



WebSphere Software

WebSphere Service Registry and Repository

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SOA on your terms and our expertise

ON DEMAND BUSINESS™

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Agenda

- Describe SOA Governance and the need for a Registry.
- Describe a Repository versus a Registry?
- Discuss WSRR Features
- New features in v6.1 and v6.2
- Case study

The promised benefits of SOA



Business process vitality



New value through reuse of assets



Improved connectivity



Closer alignment of IT to business



Business Flexibility

Without proper management and governance of your SOA...

This could become...



The promise of SOA

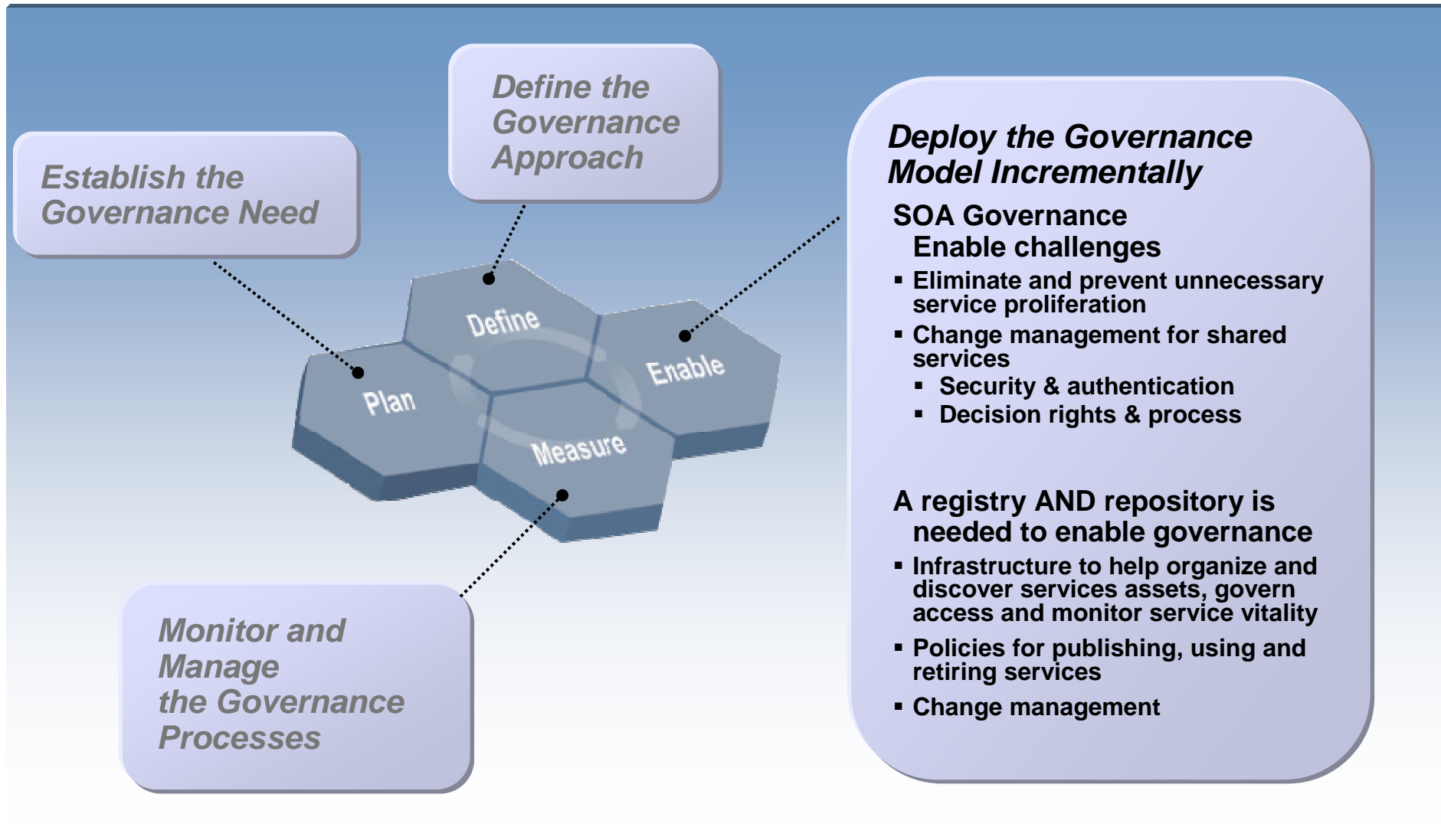
... like this



A pile of services

... and so would go the promised benefits of SOA

SOA needs a registry and repository to enable governance



What is a registry ... a repository?



Registry?

Contains information about services such as...

- Service interfaces
- Descriptions
- Parameters



Repository?

Stores service artifacts

An integrated Registry / Repository Solution is needed govern and manage SOA for maximum value



Business process vitality



New value through reuse of assets



Improved connectivity



Closer alignment of IT to business

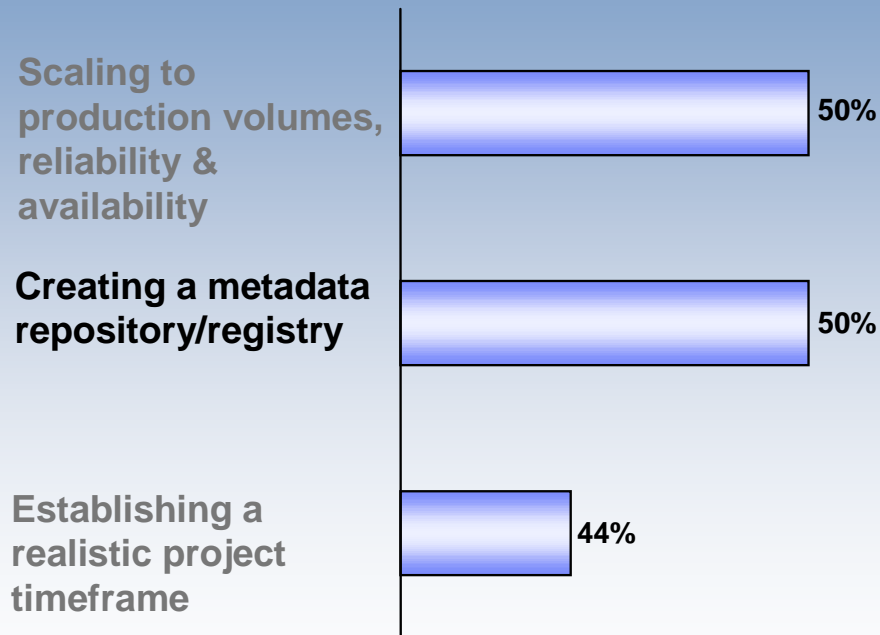


Business Flexibility

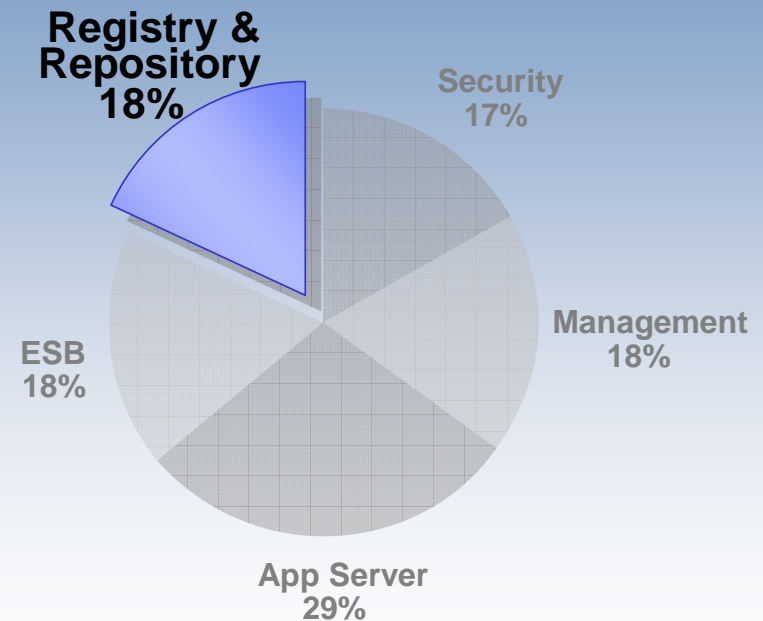


Customers recognize the importance of a registry and repository to answer their SOA questions

Top 3 Technological Challenges of Adopting SOA



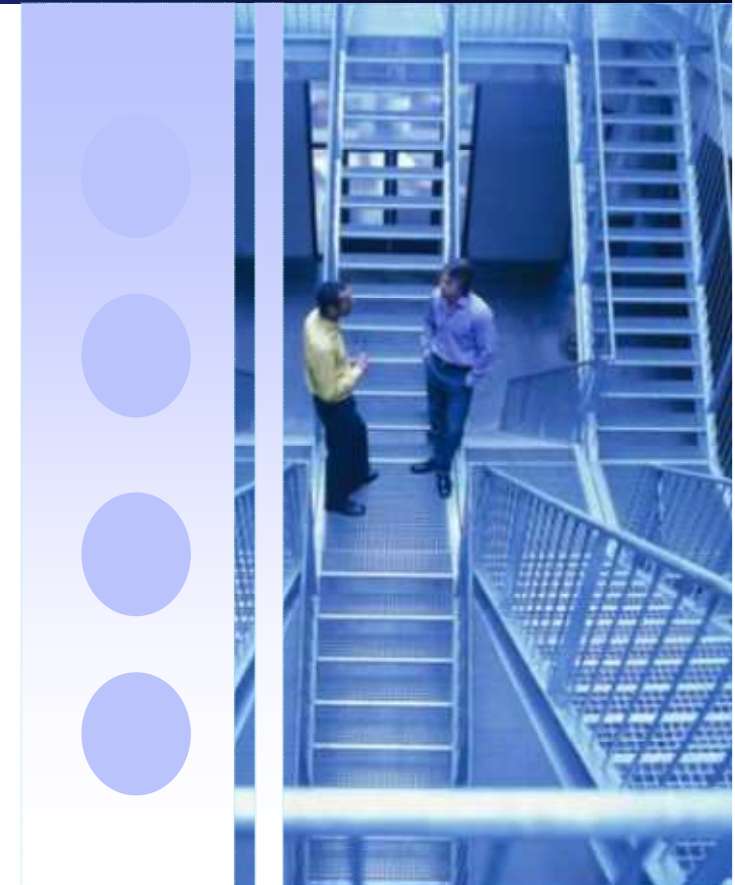
Middleware considered most important in an SOA



Source: Aberdeen Group 2006. 600+ company respondents across 4 studies

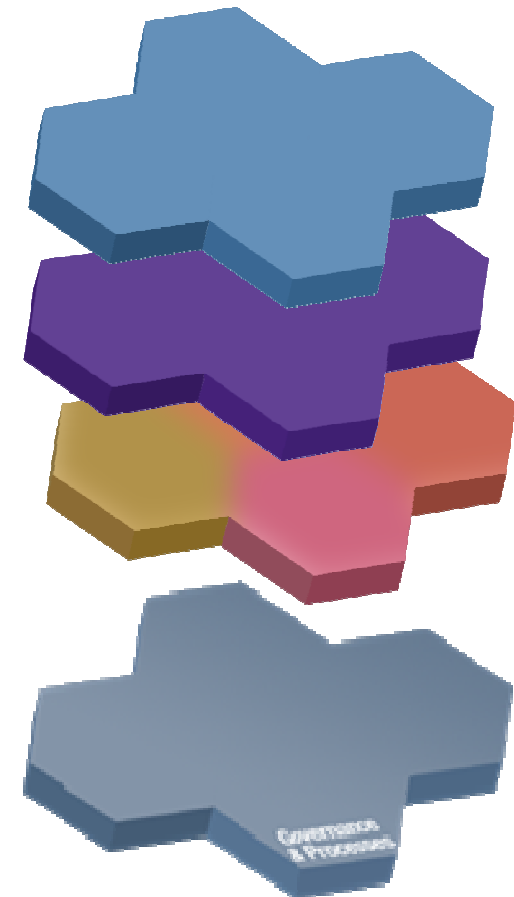
What to look for in a registry ...

- Provides the capability to effectively **manage service metadata**
- Supports **design time** discovery and **runtime** access
- **Stores artifacts** and not just references to artifacts
- Supports a **service taxonomy** to define domains and functional areas
- **Manages the service lifecycle** in a shared environment
- **Notification** to keep all required parties informed of important events / changes to service metadata
- **Control service access** via security and/or policy
- Ability to handle **multiple versions** of a service and help with the version management process
- Stores business **policies** that are enforced by the infrastructure



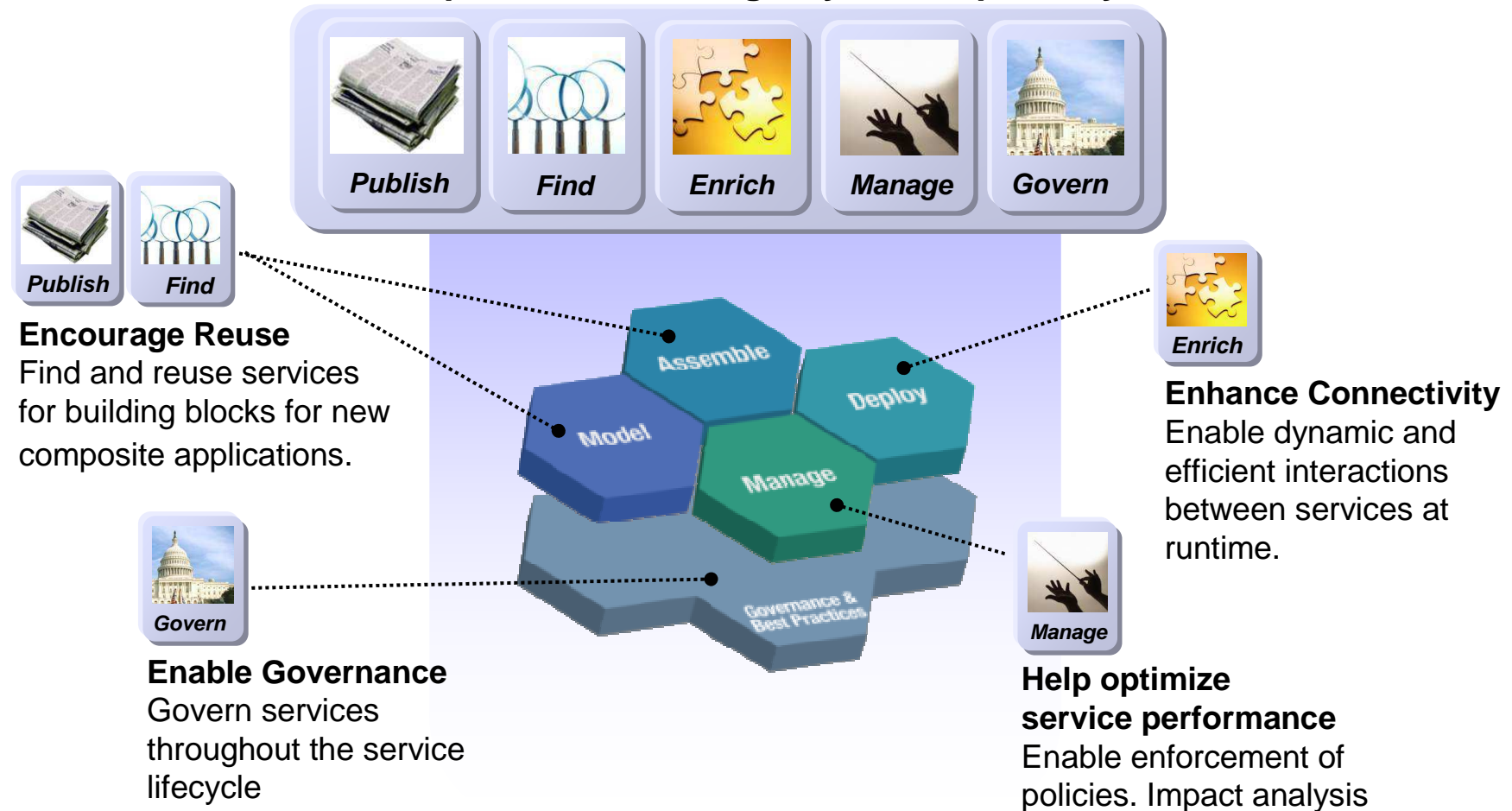
IBM's WebSphere Service Repository and Registry (WSRR)

- **Manages service metadata** while providing better search granularity than most UDDI-based products
 - The “copy of record for service metadata”.
- **User-friendly UI** to facilitate design time discovery
- Provides location transparency through **runtime access**
- **Stores all service artifacts**, not just WSDL
- Provides fully configurable functionality to **classify services**
- Supports **state model functionality** to manage service lifecycles in a shared environment
- **Service notification** to facilitate communication between service consumers and providers
- **Enforces consumer access** to services
- Simple **version management** functionality

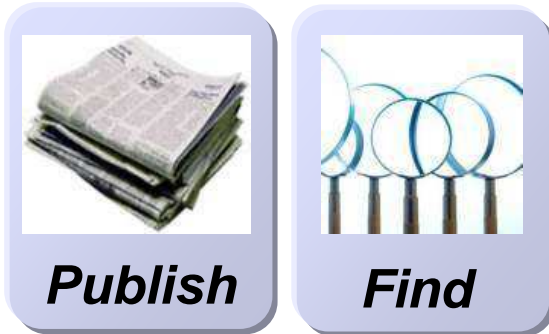


The WebSphere Service Registry and Repository provides value throughout the SOA lifecycle

WebSphere Service Registry and Repository



IBM WebSphere Service Registry and Repository capabilities



Encourage Greater Reuse

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

Publish and find...

- **Services descriptions and capabilities**
- **Service interactions, dependencies and redundancies**
- **Service lifecycle stage**
- **Policies for service usage**

IBM WSRR makes it easy... To publish and find

- Using
 - Web User Interface
 - Eclipse plug-in

?

Service

Service > CreditBeanService_v1.0

Details of the entity with name "CreditBeanService_v1.0" and type "Service".

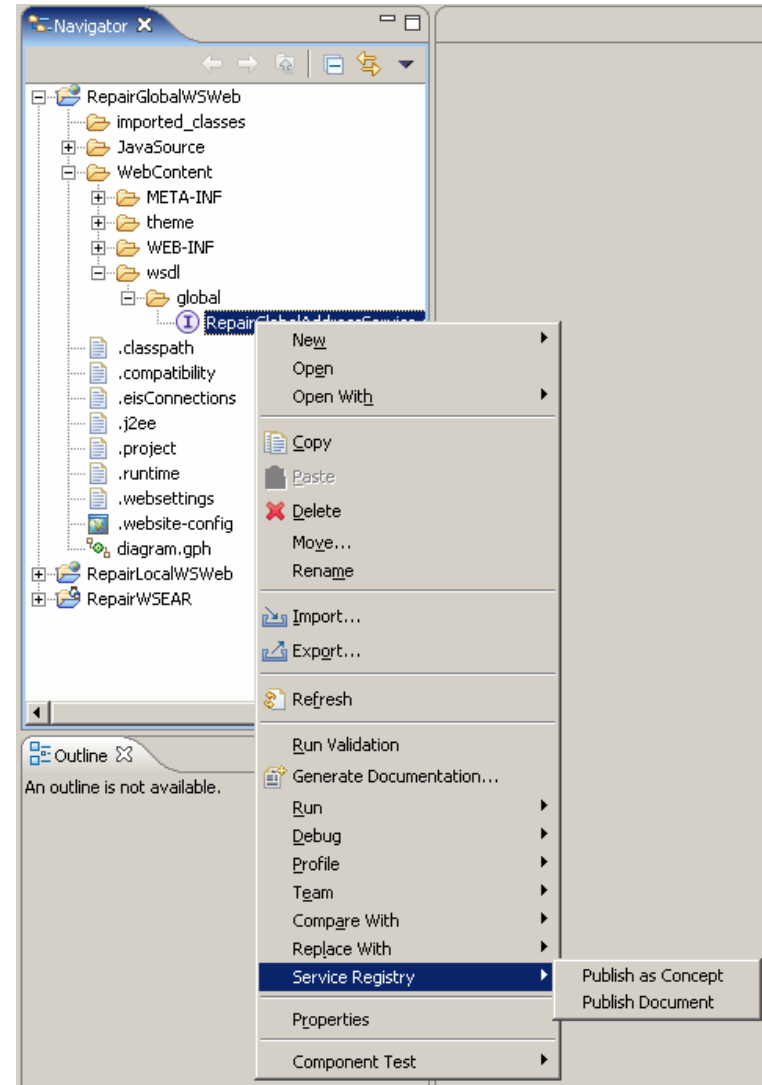
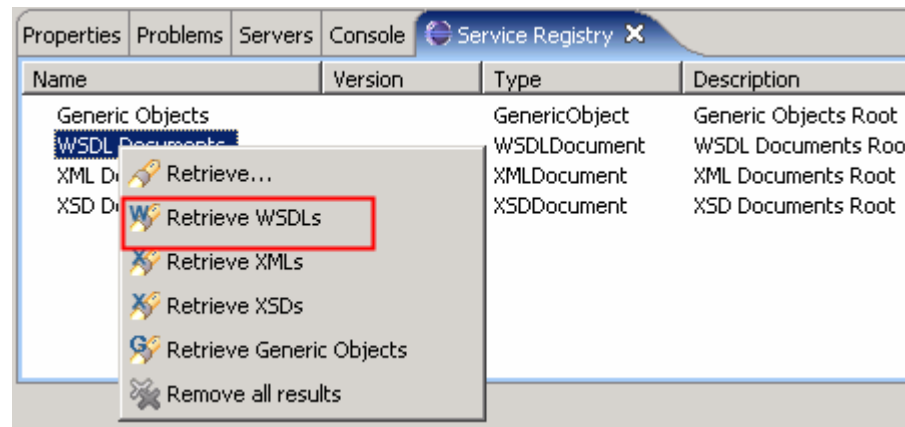
[Details](#) | [Impact Analysis](#) | [Governance](#) | [Policy](#)

[Edit Properties](#) | [Edit Relationships](#) | [Edit Classifications](#)

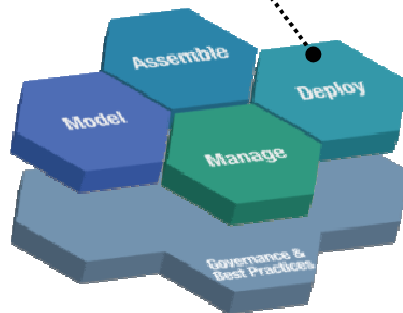
<p>General Properties</p> <p>*Name: <input type="text" value="CreditBeanService_v1.0"/></p> <p>Description: <input type="text"/></p> <p>Namespace: <input type="text"/></p> <p>Owner: <input type="text" value="UNAUTHENTICATED"/></p> <p>Version: <input type="text"/></p> <p>Last modified: <input type="text" value="Tuesday, November 25, 2008 11:00:03 P"/></p> <p>Additional Properties</p> <p><input type="button" value="Back"/></p>	<p>Links</p> <ul style="list-style-type: none"> ■ Graphical View ■ Applied Policies ■ Applied Policy Attachments <p>Relationships</p> <p>testDescription: <input type="text" value="CreditServiceBean_v1.0_Test1"/></p> <p>repairAction: <input type="text" value="CreditBeanService_v1.0_RAOA"/></p> <p>certificate: <input type="text" value="CreditBeanService_v1.0_DataClass
CreditBeanService_v1.0_Rank
CreditBeanService_v1.0_Security"/></p> <p>wsdl: <input type="text" value="CreditBean.wsdl"/></p> <p>reinitializeCommand: <input type="text" value="CreditBeanService_v1.0_RC"/></p> <p>locationInformation: <input type="text" value="None"/></p> <p>binding: <input type="text" value="CreditServiceBean_v1.0_Binding"/></p> <p>dependencies: <input type="text" value="None"/></p> <p>Classifications</p> <p>Service: <input type="text" value="Service"/></p>
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IBM WSRR makes it easy... To publish and find

- Using
 - Web based UI
 - Eclipse plug-in



IBM WebSphere Service Registry and Repository capabilities



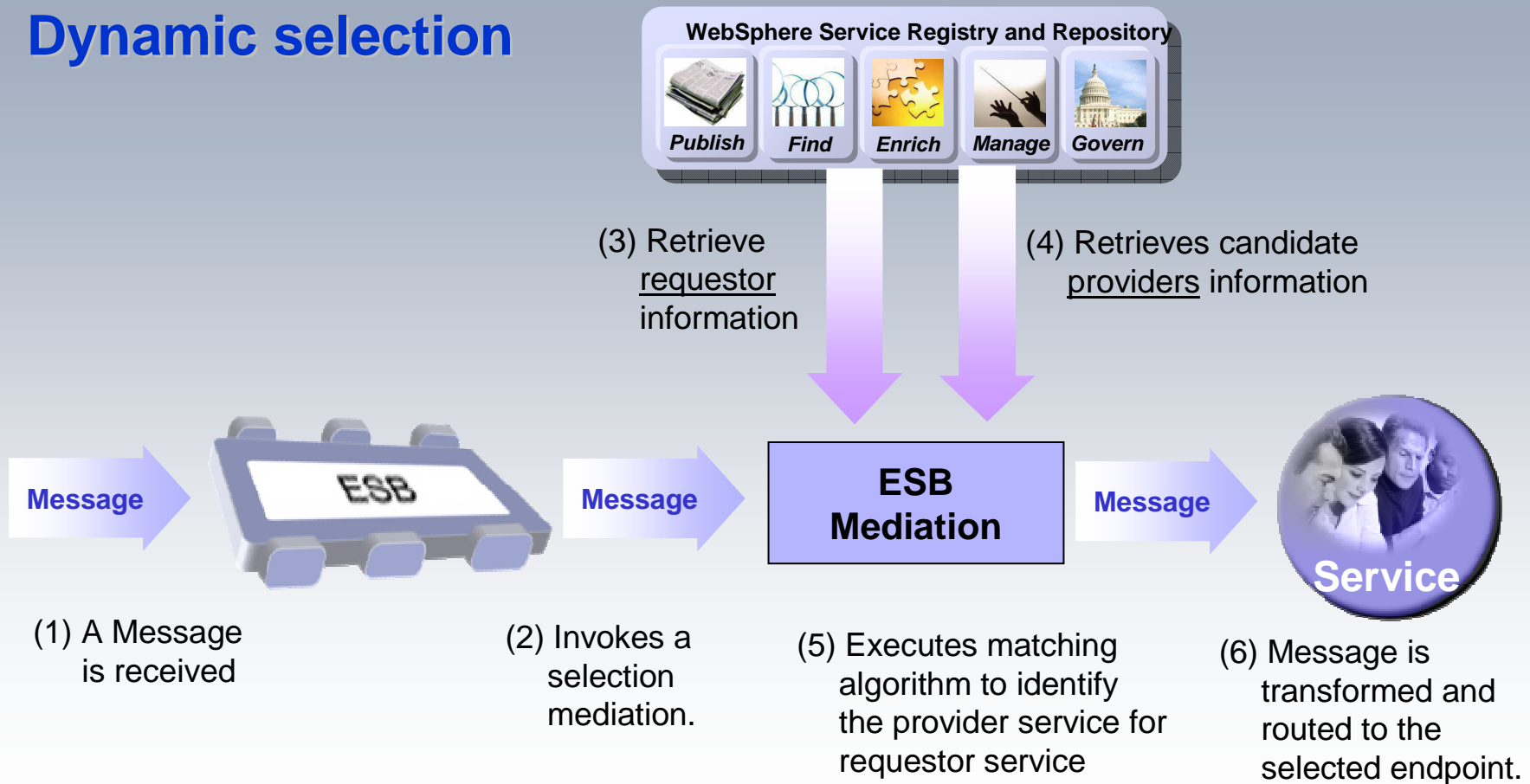
Enhance Connectivity

Enable dynamic and efficient interactions among services at runtime.

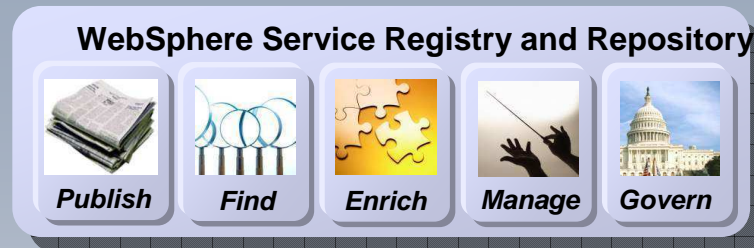
- Manage dynamic and efficient access to services information by runtimes
 - ▶ Service endpoint selection
 - ▶ Service availability management
 - ▶ Policy enforcement
- Identify users of metadata
- Notify users of changes
- Securely transmit service information

How it works: Runtime selection and invocation interactions

Dynamic selection



How it's used: Enhancing Connectivity



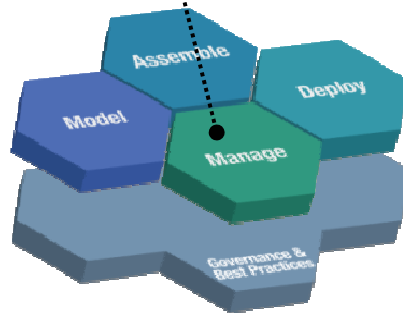
Dynamic Endpoint Selection

- 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

IBM WebSphere Service Registry and Repository



Optimize service usage and performance

- Manage service interactions, dependencies, relationships and redundancies
- Classify services into meaningful groupings based on business objectives
- Manage policies for service usage and governance
- Manage change and versioning of services
- Analyze services usage, history and business impact
- Promote and encourage optimal services usage

IBM WSRR makes it easy... To manage relationships

Graph for: BasicCreditReportService.wsdl

BasicCreditReportService... WSDL Document

CreditReportServiceElec... WSDL Document

Businessitems.xsd XML Schema

BasicCreditReportService... Port

BasicCreditReportService... SOAP Address

BasicCreditReportService... Binding

BasicCreditReportService... SOAP Binding

creditReportServiceElec... Operation

CreditReportServiceElec... Port Type

CustomerApplication XML Complex Type

Name: Businessitems.xsd
Type: XML Schema Definition Document
namespace: http://Businessitems
version:
description:
bsrURI: de65ddde-2ef9-493c.bfb0.272fb327b0ff

Viewing Window

Available Actions

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

Options

Object Display Mode

- All Objects
- Derived Objects
- External Relationships

Graph Display Depth

- Automatic
- 1 Level
- 2 Levels
- 3 Levels
- 4 Levels
- Unlimited

Orientation

- Left to Right
- Top to Bottom

List

History

IBM WSRR makes it easy... To manage relationships

- Through manual definition:

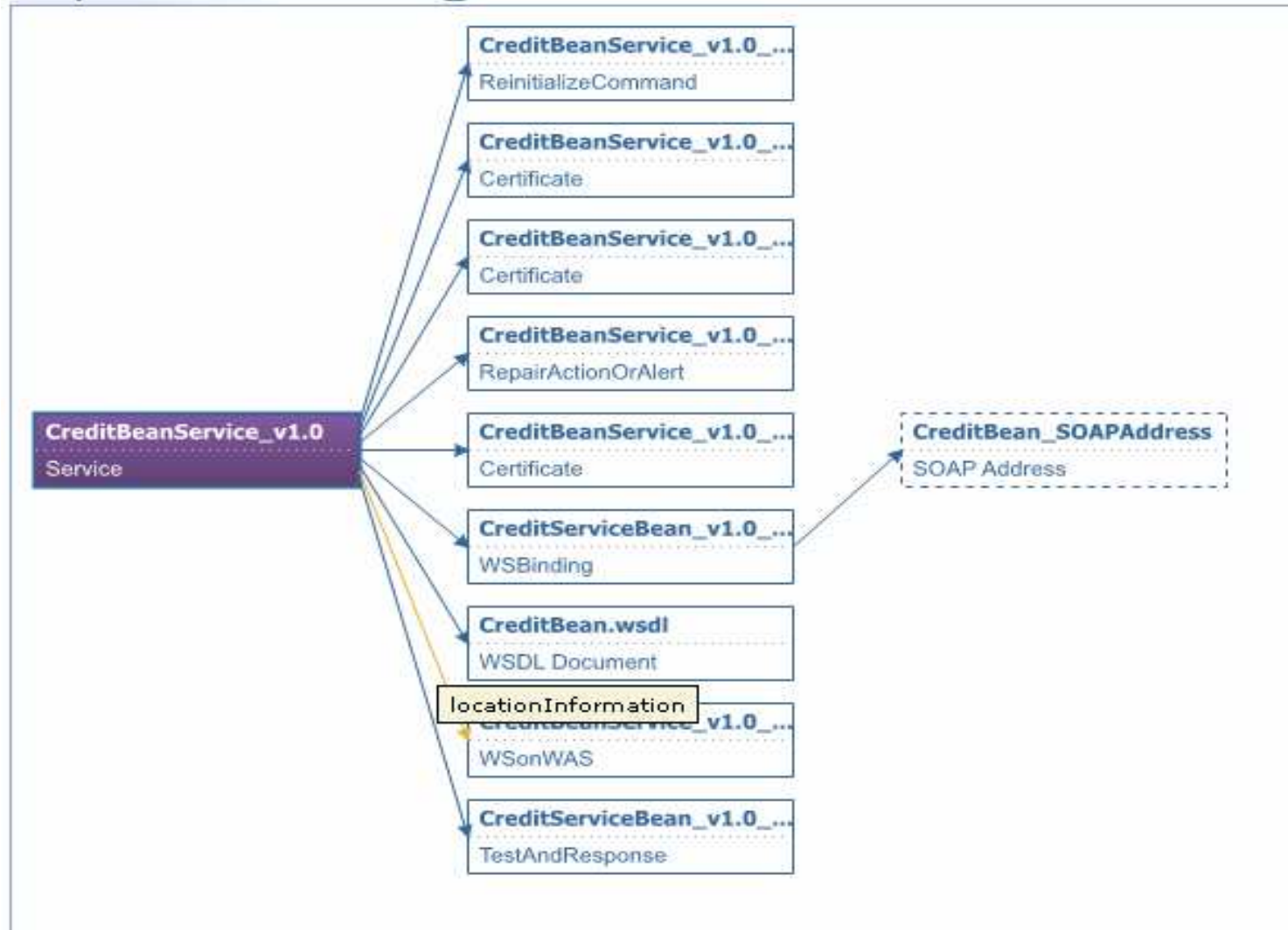
The screenshot shows the 'Service' configuration page in IBM WSRR. The page title is 'Service' with a help icon. Below the title, it says 'Service > New Service' and provides instructions: 'Create a new entity of type: Service. When you have specified all required property values, and relationship targets, click 'Finish''. There are 'Finish' and 'Cancel' buttons. A table lists relationships for 'CreditBeanService_v1.0'. The table has three columns: relationship name, actions, and status. The 'CreditBeanService_v1.0_Security' relationship is highlighted in yellow.

Relationship Name	Actions	Status
CreditBeanService_v1.0 Add Relationship		<input checked="" type="checkbox"/> New
↳ testDescription	Add TestDescription	
	CreditServiceBean_v1.0_Test1 Change Remove	<input checked="" type="checkbox"/> Existing
↳ repairAction	CreditBeanService_v1.0_RAQA Change Remove	<input checked="" type="checkbox"/> Existing
↳ certificate	Add Certificate	
	CreditBeanService_v1.0_DataClass Change Remove	<input checked="" type="checkbox"/> Existing
	CreditBeanService_v1.0_Rank Change Remove	<input checked="" type="checkbox"/> Existing
	CreditBeanService_v1.0_Security Change Remove	<input checked="" type="checkbox"/> Existing

Details

IBM WSRR makes it easy... To manage impact analysis

Graph for: CreditBeanService_v1.0



IBM WSRR makes it easy... To manage classifications

The screenshot displays the IBM WSRR interface for managing classifications. It features two main windows: 'WSDL Document' and 'Classifications'.

WSDL Document Window: Shows details for 'Echo.wSDL'. It includes tabs for 'Details', 'Content', 'Impact Analysis', and 'Governance'.

Classifications Window: Titled 'Classifications', it shows the process of adding classifications to a WSDL document. The breadcrumb path is 'WSDL documents > RepairGlobalAddressService.wSDL > Browse classifications'. Instructions state: 'Navigate the tree on the left to select classifications to be added to the WSDL document: RepairGlobalAddressService.wSDL. Click the Add button to add the selected classifications to the list.'

Classification Selection: A 'Classification tree' on the left lists categories like 'DefaultLifecycle', 'JK Enterprises Taxonomy', 'Visibility', 'External', and 'WSRR Core Ontology'. An 'Add >>>' button is used to move selected items to the 'Classification list' on the right, which currently contains 'External'. A 'Remove' button is also present.

Additional Properties and Relationships: On the right side, there are sections for 'Additional Properties' (including Port types, Bindings, Services, Custom properties) and 'Relationships' (including Imported schemas, Included schemas, Imported WSDLs, Custom relationships, and Classifications). The 'Classifications' link in the Relationships section is circled in red.

Details Table: Below the classification list, there is a table for 'Details for the selected classification'. The table has columns for 'System', 'Name', and 'URI'. The current row shows 'None' in all three columns.

Buttons: Both windows have 'Apply', 'OK', 'Reset', and 'Cancel' buttons at the bottom.

Examples for classifications

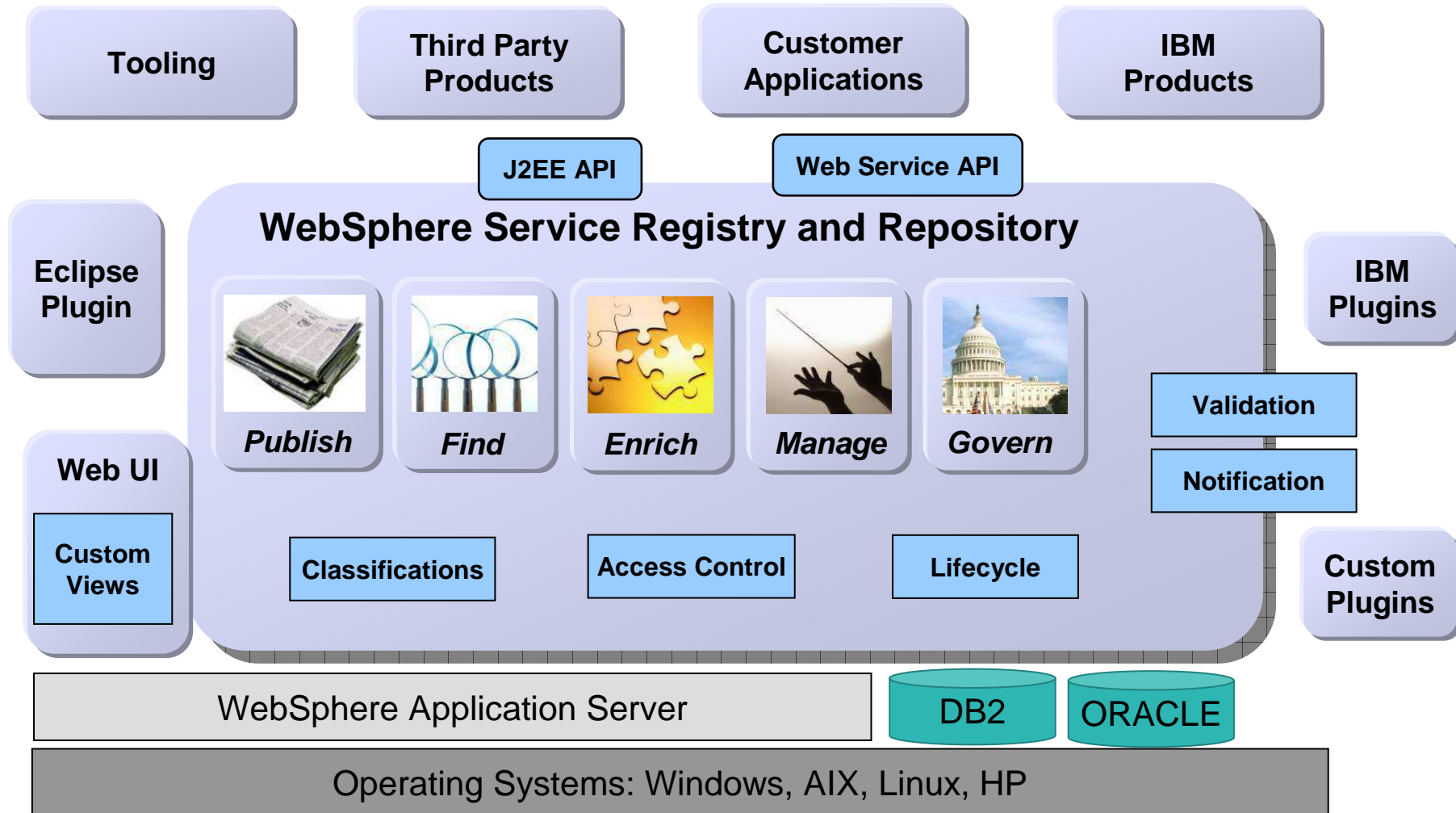
- Related Business Application <- classification system
 - SAP
 - SAP HR
 - SAP BI
 - ...
- Platform <- classification system
 - AIX
 - Windows
 - ...

IBM WSRR makes it easy... To manage notification

- Through Subscription and Notification
 - Email based and JMS based notification
- Extensible notification framework
- Granularity
 - Per entity
 - By classification
 - By operation ... create, update, delete
 - By transition

The screenshot displays the 'Subscriptions' web interface. At the top, there is a breadcrumb trail: 'WSDL documents > Create a subscription'. Below this, the text 'Details of a subscription.' is followed by a 'Details' tab. The form contains several fields: 'Name' with the value 'Low Touch Claim Service Update', 'Description' with 'hen the low touch claim service is updated', 'Owner' (empty), and 'E-mail address' with 'sachdeva@us.ibm.com'. There is an 'Entity list' dropdown menu showing 'LowTouchClaimProcessProductionService.wsdl (WSDL document)'. Below that is a 'Classifications' dropdown menu with a 'Choose' button. The 'Operations' section has four checkboxes: 'Create' (unchecked), 'Update' (checked), 'Delete' (unchecked), and 'Transition' (unchecked). The 'Transitions' section has a dropdown menu with options: 'Fund', 'Activate', 'Provision', 'Test', and 'Deactivate'. At the bottom, there is a 'Preferred e-mail language' dropdown menu set to 'English'. Finally, there are four buttons: 'Apply', 'OK', 'Reset', and 'Cancel'.

WebSphere Service Registry & Repository architecture



NEW FEATURES

Web UI: Faceted search

- Start with a simple search and refine it to home in on what you are looking for by applying the filters
- Makes it easy for the customers to find what they are looking for

The screenshots illustrate the faceted search process in the WebSphere UI:

- Initial Search:** A search for "Messages" returns 26 results. The results table lists various WSDL documents and services.
- Filtering:** The user applies filters for "Port" and "ProductionEndpoint". The results are refined to 1 item: "PremiumCreditReportServiceElectronicPort".
- Further Refinement:** The user applies additional filters, resulting in 2 items: "BasicCreditReportServiceElectronicPort" and "PremiumCreditReportServiceElectronicPort".

The "Query results" window shows the following table for the final search:

Name	Graph	Description	Object Type
BasicCreditReportServiceElectronicPort			port
PremiumCreditReportServiceElectronicPort			port
Total: 2			

The "Applied Filters" section shows:

- Port
- Endpoint > ProductionEndpoint

The "Save this Search" section includes a "Name" input field and a "Save" button.

Web UI: Auto Suggest

- As you start typing, UI queries objects by name and displays results with count of each value that matches what you have typed

WebSphere Service Registry and Repository for the users to find what they are looking for

The screenshot shows the WebSphere Service Registry and Repository web interface. At the top, there is a navigation bar with 'WebSphere Service Registry and Repository' and a 'Perspective: Administrator' dropdown. Below this is a search bar with the text 'get_quote' entered and a 'Go' button. A dropdown menu is open, displaying a list of search results with their respective counts:

Search Result	Count
get_quote	2 results
get_all_attribute_declarations	1 result
get_all_bindings	1 result
get_all_complex_type_definitions	1 result
get_all_element_declarations	1 result
get_all_generic_objects	1 result
get_all_logical_element_ids_for_physical_document	1 result
get_all_logical_elements_for_physical_document	1 result
get_all_messages	1 result
get_all_operations	1 result
...	

Below the search bar, there is a 'Load Documents' section. It contains a description: 'This facility enables you to load one or more documents, with the option to load a group. Specify a file to load, select a document type and, optionally, enter a version.' Below this, there are two radio buttons for 'Local file system' (selected) and 'Remote file location'. The 'Local file system' option has a 'Specify path' field and a 'Browse...' button. The 'Remote file location' option has a 'Specify URL' field. At the bottom, there is a 'Document type' dropdown menu set to 'WSDL'.

Web UI: Save and Run queries

- Now you can save your queries and re-run them later
- Helps the users reuse queries

Query results

Messages

The query returned 13 results.

Query Results
This is the collection of results for the query.

Preferences

Name	Graph	Description	Object Type
creditReportServiceElectronic			operation
creditReportServiceElectronic			operation
creditReportServiceElectronic			operation
creditReportServiceElectronic			XML element
CreditReportServiceElectronic			port type
CreditReportServiceElectronicInterface.wsdl			WSDL document
creditReportServiceElectronicRequest			
creditReportServiceElectronicRequest			
creditReportServiceElectronicRequest			
creditReportServiceElectronicResponse			
creditReportServiceElectronicResponse			
creditReportServiceElectronicResponse			
creditReportServiceElectronicResponse			XML element

Total: 13

Save this Search

Name

Property Query

Query Results > getCreditEntities

Details of the getCreditEntities property query.

Details | Impact Analysis

General Properties	Additional Properties
Name <input type="text" value="getCreditEntities"/>	<input type="checkbox"/> Properties
Description <input type="text"/>	Relationships
Namespace <input type="text"/>	<input type="checkbox"/> Policies
Owner <input type="text"/>	<input type="checkbox"/> Policy Attachments
Version <input type="text"/>	Actions
Last modified Monday, October 15, 2007 1:23:43 AM BST	<input type="button" value="Run"/>
Query expression <input type="text" value="//*[matches(@name,'credit.*', 'i')]"/>	

Modification Plug-in

- Helps Clients further extend WSRR
- Invoked between Validation and Notification plug-ins i.e. Validator -> Modifier -> Notifier
- Invoked within the transaction
- Modifier interface is similar to the Validator interface
- Examples
 - WSCorrelatorModifer – Reconciles multiple WSDL documents

Meta-data modelling – Business Model Templates

- Alternative to template mechanism in WSRR 6.0
- Models are represented in OWL
- User models can now have strongly-typed properties and relationships
- User models can now specify cardinalities on relationships

V6.2 UI features

- Handles custom property types:
 - Boolean type property -> checkbox
 - Enum type property -> drop down list from enum values

Service ?

Service > **New Service**

Create a new entity of type: Service. When you have specified all required property values, and relationship targets, click 'Finish'.

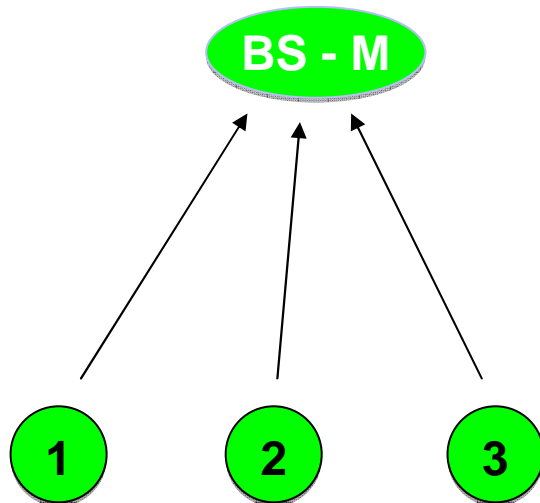
CreditBeanService_v1.0 Add Relationship		<input checked="" type="checkbox"/> New
↳ testDescription	Add TestDescription	
	CreditServiceBean_v1.0_Test1 Change Remove	<input checked="" type="checkbox"/> Existing
↳ repairAction	CreditBeanService_v1.0_RA0A Change Remove	<input checked="" type="checkbox"/> Existing
↳ certificate	Add Certificate	
	CreditBeanService_v1.0_DataClass Change Remove	<input checked="" type="checkbox"/> Existing
	CreditBeanService_v1.0_Rank Change Remove	<input checked="" type="checkbox"/> Existing
	CreditBeanService_v1.0_Security Change Remove	<input checked="" type="checkbox"/> Existing

Details

CASE STUDY

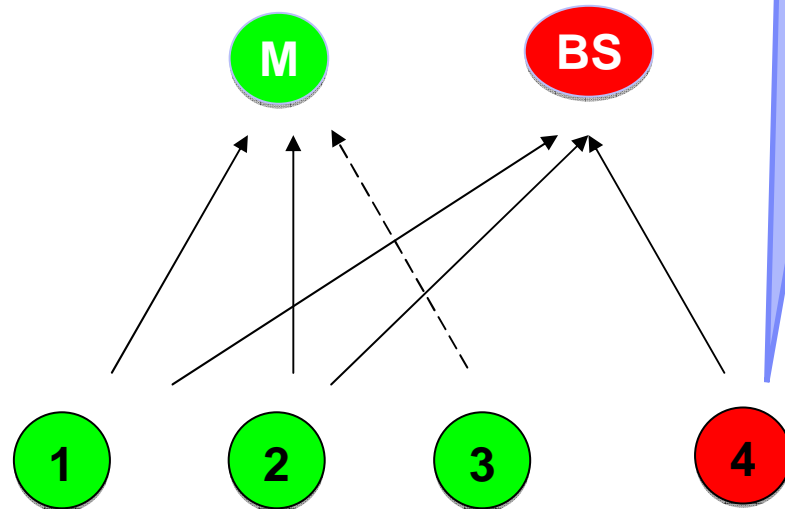
Monitoring in a SOA context

Business service based on elementary services



Can be monitored

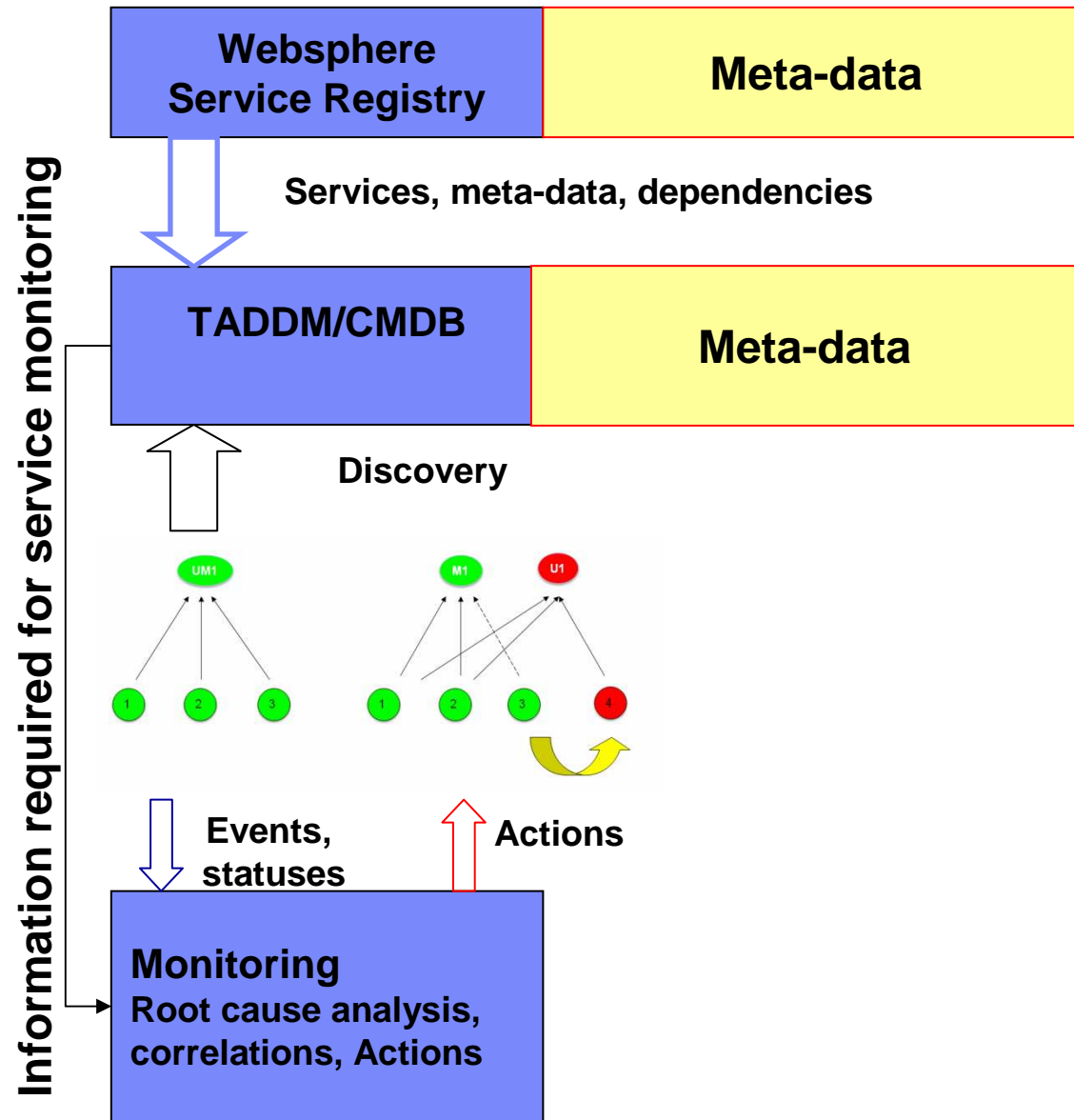
Substitution of an elementary service with another one



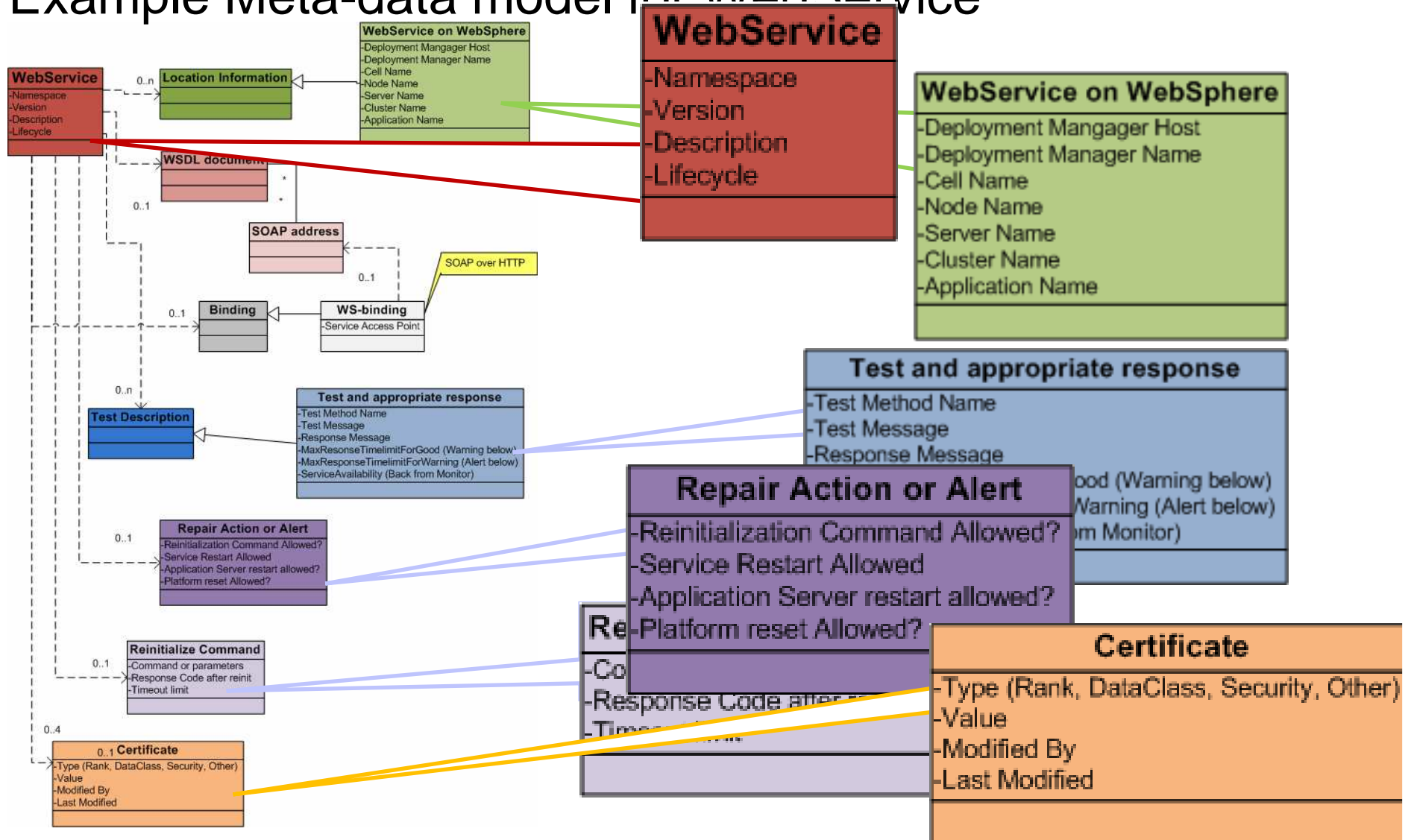
Monitoring application has no data

Meta-data is required for monitor

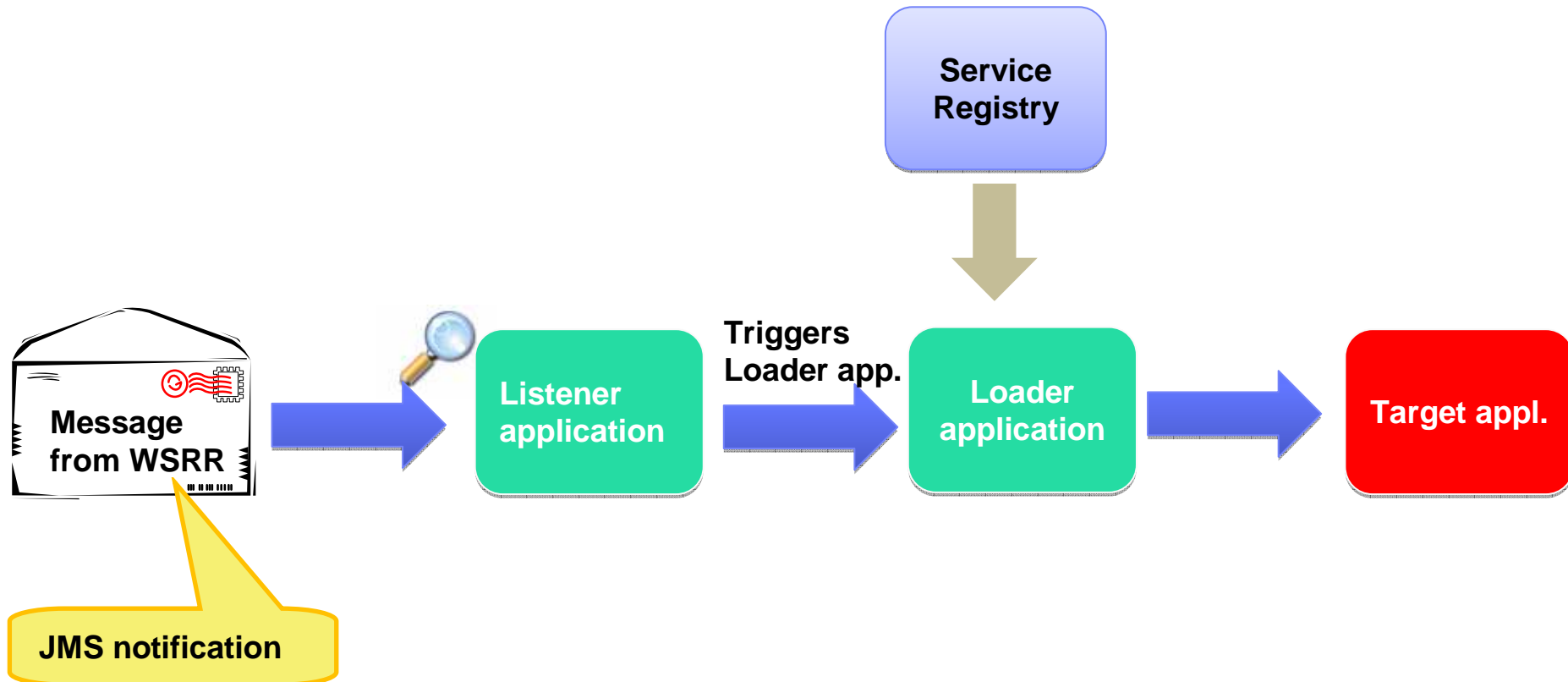
substitution



Example Meta-data model for WebService



Example integration scenario based on Notification



Questions

