Open Source SOA with Service Component Architecture and Apache Tuscany

Learn how to build and deploy Composite Service Applications using Service Component Architecture (SCA) and Apache Tuscany

Goal

Agenda

- SCA in a Nutshell
- Apache Tuscany Overview
- Demo – Business Value Scenarios
- SCA Quick Tour
- Tuscany SCA Implementation
- New and Notable
- Tuscany Community
- Summary

SCA in a Nutshell

- A development and deployment model for SOA
- Service-based models for the
  - Construction
  - Assembly
  - Deployment

  of composite service applications
- In a distributed and heterogeneous environment of
  - Multiple languages
  - Multiple container technologies
  - Multiple service access methods

SCA Specifications - History

- Dec 2003: BEA and IBM start collaborating on SCA
- Nov 2005: 0.9 specs published
  - BEA, IBM, Oracle, SAP, IONA, and Sybase
- July 2006: 0.95 specs and OSOA.org (Open SOA)
  - Added: Cape Clear, Interface21, Primeton Technologies, Progress Software, Red Hat, Rogue Wave, Siemens AG, Software AG, Sun, TIBCO
- Mar 2007: 1.0 specs published
  - Submitted to OASIS
- April 2007: OASIS Forms Open CSA Member Section
- Sept 2007: Formal standardization starts in OASIS Open CSA

Open SOA - http://www.osoa.org

The OSOA Collaboration

bea Think liquid. · Cape Clear · IBM · Interface21 · IONA · ORACLE
PRIMETON · 普元 · PROGRESS SOFTWARE · redhat. · ROGUE WAVE SOFTWARE · SAP
SIEMENS · software AG · Sun microsystems · SYBASE · TIBCO The Power of Now · xcalia · Zend The php Company

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Supporters of the OSOA Collaboration

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codefutures · Component Square, Inc. · GREENHAT · Fiorano Enabling change at the speed of thought
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OASIS Open CSA - http://www.oasis-opencsa.org/

OASIS Open CSA

Navigation

- Members
- About

The **OASIS Open Composite Services Architecture (CSA) Member Section** advances open standards that simplify SOA application development. Open CSA brings together vendors and users from around the world to collaborate on the further development and adoption of the Service Component Architecture (SCA) and Service Data Objects (SDO) families of specifications.

Steering Committee

23 March 2007 - 1:07pm — jeff.mischkinsky

Open CSA activities are managed by a Steering Open CSA membership in an open process. The

- Graham Barber - IBM
- David Burke - TIBCO
- Patrick Leonard - Rogue Wave Software
- Mark Little - Red Hat
- Jeff Mischkinsky - Oracle
- Sanjay Patil - SAP
- Michael Rowley - BEA Systems

Committees

Several technical committees are affiliated with Open CSA:

OASIS Service Component Architecture / Assembly (SCA-Assembly) TC
Defining core SCA composition model to simplify SOA application development

OASIS Service Component Architecture / Policy (SCA-Policy) TC
Defining an SCA policy framework to simplify SOA application development

OASIS Service Component Architecture / Bindings (SCA-Bindings) TC
Standardizing bindings for SCA services and references to communication protocols, technologies and frameworks

OASIS Service Component Architecture / BPEL (SCA-BPEL) TC
Specifying how SCA component implementations for SOA can be written using BPEL

OASIS Service Component Architecture / C and C++ (SCA-C-C++) TC
Standardizing C and C++ use within an SCA domain for SOA

OASIS Service Component Architecture / J (SCA-J) TC
Standardizing Java (tm) use within an SCA domain for SOA

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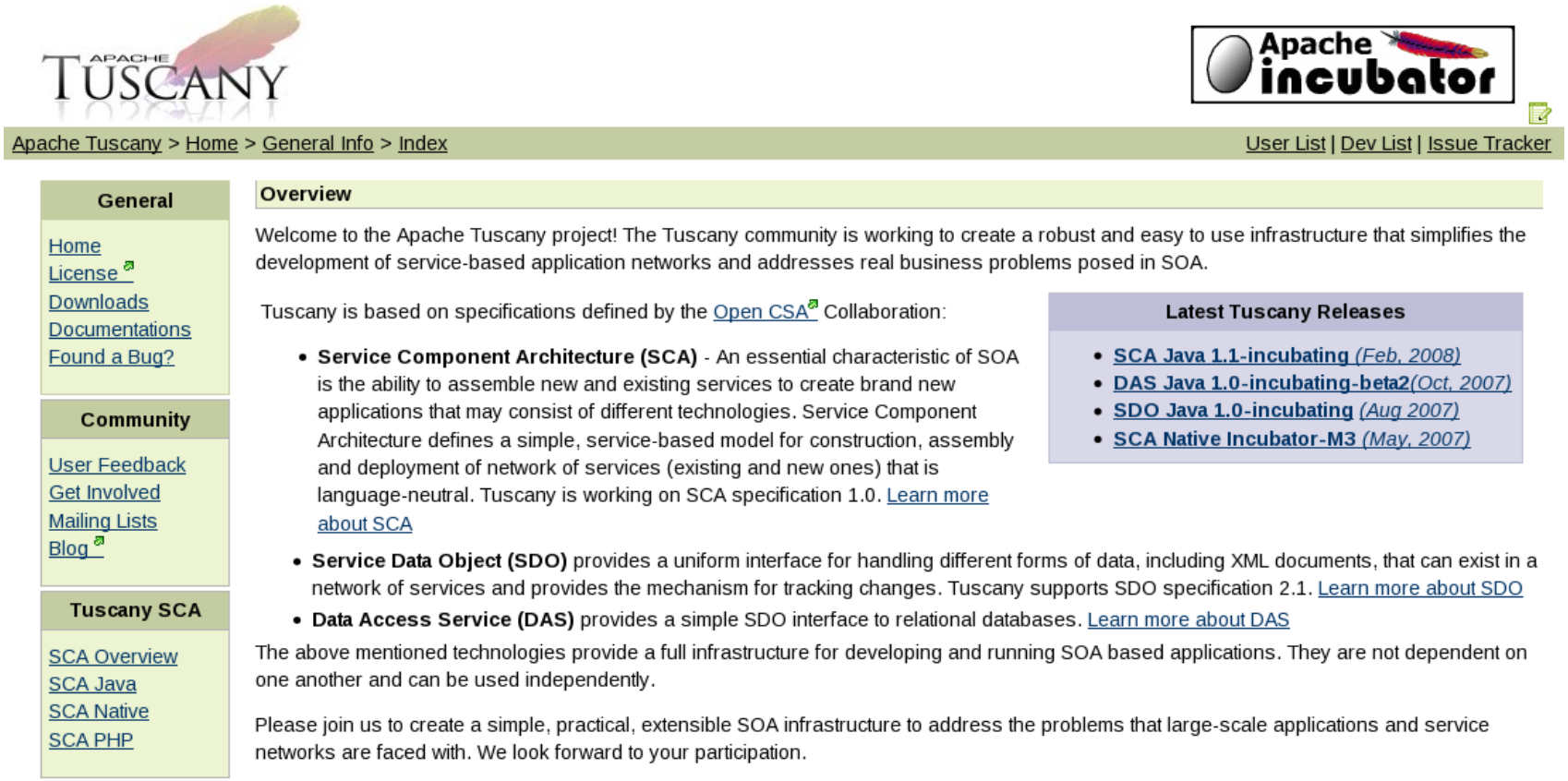
Open Source SCA – Apache Tuscany

http://incubator.apache.org/tuscany



What is Apache Tuscany

- Some words from the project charter:

  "… open-source software for distribution at no charge to the public, that simplifies the development, deployment and management of distributed applications built as compositions of service components.

  These components may be implemented with a range of technologies and connected using a variety of communication protocols.

  This software will implement relevant open standards including, but not limited to, the SCA standard defined by the OASIS OpenCSA member section."

Apache Tuscany - History

- Project created in Dec 2005 in Apache incubator
- Major Releases
  - 09/07 1.0 release, first implementation of SCA spec v1.0
  - 02/08 1.1 release, bug fixes, JMS binding, improved policy support
  - 04/08 Working on 1.2 release
    - Distributed SCA Domain management
    - Support for JAX-WS annotations
    - New ATOM binding using Apache Abdera
    - Improved JMS binding
- Incremental releases every 6/8 weeks

- Worldwide growing user and developer community!
- Users in production with Tuscany

SCA and Apache Tuscany in Action
Business Value Scenarios

Demo

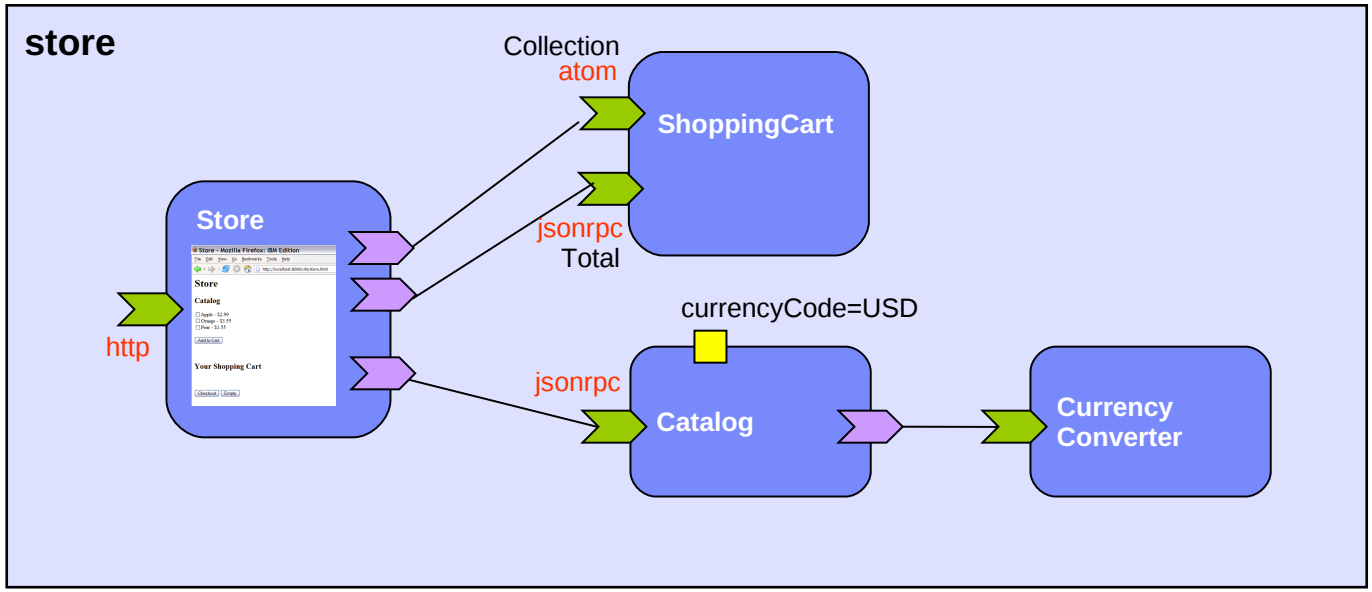
Demo - The Rise of a Fruit Business

- The Fruit Store
- Merger or Acquisition - The Fruit&Vegetable Store
- The Fruit&Vegetable Store as Supplier
- The Fruit&Vegetable Store Solution Provider
- The Fruit Store Widget - Mashup

All the code available at
http://svn.apache.org/repos/asf/incubator/tuscany/java/sca/tutorial

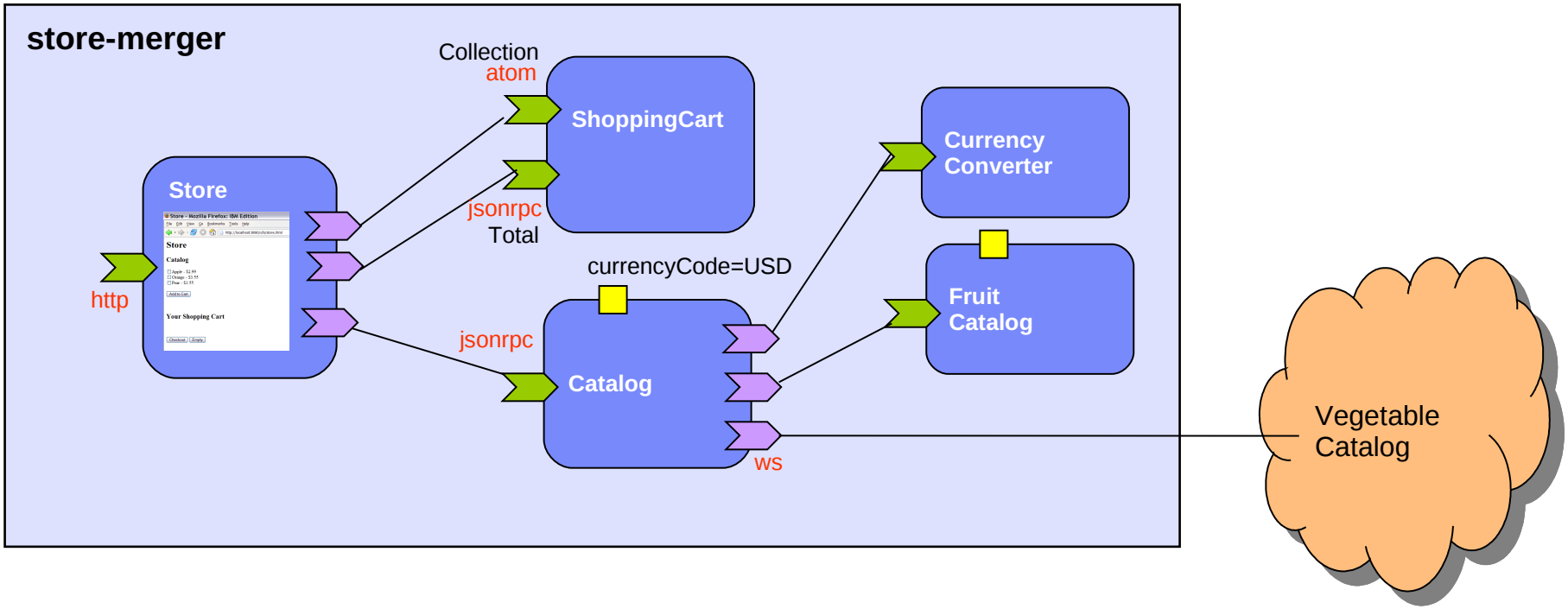
The Fruit Store

- Creating an Online Business



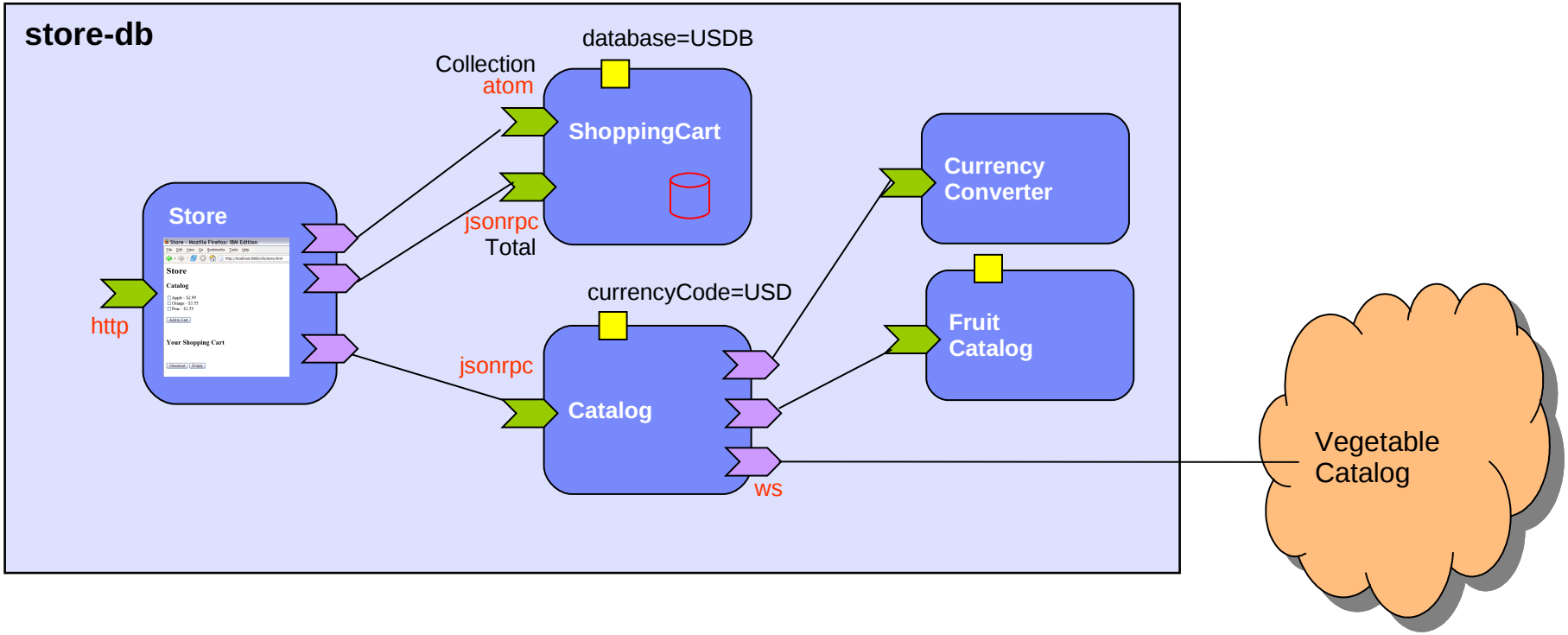
The Fruit&Vegetable Store

- Merger or Acquisition



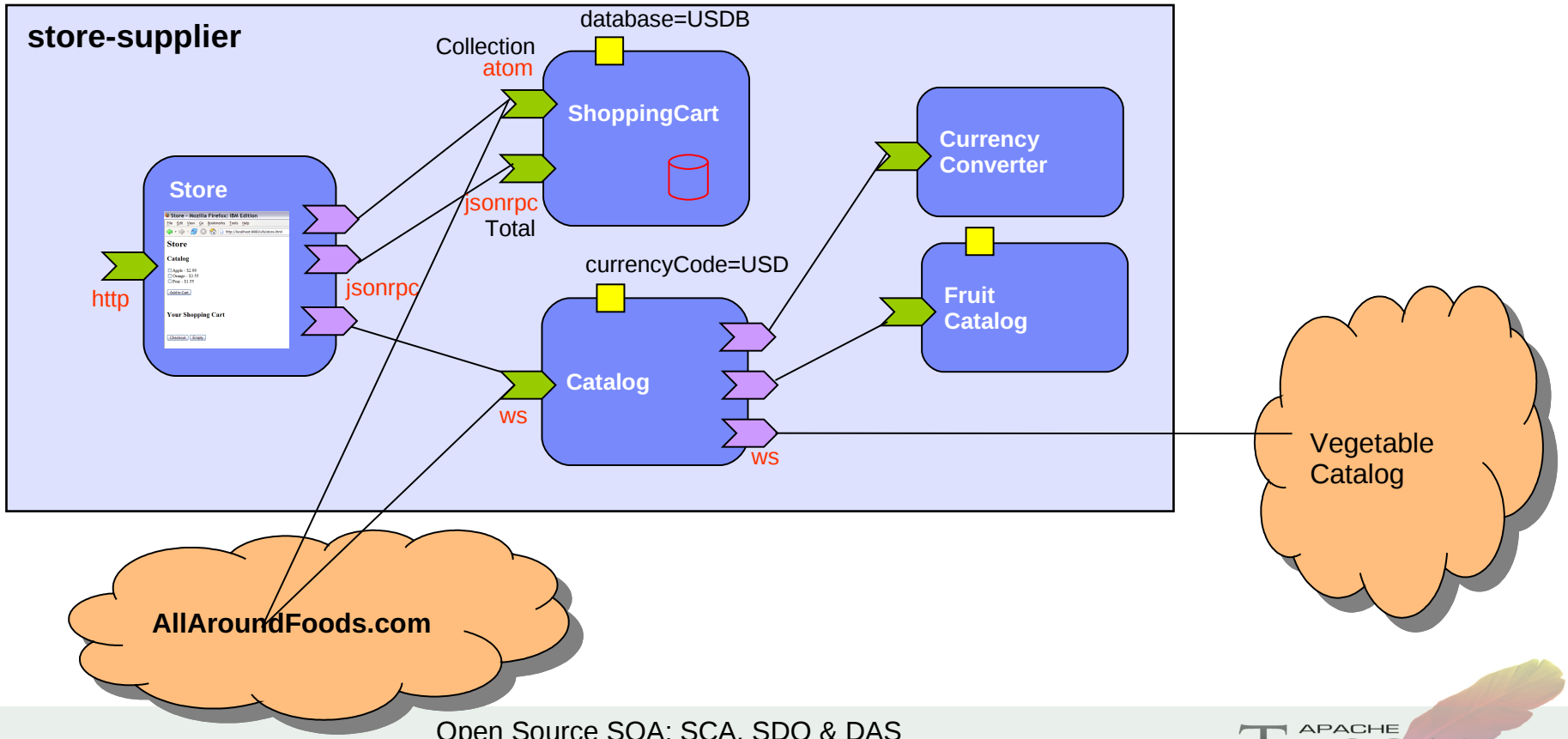
The Fruit&Vegetable Store

- Using a Database in the ShoppingCart implementation



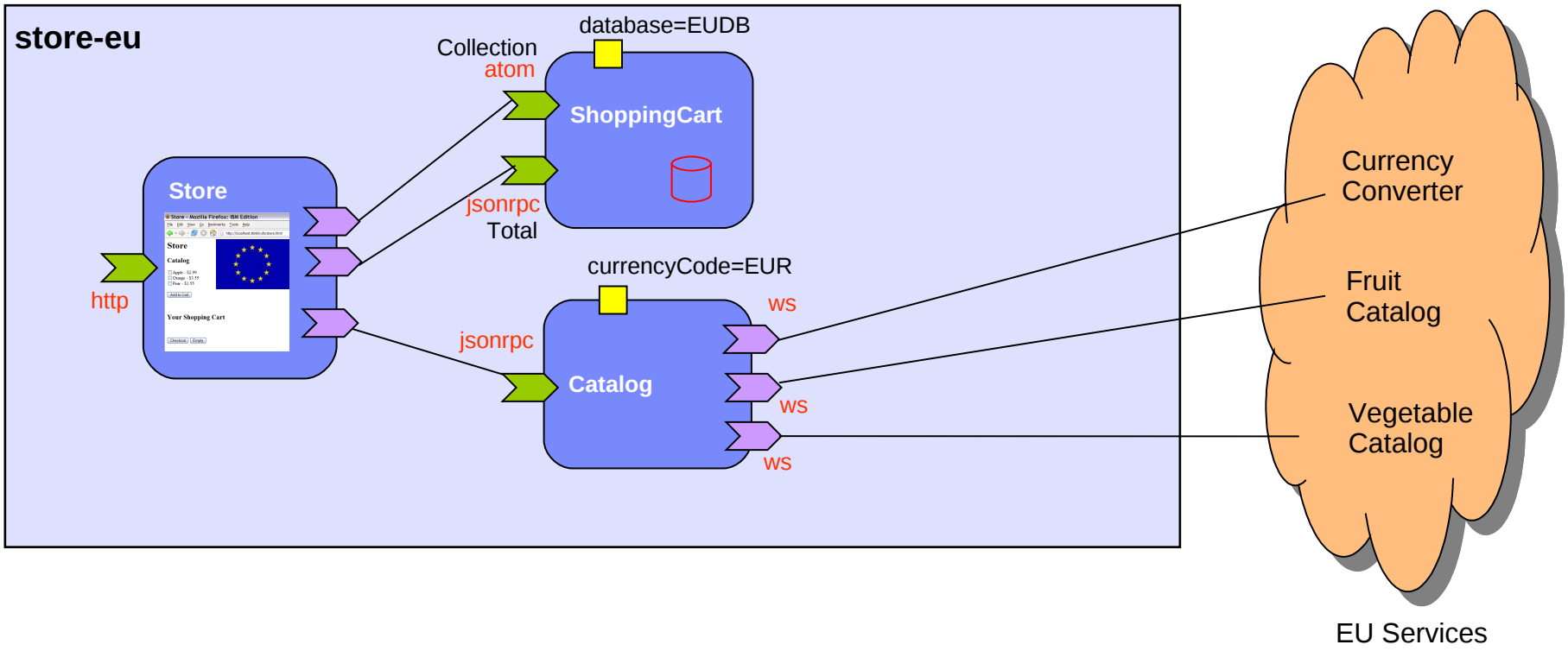
The Fruit&Vegetable Store as Supplier

- Being a Supplier for other Online Stores



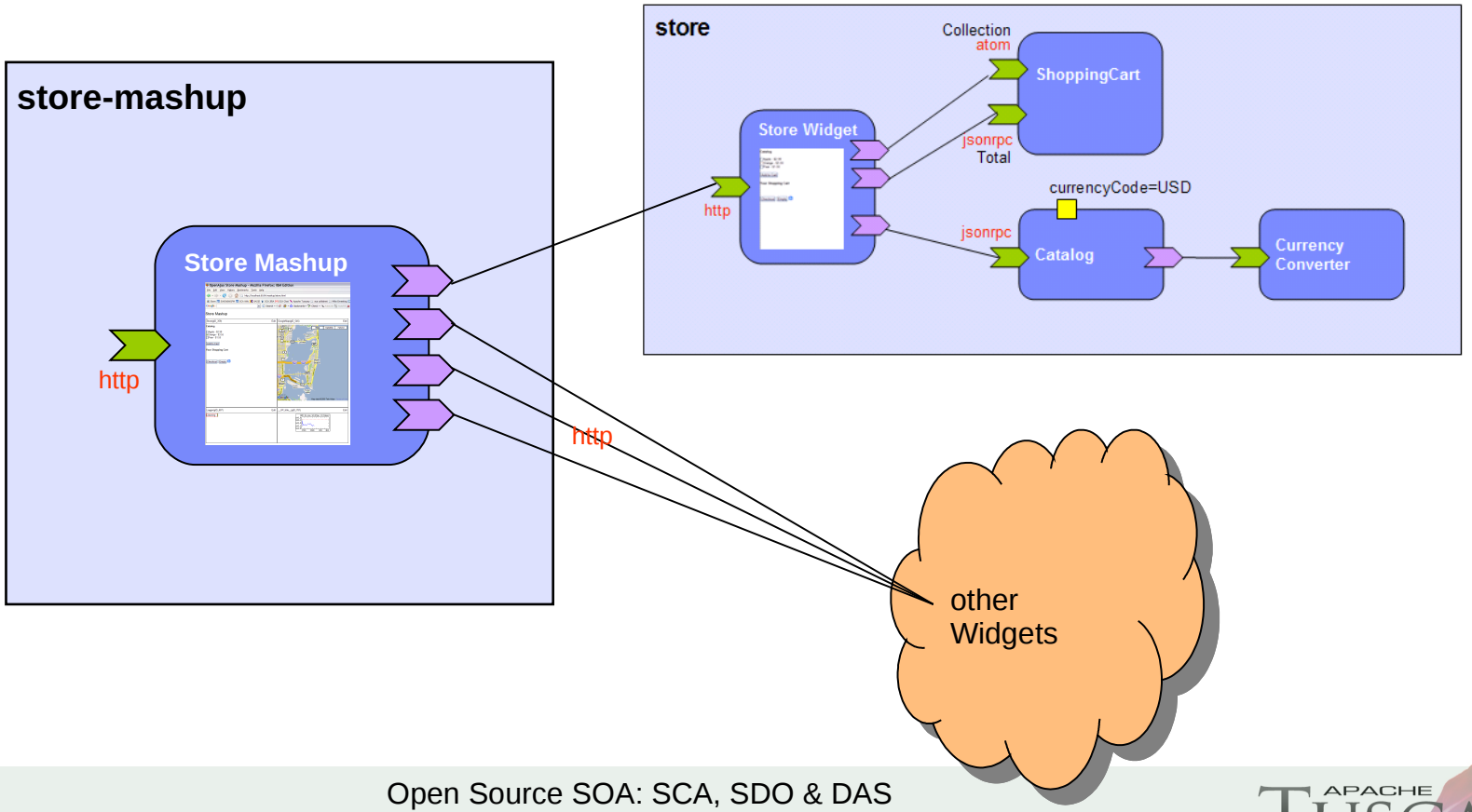
The Fruit&Vegetable Store Solution Provider

- Providing a Store Solution in another Geography



The Fruit Store Widget - Mashup

- Store Mashup – Offering the Store as an Open Ajax Widget



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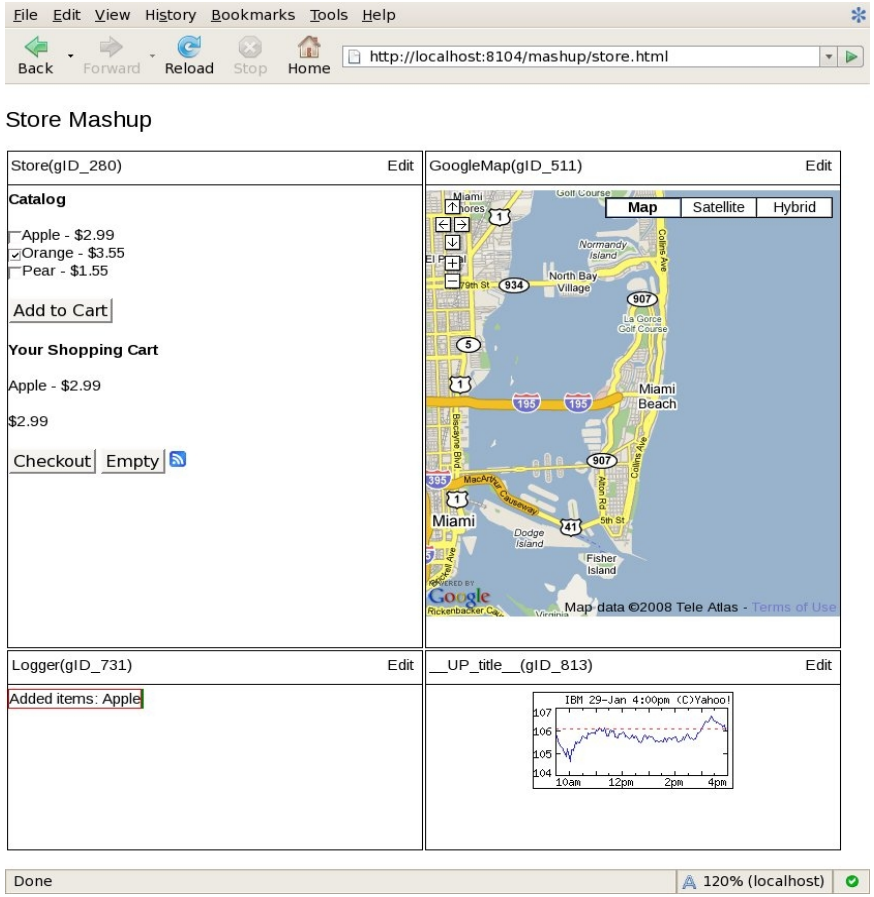

Open Source SOA: SCA, SDO & DAS
http://incubator.apache.org/Tuscany

APACHE TUSCANY

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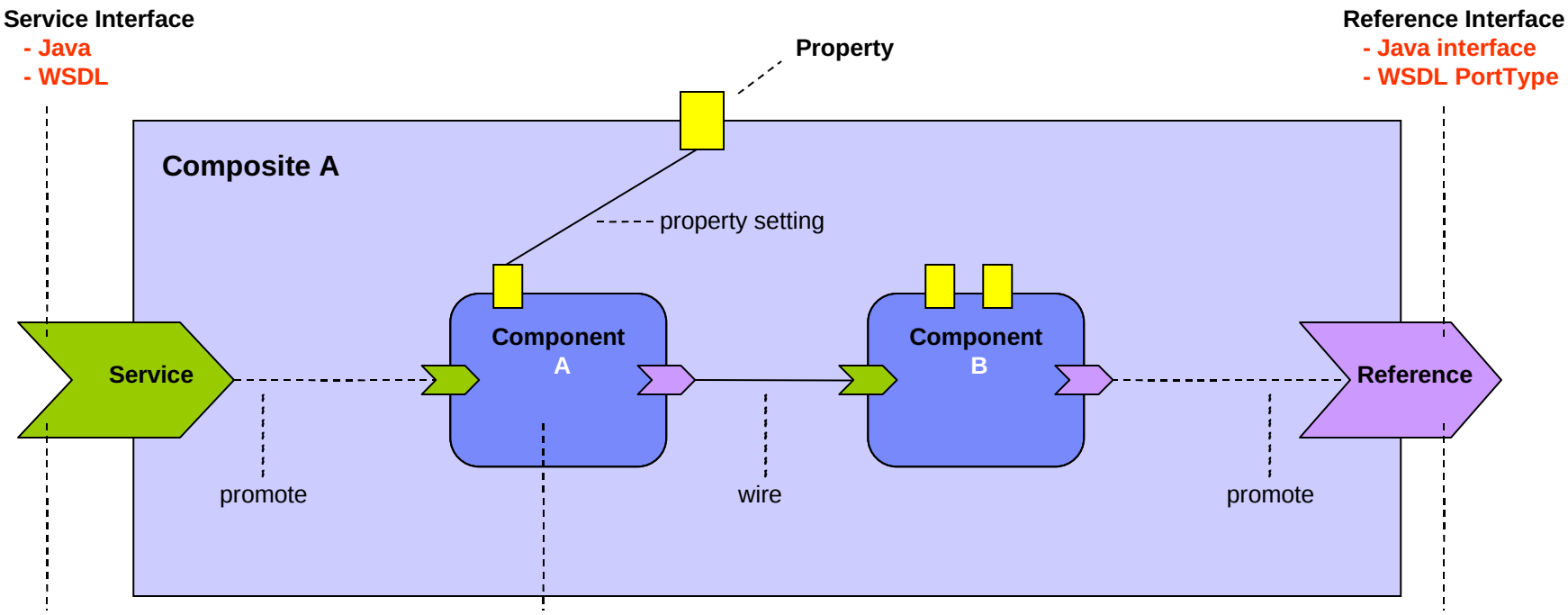
SCA Quick Tour

- Construction
- Assembly
- Deployment

SCA - Construction

- Constructing service component implementations
  - Implementer focuses on business logic
  - Implementer chooses the language that fits the business problem
  - No code is dependent on the means of accessing the service
- Defining service dependencies
  - Use business services without knowing how they will be accessed
  - Only the interface is known
- Defining other configuration features
  - Properties
  - Policies

SCA - Assembly



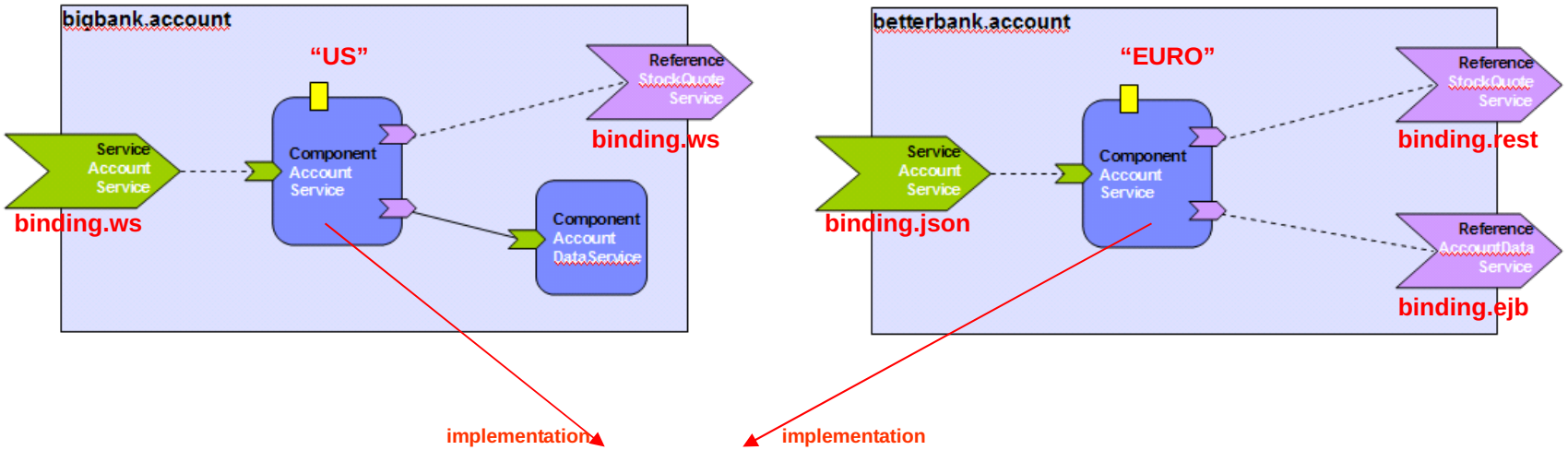
Service Binding
- Web Service
- JMS
- JCA
- SLSB
- HTTP
- JSONRPC
- ATOM
- ...

Implementation
- Java
- BPEL
- SCA Composite
- Spring
- JEE
- Scripting: Groovy, JScript, PHP, Python, Ruby, ...
- XQuery
- ...

Reference Binding
- Web Service
- JMS
- JCA
- SLSB
- HTTP
- JSONRPC
- ATOM
- ...

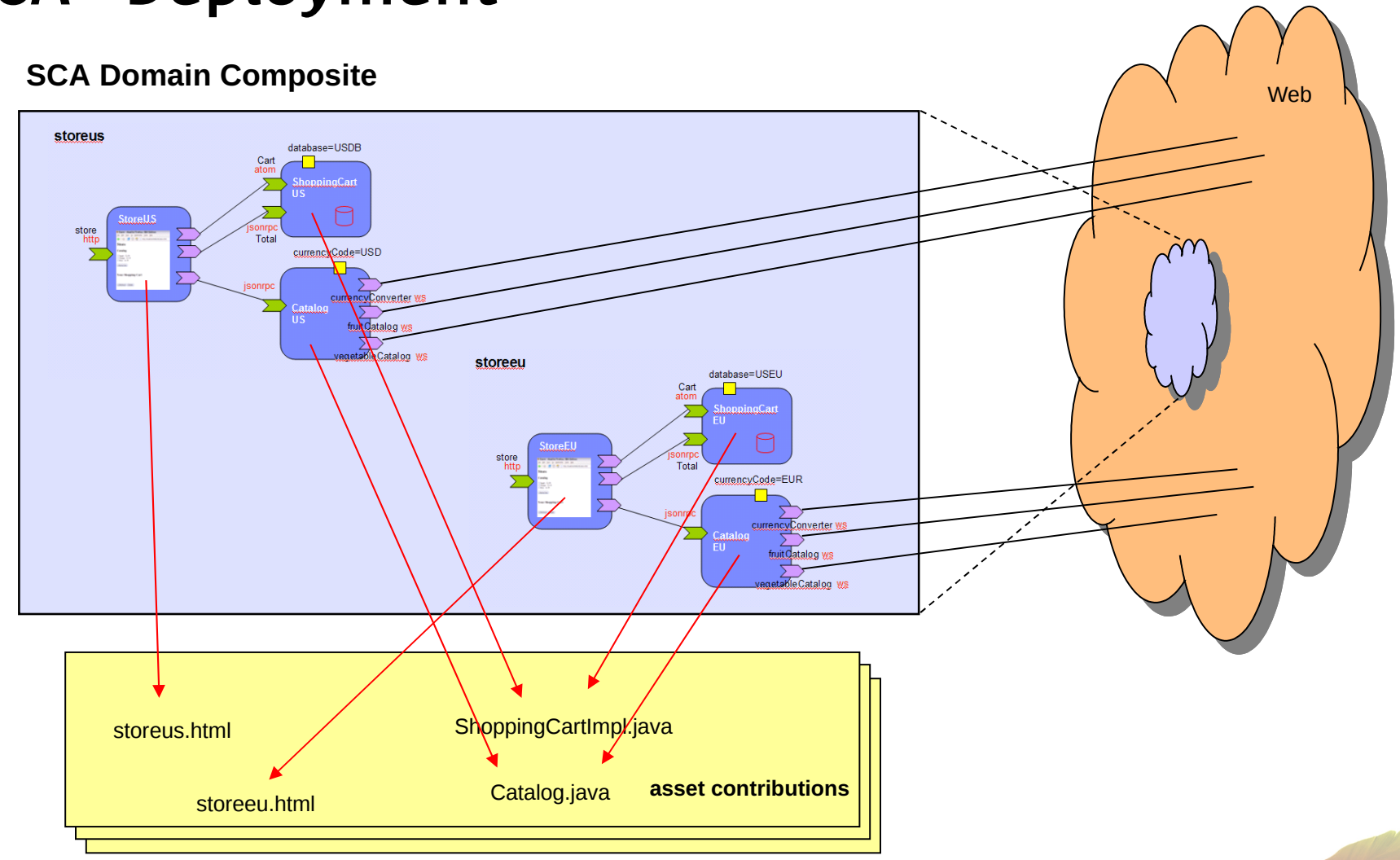
SCA - Assembly

- Building Solutions from Assets

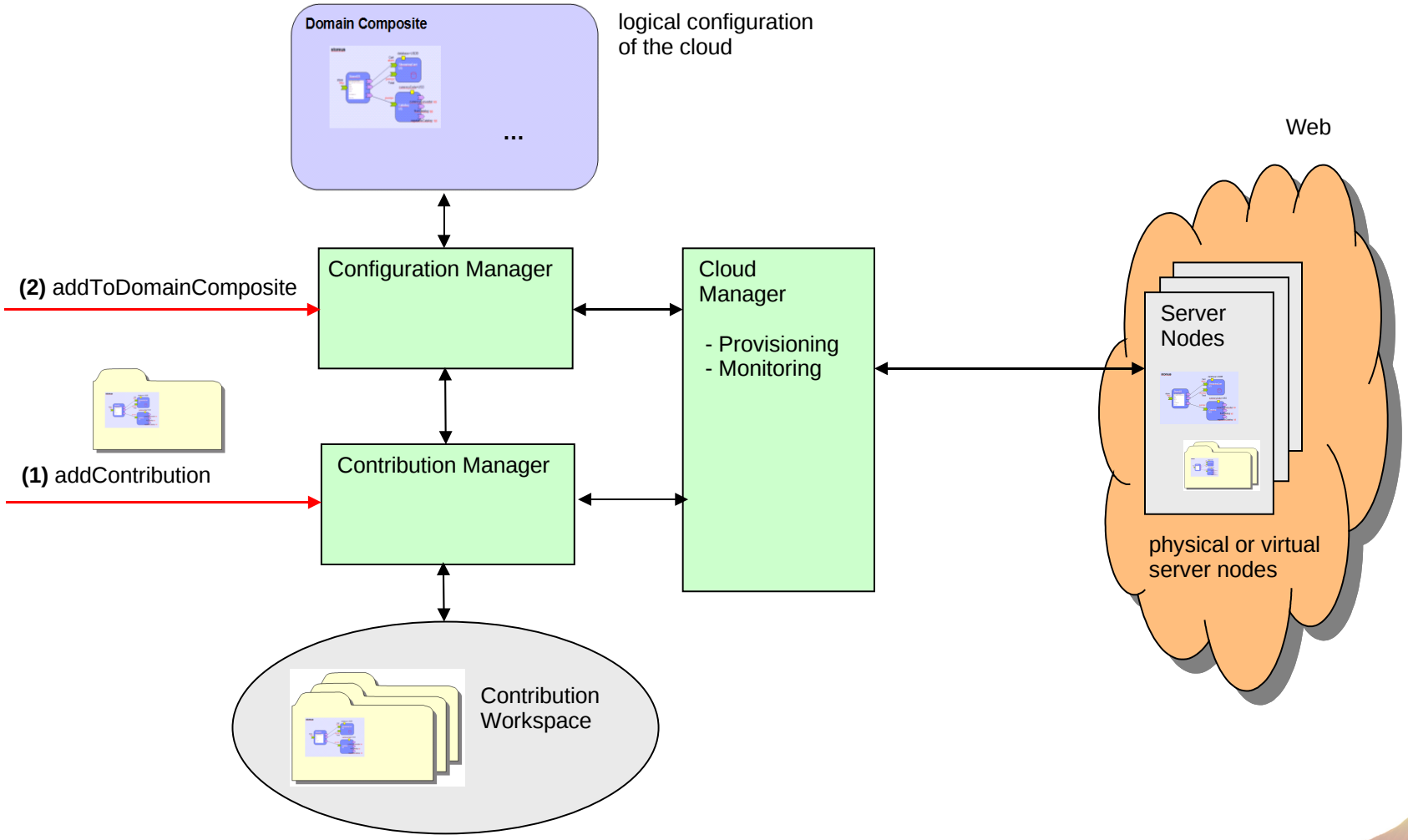



```
@Remotable
public interface AccountService {

    AccountReport getAccountReport(String customerID);
}

public class AccountServiceImpl implements AccountService {
    ...
    @Reference
    public void setAccountDataService(AccountDataService value) {
        accountDataService = value;
    }
    @Reference
    public void setStockQuoteService(StockQuoteService value) {
        stockQuoteService = value;
    }

    @Property
    public void setCurrency(String value) {
        currency = value;
    }
    ...
}
```

SCA - Deployment



SCA – Deployment Services



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Apache Tuscany – SCA Implementation

- Tuscany provides implementations of the main SCA specifications including:
  - SCA Assembly Model V1.0
  - SCA Policy Framework V1.0
  - SCA Java Common Annotations and APIs V1.0
  - SCA Java Component Implementation V1.0
  - SCA Spring Component Implementation V1.0
  - SCA BPEL Client and Implementation V1.0
  - SCA Web Service Binding V1.0
  - SCA JMS Binding V1.0
  - SCA EJB Session Bean Binding V1.0

Apache Tuscany – SCA Extensions

- SCA bindings
  - RSS and ATOM Feeds, HTTP resources, JSON-RPC, Direct Web Remoting, Pub/Sub Notifications and RMI
- SCA implementation types
  - OSGi, XQuery, BPEL, and various dynamic languages including Groovy, JavaScript, Python and Ruby
- Databindings
  - JAXB, Service Data Objects (SDO), Axis2's AXIOM, JSON, XMLBeans, SAXON, DOM, SAX and StAX
- Policies
  - Logging, connection pooling

Apache Tuscany – Distribution and Hosting

- Tuscany can be configured as a single node SCA domain or as an SCA domain distributed across multiple nodes.
- Simple Administration model: SCA domain and SCA node configuration are Web resources accessed using AtomPub.
- Host deployment options:
  - Standalone
  - Distributed nodes across multiple JVMs
  - Embedded Jetty or Tomcat
  - Standard Web application
    - Tested in Tomcat 5.5.20, 6.0.14, Jetty 6.1.3, Geronimo 2.0.2 Tomcat6 JEE5
    - WebSphere Application Server 6.1, other JEE Application Servers

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Apache Tuscany – New and Notable

- Community Update
- Latest Release Update
- Work in Progress
- Next Release

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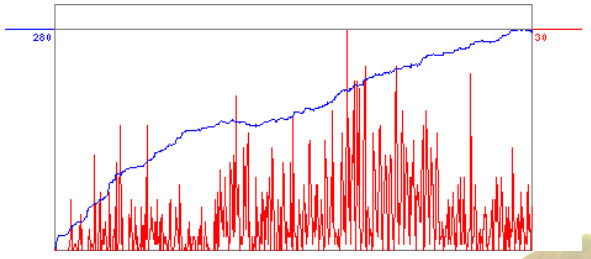
Tuscany Community – Working in Open Source

- What we have learned and are practicing
  - Code
    - Small Composable Modules, low barrier to entry
    - A working build, commit every day
  - Welcoming environment
    - Open mailing list discussions, share ideas, respect new ideas and feedback
    - Encourage user feedback, be responsive to questions, apply patches quickly
    - Help contributors find areas to contribute to
- Release early, release often!
- Apache Tuscany community is growing
  - Mailing list subscribers
  - More and more users contributing patches



For More Information – Apache Tuscany

- http://incubator.apache.org/tuscany
  - Tuscany SCA Java
    http://incubator.apache.org/tuscany/sca-java.html
  - Getting started
    http://incubator.apache.org/tuscany/getting-started-with-tuscany.html
  - Getting started using Eclipse
    http://jsdelfino.blogspot.com/2007/10/developing-sca-application-with-apache.html
  - Tuscany Online Store Tutorial
    http://svn.apache.org/repos/asf/incubator/tuscany/java/sca/tutorial
  - Using Tuscany with WebSphere Application Server 6.1
    http://jsdelfino.blogspot.com/2007/10/how-to-use-apache-tuscany-with.html
  - How to get involved
    http://incubator.apache.org/tuscany/getting-involved.html

For More Information – SCA Specification Work

- Good introduction to SCA
  http://www.davidchappell.com/articles/Introducing_SCA.pdf
- OASIS Open CSA
  http://www.oasis-opencsa.org/
  - V1 level specs
    http://www.oasis-opencsa.org/sca
  - Open CSA Technical Committees
    http://www.oasis-opencsa.org/committees
- OSOA
  http://osoa.org/display/Main/Home
  - V1 level of specs can also be found here
    http://osoa.org/display/Main/Service+Component+Architecture+Specifications
  - More information on that site
    http://osoa.org/display/Main/SCA+Resources

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Summary

- Service Component Architecture (SCA)
  - Construction, Assembly, Deployment of Composite Applications
  - Simple end to end composition
  - You can focus on your business logic
- Apache Tuscany
  - Implements SCA V1.0
  - Integrates with the Apache Platform
  - Goes beyond the specifications (Web 2.0, ATOM, Scripting, Admin)
  - Many releases
  - Simple to use

Join Tuscany! We welcome any type of contribution.
http://incubator.apache.org/tuscany/getting-involved.html

Thank You