Invoice-Q \(\xrightarrow{\text{Get Invoice-Q}}\) Program B

Request/Response

Program A \(\xrightarrow{\text{Put Invoice-Q}}\) Invoice-Q \(\xrightarrow{\text{Get Invoice-Q}}\) Program B

Target Queue

Reply-to Queue

Digital Innovations

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Building the Information Society
Messaging Styles

Chain

Program A → Program B → Program C

Loop

Program A → Program B
Program C → Program A
Program A → Program C
Program C → Program B
Parallel Processing
Message Brokering - IBM WebSphere MQ Integrator
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TietoEnator press release 21 February 2002

“TietoEnator has supplied UPM-Kymmene with a global integration solution. It will be used to link UPM-Kymmene’s centralised information systems to what are at present more than 50 different units’ systems in Finland and at UPM-Kymmene’s business locations in Europe. The solutions arrived at in the course of the slightly under two years that the project has taken, currently embraces 80% of the company’s units. The project is continuing, and once completed it will cover all UPM-Kymmene units worldwide. The solution has been supplied by TietoEnator’s Production & Logistics division’s EAI Competence Center.”
UPM-Kymmene EAI - Main concepts and Benefits

- EAI solution within UPM-Kymmene is
  - Application integration using message oriented middleware concept to provide application-to-application connectivity within UPM-Kymmene group.
  - Enabling application level communication between UPM-Kymmene group and its customers and partners.

- Benefits
  - Simplifies currently used solutions
  - Enables application integration in business transformations
  - Possibility to standardize and reuse message formats
  - Forms a standards based solution for integration projects
  - Makes transformation from existing systems to new systems easier
UPM-Kymmene EAI - Main scope

- EAI Solution Scope
  - Provides application integration services for UPM-Kymmene internal customers
  - Provides highly available, centrally monitored and controlled application interconnection network
  - Implements defined business processes together with business and application responsible groups
UPM-Kymmene messaging network

- Finance
- ERP
- Planning
- Logistics
- DW
- Existing UPM Applications
- Extranet
- Intranet
- EDI
- Fax
- Email
- TE MOM Adapter
- Mill
- Production Units

Centralized Group & Division Level Applications

External Communications
Software components

- Messaging Network
  - WebSphere MQ based network
- Message Routing
  - WebSphere MQ Integrator message broker
- Message Format Conversions
  - WebSphere MQ Integrator
  - TE Global Code Conversion system
- Application Interfaces
  - TE MOM Adapter
  - IBM Adapter technology
Project milestones from TE’s point of view

  - Global application messaging network
  - WebSphere MQ Integrator message routing principles
  - Adapter requirements and main principles
  - Global code conversions
- Rollout pilot project Germany (11/2000)
  - WebSphere MQ & Adapter training, installation and configuration
- Application Management (1/2001 - )
- WebSphere MQ & Adapter rollouts (1/2001 - )
  - Finland, Germany, France, Ireland, United Kingdom, NA, Canada, China, Austria and Belgium
- WebSphere MQ Integrator message definitions (4/2001 - )
Customer comments 1/2

“The global solutions was put through on an accelerated schedule made possible by harnessing the adapter technology that TietoEnator created plus its expert resources. Also, the IBM WebSphere MQ product family has proven its efficiency in the integration solution that was built.”

“The time schedules for other projects dictated the rate of progress and sometimes implementations had to be put together very quickly. TietoEnator operated flexibly and we always got the use of sufficient resources.”

- Pekka Kultanen, Services Manager, UPM-Kymmene Group IT
Customer comments 2/2

“WebSphere MQ Integrator has enabled UPM-Kymmene’s dynamic integration and mill systems consolidation, resulting in a clearly cost-effective investment.”

Pentti Huovinen, Manager, UPM-Kymmene Group IT

“The integration application works! Now we have standard interfaces to the mill, sales and logistics systems. We are able to collect pallet and reel level information in real time and pass it effectively into the R/3 sales application.”

Teuvo Vuojamo, Manager, UPM-Kymmene Group IT
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Business Integration Solution

- Business to business integration (B2B)
- Internal integration (EAI)
- Machine to machine integration (M2M)

Integration process and service management

Suppliers

Customers

Enterprise/BA-level

Site-level

Intelligent machines

Remote diagnostics

Suppliers

Customers
EAI Integration Solution

EAI technology stack

- Business process modelling tools
- Message brokers
- Middlewares
- Adapters and connectors
- Applications
- Servers and networks

Support components

- Archive, Analysis, Reporting
- Infra, process and data-flow monitoring
- Process, data-flow, content and security management
# TE Integration Services – Solution Model

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TE Solution Scope

- Hosting and management
  - High availability
  - Functionality and reliability
  - Business transaction monitoring and management
  - Integration application deployments
  - Problem solving
Customer Scope = 2,5

1. Entire dataflow including applications
2. Hub + middleware + TE MOM + adapters
3. Hub + middleware + TE MOM
4. Centralized hub

Sending Application

Adapter

TE MOM

EAI Architect / Service manager

Application specialist

EAI adapter specialist

Middleware specialist

Business specialist (customer)

EAI broker specialist

Middleware specialist

Business specialist

EAI adapter specialist

Application specialist

Receiving Application

Adapter

TE MOM

WMQ

WMQI

WMQ

Customer Scope = 2,5
Project Phases and Objectives 1/2

→ 1. Project setup
   → Project plan, project organization and documentation databases

→ 2. Implementation
   → Framework design
   → Technical environment setup
   → Service design and processes

→ 3. Service start-up
   → Service organization
   → Service tools roll-out
   → Monitoring and reporting tool roll-out
   → Continuous service starts
Project Phases and Objectives 2/2

- Framework design
  - Produce guidelines and standards for customer EAI environment

- Technical environment setup
  - Setup EAI hub environment
  - Installations and configurations of HW, OS, DB, WMQ and WMQI
  - Setting up backup
  - Monitoring (install and configure monitoring software)
  - Documenting (HW & software configuration)

- Service design and processes
  - Service process definitions for help desk process, EAI system management, EAI application management and service management
  - Produce service organization, tasks and responsibilities
  - Produce service management model
  - Define service tools and databases
  - Define service monitoring and reporting
Project Outcomes

- EAI framework documentations
- Technical environment documentation (HW configuration and software configuration)
- Installed integration EAI environment
  - Softwares installed and configurated
- EAI service process documentation
  - Help desk process, EAI system management, EAI application management and service management
- EAI service model documentation
  - Service organization and tools
  - Monitoring and reporting tools
  - Service management model

=> Environment and service ready to start up the integration EAI services
TE EAI Solution Components

- Adapters
  - TE MOM Adapter
- Concepts
  - TE Message Warehouse Concept
  - TE Data Harmonization Concept