

WebSphere Software

IBM WebSphere Service Registry and Repository

Technical Overview

SOA on your terms and our expertise

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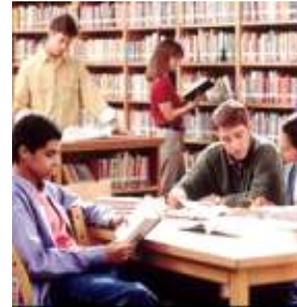
Agenda

- Registry and Repository ... what are these?
- Brief Introduction
- WSRR and the SOA Lifecycle
- Capabilities
 - Publish and Find
 - Enrich
 - Manage
 - Govern
 - Extend
- WSRR Architecture
- WSRR Roadmap and Early Access Program

What is a registry ... a repository?

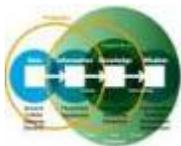


Registry?
Contains Service
Metadata



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**

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

WebSphere Service Registry & Repository Value

- **Promote reuse and eliminate redundancies**
 - Publish and find services and related metadata through all stages of SOA
 - Integration and federation with other standard registries and repositories
- **Enrich SOA runtime interaction**
 - Enable optimized access to service metadata
 - Manage service interactions and policies
- **Better control of SOA with governance**
 - Facilitate service lifecycle with guards for state transitions
 - Analyze impacts of service introduction, deletion or alteration by maintaining relationships
 - Manage role based access to services, changes, versioning and service retirement

IBM WebSphere Service Registry and Repository

WebSphere Service Registry and Repository



Publish



Find



Enrich



Manage

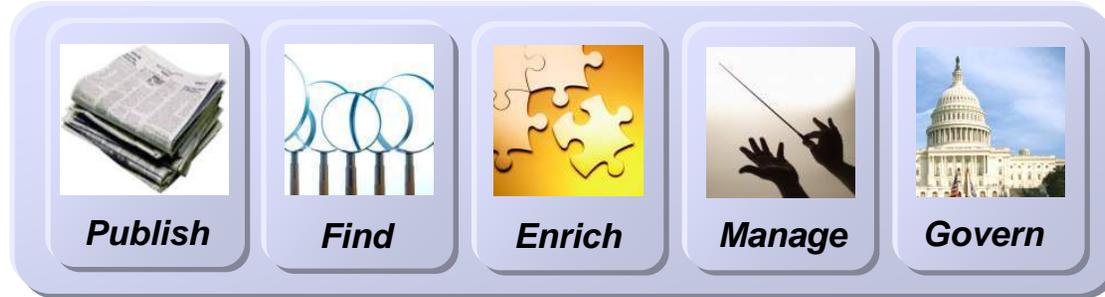


Govern

WebSphere Service Registry and Repository V6.0 is an industrial-strength tool that helps you achieve more business value from your SOA by enabling better management and governance of your services. Through its robust registry and repository capabilities and its tight integration with IBM SOA Foundation, WebSphere Service Registry and Repository can be an essential foundational component of your SOA implementation.

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

WebSphere Service Registry and Repository



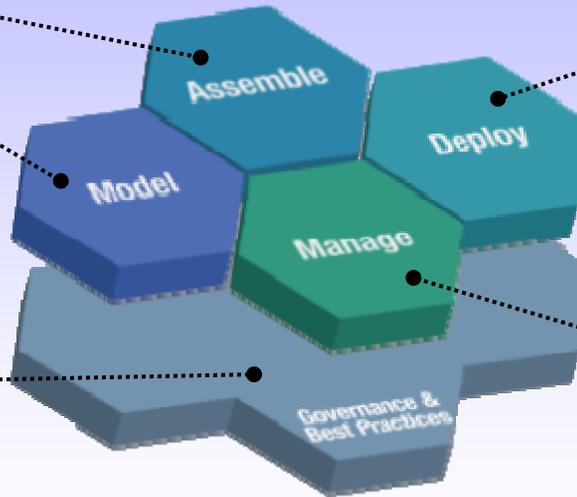
Encourage Reuse

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



Enable Governance

Govern services throughout the service lifecycle



Enhance Connectivity

Enable dynamic and efficient interactions between services at runtime.



Help optimize service performance

Enable enforcement of policies. Impact analysis

IBM WebSphere Service Registry and Repository Capabilities

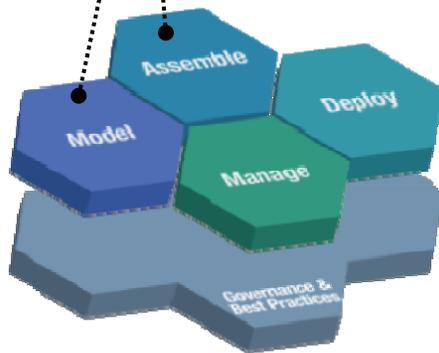


Encourage Greater Reuse

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**



WebSphere Service Registry & Repository Content

Service Description Entities

Physical Documents

- WSDL
- XSD
- SCDL
- WS-Policy
- XML – *User-defined Documents*
-

Logical derivations

- | | |
|-------------|------------|
| ▪ Interface | ▪ Service |
| ▪ Operation | ▪ Binding |
| ▪ Message | ▪ Endpoint |
| ▪ Type | ▪ |

Concepts

- *User-defined by classification*
- Business Application
- Business Process
- Governed Collection
- External reference

Metadata applies to all entities

Service Description Metadata

Properties

- name
- namespace
- version
- description
- modifiedDate

- name
- namespace
- *User-defined*
- *metrics*

- *User-defined*
- owner
- *externalURL*

Relationships

- imports
- includes
- predecessor
- *User-defined*

- derivedFrom
- operations
- messages
- *User-defined*

- *User-defined*
- *dependantServices*
- *serviceInterface*
- *governedEntities*
- *policies*
-

Classifications

- *User-defined States*
 - *Created*
 - *Approved*
 - *Published*
 - *Operational*

- *User-defined Environments*
 - *Development*
 - *Test*
 - *Approval*
 - *Production*

- *User-defined Concepts*
 - *Application*
 - *Process*
 - *Capability*

- *Standard Ontologies*
 - NAICS
 - UNSPSC
 - ISO3166

IBM WebSphere Service Registry and Repository Makes It Easy..... To Publish using Web UI

WSDL Document

[WSDL documents](#) > **Echo.wSDL**

Details of the Echo.wSDL WSDL Document.

Details | **Content** | Impact Analysis | Governance

General Properties

Name:

Location:

Additional Properties

- [Port types](#)
- [Bindings](#)
- [Services](#)
- **[Custom properties](#)**

Relationships

- [Imported schemas](#)
- [Included schemas](#)
- [Imported WSDLs](#)
- [Custom relationships](#)
- [Classifications](#)

Apply | OK | Reset | Cancel

Preparing to load the document

Specify the file to load.

Path to the service document.

Properties

[WSDL documents](#) > [RepairGlobalAddressService.wSDL](#) > [Custom Properties](#) > New

Details of a property.

Details

General Properties

Key:

Value:

Apply | OK | Reset | Cancel

OK

IBM WebSphere Service Registry and Repository Makes It Easy..... To Find using Web UI

Search

Queries

Use this wizard to run a query.

→ Enter details

Summary

Enter details

Enter details for the query. Empty fields are not used in the query.

Query: WSDL Documents

▾

Name

Namespace

Property key

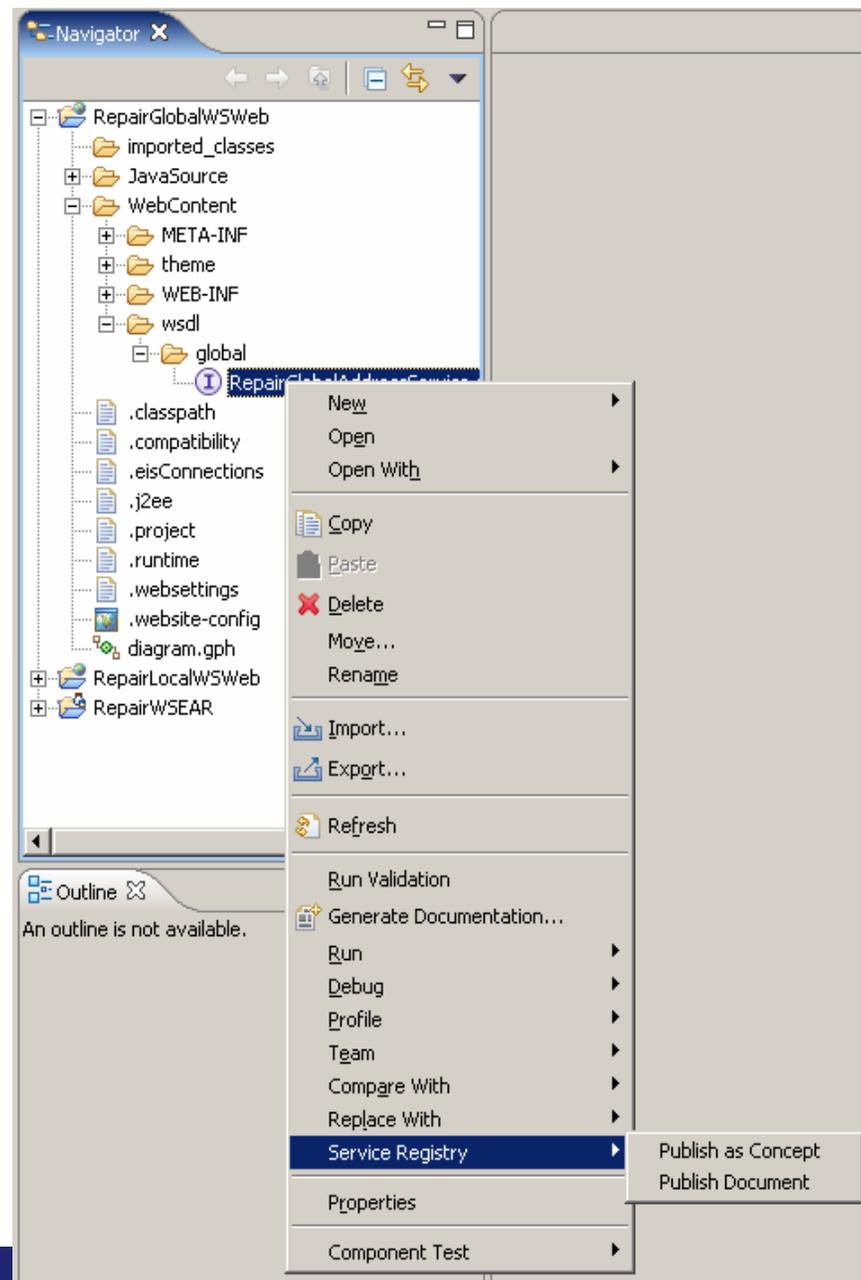
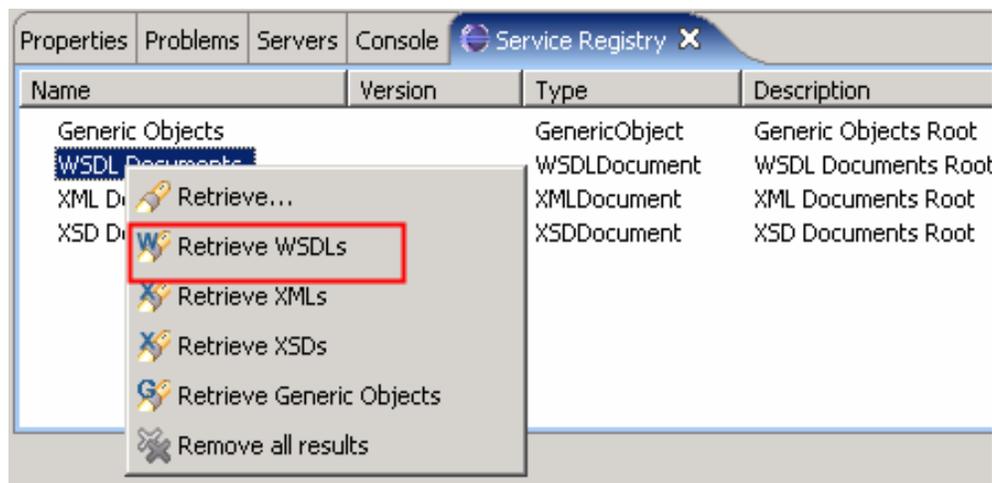
Property value

Classifications

Match children

Published

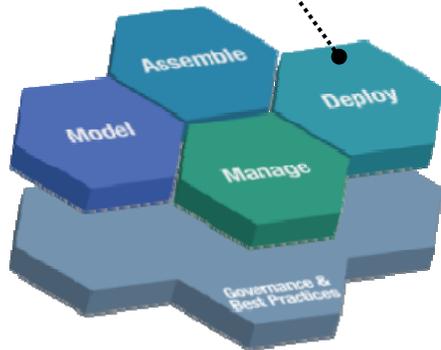
IBM WebSphere Service Registry and Repository Makes It Easy..... To Publish and Find using Eclipse Plug-In



CICS Transaction Server for z/OS integration with WSRR

- SupportPac CA1N enables CICS to publish + read the Web services interfaces for CICS programs to WSRR
 - CICS customers require WSRR to:
 - store all Web services and XML documents in a central location,
 - add meta-data to Web services and relationships between Web services,
 - refine WSDL documents,
 - search for and extract WSDL documents,
 - manage both the lifecycle and governance of WSDL documents,
- SupportPac includes:
 - a CICS transaction to publish a WSDL document to WSRR for each of your CICS programs that are Web service providers,
 - a z/OS batch utility to publish a WSDL document to WSRR, and
 - a z/OS batch utility to read a WSDL document from WSRR.
- Availability
 - September 29, 2006
 - Available at no charge from ibm.com/software/htp/cics/tserver/support/ then link to SupportPacs
 - Unsupported, but updates planned and will be based on customer feedback

IBM WebSphere Service Registry and Repository Capabilities



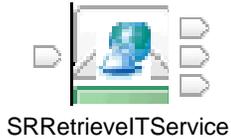
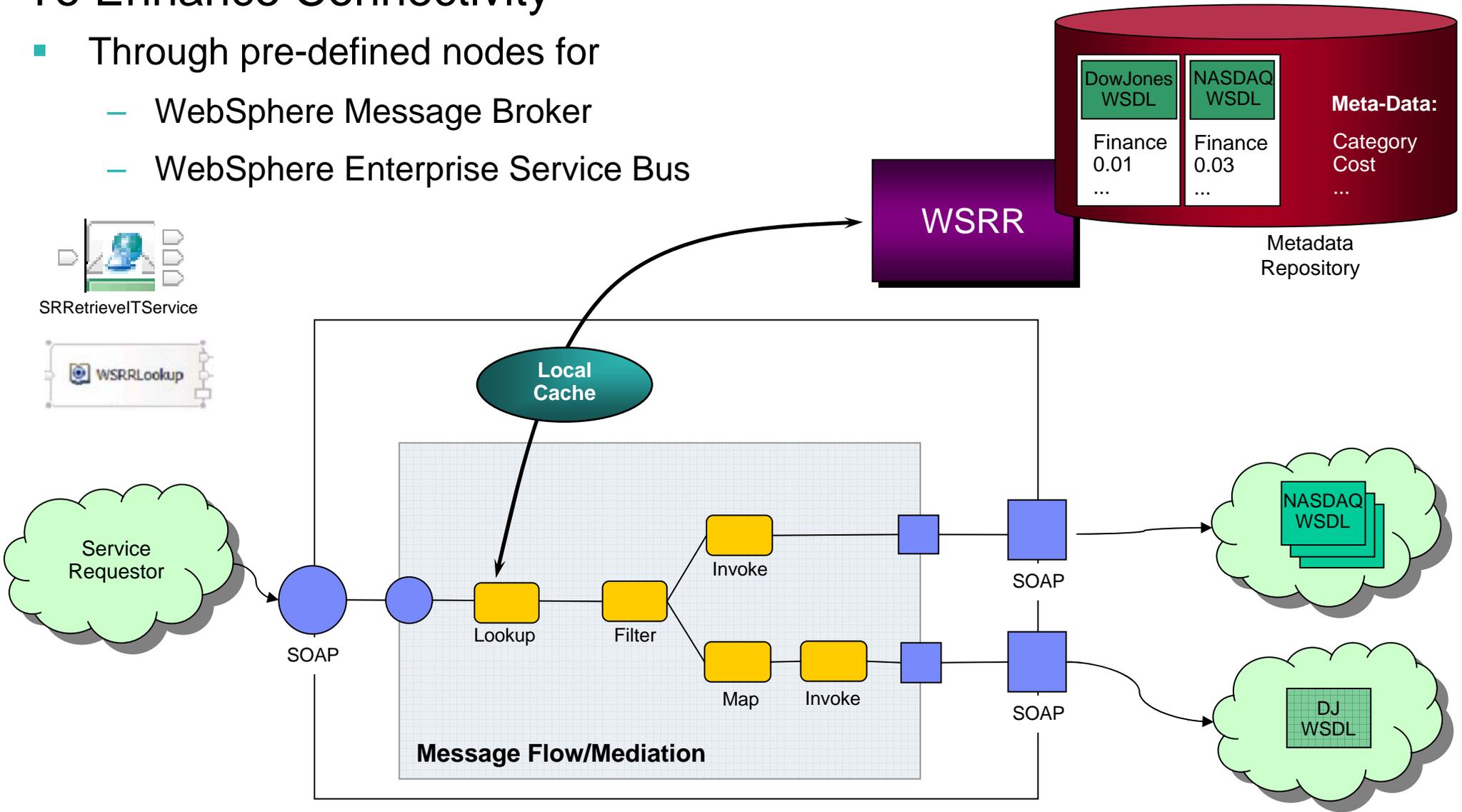
Enhance Connectivity

Enable dynamic and efficient interactions among services at runtime.

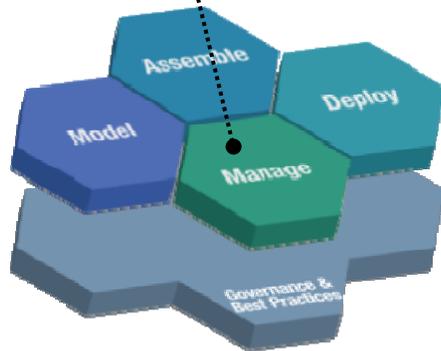
- **Manage dynamic and efficient access to services information by runtimes**
 - **Service endpoint selection**
 - **Service availability management**
 - **Policy enforcement**
- **Identify users of metadata**
- **Notify users of changes**
- **Securely transmit service information**

IBM WebSphere Service Registry and Repository Makes It Easy..... To Enhance Connectivity

- Through pre-defined nodes for
 - WebSphere Message Broker
 - WebSphere Enterprise Service Bus



IBM WebSphere Service Registry and Repository



Help 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 WebSphere Service Registry and Repository Makes It Easy..... To Manage relationships

- Through automatic discovery of relationships

- Imported WSDLs
- Included schemas
- SCA

Built-in Relationships

```

Derived entity reference to its source document
WSDL or XSD document to imported XSD document
WSDL or XSD document to included XSD document
WSDL or XSD document to redefined XSD document
WSDL document to imported WSDL document
Entity reference to classification
Entity relationship to predecessor
Non-derived entity reference to its template
WSDL service to WSDL port
WSDL port to WSDL binding
WSDL port to SOAP address
WSDL binding to SOAP binding
WSDL binding to WSDL port type
WSDL port type to WSDL operation
WSDL operation to fault WSDL message
WSDL operation to input WSDL message
WSDL operation to output WSDL message
WSDL message to WSDL part
WSDL part to XSD type
WSDL part to XSD element declaration
SCA module entity reference to SCA import document
SCA module entity reference to SCA export document
SCA module entity reference to XML schema definition document
SCA module entity reference to WSDL document
SCA module entity reference to SCA module document
SCA module to SCA import entity
SCA module to SCA export entity
SCA import or export entity reference to SCA interface
SCA import entity to SCA import binding
SCA export entity to SCA export binding
SCA import binding entity reference to SCA export binding entity
SCA web service import binding to WSDL port
SCA WSDL port type reference to WSDL port type
XSD complex type reference to a local attribute
  
```

IBM WebSphere Service Registry and Repository Makes It Easy..... To Manage relationships...

- Through manual definition:

The screenshot illustrates the manual definition of a relationship in the IBM WebSphere Service Registry and Repository. It features several overlapping windows:

- RepairAddressService**: A box pointing to the 'Create a relationship' step in the wizard.
- RepairLocalAddress Service**: A box pointing to the 'Select target entities' step in the wizard.
- RepairGlobalAddress Service**: A box pointing to the 'Select query' step in the wizard.
- Concept Details**: A window titled 'Concept' showing details for the 'Repair Address Service' concept. It includes tabs for 'Details', 'Impact Analysis', and 'Governance'. The 'Details' tab is active, showing 'General Properties' (Name: Repair Address Service, Description: repairs the customer address, Namespace: http://www.jkenterprises.com, Owner: UNAUTHENTICATED, Version: 1.0, Last modified: Wednesday, January 24, 2007 6:31:35 PM) and 'Additional Properties' (Custom properties, Relationships: Custom relationships, Classifications).

IBM WebSphere Service Registry and Repository Makes It Easy..... To Manage Impact Analysis

WSDL Document

[WSDL documents](#) > [RepairGlobalAddressService.wsdl](#)

Details of the RepairGlobalAddressService.wsdl WSDL document.

[Details](#)
[Content](#)
[Impact Analysis](#)
[Governance](#)

Impact analysis

Impact analysis results

[Concepts](#) > [Repair Address](#) > [Impact analysis results](#)

This is the collection of entities that may be impacted by changes to the entity concept [Repair Address](#) .

Preferences

Name	Description	Object Type	Version	Impact Relationship	Relationship Name	Originating Object
Repair Local Address Service	Updates the customer local address	concept	1.0	Depends on	serviceDependencies	Repair Address
Repair Global Address Service	Updates the customer global address	concept	1.0	Depends on	serviceDependencies	Repair Address
Businessitems.xsd	JK Enterprises business objects	XML schema definition document	1.0	Depends on	serviceDependencies	Repair Address

Total: 3

Entity reference to classification
 Entity relationship to predecessor
 Non-derived entity reference to its template
 WSDL service to WSDL port
 WSDL port to WSDL binding
 WSDL port to SOAP address
 WSDL binding to SOAP binding

IBM WebSphere Service Registry and Repository Makes It Easy..... To Manage Classifications

Classifications

[WSDL documents](#) > [RepairGlobalAddressService.wsdl](#) > **Browse classifications**

Navigate the tree on the left to select classifications to be added to the WSDL document: RepairGlobalAddressService.wsdl
Add button to add the selected classifications to the list.

Preferences

Select | **Classification tree**

- DefaultLifecycle
- JK Enterprises Taxonomy
- MB Nodes Concept Types
 - Endpoint
 - JMSEndpoint
 - MQEndpoint
 - URLEndpoint
 - Mediation
 - Router
 - Transcoder
 - Routing
- WSRR Core Ontology
- WSRR Sample Taxonomy
 - Concept
 - Application
 - Business Object
 - Endpoint
 - Interface
 - MessageSchema
 - Policy
 - Process
 - Resource
 - Service
 - ServiceDefinition
 - ServiceImplementation
 - ServiceInterface
 - Environment
 - Development
 - Production
 - Test

Classification list

ServiceDefinition

Development

JMSEndpoint

WSDL Document.

Additional Properties

- [Port types](#)
- [Bindings](#)
- [Services](#)
- [Custom properties](#)

Relationships

- [Imported schemas](#)
- [Included schemas](#)
- [Imported WSDLs](#)
- [Custom relationships](#)
 - [Classifications](#)

IBM WebSphere Service Registry and Repository 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

Subscriptions

[WSDL documents](#) > Create a subscription

Details of a subscription.

Details

Name
Low Touch Claim Service Update

Description
When the low touch claim service is updated

Owner

E-mail address
sachdeva@us.ibm.com

Entity list
LowTouchClaimProcessProductionService.wsdl (WSDL document)

Classifications

Choose

Operations
 Create Update Delete Transition

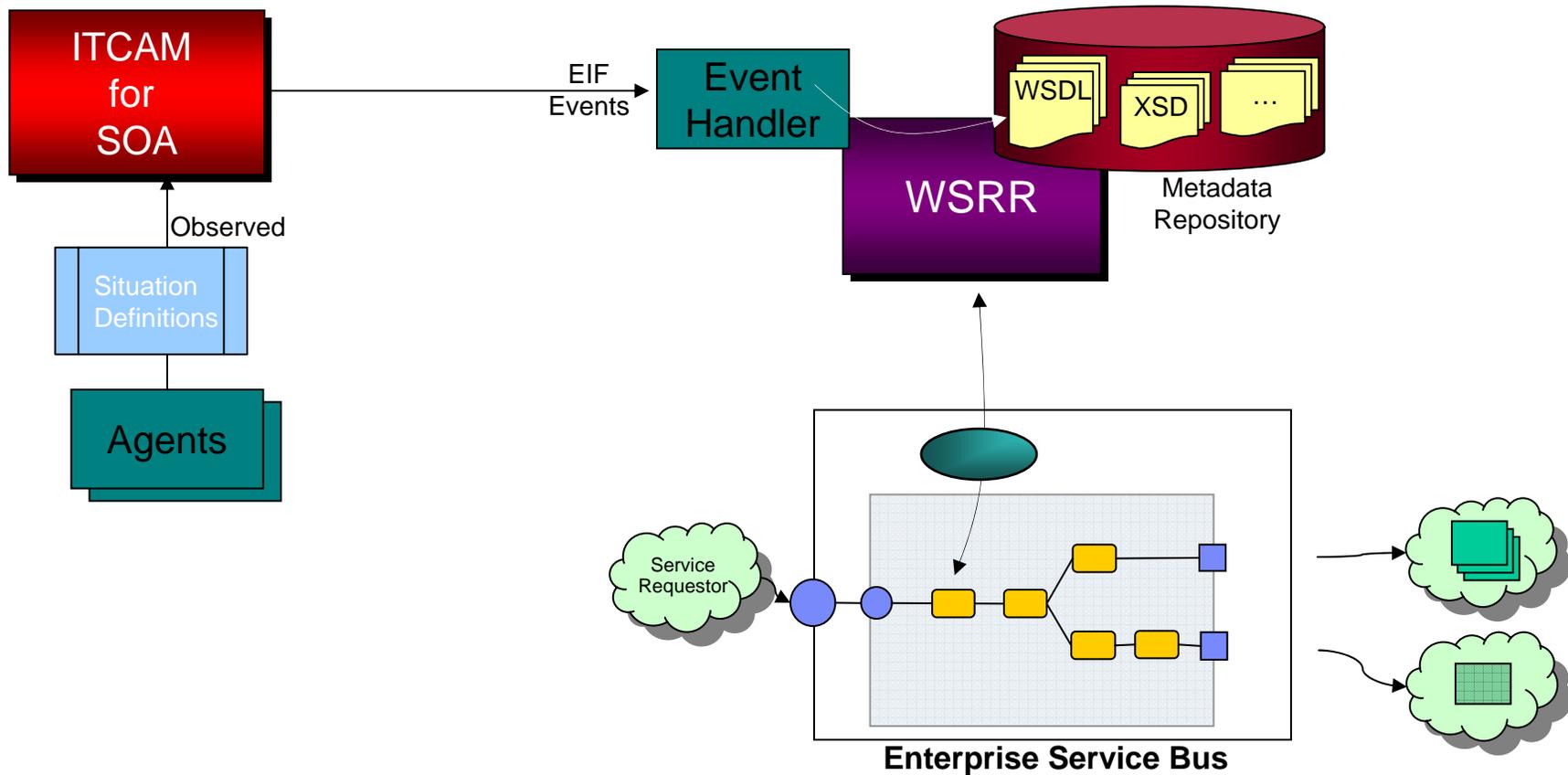
Transitions
Fund
Activate
Provision
Test
Deactivate

Preferred e-mail language
English

Apply OK Reset Cancel

IBM WebSphere Service Registry and Repository Makes It Easy..... To Manage

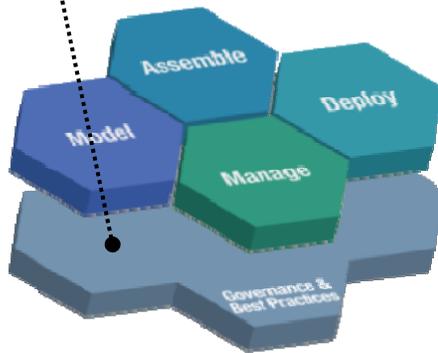
- Through integration with ITCAM for SOA



IBM WebSphere Service Registry and Repository



Govern



Enable Governance

Govern services throughout the service lifecycle

- Infrastructure to help organize and discover services assets, govern access and monitor service vitality
- Classification of services by lifecycle phase
- Policies for publishing, using and retiring services
- Roles based access

IBM WebSphere Service Registry and Repository Makes It Easy..... To Govern

The screenshot shows a web browser window titled "Service" displaying the configuration page for the "Repair Local Address Service". The page has a breadcrumb trail: **Concepts > Repair Local Address Service**. Below this, it says "Details of the Repair Local Address Service Service." There are three tabs: "Details" (selected), "Impact Analysis", and "Governance".

The main content area is divided into two sections:

- Governance Status:** Contains a "Governance State" field with the value "Created". Below it is a "State Transitions" section with "Available state transitions" and a dropdown menu currently set to "Plan". A "Transition" button is visible below the dropdown. At the bottom of this section is a "Remove Governance" button.
- Additional Properties:** Contains a single property: "Governed objects".

On the left side, there is a sidebar with a "WSDL Document" section containing a "WSDL documents >" link and "Details of the Reque" text. Below that are "Details" and "Content" buttons. Further down is a "Governance Stat" section with text: "This object is no the button to m", "Initial state tra", "Default transit", and a "Make Govern" button.

IBM WebSphere Service Registry and Repository Makes It Easy..... To Extend

■ T ■ T ■ T ■ T

Shared Libraries > New

Specifies a container-wide shared library that can be used by deployed applications.

Configuration

General Properties

* Name
SampleWSRRPlug

Description
An example WSRR shared library

* Classpath
C:\WSRR\Plugins\

Native Library Path

Apply OK Reset Cancel

Preparing to load the document

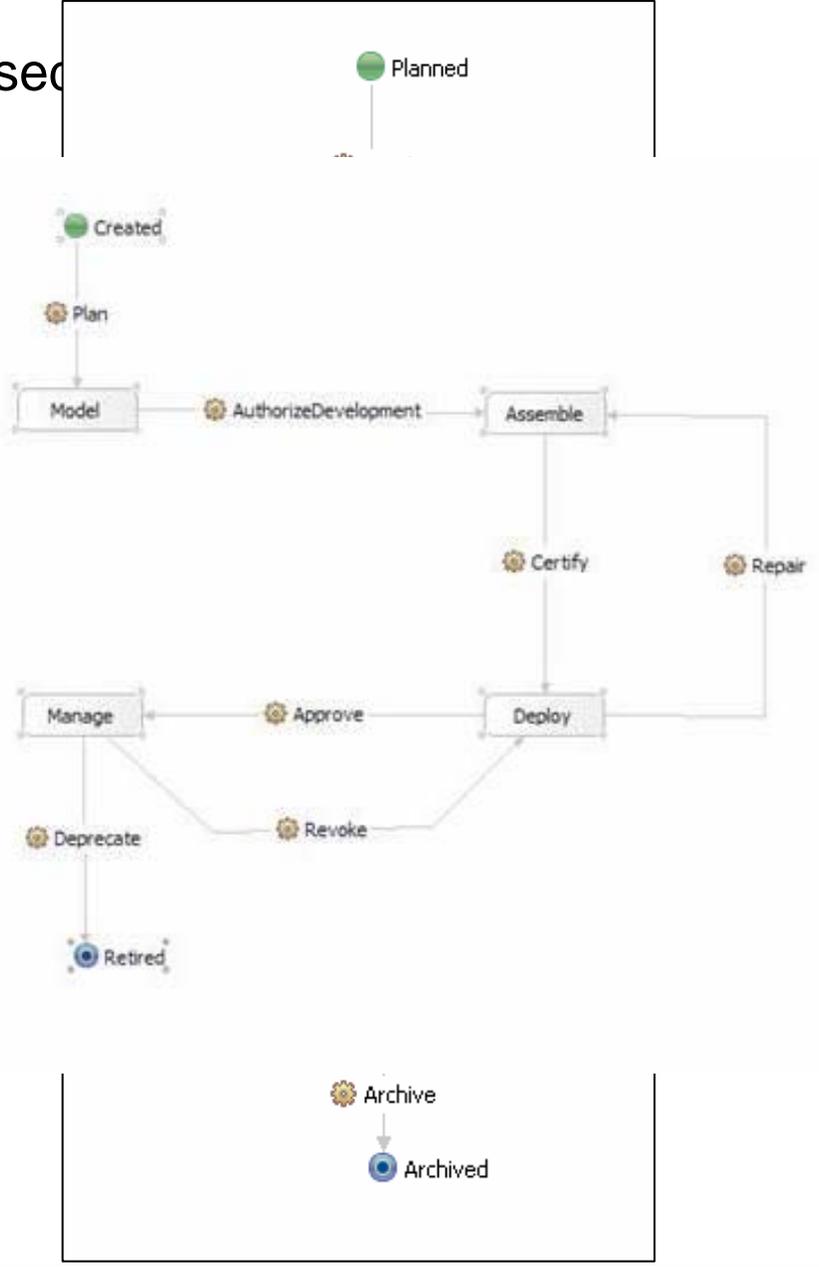
Specify the Classification system file to load.

Path to the service document.

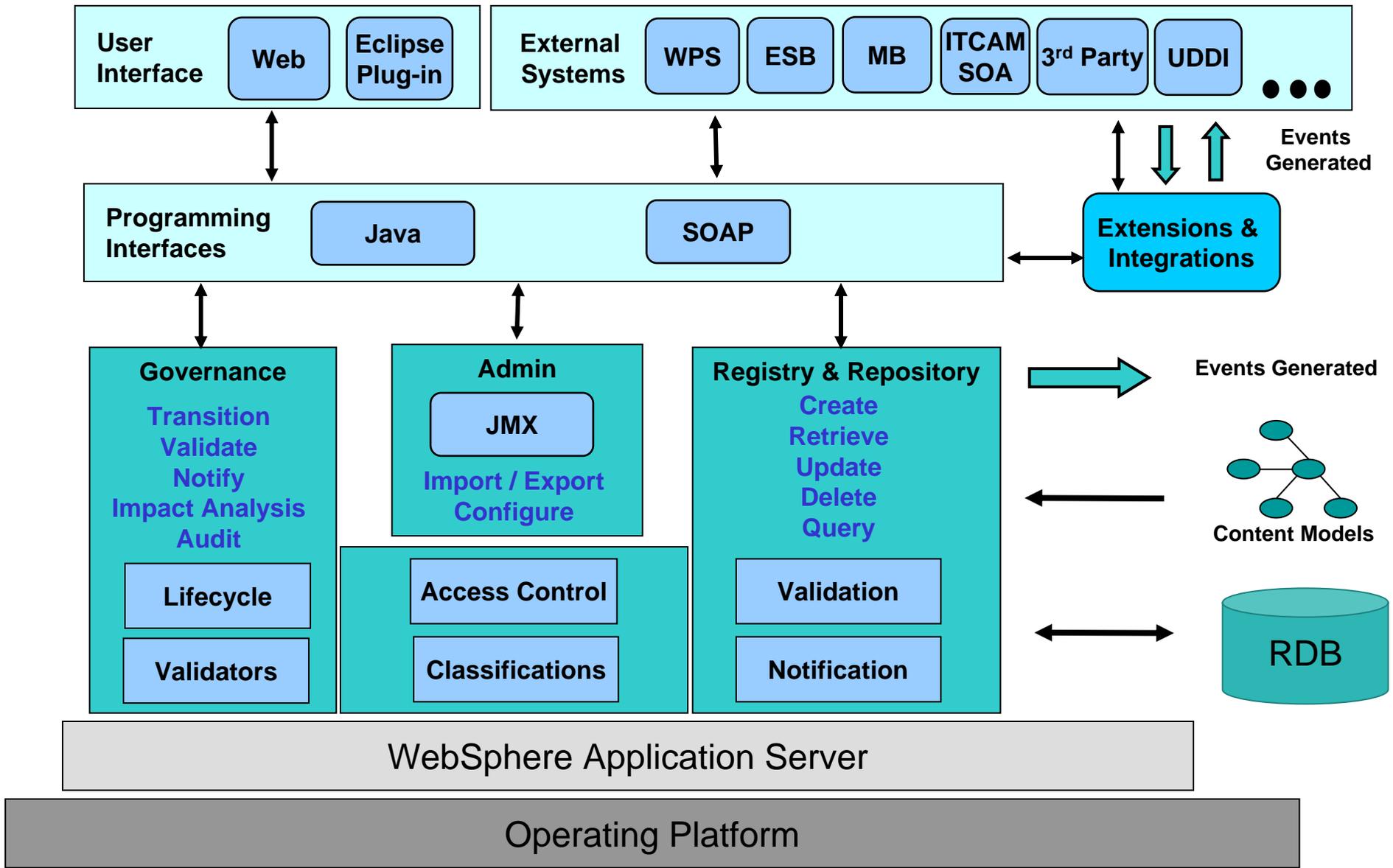
Local file system
Specify path
C:\Lab1Solution\JKEnterpriseTaxonomy.owl

Remote file location
Specify URL

OK



WebSphere Service Registry & Repository Architecture



Features Summary of WebSphere Service Registry and Repository

- User role based browser perspectives
- Standards based service metadata documents support
- “Shredding” documents into meaningful and optimized organization
- Query
 - Keyword and wizard based search
- Classification
 - OWL based ontologies
 - Customization enabling governance capabilities, state transitions, lifecycle actions
- Eclipse based toolset integrating into Eclipse 3.0.x based IDEs
- Java and Web services API
- Command line utilities
- Subscription and Notification support
- Impact Analysis
 - Service Relationships

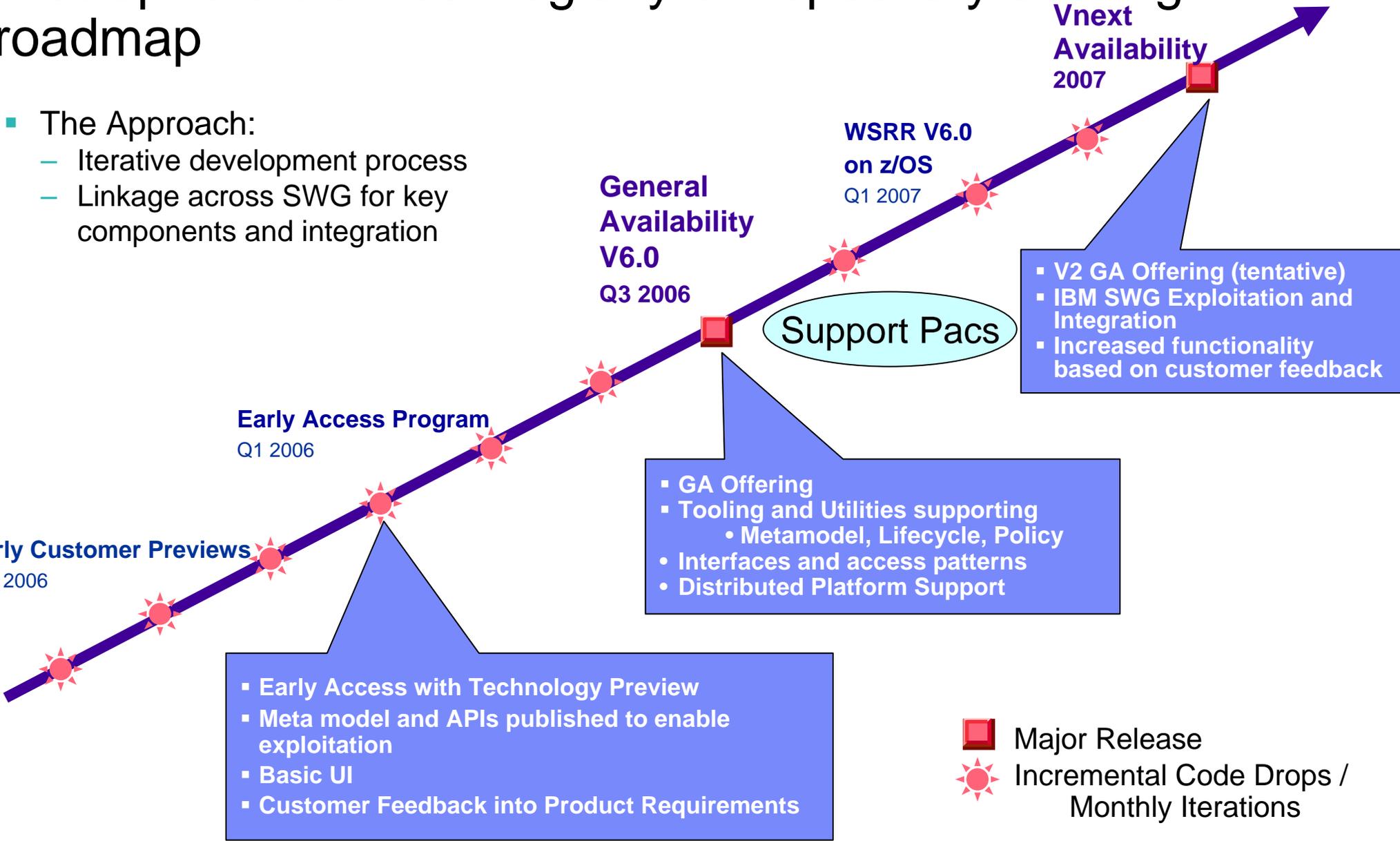


What makes WSRR unique?

- Advanced capabilities
 - Stronger taxonomy support, enabling better re-use of SOA components
 - Customer defined entities, describe SOA artefacts from a customer's perspective
- Stronger integration with other IBM SWG products
 - Custom nodes/modules for ESB products
 - Use of WSRR by Tivoli products
- Single product that combines:
 - Service Registry and
 - Service & Meta-data Repository
 - Governance including life-cycle management
- Better aligned with emerging standards
 - WS-ResourceTransfer
 - WS-EventNotification

WebSphere Service Registry & Repository offering roadmap

- The Approach:
 - Iterative development process
 - Linkage across SWG for key components and integration

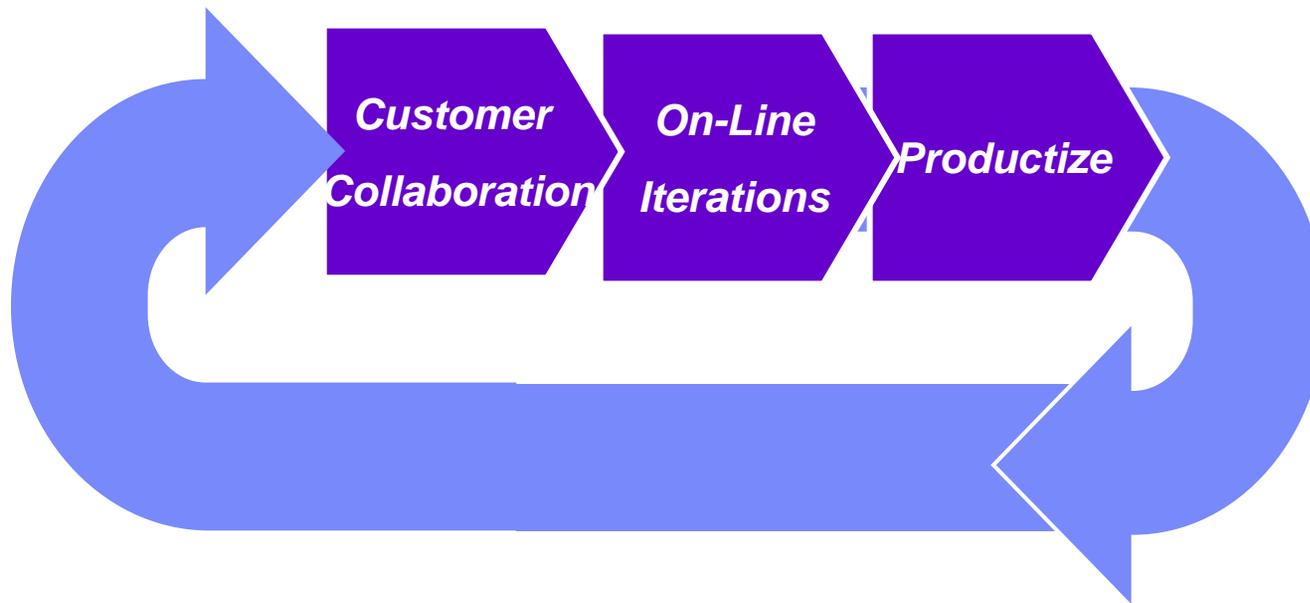


Highly successful iterative development process

Development through collaboration with Customers

Over 100 customers and partners have enrolled and are participating in this new program

Input from customers used in development in a highly iterative and timely fashion



Summary

- Value proposition
- Integration across the SOA Lifecycle
- Capabilities
 - Publish and Find
 - Enrich
 - Manage
 - Govern
 - Extend
- Architecture
- Roadmap and Early Access Program

धन्यवाद
Hindi

多謝
Traditional Chinese

ขอบคุณ
Thai

Спасибо
Russian

Gracias
Spanish

Thank You
English

شكراً
Arabic

Merci
French

Obrigado
Brazilian Portuguese

Grazie
Italian

多谢
Simplified Chinese

Danke
German

நன்றி
Tamil

ありがとうございました
Japanese

감사합니다



WebSphere Software

Backup

SOA on your terms and our expertise

ON DEMAND BUSINESS™

SOA brings new emphasis to the governance challenges within organizations

How do I eliminate “rogue services” and ensure control of my SOA?

How do I govern services as part of my SOA?

How do I manage the services lifecycle?

How do I increase service reuse?

How do I enable enforcement of policies across all internal and external services?

How can I help my ESB execute in the right context?



How do I help services interact efficiently and dynamically with each other?

How do I optimize service interactions to be better aligned with business process?

What is Governance?

Establishing chains of responsibility, authority and communication to **empower** people (decision rights)

Establishing measurement, policy, standards and control mechanisms to **enable** people to carry out their roles and responsibilities

Governance processes should make it easy to do things the right way and hard to do them the wrong way. Build schools, not prisons. The goal is to help people conform to best practices, not police them.

Mark Ericson, CTO of Mindreef



What is IT Governance?

Establishing decision making rights associated with IT

Establishing mechanisms and policies used to measure and control the way IT decisions are made and carried out

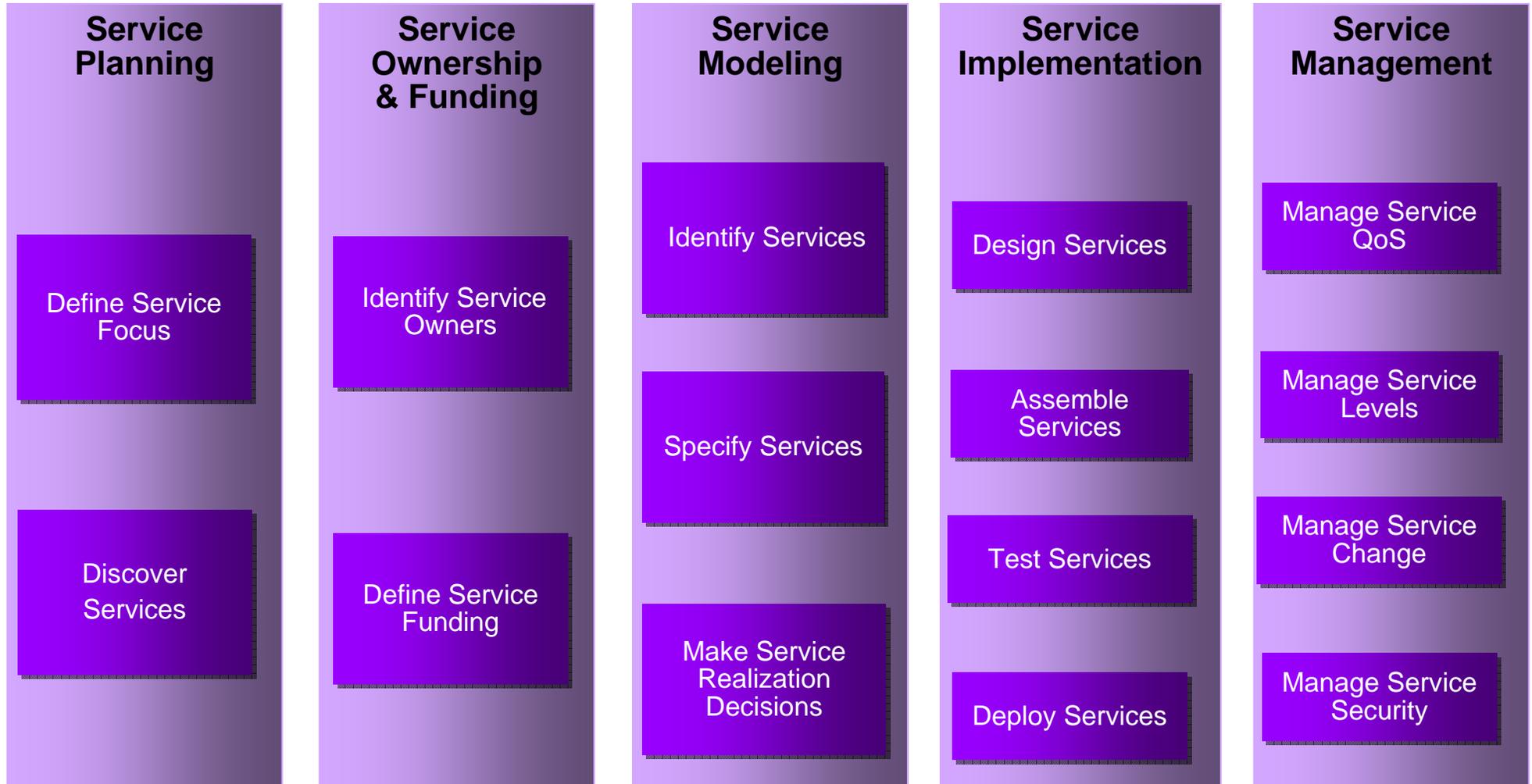
What is SOA Governance?

A style of IT governance focused on the **lifecycle of services and other SOA artifacts** to ensure the business value of SOA



SOA Governance is a catalyst for improving overall IT governance

Successful Governance Occurs Throughout the Service Lifecycle



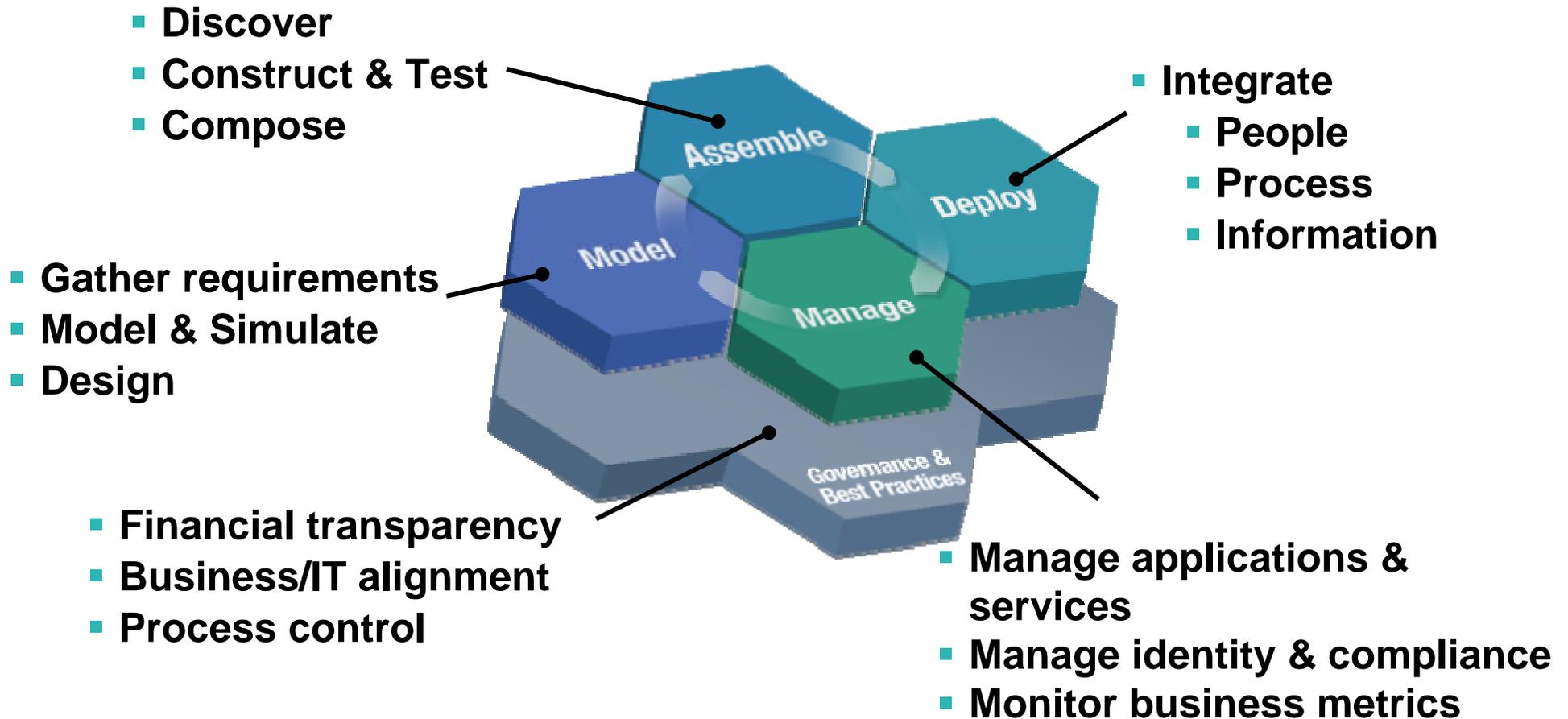
WebSphere Service Registry and Repository – An Enabler of SOA Governance

- Provides the capability to effectively **manage service metadata** across the service lifecycle
- Supports **design time** discovery and **runtime** access
- **Registry and Repository**
- 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
- Ability to handle **multiple versions** of a service
- **Role + Resource based access** to service metadata
- **Impact Analysis**

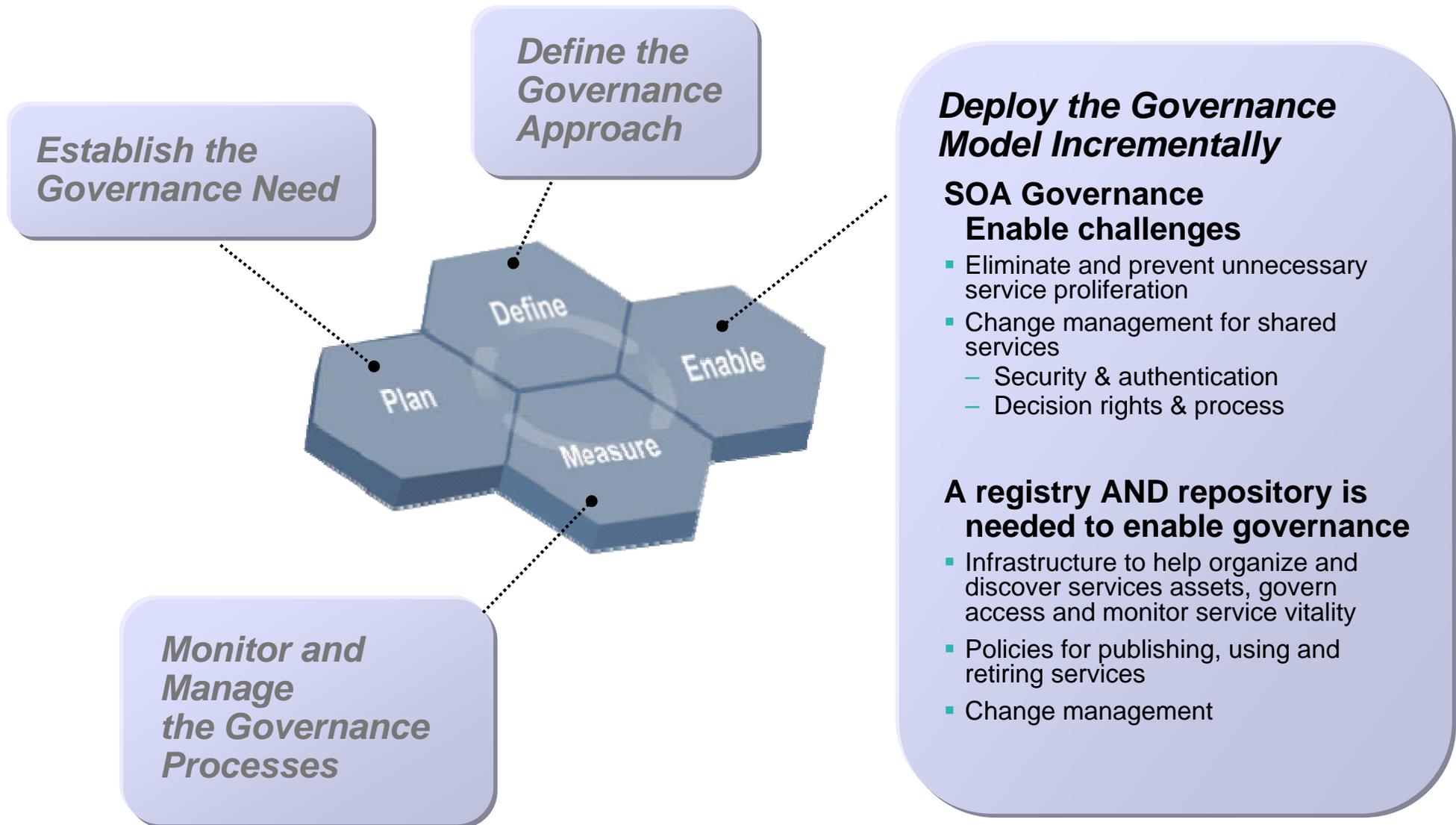


How are customers thinking technically about flexible IT through SOA?

The SOA Lifecycle



SOA needs a registry and repository to enable governance



WebSphere Service Registry & Repository

Crossing multiple SOA Entry Points

WebSphere Service Registry & Repository delivers...

- Integrated service metadata registry and repository to govern services and manage service lifecycle promoting visibility, consistency and reducing redundancy in your SOA
- Seamless publish and find capabilities across all phases of SOA fostering reuse of services, enriching connectivity with dynamic and efficient interactions between services at runtime

New feature highlights

- Publish and find services and related metadata through all stages of SOA
- Integration and federation with other standard registries and repositories
- Enable optimized access to service metadata
- Manage service interactions and policies
- Facilitate service lifecycle with guards for state transitions
- Analyze impacts of service introduction, deletion or alteration by maintaining relationships
- Manage role based access to services, changes, versioning and service retirement

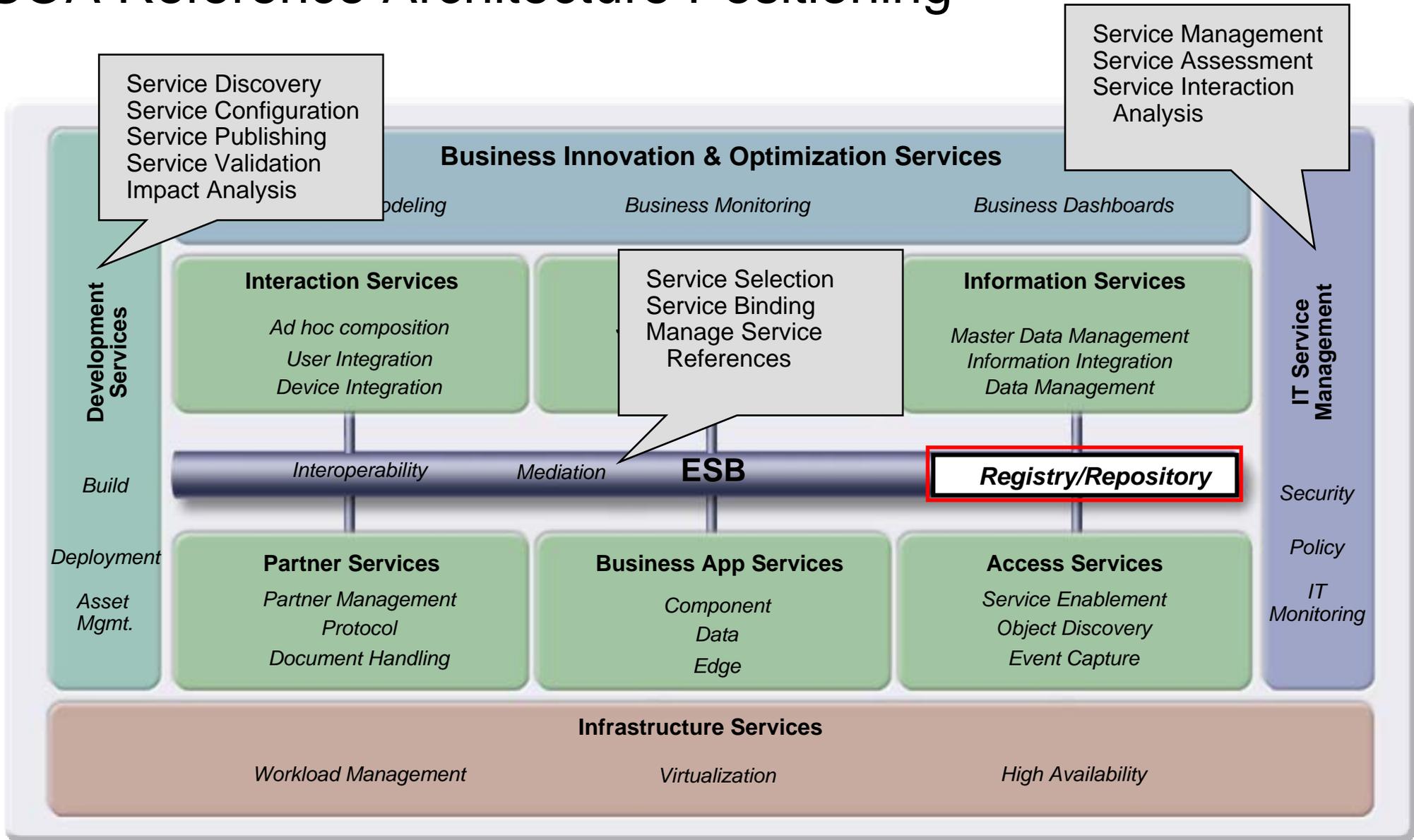
Key benefit

Promote reuse and eliminate redundancies

Enrich SOA runtime interaction

Better control of SOA with governance

SOA Reference Architecture Positioning



UDDI alone is not sufficient to handle the demands of SOA

UDDI

(Universal Description, Discovery and Integration)

Designed as “phonebook” for external WEB services

Only allows publish and find of WEB services

Lacks metadata repository to help manage and govern service interactions

Inflexible data model

Highly technical and not readily useable by end users

Not widely adopted

SOA needs:

- Service metadata repository
- Optimized service registry
- Based on latest web services standards

Based on emerging web services management standards optimized for SOA

- *WS – Resource Transfer*
- *WS – Event Notification*
- *WS – Metadata Exchange*



Driven by industry leaders including



Microsoft



Integrated with UDDI

Programming Interface

- SDO V2 based
- Java APIs
 - CRUD+Q APIs
 - JMX APIs
 - Administration APIs
 - Governance APIs
 - Ontology APIs
- SOAP APIs
 - CRUD+Q APIs

Validation

Document validation

- Supplied validators for structured data verification
 - XSD
 - Generic XML
- Invoked during Create, Update, and Delete
 - User supplied validators can be added
- IBM supplied validators is a focus item for WSRR R2

Lifecycle/Governance validation

- No supplied validators in WSRR R1
- Invoked during state transition
 - User supplied validators can be added
- IBM supplied validators is a focus item for WSRR R2

Notification

Email based and JMS based notification

Granularity

- Per entity
- By classification
- By operation ... create, update, delete
- By transition

Configurable email template supplied

Subscriptions

[WSDL documents](#) > **Create a subscription**

Details of a subscription.

Details

Name
Low Touch Claim Service Update

Description
When the low touch claim service is updated

Owner

E-mail address
sachdeva@us.ibm.com

Entity list
LowTouchClaimProcessProductionService.wsdl (WSDL document)

Classifications

Choose

Operations

Create Update Delete Transition

Transitions

Fund
Activate
Provision
Test
Deactivate

Preferred e-mail language
English

Apply OK Reset Cancel

Access Control

- Builds on WAS security capabilities – support for user defined roles
- Role based, resource based access control
 - e.g. User *bill* can access services of type *finance*
 - User *bill* can access XSD files named *FinanceBO**
- Commands provided to administer access control
 - addRole
 - addPrincipalToRole
 - addPermissionToRole
- Integration with LDAP ... through underlying WAS
- Integration with TFIM ... through underlying WAS