Bridging the Enterprise Architecture to IT Architecture Gap

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Agenda

• Introductions
• The Business Challenge
• What is Enterprise Architecture
• Bridging the Business and IT gap
• Service Orientated Architectures
• Role of Tools in Architecture
• Demonstration
• Questions & Answers
• Summary
Telelogic At A Glance

- Founded: 1983
- HQ: Malmö, Sweden
- US HQ: Irvine, California
- Public Company: Listed in 1999
- Development Sites: USA, Sweden, UK, India
Global Presence

Over 40 offices around the world

As of September 2004
Bridging the Enterprise Architecture to IT Architecture Gap
Current Business Challenges

• Hypercompetitive Market
  – Innovation
  – Ability to implement ideas
• Mergers and Acquisitions
• Governance and Compliance
• Reduce Cost
  – Operational costs
  – IT Asset Management
    • Reuse of assets
    • Application Integration Costs
• Risk Reduction and Mitigation
A Growing Divide?

Business Challenges and Opportunities

Business Process Adaptability

The Internet

1990s

2000s
What is Enterprise Architecture?

• A description of business and IT domains:
  – Mission, Strategy, Landscape, Organization, People, Locations
  – Processes, Technology, Information, Data, Applications
• A description of the relationships between them
• A set of graphical and textual models and artefacts that can be communicated in a common manner
• An Enterprise Architecture supports an operating business in achieving its goals
Enterprise Architecture

Challenges:

• Managing IT Investments
• Legacy System Integration
• Regulatory Compliance
• Efficient project deliver
• Stakeholder buy-in
• Redundant data
• Portfolio Management
• Alignment of Business & IT
• Sarbanes Oxley
Who Derives Benefit from an Enterprise Architecture?

Different users demand different capabilities and benefits

**Decision Makers** demand **reliable and consistent information**
- Need effective decision support and IT governance

**Business Analysts** demand **detailed analysis capability**
- Highly advanced Impact Analysis and What-if Scenario capability

**System Engineers/Architects** demand **a common language**
- Need for multi-disciplines to communicate more effectively

**Reviewers** demand **instant access from any location**
- Mainly interested in review functionality
Different Stakeholders, Different Perspectives

Speak a Common Vocabulary!
Support for Decision Making
Investing in the right initiatives

Principles
High-level guidelines about the use of BPM and SOA
- reference architectures
- processes and best practices
- lifecycle management
- standards

Portfolios
Collection of planned & existing
- business processes
- business & technical services
- applications
Roadmaps and scheduling for projects and deliveries

Organization
Resource management
Roles
Reporting structures
Decision patterns
Project assignments

Investments
Prioritization of projects and initiatives
based on enterprise goals and objectives

Technical Infrastructure
Architecture as Decision Support Tool

• Decision support tool
  – Integrated strategic information base for powerful decision-making
  – Traceability of data in repository
  – Capture, analyze and visually communicate information how systems, applications and business processes interrelate
  – Share and digest architecture information in order to make smarter, faster decisions
Exploring Integrated Models

• Shows relationships in encyclopedia (repository) between any objects
• Allows navigation across a scenario
• Provides analytic capability to answer questions
• Interfaces with SA reporting system
• Can update its own queries
How do I Communicate With My Stakeholders?

• We must be able to share information across the entire organization
  – Generation of an EA Website allows for information sharing across the organization.
    • Process model Business Processes

• We need to communicate to the non-technical community
  – Explorer views, Pie Chart, and Bar Chart outputs allow for analysis for a non-technical audience
Bridging the Enterprise Architecture to IT Architecture Gap
Key Issue
Two Cultures, Two Languages...One Goal

Business Process Optimization
- Systems
- Information
- Applications
- Processes
- People

IT Community
- Manage Systems
- Manage Data
- Change Control
- Improve IT Operations
- Integrate IT to Business
- Audit for Compliance

Business Process Community
- Streamline Operations
- Reduce Costs
- Increase Efficiencies
- Improve Customer Service
- Audit for KPI Initiatives
- Audit for Compliance
Architecture for Planning and Executing Change

Current State

As-Is
- Business Processes
- Information
- IT Landscape

Change Analysis

Business Needs
- Continuous Improvement
- Business Objectives
- Change Directives

To-Be
- Business Processes
- Information
- IT Landscape

Projects

IT Change
- Acquire
- Outsource
- Develop
- Integrate

Investigate

Envision & Plan

Execute
Plan IT Change

• Automation through Software
  – Change Existing / Build New Apps
    • Requirements
    • Analysis
    • Design
    • Implementation
    • Testing
  – Purchase COTS
• Design technology changes to support IT
Multiple Development Paradigms

- Flexible approach allowing for multiple paradigms, with support for
  - service-oriented architectures
  - object-oriented development
  - component-based development
  - structured analysis and design

- Support for various languages and frameworks to describe service, software, and system architectures
  - UML
  - SysML
  - DoDAF
  - BPMN
  - BPEL
  - IDEF
  - ...
Software & Services (SOA) Development

- Design and specify technical services
  - aligned with business requirements and services
  - platform-independent
  - hand-off to implementation
- Develop and maintain technical service architecture
  - decompose or orchestrate services
  - checked and validated
- Simulate services
  - model verification and testing
- Implement and deploy services
  - in-house development
  - outsourcing
- Integrate legacy applications
  - service-enable applications
What is Service Oriented Architecture

- Architecture for understanding assets in terms of the capabilities they provide in terms of dynamic interchangeable components and their relationships
- A framework of technologies that standardise interfaces
Service-Oriented Architecture (SOA)

• Relationship of services and services users
• Collection of many services to build into larger business flow
  – Ties together disparate systems
  – More completely represents more business processes
• Advantages
  – Reuse and reconfiguration
  – Promote agility, productivity and efficiency
  – Construction: better, faster, less costly
Visualizing Requirements

- Requirements can be visualized graphically using UML
- Telelogic DOORS supports requirements and integrated with System Architect
  - show relationships using a standard notation
  - simple to establish traceability links in the context of the model

- SR1 1 Credit card payment
  - SR2 1.1 Credit card acceptance
  - SR4 1.2 Credit card refused
    - SR5 1.2.0.1 The card shall be refused if there are insufficient funds in the account
    - SR6 1.2.0.2 The purchase shall be declined if the credit card has been reported stolen
    - SR7 1.2.0.3 The purchase shall be refused if the total amount exceeds $2500
  - SR8 1.3 Credit card not readable
  - SR9 1.3.0.1 Purchase by credit card shall be declined if card is not machine readable
- SR10 2 Cash payment
  - SR11 2.1 Large bills

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  <id>SR1</id>
  <name>Credit card payment</name>
</requirement>

<requirement>
  <id>SR2</id>
  <name>Credit card acceptance</name>
</requirement>

<requirement>
  <id>SR4</id>
  <name>Credit card refused</name>
  <description>
    <requirement>
      <id>SR5</id>
      <name>The card shall be refused if there are insufficient funds in the account</name>
    </requirement>
    <requirement>
      <id>SR6</id>
      <name>The purchase shall be declined if the credit card has been reported stolen</name>
    </requirement>
    <requirement>
      <id>SR7</id>
      <name>The purchase shall be refused if the total amount exceeds $2500</name>
    </requirement>
  </description>
</requirement>

<requirement>
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  <name>Credit card not readable</name>
</requirement>

<requirement>
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</requirement>

<requirement>
  <id>SR10</id>
  <name>Cash payment</name>
</requirement>

<requirement>
  <id>SR11</id>
  <name>Large bills</name>
</requirement>
```
Process Decomposition

- Business processes can be transformed into use cases
  - scenarios that lead up to technical services
  - participants of business processes usually end up as use case actors
  - only selected business processes are transformed
Detail Use Cases

- Typically combined with requirements management
- Can be derived from business processes or services

- Use cases can be at different levels
  - business process level (in lieu of BPMN)
  - system or service level

- Use case execution
  - validate flows and functionality

A use case includes activities, interactions, or textual descriptions of functionality; it is not “just” a use case diagram.
Service Automation

- Business services can be transformed into technical services
  - at the same level of abstraction or finer-grained
- Technical services are intended for deployment
  - service interfaces that can be further developed into WSDL
  - include service behavior
Requires a start anywhere approach
Enable Enterprise Workflow

DOORS

Business requirements
User requirements
System requirements

Analyze & optimize business strategies

System Architect

Develop enterprise architecture
Plan & Architect Change Projects

Deploy & maintain
Design services & applications

Trace and analyze relationships

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System Architect and Tau

- System Architect and Tau share a repository
- TAU UML 2.1 editor included within System Architect
Summary

• Bridging the Business and IT gap is the challenge
• Use architectures to drive IT delivery from business objectives.
• Use integrated tools that support both the business change and IT development needs.
  – Telelogic System Architect supports Enterprise and IT Architecture
  – Telelogic DOORS supports requirements and impact analysis
  – Telelogic Tau supports SOA applicable technologies
    • Service execution, tracing, and testing
    • Various native importers to encourage simple reuse of architectures captured in other formats
    • Forward and reverse engineering of:
      – WSDL, XSD, Java, .NET/COM components, C#, C++
  – Telelogic System Architect and Telelogic Tau share a repository for Enterprise level Concept to Code working
Contact

• Telelogic – www.Telelogic.com
partners with
• Evocean - www.evocean.ch

Forthcoming Events
Model Driven SOA and Tau – 20th February 2008 in Zurich
For More information contact Evocean
Thank You!