SCA Support In Websphere

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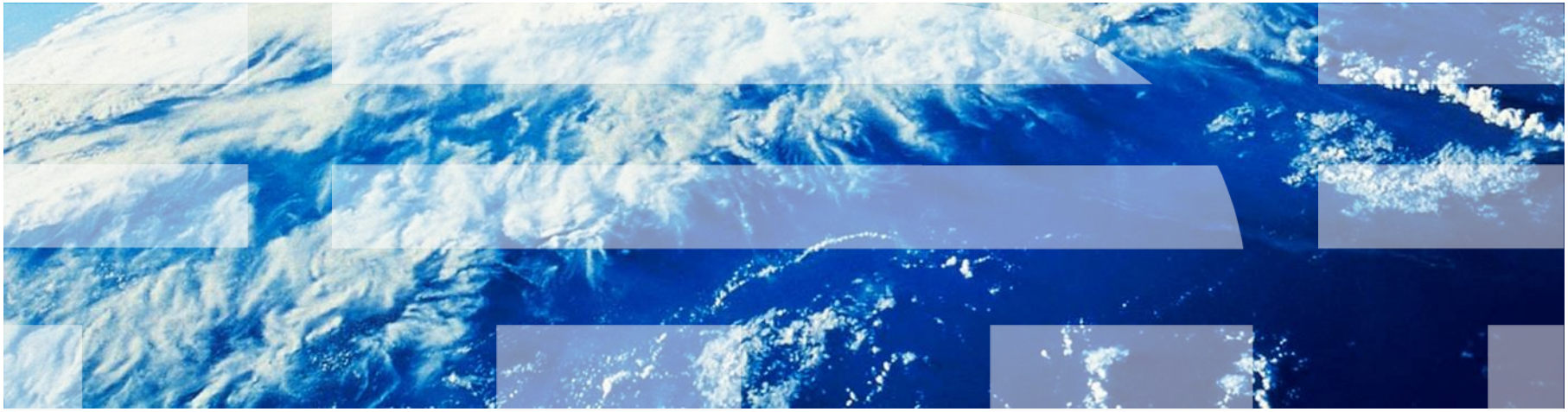


Agenda

- The Needs of the Business
- A taste of Service Components
- Service Component Architecture
- IBM Products & SCA
- Epilogue

- *What are the barriers to business flexibility?*
- *What do businesses need to improve the bottom line?*
- *How does SOA help?*
- *What are the principles and benefits of good services?*

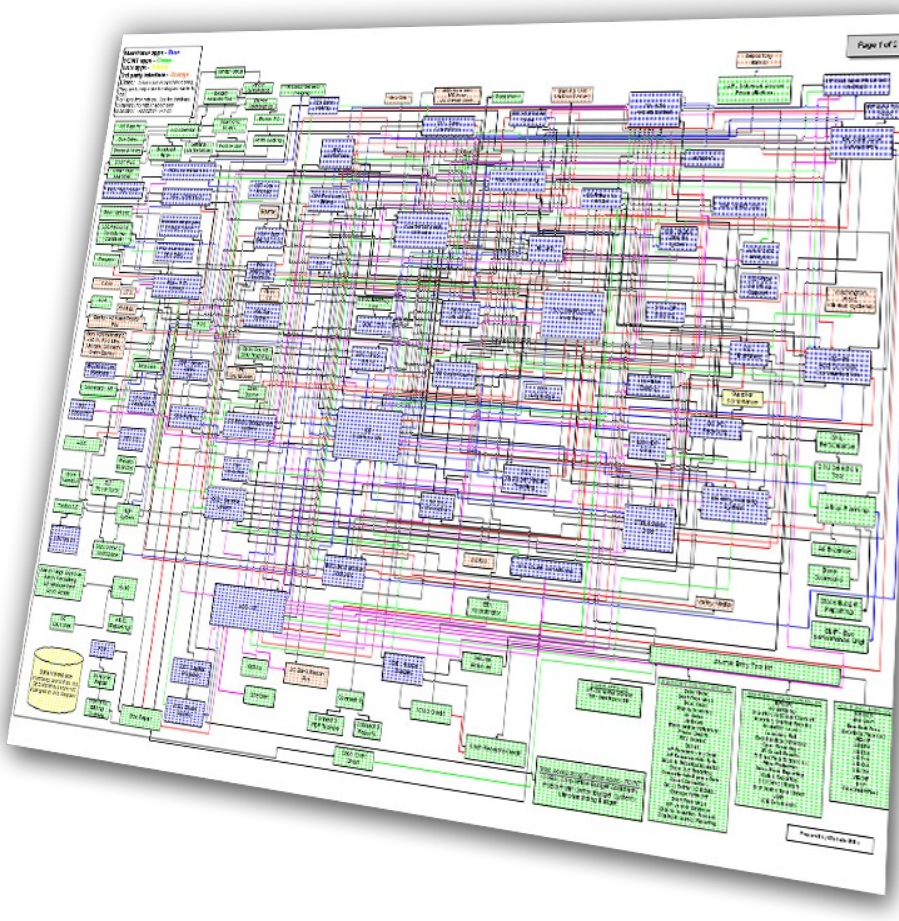
Introduction

- Simon Laws - *simon_laws@uk.ibm.com*
  - Member of IBM open source SOA team at IBM Hursley
    - provides SCA implementation in WAS
  - Committer on Apache Tuscany project
  - Co-author of "Tuscany SCA in Action" book

- Mike Edwards - *mike_edwards@uk.ibm.com*
  - works on SOA and Standards at IBM Hursley
  - Co-chair OASIS SCA Assembly technical committee
  - Committer on Apache Tuscany project

Business IT Reuse and Flexibility

- Barriers
  - Lack of business process standards.
  - Lack of enterprise-wide business, architecture and operation policies.
  - Infrastructure built with no roadmap.
  - Isolated LOB decision making.
- Forces
  - Economics: Globalization and fierce competition demands greater flexibility and innovation.
  - Change: Business processes must change daily, not monthly or yearly.
  - CEO imperative: Growth thru agility.
  - Cost: Reduction thru asset reuse.
  - Being an On Demand business.



We Need Good Services

- Diverse
- Established
- Governed
- Reusable
- Adaptable
- Reliable
- Funded
- Managed
- Unique
- Flexible

- Narrow
- Redundant
- Ill-conceived
- Rigid
- Un-vetted

How do we build these

instead of these

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- *What are Service Components?*
- *How can they help build enterprise applications?*
- *What flexibility do they provide?*
- *Are they easy to build and configure?*

Demo 1: Creating Components

Maximum Reach

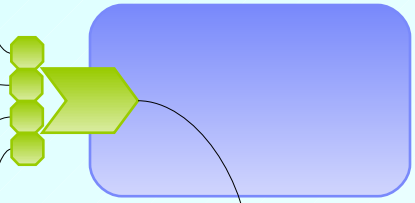
- *How do I make my service available to a wide audience of people with diverse skills and applications on diverse programming models?*

Web Service Client Applications

Java EE (EJB) Applications

JMS Applications

Web 2.0 Applications



Implementation

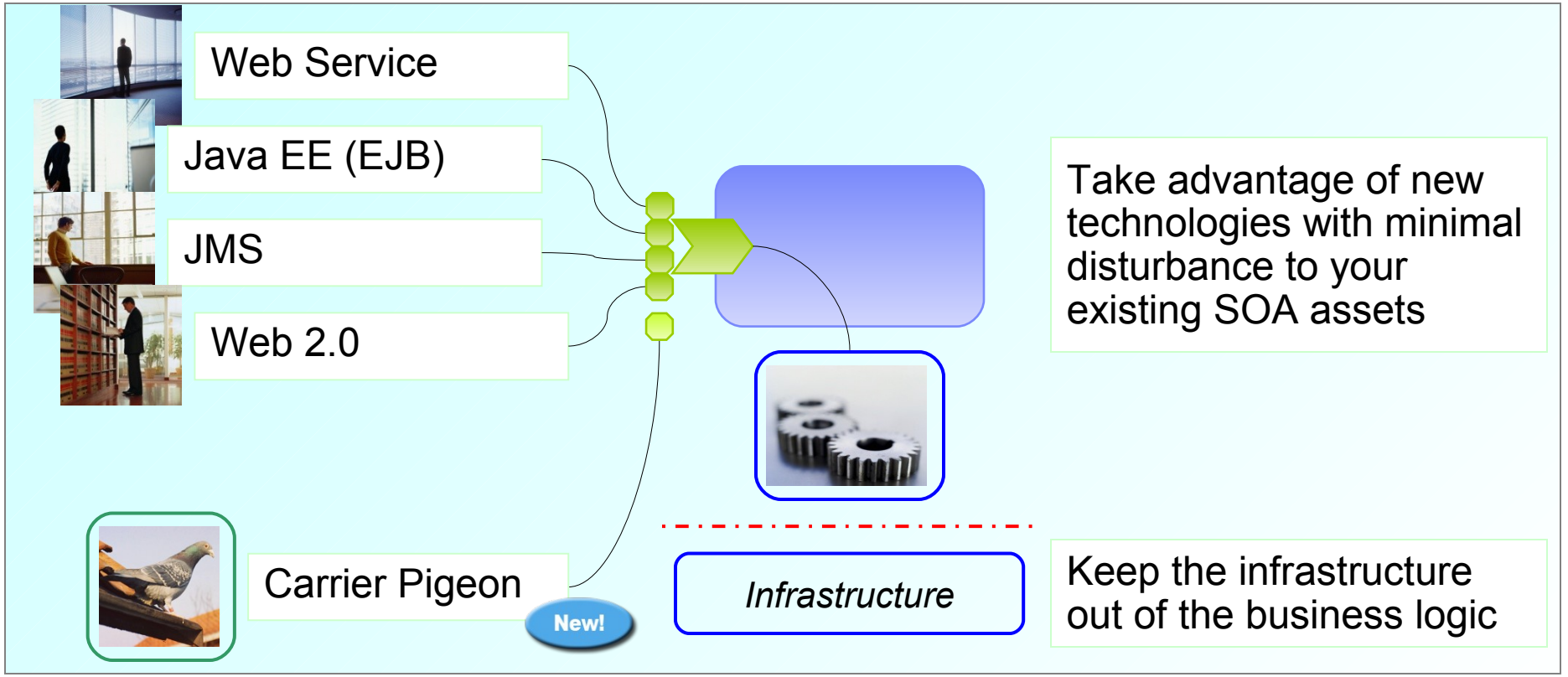
1. Consumers gravitate to providers who offer easy-to-use services.

2. Consumers outnumber providers.

Make your **one** service available in **many** forms.

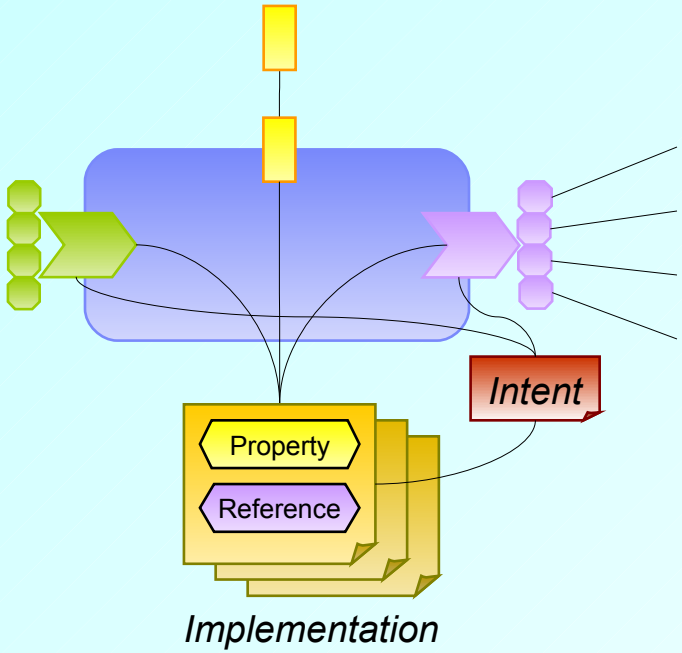
Future Proof Your Assets

- *When new implementation and protocol technologies emerge as they invariably do, how to exploit them without poking the 800 lb gorilla?*



Change When you Need to, or Want to

- *How to change or enhance services without disrupting its consumers or even implementation assets?*



Declare ***properties*** in your implementation - set and inject their values from outside

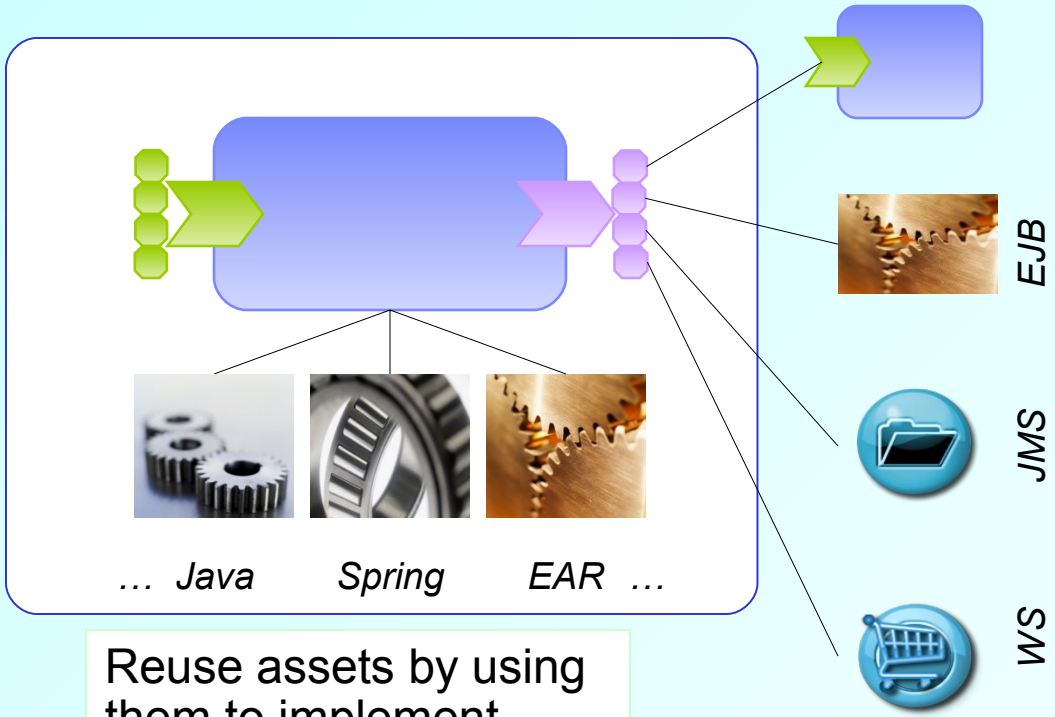
Dynamically re-wire or re-bind references to services the implementation needs

Revise ***qualities of service*** that govern non-functional behaviour of the service

Enhance or replace the implementation of the service independent of its contract

Reduce, Reuse, Adapt

- *How to tap into and reuse valuable IT collateral in my lines of business and reduce redundancy for the benefit of the enterprise?*

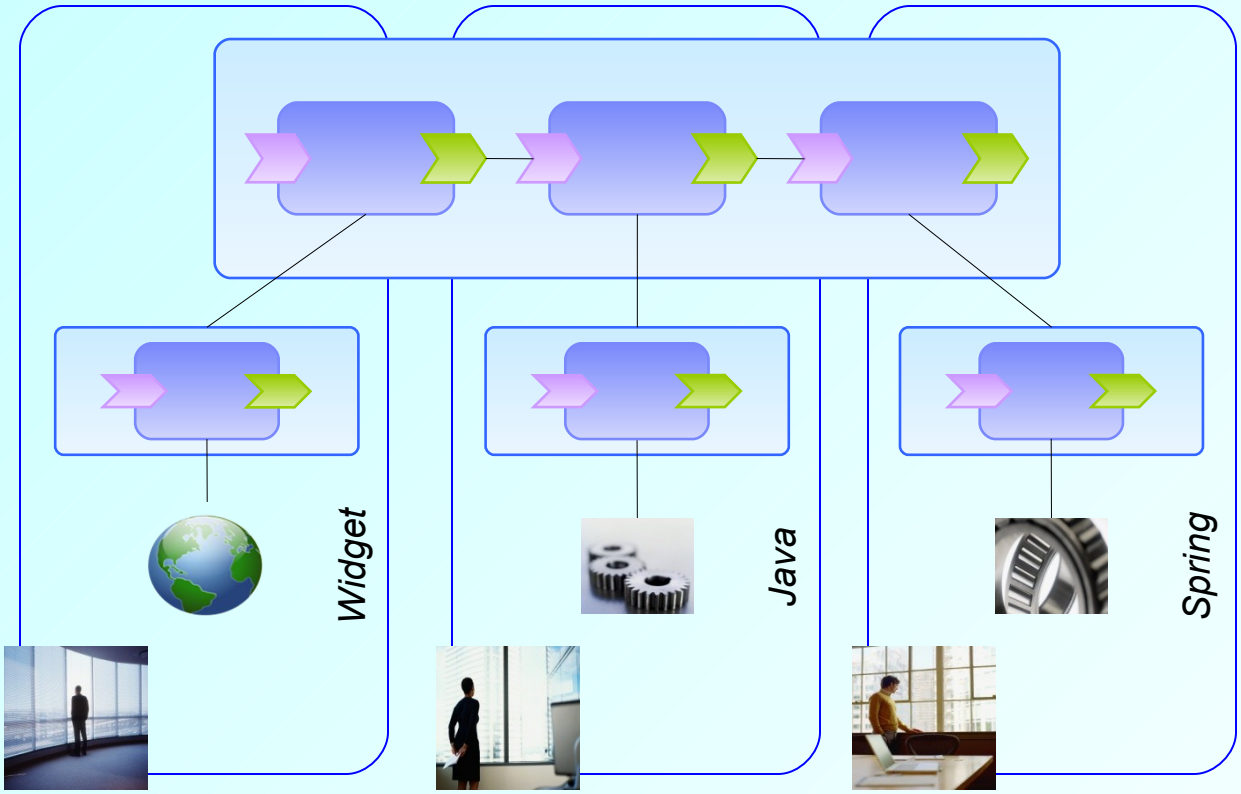


Reuse assets by using them to implement service components

Reuse assets by communicating with them on their terms

Diversity

- *Many projects and lines of business with unique skills, managing applications on different technologies. How can they serve each other?*



Assemble composite services from simpler services

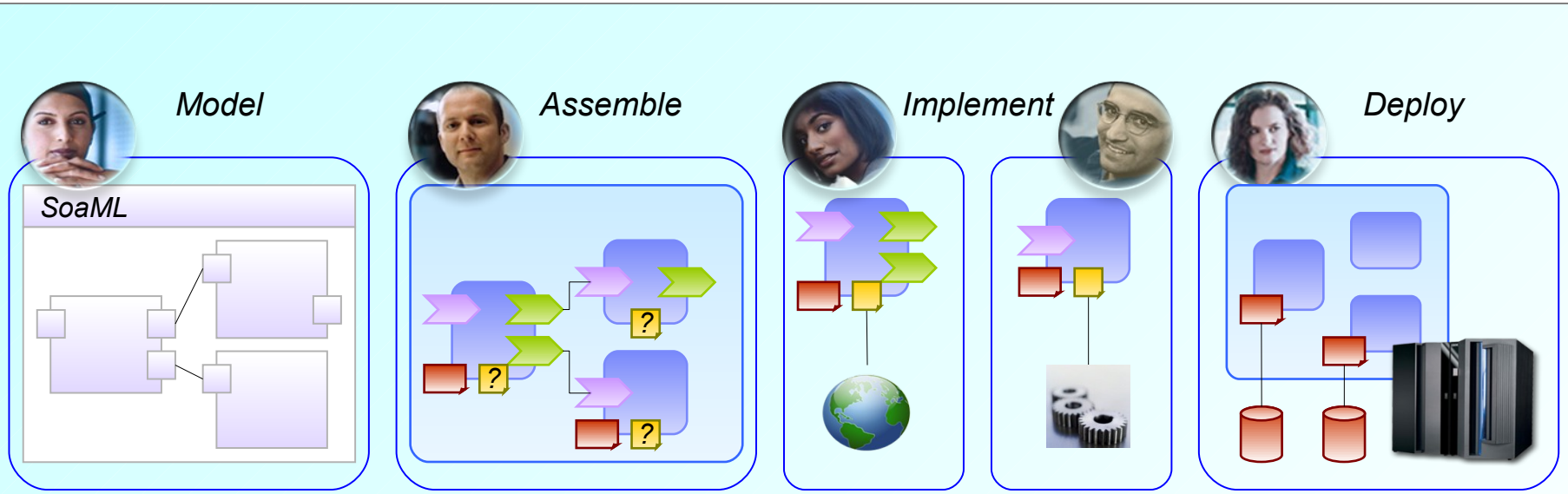
Maximize reuse

Exploit heterogeneity

Build atomic services around new or existing implementation assets of diverse kinds

Separation of Roles

- *How to help employees focus on what they're good at?*



Model services, interfaces and dependencies	Transform to assembly of components	Write or plug-in implementations	Deploy, configure, tune, operate

Demo 2: SCA Composition

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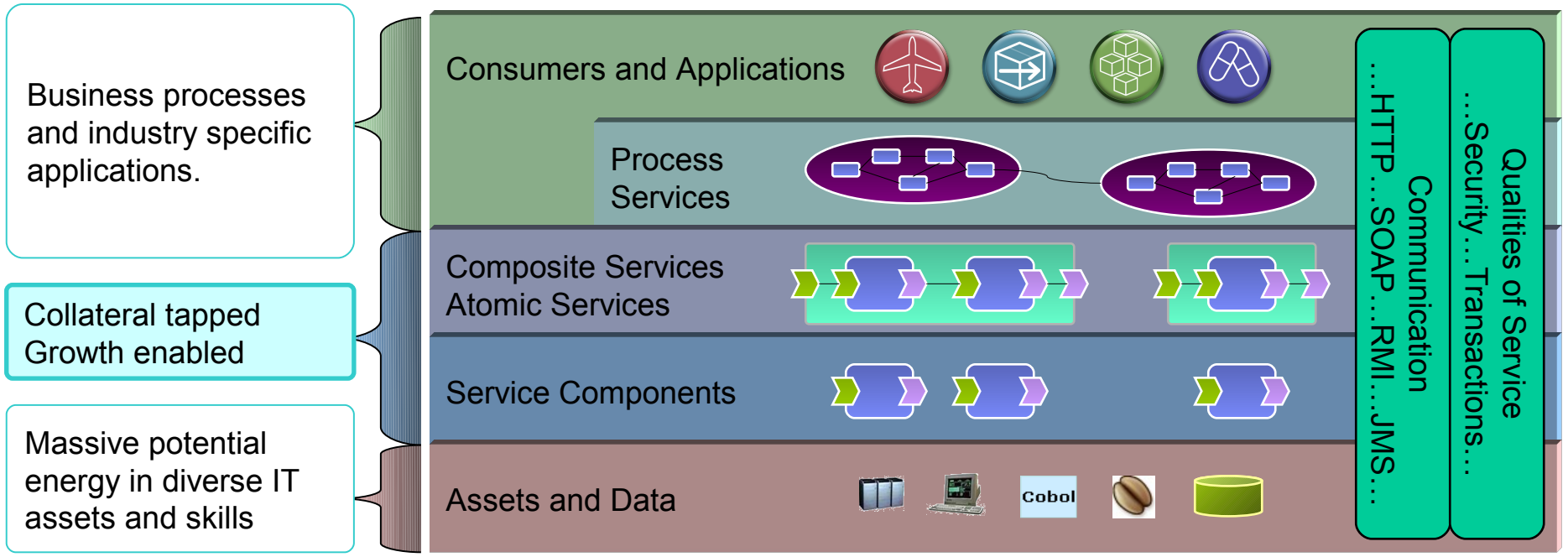
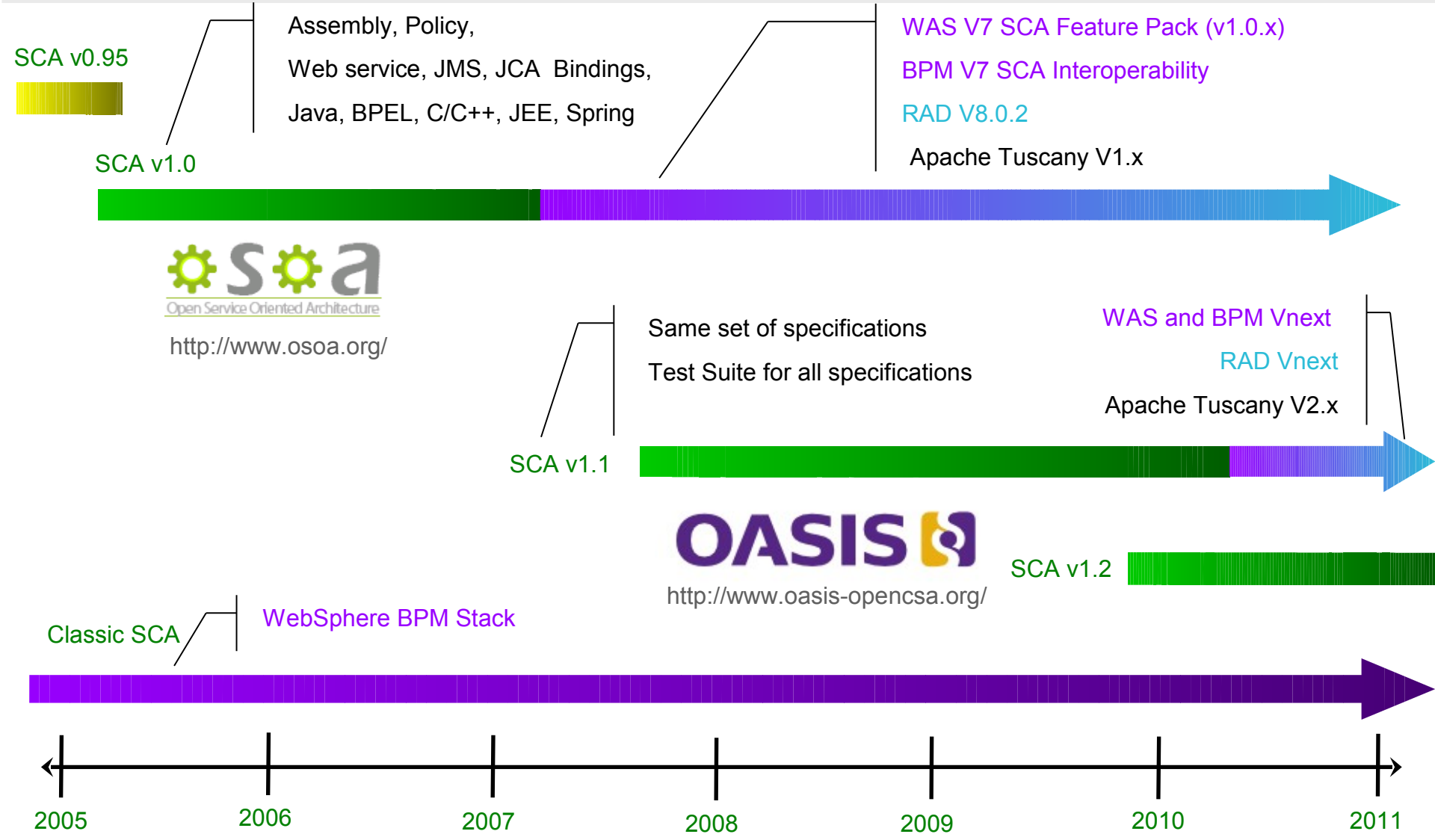
- *What is SCA?*
- *Where did it come from?*
- *What are the key pieces of SCA?*
- *What is SCA not meant for?*

SCA – Concrete Realization of SOA Style

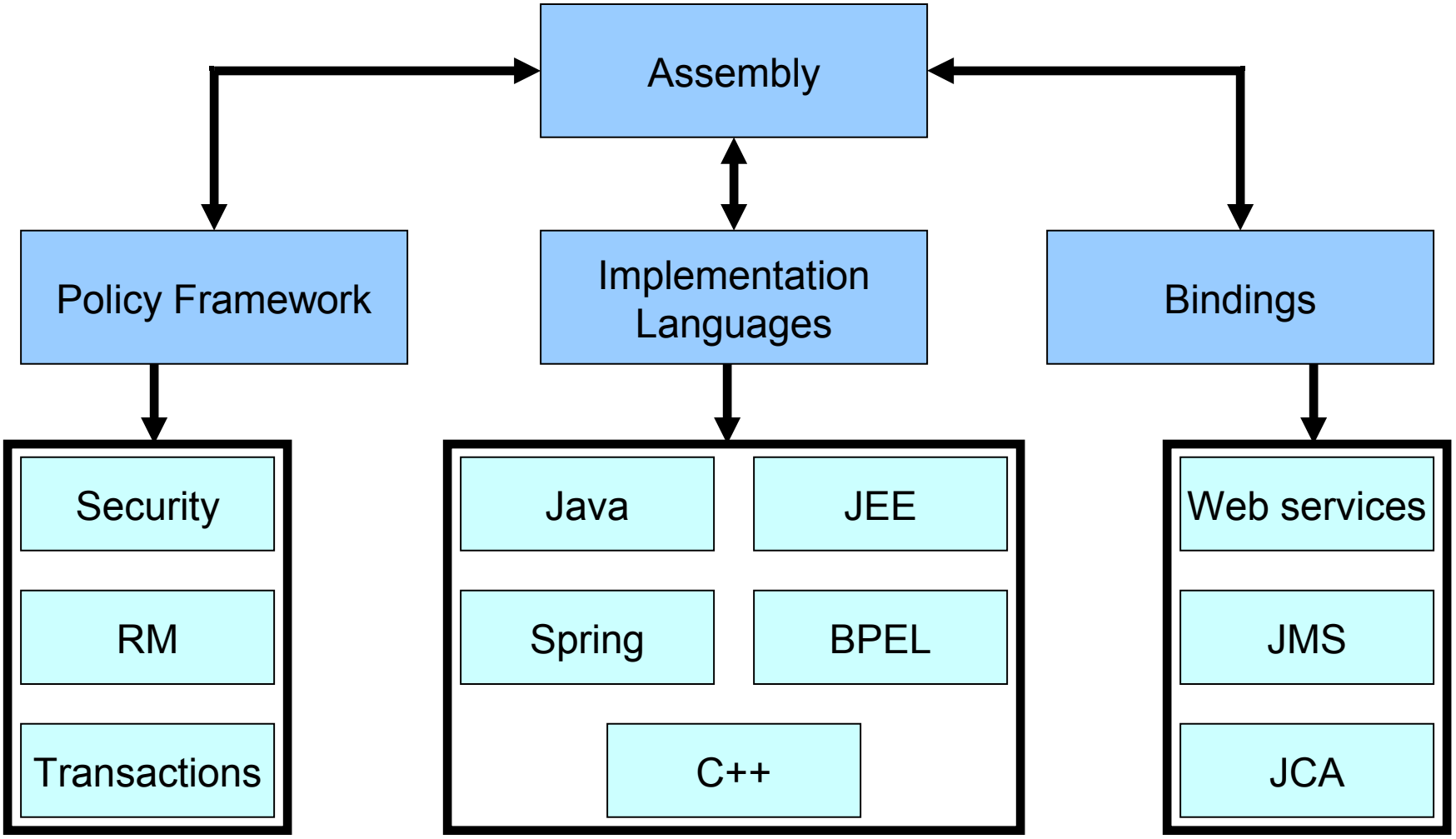
- Use SCA to…
  - Assemble diverse IT assets into SOA solutions
  - Loosely couple course grained service components
  - Realize highly reusable, multi-lingual, flexible services



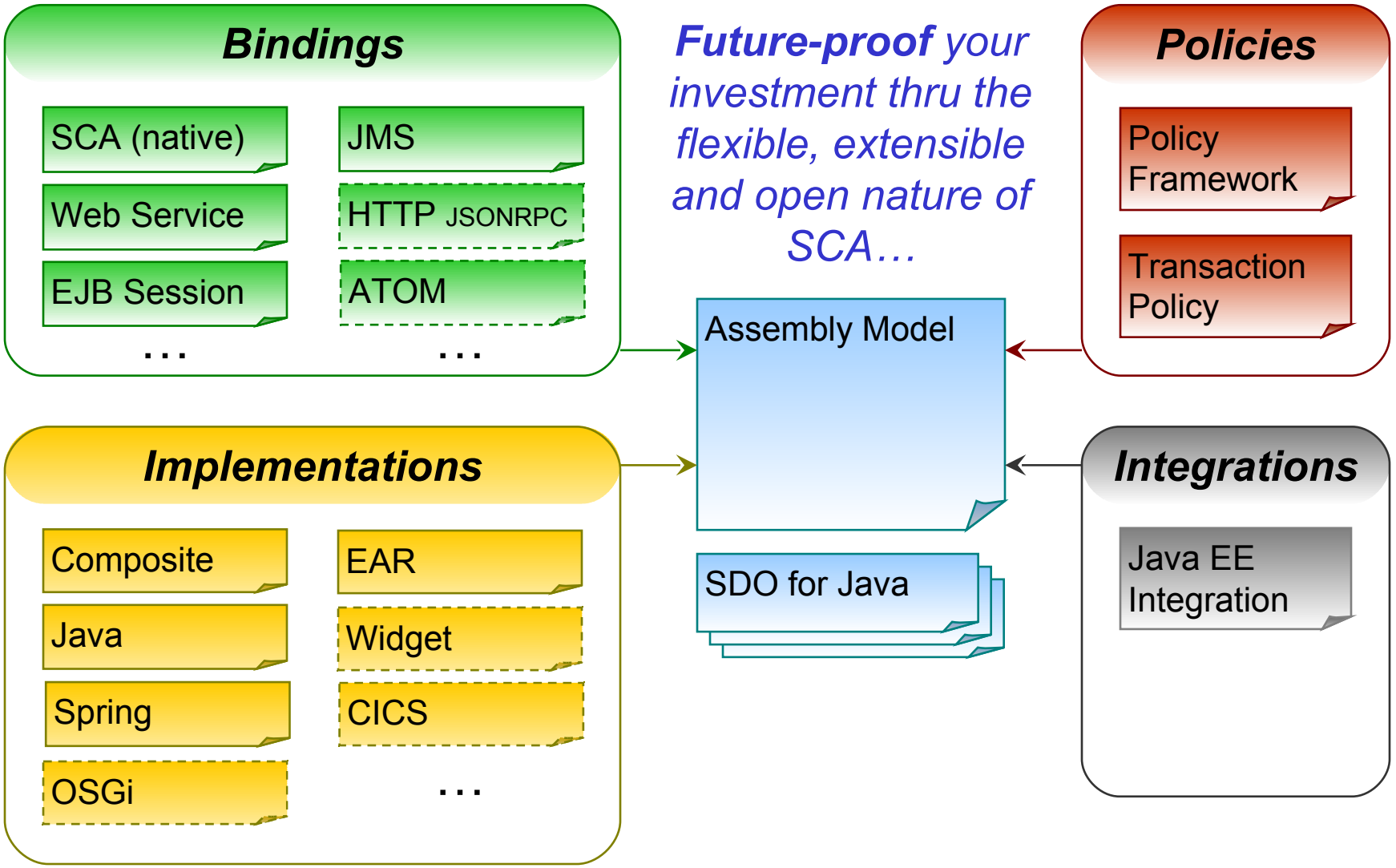
Technology Timeline



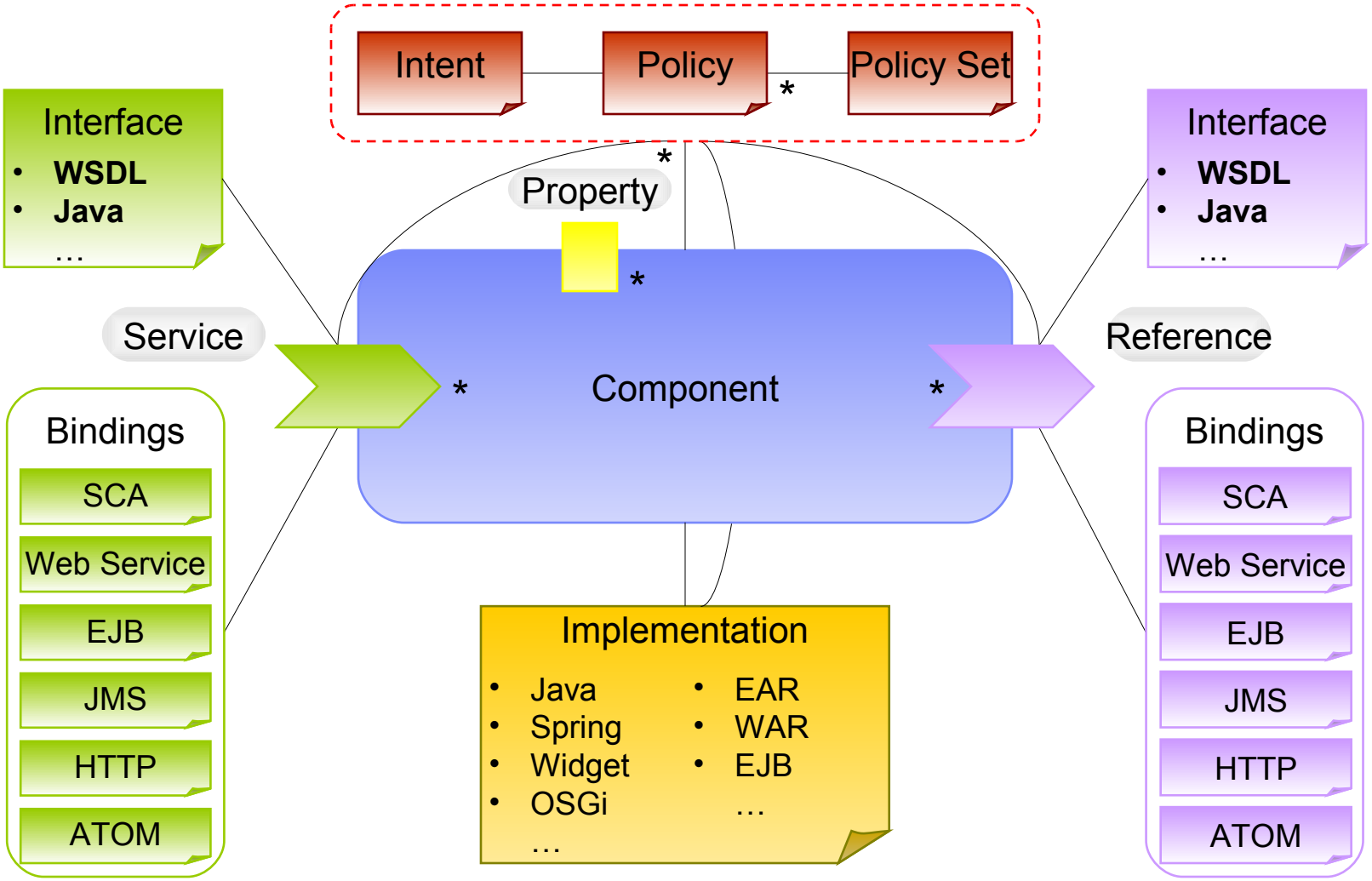
OASIS SCA Specifications



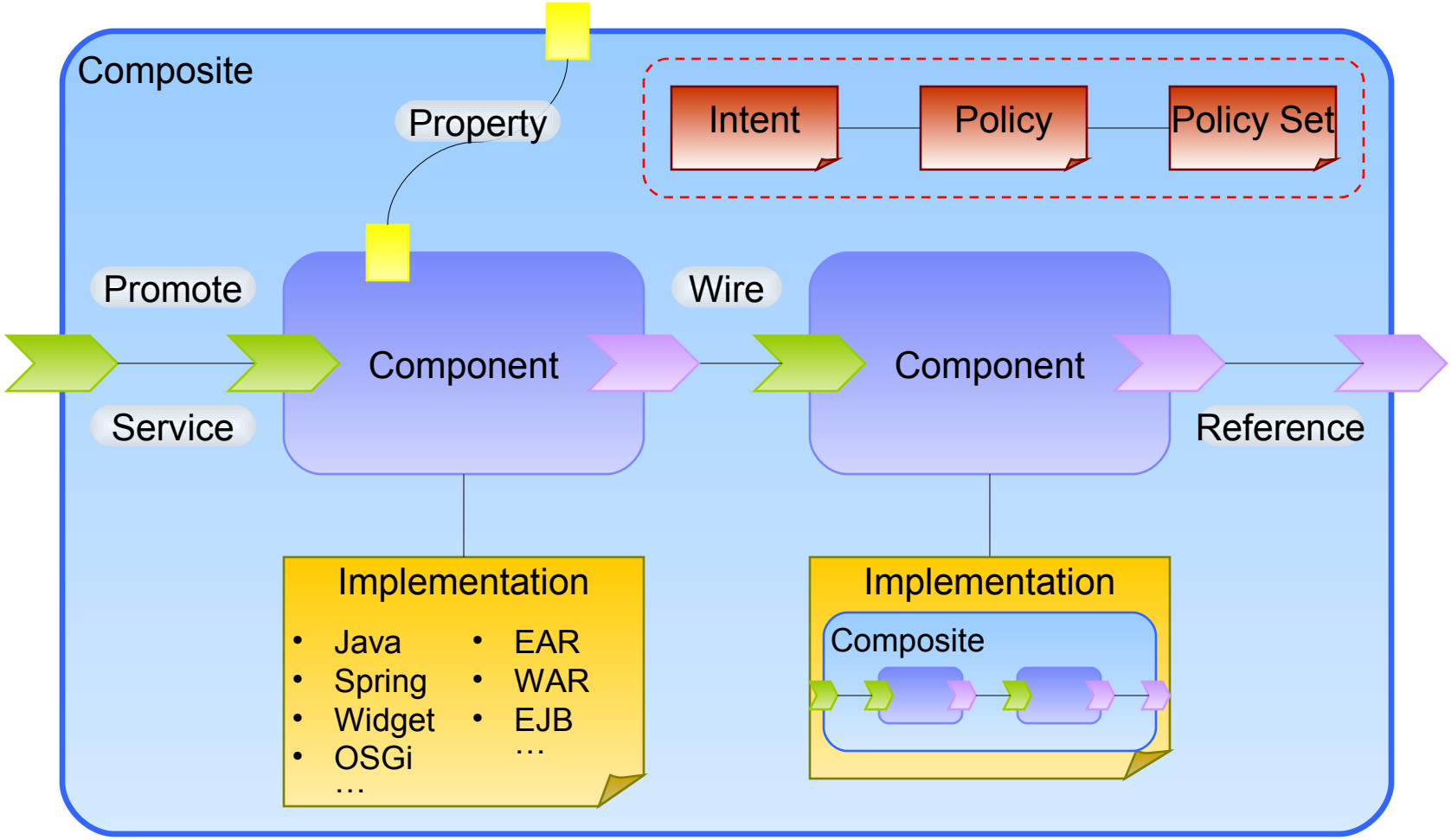
Wider SCA Specification Family



Components



Composites

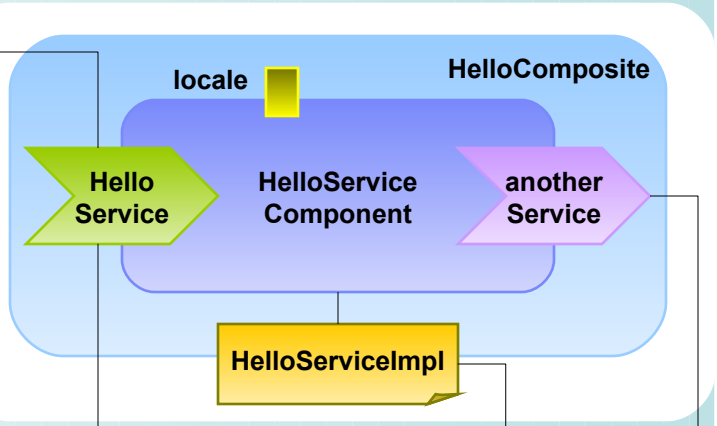


A Taste of SCA Annotated Java

```
package service;
@Remotable
public interface HelloService
{
    String hello ( String message );
}
```

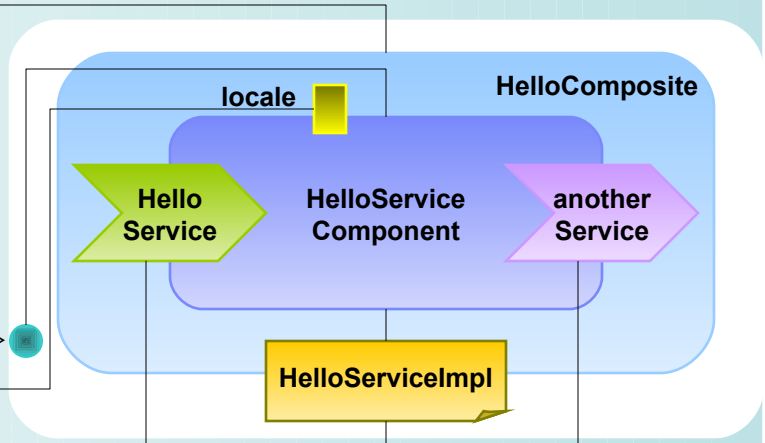
```
package service;
@Service ( HelloService.class )
public class HelloServiceImpl implements HelloService
{
    @Reference public AnotherService anotherService;

    String hello ( String message ) {
        return anotherService.howdy(message);
    }
}
```

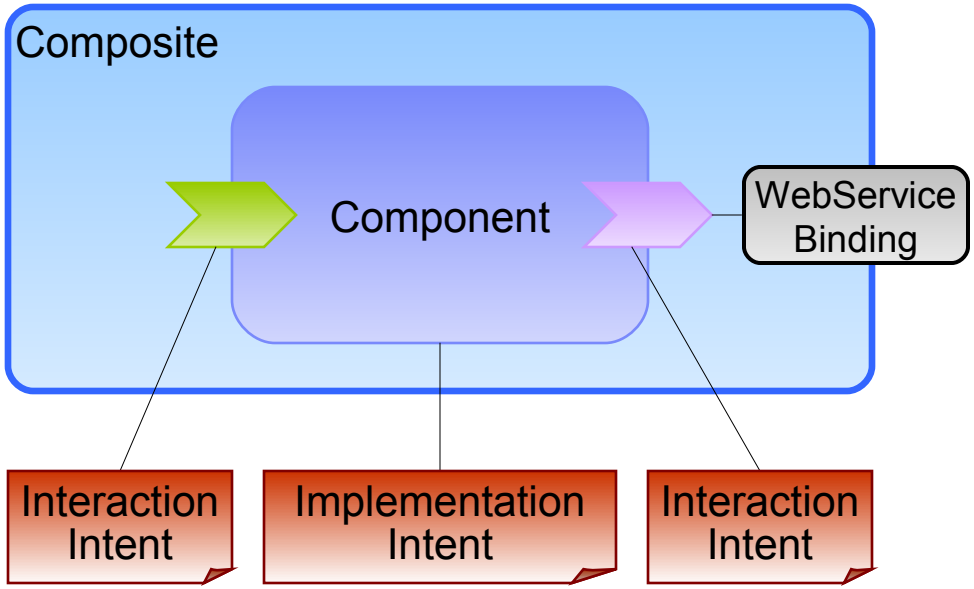


What the Composite Really Looks Like

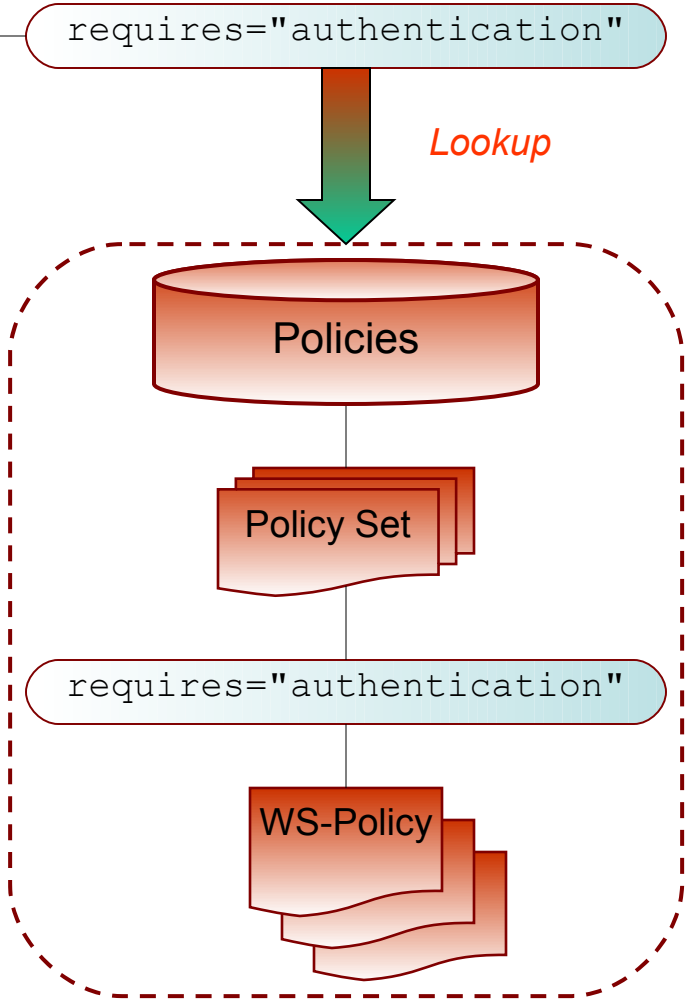
```
<?xml version="1.0" encoding="ASCII"?>
<composite name="HelloComposite"
 xmlns="http://www.osoa.org/xmlns/sca/1.0"
 targetNamespace="http://foo.com">
    <component name="HelloServiceComponent">
        <property name="locale">
            ...
        </property>
        <service name="HelloService">
            ...
        </service>
        <reference name="anotherService">
            ...
        </reference>
        <implementation.java class="services.HelloServiceImpl"/>
    </component>
</composite>
```



Abstract and Concrete Policies




```
<component name="Component">
  <implementation.java class="..."/>
  <service name="MyService">
    <interface.java interface="..."/>
    <binding.ws requires="authentication"
  .../>
  </service>
</component>
```



What SCA isn't

- SCA does not choreograph services or model workflows
- SCA is not an Enterprise Service Bus
- SCA is not Web services
  - Web services = one binding technology to SCA
  - WSDL = one interface description language to SCA
- SCA is not tied to a specific runtime environment
  - SCA complements and does not replace Java EE, Spring, etc.
  - SCA is not specifically for tight coupling of fine grained assets
    - can do it but other technologies may be better suited
- SCA does not force specific languages / technologies

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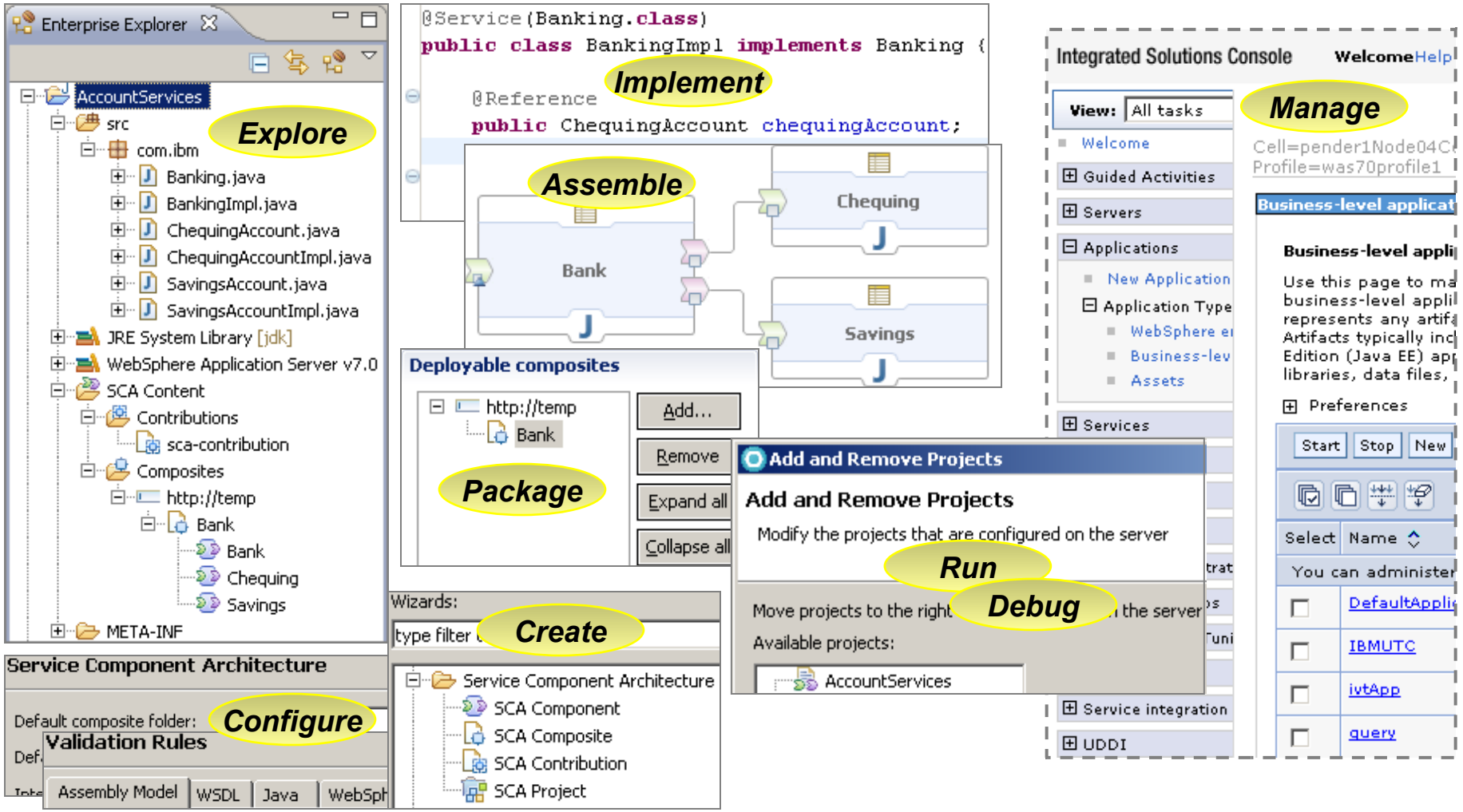
- *How do I model SCA applications?*
- *How do I develop SCA applications?*
- *How do I deploy, run and test SCA applications?*

Rational Tooling for SCA Development

- Rational Software Architect
  - Build well-architected, business-driven service models including:
    - Service interfaces, service data, service participants, and participant assemblies (SOAML)
  - UML-to-SCA transforms to generate SCA collateral:
    - WSDL documents, XML schemas and SCA composites.
    - Java interface specifications, Java XML (JAXB) schema classes skeleton Java component implementations
- Rational Application Developer
  - graphical editors, wizards, validators, deployment tools & more
    - to develop complete, deployable SCA assemblies…
    - From RSA-generated content
    - From existing implementation assets or interface descriptions
    - From scratch

Rational Application Developer tools for SCA WebSphere Application Server administration



WebSphere Application Server 7 Feature Pack for SCA

Features

- Implementation
  - Java
  - Composite
  - JEE
  - Widget
  - Spring
  - OSGi Application
- Binding
  - SCA
  - Web services
  - EJB
  - JMS
  - Atom
  - HTTP (json-rpc)
- Data Binding:
  - JAXB
  - Service Data Objects 2.1.1 (JSR235)
- Policy Framework and Transaction Policy
  - Security, Transactions, Reliable messaging...

Specifications

- OSOA SCA v1.0

WebSphere Integration

- Business Level Application Management
- Security, Transaction, Reliability
- WebServices PolicySet support
- Binding extensions for controlling wire format (v1.0.1)
- Dynamic Resource Creation for development ease of use (v1.0.1)
  - JMS resources needed for bindings can be automatically created for Platform Messaging scenarios.
- Network Deployment
  - Highly available

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- *Conclusions*
- *Resources*
- *Appendices*

Summary

- Businesses need IT solutions that enable them to respond quickly to change and accomplish loose integration across multiple lines of business

- The SCA programming model is designed to help you…
  - Recycle existing assets implemented with diverse technologies
  - Reuse existing assets over diverse communication protocols
  - Build and continuously improve flexible service assets that integrate with numerous, often entrenched, technologies

- SCA programming model, WebSphere run-time and Rational tools bring this to fruition

How do I learn more?

- Download the RAD v8.0.1 Trial (8.0.2 just available)
  - Includes the WAS v7 test environment + Feature Pack for SCA
  - http://www-01.ibm.com/software/awdtools/developer/application/index.html
- Download the WAS v7 Trial and Feature Pack for SCA
  - http://www-01.ibm.com/software/webservers/appserv/was/
  - http://www-01.ibm.com/software/webservers/appserv/was/featurepacks/sca/
- Read about SCA on developerWorks
  - http://www.ibm.com/developerworks/views/websphere/library.jsp
    - Search Keyword: “Exploring Feature Pack for SCA”
- Visit the SOA Sandbox: http://ibm.com/soa

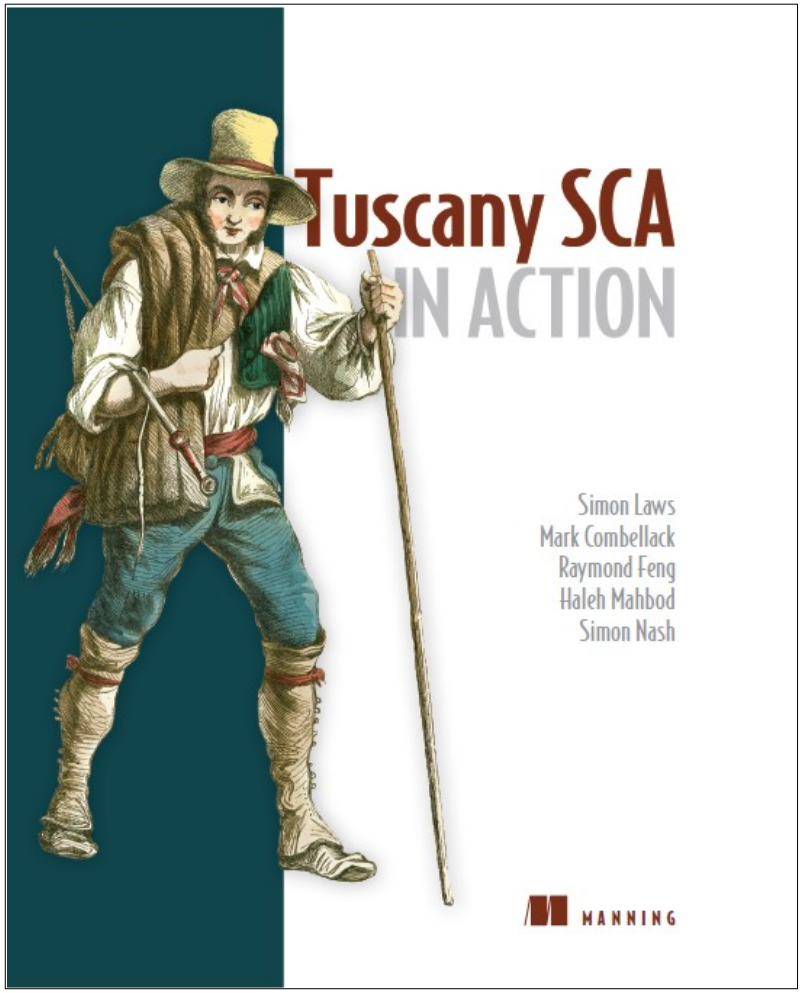
Resources

- Open Service Oriented Architecture Web site for SCA v1.0 Specifications
  - http://www.osoa.org/
- OASIS SCA Assembly v1.1
  - http://www.oasis-open.org/committees/tc_home.php?wg_abbrev=sca-assembly
- Apache Tuscany Web site
  - http://incubator.apache.org/tuscany/
- SCA feature pack support Web site
  - http://www-01.ibm.com/support/docview.wss?rs=180&context=SSEQTP&

More resources

- DeveloperWorks
  - http://www.ibm.com/developerworks/websphere
- SCA feature pack v1.0 IBM Education Assistant content
  - http://publib.boulder.ibm.com/infocenter/ieduasst/v1r1m0/index.jsp?topic=/com.ibm.iea.wasfp
- SCA feature pack information center
  - http://publib.boulder.ibm.com/infocenter/wasinfo/v7r0/topic/com.ibm.websphere.soafep.multip
- Rational Application Developer
  - http://ibm.com/software/awdtools/developer/application/index.html
- Rational Application Developer V8.0.2 Information Center
  - http://publib.boulder.ibm.com/infocenter/radhelp/v8/index.jsp
- Exploring the WebSphere application Server feature pack for SCA
  - http://www.ibm.com/developerworks/websphere/library/techarticles/0812_beck/0812_beck.ht
- WebSphere Application Server V7 service component architecture FAQs
  - http://www-01.ibm.com/software/webservers/appserv/was/featurepacks/sca/faq.html

Tuscany SCA In Action



- WebSphere SCA support uses the Java SCA runtime from the open source Apache Tuscany project
- You can find out more about Apache Tuscany here: http://tuscany.apache.org/
- There is even a Manning book about it: http://www.manning.com/laws/

Questions

- Please feel free to contact us by email later....