WebSphere Software

# IBM WebSphere Service Registry and Repository

## Technical Overview

*SOA on your terms and our expertise*

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ON DEMAND BUSINESS

# 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?

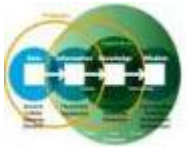
## Registry?

**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***

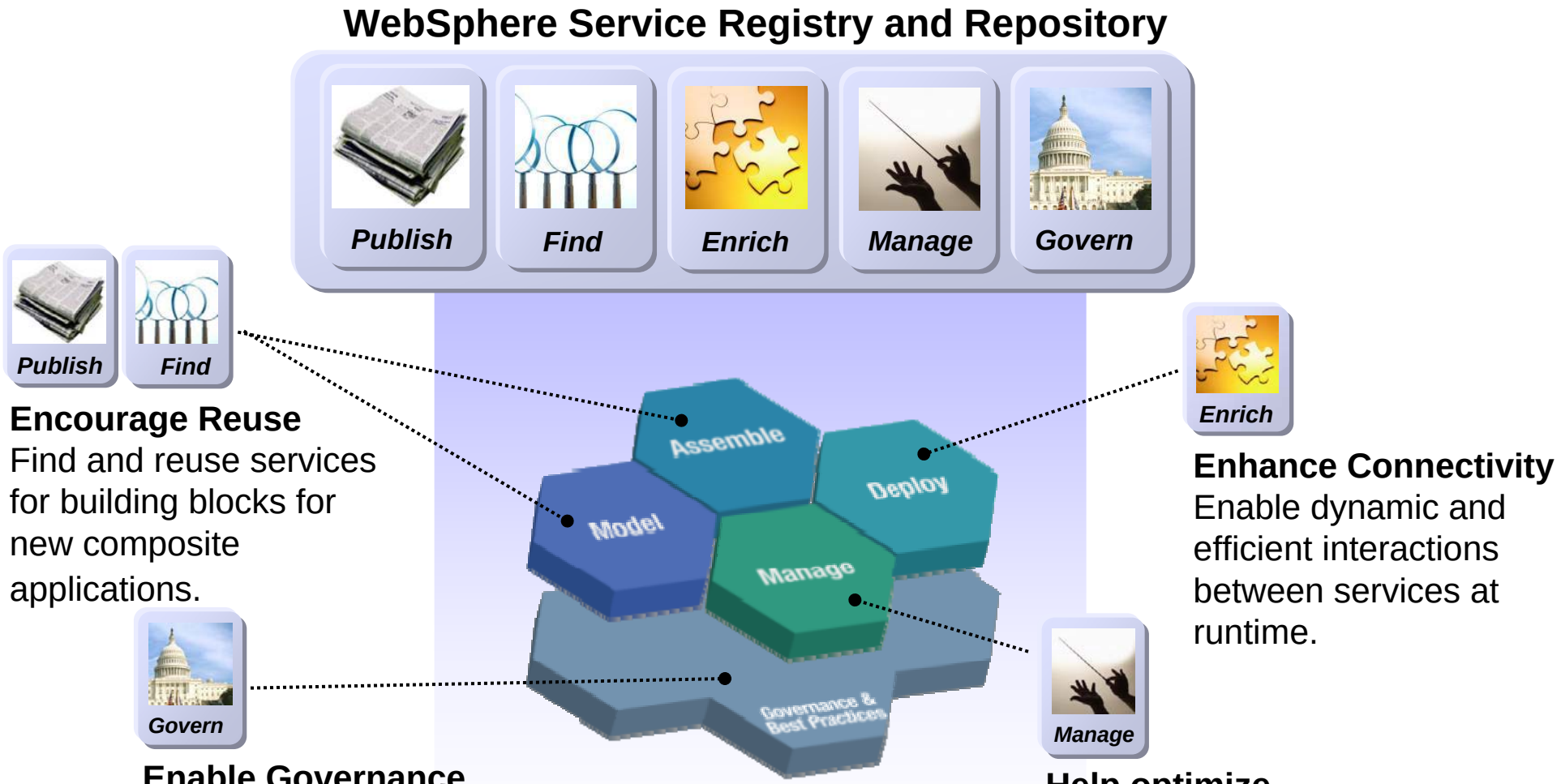
***Enrich***

***Manage***

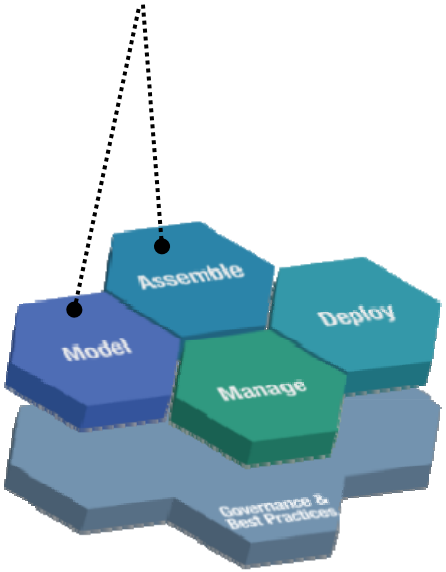
***Govern***

*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



# IBM WebSphere Service Registry and Repository Capabilities

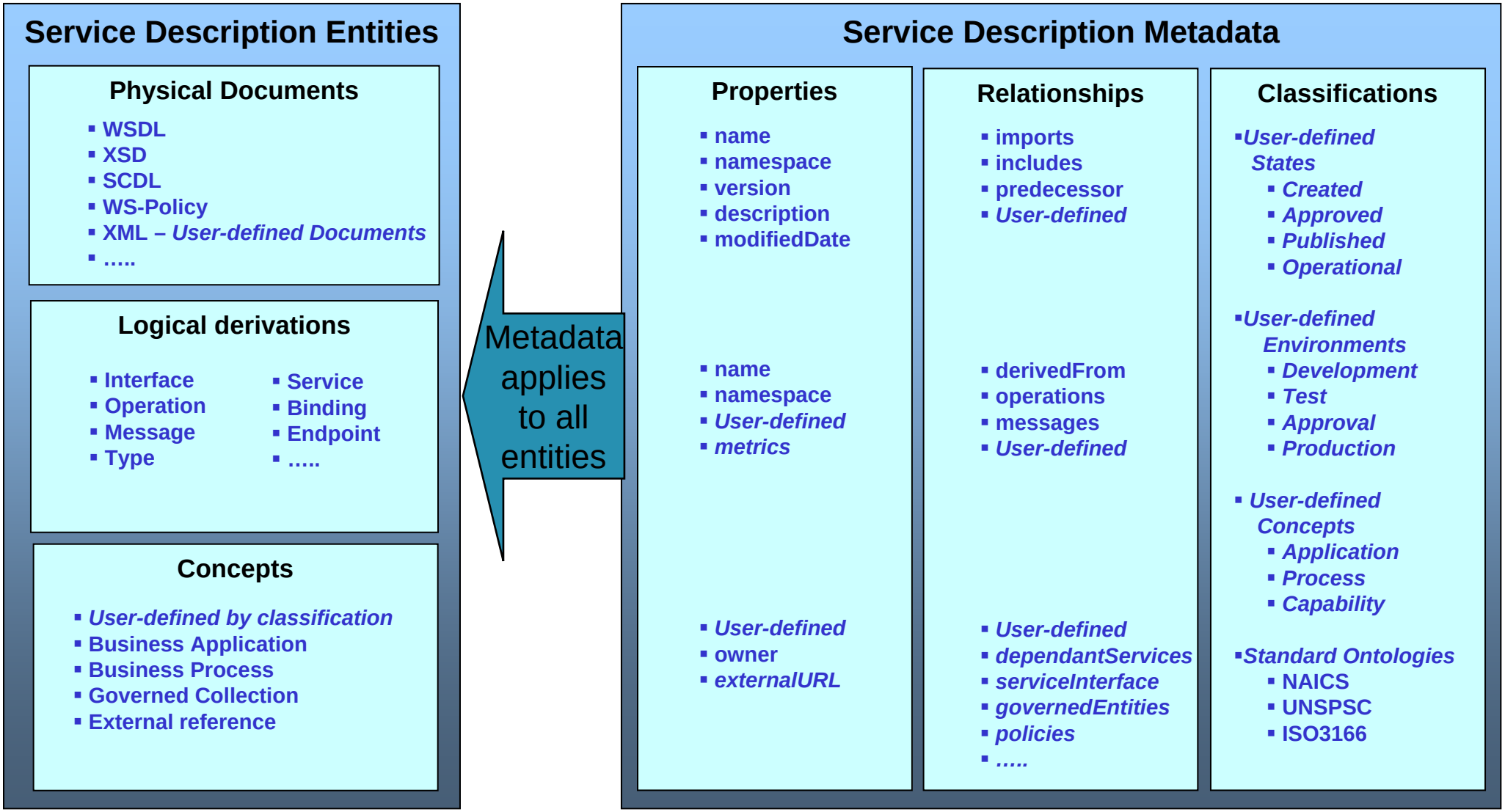

## *Encourage Greater Reuse*

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

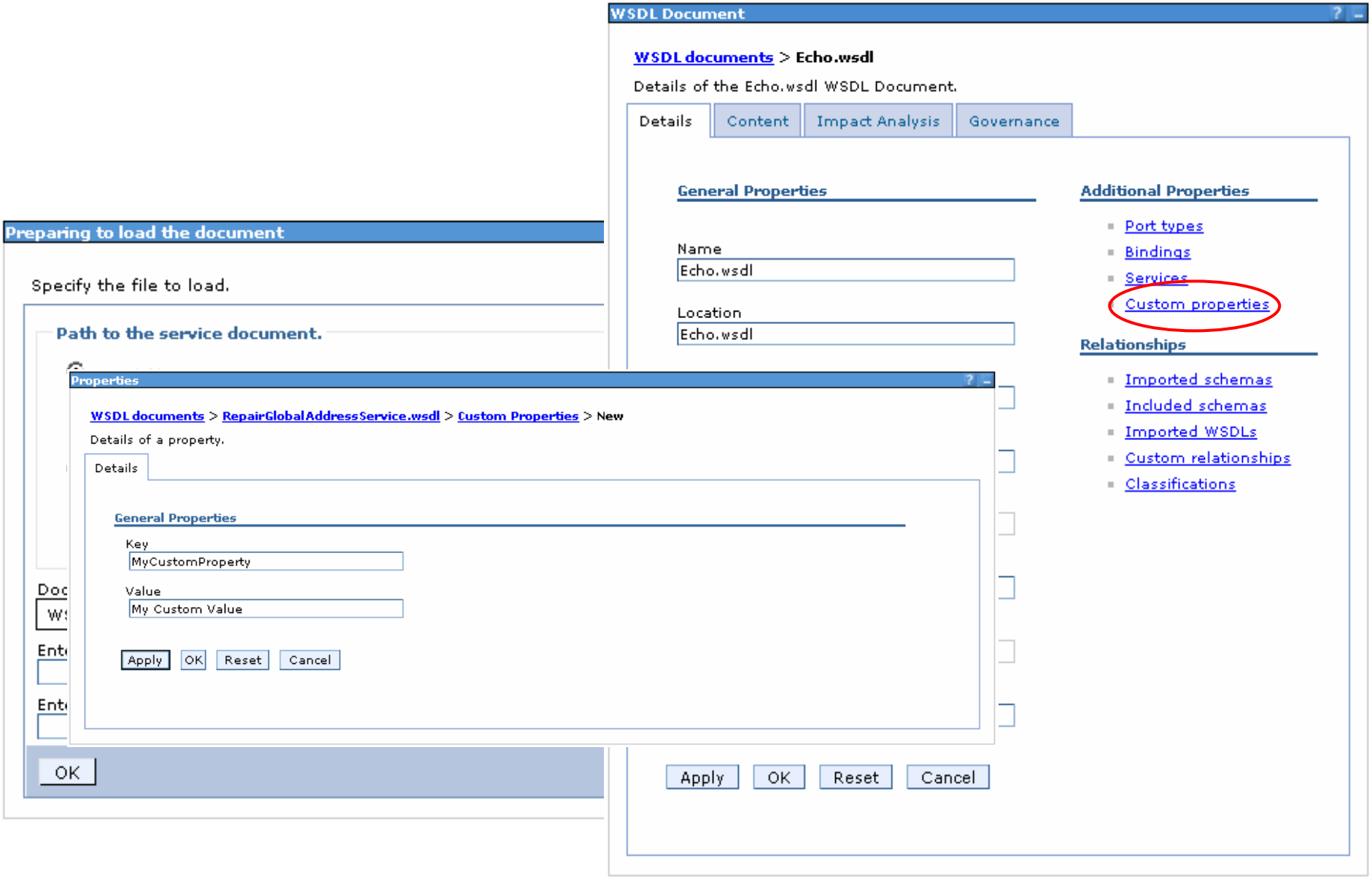
## *Publish and find…*

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

# WebSphere Service Registry & Repository Content



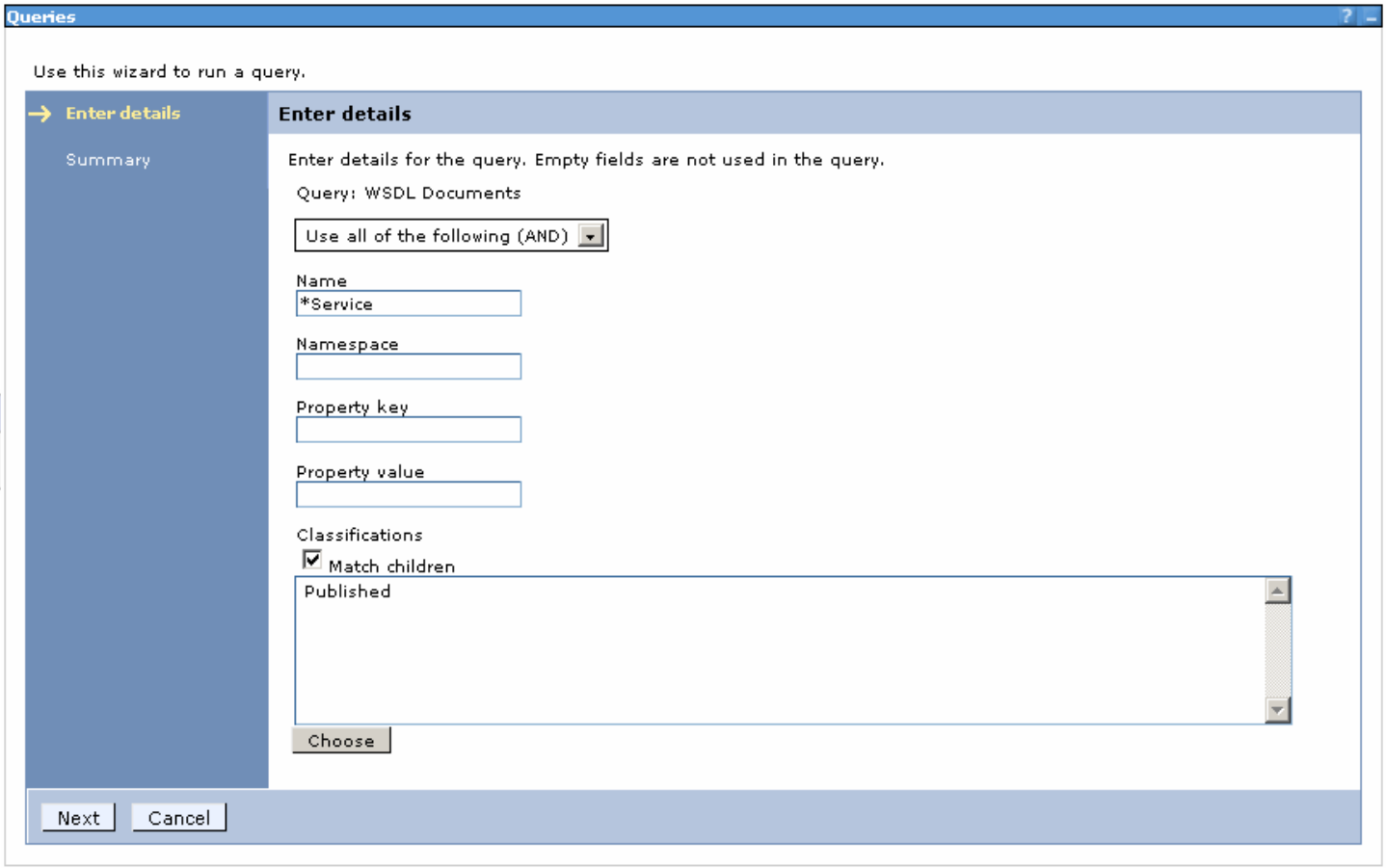
# IBM WebSphere Service Registry and Repository Makes It Easy…… To Publish using Web UI



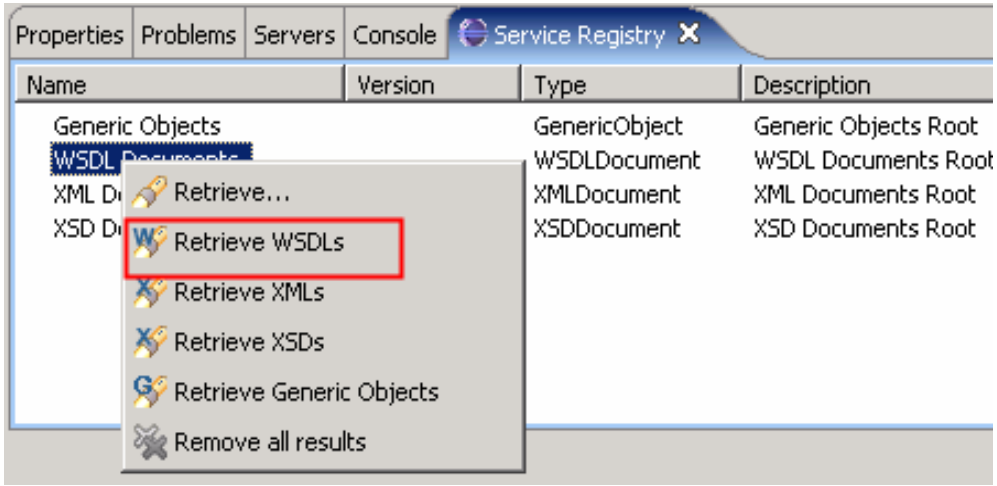


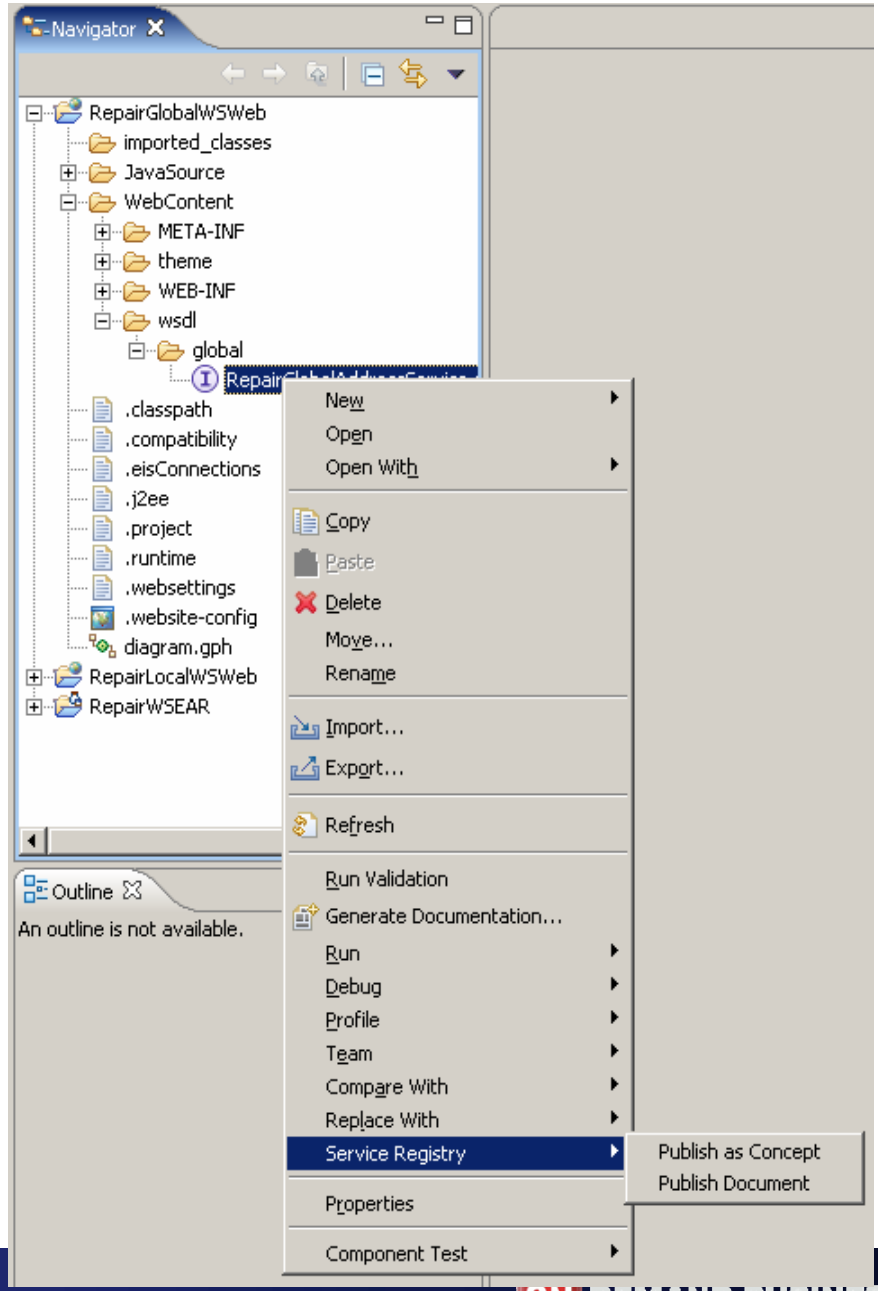

*SOA on your terms and our expertise*

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

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

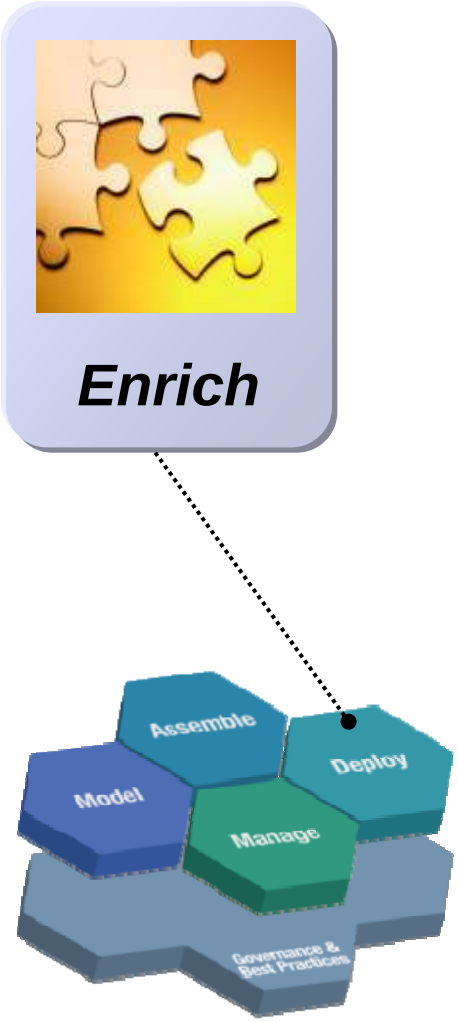


# CICS Transaction Server for z/OS integration with WSRR

- 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



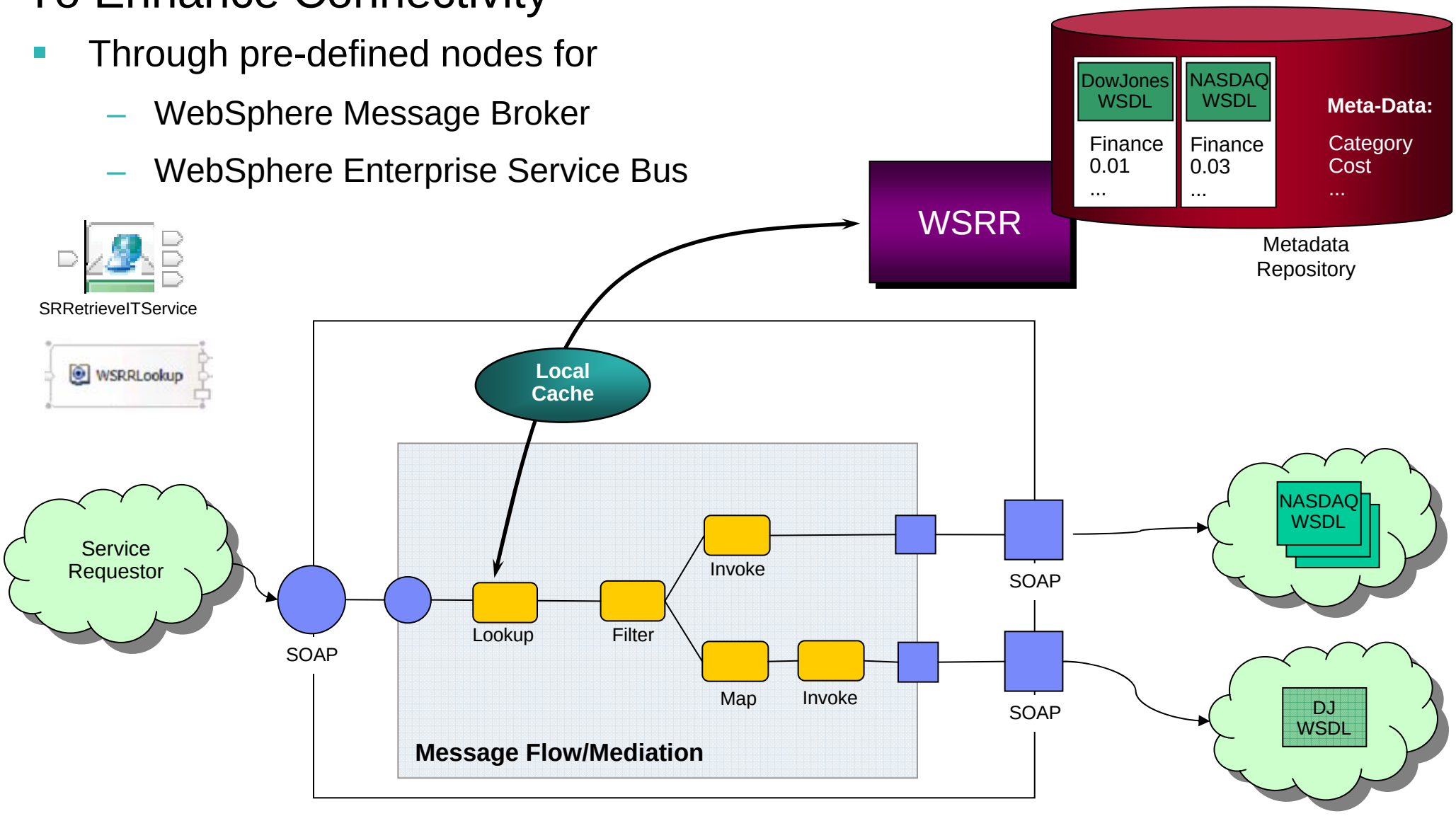

## *Enhance Connectivity*

Enable dynamic and efficient interactions among services at runtime.

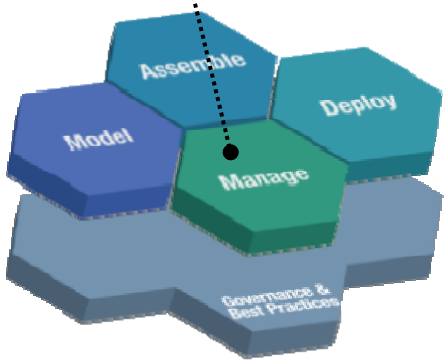
- **Manage dynamic and efficient access to services information by runtimes**
  - **Service endpoint selection**
  - **Service availability management**
  - **Policy enforcement**
- **Identify users of metadata**
- **Notify users of changes**
- **Securely transmit service information**

# 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

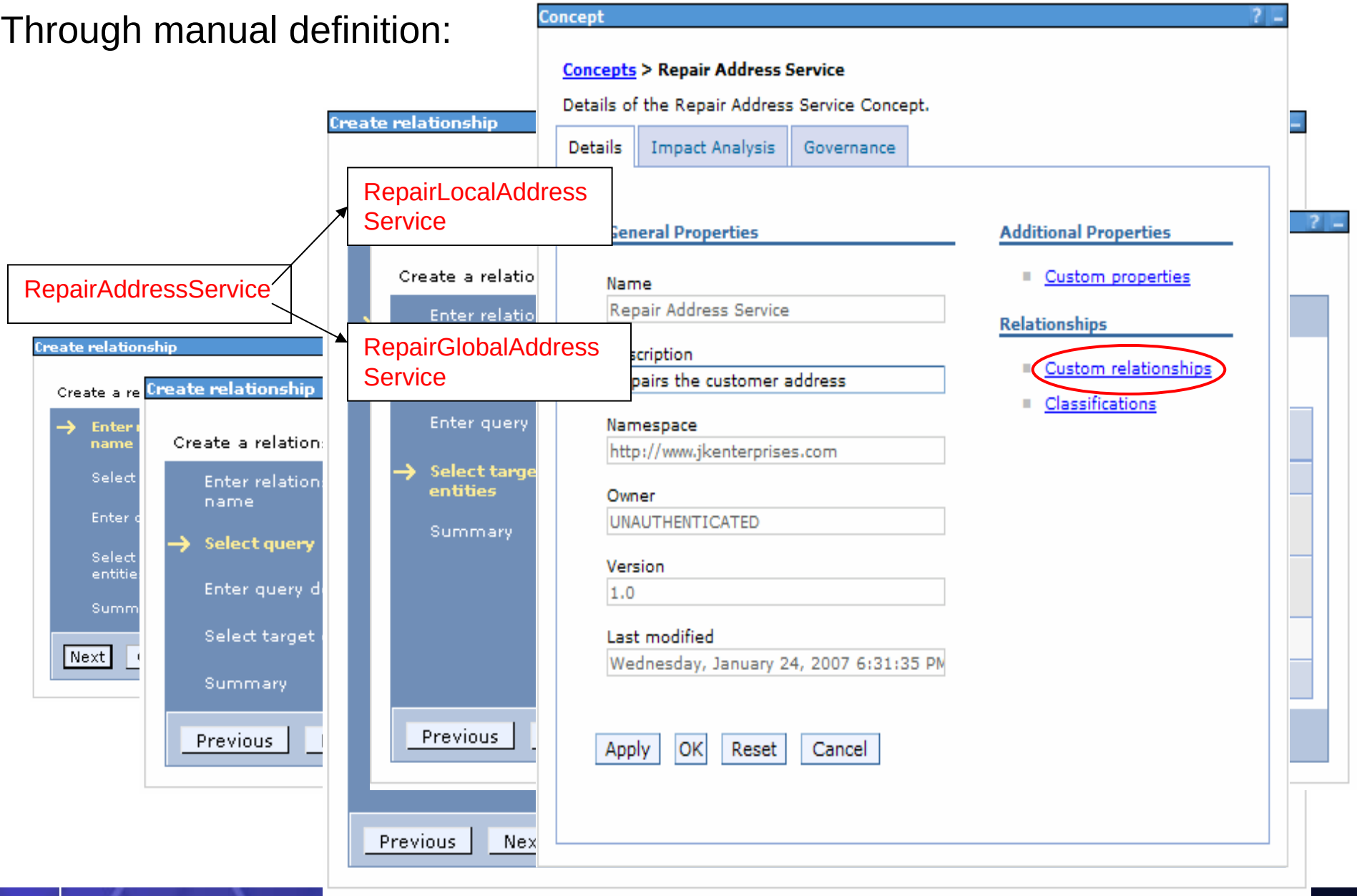
- Through automatic discovery of relationships
  - Imported WSDLs
  - Included schemas
  - SCA

Built-in Relationships

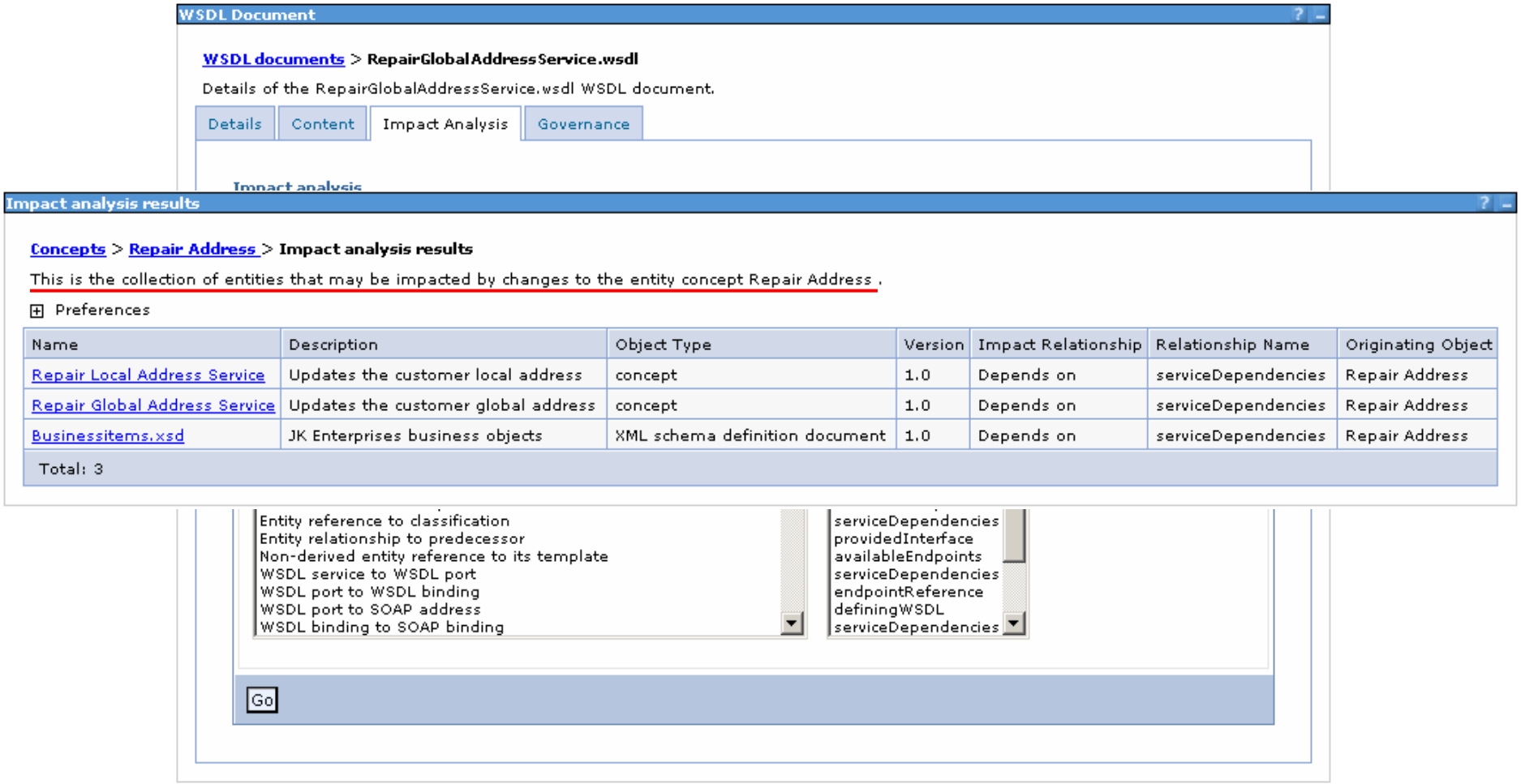
| |
|---|
| Derived entity reference to its source document |
| WSDL or XSD document to imported XSD document |
| WSDL or XSD document to included XSD document |
| WSDL or XSD document to redefined XSD document |
| WSDL document to imported WSDL document |
| Entity reference to classification |
| Entity 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…

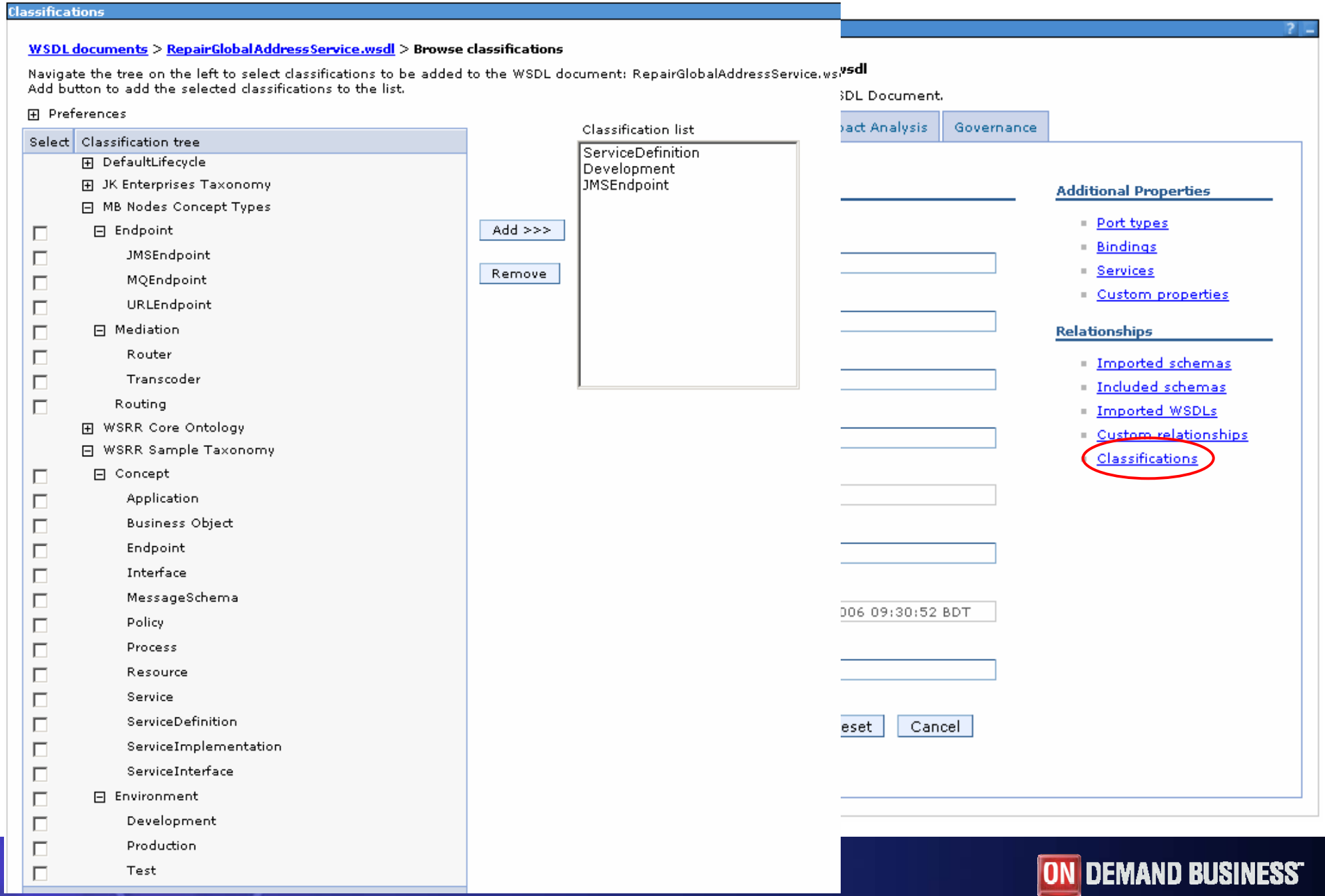
- Through manual definition:



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

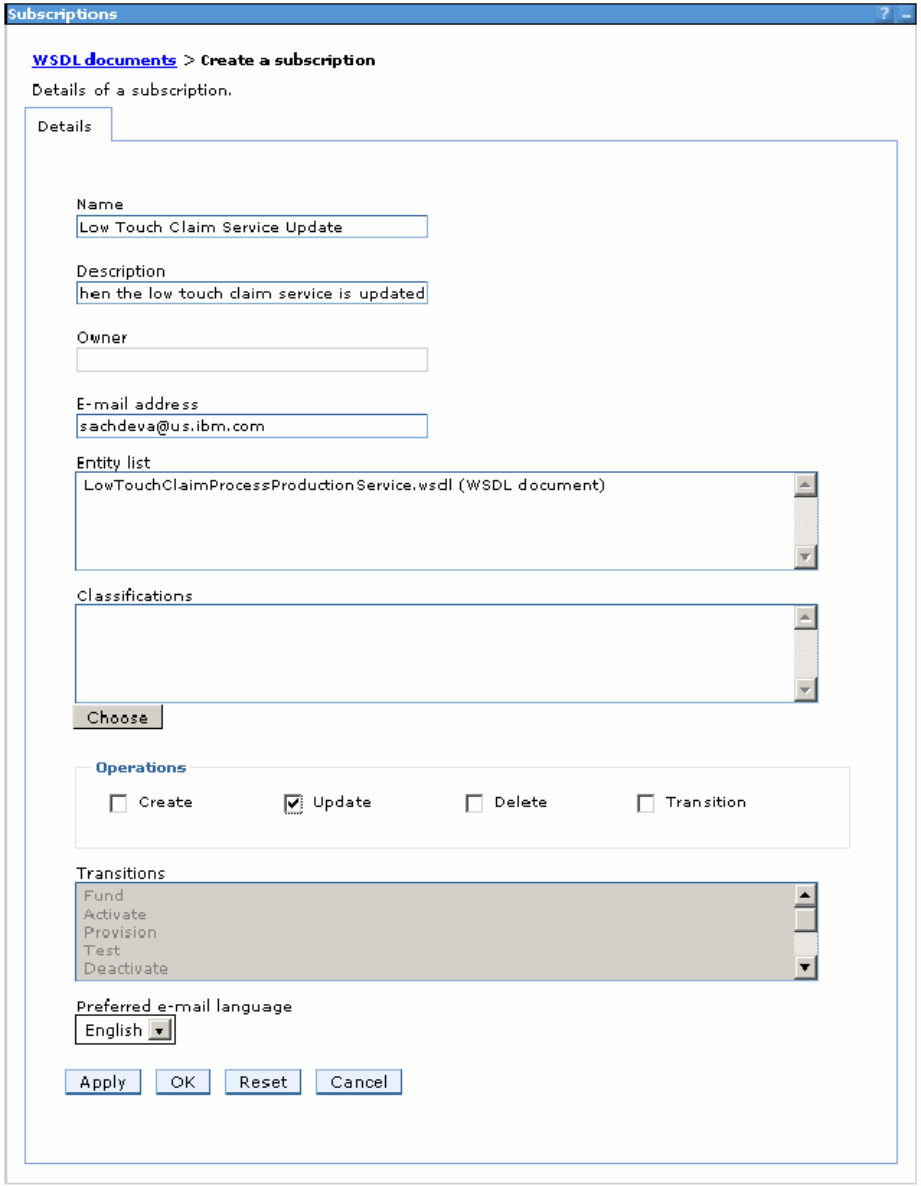


# IBM WebSphere Service Registry and Repository Makes It Easy…… To Manage Classifications



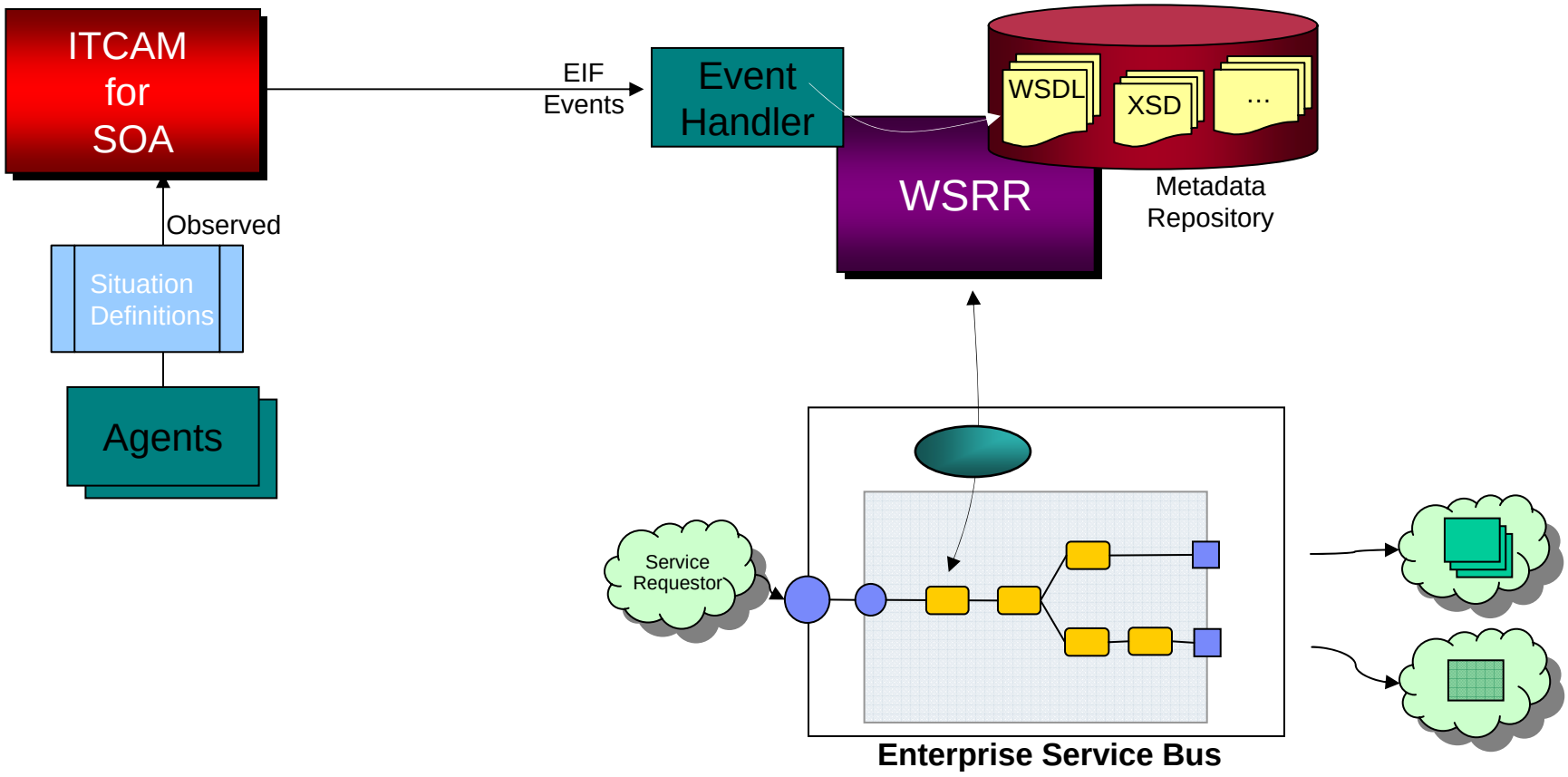
# IBM WebSphere Service Registry and Repository Makes It Easy…… To Manage Notification

- 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

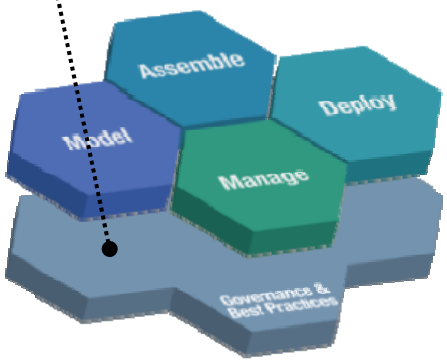


# IBM WebSphere Service Registry and Repository Makes It Easy……. To Manage

- Through integration with ITCAM for SOA



# IBM WebSphere Service Registry and Repository

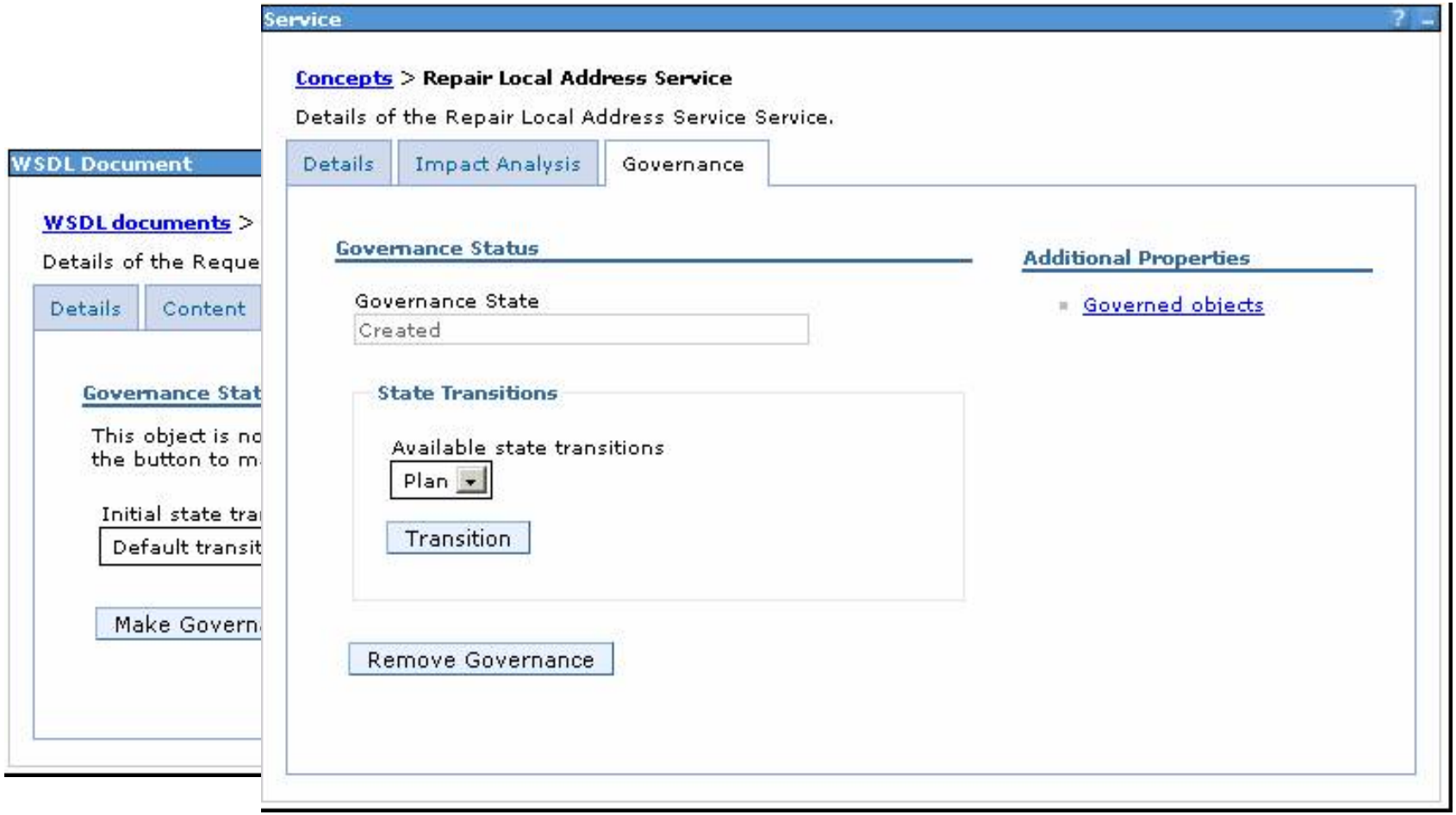




## *Enable Governance*

Govern services throughout the service lifecycle

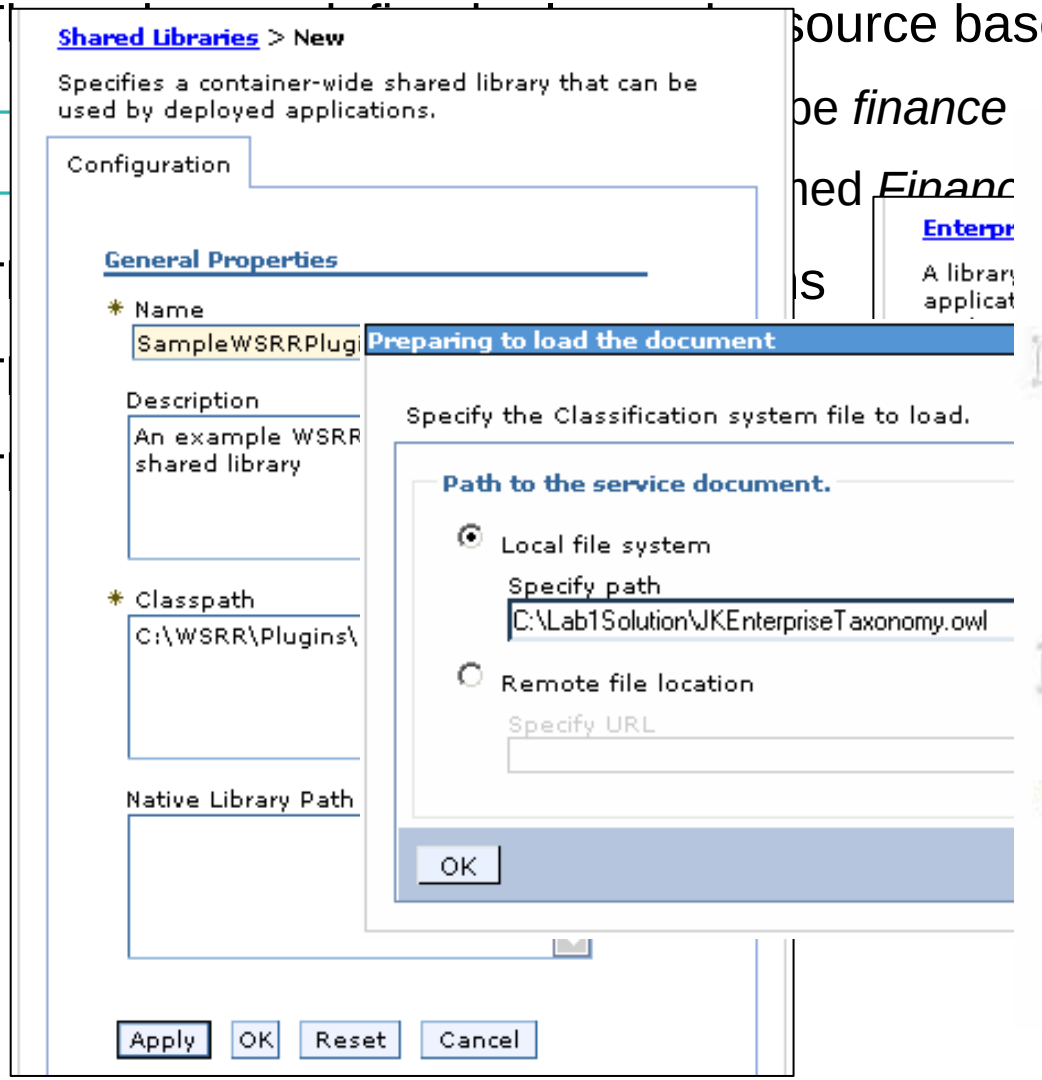
- **Infrastructure to help organize and discover services assets, govern access and monitor service vitality**
- **Classification of services by lifecycle phase**
- **Policies for publishing, using and retiring services**
- **Roles based access**

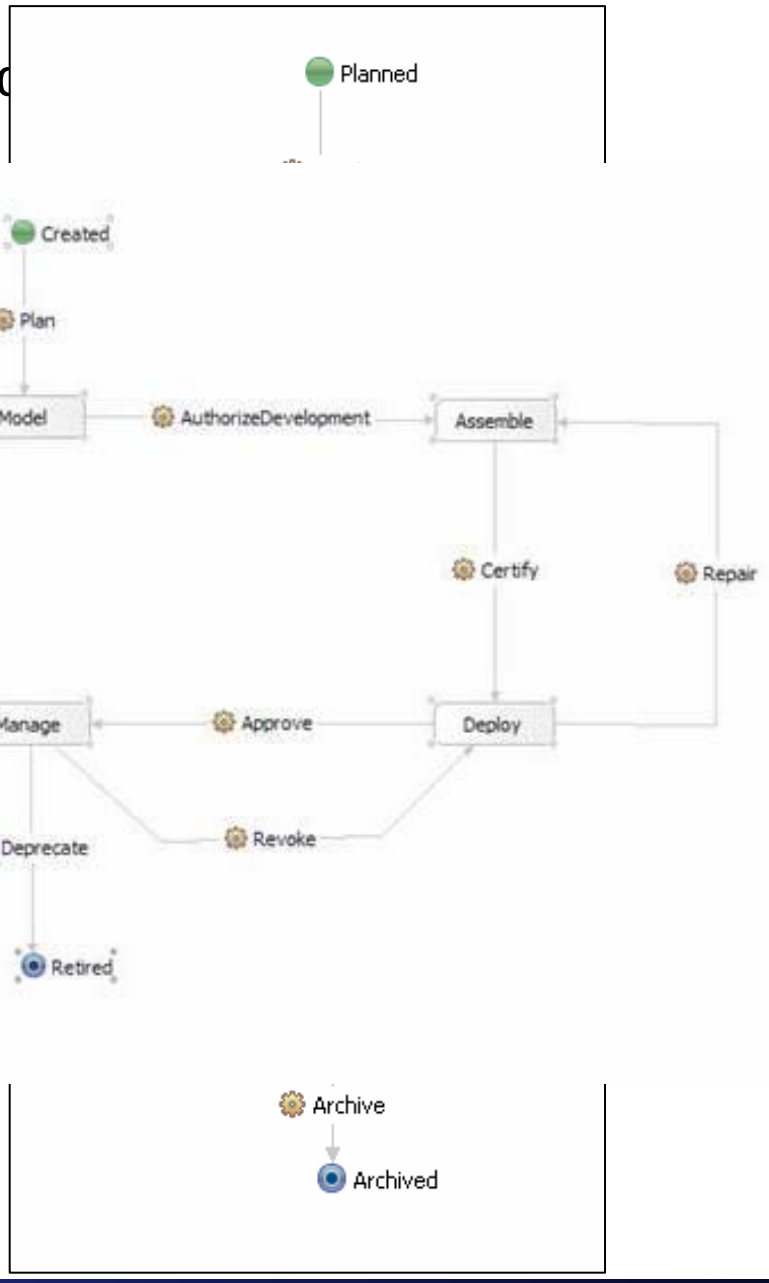
# IBM WebSphere Service Registry and Repository Makes It Easy…… To Govern



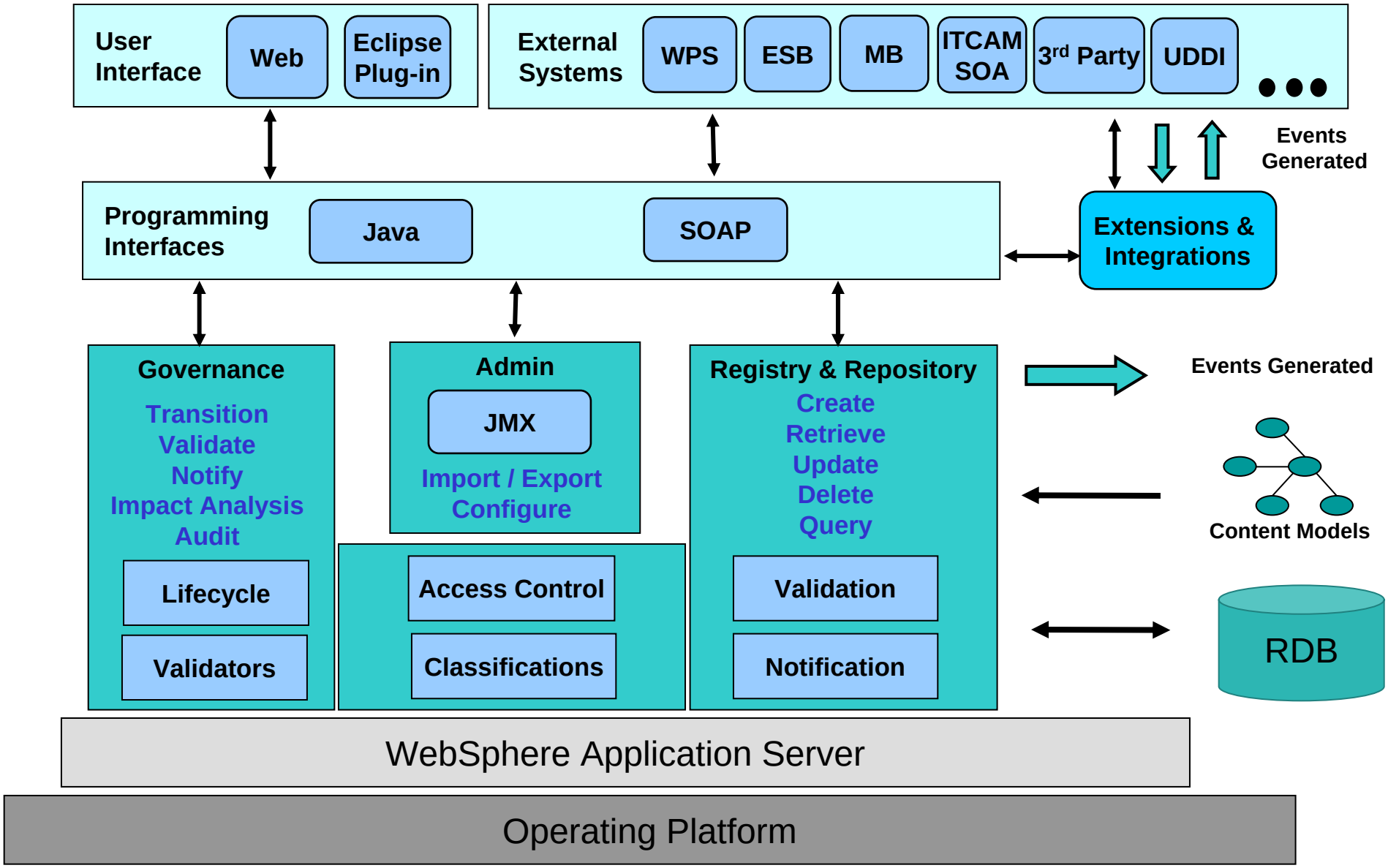
# IBM WebSphere Service Registry and Repository Makes It Easy…… To Extend

- T…source based
- T…
- T…
- T…



# WebSphere Service Registry & Repository Architecture



# Features Summary of WebSphere Service Registry and Repository

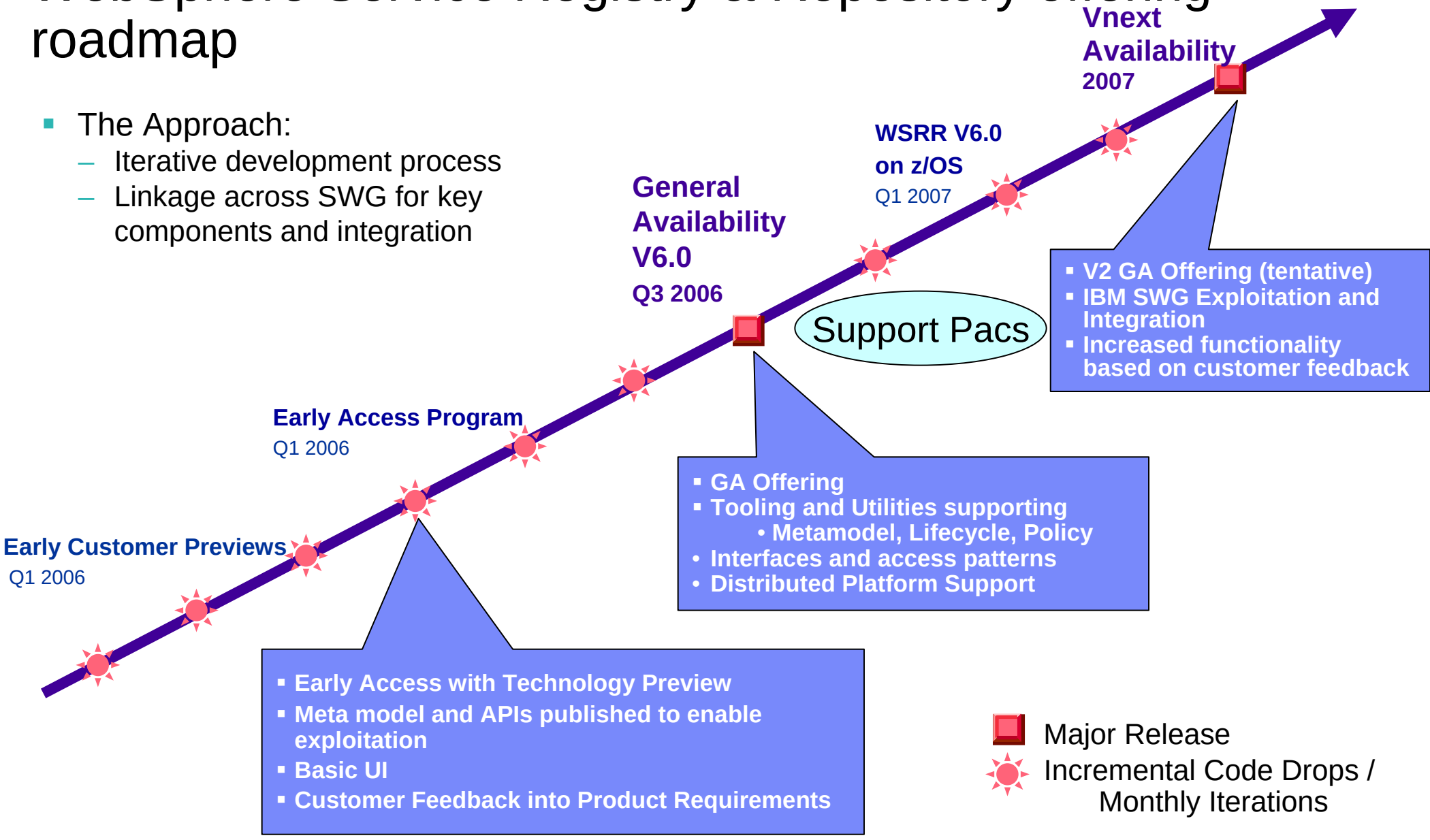
- User role based browser perspectives
- Standards based service metadata documents support
- “Shredding” documents into meaningful and optimized organization
- Query
  - Keyword and wizard based search
- Classification
  - OWL based ontologies
  - Customization enabling governance capabilities, state 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

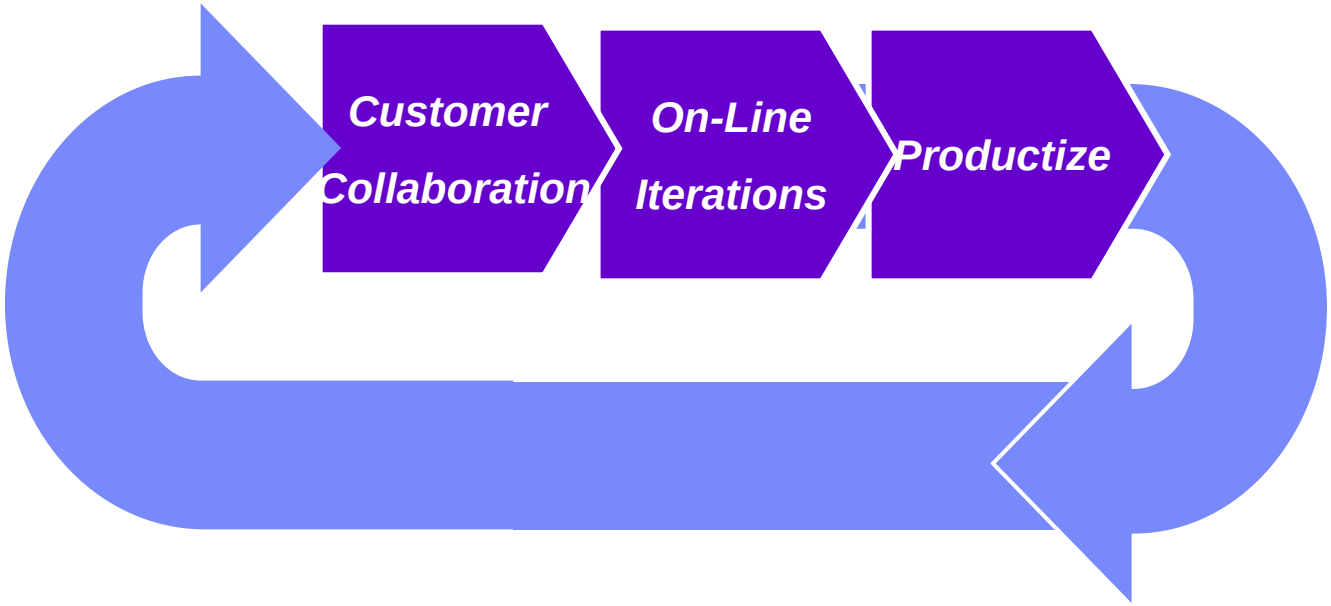


# Highly successful iterative development process

## 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

شكرا
Arabic

Merci
French

Obrigado
Brazilian Portuguese

Grazie
Italian

多谢
Simplified Chinese

Dank
e 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*

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# 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

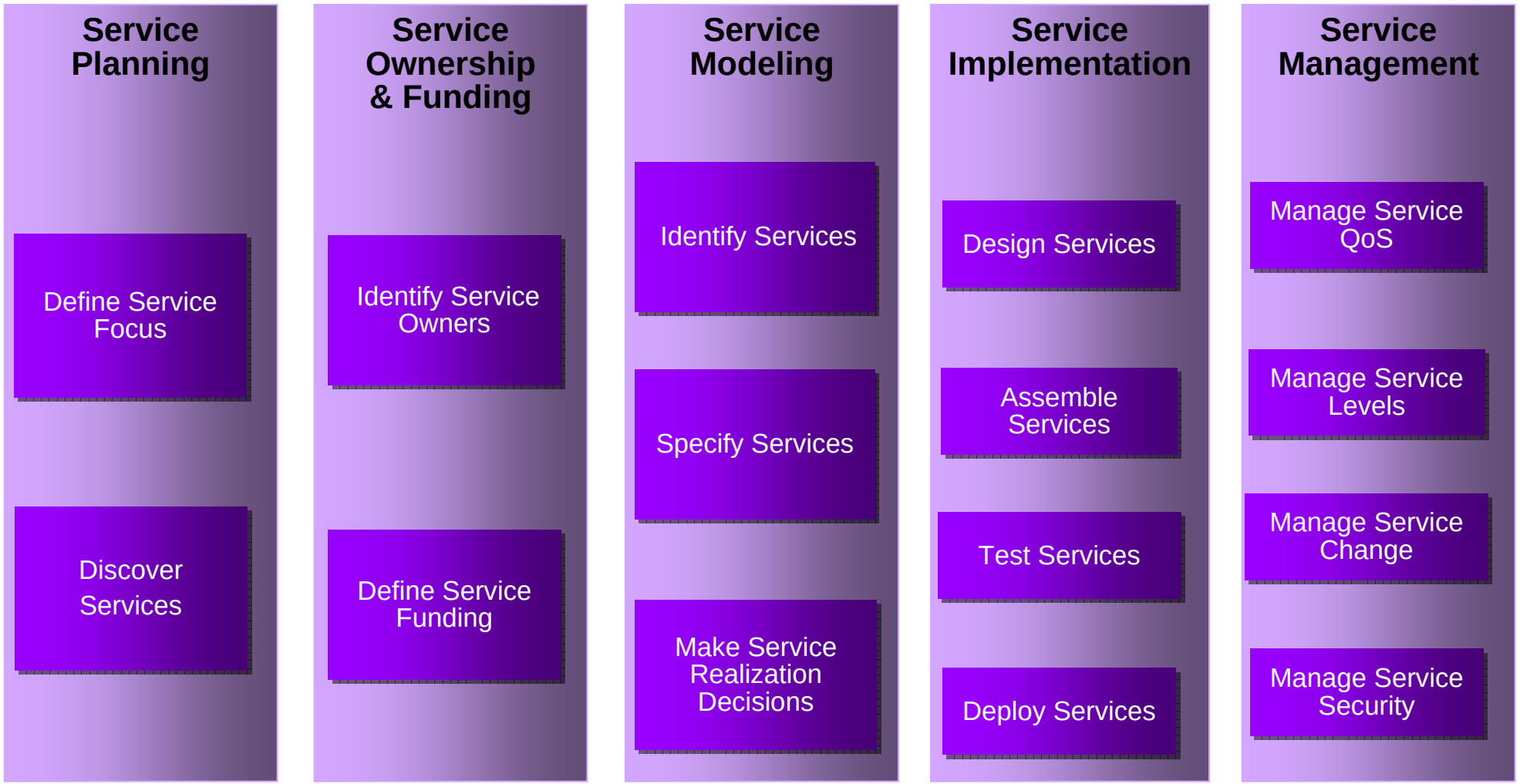
Establishing mechanisms and policies used to measure and control the way IT decisions are made and carried out

# 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



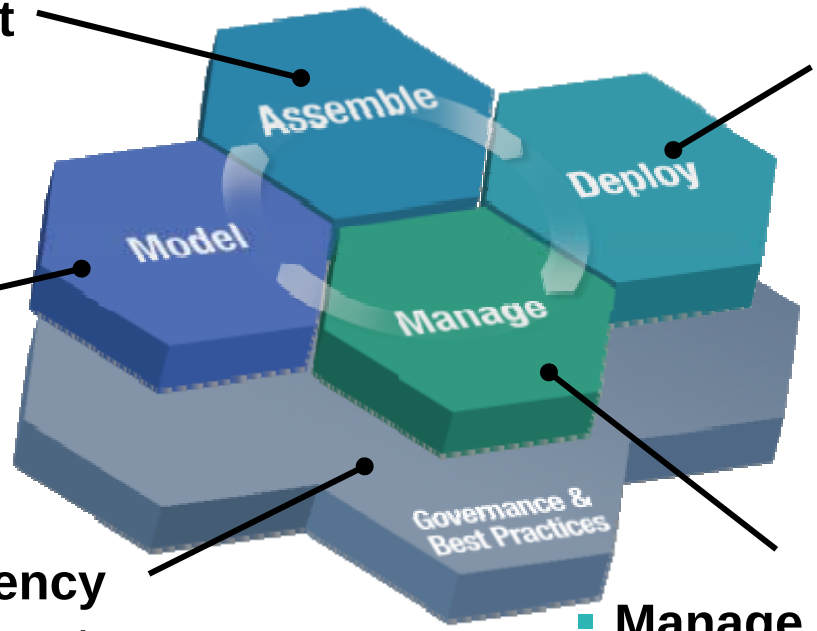
# WebSphere Service Registry and Repository – An Enabler of SOA Governance

- 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?

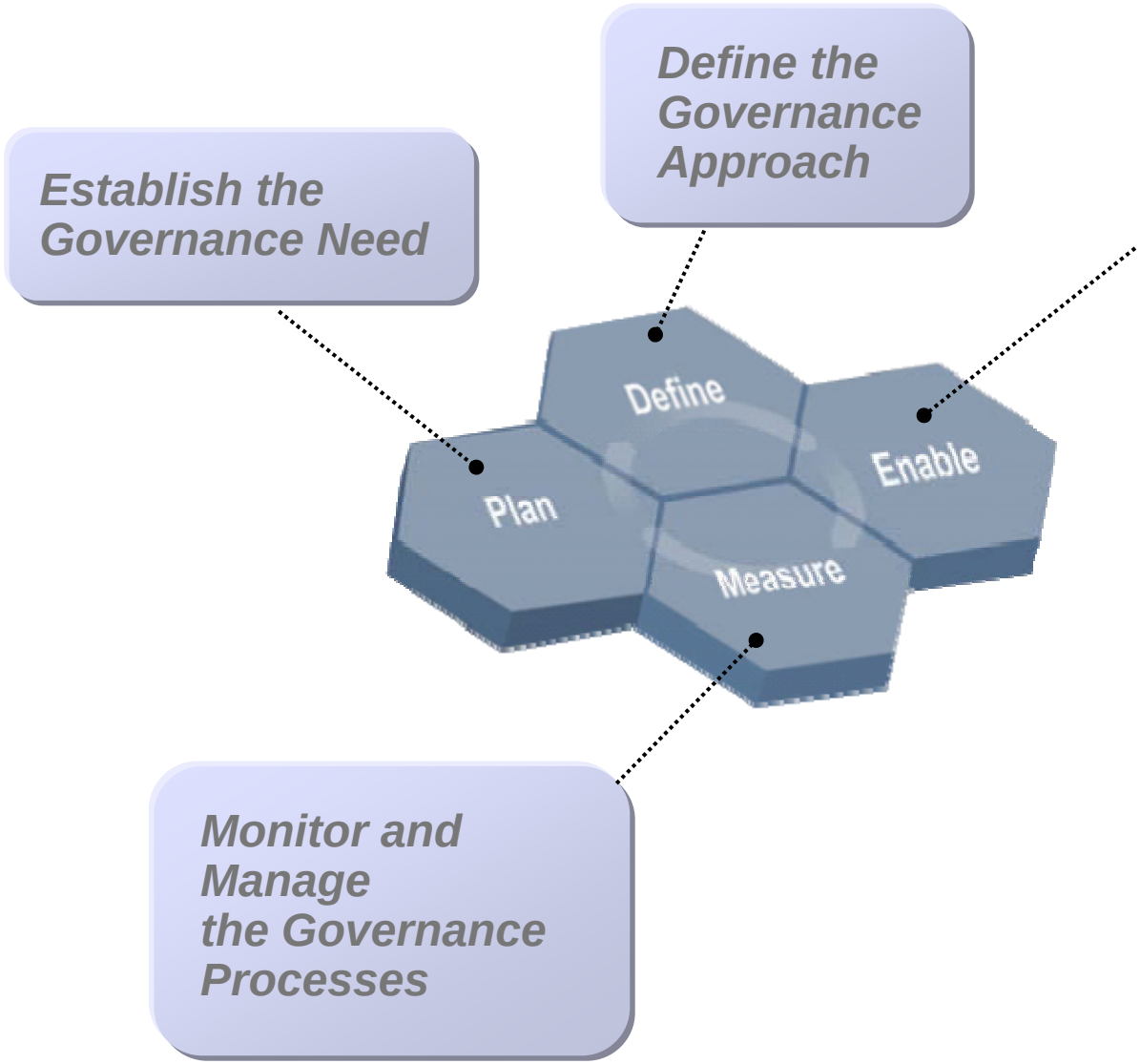
*The SOA Lifecycle*

- **Discover**
- **Construct & Test**
- **Compose**




- **Integrate**
  - **People**
  - **Process**
  - **Information**
- **Gather requirements**
- **Model & Simulate**
- **Design**
- **Financial transparency**
- **Business/IT alignment**
- **Process control**
- **Manage applications & services**
- **Manage identity & compliance**
- **Monitor business metrics**

# SOA needs a registry and repository to enable governance




## *Deploy the Governance Model Incrementally*

### SOA Governance Enable challenges

- Eliminate and prevent unnecessary service proliferation
- Change management for shared services
  - Security & authentication
  - Decision rights & process

### A registry AND repository is needed to enable governance

- Infrastructure to help organize and discover services assets, govern access and monitor service vitality
- Policies for publishing, using and retiring services
- Change management

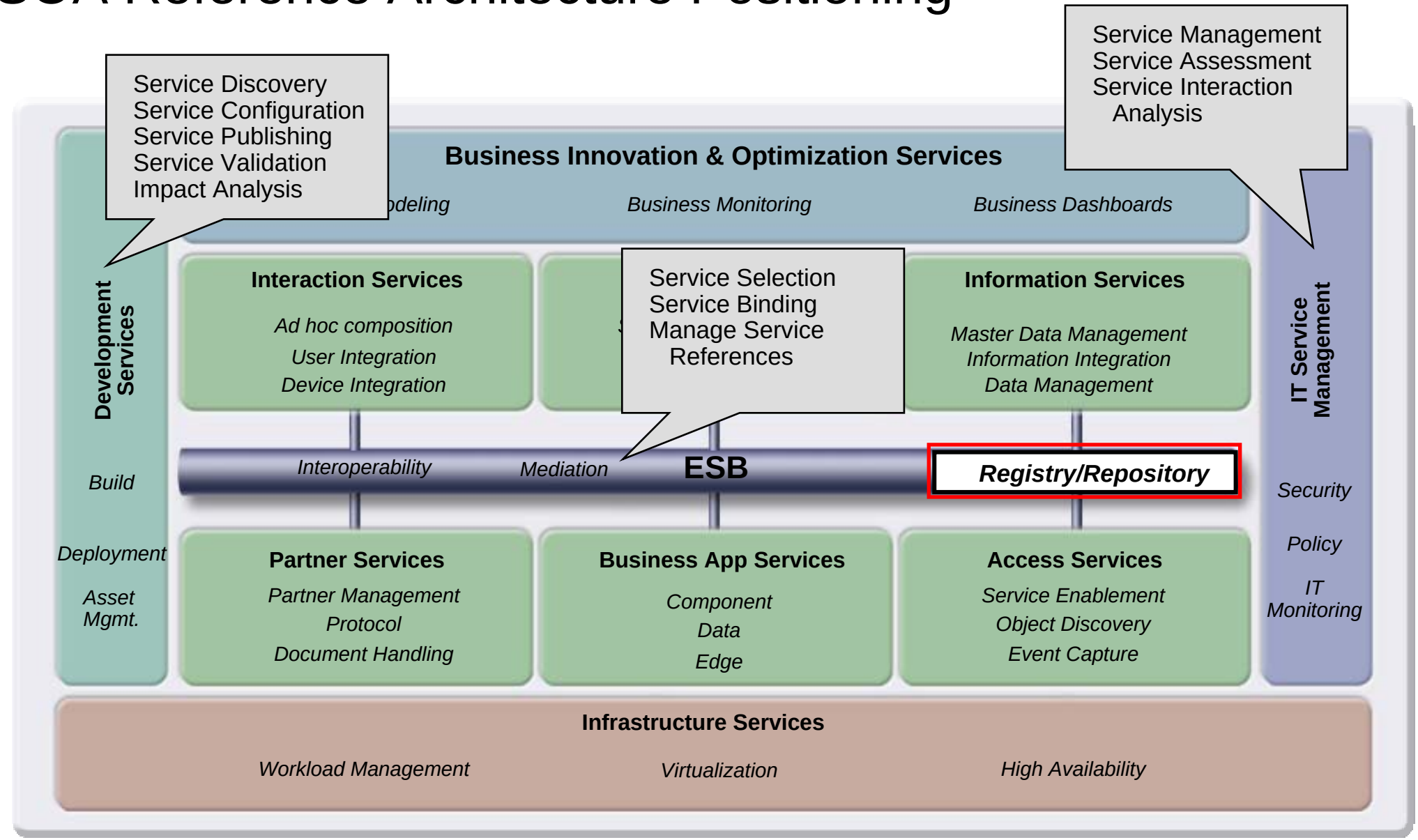
# WebSphere Service Registry & Repository
## *Crossing multiple SOA Entry Points*

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

**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

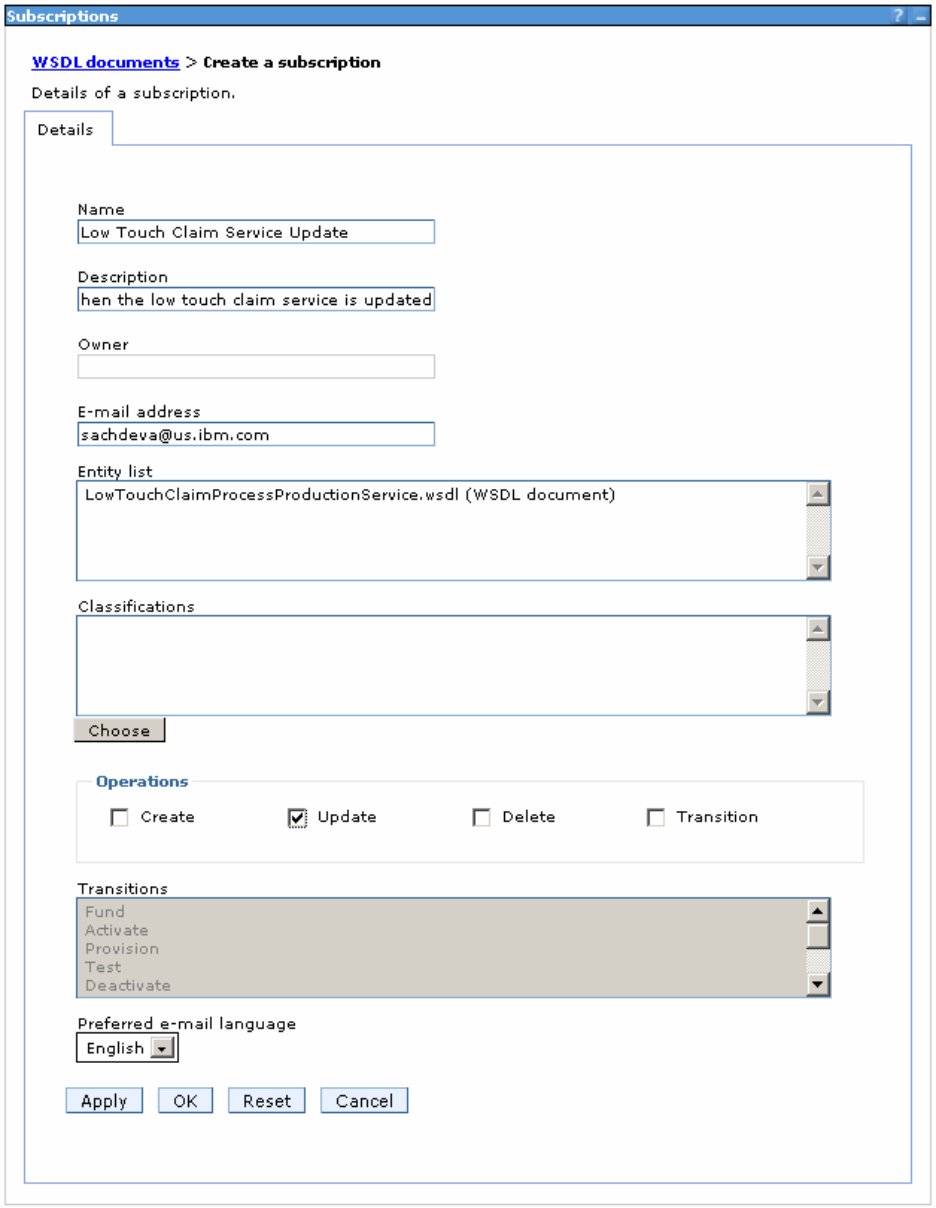
# Notification

Email based and JMS based notification

Granularity

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

Configurable email template supplied



# 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