

# Introduction to Service-Oriented Architecture

# Agenda

- **Course Overview**
- Introduction to Service-Oriented Architecture
- Oracle SOA Suite 12c Design Time: Overview
- Oracle SOA Suite 12c Run Time: Overview
- Installing Oracle SOA Suite 12c
- Practice Overview



# Target Audience

This course places strong emphasis on hands-on practices.  
It is written for a developer who has technical background, but does not have any experience with Oracle SOA Suite.

The course provides an overview of SOA features and functionality.  
The goal of the course is to provide you with an understanding of Oracle SOA Suite, and help you to arrive at a level of comfort by using it to create and configure composite applications.

# Prerequisites

This course assumes that:

- You have completed the Oracle University course titled *XML Fundamentals* or have equivalent knowledge of XML. This helps in understanding principles related to XML documents, XPath, XML Schema, and XML Namespace.
- Your technical background includes an understanding of web service concepts such as Web Services Description Language (WSDL), SOAP, and Universal Description, Discovery and Integration (UDDI)

# Course Objectives

After completing this course, you should be able to:

- Orchestrate business process flows by using BPEL
- Work with Mediator components with routing rules, filters, and transformations
- Implement a Business Rule component with IF/THEN rules and Decision Tables
- Test, debug, and troubleshoot a SOA composite application
- Initiate SOA composite applications by using the Event Delivery Network
- Apply security policies to service endpoints to secure interactions
- Implement Human Workflow with Human Task components
- Describe SOA concepts and related technology
- Create a SOA composite application by using JDeveloper

# Course Scope

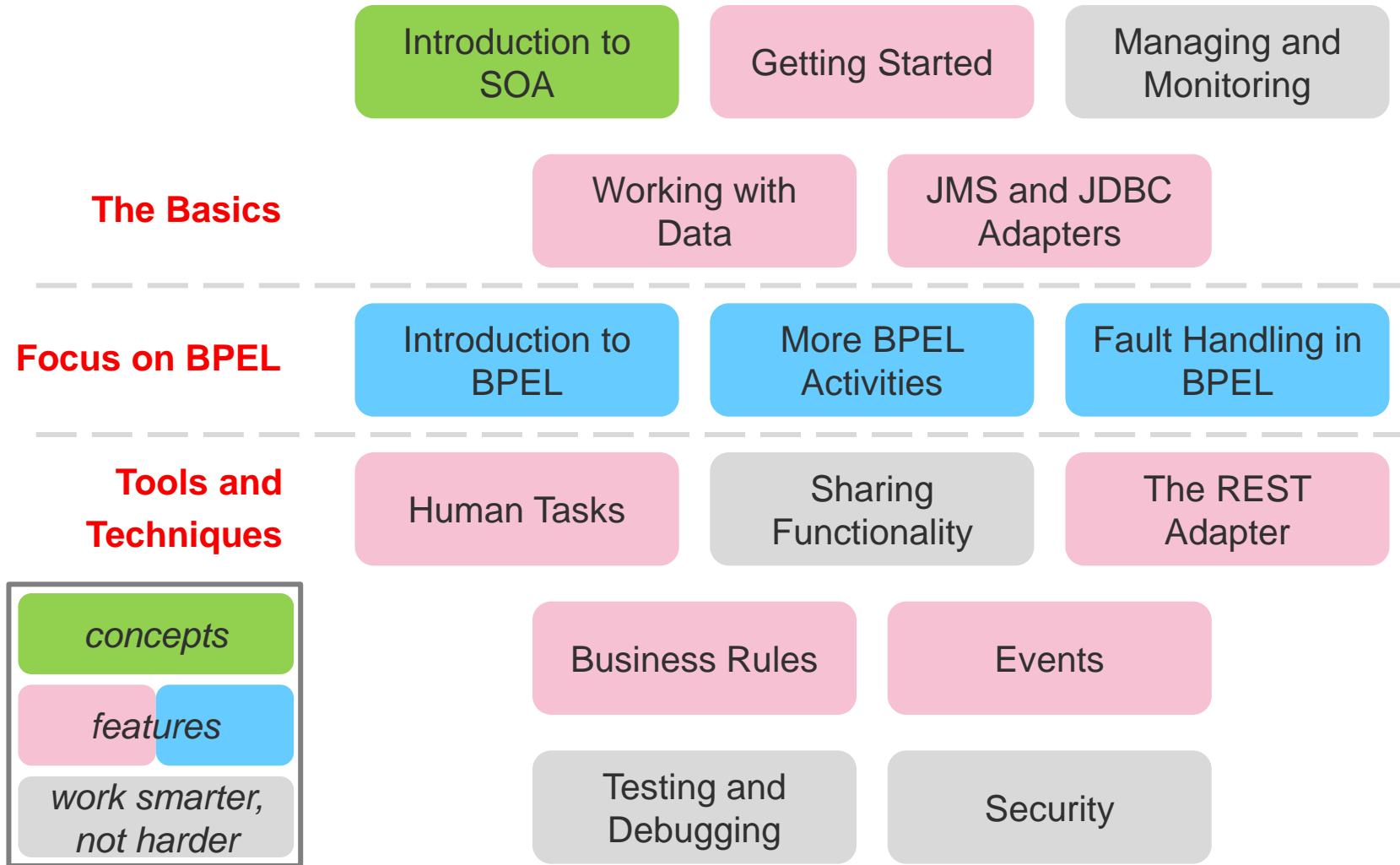
## *SOA Suite Installation*

- Oracle JDeveloper
- Oracle Enterprise Manager
- Service Infrastructure
- Oracle Mediator
- Oracle Adapters
- Oracle Business Rules
- Oracle BPEL Process Manager
- Human Workflow
- Business Events and Events Delivery Network
- Oracle Metadata Repository
- Oracle WSM Policy Manager
- Oracle User Messaging Service

- Spring Context
- Oracle Business Activity Monitoring
- Oracle B2B
- Oracle Service Bus
- Oracle Enterprise Scheduler
- Managed File Transfer
- Oracle Event Processing

This course explores these topics.

# Course Map



# Where Can I Learn More?

Topic	Website
Education and Training	<a href="http://education.oracle.com">http://education.oracle.com</a>
Product Documentation	<a href="http://docs.oracle.com">http://docs.oracle.com</a>
Product Downloads	<a href="http://www.oracle.com/technology/software">http://www.oracle.com/technology/software</a>
Product Articles	<a href="http://www.oracle.com/technetwork/articles">http://www.oracle.com/technetwork/articles</a>
Product Support	<a href="http://www.oracle.com/support">http://www.oracle.com/support</a>
Product Forums	<a href="http://forums.oracle.com">http://forums.oracle.com</a>
Product Tutorials	<a href="http://www.oracle.com/oll">http://www.oracle.com/oll</a>
Sample Code	<a href="http://www.samplecode.oracle.com/">http://www.samplecode.oracle.com/</a>



# Objectives

After completing this lesson, you should be able to:

- Describe Service-Oriented Architecture (SOA)
- Explain services and key standards
- Describe Service Component Architecture (SCA)
- Describe the functionality of Oracle SOA Suite 12c service components and adapters
- Describe how WebLogic Application Server is used by Oracle SOA Suite

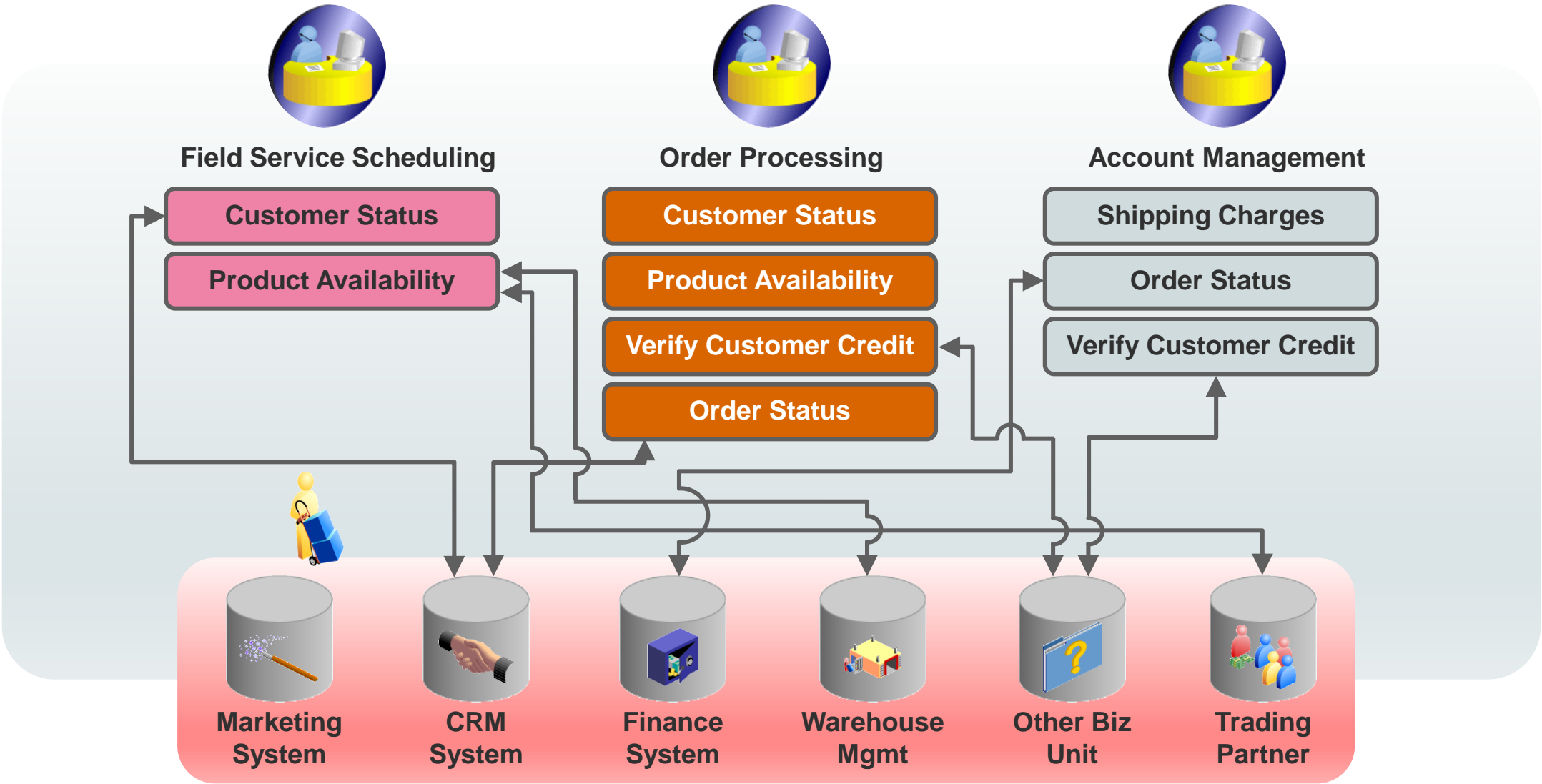


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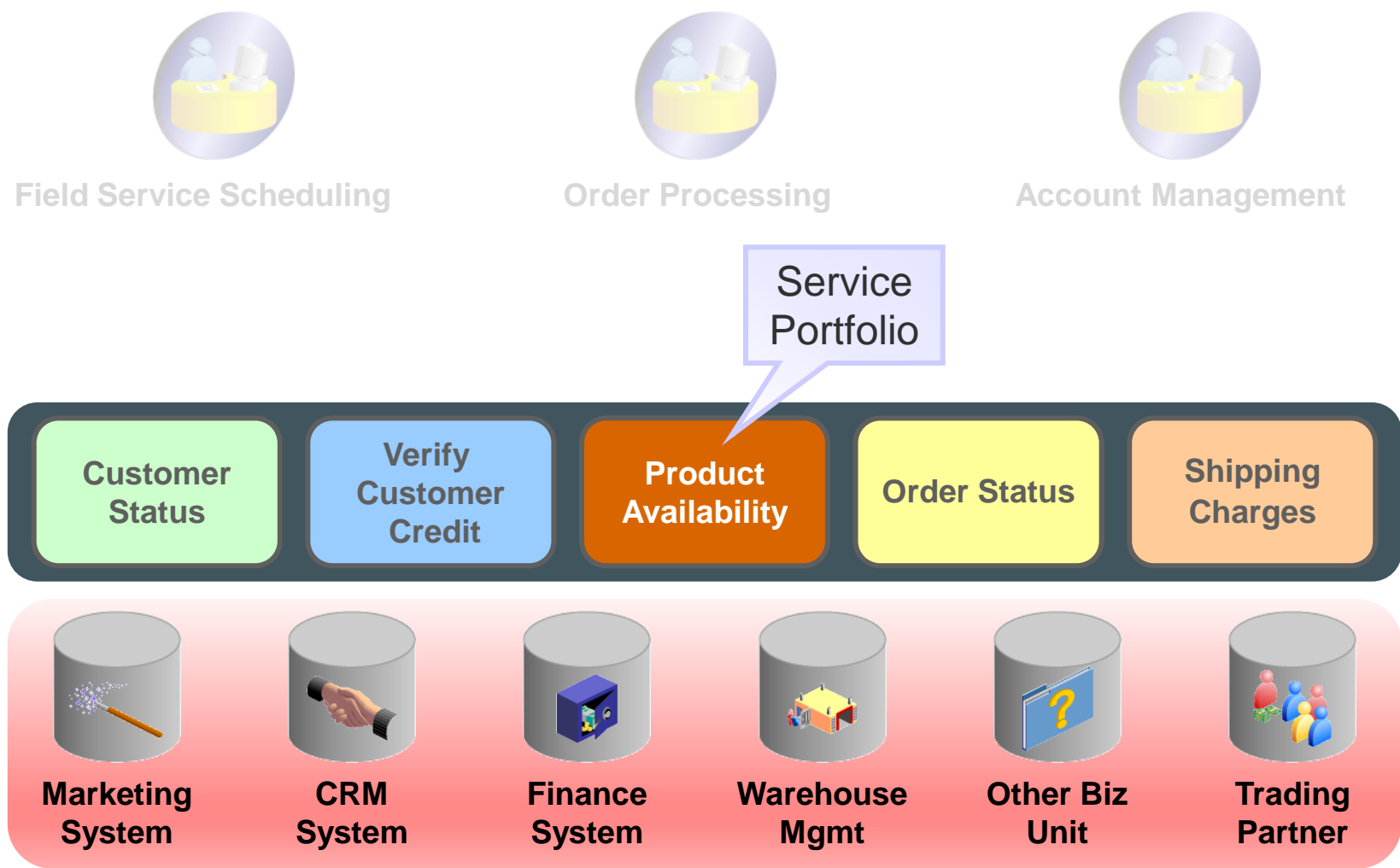
# Problem Statement



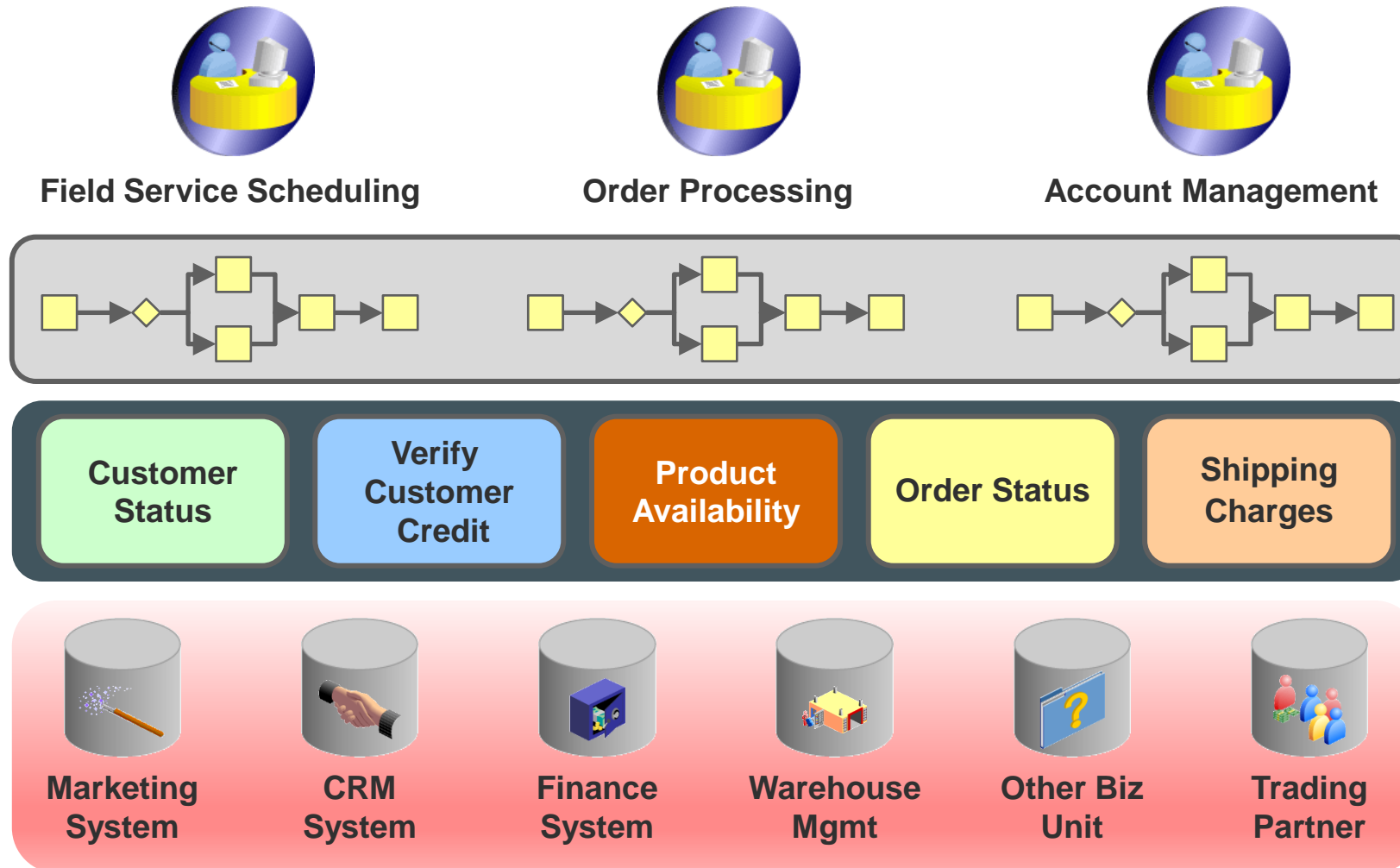
# Definition of SOA

An IT strategy that organizes the **discrete functions** contained in enterprise applications into **interoperable, standards-based services** to be combined and **reused quickly** to meet business requirements

# Building a Service Portfolio



# Assembling Services as Composite Applications

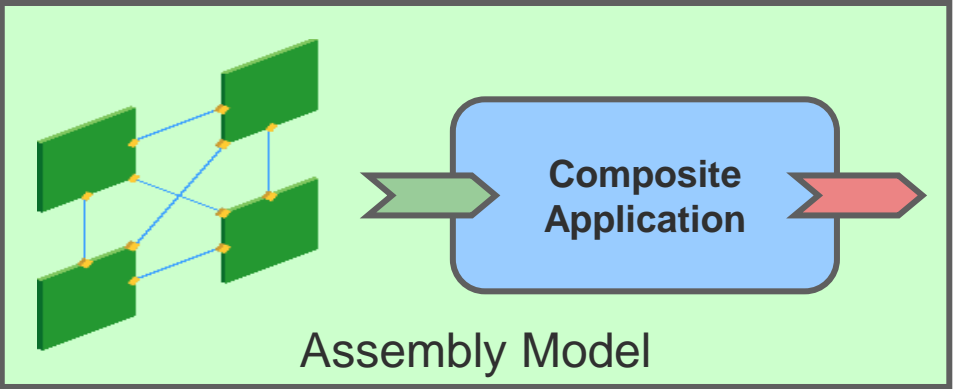


# Service Component Architecture

Service Component Architecture (SCA) is a set of specifications that describe a model for building applications by using a Service-Oriented Architecture.

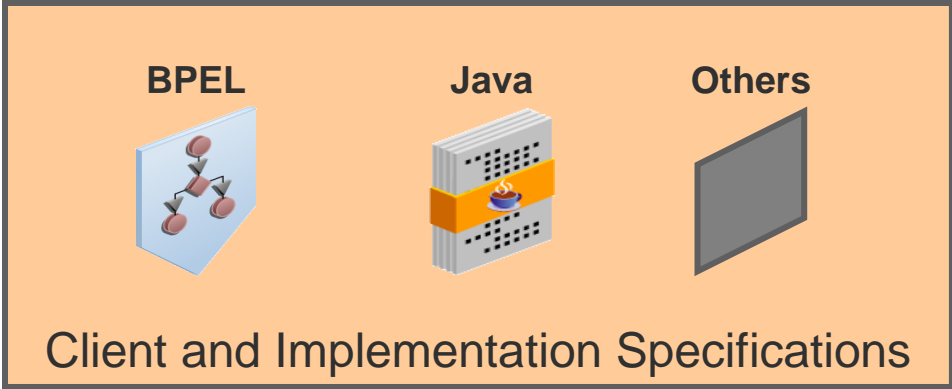
- Services are assembled to form a *composite application* that creates a solution that addresses a specific business requirement.
- Composite applications may contain new services (specifically for the application) and business functions from existing systems and applications (*reused* in the composite application).
- SCA provides a model for both the composition of services and the creation of service components, including reuse of existing application functions.

# Elements of a Service Component Architecture



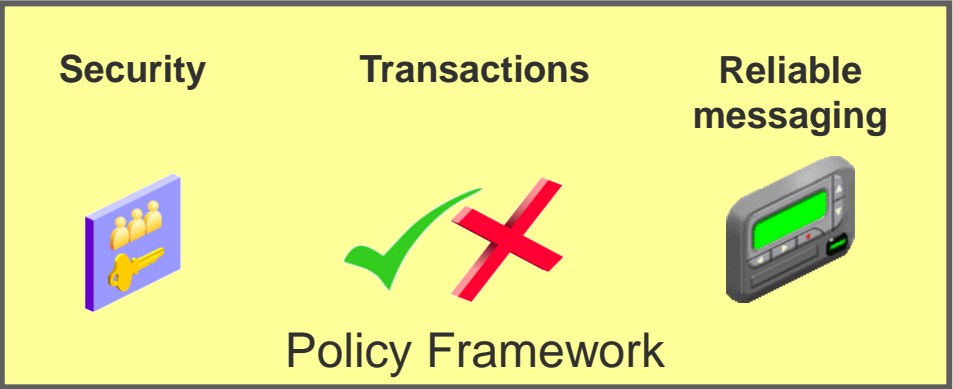
Assembly Model

Assembly Specifications



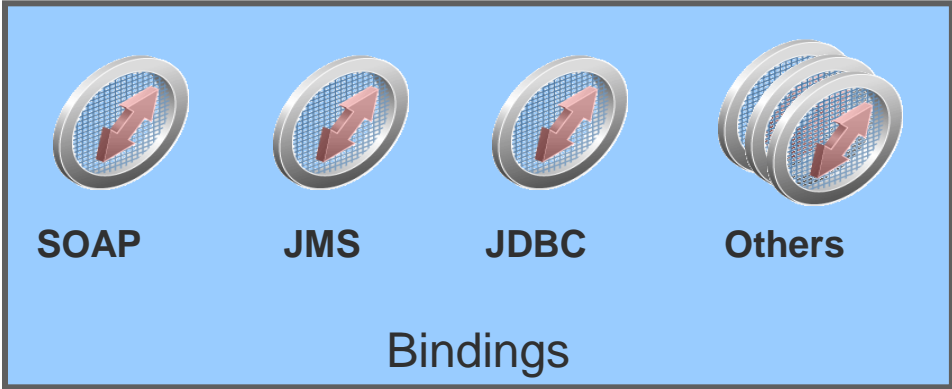
Client and Implementation Specifications

Implementation Language Specifications



Policy Framework

Infrastructure Service Specifications

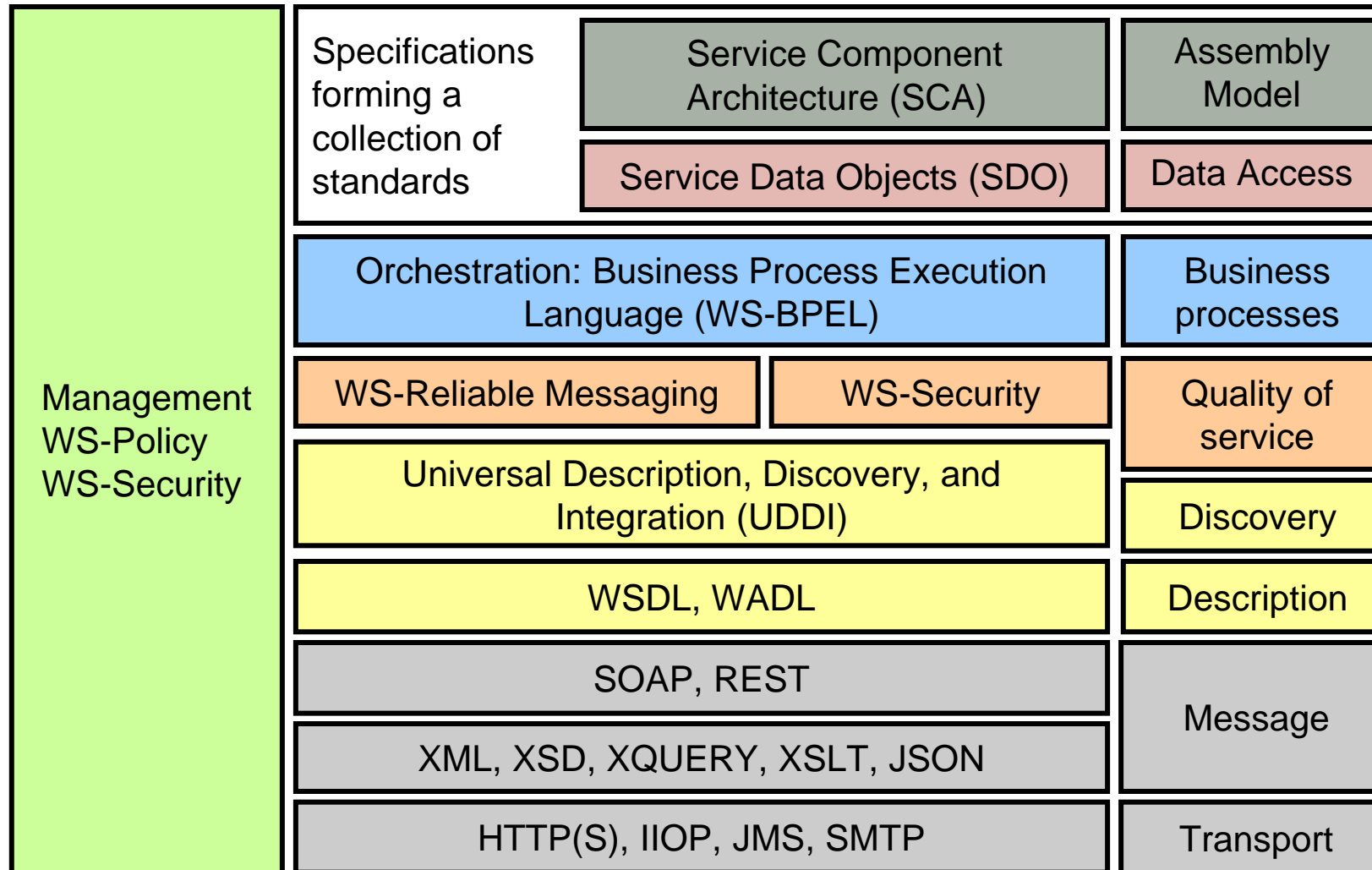


Bindings

Access Method Specifications



# Why Standards Are Important in SOA



# Benefits of SOA

- Reusability
  - Existing functionality within an application is reused across business organizations and processes.
- Interoperability
  - Communication between services is not dependent on the platform. Services are loosely coupled to the application.
- Scalability
  - Applications are flexible to changing business requirements.
- Cost efficiency
  - Costs are reduced and delivery of new functionality is accelerated because existing resources are reused and integration of business resources is standards based.

# Quiz



Service Component Architecture (SCA) is a competing standard to Service-Oriented Architecture (SOA).

- a. True
- b. False



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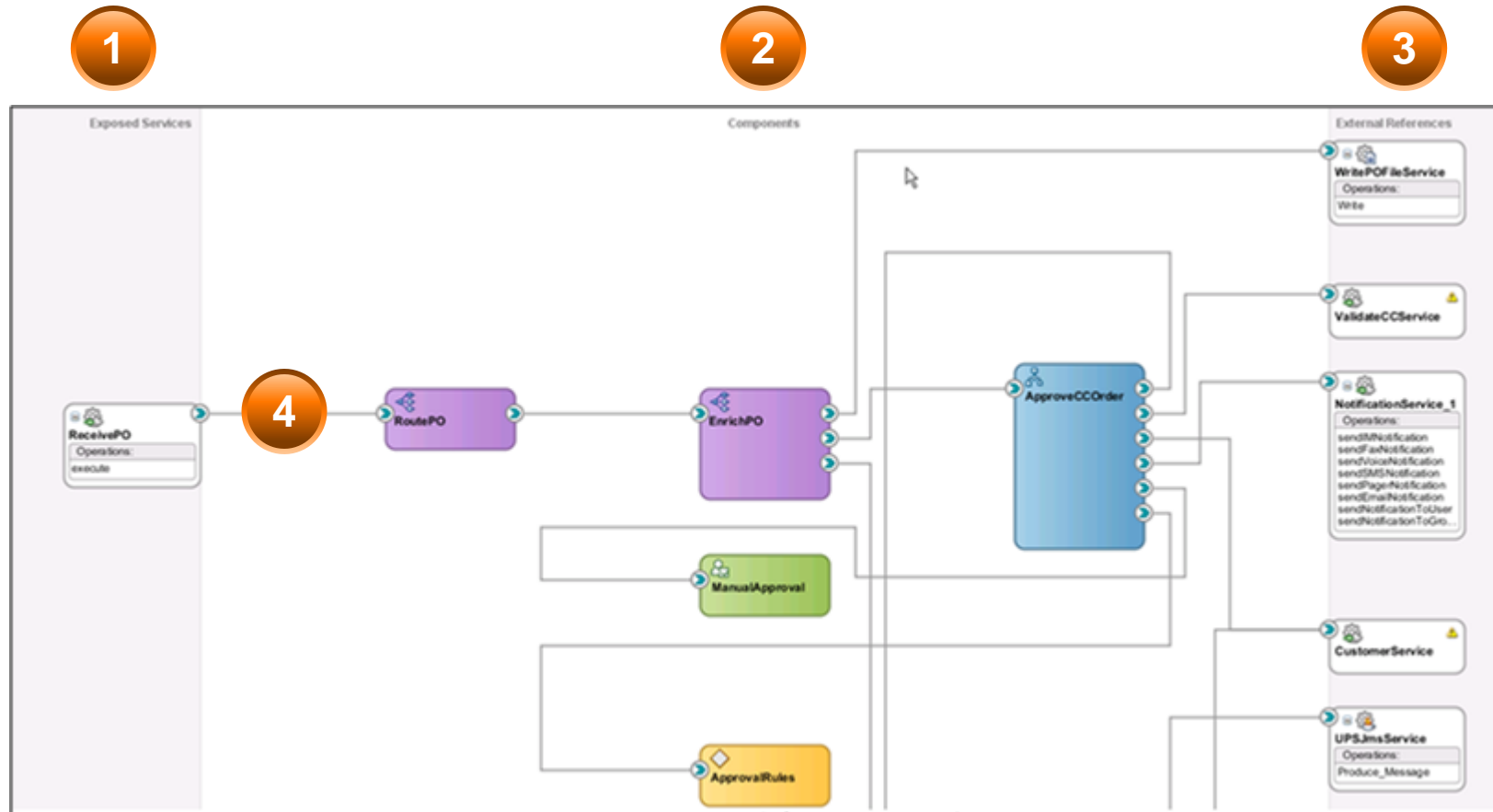


# Oracle SOA Suite 12c: Introduction

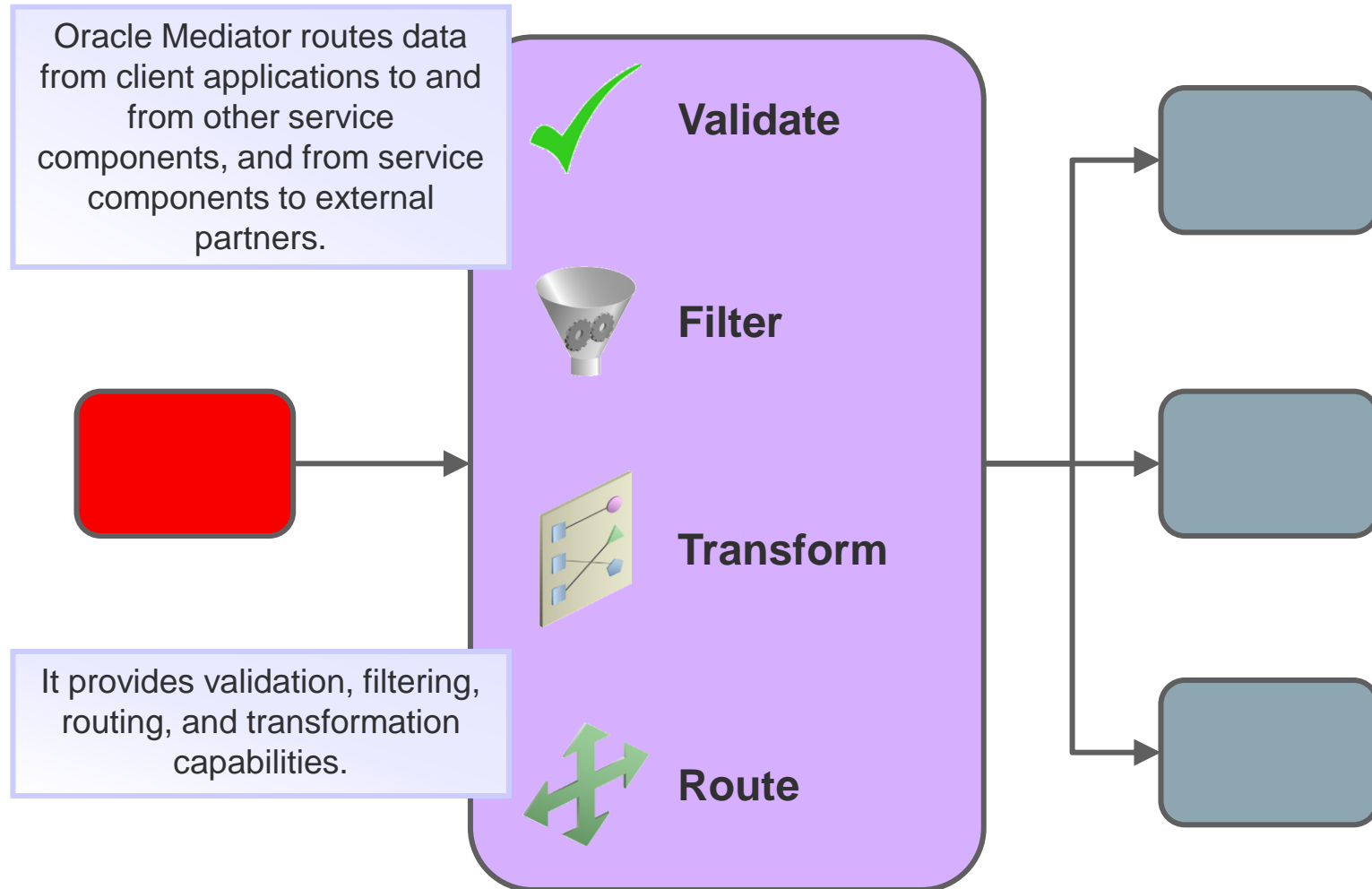
Oracle SOA Suite 12c provides a comprehensive suite of components for developing, securing, and monitoring SOA, including:

- ***Service components***, which are the building blocks that are used to construct a SOA composite application
- ***Service engines***, which implement service components at run time
- ***Adapters***, which provide connectivity to functionality outside the composite application
- ***Service infrastructure***, which provides the internal message transport infrastructure capabilities for connecting service components and enabling data flow

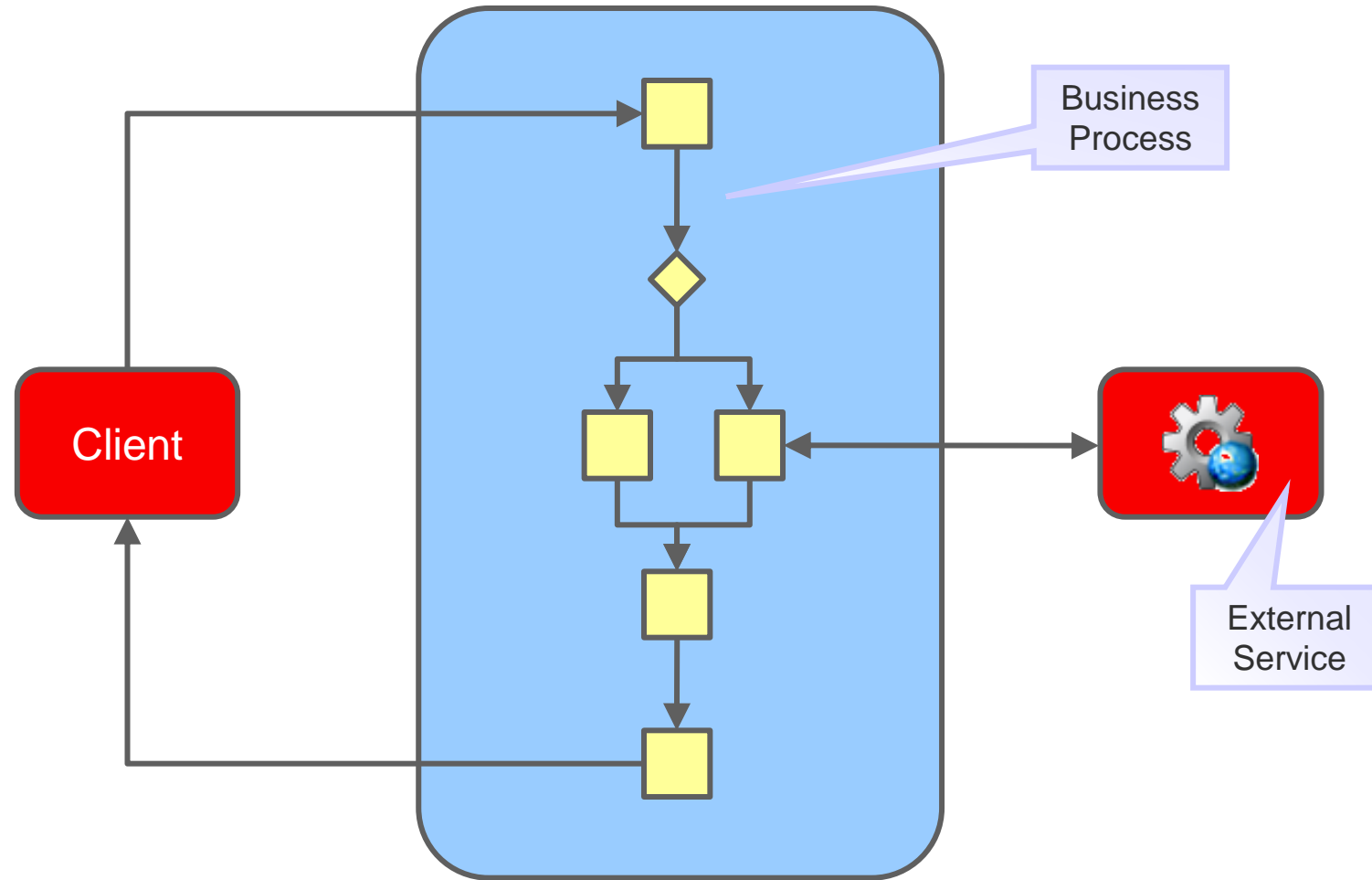
# Elements of a SOA Composite Application



# Oracle Mediator

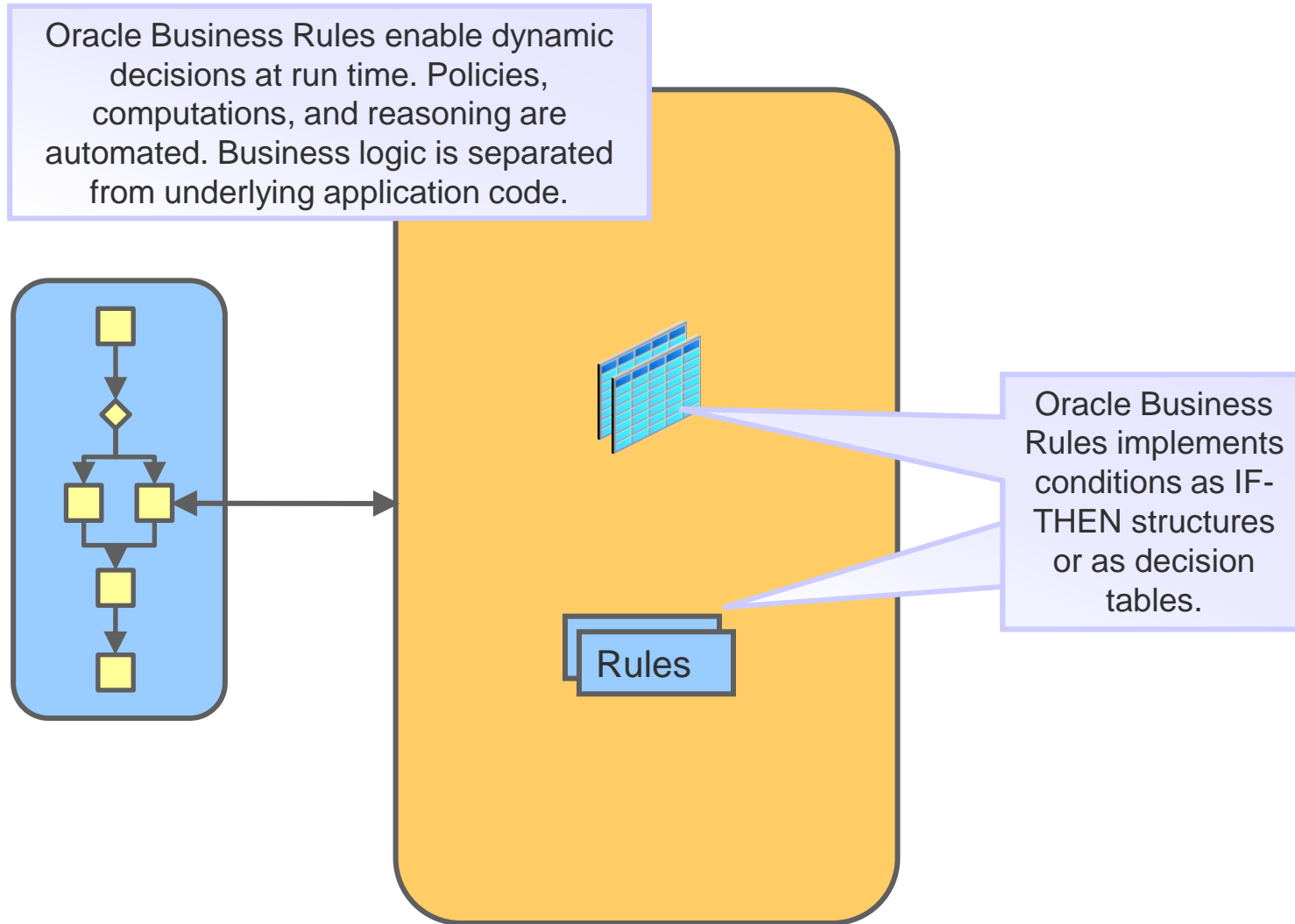


# Oracle BPEL Process Manager

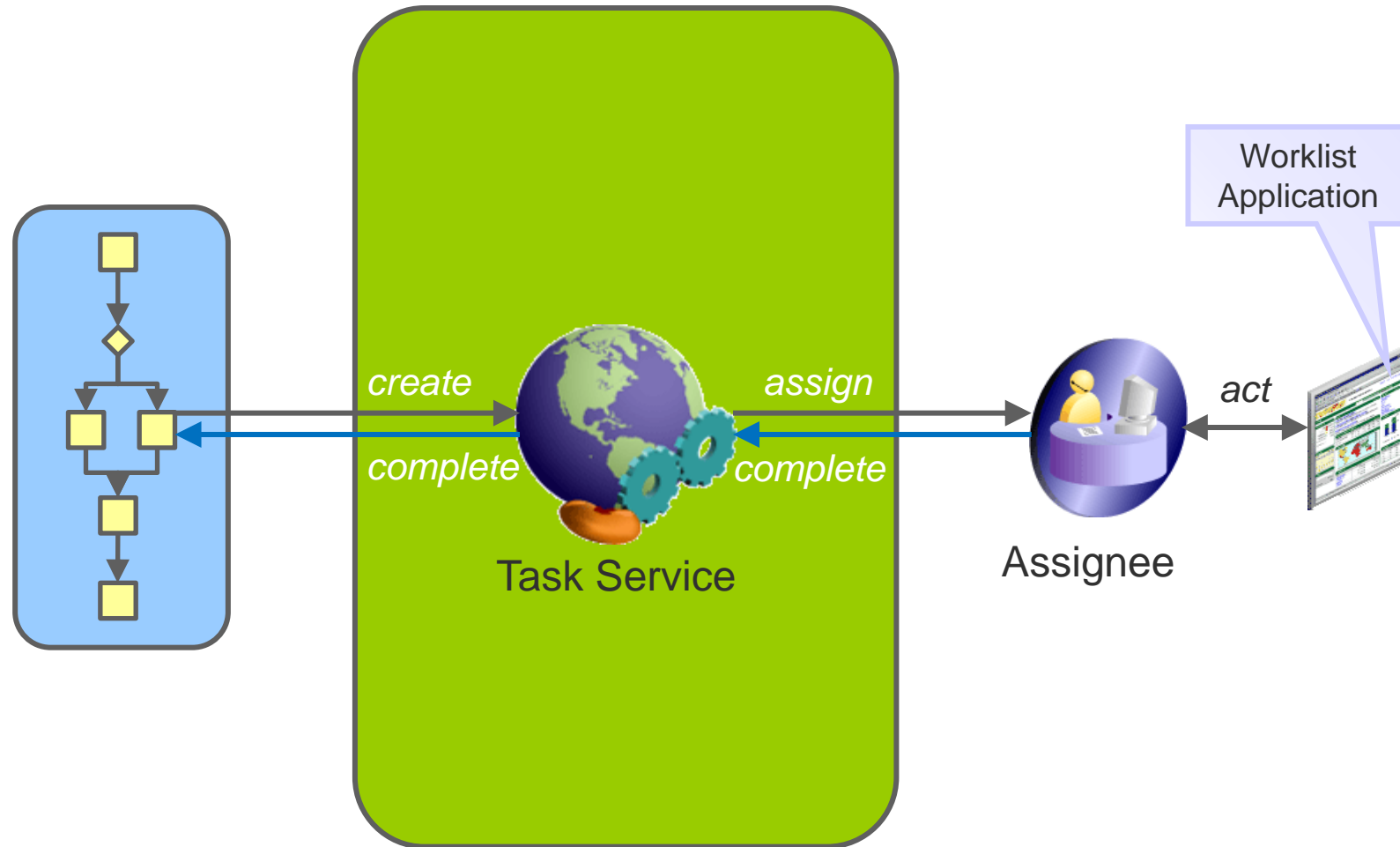




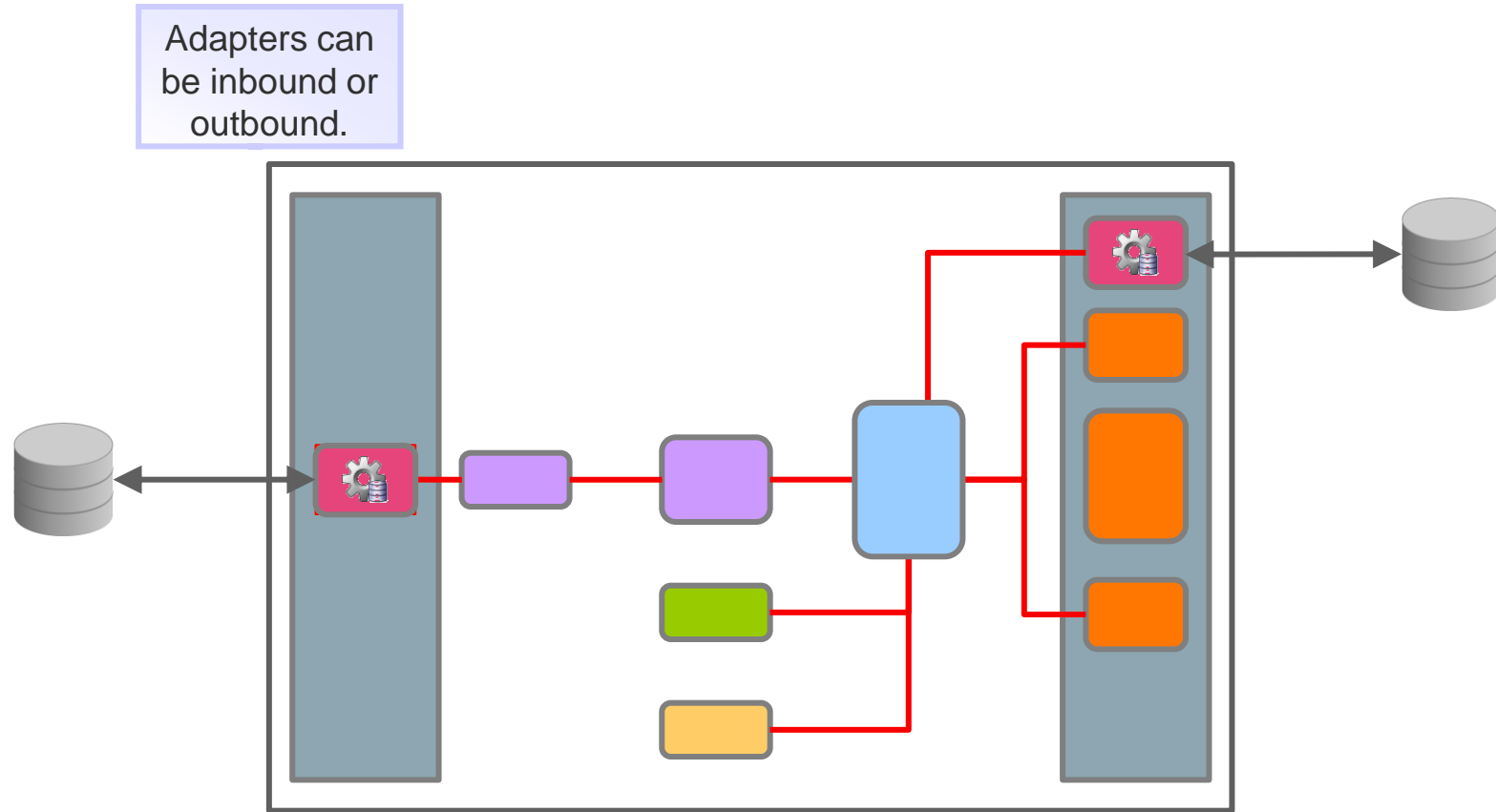
# Oracle Business Rules



# Oracle Human Workflow

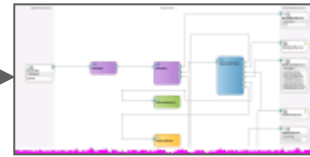


# Oracle Adapters



# JDeveloper

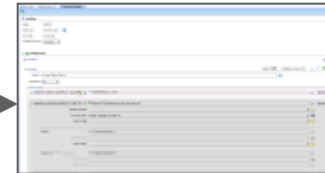
In addition to many other editing capabilities, JDeveloper supports a number of tools for SOA applications.



Composite Editor



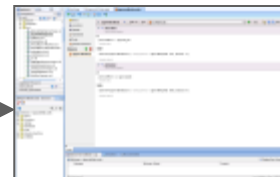
BPEL Editor



Mediator Editor



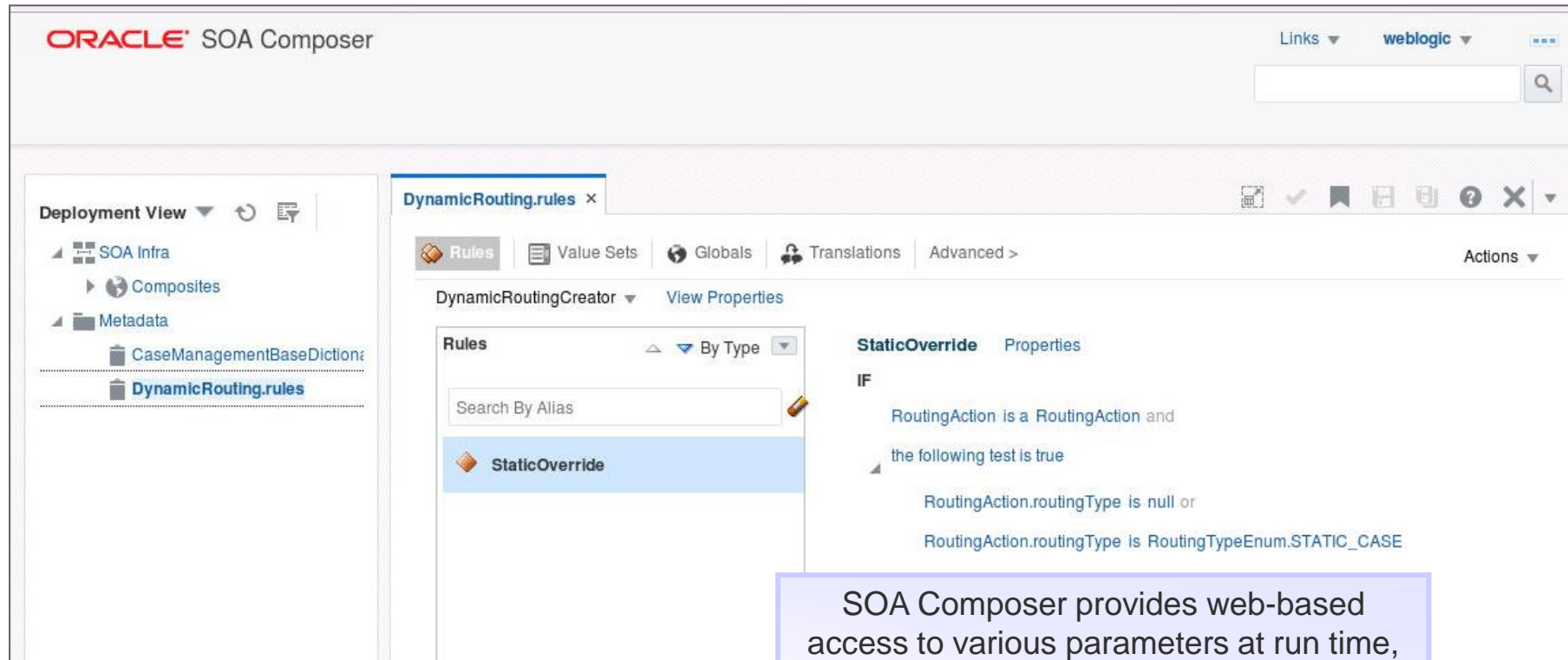
Human Task Editor



Business Rule Editor



# SOA Composer



SOA Composer provides web-based access to various parameters at run time, allowing them to be edited without redeploying the project that uses them.

# Quiz



One capability of Oracle Mediator is to route data within a composite application.

- a. True
- b. False



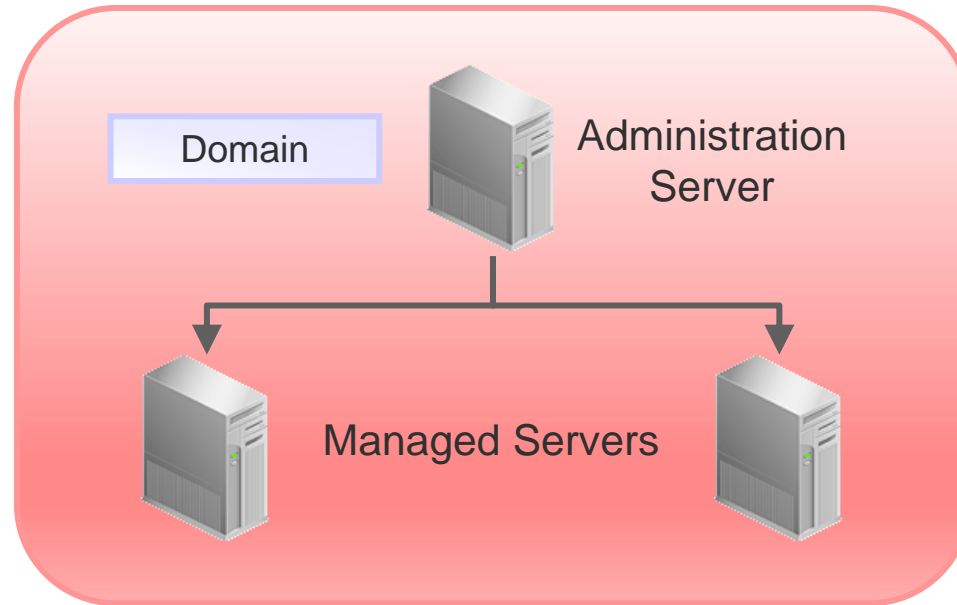
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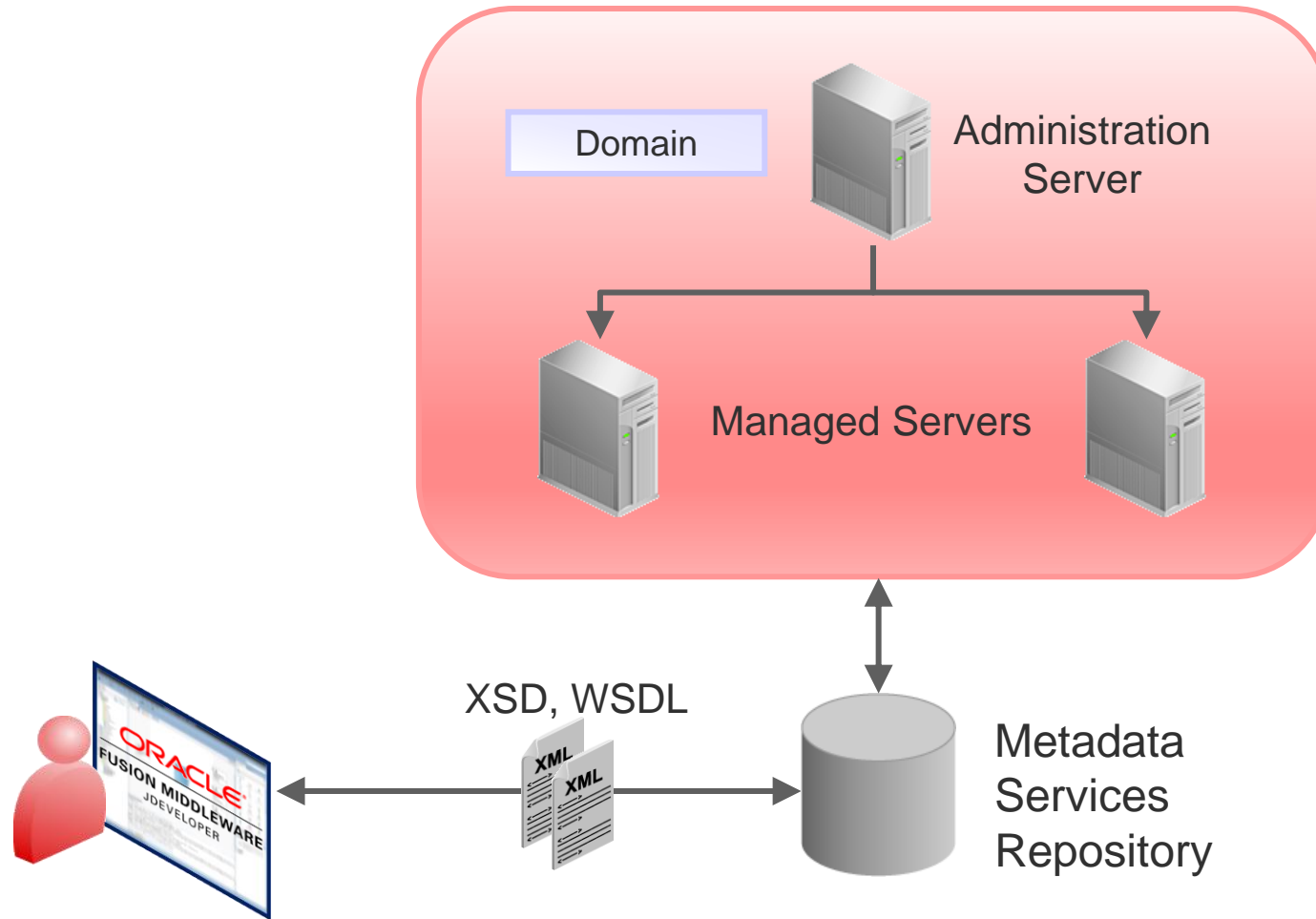




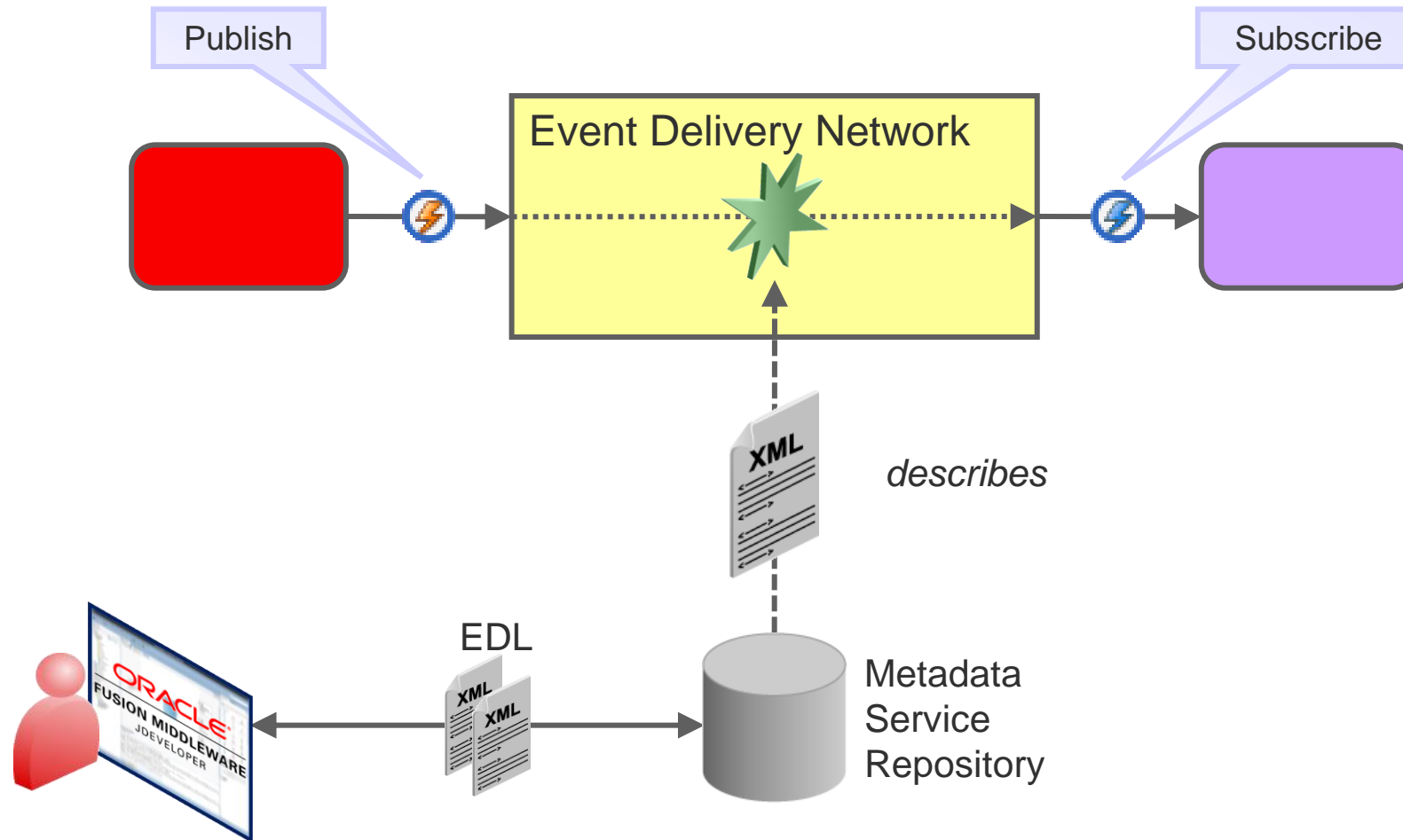
# WebLogic Application Server



# Oracle Metadata Repository

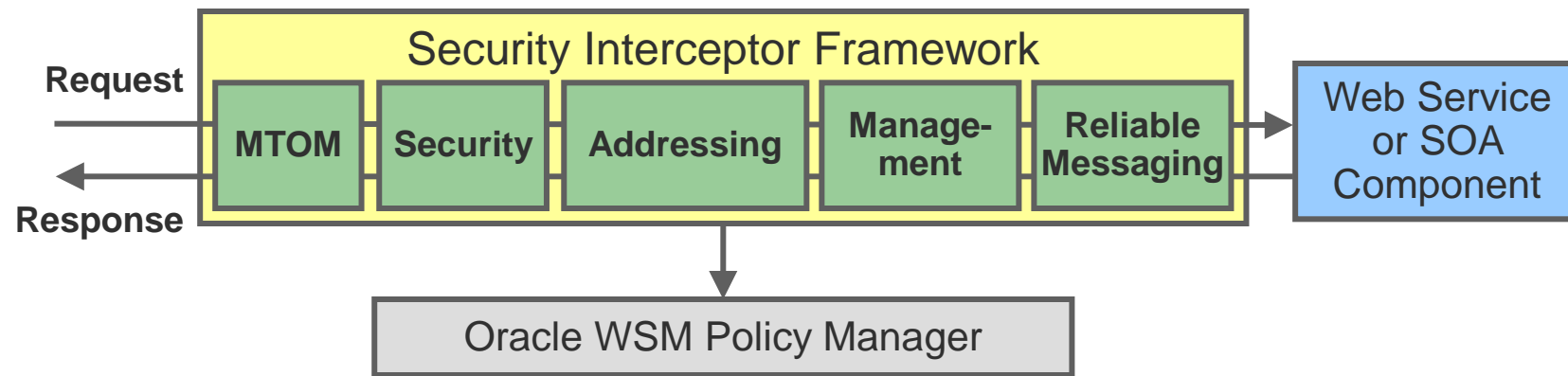


# Business Events and the Event Delivery Network

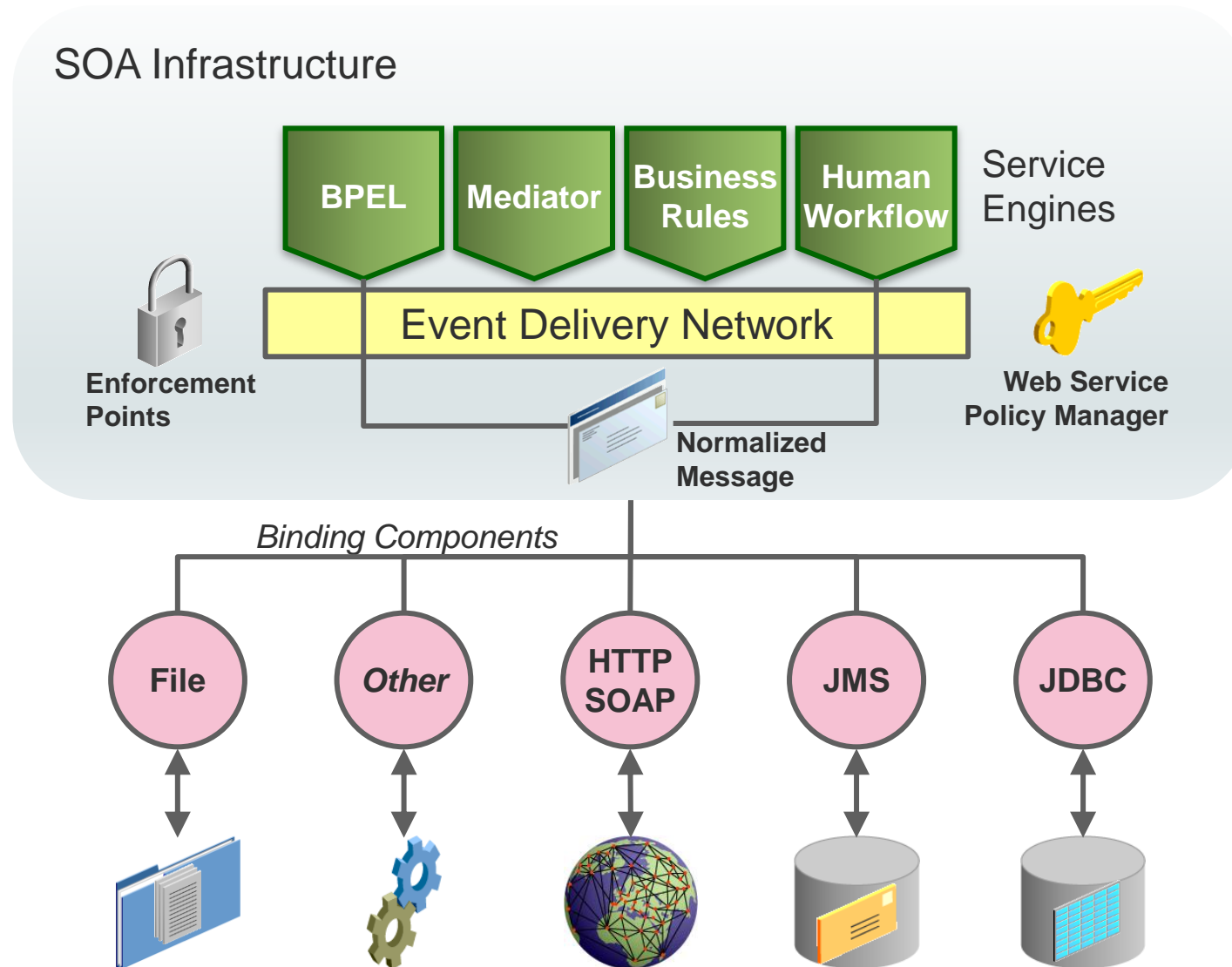




# Oracle Web Service Manager Policy Manager



# SOA Run Time



# Quiz



Business events are a means for service components to exchange data synchronously.

- a. True
- b. False



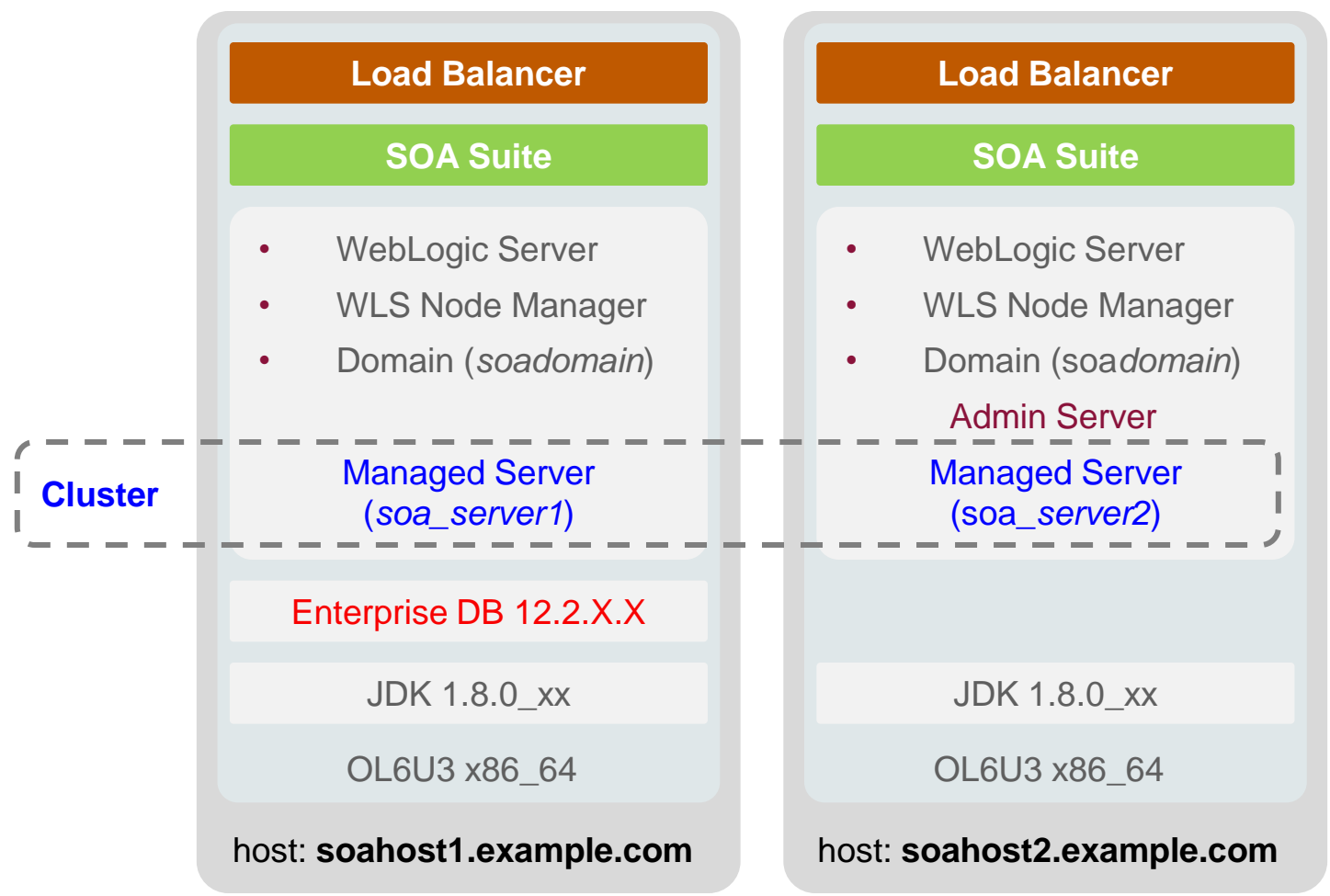
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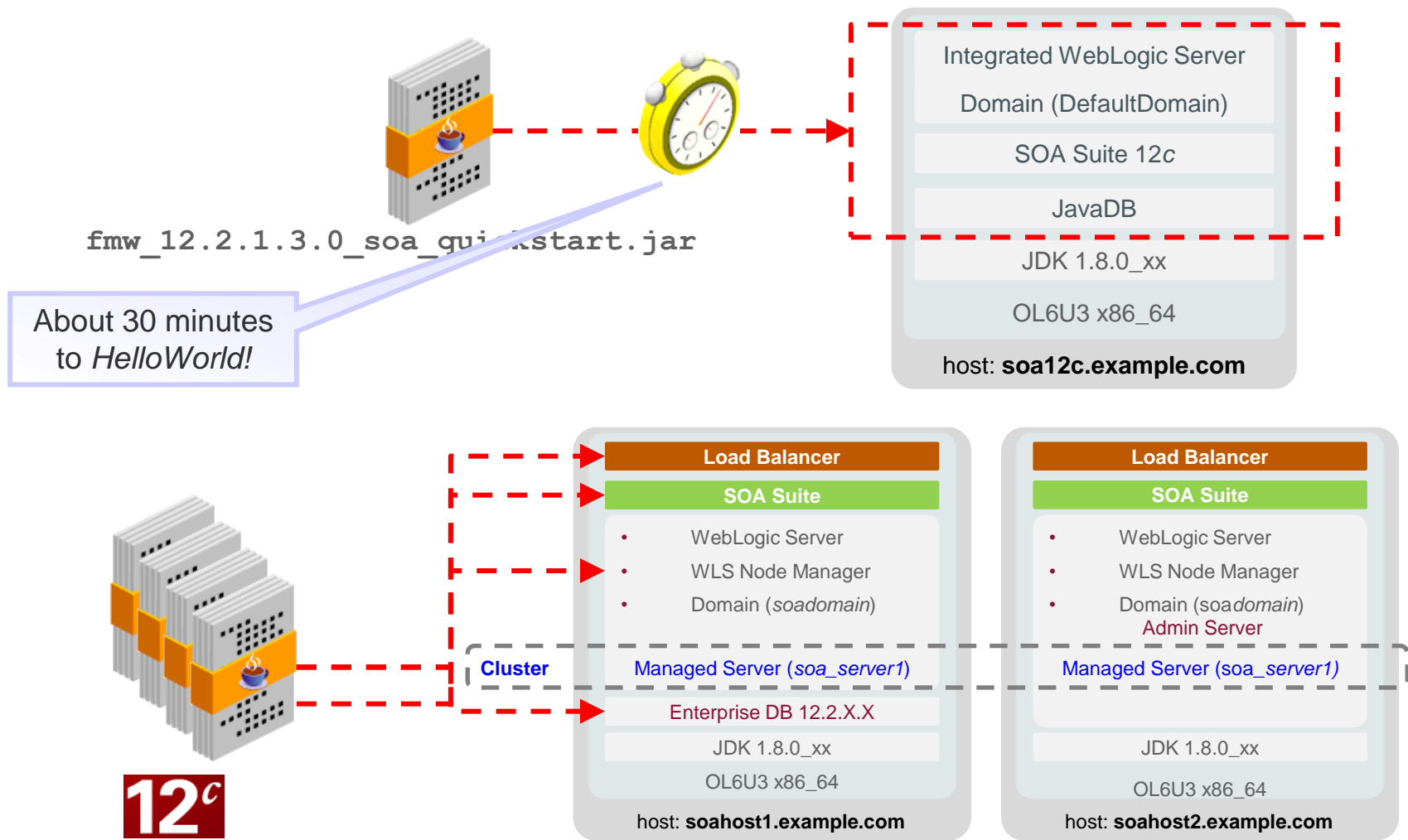




# Production Environment: Example



# SOA Quick Start Installation





# Creating a Domain

Default	Stand-Alone	Compact
<ul style="list-style-type: none"><li>• Includes SOA Suite runtime components</li><li>• Works with a pre-configured Java DB</li><li>• Launches Integrated WLS from JDeveloper. Integrated WLS is shut down every time you end a JDeveloper session.</li></ul>	<ul style="list-style-type: none"><li>• Includes SOA Suite runtime components</li><li>• Works with a pre-configured Java DB</li></ul>	<ul style="list-style-type: none"><li>• Is configured by the user</li><li>• Works with an Oracle database that you must install, and then configure with RCU</li></ul>
<ul style="list-style-type: none"><li>• Is best for demos or evaluation</li></ul>	<ul style="list-style-type: none"><li>• Is best for developers, especially those who want to use the OSB Design Time Console instead of JDeveloper</li></ul>	<ul style="list-style-type: none"><li>• Can be used if you want to add SOA components that are require a database, such as Enterprise Scheduler, MFT, B2B, Healthcare, or BAM</li></ul>

# Summary

In this lesson, you should have learned how to:

- Describe Service-Oriented Architecture (SOA)
- Explain services and key standards
- Describe Service Component Architecture (SCA)
- Describe the functionality of Oracle SOA Suite 12c service components and adapters
- Describe how WebLogic Application Server is used by Oracle SOA Suite



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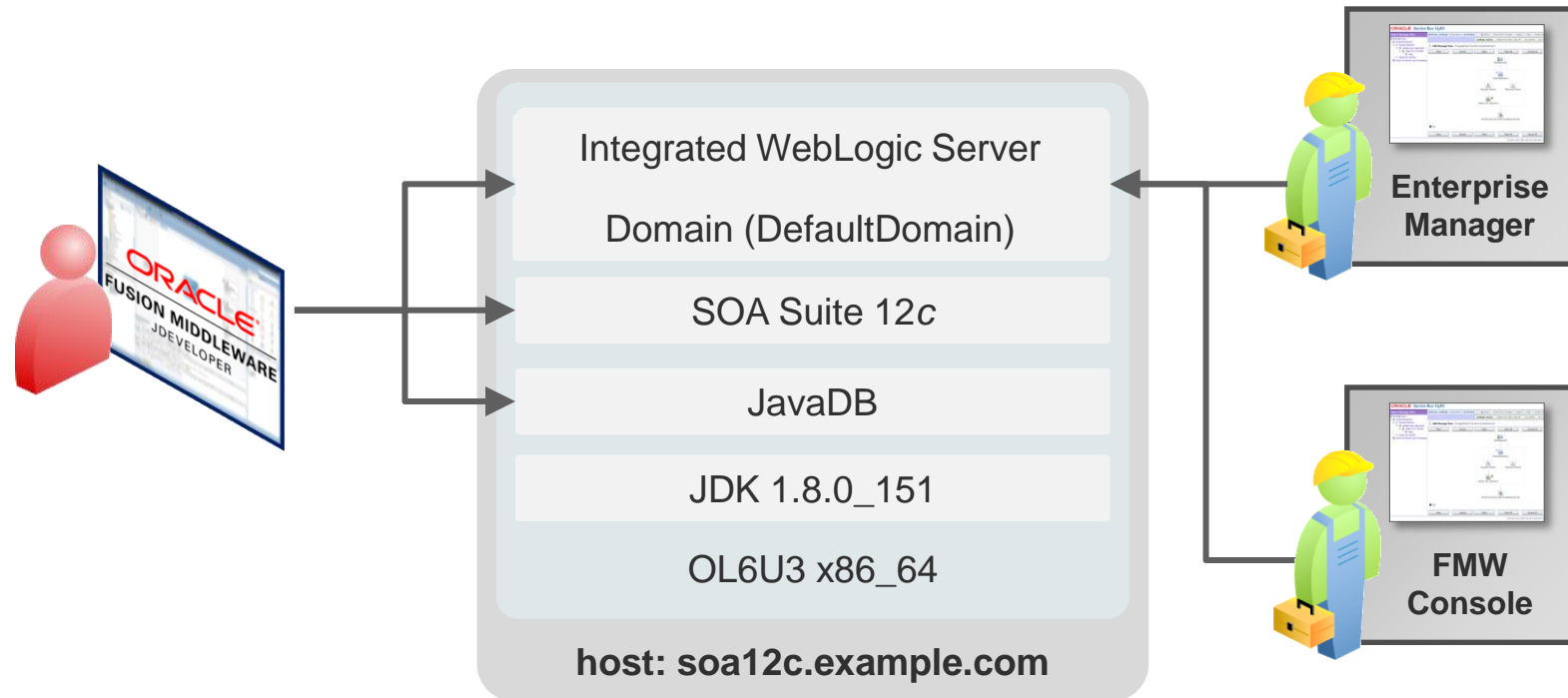


# Practice 1 Overview

This practice covers the following topics:

- Performing the SOA Quick Start installation
- Configuring memory settings for improved performance
- Starting the integrated server and configuring a domain

# Course Environment





# Launching the Quick Start Installer

```
# startInstall.sh
```

```
export JAVA_HOME=/usr/java/jdk1.8.0_151  
export ORACLE_HOME=/u01/app/fmw12c/Oracle_Home  
cd /home/oracle/labs/software  
$JAVA_HOME/java -jar fmw_12.2.1.3.0_soa_quickstart.jar
```

Set the environment variable  
JAVA\_HOME to point to the  
location of your JDK.

Optionally, set  
ORACLE\_HOME.

Run the appropriate  
.jar file

