Integrating Business Processes across Oracle E-Business suite, PeopleSoft, Siebel and Agile

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Introduction

Organizations have heterogeneous application portfolios that cross different departments, geographic locations, or subsidiaries. While multiple ERP systems may be necessary to meet the requirements of the business unit, they essentially result in data fragmentation. Integration of these systems is complex and traditionally handled in a proprietary manner; nevertheless, companies invest significant resources in integrating information spread across multiple ERP systems to deliver better business decisions.

The audience will hear about the experience of integrating enterprise applications using Fusion middleware and Application Integration Architecture.

We will present various technology interfaces that are available in the enterprise application and how these technology interfaces works in conjunction with Oracle Fusion Middleware. In particular, we will explain Fusion middleware components such as BPEL Process Manager, Enterprise Service Bus, Oracle Data Integrator and out of the box packaged integration solutions such as Oracle Process Integration Packs using Application Integration Architecture.

Technology Interfaces – Oracle E-Business Suite

Business Events

A business event is a notification of a change in status related to a business component such as order, customer or employee. When a state changes in Oracle E-Business suite, Oracle Workflow raises an event. The Business Event System (BES) consists of the event manager, which lets you register subscription to events and even activities, which allows the modeling of business events within workflow process.

XML Gateway

The XML Gateway provides XML messages for both inbound and outbound communication for Oracle E-Business suite. The main components of the XML Gateway include the XML Gateway Message Designer, XML Gateway repository, Oracle workflow Business Event System (BES), Oracle Advanced Queuing (AQ) and the Oracle Transport Agent.

Oracle e-Commerce / EDI Gateway

Oracle Applications provide users with the ability to conduct businesses electronically between trading partners based on Electronic commerce standards and methodologies. E-Commerce Gateway performs functions such as defining trading partner groups, converting codes between trading partner codes, and defining codes in Oracle Applications. Also one can define interface files to integrate application data with an EDI translator

Concurrent Program / Interface Tables

In Oracle Applications, concurrent processing simultaneously executes programs running in the background. Typically concurrent programs are created for long-running, data intensive tasks, such as journal posting or reports generation.

Technology Interfaces – PeopleSoft

Integration Broker (IB)

PeopleSoft Integration Broker is a middleware technology that facilitates synchronous and asynchronous messaging among systems. IB comprises of two high-level subsystems: the Integration Engine and the Integration Gateway. The Integration Engine runs on the PeopleSoft application server and is closely tied to PeopleSoft applications and produces or accepts messages for these applications. The Integration Gateway is a platform that manages the actual receipt and delivery of messages passed among systems through the PeopleSoft Integration Broker.

PeopleTools

PeopleTools refers to the collection of proprietary PeopleSoft tools for the development and execution of applications.

Component Interface

A component interface is a set of application programming interfaces (APIs) that can be used to access and modify PeopleSoft information using a program as opposed to using the PeopleSoft client. PeopleSoft Component Interfaces expose a PeopleSoft component for synchronous access from another application.

Application Messages

Application Messages or Message definitions are templates for the data that the application sends or receives. Message definitions are created in PeopleSoft Application Designer. There are two types of PeopleSoft messages, which are rowset-based (structured) messages and non-rowset-based (unstructured) messages. Structured messages are based on PeopleSoft records while unstructured messages can have virtually any structure and content.

Technology Interfaces – Siebel

EAI Adapters and Connectors

The EAI Siebel Adapter business service is specifically designed to interact with the Siebel business object layer. Siebel not only provides EAI connectors to back office applications such as Oracle and SAP but also includes the business processes used for connecting to external application. Programmatic interfaces, such as COM and Siebel Java Beans provide a tightly coupled integration for real-time data exchange. Adapters, such as MQ Series and HTTP provide a loosely coupled mechanism for real time integration.

Virtual Business Components

Virtual business components (VBCs) are mechanisms in Siebel EAI using which, data from an external system can be viewed in Siebel applications without replicating the data within the Siebel Database. VBCs use business services to access data from the external system and can use standard transports like MQ, HTTP and MSMQ.

Enterprise Integration Manager

Siebel Enterprise Integration Manager (EIM) is used for high-volume batch integrations. EIM can replicate data between Siebel applications and other systems at the database layer and provides high performance for importing or exporting large volumes of data. EIM includes database profiling that improves performance by supporting index specifications in relational database management systems.

Application Services Interfaces

Application Services Interfaces (ASIs) are pre-built interfaces to Siebel business processes. These interfaces expose Siebel functionalities as services to the application environment, as well as allow Siebel business processes to use services provided by external applications. ASIs are extensible, accessible via web services and comprise of Inbound and Outbound ASIs. Inbound ASIs accept data using Siebel workflow processes and Siebel Business Services, while outbound ASIs are used to send out data based on an event or trigger in the Siebel workflow process.

Technology Interfaces – Agile

The Agile SDK is a software development kit containing a collection of tools, application programming interfaces (APIs), sample applications, and documentation. It has the following three modules:

Agile API — A Java API with interfaces that expose Agile business objects. The Agile API can be used to create additional Agile clients, or can be used as part of an extension developed using WSX or PX.

Process extensions (PX) — A framework that allows Agile customers to extend the functionality of Agile PLM clients by adding external reports, user-driven and workflow-driven custom actions, custom tools, and custom auto number sources.

Web service extensions (WSX) — A framework that allows Agile customers to extend the functionality of the Agile PLM server and expose customer-specific solutions using web services.

Agile Integration Services (AIS) is a collection of predefined Web services in the Agile Integration Framework to enable communication between the Agile server and disparate systems, including Enterprise Resource Planning (ERP) systems, Customer Relationship Management (CRM) systems, Business-to-Business Integration systems (B2Bi), other Agile PLM systems, and supply chain partners.

Using AIS to exchange content with other systems simplifies the process for aggregating raw product content, and makes critical product content available in real time to other core systems. AIS Web services also provide import and export capabilities.

Agile Content Service (ACS) is an event driven XML-based publishing service that makes the product record available to a wide variety of business applications and users both internally and across the global manufacturing network. ACS can be configured to automatically publish the Item Master, Bill of Material (BOM), and Approved Manufacturers List (AML) during any phase of the product life cycle. Some of the capabilities include Event driven XML-based publishing service, Publishes Agile data in PDX / aXML output and it supports transports such as JMS, FTP, HTTP and File.

Cross-Application Integration using Fusion Middleware & Application Integration Architecture

Oracle BPEL Process Manager

Oracle BPEL Process Manager, a part of Oracle Fusion Middleware, provides a comprehensive, standards-based, easy-to-use solution for creating, deploying, and managing cross-application business processes with both automated and human workflow steps—all in a service-oriented architecture.

Please refer to the following link for the cookbook on how to integrate applications such as PeopleSoft and Oracle E-Business suite using Oracle BPEL Process Manager. This cookbook provides step-by-step instructions with sample code for an order management business scenario.

http://www.oracle.com/technology/pub/articles/bpel_cookbook/pravin.html

Enterprise Service Bus (ESB)

Oracle ESB provides seamless integration of data and enterprise applications within your organization and with trading partners. Oracle ESB provides low-cost, standards-based integration between systems for greater IT flexibility and responsiveness. ESB is stateless while the BPEL Process Manager takes care of the stateful, long running and orchestration related steps. The ESB virtualizes endpoints that BPEL orchestrates

Oracle Data Integrator (ODI)

ODI is an ETL tool but with E-LT approach, which is basically Extract then Load and Transform. This approach (E-LT) dramatically improves the responsiveness of BI by optimizing data transformations. Instead of moving all the data through an intermediate ETL transformation server, the E-LT approach leverages the power of the target RDBMS engine to perform the transformations, dramatically improving the performance at a much lower total cost of ownership.

Application Integration Architecture – Process Integration Packs and Foundation Pack

Until now, this paper had been focused on leveraging the above mentioned technology interfaces from each enterprise applications in conjunction with Oracle Fusion Middleware. One such example (http://www.oracle.com/technology/pub/articles/bpel_cookbook/pravin.html) was provided in detail with step-by-step instructions with sample code to integrate E-business suite and PeopleSoft applications. The process of building these integrations requires considerable effort in understanding the enterprise applications business processes that needs to be integrated, their API structure, mapping technique with the target application, transformation logic and the know-how of the underlying technology components.

The remainder portion of this white paper focuses on the pre-packaged solutions available as part of Oracle's Application Integration Architecture and how they can reduce the total cost of ownership

Process Integration Packs (PIPs)

Process Integration Packs are pre-built process integrations. Since they are a fully packaged product, companies spend less time developing processes for integrations, and focus more on getting the integration live faster. A good example of a Process Integration Pack is the Order to Fulfillment integration offered between Siebel CRM and Oracle E-Business Suite Order Management. The Order Fulfillment integration provides the capability to capture an Order in Siebel CRM and then transfer it to Oracle E-Business for fulfillment. PIPs not only provide transactional processes like Sales Order but also master data such as synchronizing product/item, customer, and pricing data between Siebel and E-Business suite.

Process Integration Packs use Fusion Middleware components such as Oracle ESB for messaging, routing and transformation capabilities. Oracle BPEL Process Manager provides the orchestration aspects, when additional logic is required to sequence services together exposed through Oracle ESB, Oracle BPEL Process Manager acts as a guide to connect those services into a process. Oracle ODI is used for batch integrations.

Foundation Pack

The Foundation Pack delivers the same methodology that Oracle uses to deliver its pre-packaged integrations between Oracle Applications, as explained above. This methodology mitigates integration risks and costs by providing a set of proven best practices and design principles to build mission-critical business processes. Pre-packaged Process Integration Packs may not address all integration needs due to custom or legacy applications that one may own or for additional business process. In such scenarios, the Foundation Pack can be used to ensure interoperability of one's custom integration is interoperable with other pre-packaged integrations from Oracle.

The Foundation Pack comprises of Enterprise Business Objects, Enterprise Business Services, SOA Governance Tools and a Reference Architecture.

Enterprise Business Objects (EBO)

EBO refers to a data model consisting of standard business data object definitions and reusable data components representing a business object such as a Sales Order, Item, or Customer. The Enterprise Business Objects are delivered as XML Schema Definition (XSD) files.

Enterprise Business Services (EBS)

EBSs represent the application independent web service definitions for performing a business task. These are self-contained and can be used independent of any other services. In addition, they can also be used within another Enterprise Business Service. Enterprise Business Services are standard business level interfaces that can be implemented by the applications participating in the integration process.

SOA Governance

The Foundation Pack includes a set of tools to manage and govern one's entire integration lifecycle.

The Business Service Repository (BSR) acts as a catalog of the objects, messages, and services that compose the integration scenarios in one's Oracle Application Integration Architecture ecosystem. It facilitates the key functions of service visibility, reuse, and impact analysis in the service lifecycle.

The Composite Application Validation System (CAVS) enables one to test integration web services without deploying participating applications. It uses a framework that includes initiators to simulate calls to participating applications and simulators to simulate responses from participating applications.

The Composite Application Error Management and Resolution framework provides customers with a consistent way to manage errors in one's integration layer. It provides the ability to route the error back to the correct application and the right application user. This allows speedy exception resolution with minimal downtime, thereby allowing IT to meet the stricter service level agreements that businesses need to compete in the global marketplace.

Reference Architecture

The reference architecture consists of the Concepts and Technologies Guide and an Integration Developer's Guide, two pieces of comprehensive documentation to assist in integration development. The guides outline the Application Integration Architecture methodology and provide step-by-step guidance on how to design and develop one's integrations. It also provides a list of best practices and design patterns that one can apply to one's custom integrations.

Conclusion

If you are using Enterprise Applications like Oracle E-Business suite, PeopleSoft, Siebel or Agile, you should consider looking at Fusion Middleware technology for Service Oriented Integration. We will share all the approaches in detail as part of this presentation. Oracle Fusion Middleware delivers everything that organizations need to implement integrations to better support business process. Combined with out-of the-box Process Integration packs and the Foundation pack, this is a significant value proposition.