A Software Development Platform for SOA

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Agenda

- Introduction
- SOA Development Process
- SOA Development Tools
- Technical Direction
- Summary
SOA Provides a Unified Environment

Business Processes

Automate & Integrate

Services

Drive

New Development

INTEGRATED

Legacy Systems

INTEGRATED

Packaged Apps

INTEGRATED

Software Development
Agenda

- Introduction
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SOA Development in Context

Business

Executive

Model the Business

Define Requirements

End User

Govern

Optimize

Project Manager

Manage change & assets

Analyze & Design

Define Requirements

SOA Development

Deploy

Test

Implement

Manage

SOA Infrastructure Management

Deployment Manager

Tester

Analyst

Developer

Architect

Operations Manager

Application Support
A Software Development Platform for SOA

Software Development Platform

- Business Modeling
- System Modeling
- Coding
- Workflow Orchestration
- Service

Middleware Platform

- Workflow Engine
- Enterprise Application Server + Enterprise Service Bus
Process Offerings

- Commercially-available products
  - Rational Unified Process
  - RUP plugins available today
    - RUP for SOA
    - RUP for WebSphere Business Modeler
    - RUP for Asset-Based Development
    - RUP for Systems Engineering
- IBM Global Services (IGS) offerings
  - Component Business Modeling
  - Service-Oriented Modeling and Architecture (SOMA)
The RUP “Hump Chart”
Applying RUP an Enterprise Level

- Enterprise architecting
  - Defining an architecture that underpins a number of systems

- Strategic reuse
  - Developing reusable assets that are used within a number of systems

- Systems engineering
  - Developing a system that contains elements of hardware, software, workers and data

- Enterprise Application Integration
  - Developing a solution that includes the integration of a number of legacy systems

- Packaged application development
  - Developing a solution that includes the configuration of a packaged application, such as an ERP or CRM solution

- Outsourced development
  - Defining an architecture that lends itself to the outsourced development of its constituent parts, whilst ensuring the quality and integrity of these parts

- And … SOA!
Applying RUP an Enterprise Level

Enterprise

Programme

Project
Programme / Project Governance

- Programme concerns
  - Alignment of projects within the programme

- Alignment of project management artifacts
  - Programme / project vision
  - Programme / project plans (schedules, budgets, signoff points, funding, releases)

- Alignment of project management processes
  - Scope (requirements) management
  - Change management
  - Test management
  - Risk and issues management
  - Quality management
  - Measurement / metrics gathering
  - Programme / project management reviews
  - Configuration management
  - etc.
Architectural Governance

- **Architectural concerns**
  - Alignment of subsystems within the overall “enterprise” architecture

- **Alignment of architectural artifacts**
  - Requirements model
  - Design model
  - Implementation model
  - Data model
  - Software architecture
  - Standards and guidelines
  - Infrastructure definition

- **Alignment of architectural processes**
  - Identification / refinement of interfaces
  - Identification / refinement of architectural components
  - Identification / refinement of architectural component properties (cost, performance)
  - Architecture reviews
  - … and alignment of the software development process in general
RUP for SOA

- **Description: Service Model**
  - Concepts
    - **Concept: Message Design**
    - **Concept: Service Portfolio**
  - Reports
    - **Report: Service Portfolio**
    - **Report: Service Dependencies**
    - **Report: Service Goal Traceability**
  - Examples
    - **Anonymous: SOA Model Example**
- **Description: Message**
  - **Concept: Message Design**
  - **Guideline: Message Attachments**
  - **Guideline: Service Data Encapsulation**
- **Description: Service**
  - **Guideline: Service**
  - **Guideline: Service Data Encapsulation**
  - **Guideline: Going from Services to Service Components**
  - **Concept: Service Composition and Choreography**
- **Description: Service Channel**
  - **Guideline: Service Mediation**
- **Description: Service Collaboration**
- **Description: Service Gateway**
  - **Guideline: Service Mediation**
- **Description: Service Partition**
  - **Concept: Solution Partitioning**
- **Description: Service Provider**
- **Description: Service Specification**
  - **Guideline: State Management for Services**

- **Tool Mentors**
  - **Description: Rational Software Architect**
  - **Description: Creating a Service Model using RSA**
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A Software Development Platform for SOA

Software Development Platform

Business Modeling

RequisitePro

System Modeling

Coding

Service

Workflow Orchestration

Middleware Platform

Workflow Engine

Enterprise Application Server + Enterprise Service Bus

Component Business Modeling

WebSphere Business Modeler

WebSphere Integration Developer

WebSphere Process Server

WebSphere Application Server

WebSphere Enterprise Service Bus

Rational Unified Process

ClearCase

ClearQuest

Rational Software Architect

Test Manager

Rational Functional Tester

Rational Performance Tester

Rational Functional Tester

Rational Performance Tester
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Eclipse – On the Desktop
Eclipse – Under the Covers

Language Tooling (J2EE, Web Services, Deployment)

Diagrams & Visualization

MDD Core (Code Generation, Pattern Engine)

Content (Pattern Templates)

Common Service (Reporting, etc...)

Model Services (UML2 ext, other Meta-Models, Code Gen APIs, ...)

Hyades

J2EE, WS* UML2 Models

CM, Merge, Traceability....

GEF

EMF

JDT/CDT

Team

Eclipse Core

Team Unifying Platform (WebSphere Portal, WAS, DB2, Lotus Collaboration)
Model-Driven Architecture (MDA)

- **Computation Independent Model (CIM)**
  - Business Analyst

- **Platform Independent Model (PIM)**
  - Architect / Designer

- **Platform Specific Model (PSM)**
  - Developer / Tester

- **Code**
  - Tester / Developer

**Transformations**
- CIM >> PIM Transformation
- PIM >> PSM Transformation
- PSM >> Code Transformation
Reusable Asset Specification (RAS)

- Reusable Asset Specification (RAS)
  - Describes the structure and nature of assets
    - Each asset is described in terms of
      - Classification
      - Solution
      - Usage
      - Related Assets
  - The packaging of assets
  - An interface to a RAS Repository Service

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Case Study: Volvo IT – MDA Framework

- Requirements

Platform-independent Model
- Model templates
- Domain Model

Platform-specific Model
- Patterns
- Patterns
- Design Model

Implementation Model
- Patterns
- Patterns
- Business logic
- Code & Test

RAS Repository Service
- Reusable asset (.ras file)
- Reusable asset (.ras file)
- Reusable asset (.ras file)

Patterns
- integrate
- validate

Patterns
- extend
- transform
Example: Service Integration Framework

- A combination of tools and services assets hosted in RSA
  - CBM and process decomposition
  - WebSphere Business Modeler integration
  - RSA / RSM Architecture Description Standard (ADS) Profile
  - RSA / RSM profiles for scenario based solutions
  - RUP SOA plug-in
  - RSA/ RSM profiles for product and product assemblies
  - Patterns library
  - RAS based asset storage and retrieval via a portal
  - RPM based project instantiation from scenario templates
  - Deployment and systems management of solution topologies
  - Tivoli deployment and monitoring
Thank You