OW2 Conference 2009

Session 2

SCA by OW2: the SCOrWare Project and its Affiliates

SCOrWare project, an enabler for open source SCA-compliant solutions

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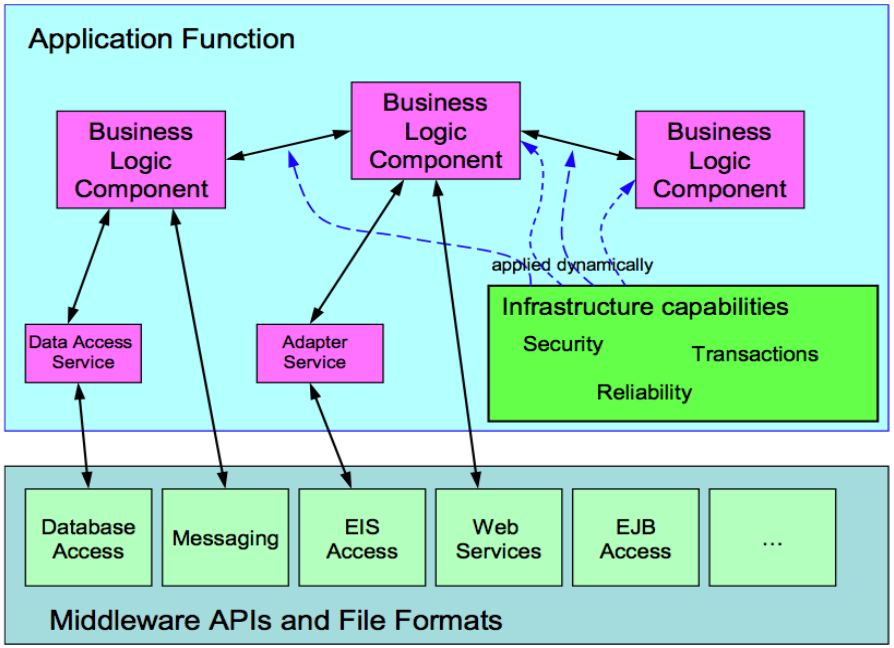
Outline

- Motivations
- The SCA (Service Component Architecture) standard
- A quick SCA market overview
- The Open SCA-compliant SCOrWare platform
- An illustration of SCOrWare: an Enterprise application example (by EdifiXio)

SCA
Emerging in 2005

- Initiated by software industry Majors
- Towards a larger community
- Open SOA
  http://www.osoa.org

SCA
Main Motivations



- A model designed for building applications and systems using SOA
- An SOA organization of business application code

- Capabilities to build coarse-grained service components as assemblies of fine-grained components
- Abstraction of middleware programming model dependencies from business logic

Eclipse STP (SOA Tools Platform) Launching End of 2005

- Eclipse top level project
  - Creation review successfully completed on December 22, 2005
  - ObjectWeb invited as a PMC member
- A generic, extensible, standards-based (WSDL, SCA) tooling platform for SOA applications and networks
- Partnership with major software and open-source industry leaders and (incl. BEA, IBM, INTALIO, IONA, LOGICBLAZE, RED HAT, SYBASE, SCAPA Tech.)
  - OW2 Strategic & Corporate Members such as EBM Websourcing, Eteration, Obeo, Open Wide, Bull, Engineering, Red Hat
- Associated with other Eclipse “friend” projects
  - Top level project WTP (Web Tools Platform)
  - Technology project JWT (Java Workflow Toolbox)

OW ESBi (2004-2006)
An Open Collaborative View

USER GROUP

TECHNO GROUP

USAGE Views

TECHNOLOGY Views

FUNCTIONAL REQUIREMENTS & BEST PRACTICCES

BPM

BPEL

ARCHITECTURE MODELING & TECHNOLOGY STATE-OF-ART

UML

Java classes

SOA

"Y" Iterative Cycle

ENTERPRISE SERVICE BUS

BPMN

BPEL

WSDL

ESB

Standard-based

XML- WS-*

JBI - SCA

MDA,UML

Java

WSDL

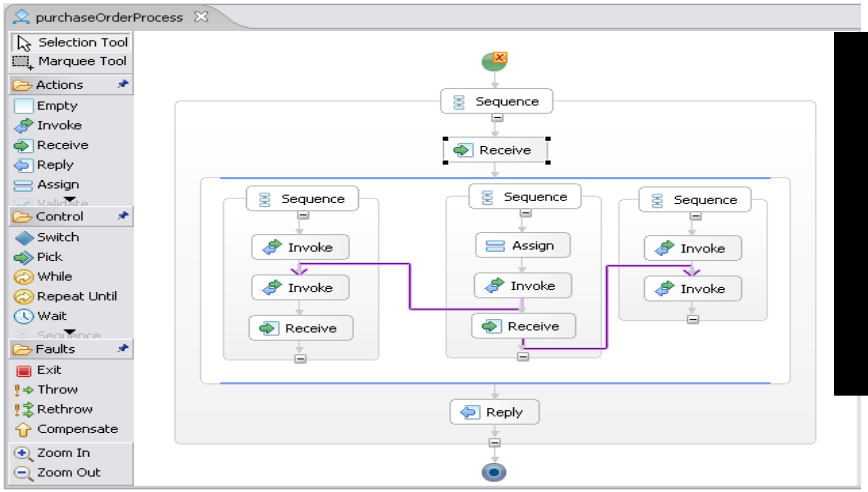
UMR 5505 – CNRS – INP ENSEEIHT – UPS

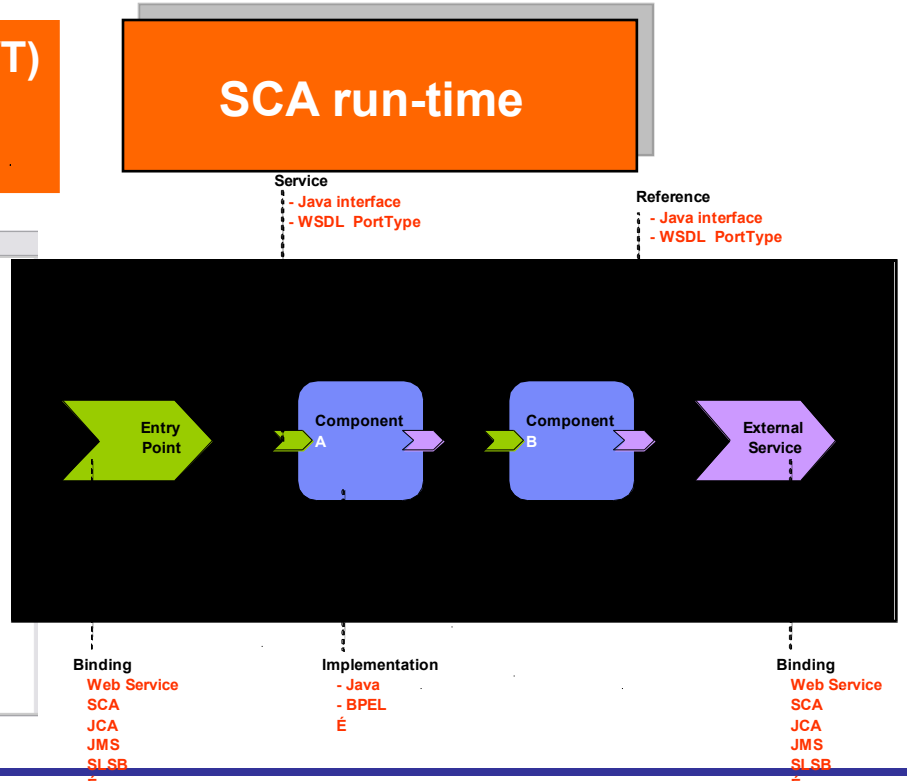
SCOrWare Proposal 2006

OW2 Consortium

Design & Development → Deployment → Administration

ECLIPSE env. (STP, WTP, JWT)
Service creation & assembly
BPMN, BPEL, XPDL, …





SCA Model

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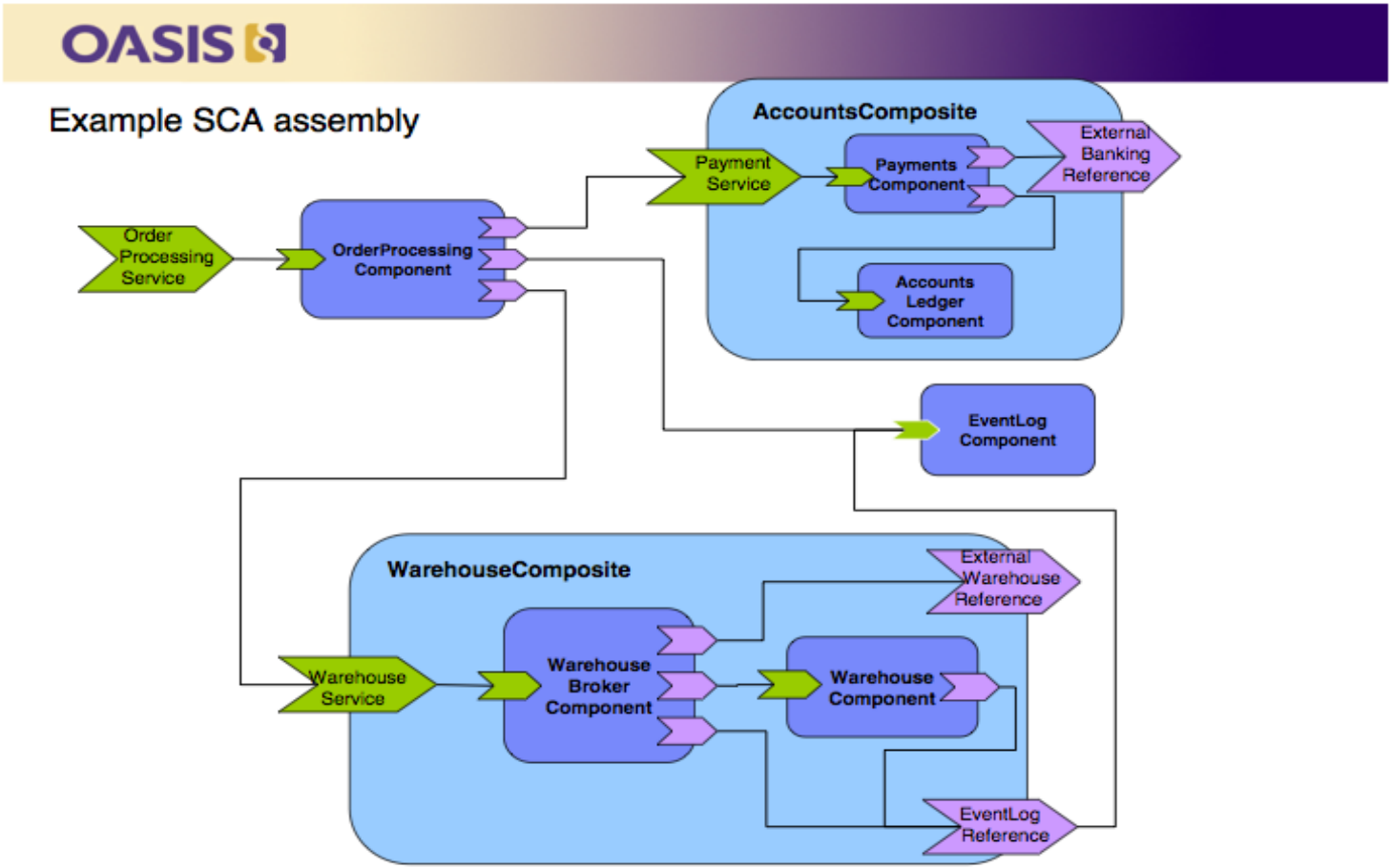
SCOrWare Project & Consortium
An Open
Service Component Oriented Platform

- Open Component-based and Service-Oriented platform
- Convergence
  - Software architectures (ADL and components)
  - Service-oriented architectures (SOA)
- SCA (Service Component Architecture) standard based (OASIS, JCP)
  - Open Source implementation: Apache Tuscany
- Several OW2 partners collaborating in Eclipse STP (SOA Tooling platform)
- BPM and SOA
  - Collaboration with Eclipse JWT (Java Workflow Tooling)
- Component-based and service-oriented infrastructures
- Semantic trading
- Process & transaction management
- Model-Driven Engineering
- Application to business, cooperative and scientific applications
- **Funded by ANR end of 2006**
- **28-months project** (**2007-2009**)
- Workload ~400 p.m (Total cost ~2600K€)

The SCA standard

- OASIS (Advancing open standards for the information society), http://www.oasis-open.org
- OASIS SOA Technical Committees for SCA
  - OASIS SCA-Assembly TC
  - OASIS SCA-Policy TC
  - OASIS SCA-Bindings TC
  - OASIS SCA-BPEL TC
  - OASIS SCA-C-C++ TC
  - OASIS SCA-J TC
  - *OASIS SDO TC*
- Affiliation with Open CSA, http://www.oasis-opencsa.org
  - OASIS Member Section (Composite Services Architecture)
- JCP (Java Community Process), http://www.jcp.org
  - JSR-312 (JBI 2.0), JSR-316 (Java EE 6)

SCA assembly (example)

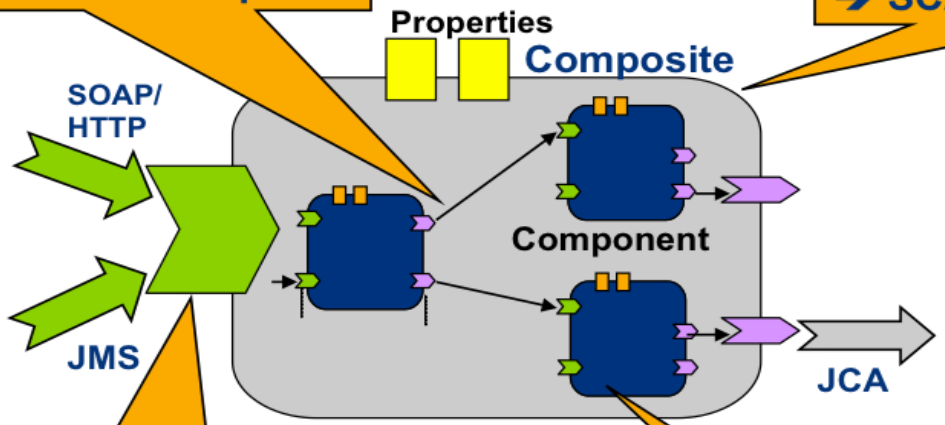


Source: oasis-open.org

SCA Key Points

How do I define, use and administer policies for non-functional aspects (QoS, etc)?
➔ SCA Policy Framework Spec

How do I configure and assemble components to create composites?
➔ SCA Assembly Spec



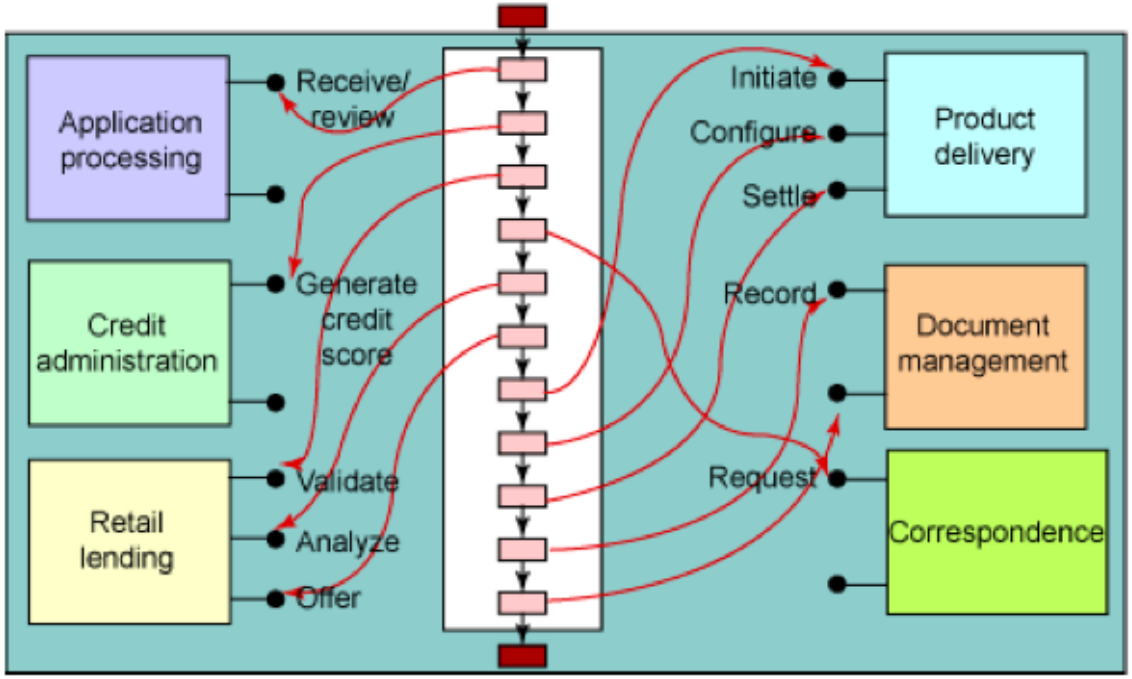
© SAP 2007

How do I configure access to SCA services using SOAP/ HTTP or JMS or JCA, …
➔ SCA WS Binding Spec, …

How do I code SCA components in Java? Or say in BPEL? Or C++, PHP
➔ SCA BPEL Client & Impl Spec, …

SCA by some Commercial Competitors

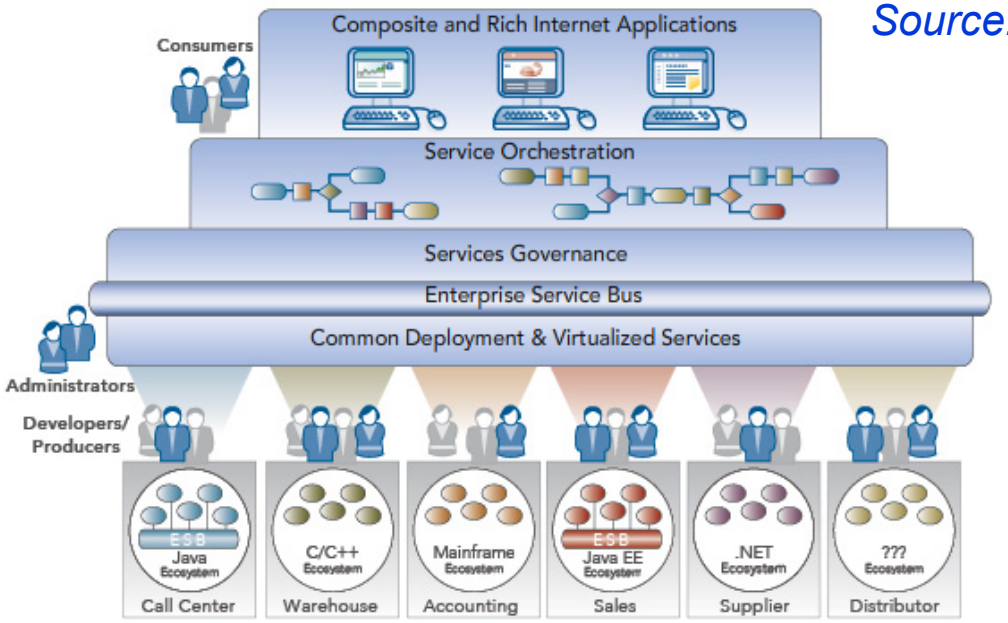
- **IBM (WebSphere)**
  - SCA as a framework to develop SOA composite applications



Source: IBM, developerWorks, Technical Library, 2007

… SCA by some Commercial competitors

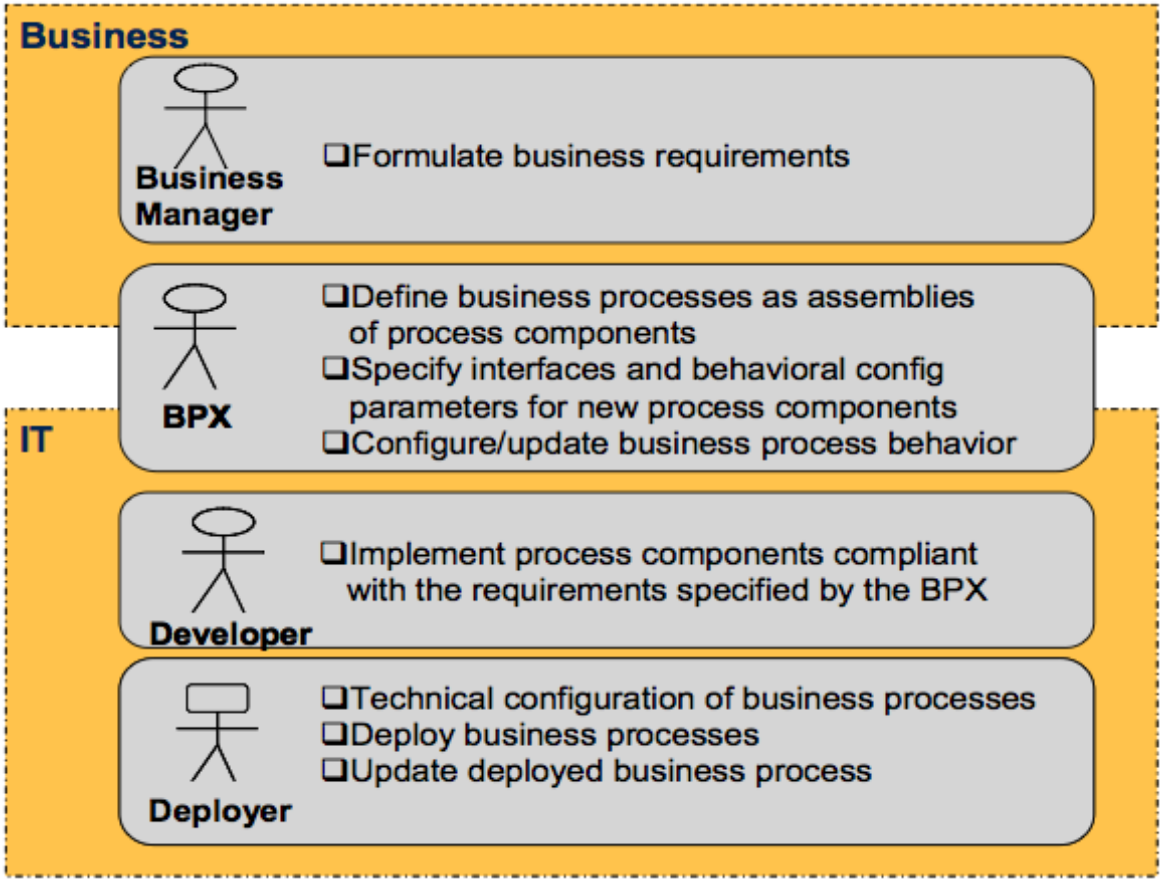
- **TIBCO (Active Matrix)**
  - SCA for deployment of virtualized services and description of bindings, properties, service's packaging



Source: tibco.com, 2007

… SCA by some Commercial Competitors

- **SAP**
  - SCA as a standard for simplifying the task of an business process expert to configure and assemble business processes on top of heterogeneous components



Source: SAP Developer Network, 2006

SCA Open Source Implementations

- **Apache Tuscany**
  - The first major SCA open source implementation
- Tuscany SCA Java
  - A modularized architecture
  - Two kinds of modules: core and extensions
  - Core modules for SCA support
  - Extensions for integration of technologies required by SOA
- Standalone runtime or in other runtime platforms
  - WebSphere, Geronimo, Tomcat, JBoss
- Tuscany SCA native implementation in C++
  - Supports component implementations in C++, Ruby, Python or PHP (under development)
- Tuscany moving to OSGi
  - As a packaging mechanism for SCA artifacts
  - As an SCA Component Implementation Type

http://tuscany.apache.org

... SCA Open Source Implementations

- Other ones as referred by the OSOA, http://www.osoa.org
- **Fabric3**
  - Apache-licensed open source
  - Supports JBoss, WebLogic, WebSphere, Jetty, Tomcat
- **The Newton Project**
  - An OSGi-based distributed runtime for composite applications
  - Foundation of the commercial Infiniflow product (Paremus)
- **The Mule Project**
  - MuleSCA activity for SCA compliance to the Mule service platform
  - Any open source code and activity ?

SCA Open Source Tooling
Eclipse SOA Tools Platform
http://www.eclipse.org/stp/

The mission of the SOA Tools Platform (STP) project is to build frameworks and exemplary extensible tools that enable the design, configuration, assembly, deployment, monitoring, and management of software designed around a Service Oriented Architecture (SOA).

As referred by the OSOA
http://www.osoa.org

The Open Source SCA-compliant SCOrWare platform

- **OW2 FraSCAti**, http://frascati.ow2.org
  - Open SCA middleware platform
  - GNU Library Public License
  - Standalone runtime or embedded into OW2 PEtALS
  - SCA-compliant + extra features (Fractal-based) for dynamic adaptation and reconfiguration
- **OW2 SCA PEtALS service platform**, http://petals.ow2.org
  - Open Source SOA integration platform
  - GNU Library Public License
  - Integrates SCA features at design time with JBI ones at runtime
    - Compose an SOA application with SCA
    - Deploy it onto a JBI service platform

… the Open Source SCA-compliant SCOrWare platform

- **OW2 Scarbo**, http://scarbo.ow2.org
  - An Open SOA ready, SCA powered BPM solution
  - Workflows and processes invoking services designed and deployed through SCA
  - GNU Library Public License
  - Built on top of OW2 and Eclipse technologies
  - Eclipse JWT (Java Workflow Tooling) generic suite
  - OW2 Bonita workflow engine
  - FraSCAti SCA middleware platform
  - Eclipse STP SCA and STP-IM for designing and managing services

… the Open Source SCA-compliant SCOrWare platform

- **Eclipse SCA tool set**, http://www.eclipse.org/stp/sca/
  - Provides a set of tools for SCA standard
  - Eclipse Public License
  - The SCA meta model (EMF meta model), based on SCA specifications 1.0, in collaboration with OSOA
  - The SCA composite designer, a graphical (GMF) development environment for the construction of composite applications
  - The SCA composite editors, XML and Form editors to construct SCA assembly file

… the Open Source SCA-compliant SCOrWare platform

- **Eclipse STP Intermediate Model, http://www.eclipse.org/stp/im/**
  - Facilitates the sharing of SOA/BPM-related information
  - Eclipse Public License
  - A bridge
    - b/w Eclipse STP editors (BPMN, BPEL, SCA)
    - b/w process and workflow world (BPMN, BPEL, JWT) with
      - the architecture specifications (SCA, JBI)
      - the service creation world (JAX-WS, service creation)
  - An SOA-based meta model (EMF meta model), incl. concepts such as Service, Process, Binding, Endpoint
  - Initial contribution by INRIA and Engineering

… the Open Source SCA-compliant SCOrWare platform Usage demonstrators

- **SCA for Scientific Computing**
  - A distributive & collaborative framework for 3D scientific data visualization
  - SCA application a “pipeline” architecture handling large data
- **SCA for Collaborative Development Environment**
  - Design of a SOA New Generation Forge
  - An SCA-based Open Source Project Portal integrating CMS features
- **SCA for Network Monitoring**
  - Workflow on top of SCA business components
  - Multi-compositions and evolutions
- ***SCA for a Front-End Enterprise Application linked to SAP Back-Office***

SCOrWare, an Enterprise Application example

A Front-End Enterprise Application linked to Back Offices (SAP, JDEdwards, …)

INRIA Artenum, Paris Science & Groupware ebm WEBSOURCING Edifixio INT INP ENSEEIHT IRIT UMR 5505 – CNRS – INP ENSEEIHT – UPS beo Open Wide Architecte Open Source THALES AGENCE NATIONALE DE LA RECHERCHE ANR

EdifiXio Presentation

- **Consulting, System Integrator, Full Management Services**
  - Java
  - Open Source & Commercial Middleware
  - Commercial eBusiness Software
- **Offices**
  - France: Paris – Grenoble – Lyon
  - USA: Boston
  - India: Calcuta
- **Incomes & Employees in 2007**
  - CA 13,6 M€
  - 130 Employees

EdifiXio Presentation

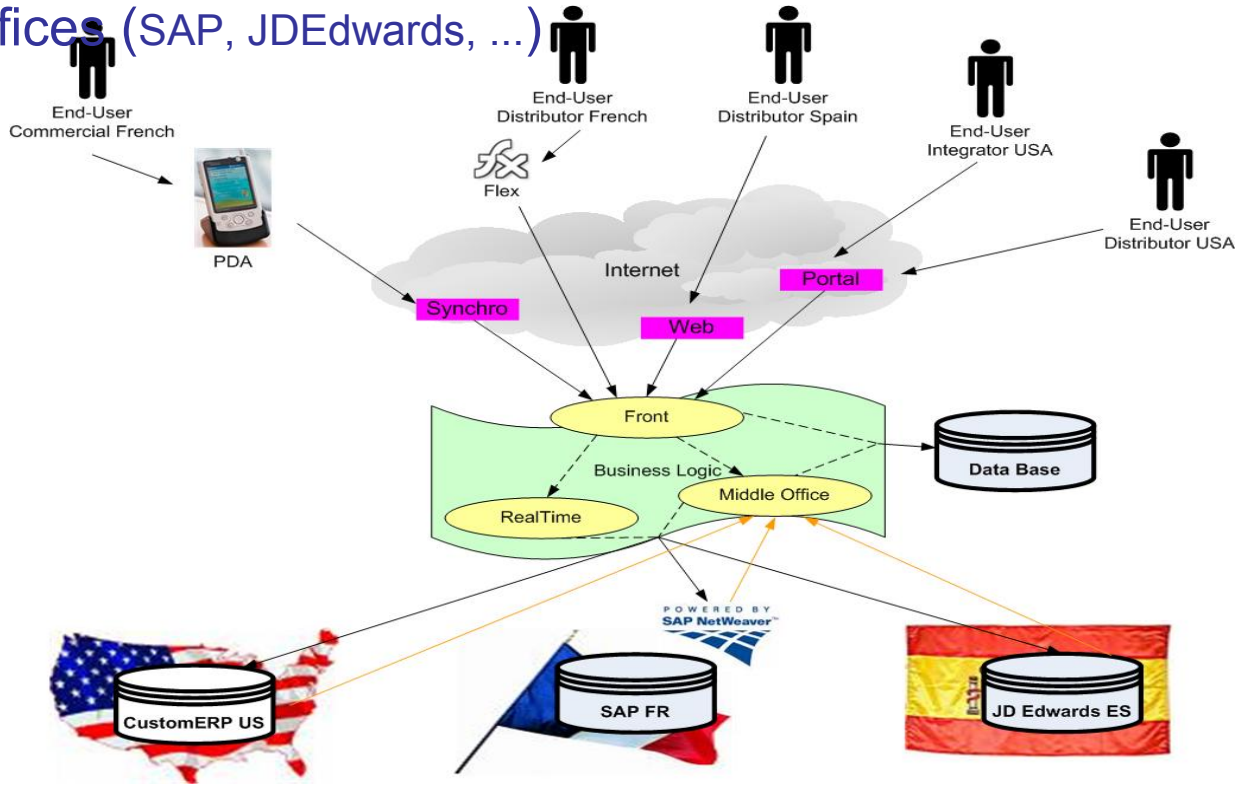
- **OW2 Founding Member**
- Parnership with « **Large International Manufacturing Companies** »
- Partnership with **major Software and IT eBusiness** companies
- Specialized in the development and implementation of **full management IT services** and **eBusiness** applications in an **international** environment
- One single management for Operations in **Europe**, **US** and **Asia**
- **Visit our WebSite: www.edifixio.fr**

Why EdifiXio in SCOrWare ?

- SCA & JEE
- Reuse and Enrichment of Components
- R&D on SCA
- Improvment of our Component Approach
- Improvment of our Tools

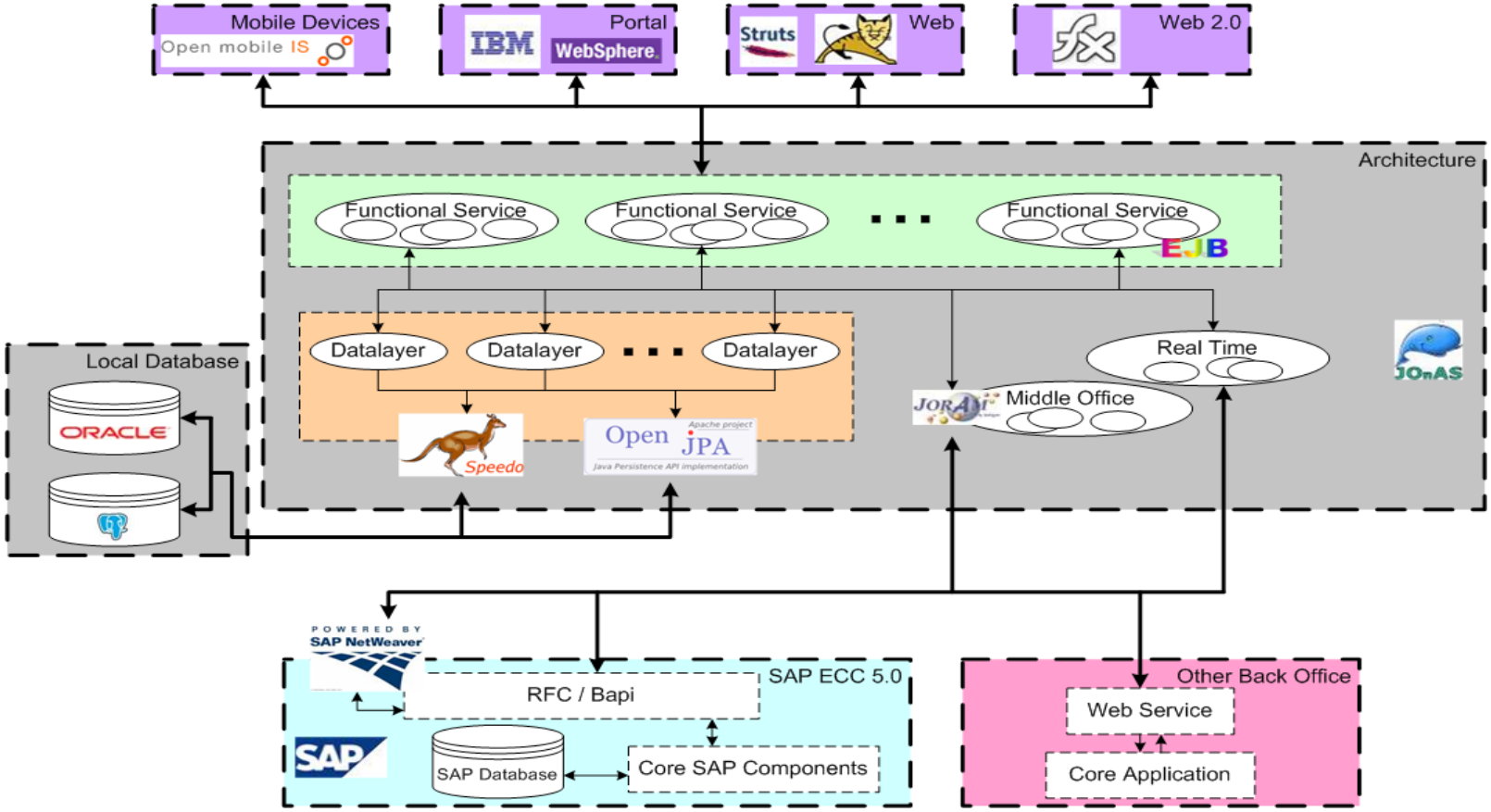
Real Applications Overview

- Close to Real EdifiXio Applications
  - Web 2.0 / Portal / PDA / Struts Presentation Layer
  - Several Back Offices (SAP, JDEdwards, ...)

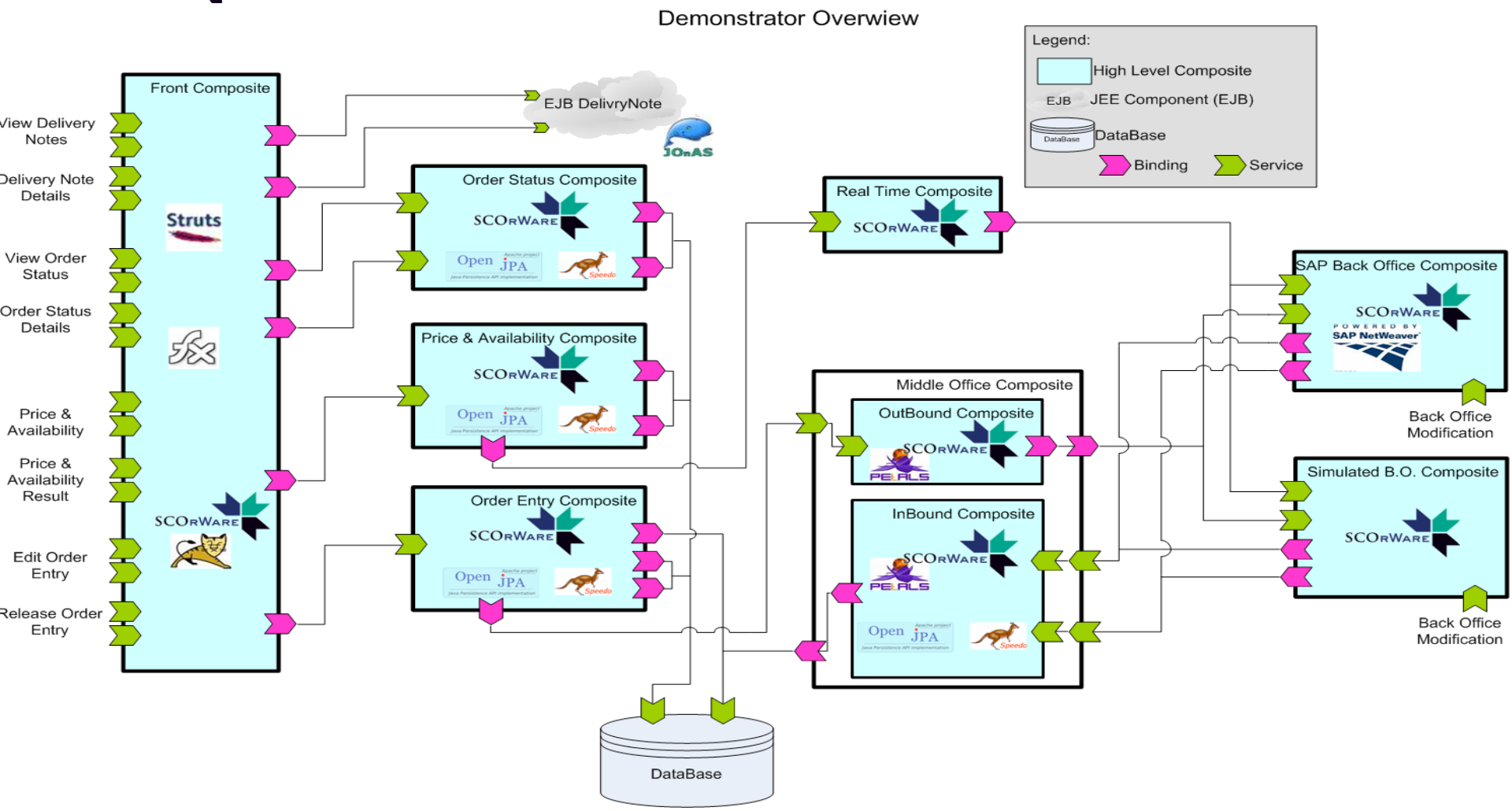


Methodoloy – JEE Framework

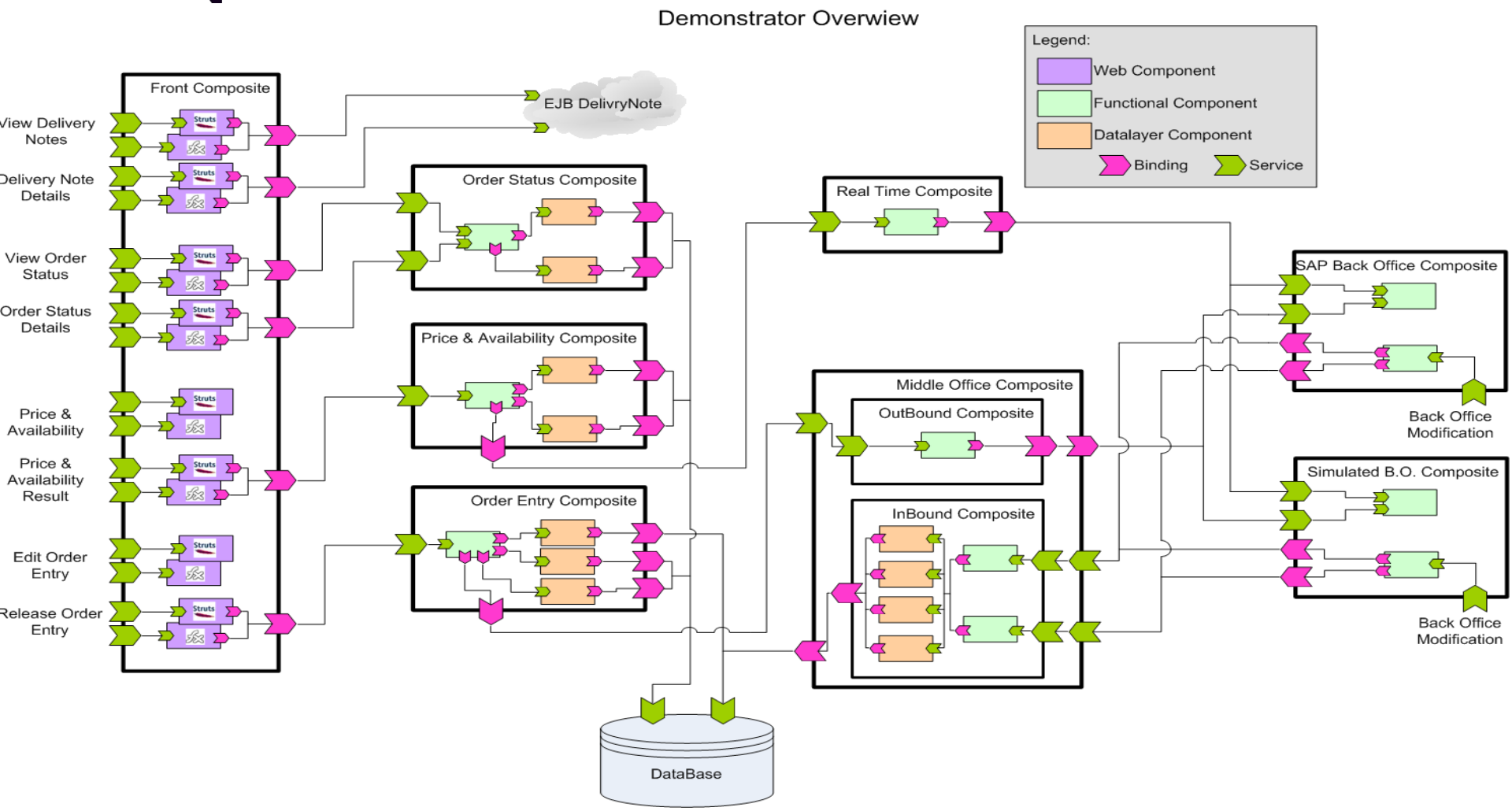
- Current EdifiXio JEE Framework



Demonstrator – SCA Overview

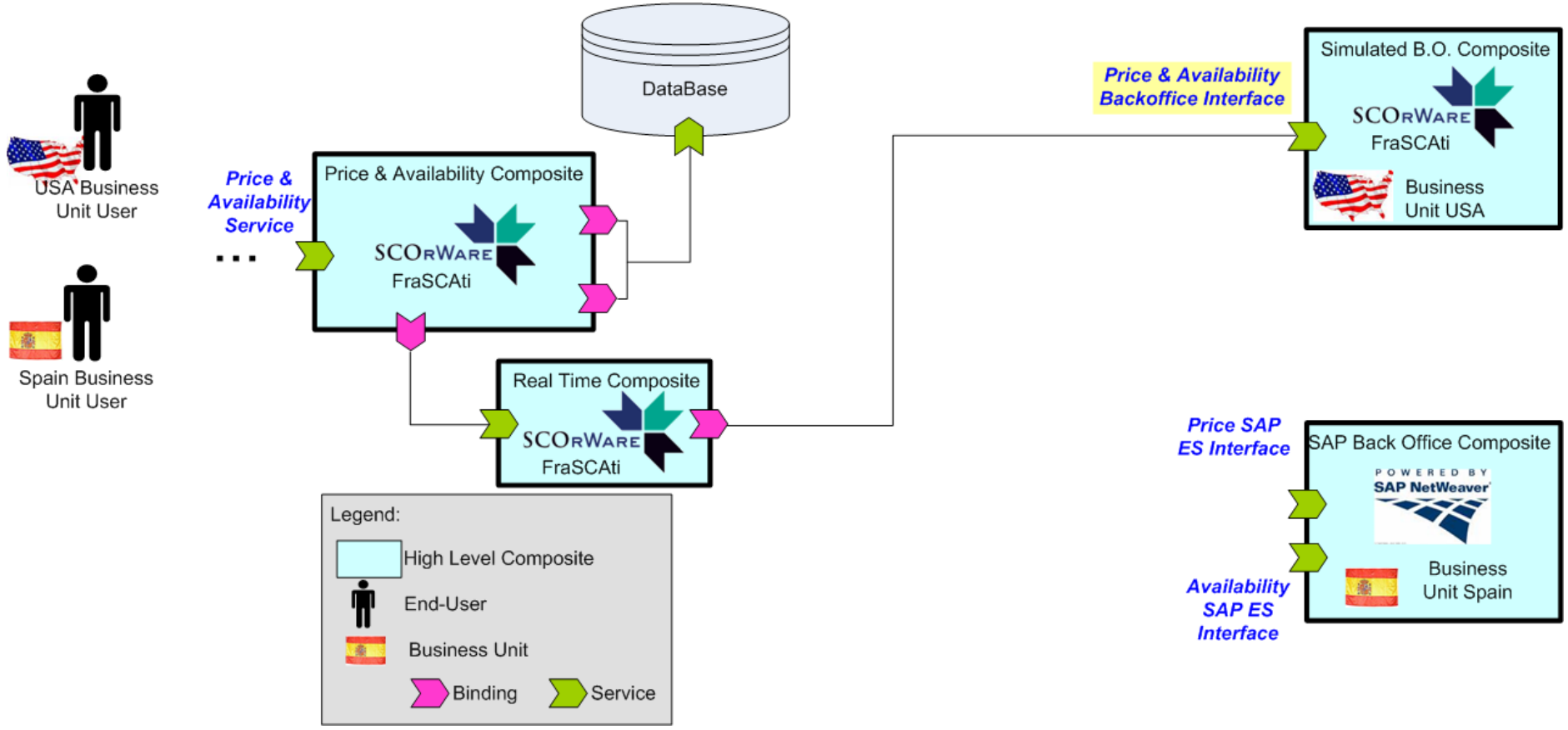


Demonstrator – SCA Overview



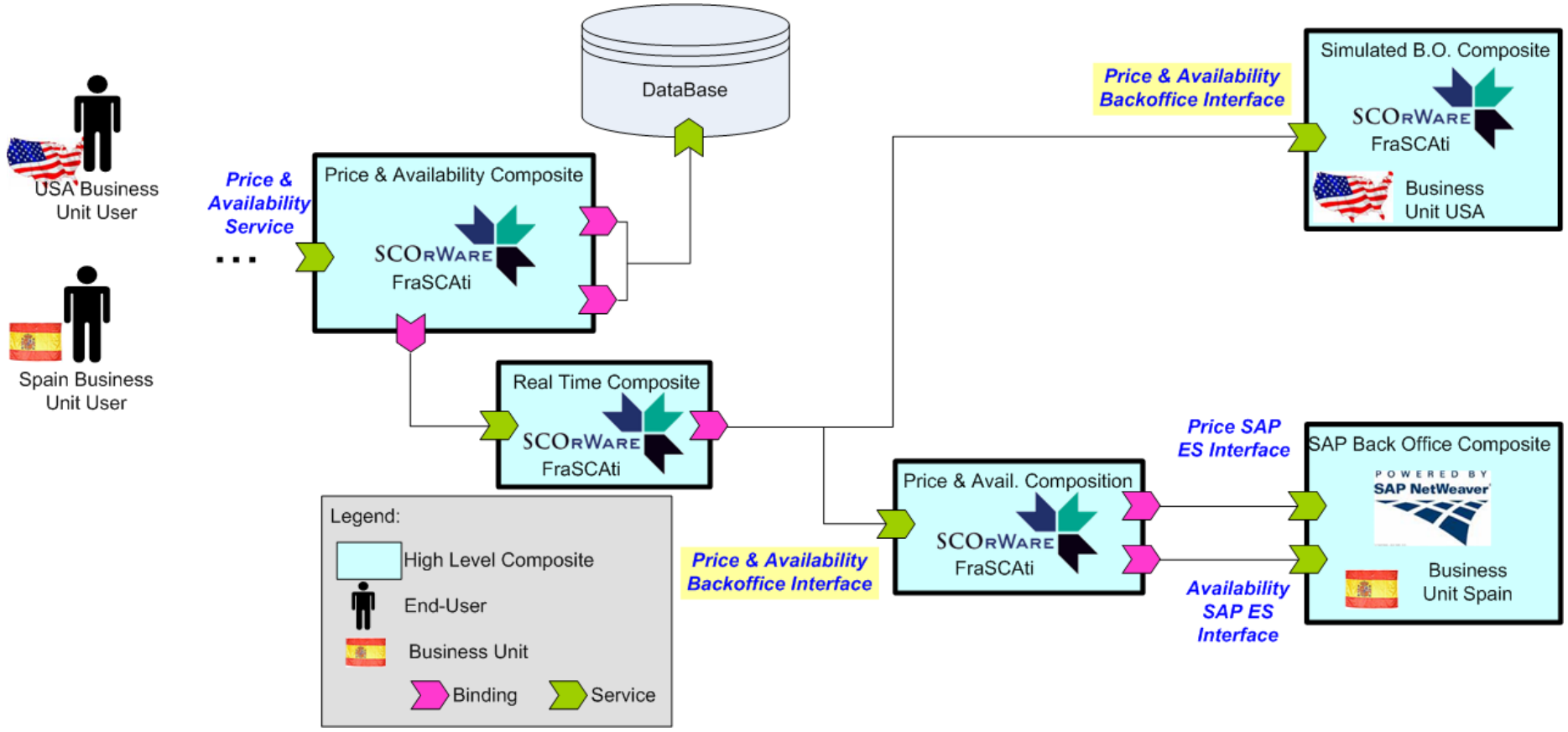
SCA – Service Composition

- Application Deployed on Business Unit USA



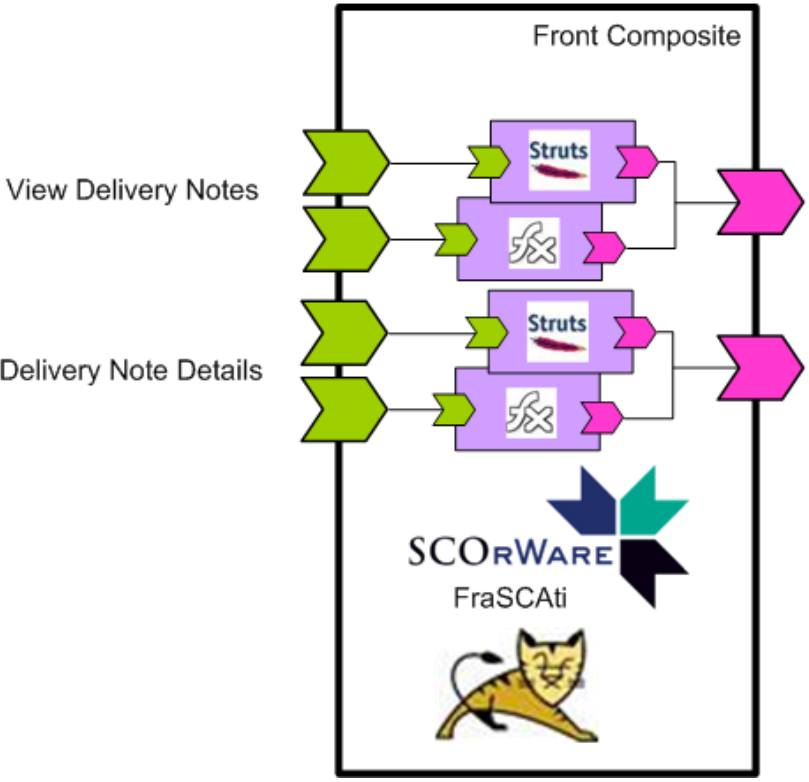
SCA – Service Composition

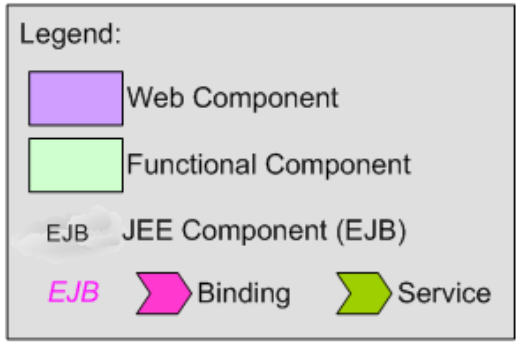
- Application now Available for Business Unit Spain



SCA and JEE

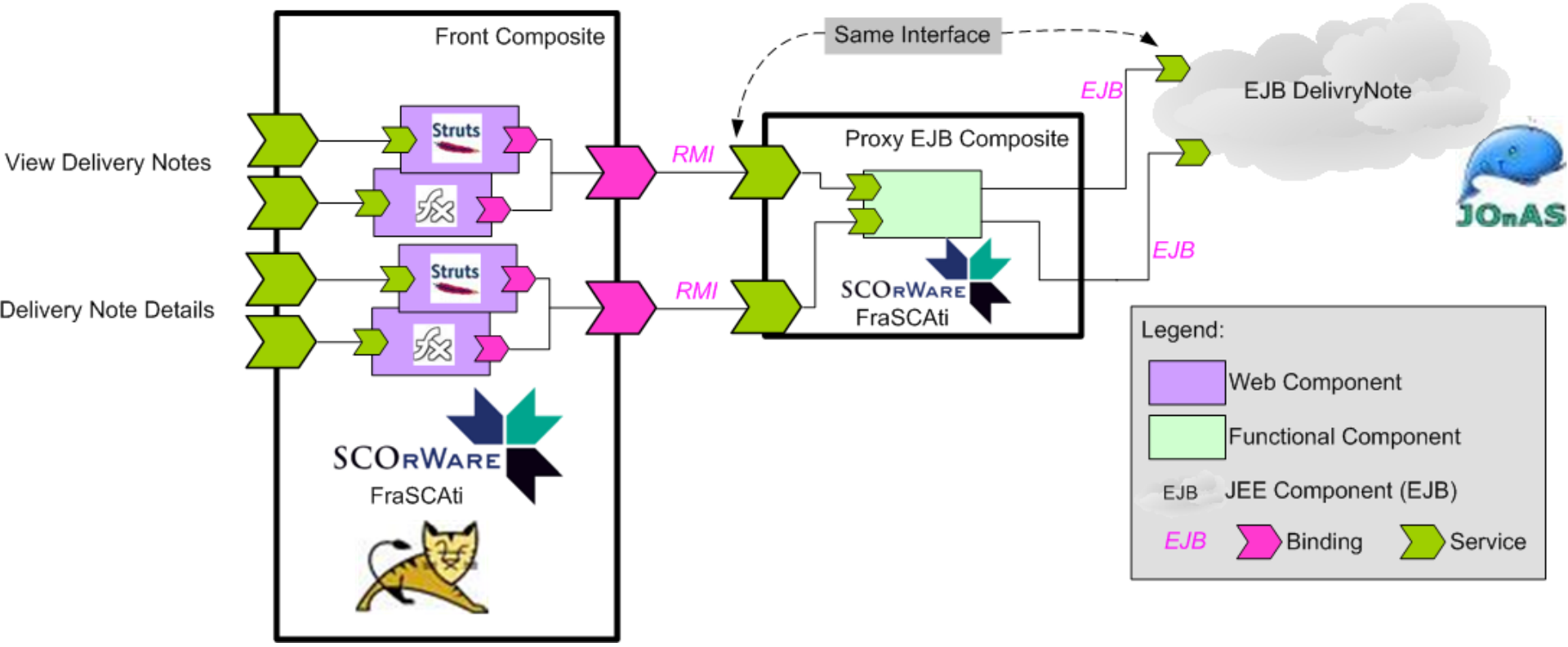
- Delivery Note Component – EJB Integration





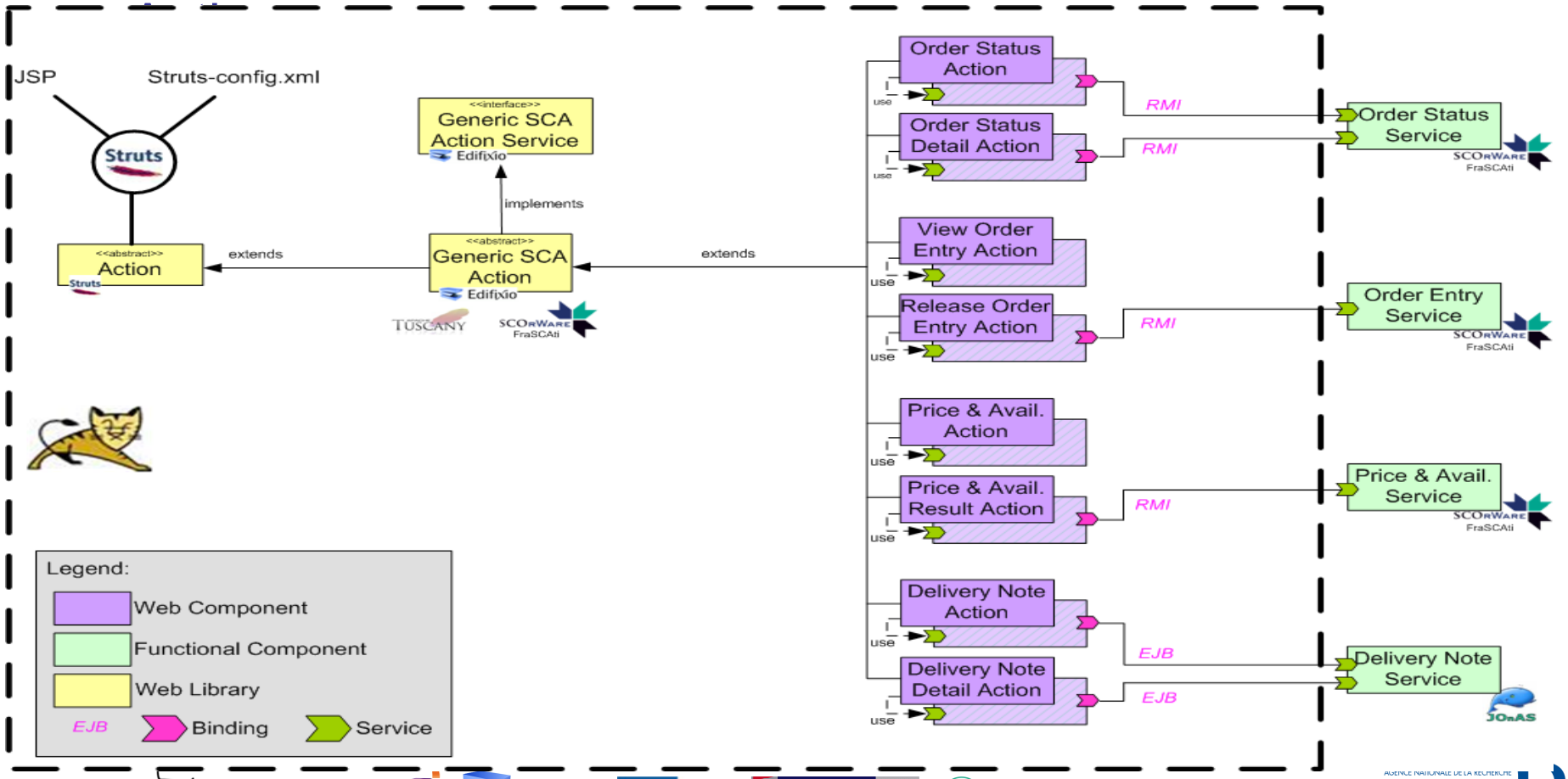
SCA and JEE

- Delivery Note Component – EJB Integration



SCA WebApp – Proxy SCA Struts

- Easy Struts Integration: Only References to Add on

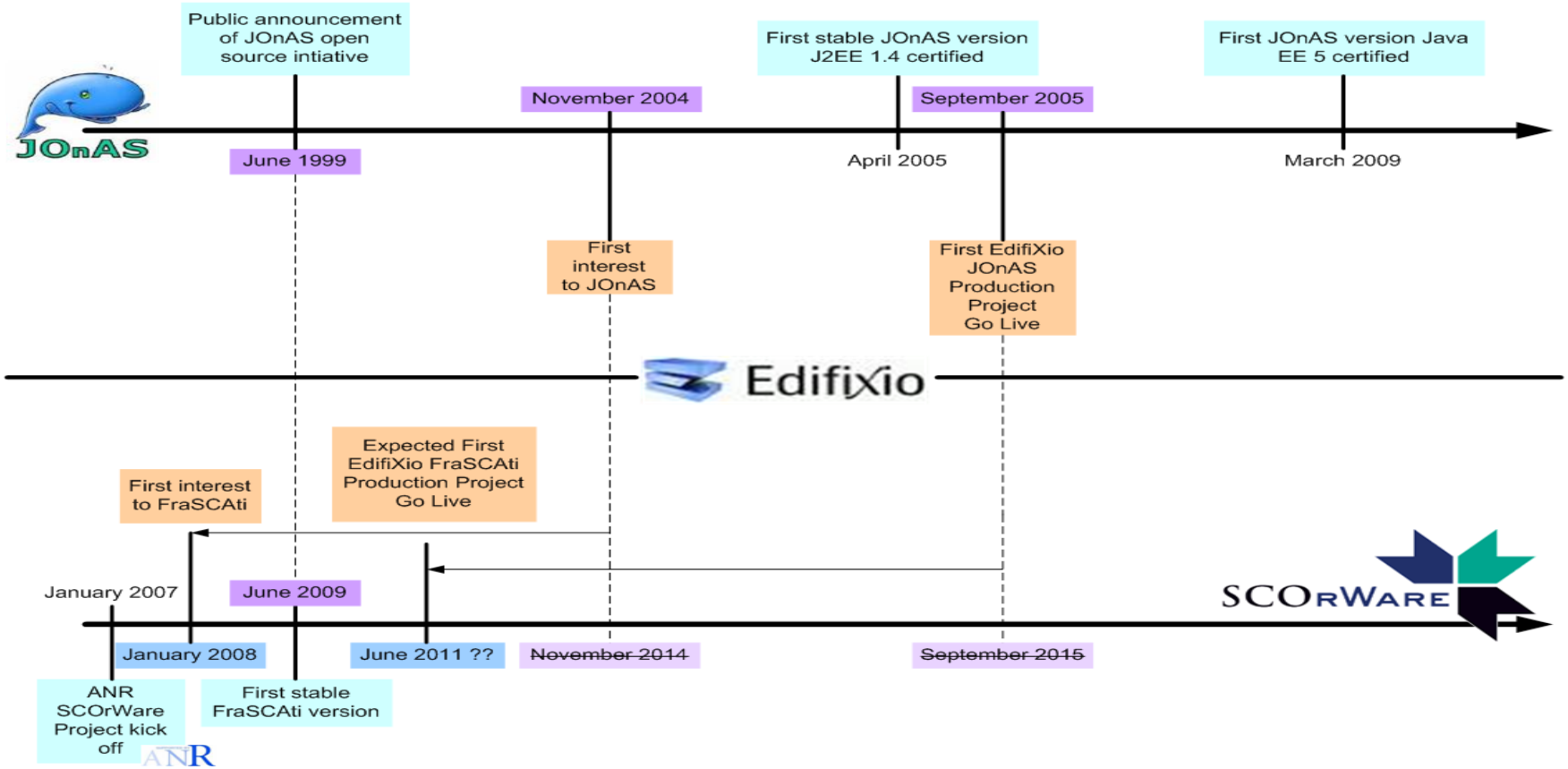


SCA Advantage

- SCA Component
  - Light
    - Running Time: **Local Binding** (less than **1 ms**) vs **EJB Local Call** (**3 ms**)
    - Development Cost
  - Better Granularity
  - More Readable, Flexible as a result more RE-USABLE
  - Easily Transformable to JEE Components
- SCA Conception Improvement
  - SCA Normalisation
- Binding Abstraction
- Easy recomposition

Technical move from JEE to SCA

- Comparative EdifiXio RoadMap : FraSCAti and JOnAS



Demonstrator Public URL

- FraSCAti URL
  - http://scorwareinteg.jnet.edifixio.com/front-frascati
- Flex URL
  - http://scorwareinteg.jnet.edifixio.com/flex
- Tuscany URL
  - http://scorwareinteg.jnet.edifixio.com/front-tuscany

More information

Visit our WebSite
http://www.scorware.org

Meet SCOrWare partners

At the OW2 village !!

SCA by OW2
Upcoming talks …

- **FraSCAti**, an Open SCA Platform
  - Lionel Seinturier, INRIA
- **PEtALS-FraSCAti**, SCA in action into PEtALS
  - Mohammed El Jai, EBM Websourcing
- **SCA Tooling** in Eclipse STP
  - Stéphane Drapeau, Obeo, Vincent Zurczak, EBM Websourcing
- **Scarbo**, Going BPM on SCA
  - Marc Dutoo, Open Wide