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Service Enabling E-Business Suite

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Fusion Middleware

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Development Manager
E-Business Suite

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Agenda

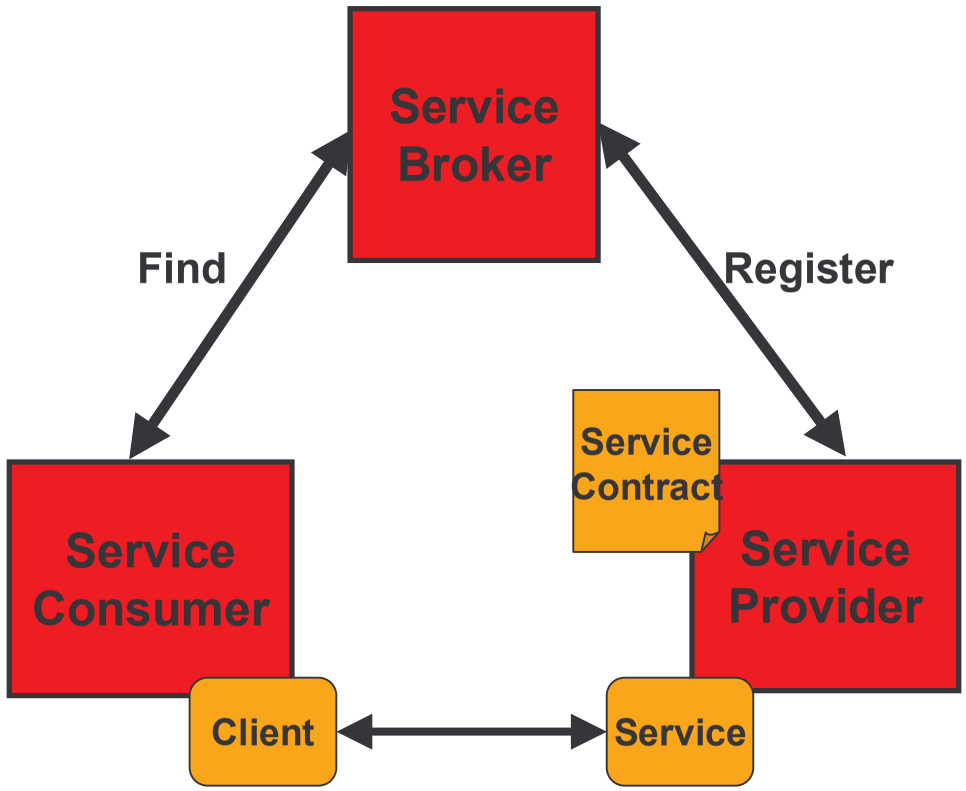
- Service Enablement in EBS Context
- SOA Suite / FMW Overview
- EBS Adapter
- Integration Repository
- EBS Integration Interfaces
- Order Visibility with BPEL + BAM Case Study
- EBS Adapter Demo
- EBS Adapter Roadmap for R12

Service Oriented Architecture for EBS

What is Service Enablement?

It's all about…

- Capability to Provide Services
- Ability to Consume Services
- Abstracted Re-Usable Interfaces
- Standard Based Web Services
- Documented Services & API



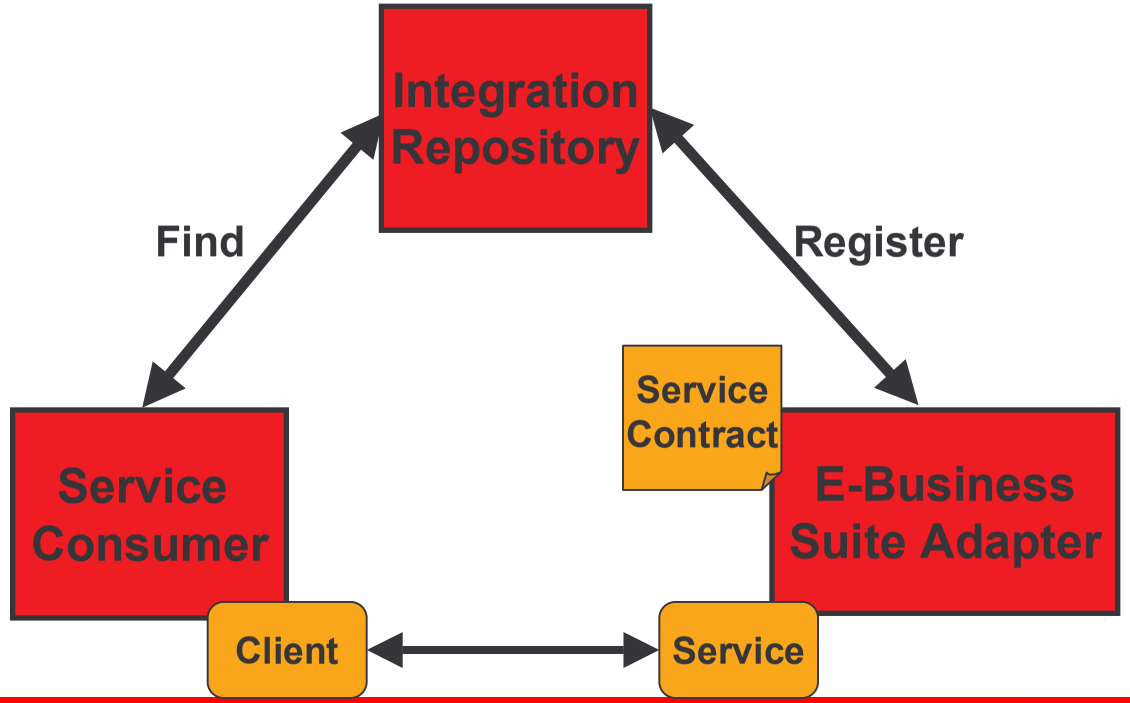
Why Service Enablement?

Business Drivers

- Leveraging the investment of existing Applications
- Rapid time to design and deploy new solutions
- Interoperability in a heterogeneous ecosystem
- Integrated View of business processes
- Maximize ROI by re-usability of services
- Low TCO for implementation and deployment

Service Oriented Architecture

SOA Concept	E-Business Suite SOA
Service Broker: Describe Service's Location and Contract	**Integration Repository**
Service Provider: An appropriate agent to implement a particular service	**Oracle E-Business Suite Adapter**

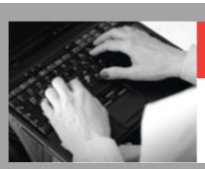


Fusion Middleware / SOA Suite Overview

ORACLE FUSION MIDDLEWARE

Development Tools

Unified SOA Development Tool & Framework



User Interaction

Web 2.0 Portal, Rich Internet Apps, Mobile, Search, Desktop, Presence, VoIP

Enterprise Performance Management

Planning, Budgeting, Financial Management & Reporting, Scorecards

Business Intelligence

Data Integration, Query & Analysis, OLAP, Dashboards, Reports, Alerts, Real-Time

Content Management

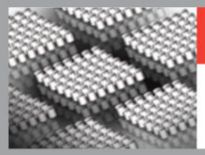
Web Content, Documents, Digital Assets, Imaging, Records, Information Rights

SOA & Process Management

ESB, BPEL PM, Workflow, BAM, Rules, B2B, MDM, Registry, SOA Governance

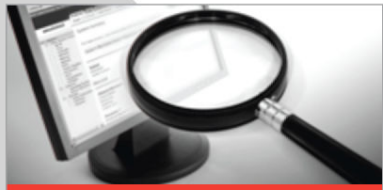
Application Server

Java EE, Web Services, Complex Event Processing, XTP, RFID & Sensors, SIP



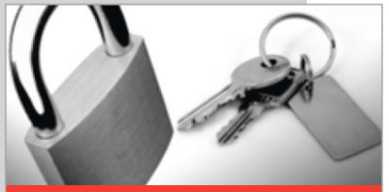
Grid Infrastructure

Application Clusters, In-Memory Data Grid, Common Metadata Services



Enterprise Management

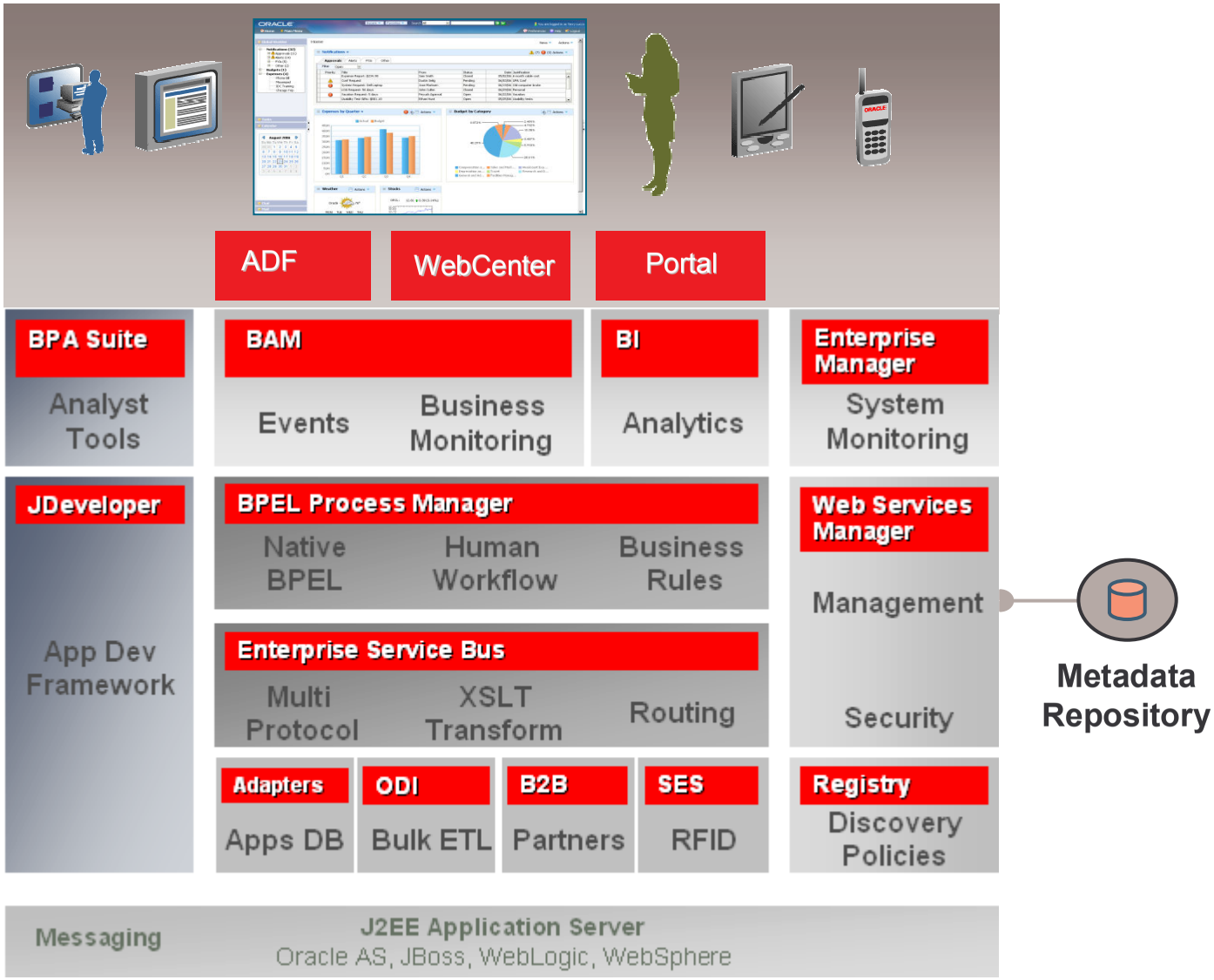
Provisioning, Diagnostics, Tuning, Configuration Management



Identity Management

Provisioning, Access Management, Federation, Audit, Directory

Oracle SOA & Webcenter Technologies



Oracle Fusion Middleware

The World's Best Middleware Suite - Gartner MQs

• Application Platform Suites	LEADER
• Development Tools	LEADER
• Application Server	LEADER
• Web Services Platform	LEADER
• Enterprise Portal	LEADER
• Enterprise Content Mgmt.	LEADER
• Enterprise Records Mgmt.	LEADER
• Enterprise Service Bus	LEADER
• Business Integration	LEADER
• Business Process Mgmt.	LEADER
• Business Intelligence	LEADER
• Corporate Performance Mgmt.	LEADER
• Access Management	LEADER
• Identity Provisioning	LEADER
• Web Services Management	LEADER
• Data Integration	LEADER

Oracle Fusion Middleware

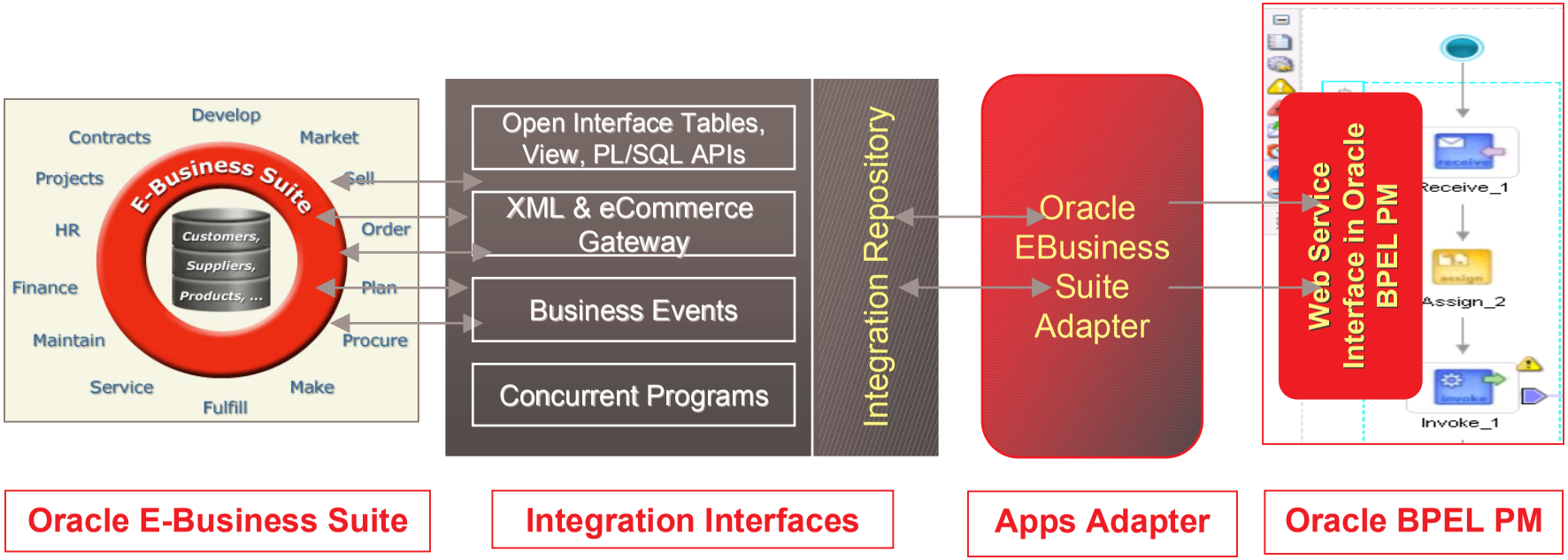
The World's Best Middleware Suite

50,000+	Global Customers
873	Business Week 1000
39	Fortune 50 Global
43	Fortune 50 US
7,800	Partners
4,780	ISVs
38,500	SIs
4,500	VARs
227	Patents
145	Industry Awards

Leveraging Fusion Middleware with EBS

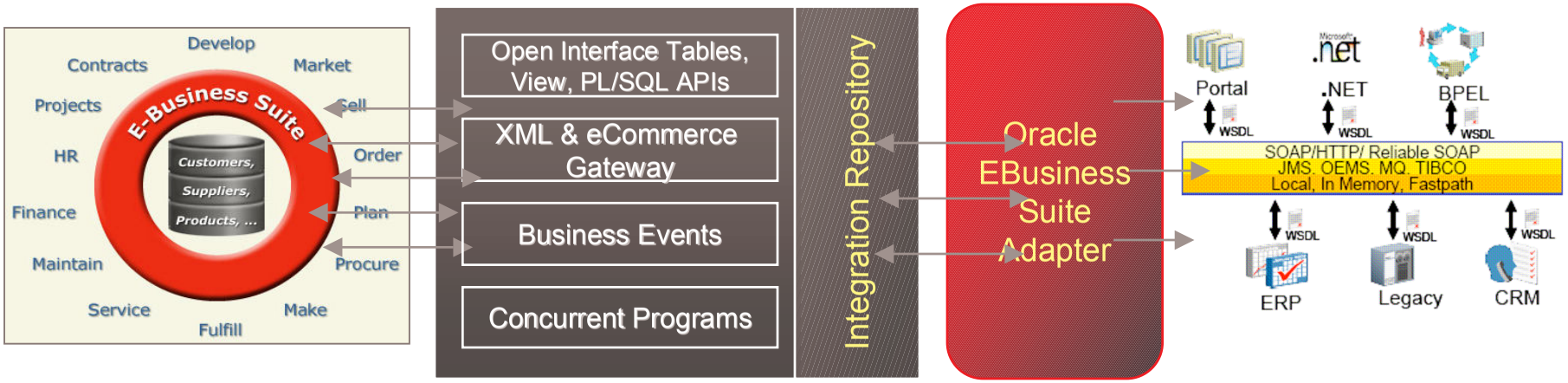
Oracle BPEL PM

Process Orchestration



Oracle ESB

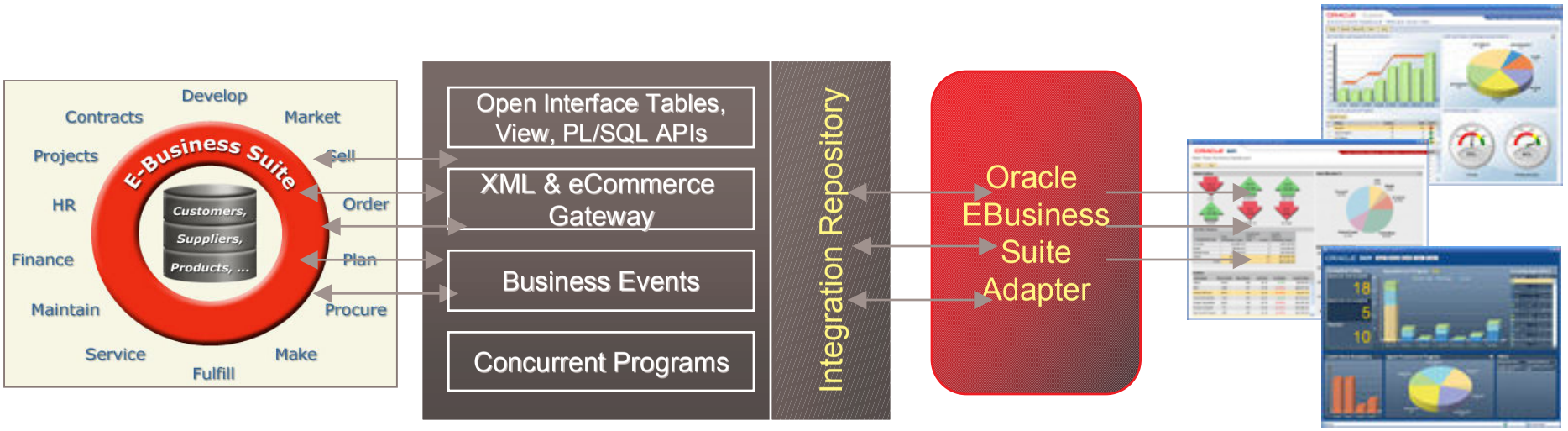
Event Driven Architecture



Oracle E-Business Suite | Integration Interfaces | Apps Adapter | Oracle ESB

Oracle Business Activity Monitoring

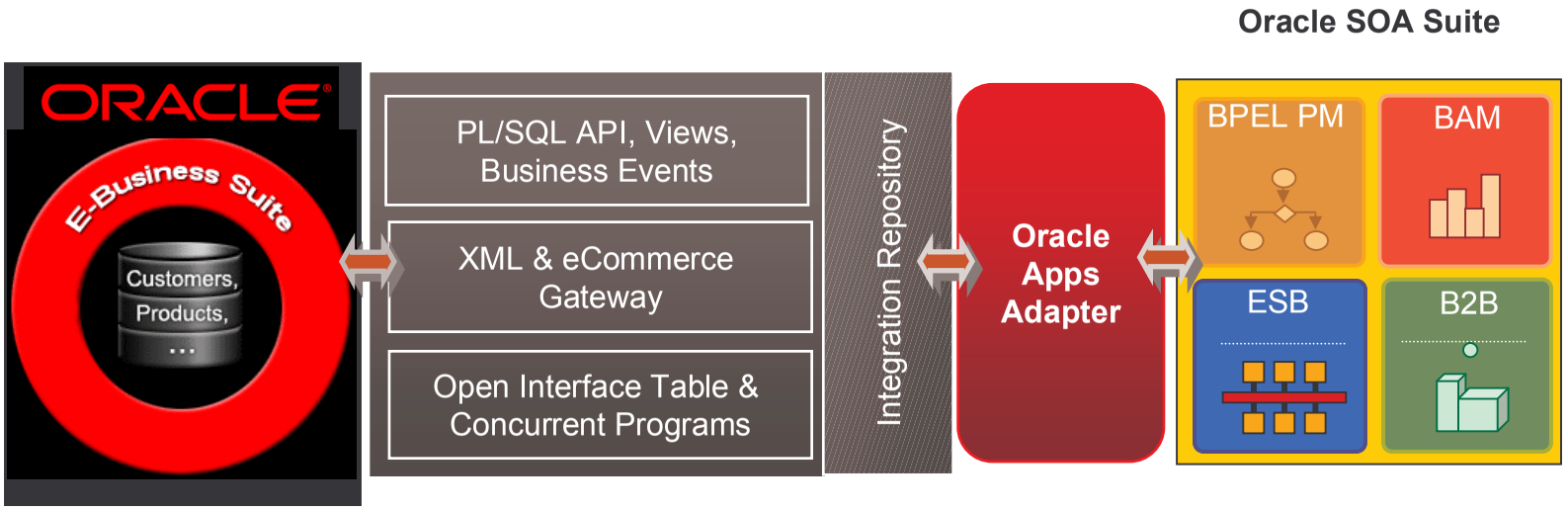
Real-Time Dashboards



Oracle E-Business Suite | Integration Interfaces | Apps Adapter | Oracle BAM

Oracle E-Business Suite Adapter

Schematic Architecture



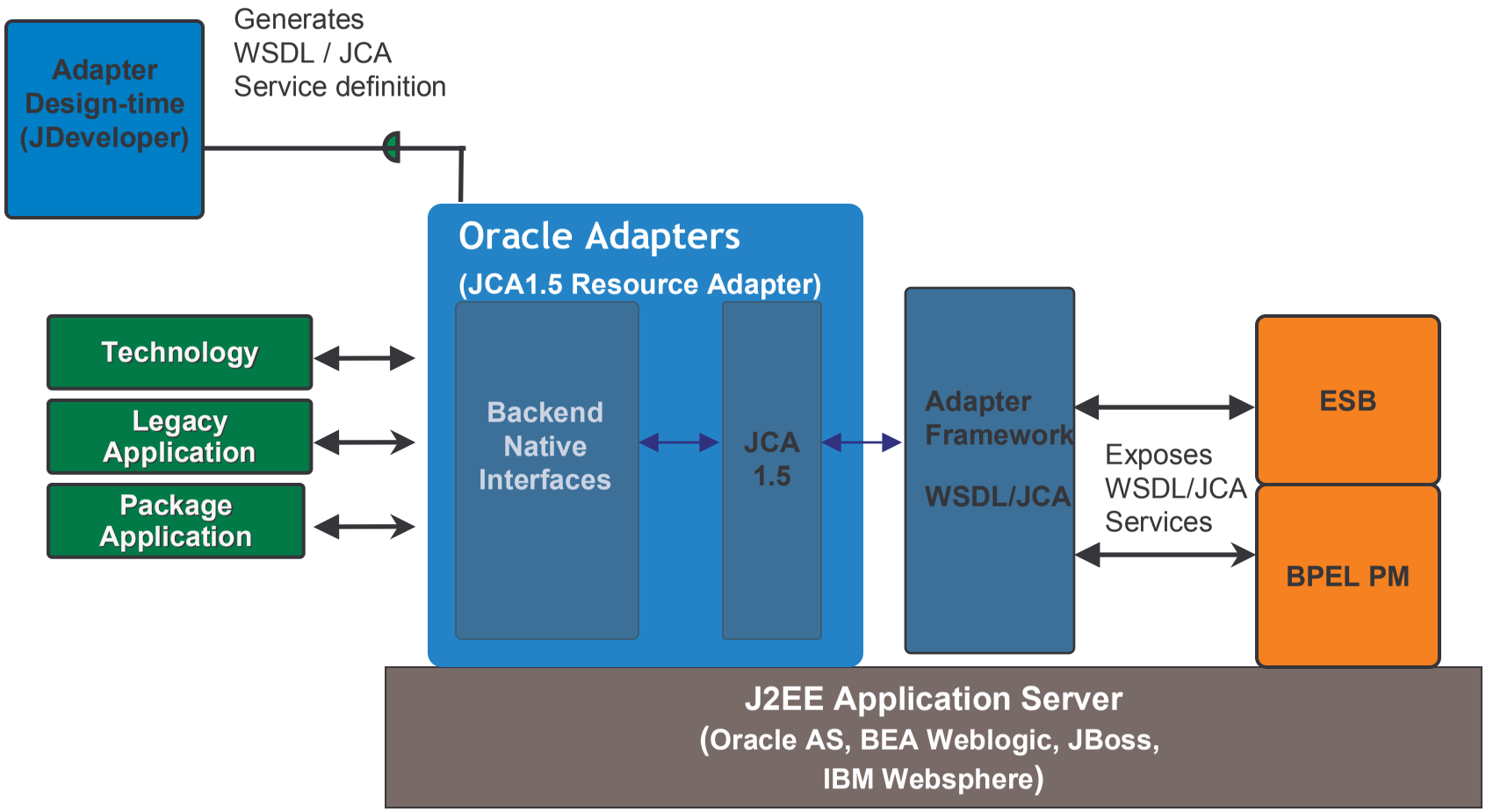
EBS Adapter and the Integration Repository

Salient Features

Oracle Applications Adapter

- Leverages Integration Repository for 11.5.10
  - Expose only recommended public interfaces
- Version aware design-time
  - Packaged IREP content for 11.5.10
  - Direct Application connectivity for pre 11.5.10
- Completely standards based product
- XA Support
- Automatic Application Context Initialization

Oracle Adapter Architecture



Integration Repository

Single Source of Truth

- PL/SQL APIs (2650+)
- Open Interface Tables (147+)
- Concurrent Programs (214+)
- XML Gateway (170+)
- eCommerce Gateway (24+)
- Interface Views
- Java
- Web Service

Integration Repository

http://irep.oracle.com

- Catalog of all Public Interfaces – the single source of truth for Integration
- Common User Interface to search and browse E-Business Suite interfaces
- Embedded within the core E-Business Suite schema to leverage the standard security system
- Preconfigured for exposing & administering Interface Points as Web Services
- Automatically kept in step with source code, via standard patching technology
- Hosted in 11.5.10, packaged in 12.

Oracle Apps Adapter

Standards Based

- Based on J2CA 1.5 standards
- Deployed as a resource adapter in the same Oracle AS Server Containers for J2EE (OC4J)
- Supports open standards, such as
  - **J2EE Connector Architecture (J2CA)**
  - **Extensible Markup Language (XML)**
  - **Web Service Invocation Framework (WSIF)**
  - **Web Service Inspection Language (WSIL)**
  - **Web Service Definition Language (WSDL)**
- Uses JDeveloper based design-time environment
- Generates Adapter metadata as WSDL files with J2CA extension

Supported Interfaces

- Business Events
  - **Seeded and custom events for outbound**
  - **Only custom events for inbound**
- PL/SQL APIs
  - **Packaged IREP annotated for 11.5.10 (public APIs)**
  - **All for pre-11.5.10**
  - **Custom + Ones still not annotated in IREP**
- XML Gateway Interfaces
  - Seeded + custom maps
- Open Interface Tables & Concurrent Programs
- ECommerce Gateway Interfaces

Oracle E-Business Suite Adapter

Benefits

- Exposes E-Business Suite Integration Interfaces as standard Web Services for 1.5.x versions
  - Supports multiple versions of Oracle Apps in a heterogeneous ecosystem
  - Supports most-used interface types
- Intuitive UI
  - Simplifies design-time experience
- Faster design to deploy time
  - Declarative development of integration solutions

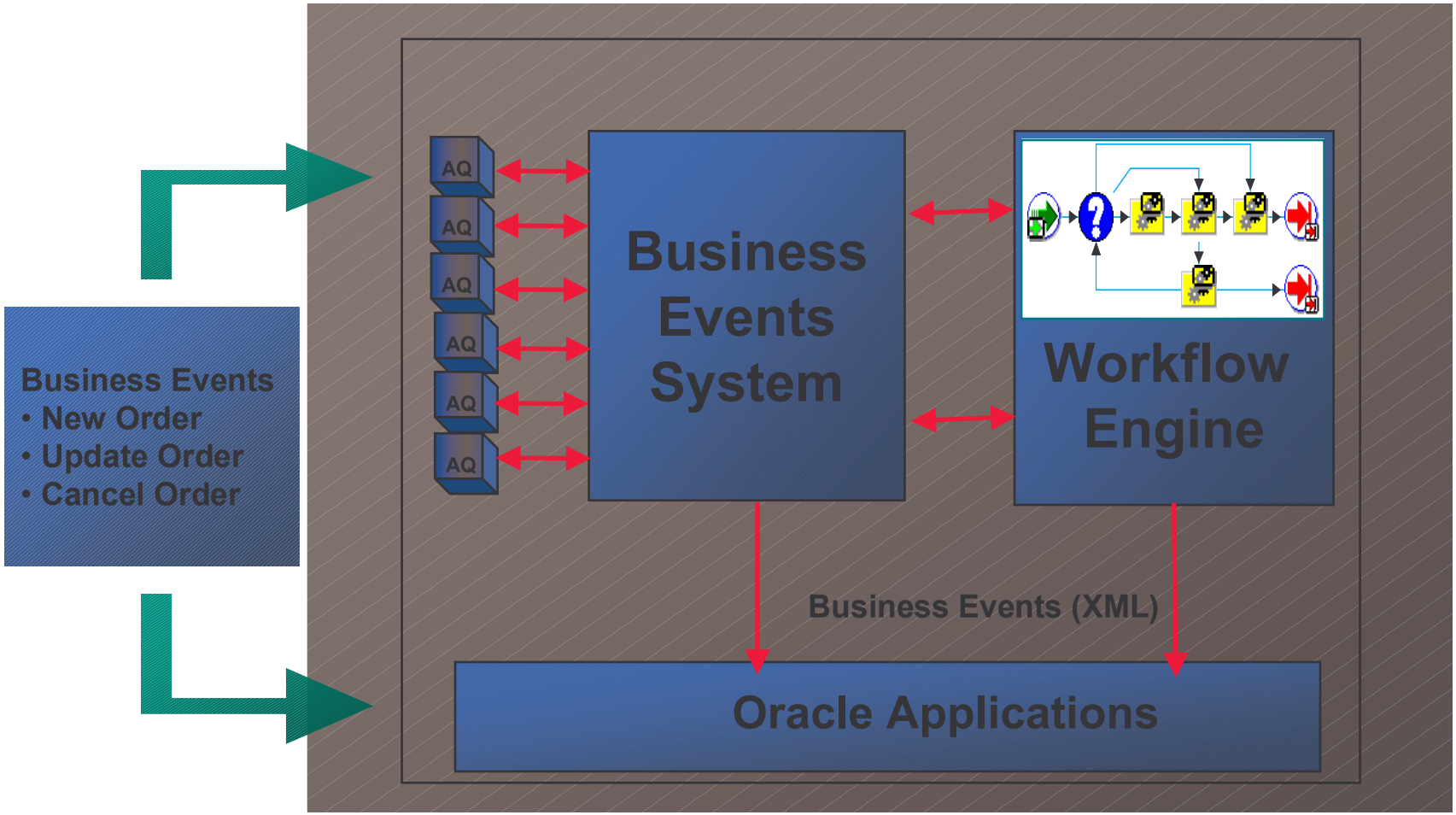
About
Integration Interfaces

Business Event System

- Events as business documents
  - Component of the Oracle Workflow
  - Based on Oracle Advanced Queues (Oracle AQ)
  - Allows Apps modules and external systems to raise events
  - Facilitates event subscriptions
  - Subscriptions can be synchronous or asynchronous
- Provides hooks into the E-Business Suite for,
  - Messaging Integration
  - Workflow Business Processes
  - Code Extensions
- Supports non-invasive changes

Business Event System

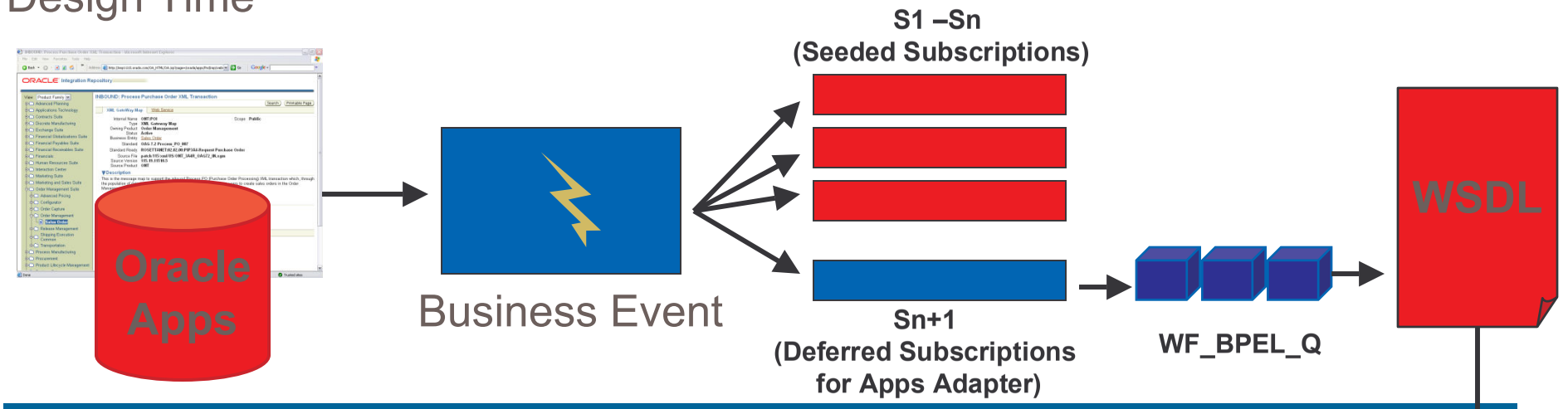
Component Architecture

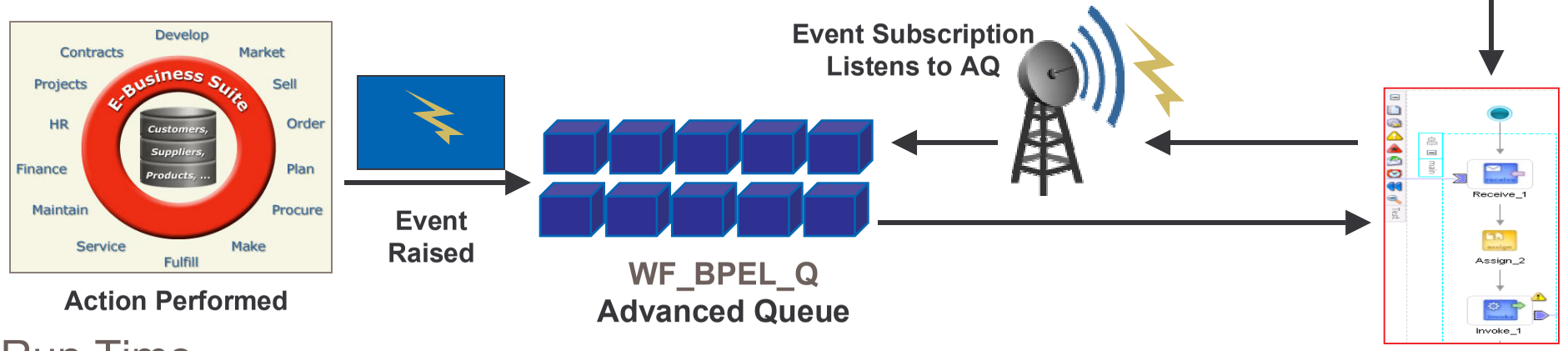


Business Event – Outbound

Architectural Diagram

Design Time



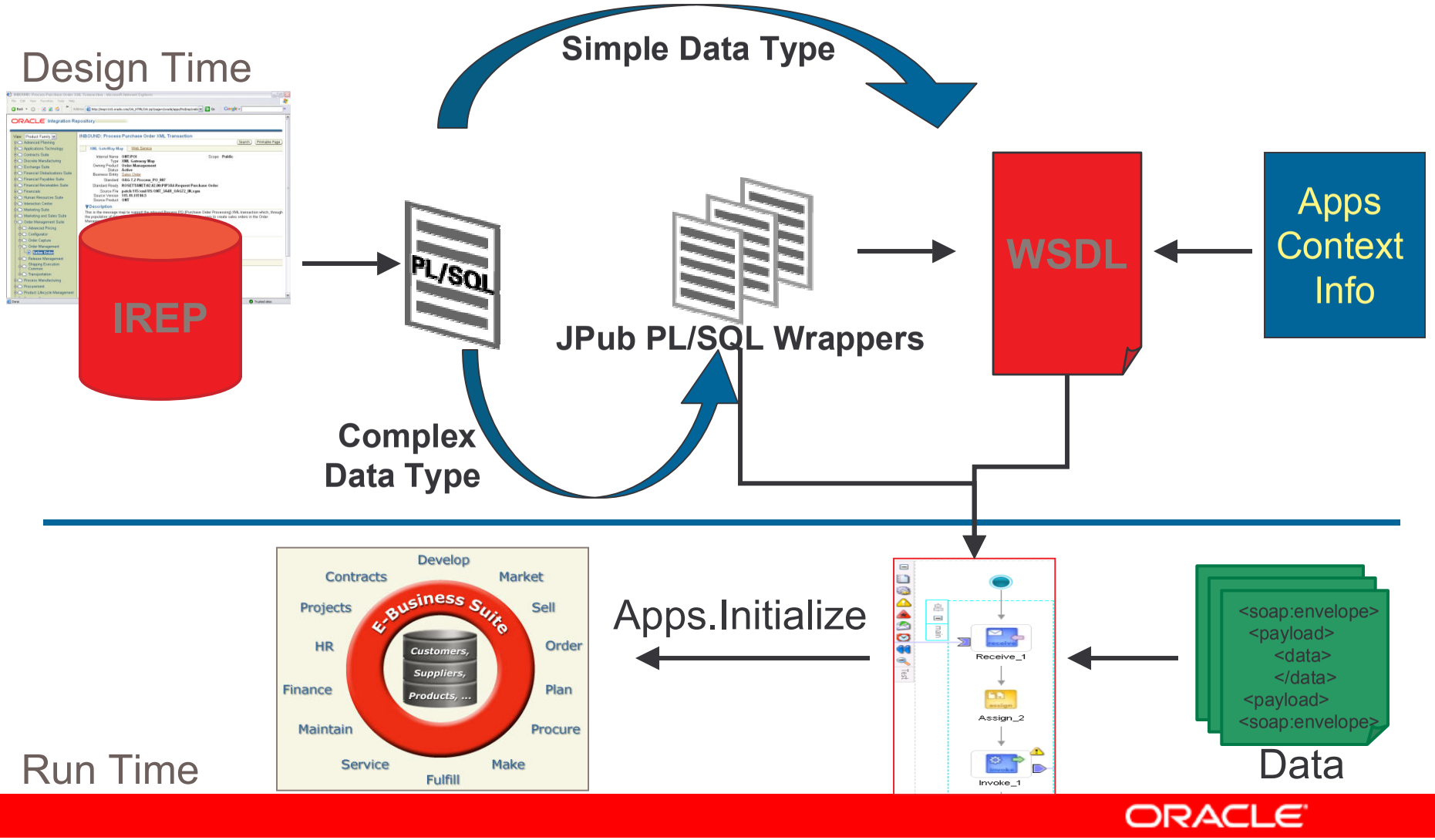


Run Time

PL / SQL APIs

- Public PL/SQL are used for inserting and updating Oracle Applications data
- Multiple operations can be performed by the procedures for a Business Service
- The PL/SQL APIs are typically used for A2A integration purposes

PL/SQL APIs Architecture



Order Visibility Case Study

Business Problem

- The Business Use Case
  - Move to automated Quote-to-Order Processing.
  - Faster rampup of additional B2B partners.
  - Increased RN PIPs interactions (new message types being added)
  - Partners are demanding faster turnaround, forcing Company to upgrade I.e. – stop being the bottleneck

- What is expected from BPEL/BAM
  - Event driven integration and orchestration for Order Status, ASN, and Invoice from ERP (EBS) to B2B
  - Create RosettaNet documents for PO, ASN, and Invoice
  - Order Processing Dashboard

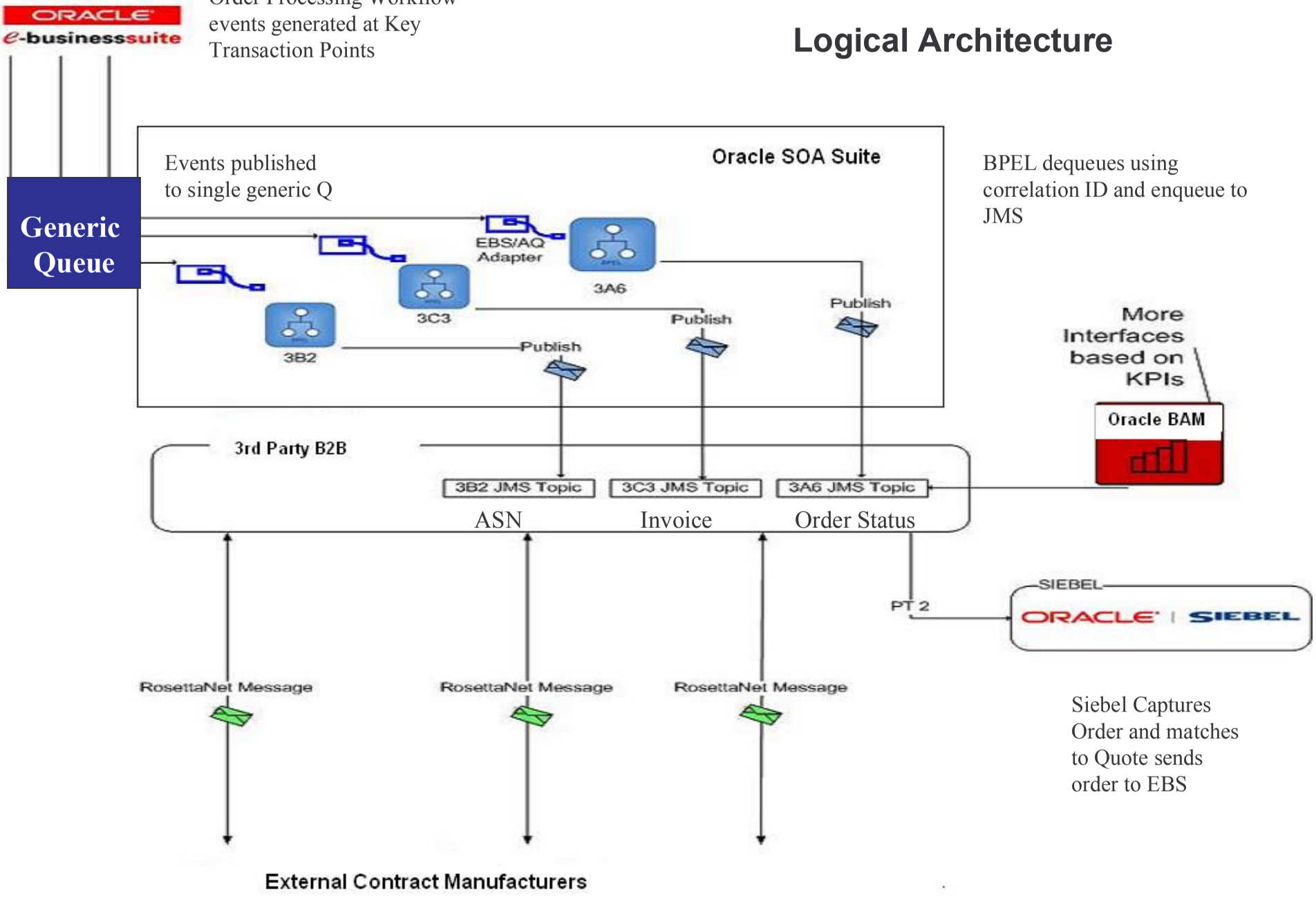
Technical Issues/Requirements

- Technical Requirements
  - Integrate EBS with 3rd Party B2B using JMS.
  - Order Processing was heavily customized with custom PL-SQL validation.
    - The Order for EMEA has different validation from Order for APAC.
  - SLA from trading partners (15m – 1h) turnaround for order processing.

- Software versions
  - EBS for Order Processing.
  - 3rd Party for B2B.
  - BPEL for Integration and BAM for Visibility.
  - Siebel for Order Capture.

Logical Architecture

Order Processing Workflow events generated at Key Transaction Points

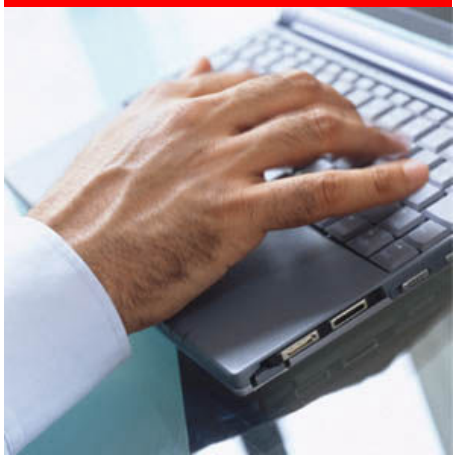


BAM Usage

- Information available:
  - Order status
  - Volume counts
  - Cycle times
  - B2B service level
  - Errors
- Search capability:
  - Date range
  - Error
  - Customer
  - Quote number
  - PO number
  - SO number
  - Last state

EBS Adapter Roadmap: R12 and beyond

Key Features



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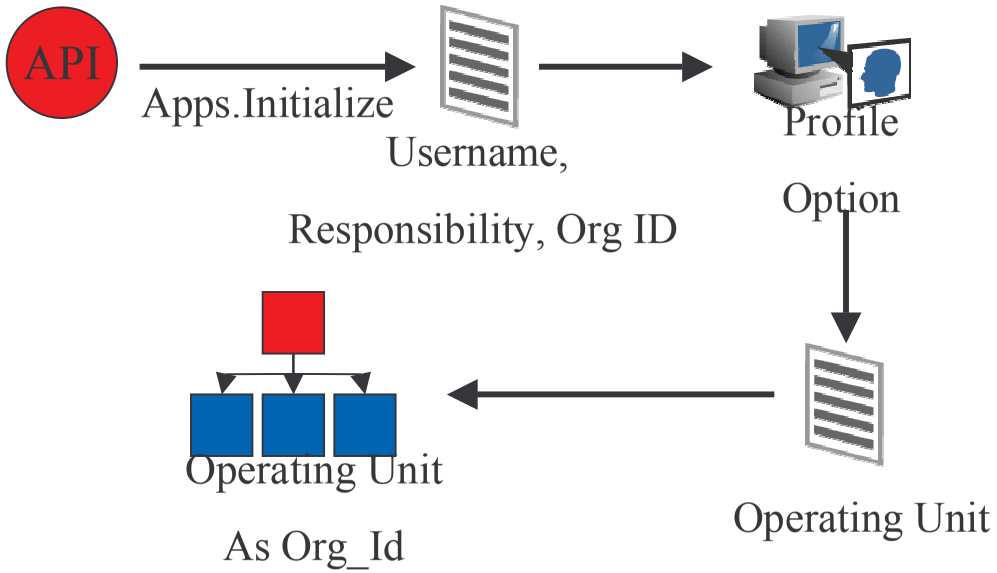
Application Context

Application Context:

- Organization ID
- Username
- Responsibility
- NLS



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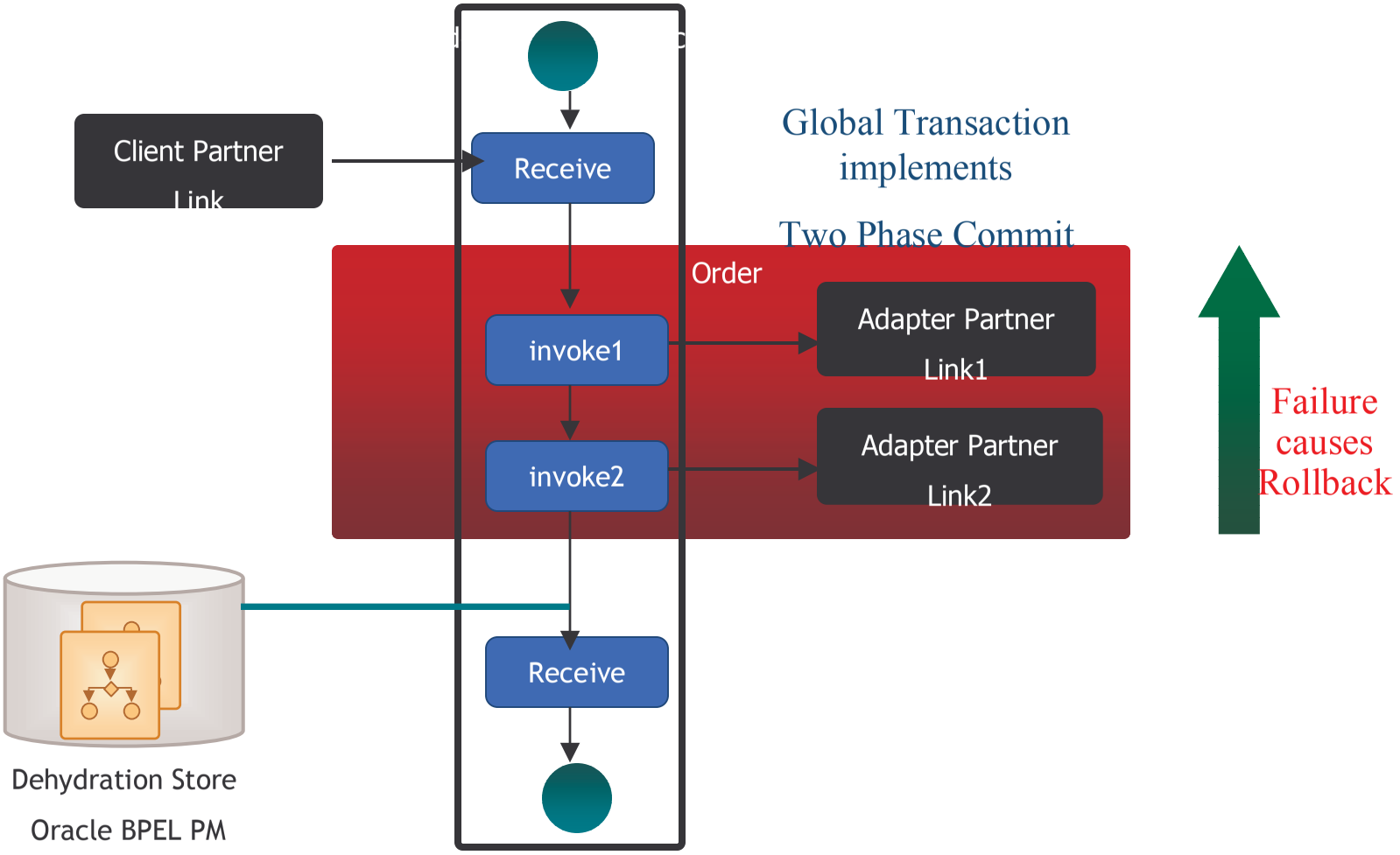
Global Transaction



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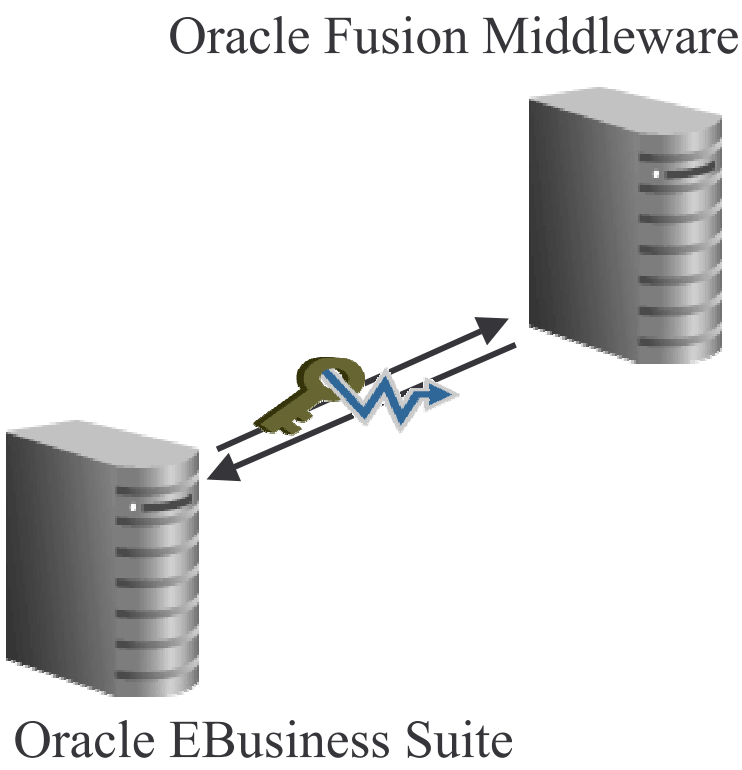
Secured and Trusted Connection



- APPS Schema name / Password not required
- FND Username / Password works
- FMW, a trusted client
- Connection Managed by the EM

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Function Security Enabled

Definition: Function Security is the base layer of access control in Oracle EBusiness Suite. It restricts user access to individual menus and menu options within the system, but does not restrict access to the data contained within those menus.

- Restricts user access for execution privileges
- Profile Option EBS ADAPTER FUNCTION SEC ENABLED
  - By Default it will be set to N
  - To implement Function Security set to **Y**
- Implemented for EBS R12 as well as EBS 11i10
- Based on Role Based Access Control
- Available via Metalink Note: 464164.1

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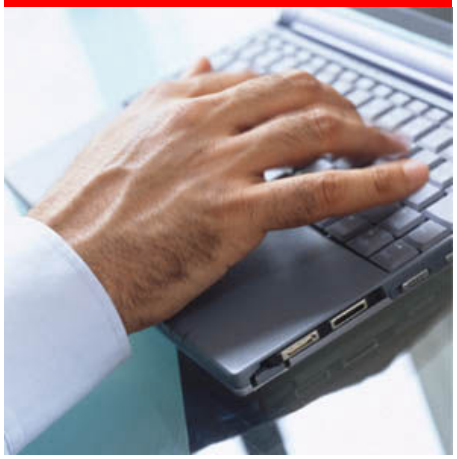

Native Services

Enablement in 12.1

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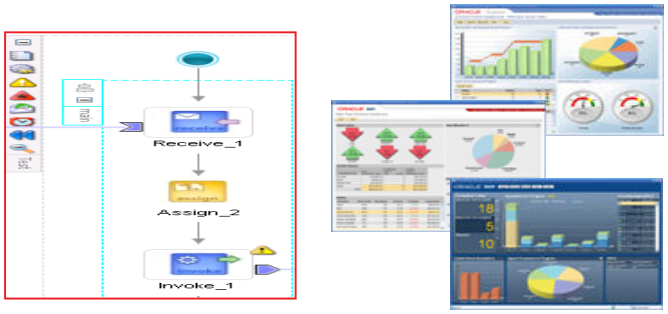
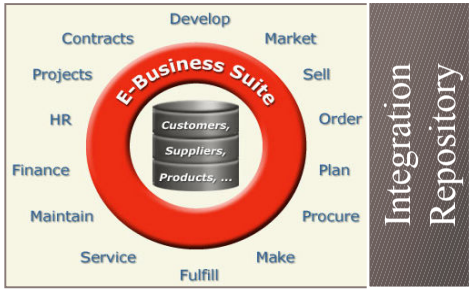
SOA Enablement

The Big Picture

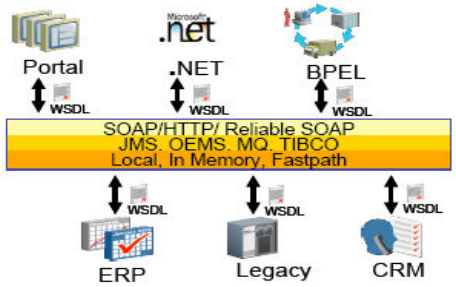
Adaptive Business Processes





Native Services

Enterprise Integration



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Native Service Enablement

SOA Simplified from Integration Repository

- Generate
- Deploy
- Publish

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Native Services

Pre-Shipped Services

Interface Type

- Business Events (1400+)
- PL/SQL APIs (1200+)
- Concurrent Programs (214+)
- XML Gateway (170+)
- Open Interface Tables (147+)
- Business Service Object (11+)

Functional Module

- Financials
  - 300+
- Order Management
  - 80+
- Procurement
  - 62+

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Coarse Grained Services

XML Messages

- ✓ Single Operation per message
- ✓ Document definition based on standards (OAG, cXML, RosettaNet, UCCNet etc.)
- ✓ DTD's converted to XML Schema's as input

```
<portType name="PO">
  <operation name="PROCESSPO">
    <input message="tns:Request"/>
  </operation>
</portType>
```

```
<portType name="PO">
  <operation name="CANCELPO">
    <input message="tns:Request"/>
  </operation>
</portType>
```

```
<portType name="INVOICE">
  <operation name="PROCESSINVOICE">
    <input message="tns:Request"/>
  </operation>
</portType>
```

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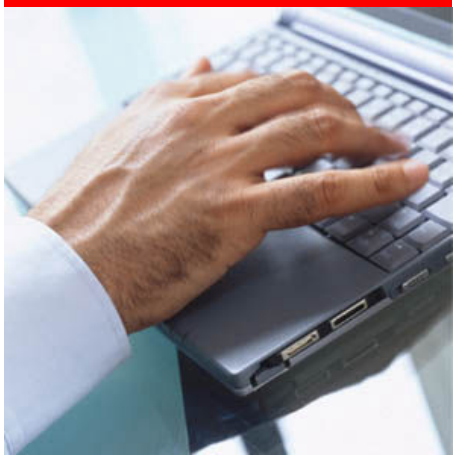
Native Services Security



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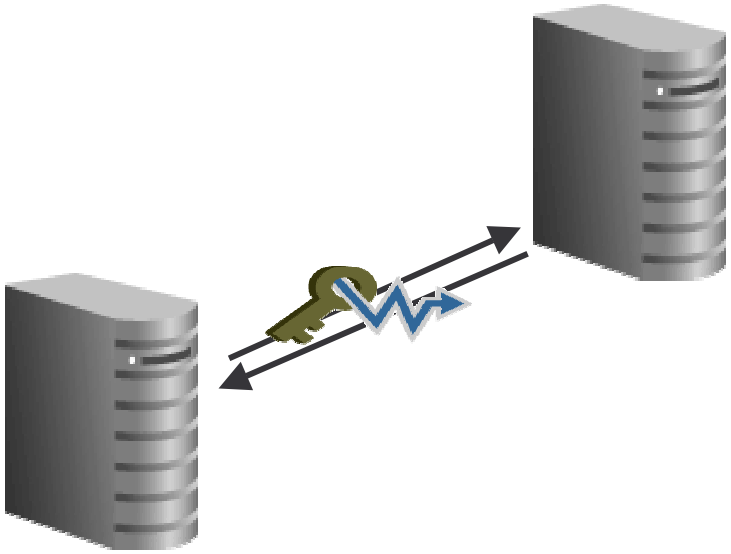
Services Security

Leverages E-Business Security Model



- Authentication
  - Username
  - Password
- Authorization
  - Role Based Access Control
  - Grants provided in IREP
    - User
    - Group
- Application Context

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SOA Enablement - Roadmap

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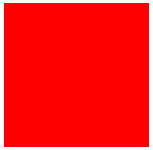

Roadmap

- Technology adoption as it evolves
- Pluggable Monitoring
- Version Control
- Testing Framework

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EBS Adapter Demo

Q&A