What is …?

... a service?
A repeatable business task – e.g., check customer credit; open new account

... service orientation?
A way of integrating your business as linked services and the outcomes that they bring

... service oriented architecture (SOA)?
An IT architectural style that supports service orientation

... a composite application?
A set of related & integrated services that support a business process built on an SOA
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
A Registry Repository answers questions customers have about governing and managing their SOA.

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

How do I manage the services lifecycle?

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

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

How do I govern services as part of my SOA?

How do I increase service reuse?

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

How do I optimize service interactions to be better aligned with business process?
Proper SOA governance answers customer questions about their SOA

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?
Extension of IT governance focused on the **lifecycle of services** to ensure the business value of SOA

Why SOA Governance matters?
- **Realize business benefits of SOA**
  - Business process flexibility
  - Improved time to market
- **Mitigate business risk and regain control**
  - Maintaining quality of service
  - Ensuring consistency of service
- **Improved team effectiveness**
  - Measuring the right things
  - Communicating clearly between business and IT
A Conceptual Architectural View

ESB Stack

- WebSphere Message Broker (WMB)
- Routing, Event, Transformation, & Mediation Services
- WebSphere Message Queue (MQ)
- Messaging Services

Integrated Development/Configuration Environment

One Logical ESB
- Mainframe
- UNIX

High Availability on UNIX

WMB Toolkit

Service Management

Security

Registry Management

Tivoli Omegamon

TBG / RACF

WSRR
What is a registry … a repository?

**Registry?**
Contains information about services such as…
- Service interfaces
- Descriptions
- Parameters

**Repository?**
Stores information about the nature of service usage

An integrated Registry / Repository Solution is needed to 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
WSRR is a Critical Component of the ESB

Customer needs were:

- To easily discover services across the enterprise
- Control the consistency and integrity of new services - before they are published
- Enable change management with automatic subscription-based notifications
- Create customized information views
- Secure access to business services and artifacts
- Support run time look-up of services
- Provide content-based routing by established relationship type with message content
- Provide dynamic endpoint binding based on protocol affinity and service governance states
WSRR Provides Support for Governance

- Service Registry supports the management of service meta-data, service lifecycle management and SOA governance
- Registry serves as a repository for service meta-data
- Maintain access control of registry data
- Centralized version management
- Track, monitor and update service lifecycle – from inception, through deployment and retirement
- Event notification triggered on service meta-data changes such as communication endpoint, lifecycle state, classification etc

![Service Registry diagram]
A service must be published by the provider, with meta-data such as classification, description, communication endpoints, before it can be used.

The service consumer discovers the service by performing search, list, or browse operations.

Administrators manage access control lists, permissions, version management, subscription lists, user permissions.

Subscribers are notified of change events: Service endpoint modified event, state change event and meta-data change event.

WSRR Supports to Find, Publish, Manage and Subscribe to Services

**Find**
- Discover, Search, Retrieve Services

**Publish**
- Describe, Approve, Configure, Services

**Manage**
- Manage Policies, Change, Version, Classify, Analyze, Promote Services

**Subscribe**
- Identify, Notify, Secure, Access Services

**Service Registry**
- Lifecycle
- Metamodel
- Central Catalog
- Policy
- Governance
- Federation
Scenario - WSRR Provides Endpoint Resolution
Overview of Features

- **Manage service lifecycle**
  - Publish service
    - Manage artifacts and metadata
    - Configure variation of type relationship: binding
    - Establish a subscription list for notification
    - Classify and organize service taxonomy
  - Discover service
    - Browse taxonomy and conduct service search
    - Download artifacts
    - Subscribe to service notification
    - Associate service at design-time
    - Exercise the variation of type relationship: binding
  - Manage service states
    - Business and IS lifecycle states
      - Enumerate the possible states
    - Notify upon state change

- **Intra-System Federation**
  - Manage registry through development lifecycle
    - Promotion of entries among the stage of development
      - Development
      - QA
      - Stage
      - Production
    - Deployment mechanism
      - Automation
      - Procedures

- **Security**
  - Basic peripheral security
  - Role-based ACL for WSRR management
  - Role-based access control via the configurable governance model
WSRR – SOA Governance Interactions

**Life Cycle Management Processes**

1. Create
   - WSDL
   - XSD
   - SCDL
   - BPEL
   - Policy
   - MXML

2. Publish from Development Tools
3. Test and classify
4. Validate Artifacts
5. Awaiting Approval
6. Change impact analysis
7. Compliance checks
8. Change policy conformance
9. Scheduling
10. Deployment
11. Production configuration
12. Operational
13. Change impact Analysis
14. Retirement policy conformance
15. Retired

**Processes**

1. Service metadata artifacts are created
2. Tools, utilities and users publish servicemetadata to the Service Registry & Repository
3. LCM processes enforce testing, classifying and validation
4. Service and metadata is Published
5. Service is assigned a state of AWAITING APPROVAL
6. LCM processes drive impact analyses, compliance checks, change policy conformance and scheduling.
7. Service is approved
8. Service is assigned a state of APPROVED
9. Notifications are Generated
10. LCM processes drive: Deployment Production configuration
11. Service is promoted to production environment
12. Service is assigned an OPERATIONAL state.
13. LCM processes drive: impact of retiring retirement policy
14. Service is retired
15. Service is assigned an RETIRED state.

**States**

- Developing
- Registry & Repository
- Operational
- Retired
- Approved
- Awaiting Approval
- Approved
- Operational
- Retired
- Approved
- Awaiting Approval
- Approved
- Operational
- Retired
- Approved
End to End Scope

- **What** has to be done in a shared-service lifecycle?
- **What** is the scope of policies that are used to enforce governance?
- **When** is oversight and control appropriate and by whom?
- **Who** has the authority?
- **Where** is governance enforced (e.g., when published, at consumption)?
- **How** should the governance decisions be made?
- **How** is the service capability measured, to include milestones & conformance checkpoints?

Inception Phase
Define Phase
Elaboration Phase
Construction Phase
Transition Phase

Plan
Define
Enable
Measure
Integration Through ESB

- **ESB enables connectivity to all resources and assets in your SOA**
  - Up to the minute information from all parts of the business, and everything in it
  - Accelerate ROI for packaged applications
  - Make your files and file-based data work for you
  - Extending the lifecycle and value of existing applications, systems and data

- **Flexible, powerful configuration and qualities of service**
  - 24x7 production environments, with clustering and high availability
  - Hot deployment of new applications and services with powerful version control
  - Full Transaction support (JTS/JTA, EJBC, JMS, XA and 2 phase commit)

- **Secure your data and coordinate resource updates**
  - Update multiple resources in a transaction
  - Security end-to-end from one application to another, without additional programming
  - Extend the transaction to include different messaging providers
  - Transaction coordination across multiple systems and geographies
Service Registry Adding Value: Enriched ESB Interaction

- **Enhance connectivity**
  - Central, integrated service registry and service metadata repository
  - Help optimize service usage and performance across connectivity layer

- **Enrich ESB interaction**
  - Enable dynamic and efficient interactions between services at runtime
  - New Mediation capabilities allows dynamic endpoint lookup and selection

- **Help optimize service performance**
  - Enable enforcement of policies, Impact analysis

- **Better Control Enabling Governance**
  - Govern services throughout the service lifecycle

- **Federated service lifecycle support across the enterprise**
  - Integration and federation with other standard registries and repositories providing one reliable authoritative service reference

Encourage Reuse, Enhance Connectivity and Enable Governance with WebSphere ESB and WebSphere Message Broker, extended with WebSphere Service Registry and Repository
Benefits and Summary

- The customer and IBM jointly worked in developing and shaping requirements for WebSphere Service Registry and Repository
- WebSphere Message Broker providing Advanced ESB capabilities
- WebSphere Service Registry and Repository enriching ESB interactions with dynamic selection and endpoint resolution

<table>
<thead>
<tr>
<th>Feature</th>
<th>Benefit</th>
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<tbody>
<tr>
<td>Publish and find services and related metadata through all stages of SOA</td>
<td>Promote reuse and eliminate redundancies</td>
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<tr>
<td>Integration and federation with other standard registries and repositories</td>
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<tr>
<td>Enable optimized access to service metadata</td>
<td>Enrich SOA runtime interaction</td>
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<tr>
<td>Manage service interactions and policies</td>
<td></td>
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<tr>
<td>Facilitate service lifecycle with guards for state transitions</td>
<td>Better control of SOA with governance</td>
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<tr>
<td>Analyze impacts of service introduction, deletion or alteration by maintaining relationships</td>
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<tr>
<td>Manage role based access to services, changes, versioning and service retirement</td>
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Thank you
Q & A
Resources

WebSphere Service Registry and Repository website
www.ibm.com/software/integration/wsrr

WSRR Information Center
http://publib.boulder.ibm.com/infocenter/sr/v6r0/index.jsp

Technical articles:
- Introducing IBM WebSphere Service Registry and Repository, Part 1: Day in the Life of the Service Registry and Repository
- Introducing IBM WebSphere Service Registry and Repository, Part 2: Architecture, APIs, and content

IBM SOA website
www.ibm.com/soa

SOA Governance website
www.ibm.com/soa/gov