IBM Software Group

Mastering SOA with WebSphere Service Registry and Repository

WebSphere User Group 18th March 2010

David Buchanan

Consultant IT Specialist

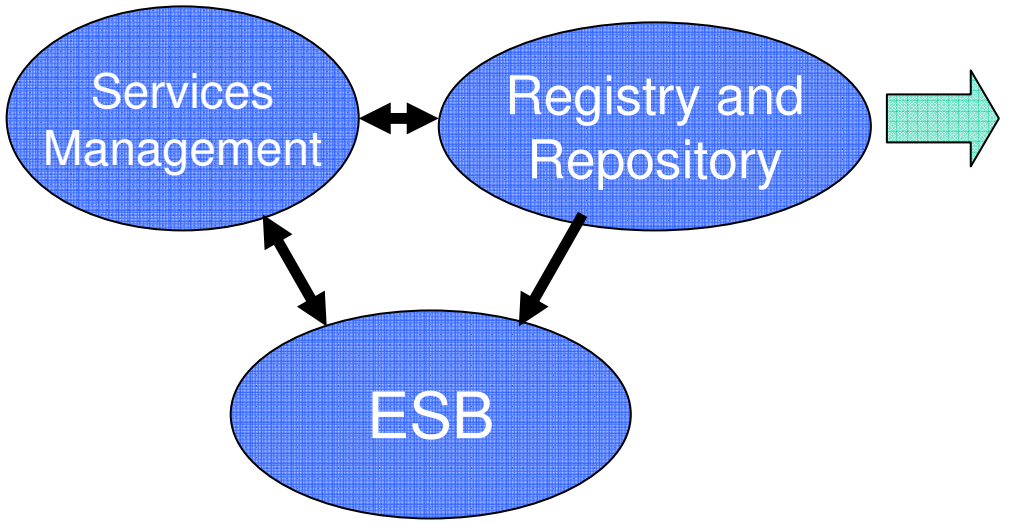
WebSphere

d_buchanan@uk.ibm.com

ON DEMAND BUSINESS™

© 2009 IBM Corporation

Building a basic SOA Infrastructure



1. Master reference for service definitions
2. Service governance
3. Run-time integration and management

© 2009 IBM Corporation

WebSphere Service Registry and Repository

Overview

© 2009 IBM Corporation

WebSphere Service Registry & Repository Architecture

Eclipse Plugin (& .Net)

Tooling

IBM Products

Third Party Products

Customer Applications

Plugin Extensions

J2EE API

Web Service API

REST

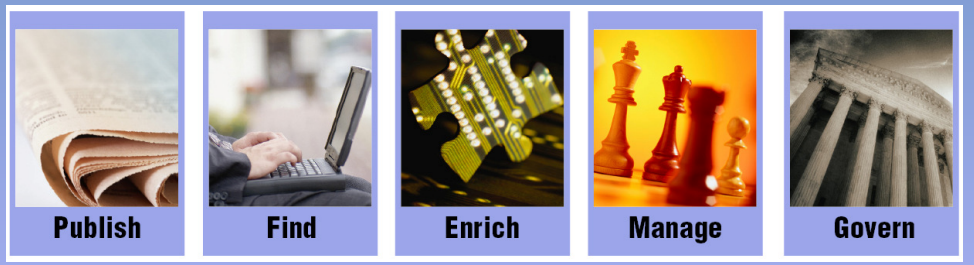
Web UI

Custom Views

WebSphere Service Registry and Repository

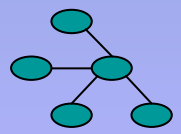
Validation

Notification



UDDI

Registry Repository Create, Retrieve, Update, Delete, Query



Content Models

Classifications

Admin Import, Export, Configure

Lifecycle

Access Control

Governance Transition, Validate, Notify

WebSphere Application Server

DB2

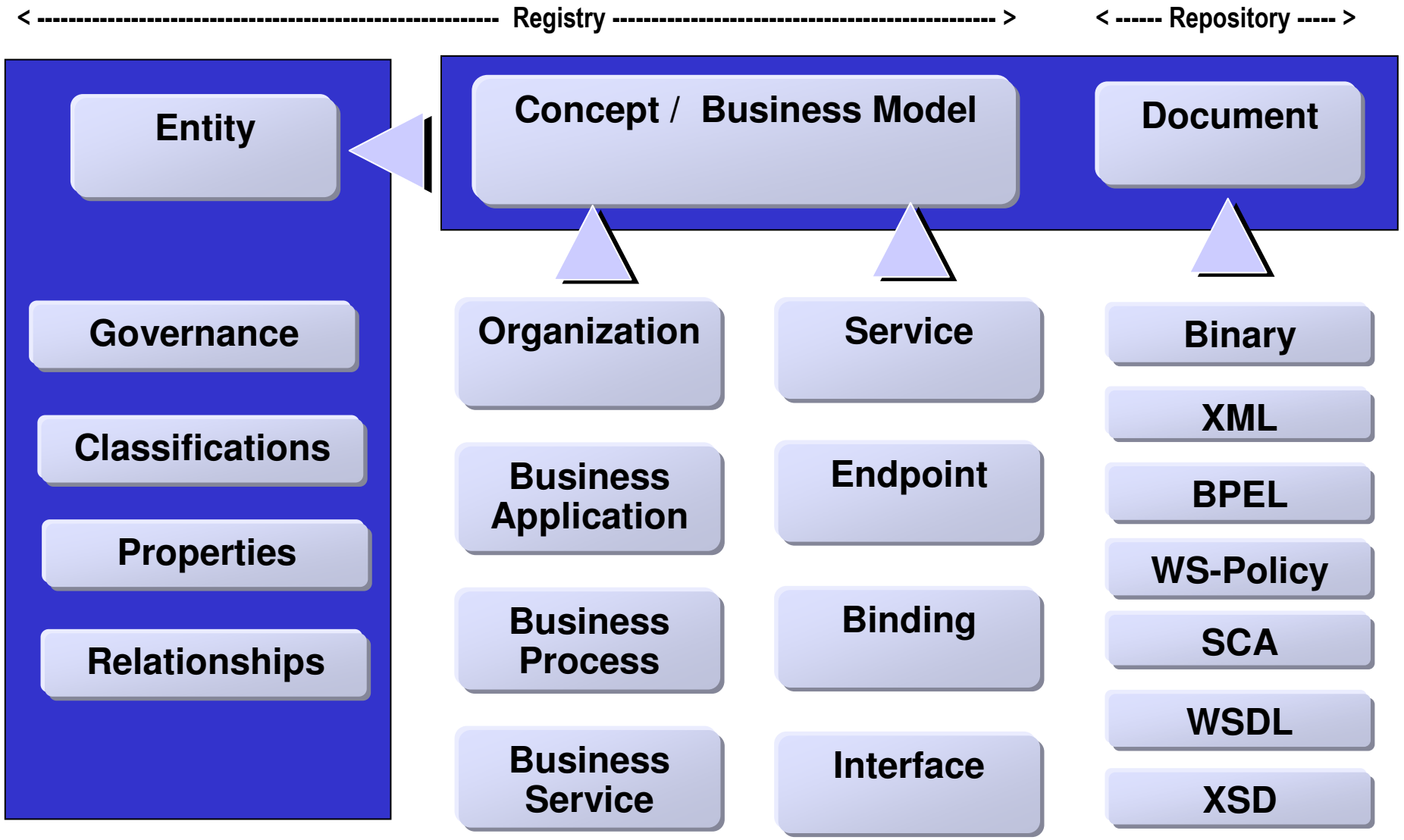
ORACLE

SQLServer

Operating Systems: Windows, AIX, Linux, HP, z/OS, Solaris

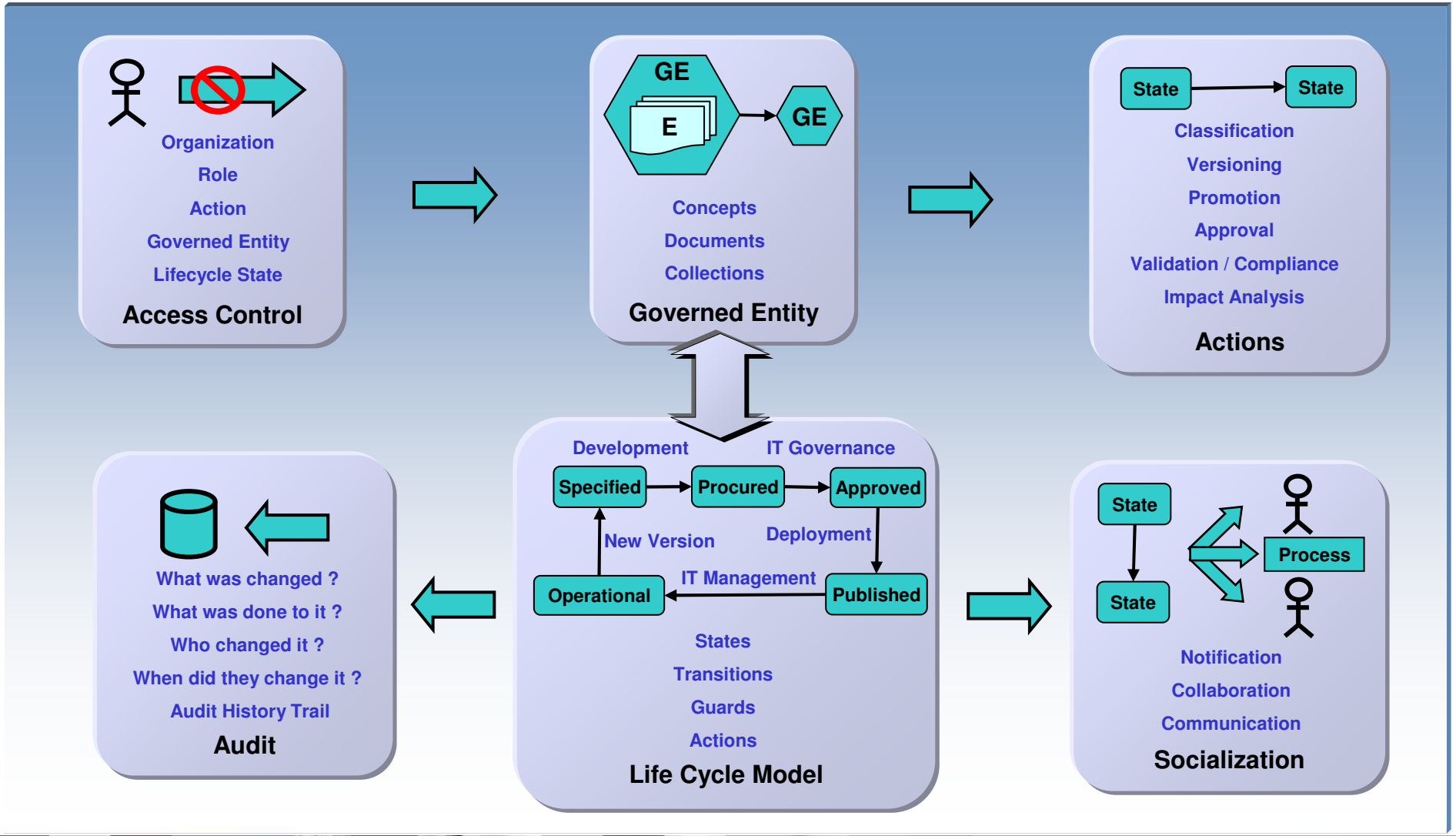
© 2009 IBM Corporation

WSRR content model



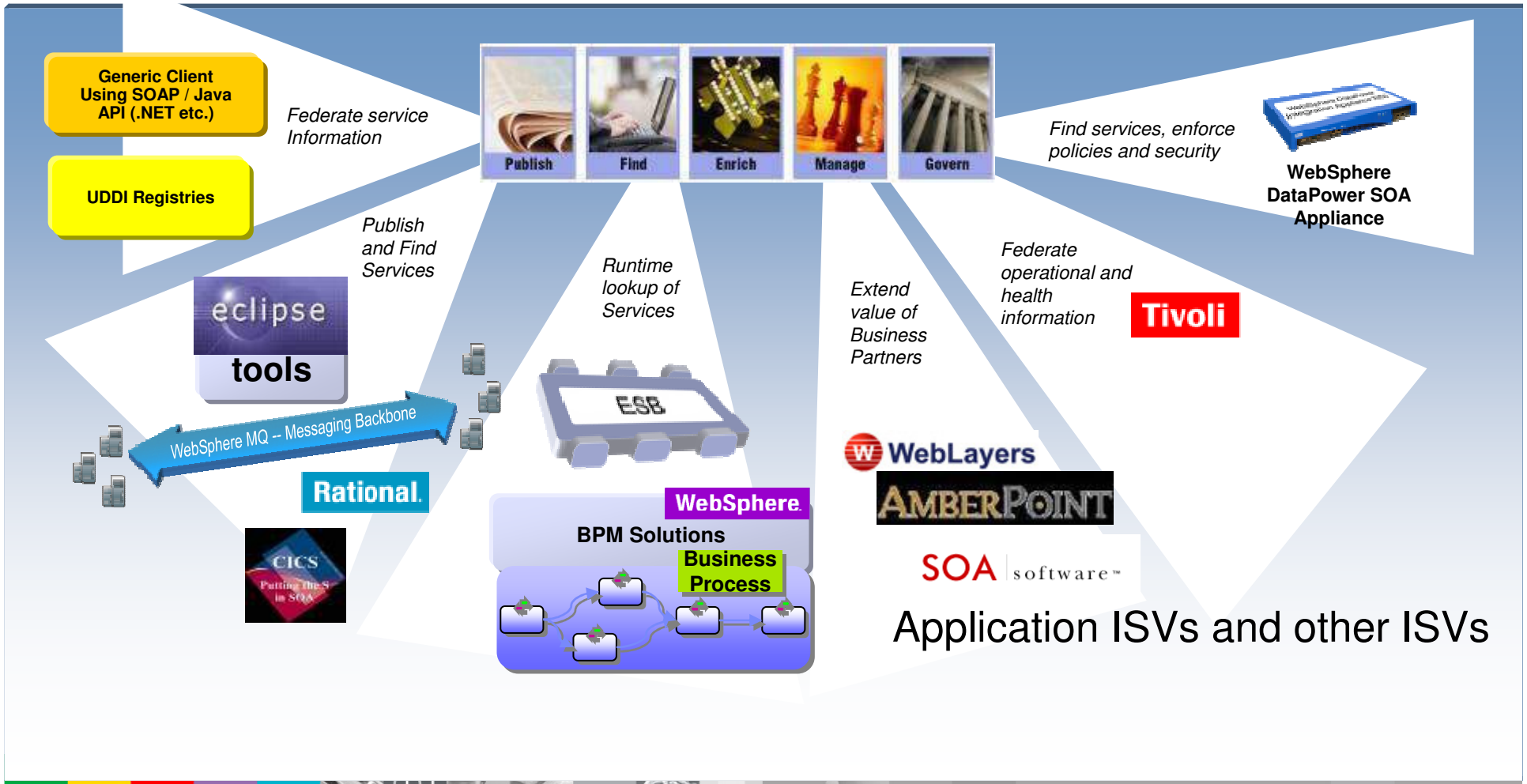
© 2009 IBM Corporation

WSRR Governance Model



© 2009 IBM Corporation

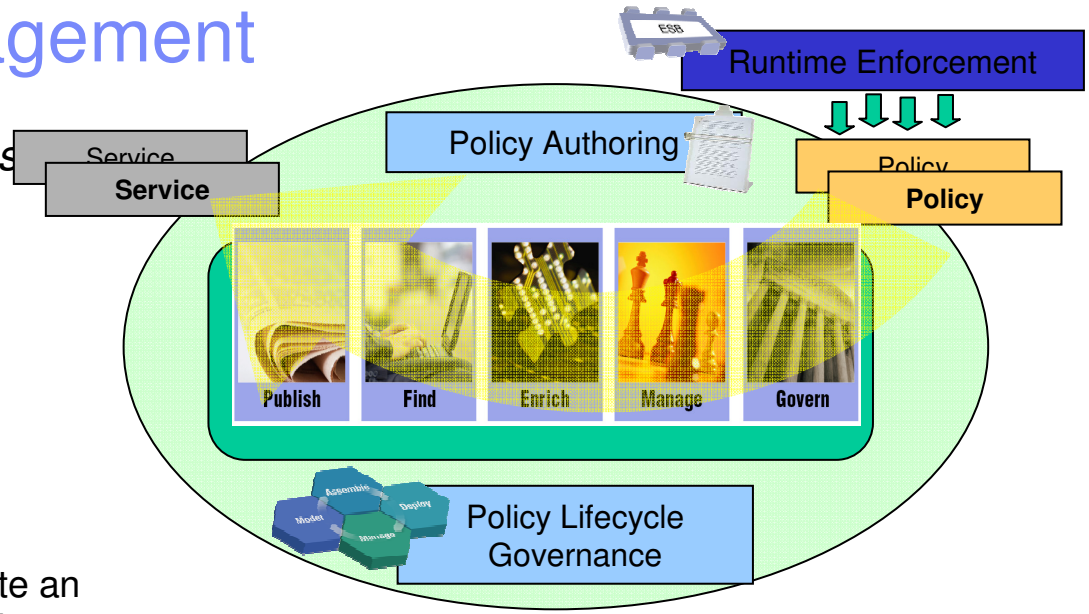
WSRR: integration and interoperability across ESBs, BPM & Connectivity

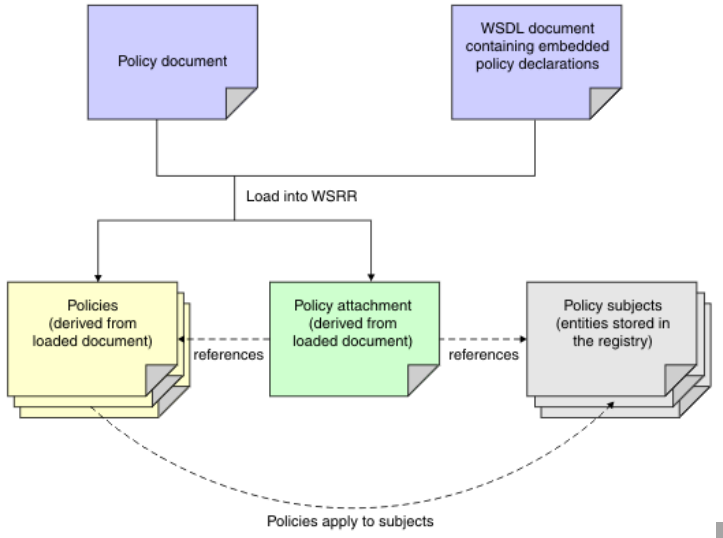


© 2009 IBM Corporation

Policy Management

- ***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 **<u>authoritative source</u>** 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**

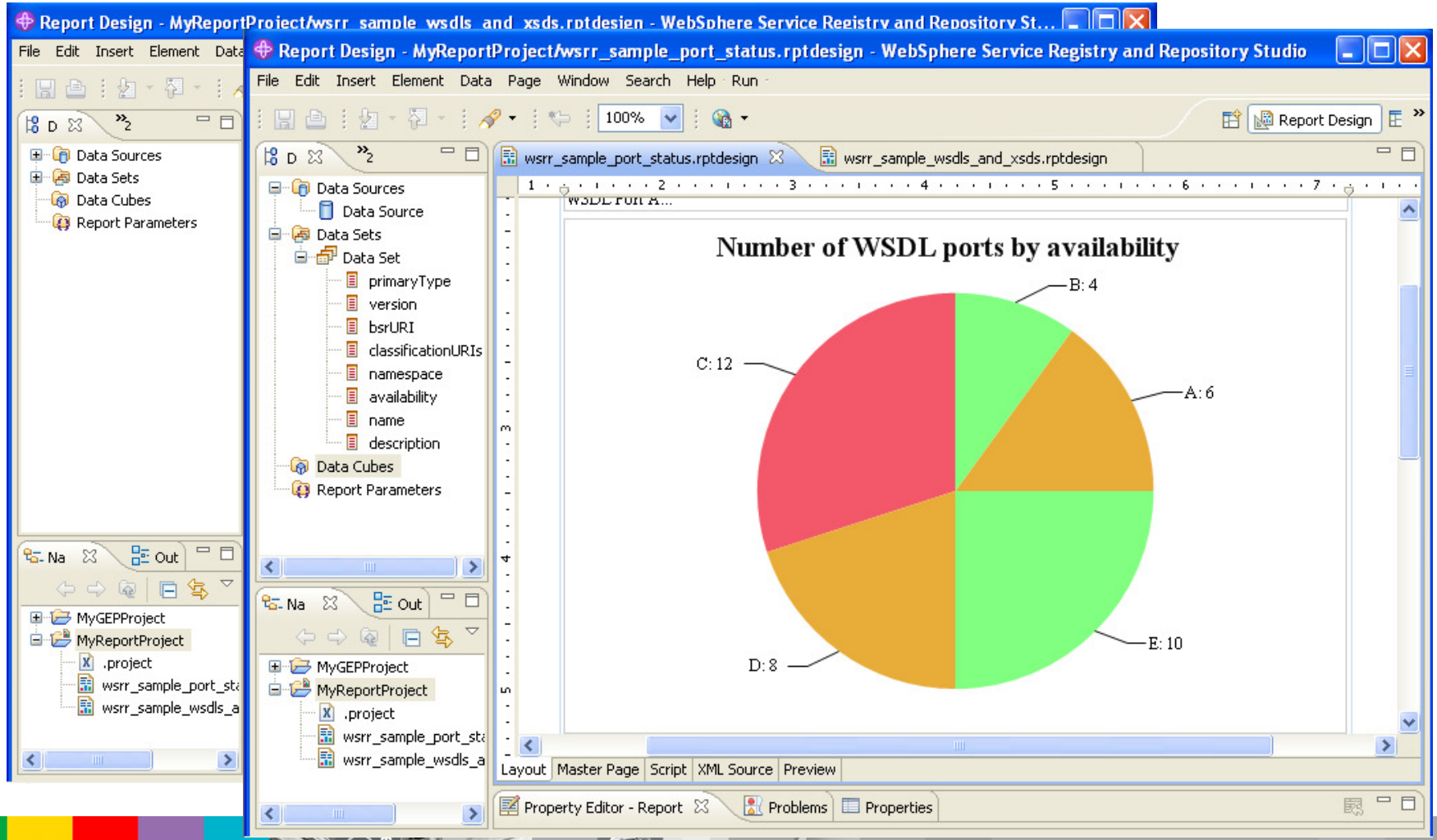




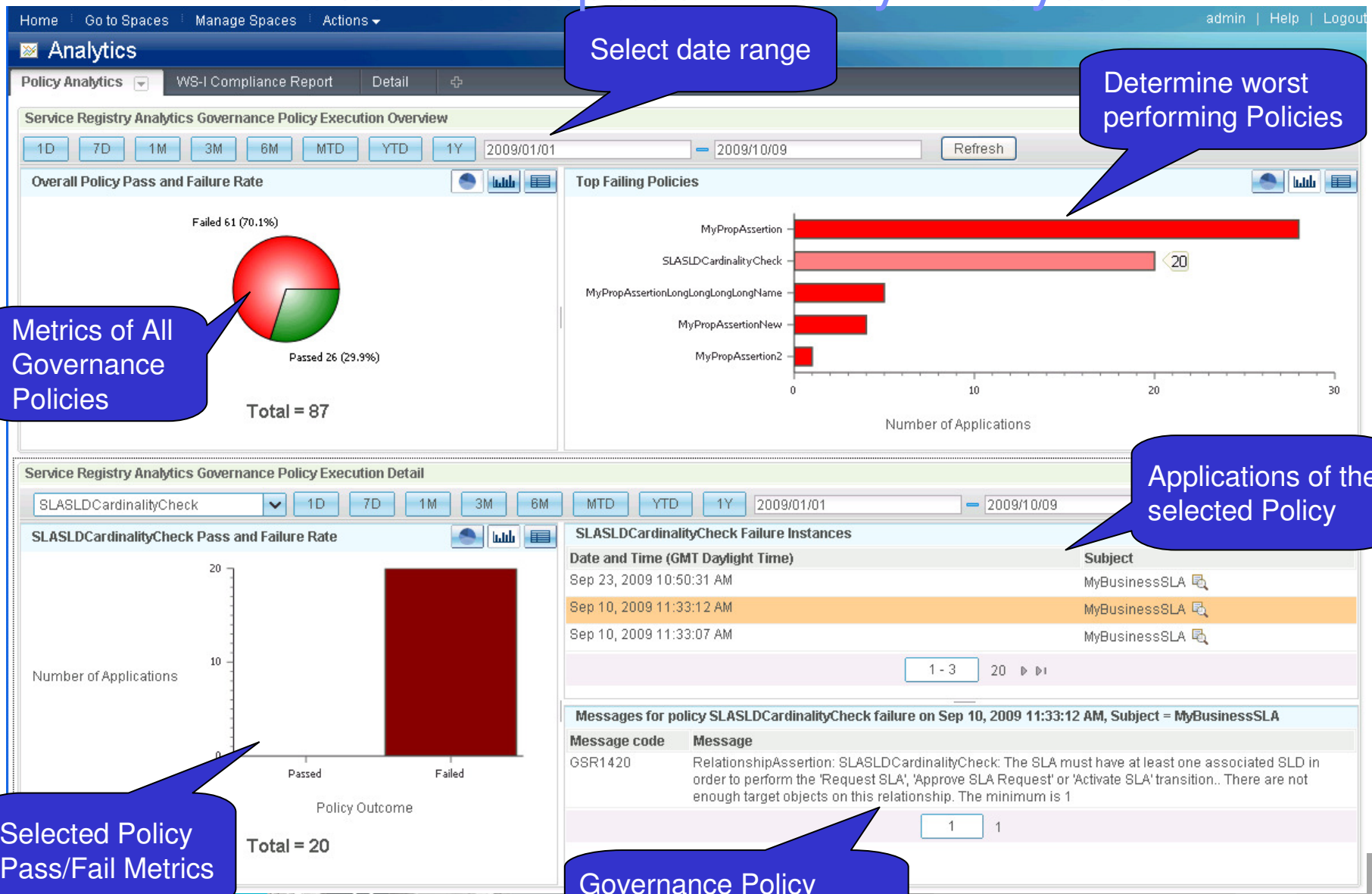
© 2009 IBM Corporation

WSRR Studio

BIRT Reporting



Business Space - Policy Analytics



© 2009 IBM Corporation

Master reference for service definitions

Publish and Find

© 2009 IBM Corporation

WebSphere Service Registry and Repository

Encourage Greater Reuse

Business and IT alignment through sharing assets

Publish Documents Using …

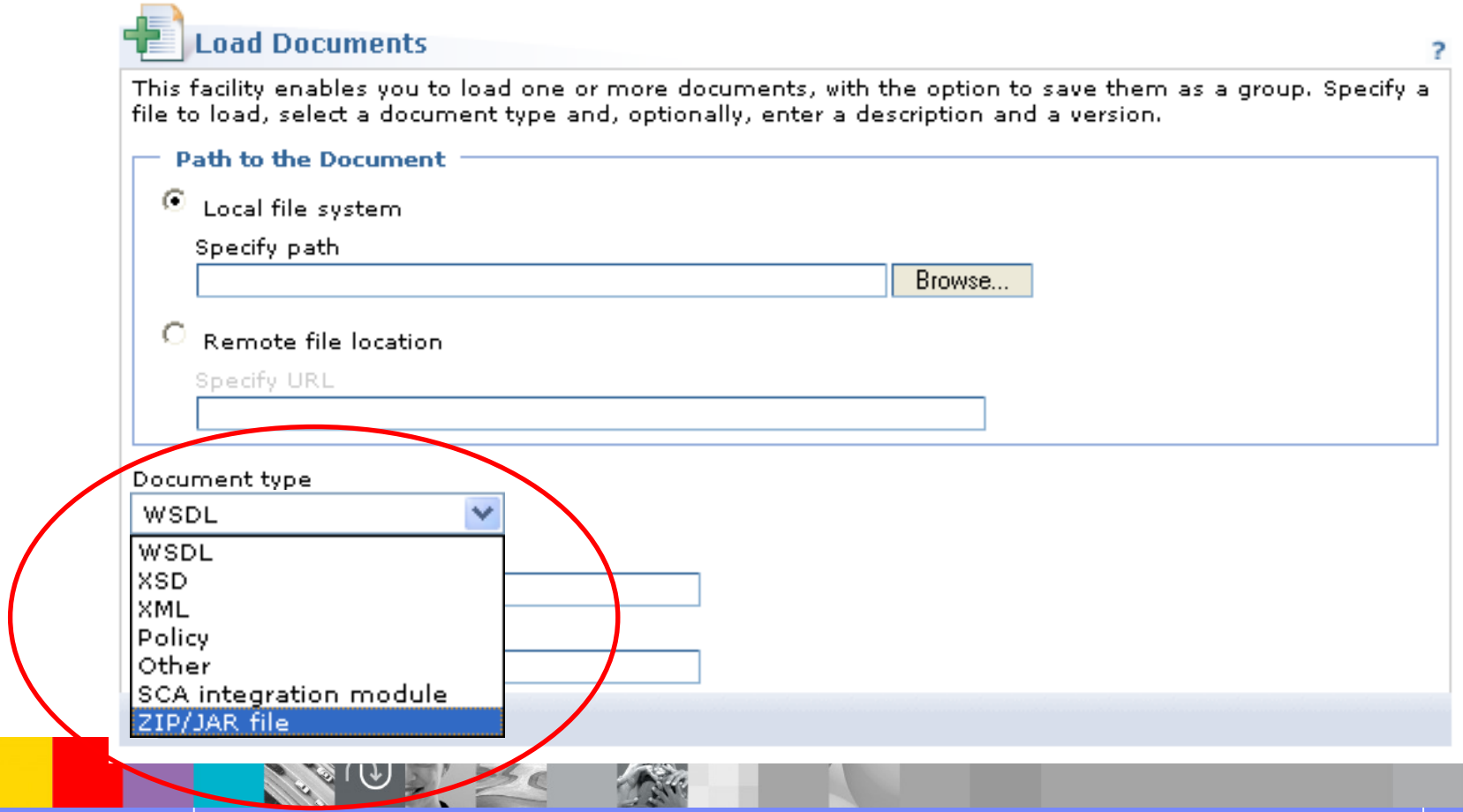
WSRR Web User Interface

Eclipse Plugin User Interface

WebSphere MQ Explorer

Publish Document and Groups in WSRR Web UI

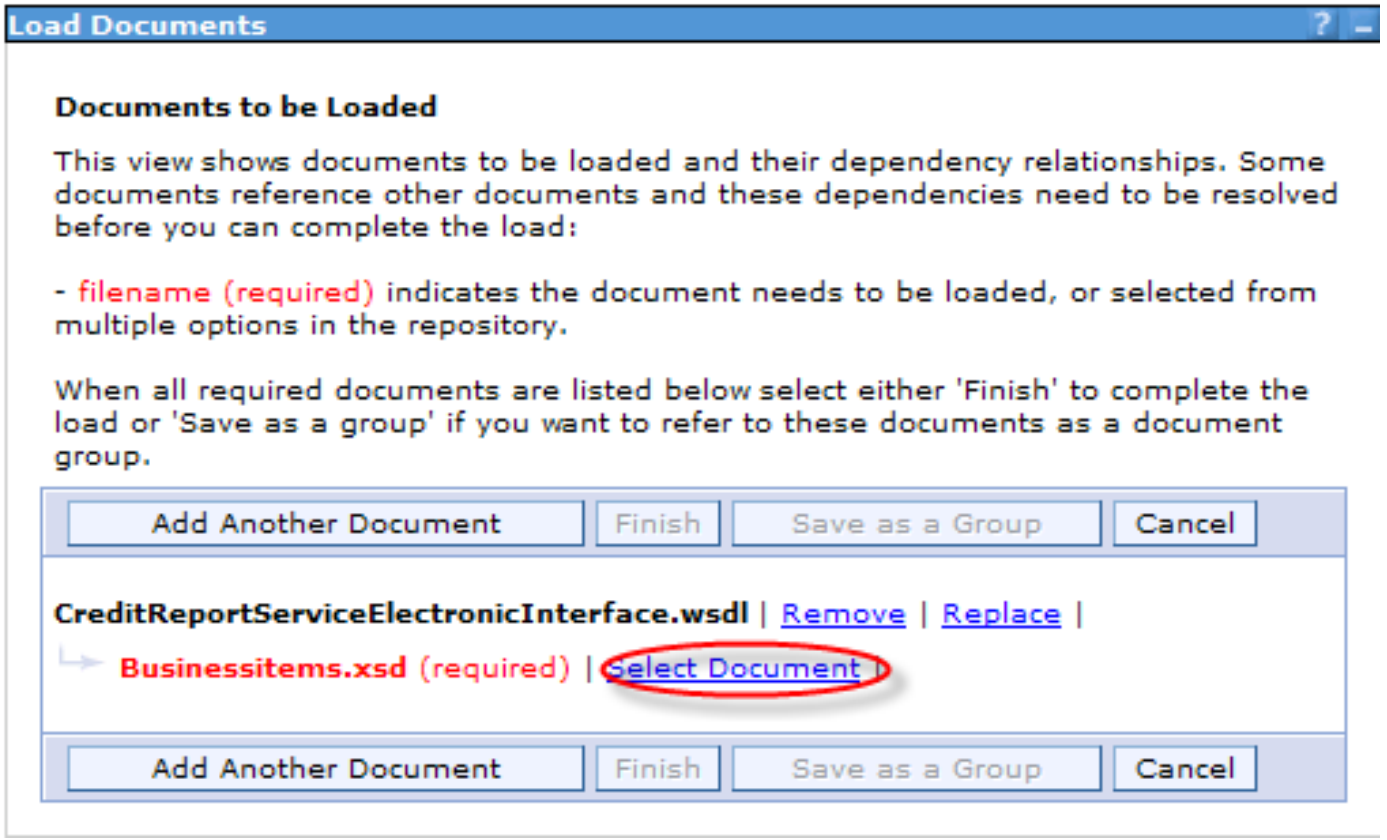
- Many document types supported: WSDL, XSD, XML, Policy, Other (binary), SCA, Zip/Jar
- Load all the dependent artifacts together in a ZIP file
- Makes it easy for the users to publish large collections of service artifacts



© 2009 IBM Corporation

Automatic Dependencies

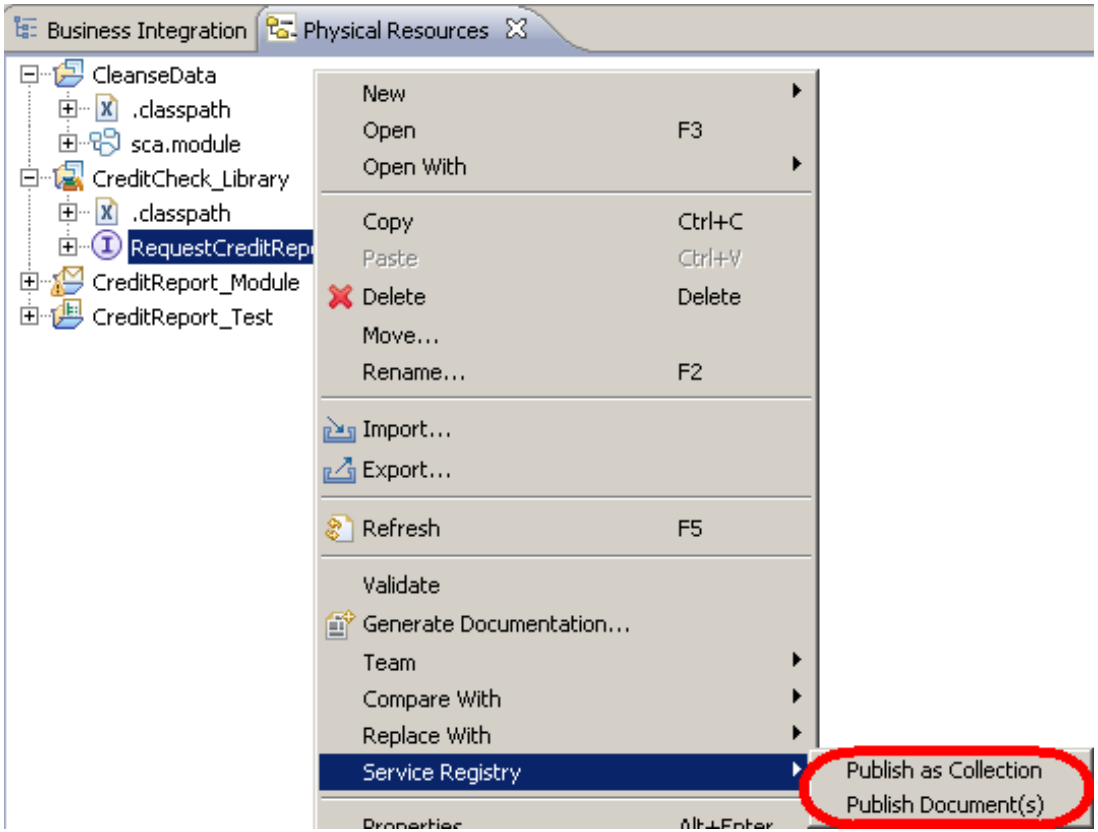
WSRR automatically figures out all the dependencies when loading a document.



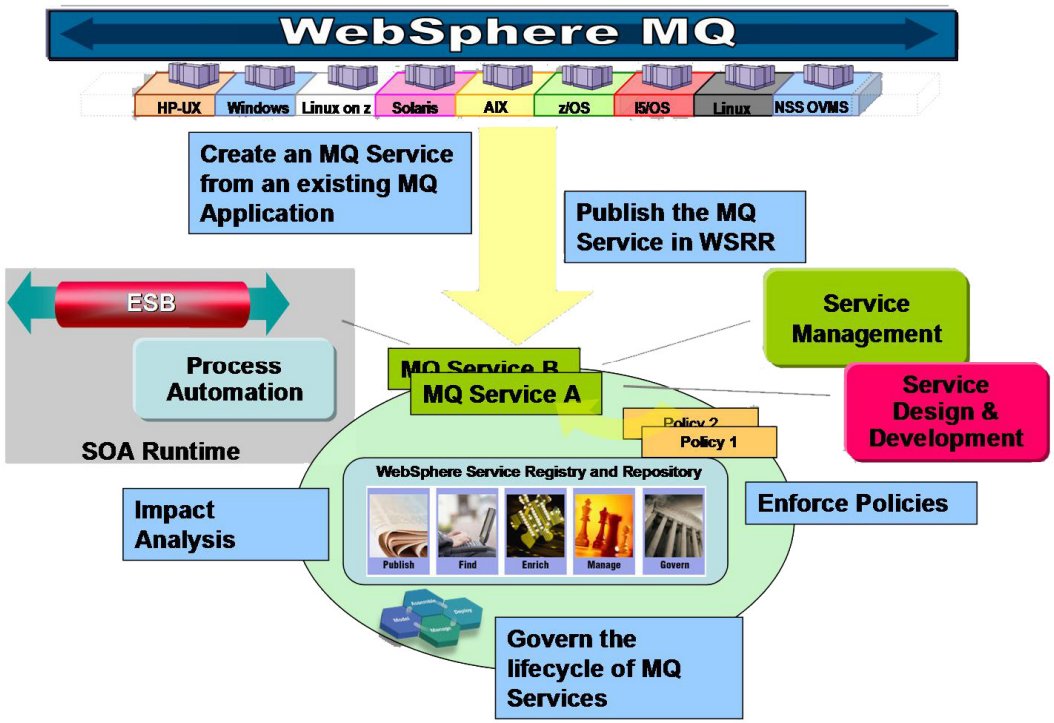
© 2009 IBM Corporation

Publish Using Service Registry Eclipse Plug-in

- Subset of Web UI's extensive capabilities
- Supports Eclipse environments
- API's enable other environments



Publishing Services from WebSphere MQ Explorer



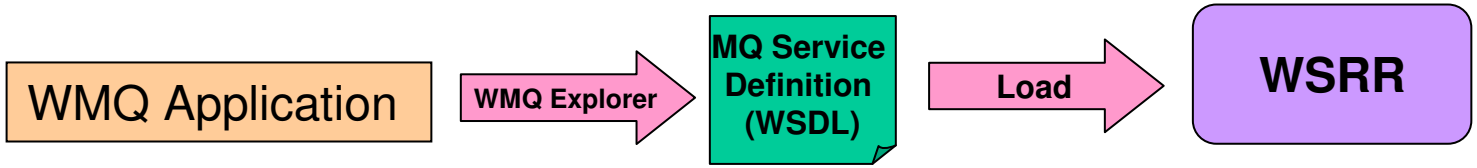
WMQ Explorer creates a WSDL with wmqservice elements

When a WebSphere MQ WSDL is loaded, WebSphere Service Registry and Repository automatically builds

representations of:

- MQ queue managers,
- MQ queues
- MQ connections,

And relationships between them and a port object



© 2009 IBM Corporation

WebSphere Service Registry and Repository

Encourage Greater Reuse

Find and reuse services for building blocks for new composite applications.

Find Services Using …

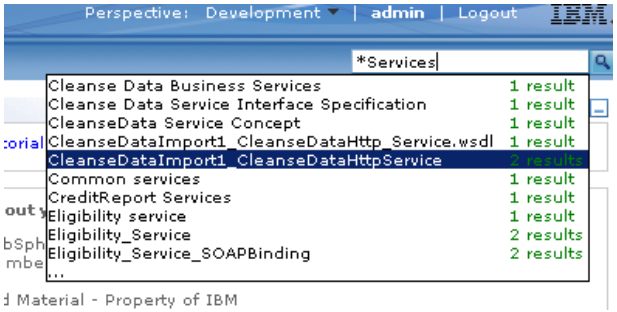
WSRR Web User Interface

Eclipse Plugin User Interface

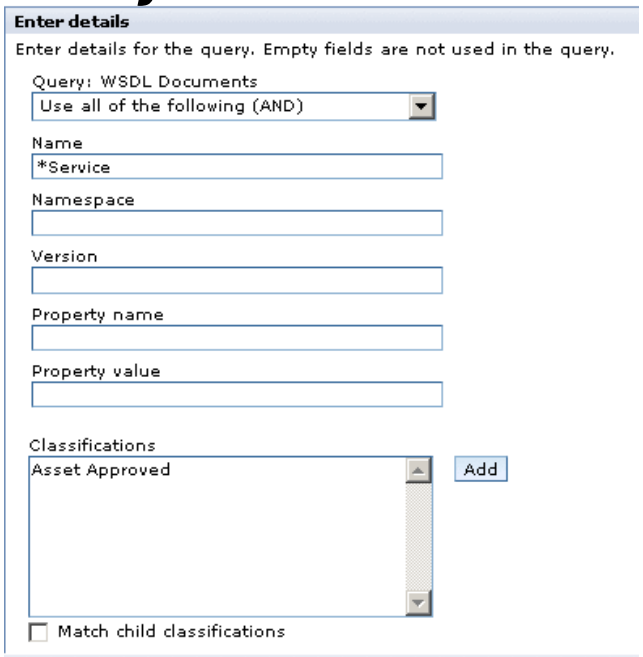
© 2009 IBM Corporation

Find Services Using Web UI

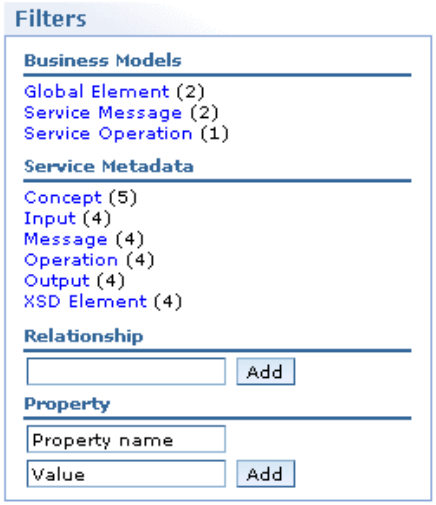
Simple Search *- with Auto Suggest*



Query Wizard

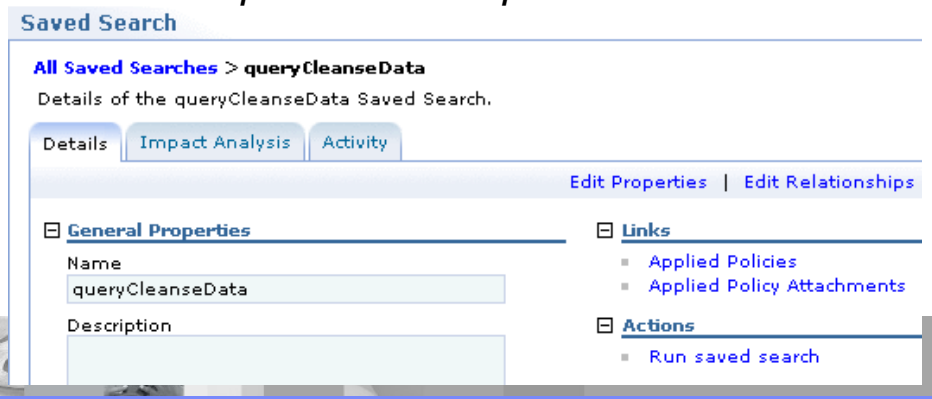


Faceted Search *- with Filters*



Saved Queries

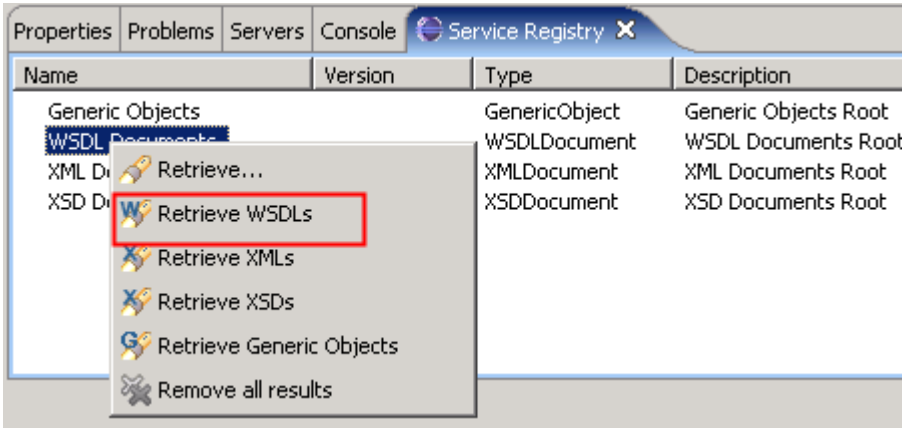
- Save complex search queries and rerun later

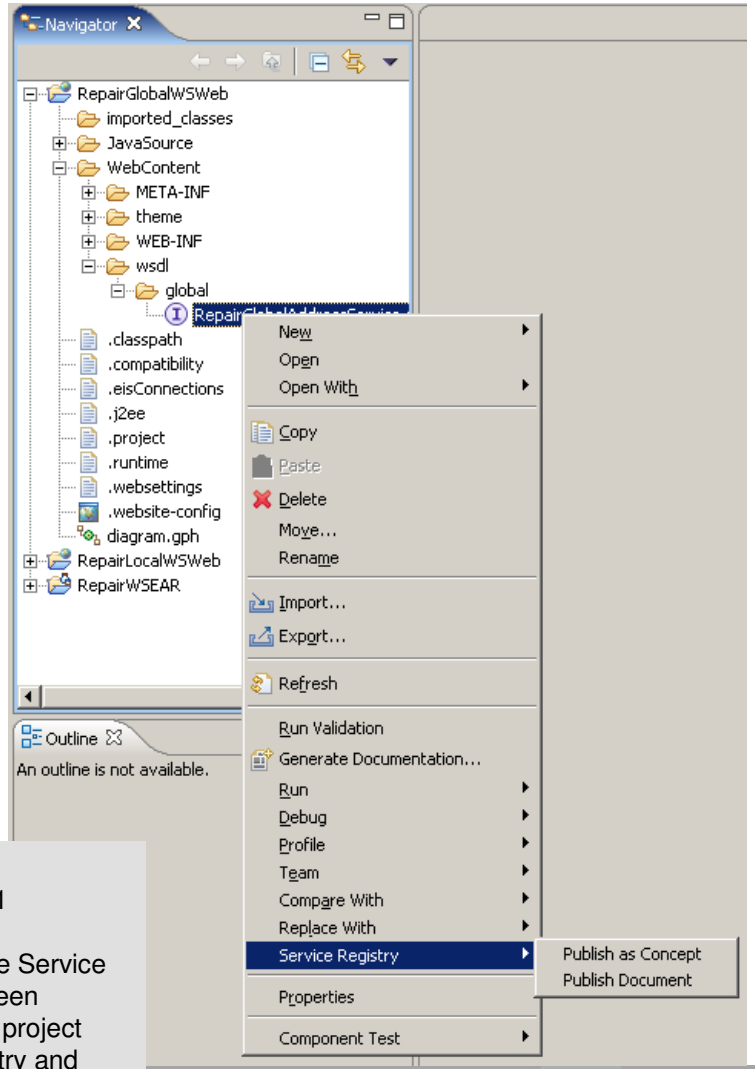


© 2009 IBM Corporation

Find Using Service Registry Eclipse Plug-in

- Subset of Web UI's extensive capabilities
- Supports Eclipse environments
- API's enable other environments



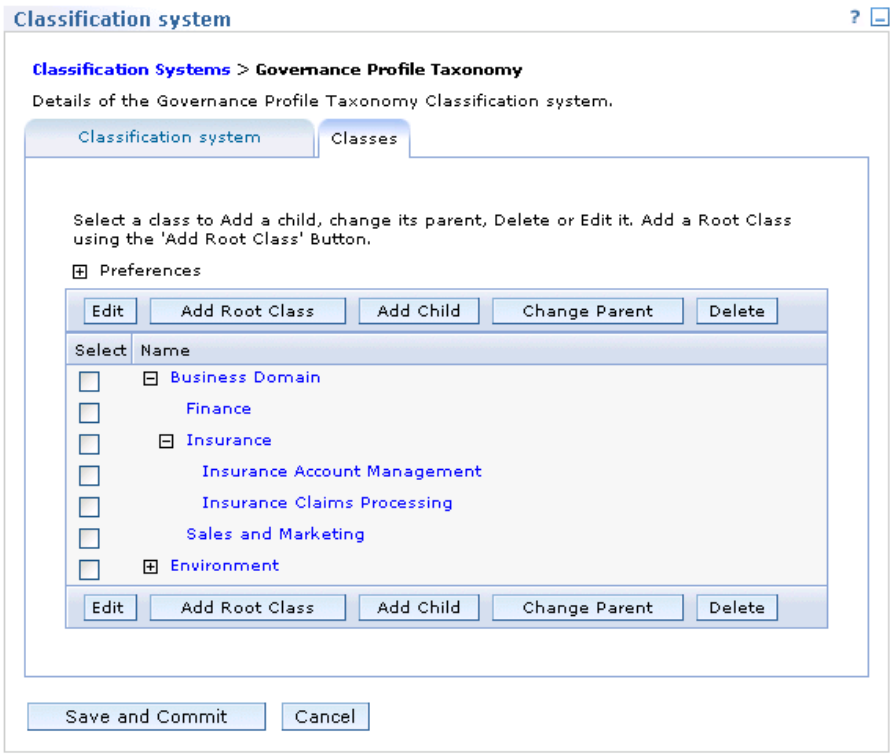


Microsoft Visual Studio support
Microsoft Visual Studio is supported via the SA11 SupportPac.
As well as retrieving documents from WebSphere Service Registry and Repository, documents that have been created within a Microsoft Visual Studio Solution project can be published into WebSphere Service Registry and Repository along with some associated metadata.

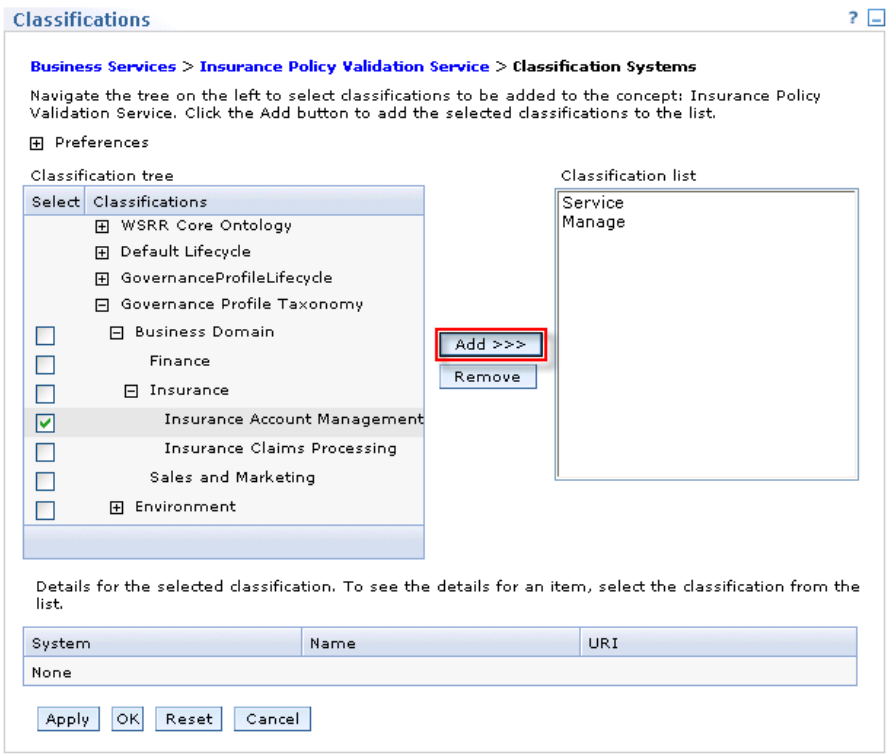
© 2009 IBM Corporation

Classification System for Services

Define Classification



Assign Classification to Service



- ***Web UI***
- ***WSRR Studio***

Demo

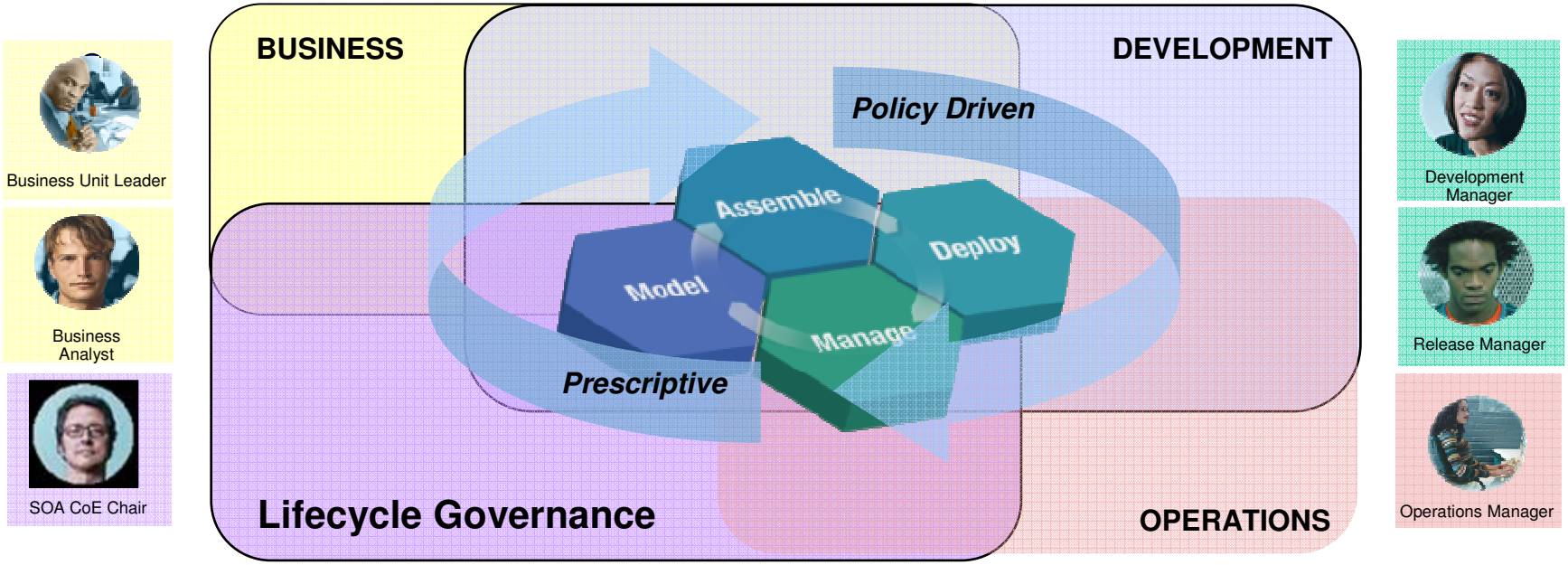
Find
Graph of a Business Service
Impact analysis of an XSD
Policy Analytics

Governance of Services

© 2009 IBM Corporation

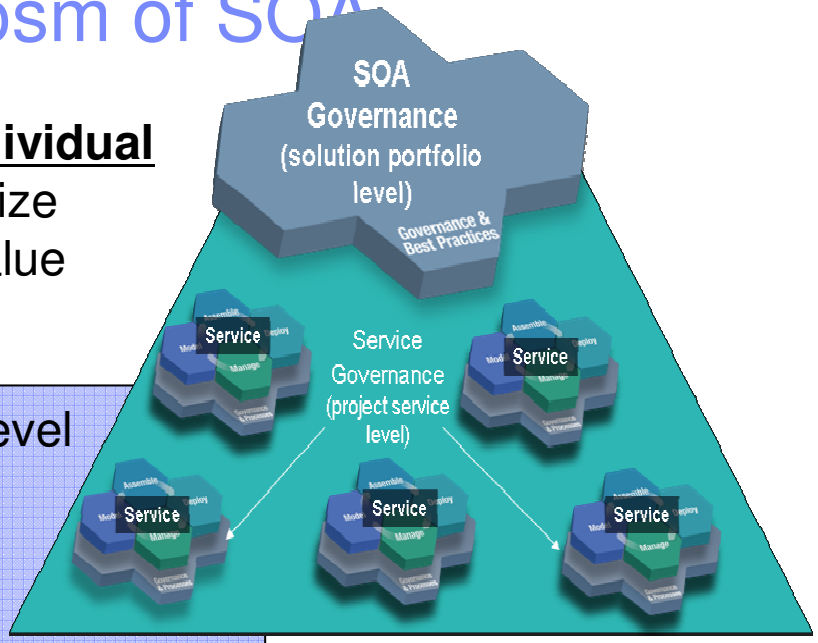
Governance: Reduce business risk with prescriptive lifecycle management

- Policy driven lifecycle governance
  - Automated metadata exchange across design and runtime
  - Prescriptive lifecycle governance with out of the box governance policies



IBM's view: Service Governance can be seen as a microcosm of SOA Governance

Service Governance – the governing of the **individual** service lifecycle management process to maximize how that **particular** service delivers business value and enables the goals of the business.



SOA Governance – Solution Portfolio level

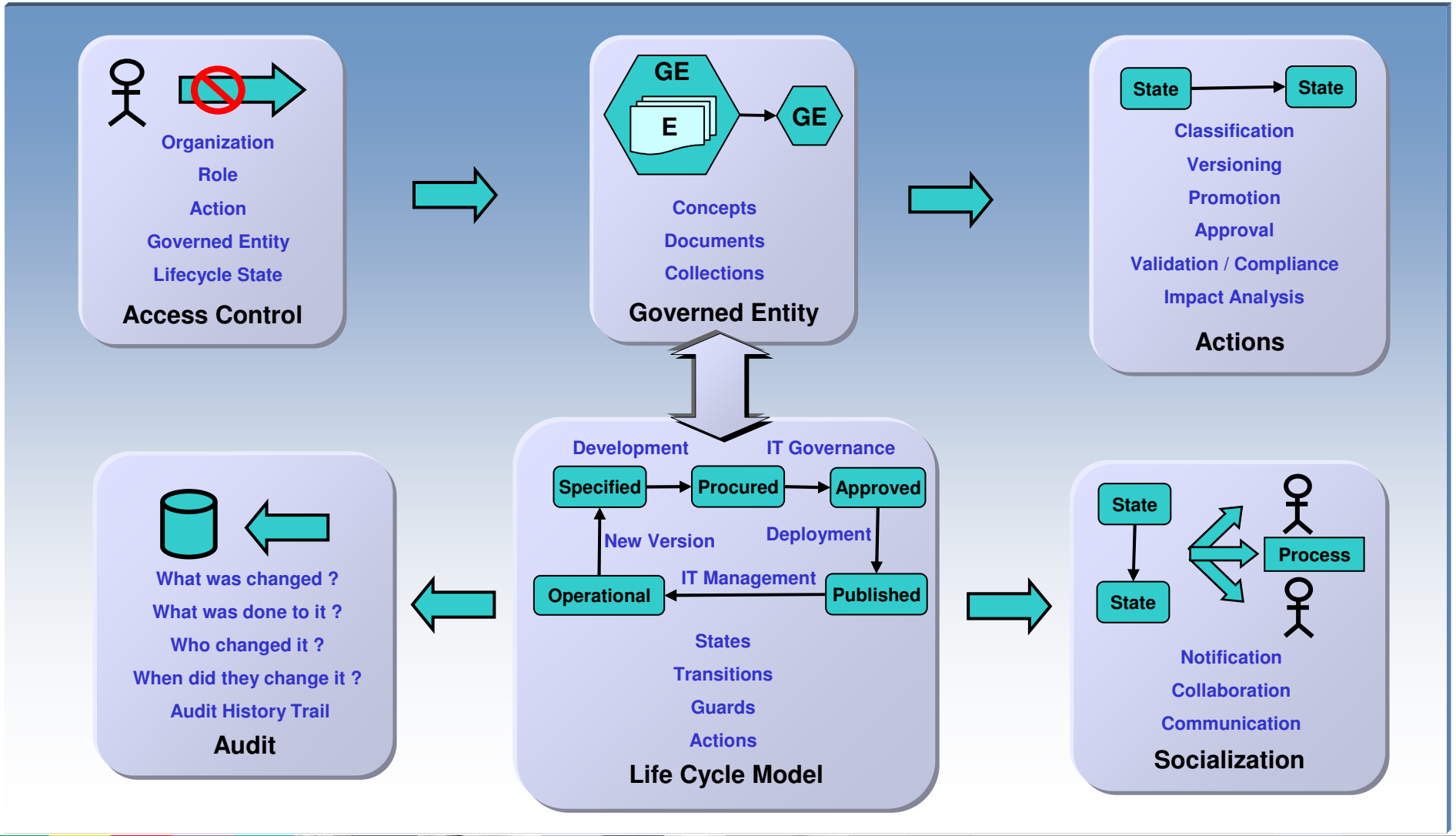
- Process Modeling Services
- Metadata Model
- Organizational Change
- Human Collaboration
- Portfolio Management
- Risk Management

Service Governance – Service level

- Registry & Repository Support
- Policy Lifecycle Management
- Change Management
- Service Lifecycle Model
- Service Level Agreement
- Dashboards & Other Presentation
- Decision Rights Management

© 2009 IBM Corporation

WSRR Governance Model



© 2009 IBM Corporation

What is the Governance Enablement Profile?

The GEP is a WSRR configuration profile

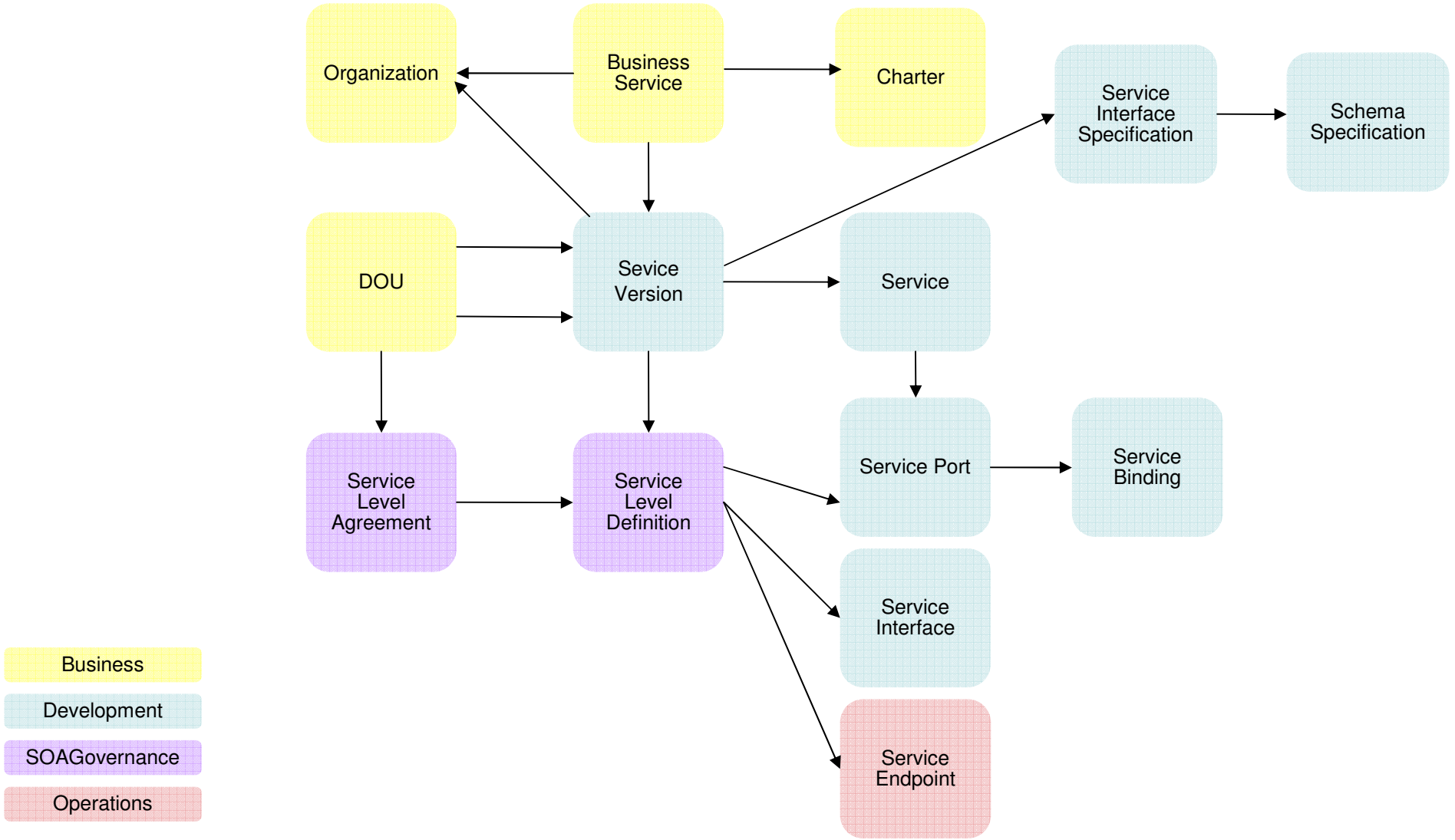
WSRR configuration profiles comprise a variety of components, all of which are interrelated and the GEP is no different.

The main aspects to this profile (and any profile) are:

- Business Models
- Lifecycles for the various modelled entities
- Policies
- Roles
- Customized User Interface
- Automation (Validators and Notifiers)

© 2009 IBM Corporation

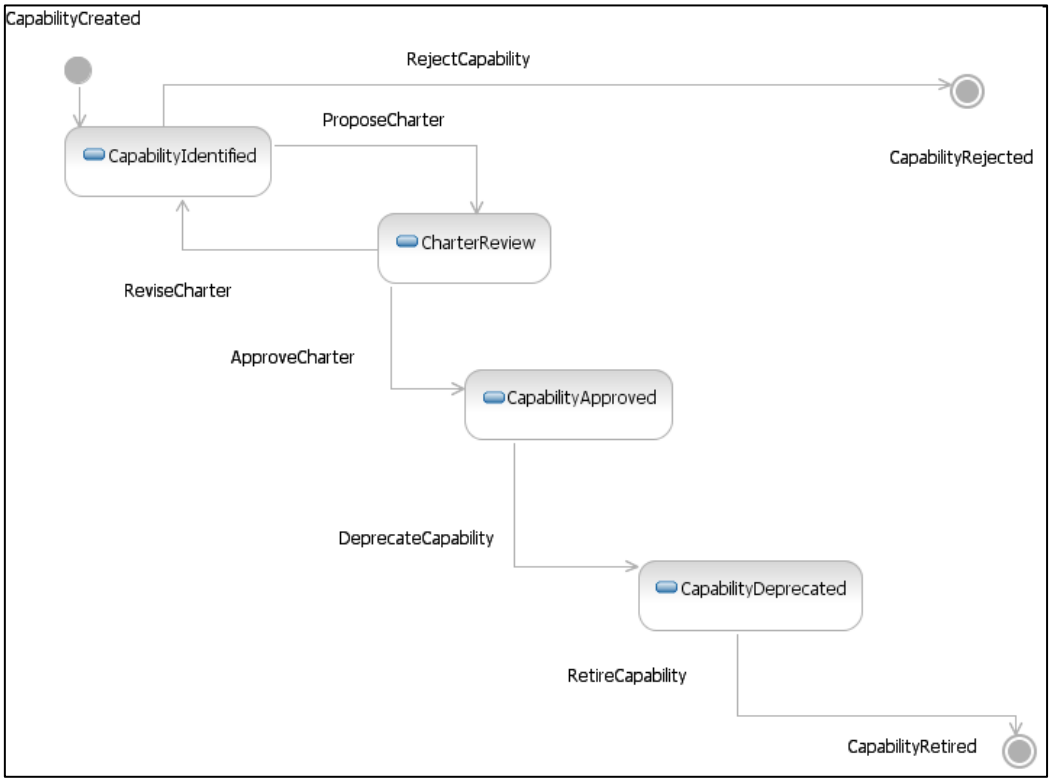
Governance Enablement Profile Model



Governance through lifecycle definition and validation

- WSRR enforces governance across the enterprise
- Different life cycles for different entities
- Transitions are possible:
  - When user has authority
  - When conditions are satisfied
- Automatic notification of change

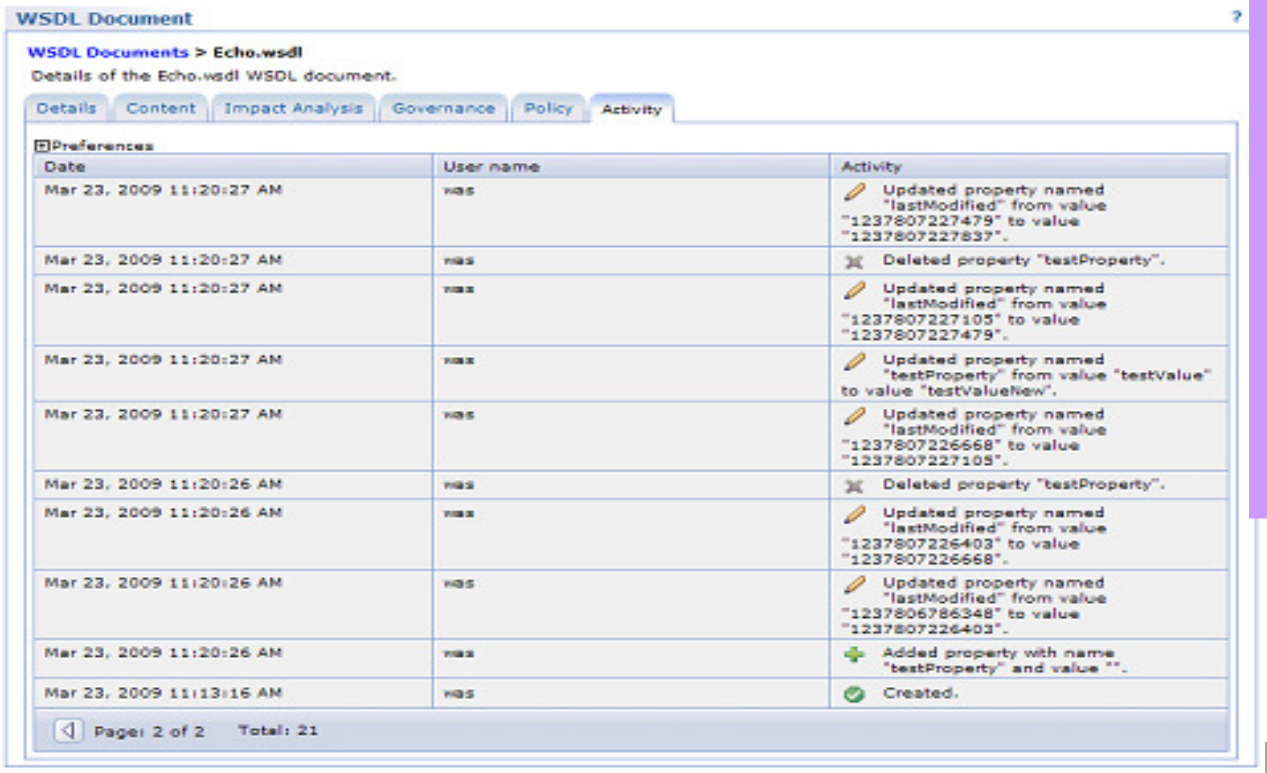
e.g. Business Capability life cycle



© 2009 IBM Corporation

Comprehensive Auditing to Track Service Metadata Changes

- Activity logging Integrated into the product
- Provides details of what has changed
- User interface view shows the history of an object



IBM Solution

- WSRR facilitates managing your service metadata.
  - **Audit service metadata changes.**
  - **View the lifecycle history for a service.**

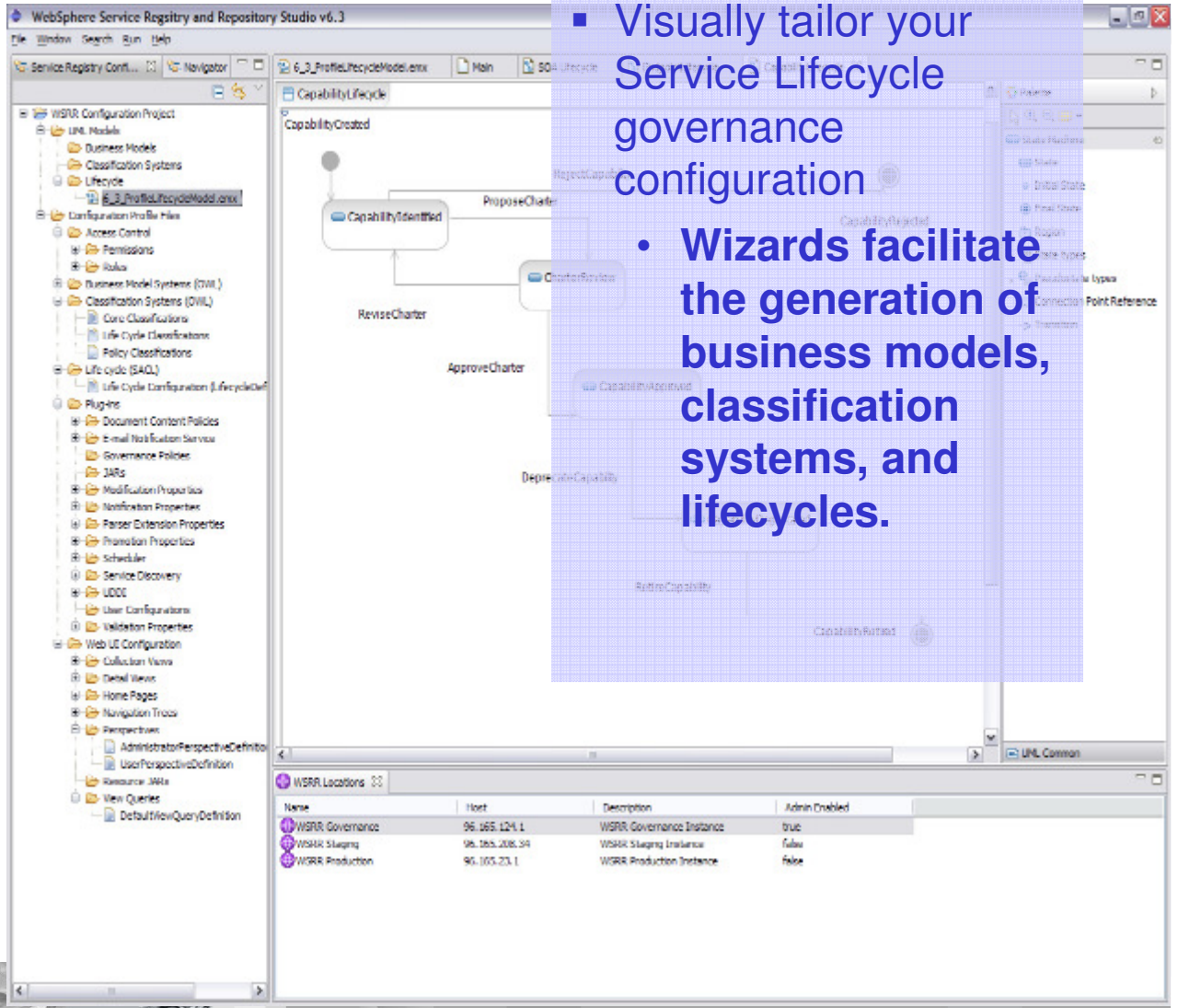
© 2009 IBM Corporation

WSRR Studio

Business Models – Visually model your service metadata using UML

Classification Systems – Visually create service taxonomies

Lifecycles – Visually define service lifecycles and transitions

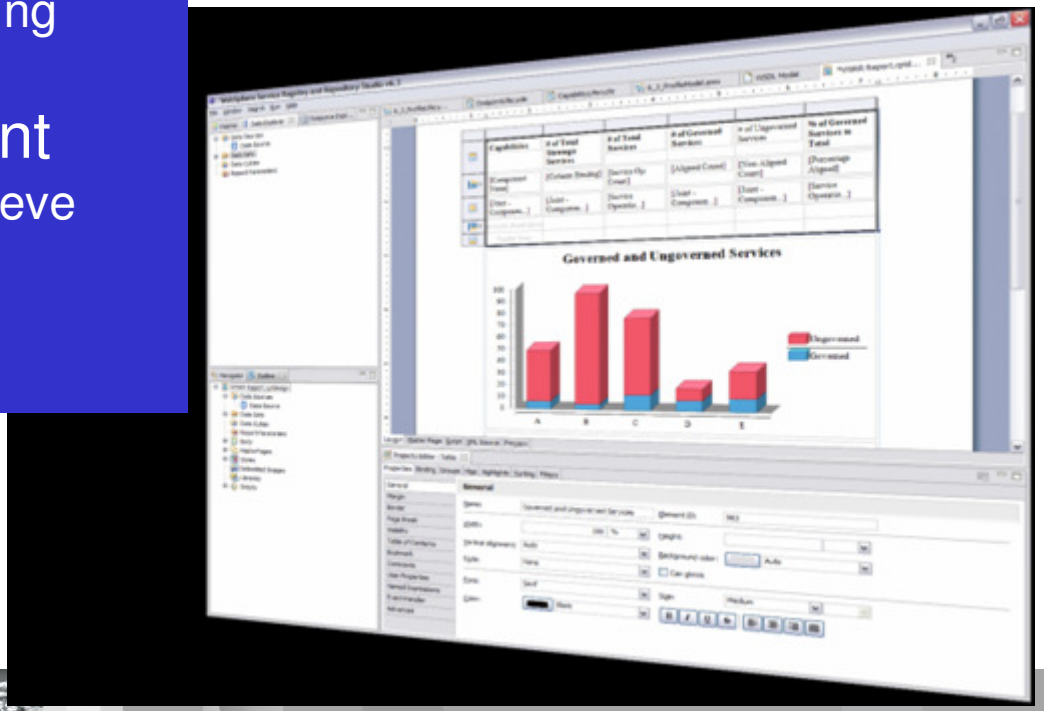


- Visually tailor your Service Lifecycle governance configuration
  - **Wizards facilitate the generation of business models, classification systems, and lifecycles.**

© 2009 IBM Corporation

WSRR Studio can also be used to…

- Create reports
  - Queries can be run within WSRR and Business Intelligence and Reporting Tools (BIRTcan be used to generate detailed reporting charts in a number of formats, including HTML, PDF and Excel.
- Manage WSRR content
  - You can publish and retrieve service documents.

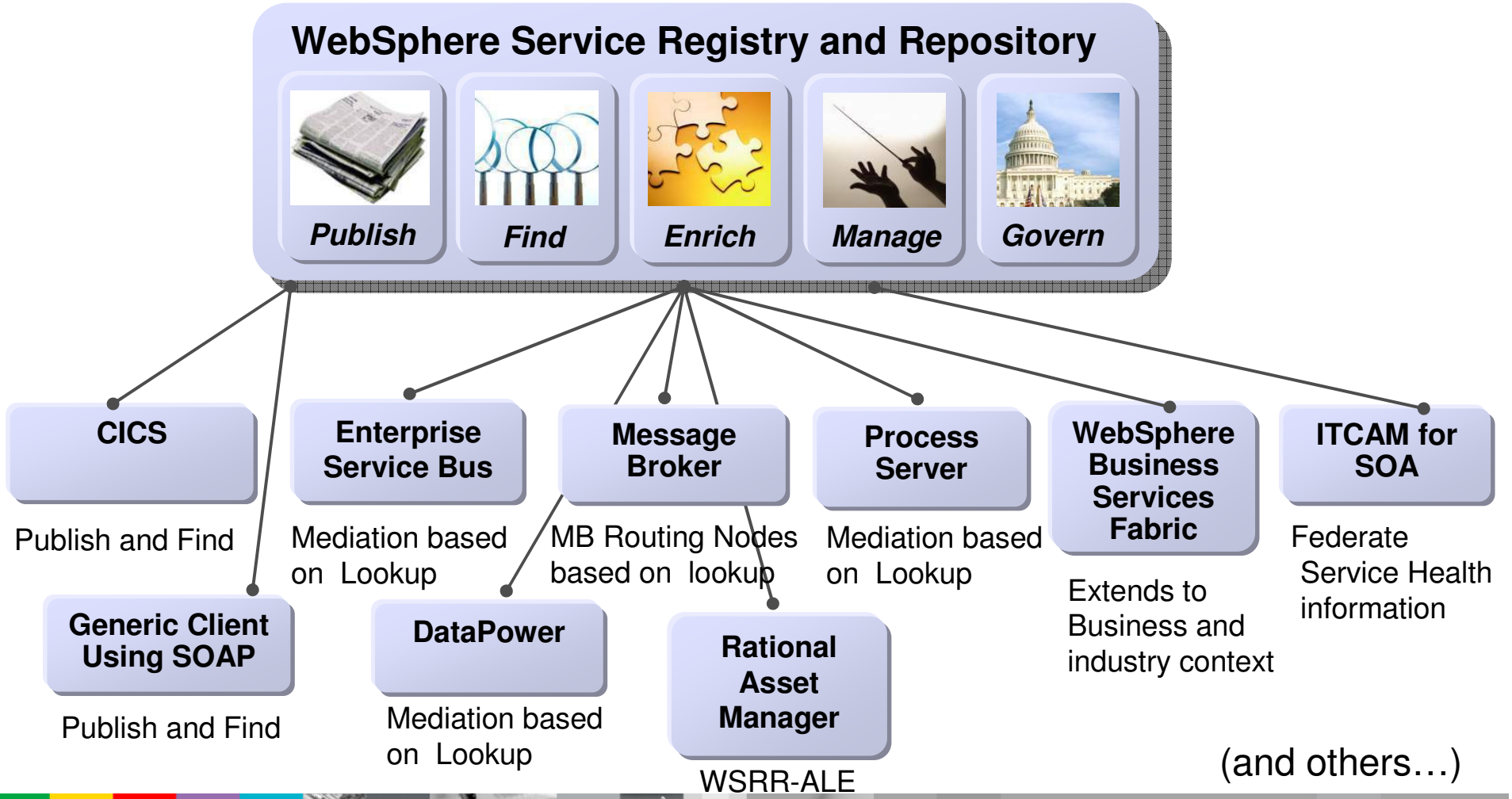


© 2009 IBM Corporation

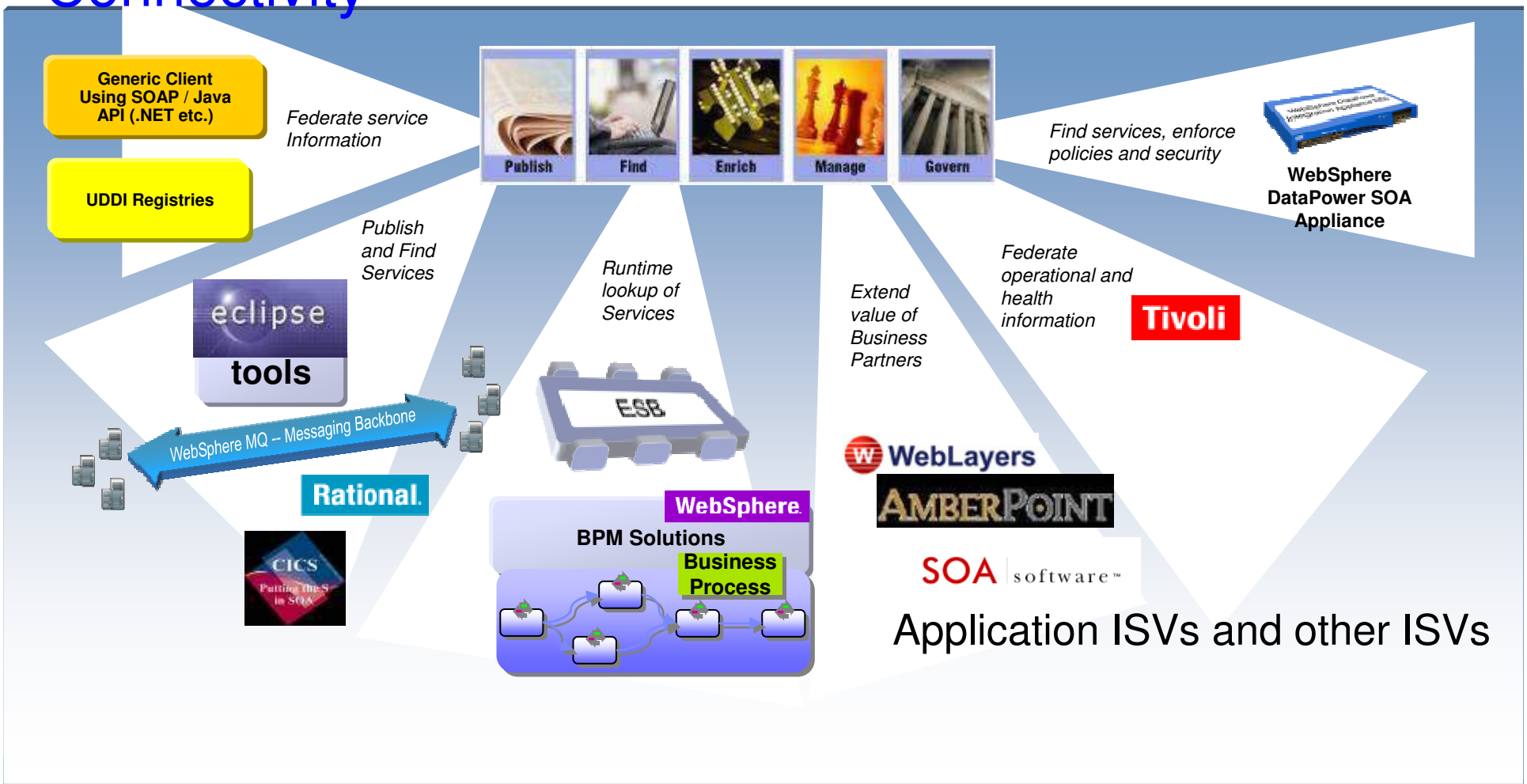
Run-time integration and control

© 2009 IBM Corporation

Integration with other IBM SOA products



WSRR provides integration and interoperability across ESBs, BPM & Connectivity



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

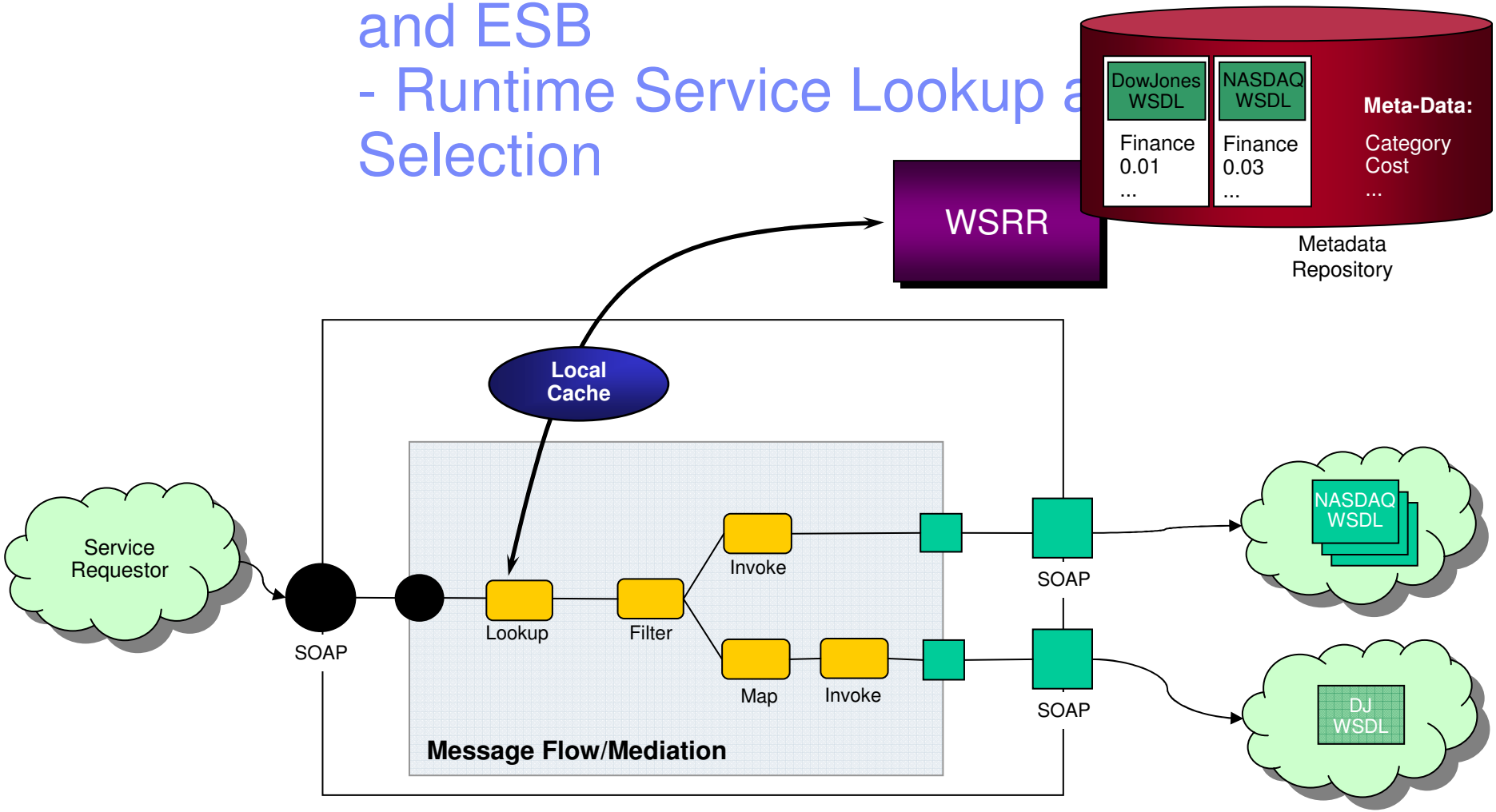
Policy Enforcement

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 ……

© 2009 IBM Corporation

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



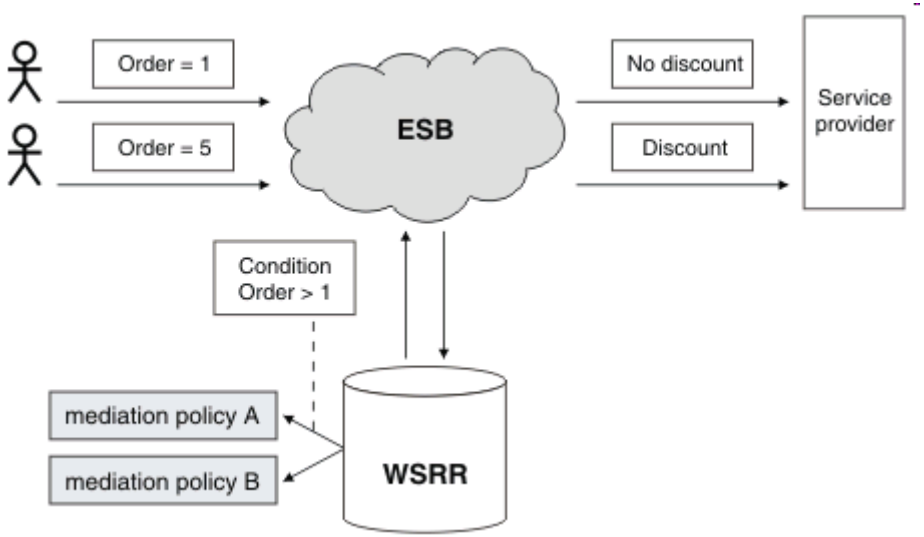
WebSphere Enterprise Service Bus

Endpoint Lookup

- Supports:
  - WSDL defined services
  - SCA modules
  - SOAP/JMS and SOAP/HTTP
  - MQ and JMS
- Range of querying/matching options

Mediation Policies

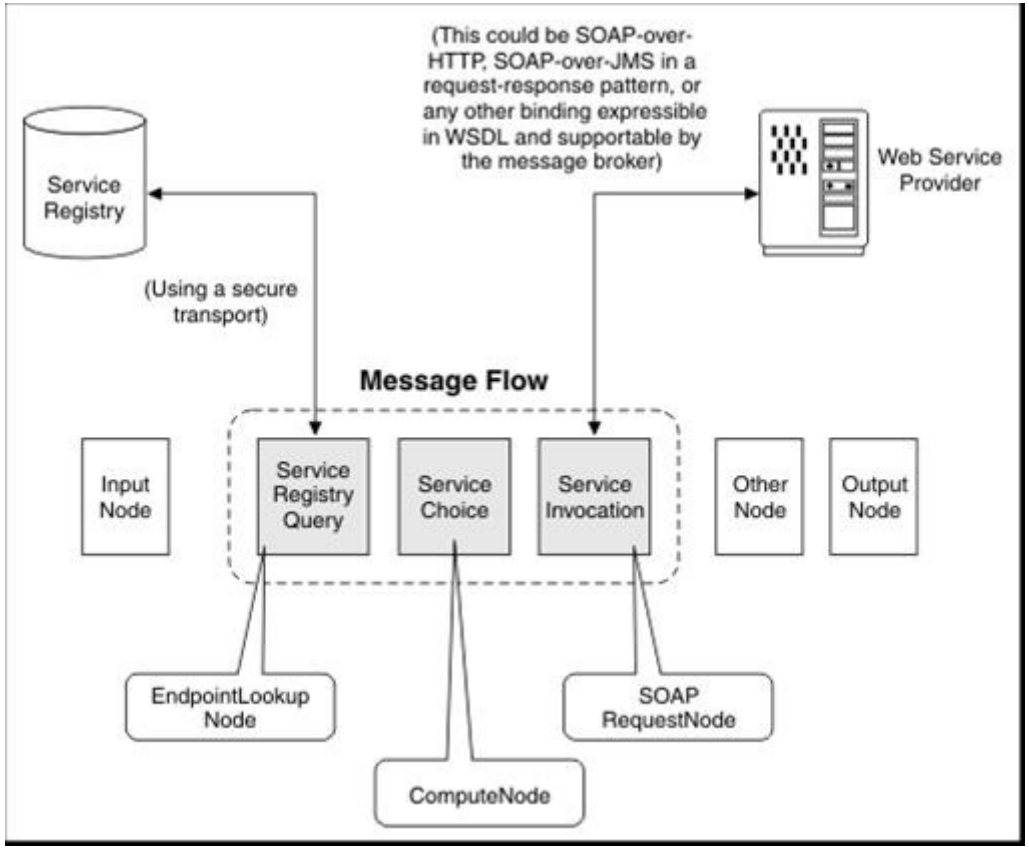
- Promoted properties can be overridden, at run time, using mediation policies in the registry.



WebSphere Message Broker

The **EndpointLookup** node can retrieve a service endpoint for a WSDL service from WSRR.

The **RegistryLookup** node can retrieve any artifact stored in WSRR, for example, WSDL, XSD, XSLT, WS-policy documents.



© 2009 IBM Corporation

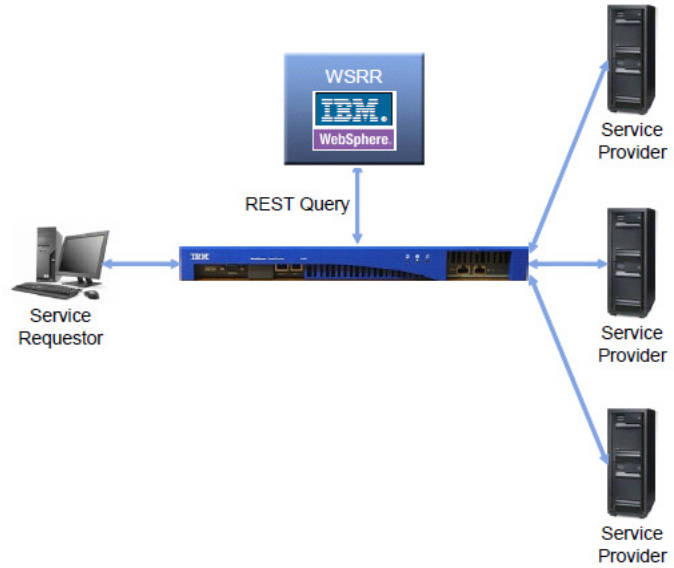
DataPower Integration Options

1. WSRR Subscription

- Subscribe to a concept or a WSDL
- Retrieves WSDL or WS-Policy
- Polling is asynchronous with service requests

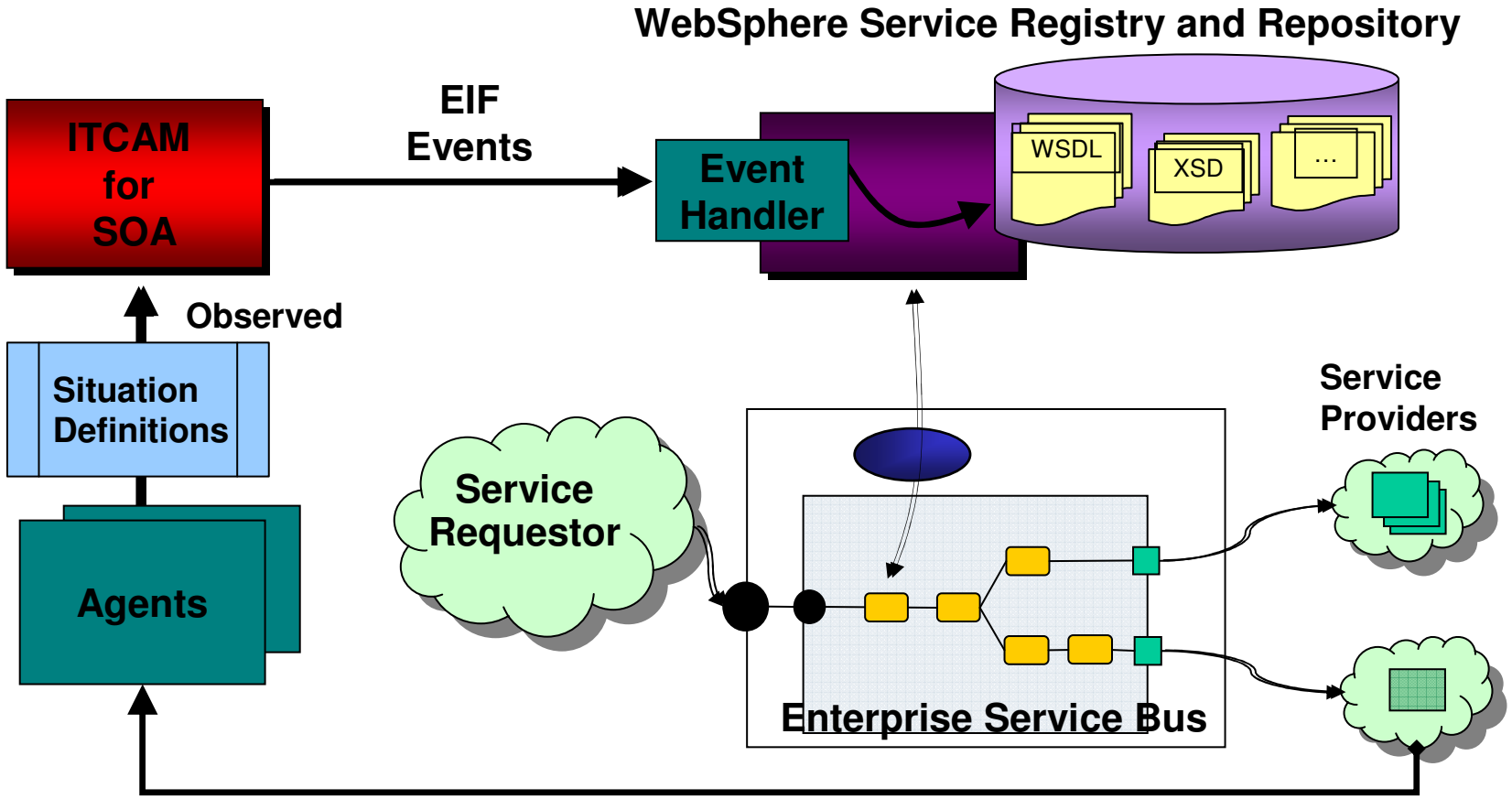
2. Representational state transfer (REST) query

- Query any WSRR content using a REST action
- Further query using XPath
- Results are cached



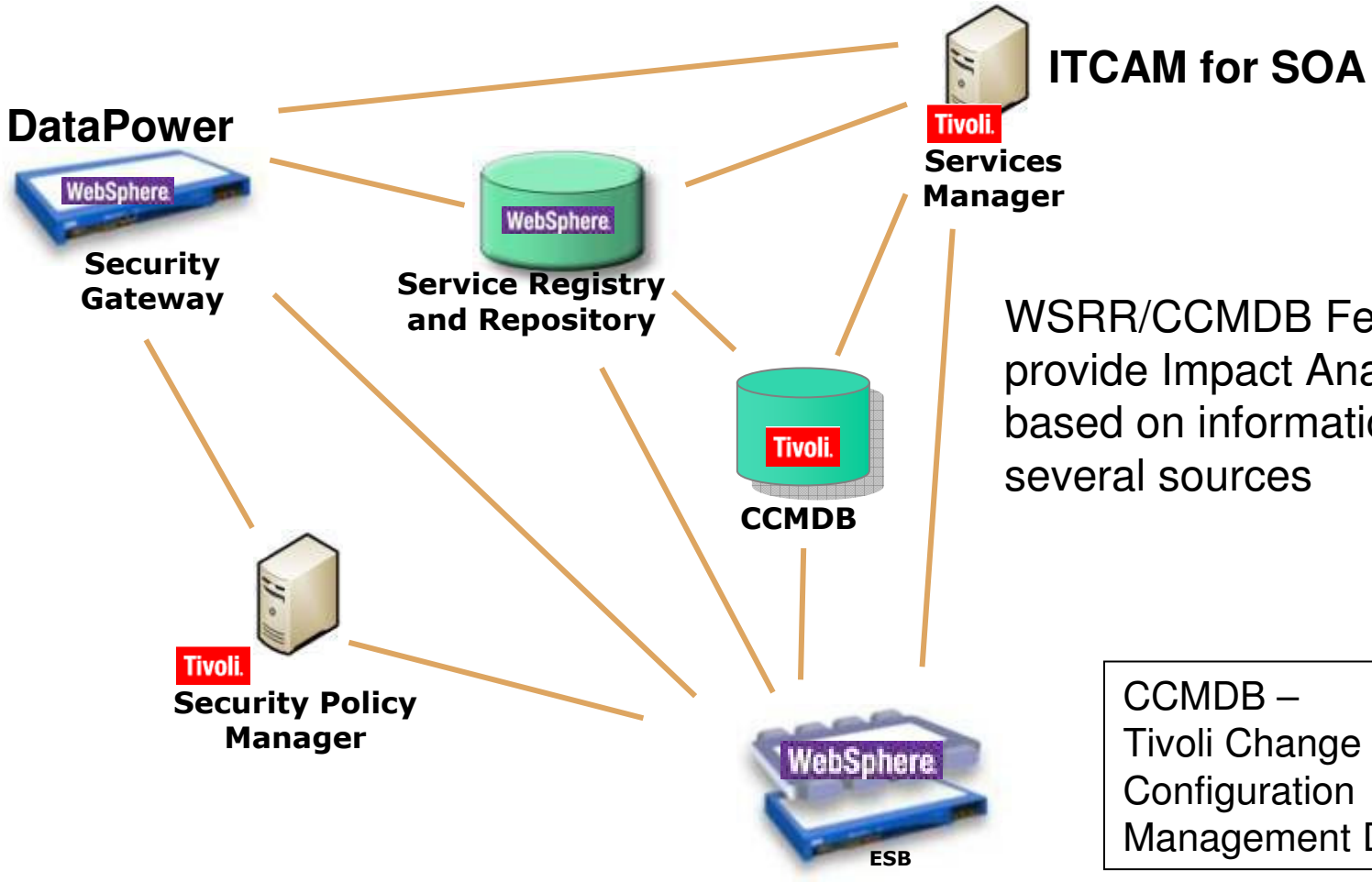
© 2009 IBM Corporation

Integration with ITCAM for SOA



© 2009 IBM Corporation

Federation with CCMDB and other Tivoli products

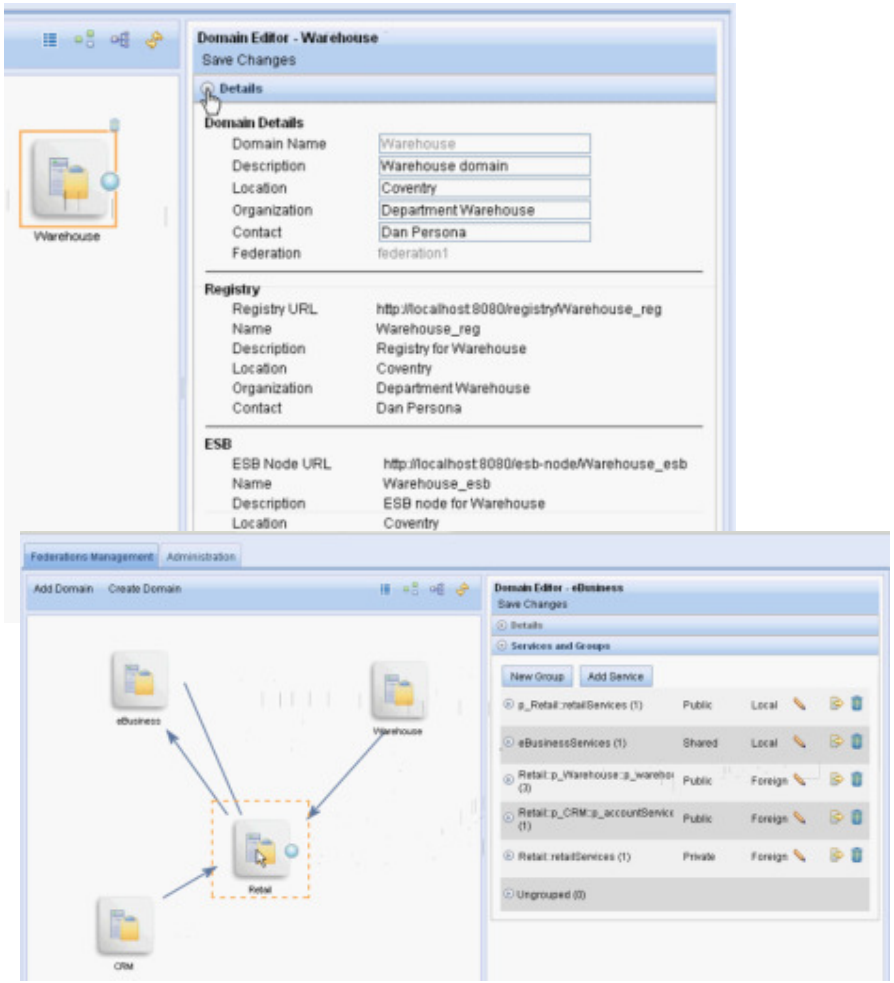


WSRR/CCMDB Federation provide Impact Analysis based on information from several sources

CCMDB – Tivoli Change and Configuration Management Database

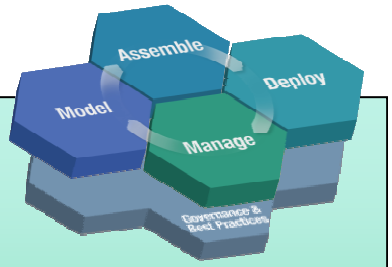
Service Federation Management - service visibility and reuse across the enterprise

- Integrated solution across WSRR (console UI and registry) and the ESB family to enable service re-use across enterprise domains.
- Provides a unifying view of federation relevant content
- Web 2.0-based protocol to access the service connectivity and registry components supporting a domain
- Easy configuration of best practice patterns for service sharing
- WSRR, WESB and WMB are Service Connectivity Management Protocol (SCMP) Enabled



© 2009 IBM Corporation

WebSphere Service Registry and Repository – Advanced Lifecycle Edition



SOA Service Lifecycle Management

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

Service Development

Rational ClearQuest

Rational ClearCase

Rational Software Architect / Functional Tester

WID/Modeler

Service Deployment

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 (Tivoli® Change and Configuration Management Database)

ITCAM for SOA

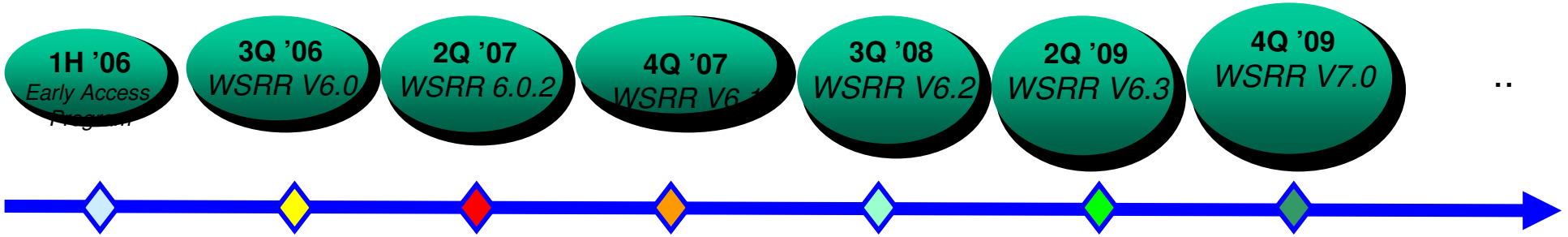
TFIM / TAM

© 2009 IBM Corporation

Additional Material and Wrap-Up

© 2009 IBM Corporation

WSRR product strategy reflects growing importance of Service Registry/Repository in Runtime Policy Management, bolstering Service Governance



1H '06	3Q '06	2Q '07	4Q '07	3Q '08	2Q '09	4Q '09
• Statement of Direction announcement • Early Access Program to garner feedback, input • Meet basic customer requirements	• General Availability of WSRR • Provide core Registry/ Repository functions • Continued feedback and input towards product capabilities	• Enhance Registry/Repository functions, addressing customer needs • Performance and clustering support • Drive cross product and third-party integrations	• Registry/ Repository integration across Software portfolio and third-party Software providers • Consumability enhancements : installation and administration	• Prescriptive Registry/ Repository adoption driving SOA • Address customer needs for SOA Policy Management • Launch Advanced Lifecycle Edition • User interface enhancements	• Service discovery across heterogeneous platforms • Expand SOA Policy capabilities • Prescriptive Governance capabilities with pre-built profile and lifecycles • Productivity improvements with Studio tooling support	• Consumability enhancements focusing on Business Users: Business Space Support • Service visibility extension for ESBs : Service Federation Management • SOA Policy Analytics tracking enforcement • Federation enhancements with Integration with CCMDB

© 2009 IBM Corporation

WebSphere Service Registry & Repository: Proven Value

WSRR deployment on average results in:

- 30% increase in software reuse
- 25% reduction in integration costs
- 40-60% improvement in application maintenance productivity.

On average, the ROI (in WSRR) ranges from 300% to 700% with a payback period of just 9 to 13 months.

Source: Cross-industry averages based on estimates by IBM's Business Value Assessment Team. Actual results may vary by customer and industry.

http://www-01.ibm.com/software/integration/wsrr/nonflash.html

© 2009 IBM Corporation

WSRR Ecosystem provides Business Partners taking advantage of WSRR today

- Leverage Service metadata foundation technology to provide BP supplied Customer Value
- Enhance and Extend WSRR functionality with BP application value proposition
- Reduce integration costs with readily available integration points

Federate operational and health information

SOA software™

- Ensure that services in WSRR align with plan and priority
- Provide consistent governance by extending WSRR control to non-IBM environments
- Extend WSRR with policy automation for DataPower

Design/Reporting Policies

WebLayers

- Enhance profiles and templates
- Allow single policies to govern multiple versions of services
- Automate review cycle by federating policies across the service lifecycle

AMBERPOINT

- Discovers rogue service to be governed
- Publishes metrics about the managed services
- Publishes WS-Policy to be governed

Reference materials

Web Site

http://www-01.ibm.com/software/integration/wsrr/

InfoCenter

http://publib.boulder.ibm.com/infocenter/sr/v7r0/index.jsp

developerWorks®

http://www.ibm.com/developerworks/websphere/products/

Redbooks and Redpapers

http://www.redbooks.ibm.com/abstracts/sg247386.html - original WSRR Redbook

http://www.redbooks.ibm.com/abstracts/redp4366.html - DataPower integration (polling)

http://www.redbooks.ibm.com/redpieces/abstracts/redp4559.html - DataPower integration (REST)

http://www.redbooks.ibm.com/redpieces/abstracts/redp4557.html - Process server and ESB integration

http://www.redbooks.ibm.com/redpieces/abstracts/redp4558.html - WMQ and WMB integration

http://www.redbooks.ibm.com/redpieces/abstracts/sg247793.html - WSRR v 6.3

http://www.redbooks.ibm.com/abstracts/sg247782.html - WSRR-ALE v 6.3

http://www.redbooks.ibm.com/redpieces/abstracts/redp4561.html -Tivoli Security Policy Manager integration

© 2009 IBM Corporation

Without proper management and governance of SOA…

This could become…

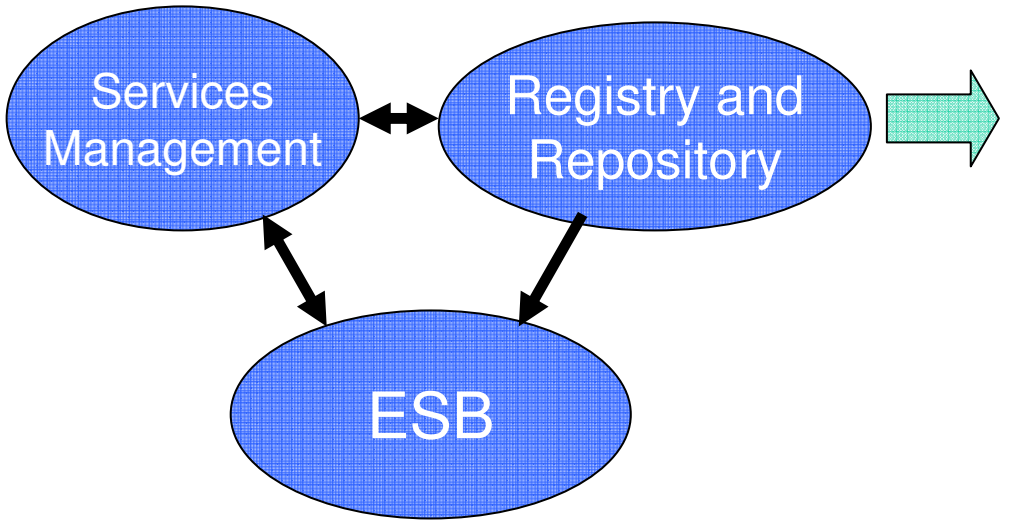
The promise of SOA

… like this

A pile of services

… and so would go the promised benefits of SOA

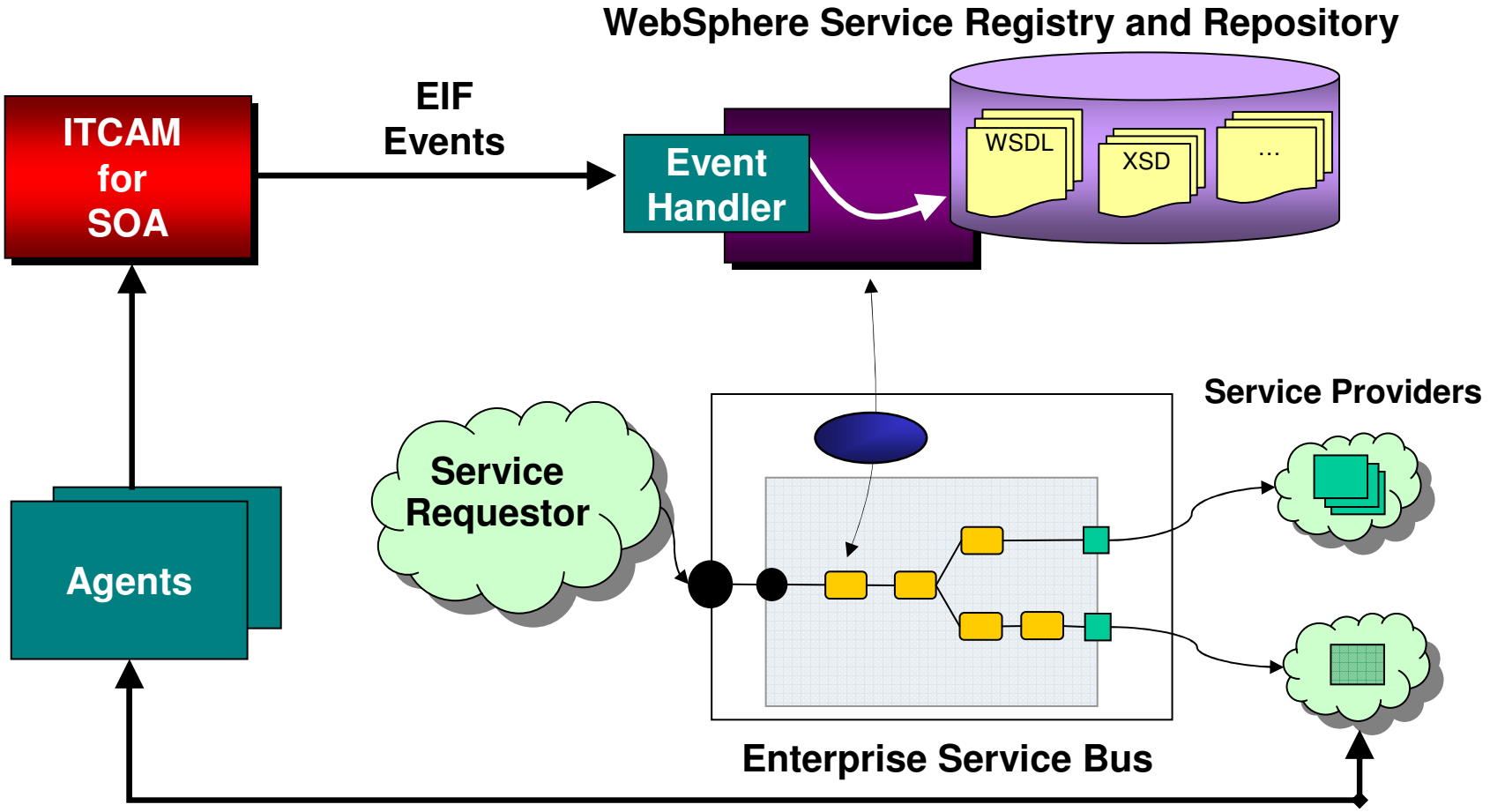
Building a basic SOA Infrastructure



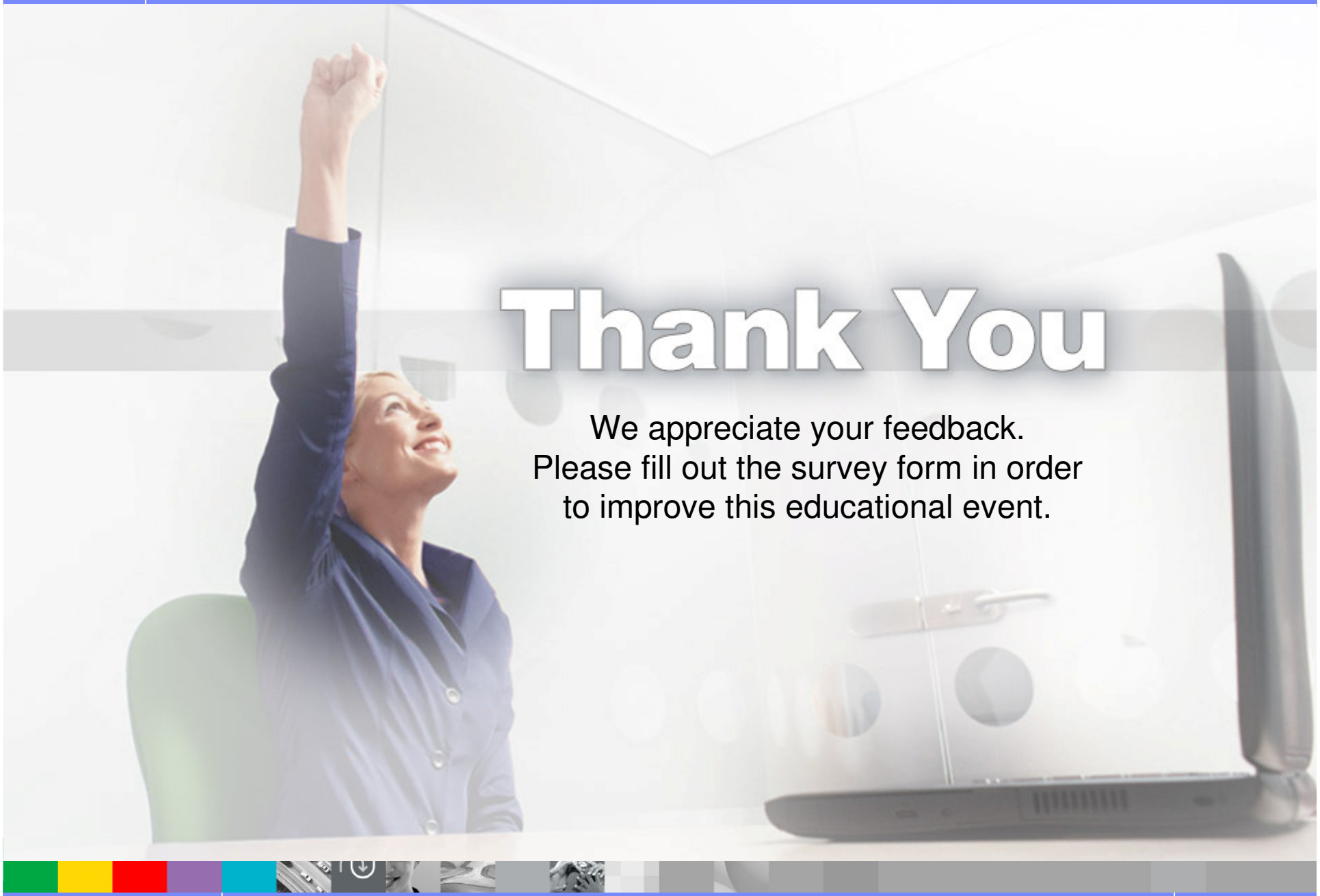
1. Master reference for service definitions
2. Service governance
3. Run-time integration and control

© 2009 IBM Corporation

The foundation of an SOA Infrastructure



© 2009 IBM Corporation



© 2009 IBM Corporation