Avoiding Web Services Chaos with WebSphere Service Registry and Repository

David Buchanan
Consulting IT Specialist
WebSphere Software
d_buchanan@uk.ibm.com

Ben J Briden
IT Specialist
Betaworks
benbriden@uk.ibm.com

"You only need one service to need governance. You only need one service to destroy your business." Daryl Plummer, Managing VP , Gartner Inc.

(http://searchsoa.techtarget.com/news/article/0,289142,sid26_gci1233109,00.html)

Without proper management and governance of SOA…

This could become… **… like this**

The promise of SOA

A pile of services

Avoiding Web Services Chaos with WebSphere Registry and Repository

Agenda

- Why do I need WebSphere Service Registry & Repository?
- A technical overview of WebSphere Service Registry & Repository
  - Architecture
  - Publish and Find service documents
  - Business Modeling
  - Governance
  - Runtime integration
- What’s new in WSRR v6.2 and WSRR-ALE
- Demo of WSRR v6.2

SOA brings new emphasis to governance challenges

How do I eliminate “rogue services”?

How do I govern services?

How do I manage the services lifecycle?

How do I ensure service reuse?

How do I enforce policies across services?

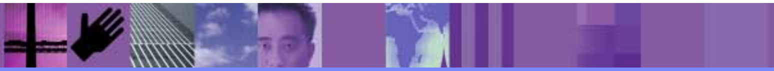
How can I manage my ESB?

How do I handle the failure of a service?

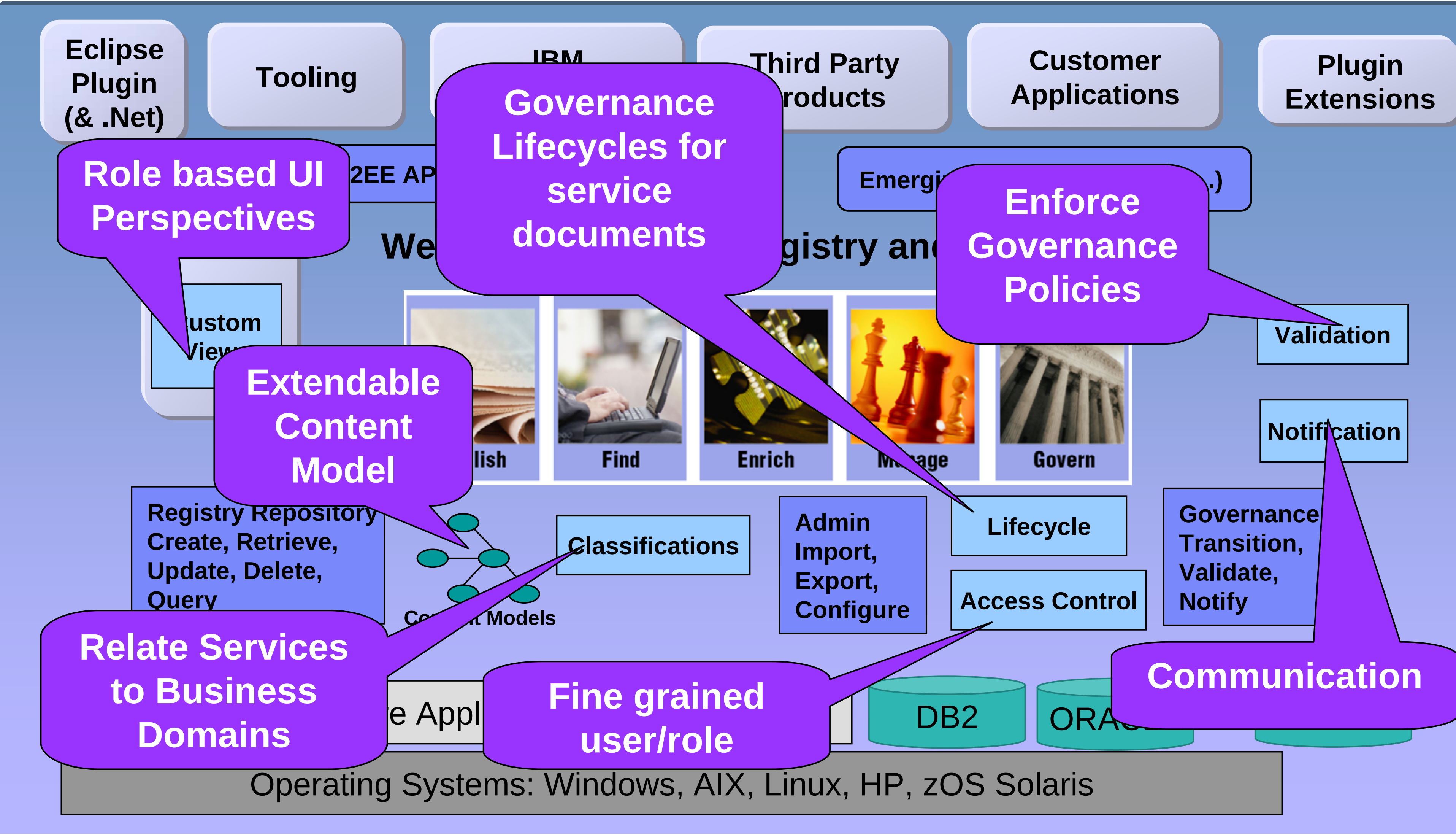
How do I manage the versioning of services?

Why do I need WebSphere Service Registry & Repository?

- Business requirements
  - Enable agility
  - Reduce risk
  - Define and enforce standards and governance for services
- Technical requirements
  - Establish a central point for publishing, finding, and managing service metadata
  - Manage interdependencies
  - Discover existing services and promote reuse
  - Manage service lifecycle from design through development, deployment, and retire
  - Interact with the enterprise service bus at runtime for dynamic service mediation
  - Manage service changes
  - Fully integrate with application development



WebSphere Service Registry & Repository Architecture



Eclipse Plugin (& .Net)

Tooling

IBM

Third Party
roducts

Customer Applications

Plugin Extensions

2EE AP

Emergi
.)

We
gistry an

ustom
View

lish

Find

Enrich

M age

Govern

Validation

Notification

Registry Repository
Create, Retrieve,
Update, Delete,
Query

Co t Models

Classifications

Admin
Import,
Export,
Configure

Lifecycle

Access Control

Governance
Transition,
Validate,
Notify

e Appl

DB2

ORAC

Operating Systems: Windows, AIX, Linux, HP, zOS Solaris

Role based UI Perspectives

Governance Lifecycles for service documents

Enforce Governance Policies

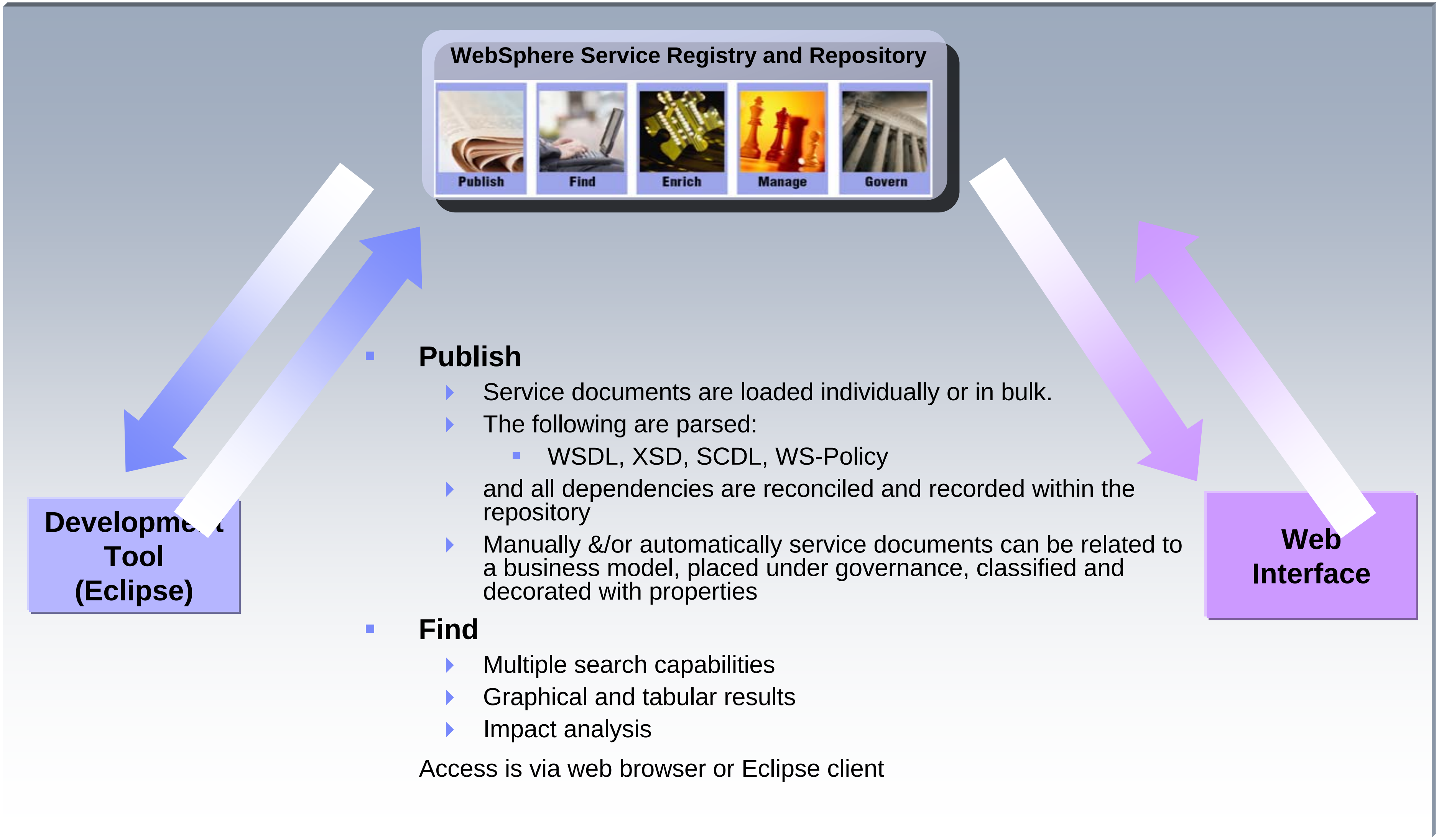
Extendable Content Model

Relate Services to Business Domains

Fine grained user/role

Communication

Publish & Find



WebSphere Service Registry and Repository

Publish

Find

Enrich

Manage

Govern

Development Tool (Eclipse)

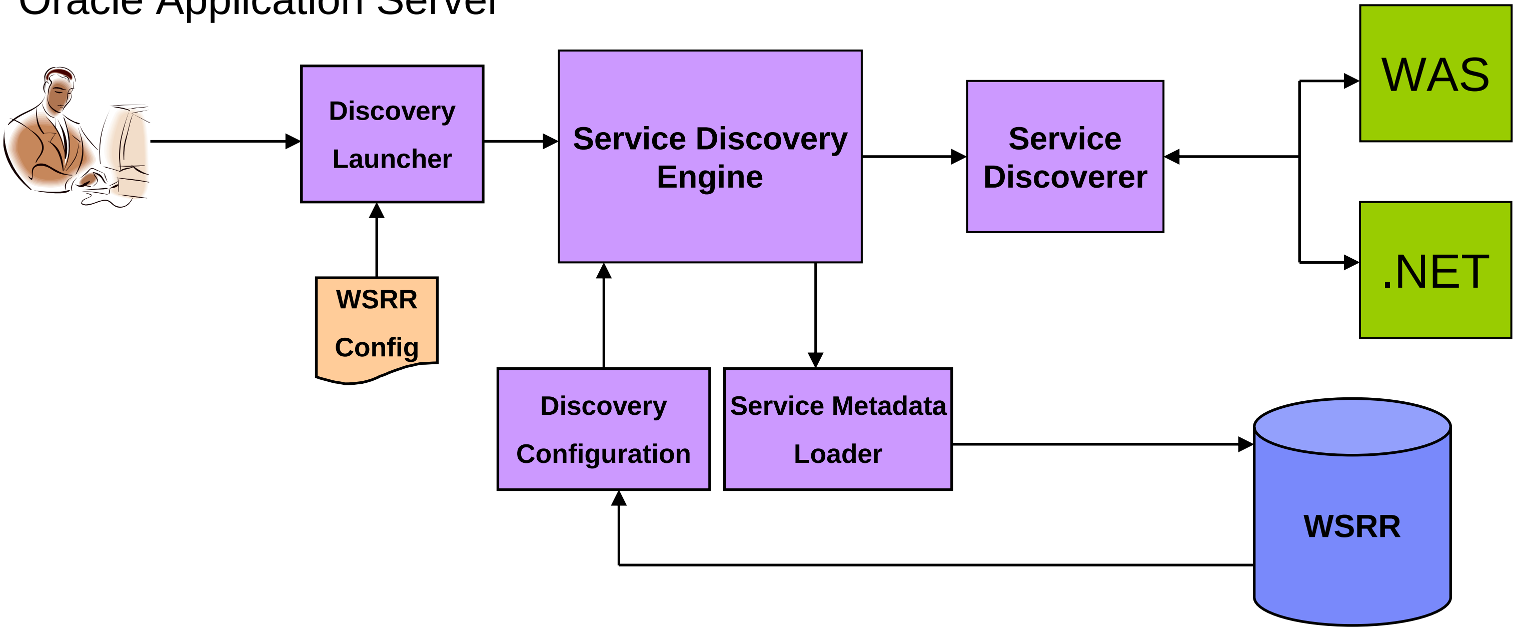
Web Interface

- **Publish**
  - Service documents are loaded individually or in bulk.
  - The following are parsed:
    - WSDL, XSD, SCDL, WS-Policy
  - and all dependencies are reconciled and recorded within the repository
  - Manually &/or automatically service documents can be related to a business model, placed under governance, classified and decorated with properties
- **Find**
  - Multiple search capabilities
  - Graphical and tabular results
  - Impact analysis

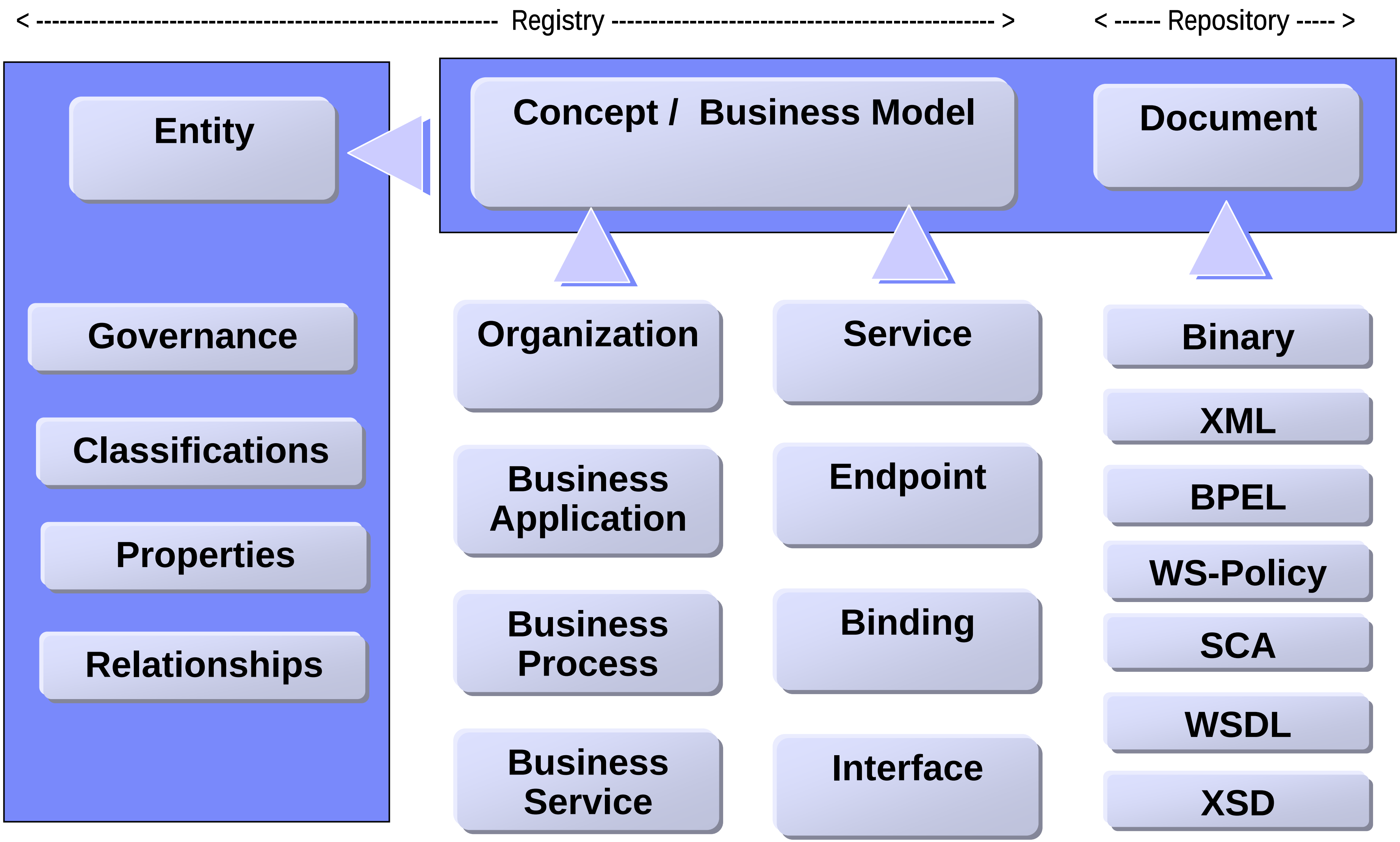
Access is via web browser or Eclipse client

Publish and Find using service discovery

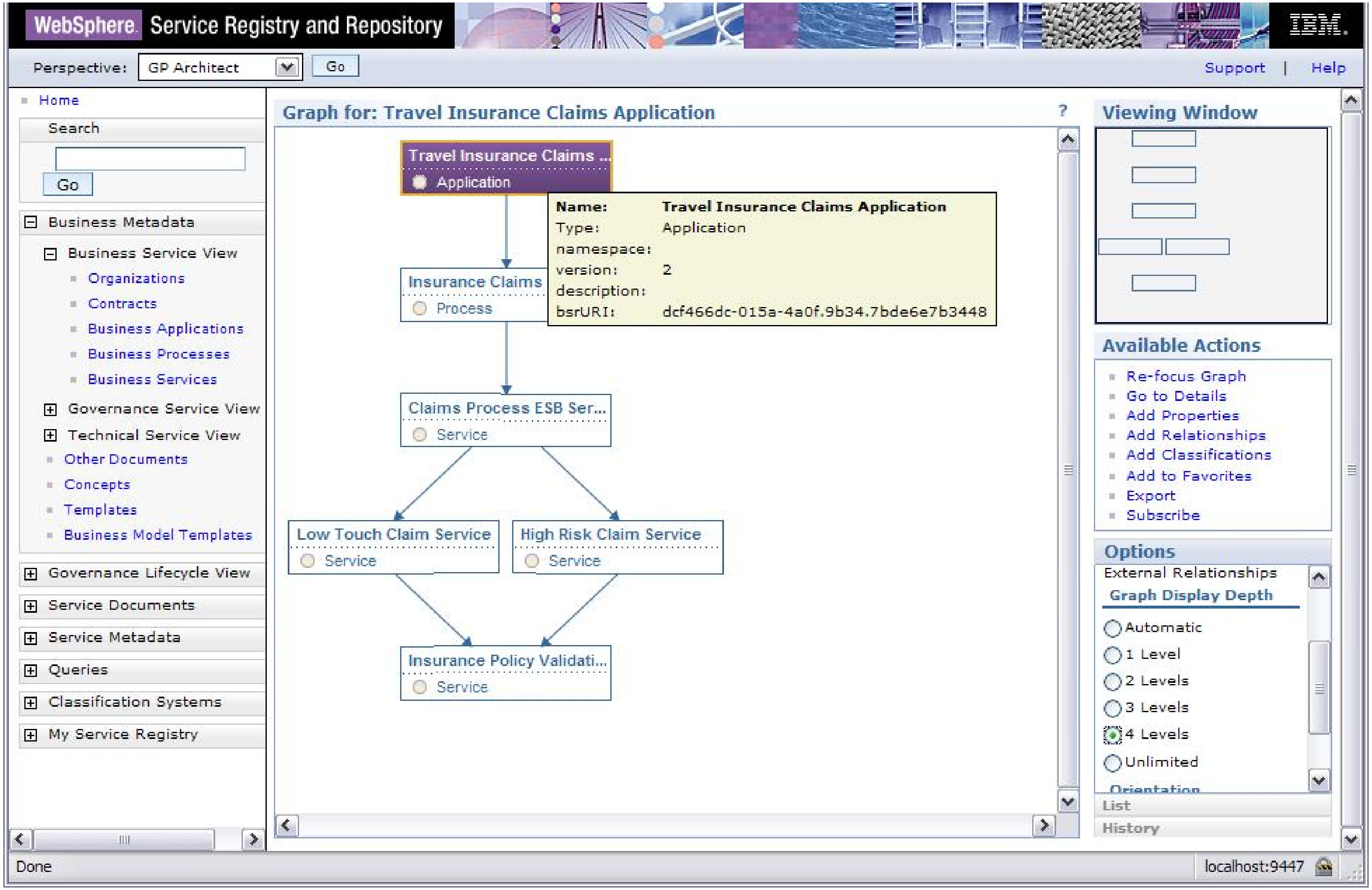
- Discovery rogue services
  - Bring under governance / management
  - Align running and managed services
- Automatic or manual discovery (services must be JSR109 compliant)
  - WebSphere Application Server
  - .NET
  - Oracle Application Server



WSRR content model



Some instances of a business model



WebSphere. Service Registry and Repository

Perspective: GP Architect ▾ Go

Support | Help

- Home

Search

Go

⊟ Business Metadata
- ⊟ Business Service View
  - Organizations
  - Contracts
  - Business Applications
  - Business Processes
  - Business Services
- ⊞ Governance Service View
- ⊞ Technical Service View
- Other Documents
- Concepts
- Templates
- Business Model Templates

⊞ Governance Lifecycle View

⊞ Service Documents

⊞ Service Metadata

⊞ Queries

⊞ Classification Systems

⊞ My Service Registry

Graph for: Travel Insurance Claims Application

Travel Insurance Claims ... — Application

Insurance Claims — Process

Claims Process ESB Ser... — Service

Low Touch Claim Service — Service

High Risk Claim Service — Service

Insurance Policy Validati... — Service

Name:	**Travel Insurance Claims Application**
Type:	Application
namespace:	
version:	2
description:	
bsrURI:	dcf466dc-015a-4a0f.9b34.7bde6e7b3448

Viewing Window

Available Actions

- Re-focus Graph
- Go to Details
- Add Properties
- Add Relationships
- Add Classifications
- Add to Favorites
- Export
- Subscribe

Options

External Relationships

Graph Display Depth

○ Automatic
○ 1 Level
○ 2 Levels
○ 3 Levels
● 4 Levels
○ Unlimited

Orientation

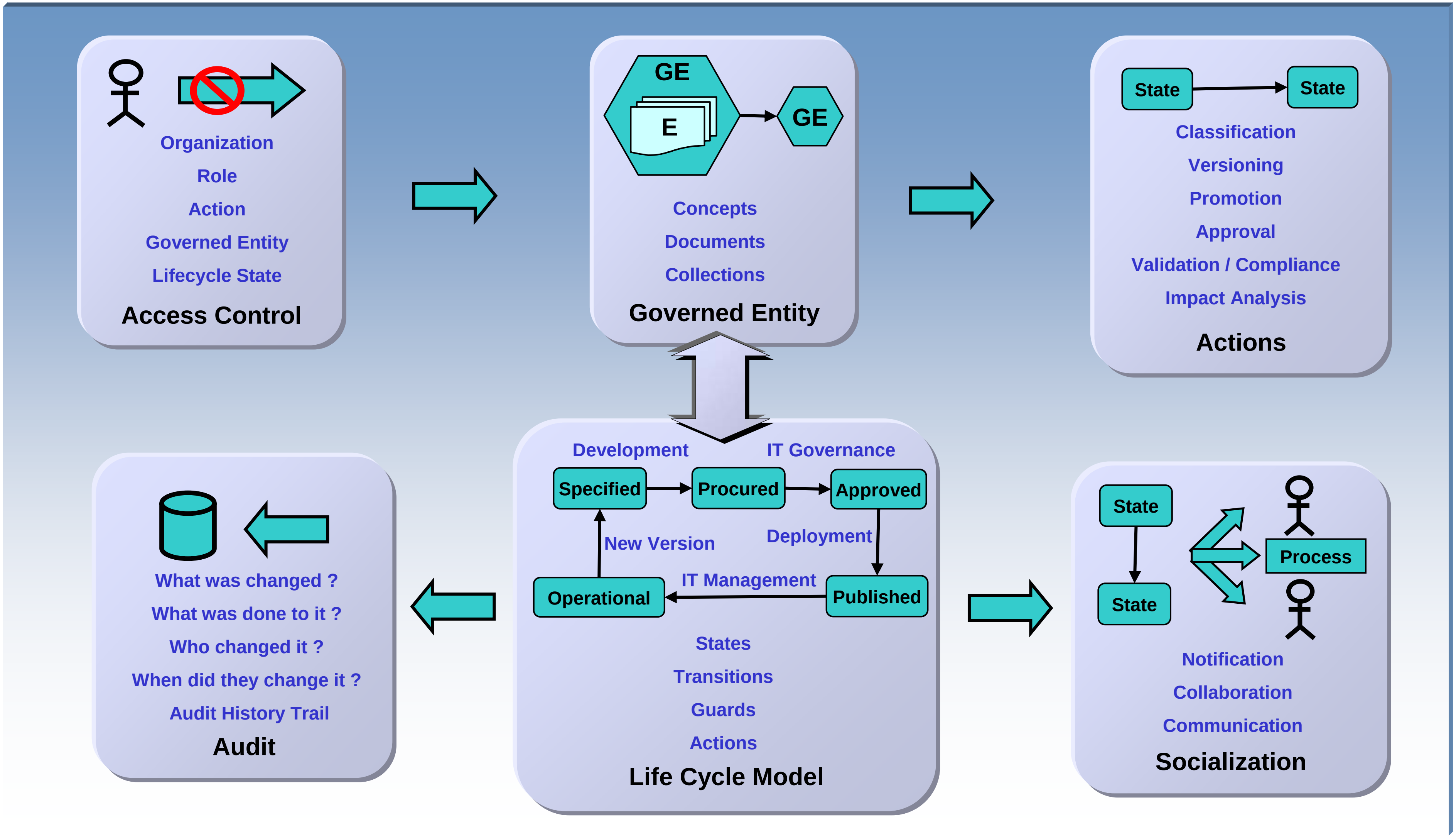
List

History

Done

localhost:9447

WSRR Governance Model



Organization
Role
Action
Governed Entity
Lifecycle State

Access Control

Concepts
Documents
Collections

Governed Entity

Classification
Versioning
Promotion
Approval
Validation / Compliance
Impact Analysis

Actions

What was changed ?
What was done to it ?
Who changed it ?
When did they change it ?
Audit History Trail

Audit

States
Transitions
Guards
Actions

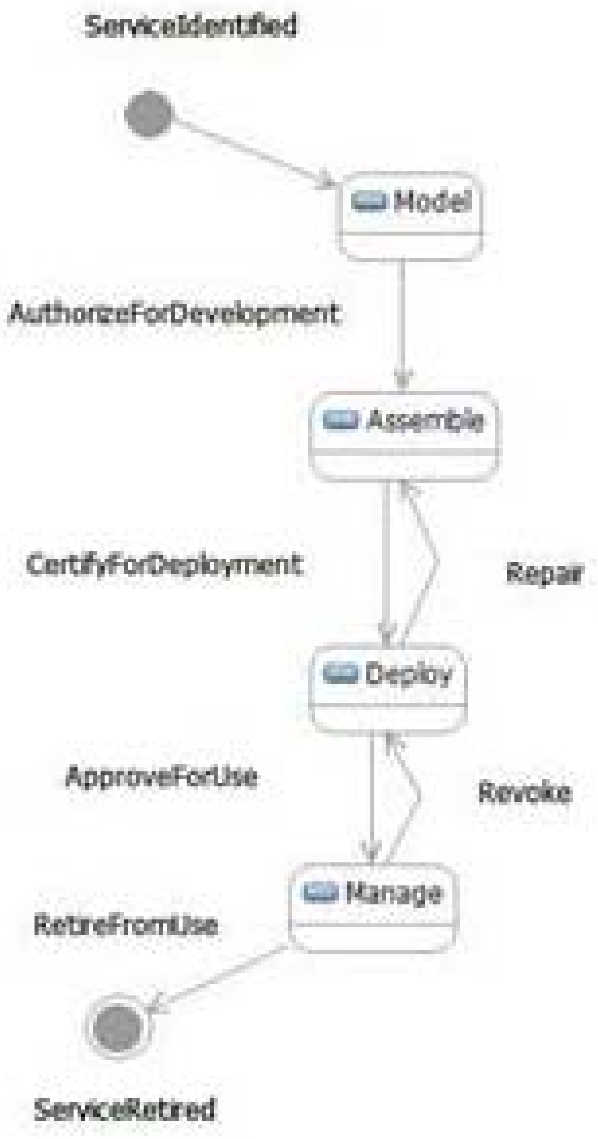
Life Cycle Model

Notification
Collaboration
Communication

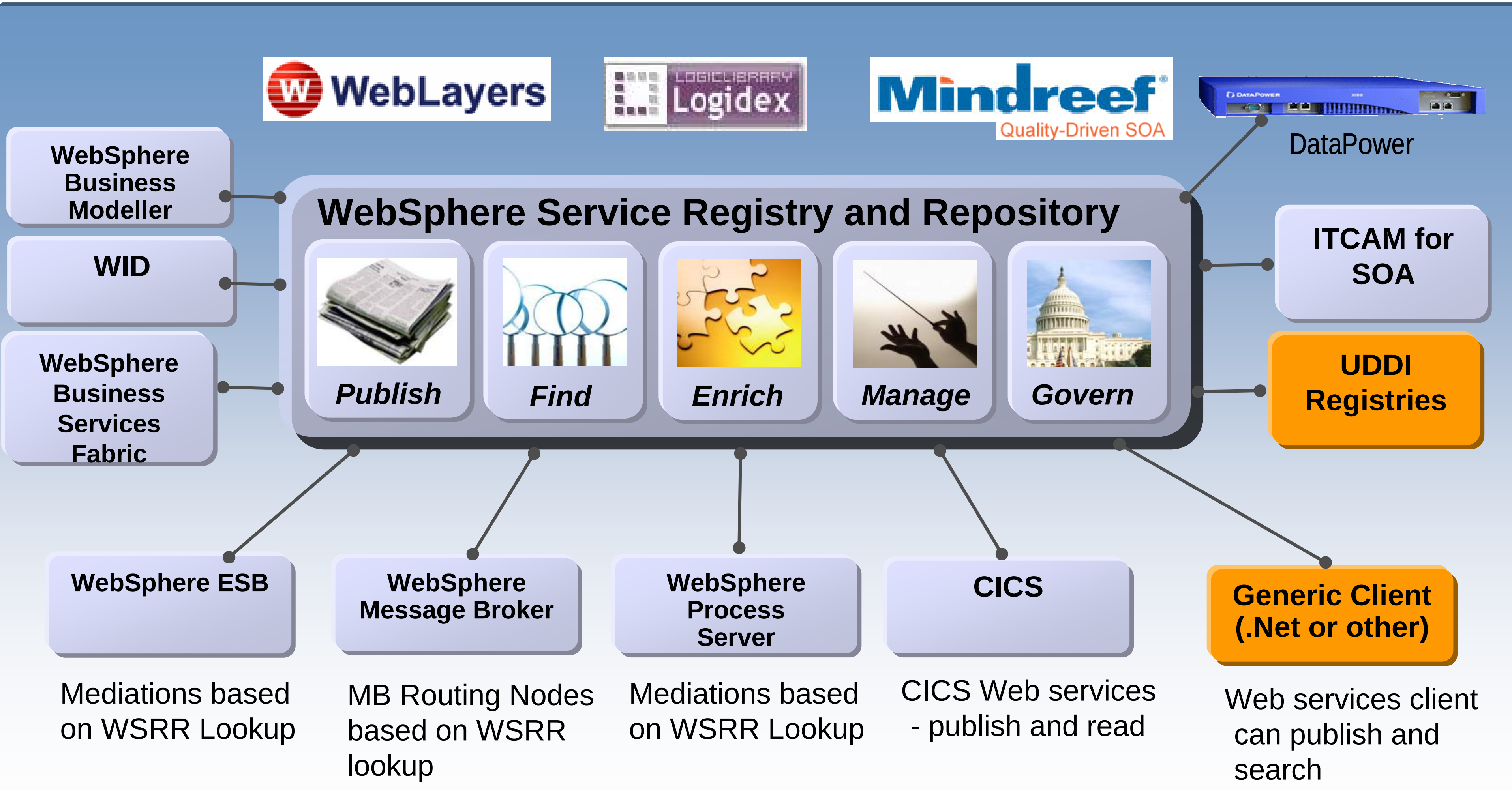
Socialization

Service Lifecycle Example

- LifecycleSelection
  - Transition: Administrator, Analyst, Architect
  - InitiateServiceLifecycle
    - Object must be a Service, Process or Application
- Model
  - Transition: Administrator, Analyst
  - AuthorizeForDevelopment
    - OwningOrganization must be set
    - 1 provideInterface in Published state
- Assemble
  - Transition: Administrator, Architect
  - CertifyForDeployment
    - 1 availableEndpoints
- Deploy
  - Transition: Administrator
  - ApproveForUse
    - 2 availableEndpoints
  - Repair
- Manage
  - Transition: Administrator
  - RetireFromUse
    - No dependencies on service
  - Revoke
- Retired



WebSphere Service Registry and Repository Runtime Integration



WebLayers

Logidex

Mindreef Quality-Driven SOA

DataPower

WebSphere Business Modeller

WID

WebSphere Business Services Fabric

WebSphere Service Registry and Repository

Publish

Find

Enrich

Manage

Govern

ITCAM for SOA

UDDI Registries

WebSphere ESB

Mediations based on WSRR Lookup

WebSphere Message Broker

MB Routing Nodes based on WSRR lookup

WebSphere Process Server

Mediations based on WSRR Lookup

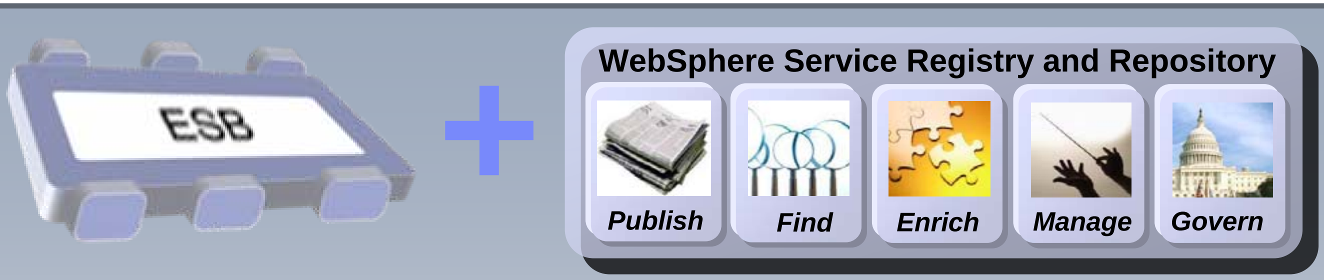
CICS

CICS Web services - publish and read

Generic Client (.Net or other)

Web services client can publish and search

ESB Integration



Dynamic Endpoint Selection

1) ESB mediation is invoked
2) Mediation queries WSRR for information about the requestor and candidate provider
3) Mediation matches requestor with best candidate provider
4) Message is routed

Availability Management

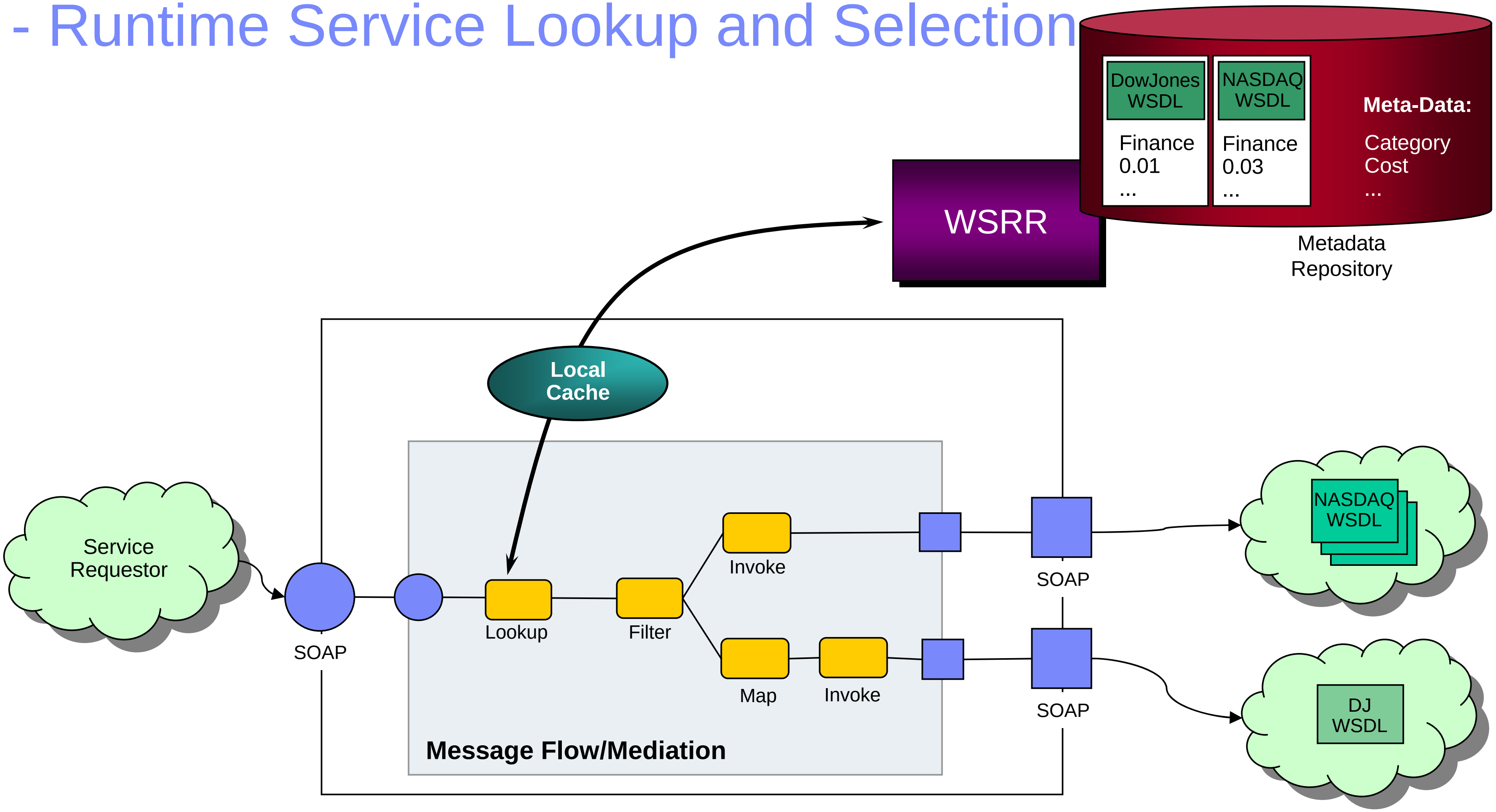
1) Selected provider fails to respond due to failure
2) Mediation queries WSRR to find other candidate providers
3) Mediation matches requestor with best candidate provider
4) Message is routed

Policy Enforcement

1) Mediation queries WSRR for information about the requestor and candidate provider
2) Mediation retrieves policy information from registry
3) Requestor and provider are matched based on these policies
4) Message is routed

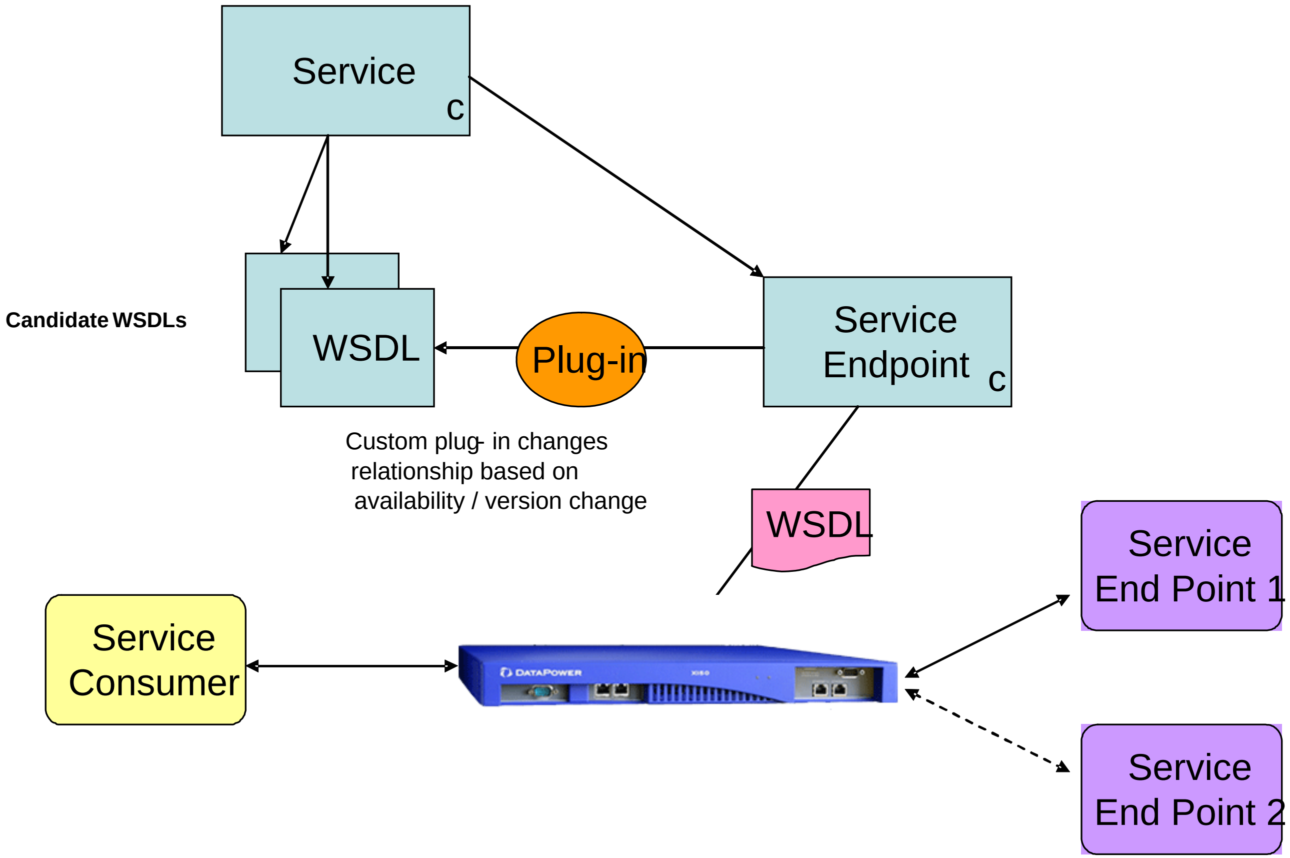
Version Control, Change Management, Maintenance ....

Integration with Message Broker and ESB - Runtime Service Lookup and Selection

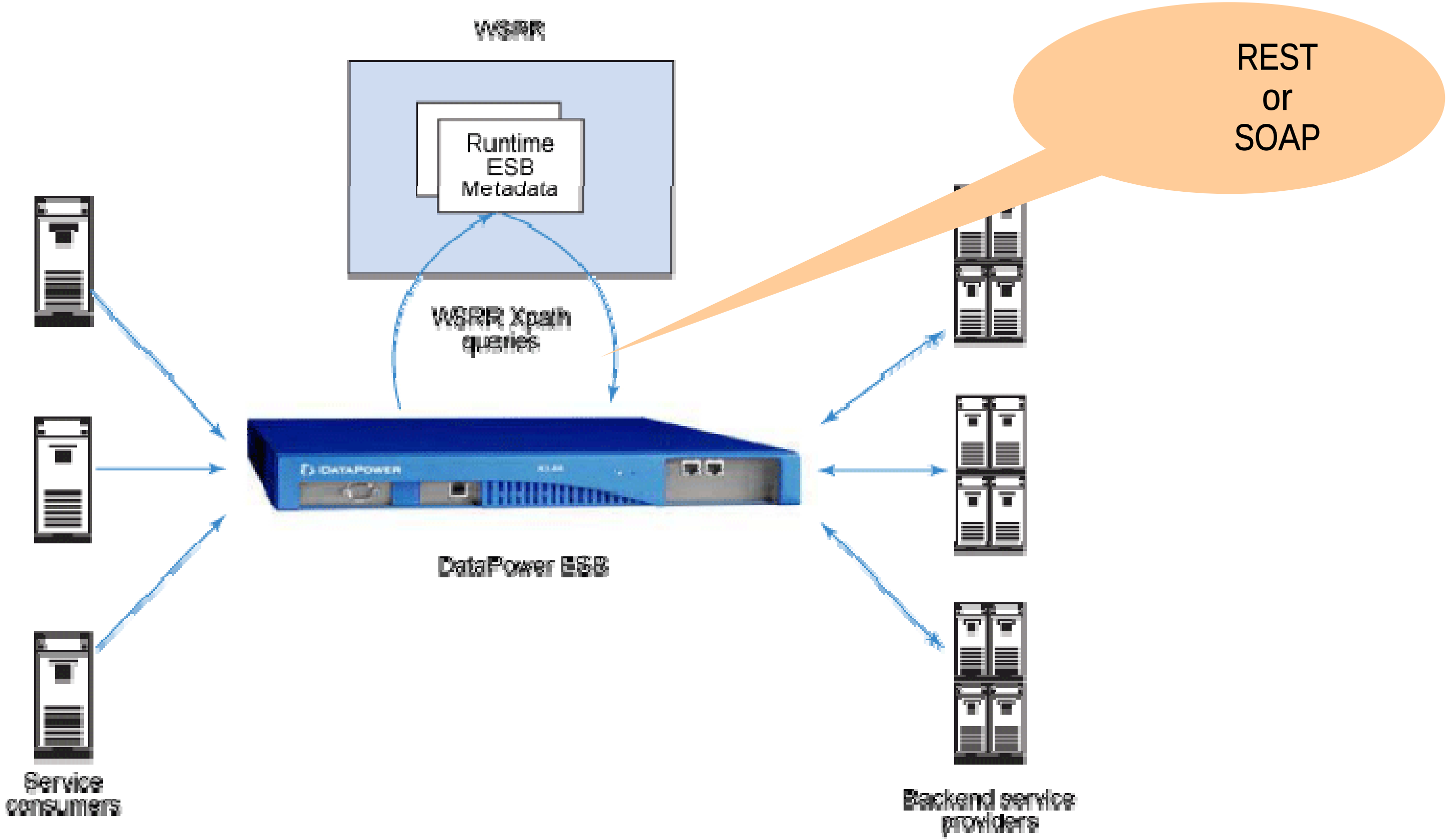


DataPower Integration – Scenario 1

DataPower – WSRR Integration

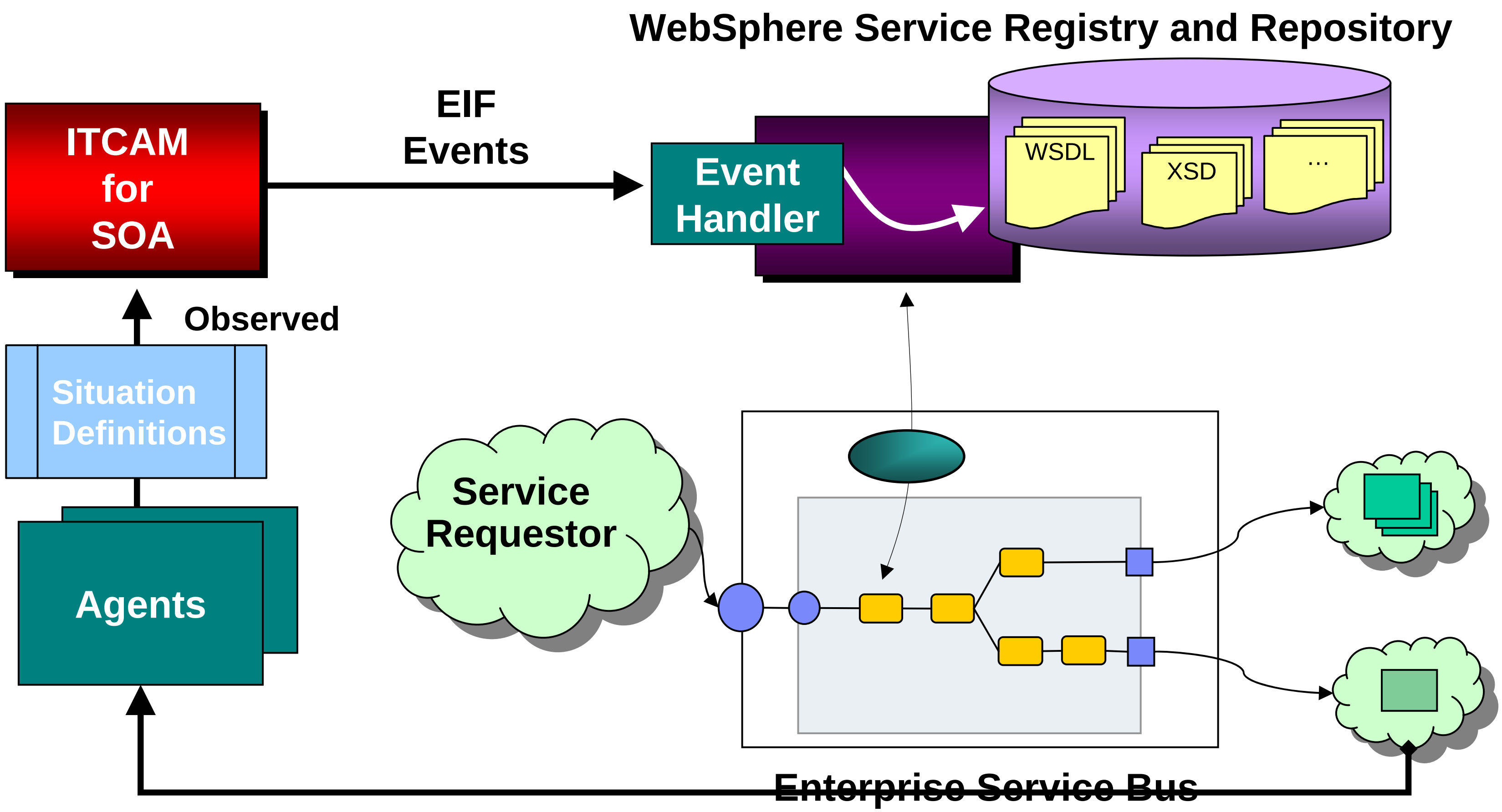


DataPower Integration – Scenario 2



http://www.ibm.com/developerworks/websphere/techjournal/0805_peterson/0805_peterson.html

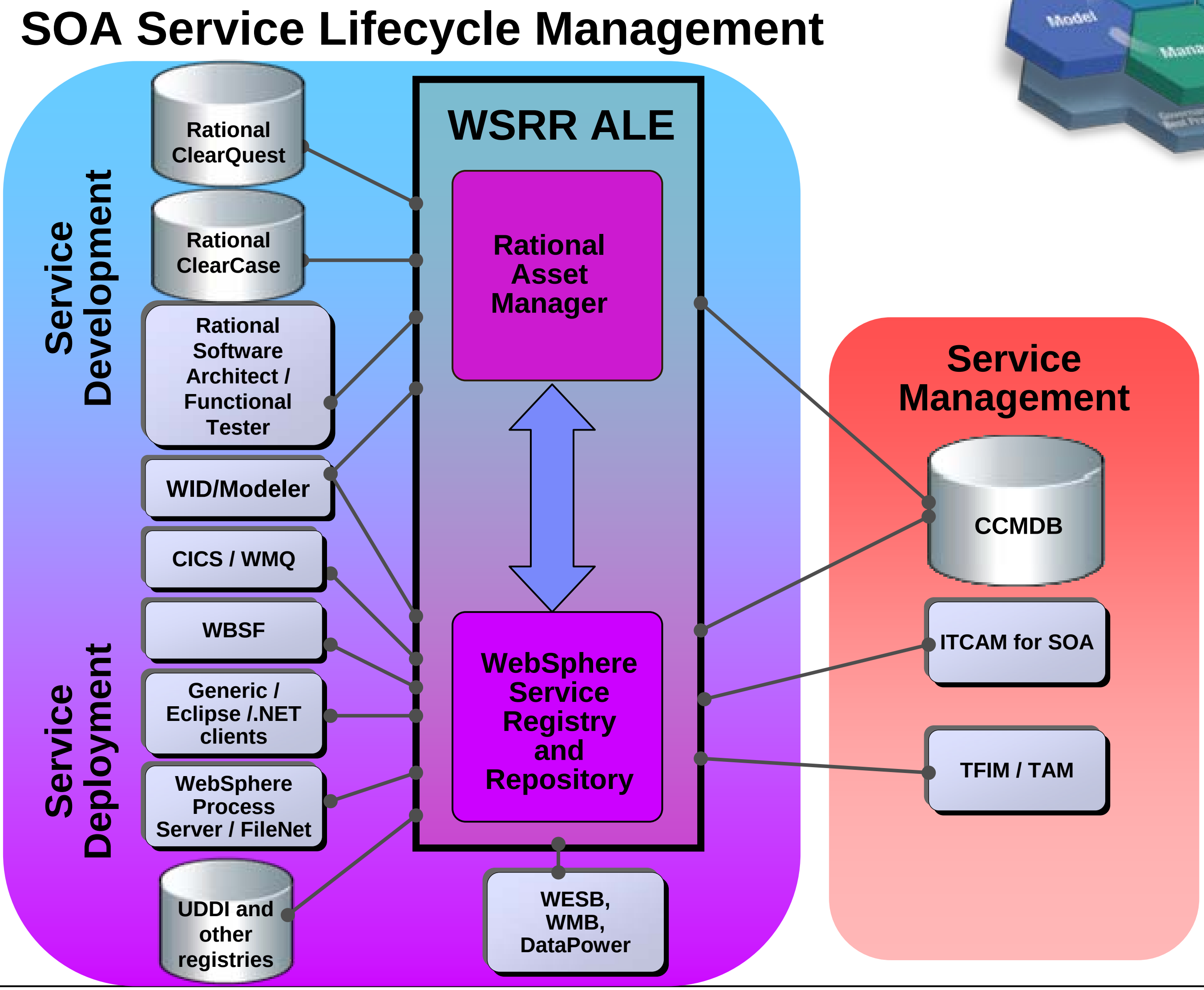
Integration with ITCAM for SOA



WebSphere Service Registry and Repository – Advanced Lifecycle Edition

Integral to SOA

Integrate with your SOA design and runtime systems including other existing repositories



SOA Service Lifecycle Management

Service Development

Service Deployment

Rational ClearQuest

Rational ClearCase

Rational Software Architect / Functional Tester

WID/Modeler

CICS / WMQ

WBSF

Generic / Eclipse /.NET clients

WebSphere Process Server / FileNet

UDDI and other registries

WSRR ALE

Rational Asset Manager

WebSphere Service Registry and Repository

WESB, WMB, DataPower

Service Management

CCMDB

ITCAM for SOA

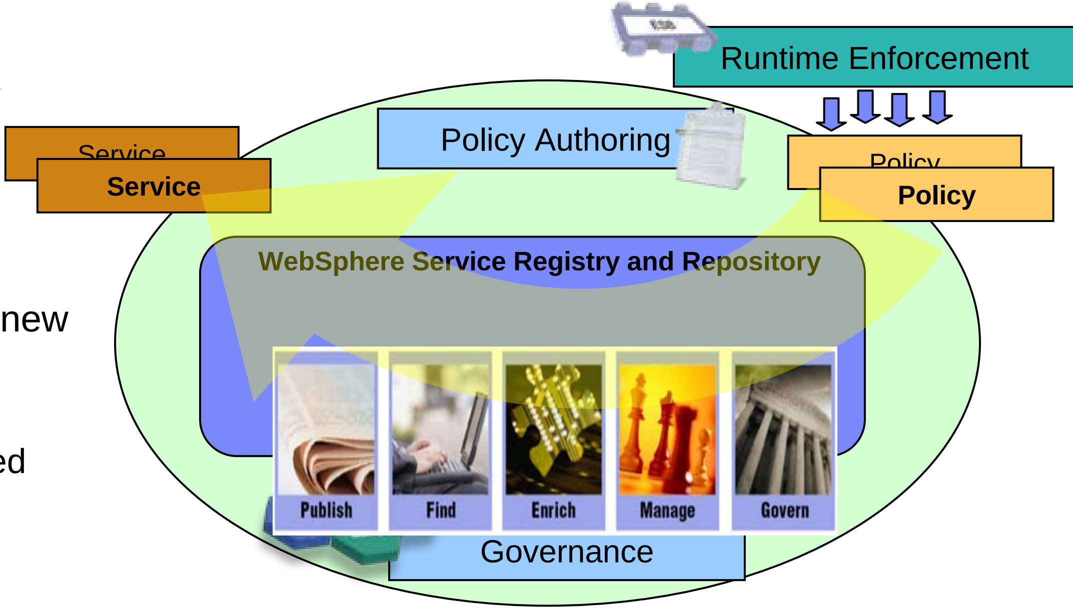
TFIM / TAM

WSRR 6.2 – New Features

- It’s faster
- The Web UI is better
- Policy (WS-Policy) management support
- More ………….

WebSphere Service Registry and Repository V6.2 Policy Management Capabilities

- ***Govern the lifecycle** of SOA Policies*
  - Validate, audit and report changes to policy
  - Ensure WS-I compliance
  - Enforce service governance policies
- Use **policy authoring** tools to easily create new policies
  - Associate policies to services to create an **authoritative source** of services and related metadata
- **Policy libraries**
  - Taxonomy for modeling any policy domain
  - Policies that capture governance best practices
- Enable ESB's and other SOA products for **enforcing policies**



WSRR enables policy management across the lifecycle spanning all domains of policy

What is WS-Policy Framework, WS-Policy, WS-Policy Attachment?

- The Web Services Policy Framework (WS-Policy Framework) defines a base set of constructs that can be used and extended by other Web services specifications to describe a broad range of service requirements and capabilities

- The WS-Policy Framework consists of two specifications: WS-Policy and WS-Policy Attachment

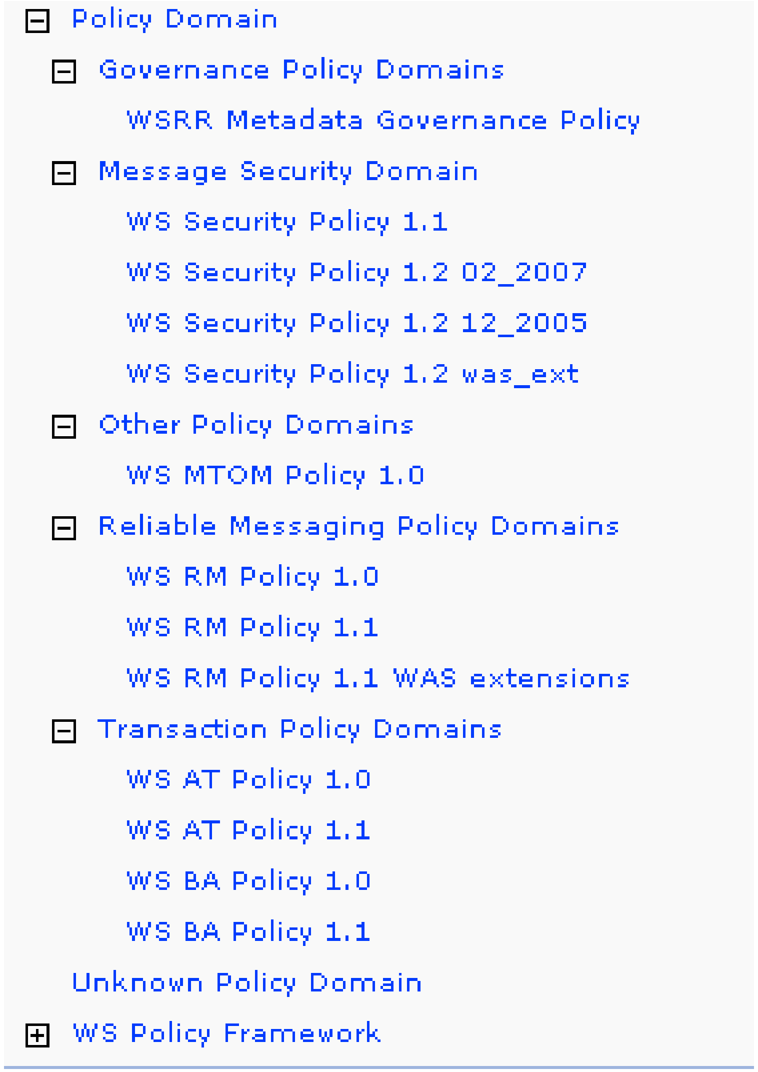
- The WS-Policy specification describes the grammar for expressing policy alternatives and composing them as combinations of domain assertions

- The WS-PolicyAttachment specification describes how to associate policies with a particular subject

Policy domains

- WS-Policy standard support plus extensions
- WSRR Service Metadata Governance
- Message security
  - WS Security Policy 1.1, 1.2 (Dec 2005), 1.2 Extensions
- Reliable messaging
  - WS-RM Policy 1.0, 1.1 and WebSphere extensions
- Transaction
  - WS Atomic Transaction Policy 1.0, 1.1
  - WS Business Activity Policy 1.0, 1.1
- SOAP Message Transmission Optimization Mechanism
  - WS-MTOM Policy 1.0

WSRR 6.2 Policy Library - Taxonomy



- ⊟ Policy Domain
  - ⊟ Governance Policy Domains
    - WSRR Metadata Governance Policy
  - ⊟ Message Security Domain
    - WS Security Policy 1.1
    - WS Security Policy 1.2 02_2007
    - WS Security Policy 1.2 12_2005
    - WS Security Policy 1.2 was_ext
  - ⊟ Other Policy Domains
    - WS MTOM Policy 1.0
  - ⊟ Reliable Messaging Policy Domains
    - WS RM Policy 1.0
    - WS RM Policy 1.1
    - WS RM Policy 1.1 WAS extensions
  - ⊟ Transaction Policy Domains
    - WS AT Policy 1.0
    - WS AT Policy 1.1
    - WS BA Policy 1.0
    - WS BA Policy 1.1
  - Unknown Policy Domain
- ⊞ WS Policy Framework

WSRR 6.2 – Other New Features / Enhancements

- UDDI integration is improved
  - Including support for SAP Enterprise Service Registry
- Support for Microsoft Silverlight for IE
- Service discovery framework
- Support for MS SQL Server 2005
- XSD – extra parsing
- Enhanced access conrol
- Longer descriptions
- More ………….

DEMO