



Practical SOA Governance

Using the WSO2 Governance registry

Your business technologists. Powering progress

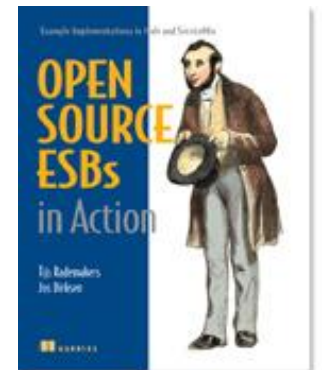
Atos
Consulting
& Technology Services

Who am I?

- ▶ Jos Dirksen
- ▶ Architect for Atos Consulting

- ▶ Author of:
 - Open Source ESBs in Action
 - SOA Governance in Action
 - <http://www.manning.com/dirksen/>

- ▶ Contact me at:
 - Jos.dirksen@gmail.com
 - Twitter: @josdirksen



Goal of the presentation

Introduce you to SOA Governance, and show you some aspects of how WSO2 Governance registry can help you in your SOA Governance effort.

Agenda

- ▶ Introduction
- ▶ **What is SOA Governance?**
- ▶ Registering Services
- ▶ Working with policies
- ▶ Integration with other tools and frameworks
- ▶ Summary
- ▶ Q&A



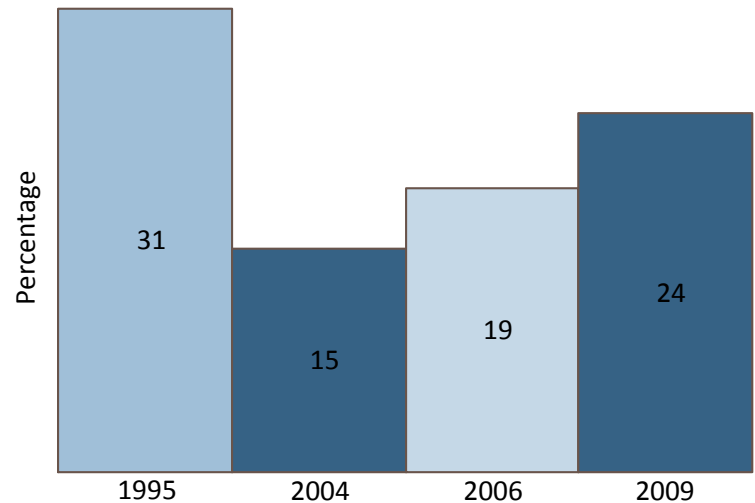
Corporate Governance

- ▶ Most people link governance to corporate governance
- ▶ Characteristics:
 - Discipline, transparency, independence, accountability, responsibility and fairness. (from corporate governance (Naidoo, 2002))
- ▶ Usually only see it when things go wrong: Enron
 - From \$111 billion to bankruptcy.
 - Influence energy price through political means
 - Stocks dropped from \$90 dollars to 30 cents in a couple of months

“Corporate governance defines a set of rules, laws, policies and regulations that affect how a corporation should be run. Corporate governance should make sure that corporations are run correctly, efficiently and responsibly. Well-executed corporate governance makes sure that all the stakeholders in a corporation are represented properly.”

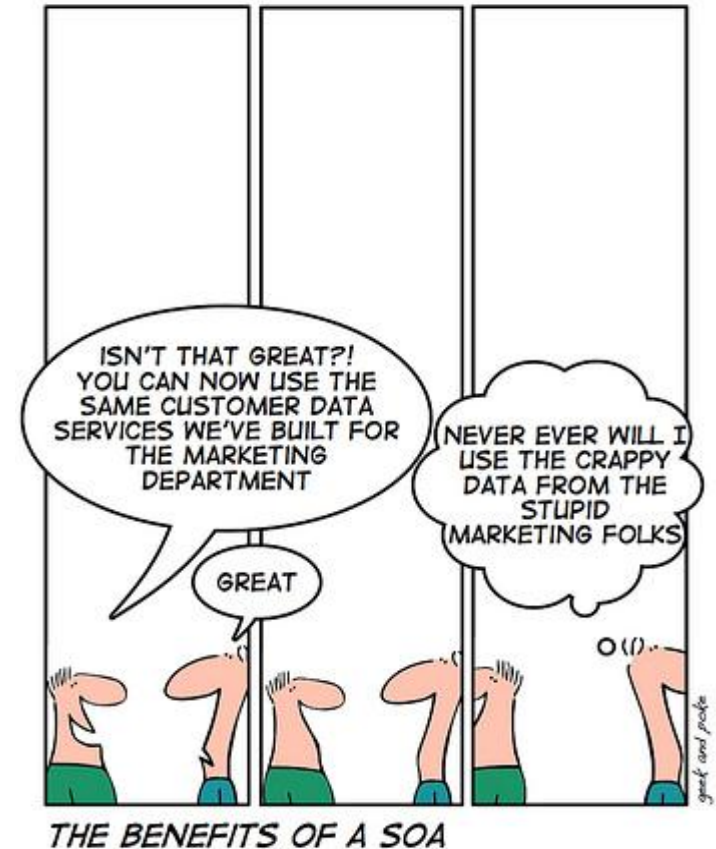
IT Governance

- ▶ Make sure IT projects provide business value
- ▶ Minimize the risks of IT projects
- ▶ Denver Airport Baggage system
 - Automatically route baggage
 - Just didn't work
 - 16 month delay in opening of airport
- ▶ Sainsbury's fulfillment system
 - Installed in 2003
 - Never worked correctly
 - Scrapped in 2007: write off £150M.



SOA Governance

- ▶ Advantages of SOA:
 - Business agility / reduced time to market
 - Reduced costs
 - Improve reuse of services
 - Improving software quality
 - Better interoperability
- ▶ SOA Governance: “the three P’s”
 - People
 - Processes
 - Policies



What is a policy?

- ▶ Policy consists out of three parts:
 - Policy assertion:
 - “All the messages send to the service must be encrypted”
 - Policy owner
 - Service provider
 - Policy enforcement
 - Technically or by having reviews
- ▶ Two categories:
 - Design time policies
 - Runtime policies

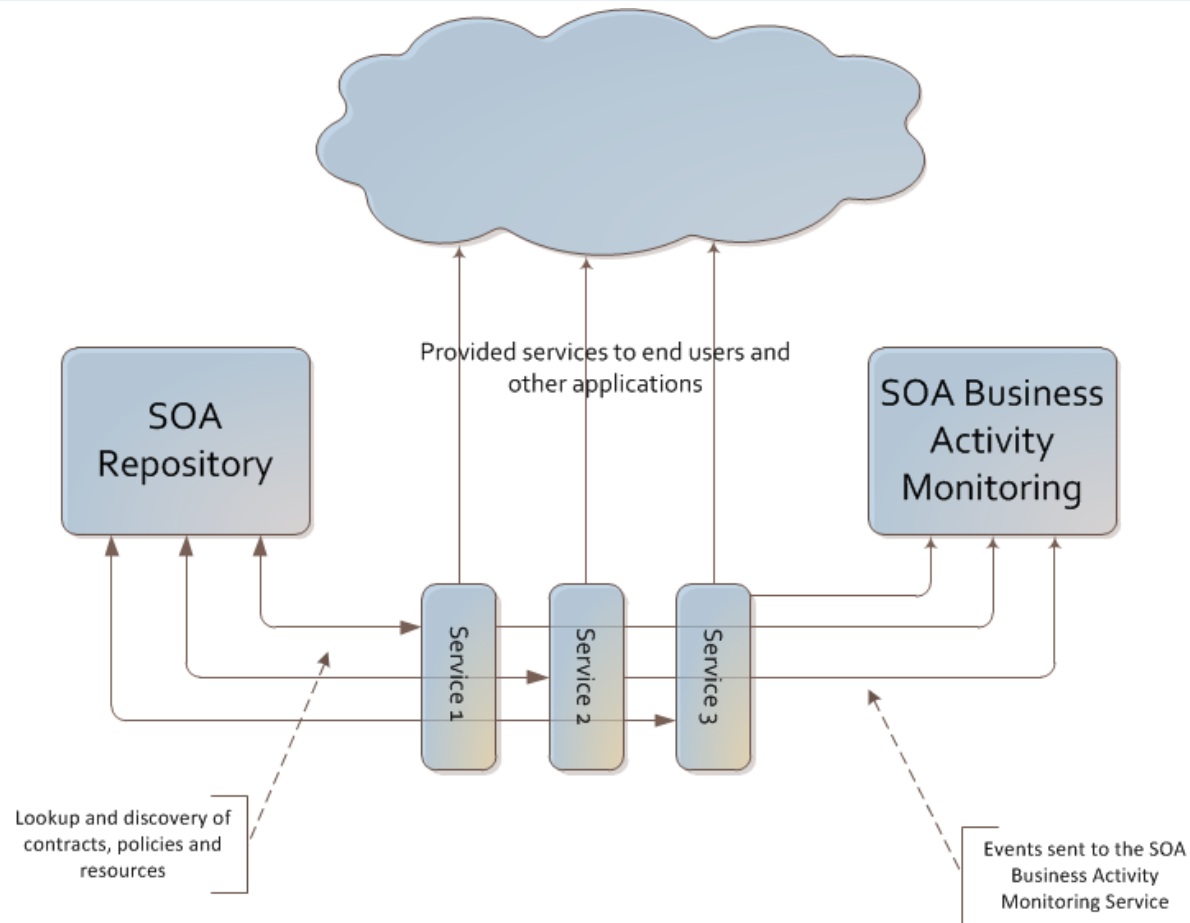
“A statement of obligations, constraints or other conditions of use of an owned entity as defined by a participant”

source: Reference Model for Service Oriented Architecture 1.0

Policy categories

- ▶ Design time policies:
 - Services must be documented
 - Services should have a defined lifecycle
 - Services must be implemented using REST
 - Services must be horizontally scalable
 - Services must use an audit log for all requests
- ▶ Runtime policies:
 - Service call must return result within 2 seconds
 - All service calls must be made over HTTPS
 - Specific process task must be executed within 10 minutes
 - Consumers may only make 100 request per hour

SOA Governance solution



Design time view using the WSO2 Governance Registry

The screenshot displays the WSO2 Governance Registry Management Console. The top navigation bar includes the WSO2 logo and 'Governance Registry' on the left, and 'Management Console' on the right. Below this, the user is signed in as 'admin@10.0.0.3:9443' with links for 'Sign-out', 'Docs', and 'About'. A left-hand navigation menu is visible, with 'Metadata' expanded to show 'Add', 'List', and 'Resources'. The 'List' section is further expanded to show 'Services', 'Policies', 'WSDLs', and 'Schemas'. The main content area shows the breadcrumb 'Home > Metadata > List > Services' and a 'Help' icon. The title 'Service List' is displayed above a table. The table has a search filter and contains one entry: 'Person Service' with namespace 'urn:soagovernance:person' and a 'Delete' action.

WSO2 Governance Registry Management Console

Signed-in as: admin@10.0.0.3:9443 | Sign-out | Docs | About

Home > Metadata > List > Services Help

Service List

Filter the service list

Service Name	Service Namespace	Actions
Person Service	urn:soagovernance:person	Delete

Runtime view using the WSO2 Business activity monitor



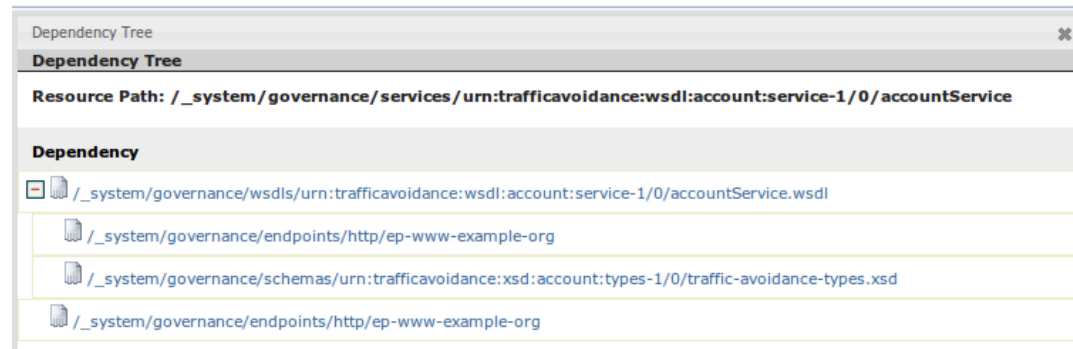
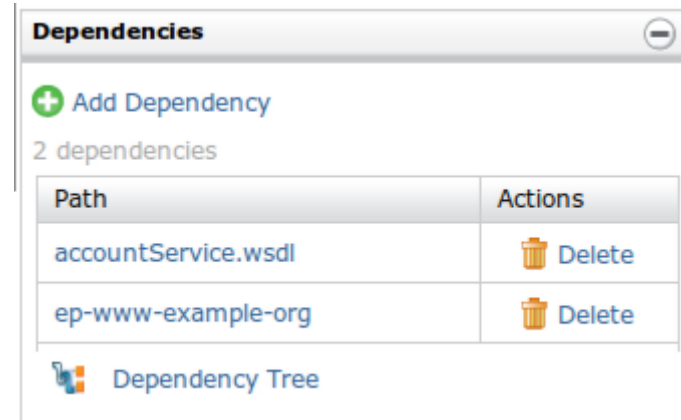
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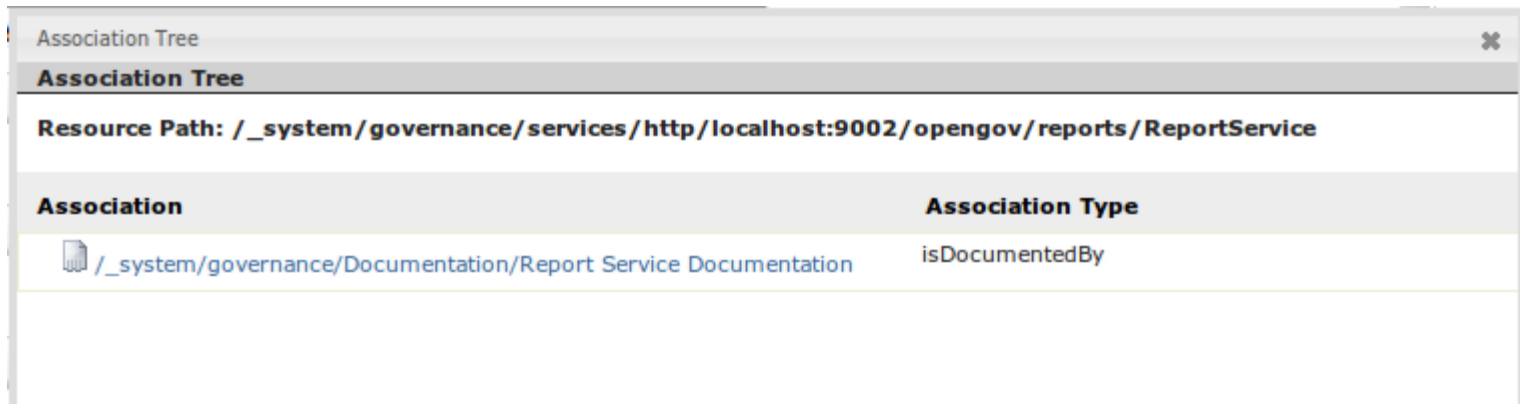
Service registration: WS-* based services

- ▶ WSDL is the contract
- ▶ When registering the WSO2 repository extracts the required information:
 - Service information
 - Endpoint
 - Schemas
 - WS-Policies
- ▶ Makes associations between:
 - Services and WSDL
 - Services and endpoints
 - WSDL and Schemas




Service registration: REST based services

- ▶ What defines a REST service?
 - There is no formal contract (WADL is not widely used)
 - Data format can be XML, more often is JSON
 - Identified by resource URI and content-type
 - Requires “Human readable” documentation
- ▶ Manually register as a service
- ▶ Manually add human readable documentation



The screenshot shows a window titled 'Association Tree' with a close button. Below the title bar, there is a header 'Association Tree' and a 'Resource Path' field containing the URI: `/_system/governance/services/http/localhost:9002/opengov/reports/ReportService`. Below this is a table with two columns: 'Association' and 'Association Type'. The table contains one row with a document icon in the 'Association' column and the text `/_system/governance/Documentation/Report Service Documentation`, and 'isDocumentedBy' in the 'Association Type' column.

Association	Association Type
 <code>/_system/governance/Documentation/Report Service Documentation</code>	isDocumentedBy

▶ DEMO

- WS* service registration
- REST service registration
- Modifying service UI

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One step back, what is a policy

- ▶ Each policy consists out of the following elements:
 - Name:
 - Essence of the policy
 - Statement:
 - Describe the policy unambiguously
 - Rationale:
 - What is the reason this policy is in place
 - Implications:
 - How does this affect me?
- ▶ Policies on many different levels
- ▶ Used for human consumption

**DON'T BE
EVIL***

***Unless It's Profitable**

Google

Google Bargains Away Net Neutrality

Advanced Search
Language Tools

Google Search

I'm Feeling Lucky

Policies in the registry?

- ▶ Policies can (and should) also be stored in the repository
- ▶ And each policy has a lifecycle:
 - Trial, Active, Deprecated, Obsolete
- ▶ Standard no support for policies:
 - WS-Policy is supported
 - WSO2 Registry allows custom UIs and lifecycles

Policy name *	Encrypted use of services
Category *	Business ▼
Description	All calls made to services containing personal or financial information must be made encrypted. Communication must be encrypted using TLS
External information	Non available
<input type="button" value="Save"/>	

Lifecycle
Name: PolicyLifecycle
State: Trial
Checklist:

- Pilot project executed?
- Policy accepted?

▶ DEMO

- How to define a custom UI
- Register a policy using this custom UI
- Attach a lifecycle to this policy

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Integration basics: WS-* based java client

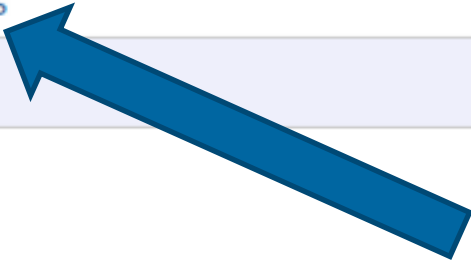
- ▶ WSO2 Governance registry offers:
 - WS-* based API (with a java client that uses it)
 - Exposes all registry functionality to other applications

```
WSRegistryServiceClient client;
client = initialize();
Resource governanceFolder = client.get("/_system/governance");
System.out.println("Folder description: " +
    governanceFolder.getDescription());
// get the WSDL folder resource (use the url we browsed to)
String wsdlUrl = "/_system/governance/wsdl/urn: " +
    "trafficavoidance:wsdl:account:service1/0/accountService.wsdl";
Resource wsdlResource = client.get(wsdlUrl);
// output the content of the wsdl
System.out.println(new String((byte[])wsdlResource.getContent()));
```

Direct HTTP(S) access to resources

- ▶ Each resource in the repo has unique link

Created:	By admin 30 Aug 16:08:05
Last Updated:	By admin 16 Oct 20:10:15
Media Type:	application/wsdl+xml
Checkpoint:	 Create Checkpoint
Versions:	 View versions
Permalink:	 HTTP  HTTPS
Description:	 Edit



Nice to know

► Links in WSDLs are resolved

```
<wsdl:types>
  <xsd:schema targetNamespace="urn:trafficavoidance:xsd:account:service:types-1.0">
    <xsd:annotation>
      <xsd:documentation>
        In this schema all the types used in the services
        are defined. This schema imports the namespace and
        the associated types from the xsd in the same
        directory.
      </xsd:documentation>
    </xsd:annotation>
    <xsd:import namespace="urn:trafficavoidance:xsd:account:types-1.0"
      schemaLocation="../../../schemas/urn:trafficavoidance:xsd:account:types-1/0/traffic-avoidance-types.xsd"/>
  </xsd:schema>
</wsdl:types>
```

This integration allows you to easily...

- ▶ Store property files in the repository and use them from Spring

```
<bean id="propertiesHolder" class="PropertiesHolder" > |#2
  <property name="location"
value="http://10.0.0.9:9763/registry/resource/_system/governance
      /properties/example-properties.txt"/>
  <property name="username" value="admin"/>
  <property name="password" value="admin"/>
</bean>
```



This integration allows you to easily...

- ▶ Use CXF to provision WSDLs from the repository

```
public class MyWSDLQueryHandler extends WSDLQueryHandler {
    private String baseLocation = "http://.../governance/wsdl/";

    public void writeResponse(String baseUri, String ctxUri,
        EndpointInfo endpointInfo, OutputStream os) {

        QName qname = endpointInfo.getName();
        String qnameLocal = qname.getLocalPart();
        String qnameNs = qname.getNamespaceURI();

        String locationToQuery = baseLocation
            + qnameNs.replace('.', '/') + ctxUri + ".wsdl";
        InputStream is = getWSDL(locationToQuery);
        ... (copy inputstream to outputstream)
    }
}
```

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Summary

- ▶ SOA Governance is complex, involves people, processes and policies.
- ▶ Tools can help in making SOA Governance easier
- ▶ WSO2 Registry is one of the few open source registries, allows you to:
 - Easily register services
 - Register other types of content
 - Create custom UIs
 - Easily integrate with other tools
 - Single most important component of the WSO2 stack

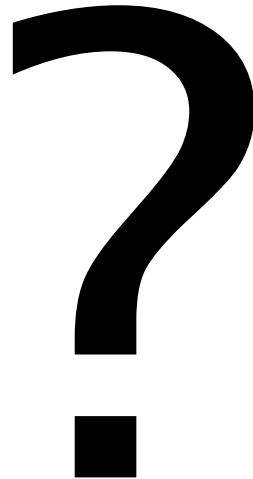


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Questions?





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