

An Oracle White Paper
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Integrating SAP with Oracle AIA Foundation Pack

Introduction

For many reasons, today's organizations have an urgent need to implement business processes across lines of business and across application assets in their portfolios. Moreover, organizations must also be able to adjust these implementations to meet frequently changing requirements resulting from new business models, acquisitions and mergers, and changing legal requirements. These businesses must meet the requirements of these processes to be successful in their markets, and at the same time, cannot afford to struggle with the technical implementations that enable these processes within their system landscapes.

Oracle Application Integration Architecture (AIA) addresses many aspects of these challenges. AIA accelerates integration between applications by providing a programming model, reference architecture, and best practices. AIA is a completely generic model that provides the means to integrate multiple applications of any kind, enabling the establishment of a business process that spans any number of heterogeneous application systems.

Like many other applications, SAP's applications are obvious candidates for integrations and can be found quite frequently in our customers' system landscapes, being used in financial management and enterprise resource planning areas, for example. AIA has all of the architectural, conceptual, and technical capabilities to integrate SAP applications in a rapid and sustainable manner. These integrations use Oracle's best-in-class Oracle Fusion Middleware as its service-oriented architecture (SOA) foundation for flexible state-of-the-art integrations.

This white paper aims to illustrate why AIA is the right choice for integrating with SAP and will describe:

- How AIA's canonical data model is well-suited to match SAP's data model.
- How AIA establishes connectivity to any SAP environment.
- Real examples of how Oracle has followed AIA guidelines to provide prebuilt integration products for SAP.

Integrating SAP with Oracle AIA Foundation Pack

Oracle Application Integration Architecture Overview

AIA is the most complete integration solution for orchestrating agile, user-centric business processes across your enterprise applications.

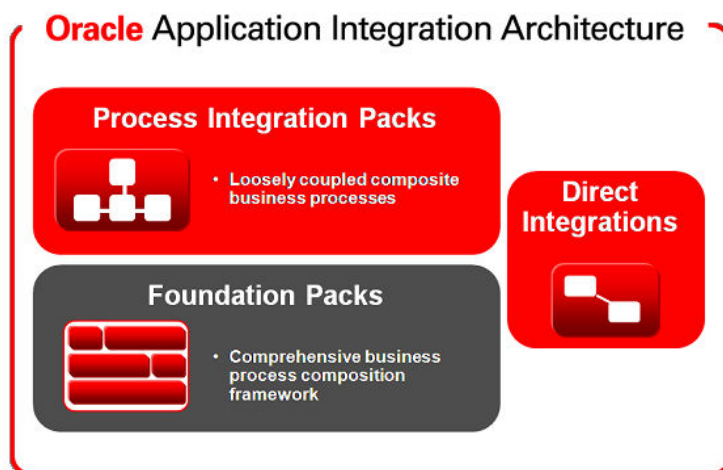


Figure 1: AIA products

AIA products include:

- **Process Integration Packs (PIPs):** Prebuilt packaged integrations that support composite business processes across both Oracle and non-Oracle applications.
- **Foundation Pack:** Business process composition framework that provides the architectural and programming model, best practices, utilities, and application-independent Enterprise Business Objects (EBOs) and Enterprise Business Services (EBSs) on which AIA users can develop standardized, cross-application process integrations. Customers use Foundation Pack to accelerate SOA adoption and quickly build integrations between their best-of-breed applications.
- **Direct Integrations:** Used to augment and support SOA integrations, such as with Oracle Data Integrator to help facilitate high-volume batch data integrations.

AIA products are leveraging the award-winning Oracle Fusion Middleware technology. In particular, AIA Foundation Pack and the Process Integration Packs are running on Oracle SOA Suite.

Enterprise Business Objects

A core feature of AIA is the EBO, which is an application-independent representation of a business entity, such as an Invoice, ServiceRequest, and so forth. These data models are truly canonical and follow proven industry standards established by the United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT), the Open Applications Group Integration Specification (OAGIS), and other consortiums.

Messages based on these EBO definitions are called Enterprise Business Messages (EBMs). EBMs provide the payload definitions that support common operations on business objects, such as create, review, update, and delete (CRUD), as well as other operations that are relevant for a particular object.

Why the AIA Canonical Data Model is Well-Suited to Integrate with SAP

Oracle applications and SAP are working together on content standards methodologies and horizontal business content standards. Specifically, Oracle supports UN/CEFACT's Core Component Technical Specifications (CCTS) and the OAGIS. These specifications provide a "standard for standards" platform that organizations can use to enable integration.

AIA implements this "standard for standards" platform by supporting these specifications in the AIA Enterprise Object Library. SAP indicates that they support CCTS with the SAP Global Data Type (GDT).

By supporting this platform, AIA is able to integrate with all types of integration points in SAP, such as Intermediate Documents (IDocs), Business Application Programming Interfaces (BAPIs), and GDTs.

Enterprise Business Services

EBSs are the implementations of business services on business objects. Leveraging EBMs as payloads for service requests and responses, EBSs establish truly canonical and reusable enterprise services. EBSs are the core of AIA-based integrations as they provide the service abstraction layer that allows for loose coupling between applications participating in a business process.

Application Business Connector Services

Applications participating in an integration (requestor and provider) retain their own data models of a business entity. These data models are often not 100% compatible with the AIA EBM. An Application Business Connector Service (ABCS) handles the transformation of the application business message into the EBM, and back again. The ABCS validates, enriches, and transforms the messages and performs the necessary conversions. The ABCS shields the participating applications in that the requestor has no knowledge of the provider, and vice versa. This provides a maximum level of reusability of services in that any changes to participating applications only require isolated changes to ABCSs.

AIA Reference Architecture Brings it All Together

Using each of these components, AIA establishes a proven SOA reference architecture that can be used for state-of-the-art integrations with any kind of application, including SAP. Figure 2 illustrates an integration scenario including Oracle Siebel, Oracle E-Business Suite, and SAP. Note the use of adapters to establish connectivity to some of the applications.

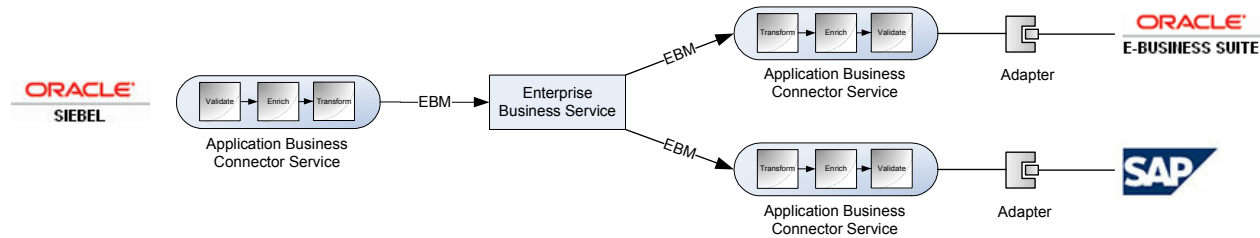


Figure 2: AIA Reference Architecture leveraging an EBO, EBS, EBM, and ABCSs to integrate multiple applications

Establishing Connectivity with SAP's Integration Points

Oracle Fusion Middleware provides connectivity to virtually any application running in an organization. This is achieved through a broad offering of adapters following the Java EE Connector Architecture (JCA) standard. Figure 2 above depicts how adapters are used in the AIA reference architecture to establish connectivity with applications.

Oracle SOA Suite is delivered with a rich set of technology adapters establishing connectivity to databases, FTP servers, or other technologies. However, there are also many vendors that offer JCA-compliant connectors that connect on an application level rather than on a technology level. Examples of these adapters include the Oracle applications adapter offered by Oracle or the SAP ERP adapter offered by iWay.

The iWay adapter for SAP exposes all of SAP's common integration points, such as BAPIs, Remote Function Call Modules (RFCs), and IDocs.

Beyond providing core connectivity for these standard or custom integration points, the iWay adapter for SAP also provides:

- Support for current SAP releases, including R/3 and ECC.
- Rich design-time support, allowing for browsing of SAP's integration points.
- Configuration and test pages for simplified setup and validation.

For any AIA-based SAP integration, the ABCS and iWay adapter work together to handle the interaction with SAP. Figure 3 below illustrates how this is accomplished in the case of outgoing messages from SAP, for example, when an update to an order in SAP needs to be propagated to other applications as a part of a business process.

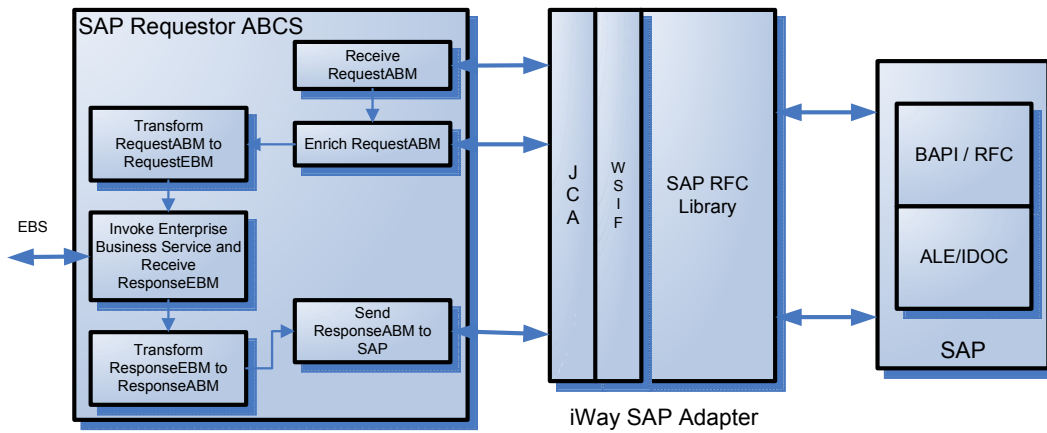


Figure 3: Conceptual view of handling outgoing messages from SAP through the ABCS and iWay SAP adapter

For additional details on how to establish connectivity with SAP environments, please refer to white paper “Connecting to SAP with Oracle AIA”.

AIA Integration Pack with SAP Case Study: Order to Cash

In addition to many other prebuilt PIPs, Oracle offers PIPs that provide integrations with SAP. These include:

- Agile Product Lifecycle Management Integration Pack for SAP: Design to Release
- Oracle Order to Cash Integration Pack for Siebel CRM and SAP (available with AIA Release Vehicle 2.5)
- Oracle Customer Master Data Management Integration Option for SAP (available with AIA Release Vehicle 2.5)

In this section, we use the Oracle Order to Cash Integration Pack for Siebel CRM and SAP as an example of how an Oracle AIA PIP integrates with SAP. Figure 4 below provides a high-level overview of the typical processes that occur in the integration provided by the Oracle Order to Cash Integration Pack for Siebel CRM and SAP.

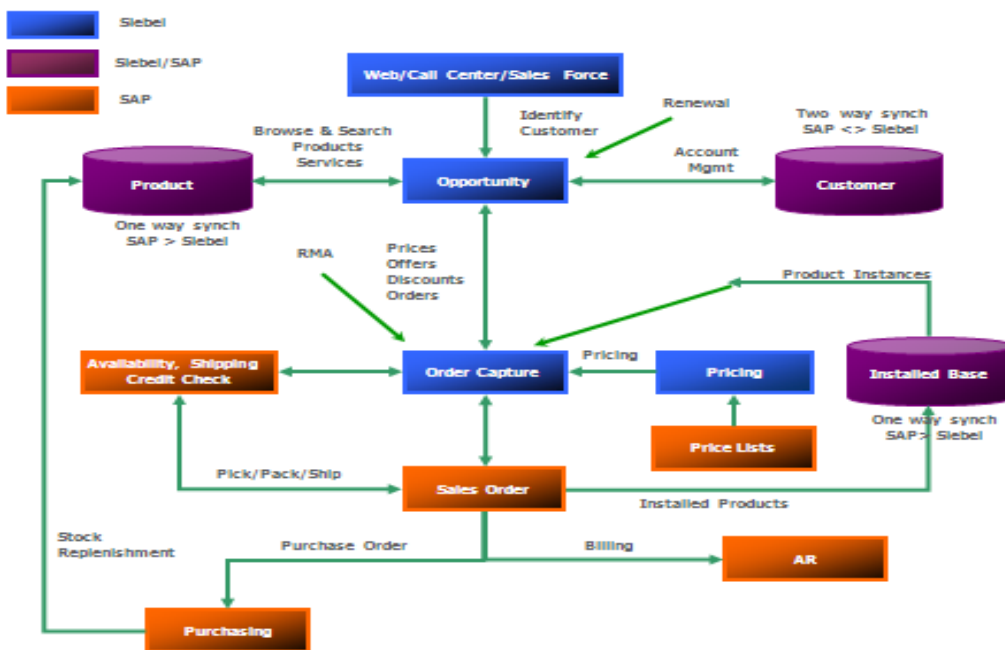


Figure 4: High-level functional flow diagram for Oracle Order to Cash Integration Pack for Siebel CRM and SAP

In essence, we can see that Siebel is used to manage all CRM functionality, such as opportunity and order capture, while SAP plays the ERP role. Note that there are also areas with shared responsibilities (purple) that the integration solution needs to handle. For example, customer data maintenance can occur in both Siebel and SAP, therefore the PIP needs to establish synchronization mechanisms to keep customer data synchronized.

Figure 5 drills down to the next level in this solution, where we can see the AIA artifacts that are required to implement the order processing integration flow. This is a fairly complex integration as it propagates captured orders from Siebel to SAP, and also creates the required customer accounts on the fly in SAP, if they don't already exist.

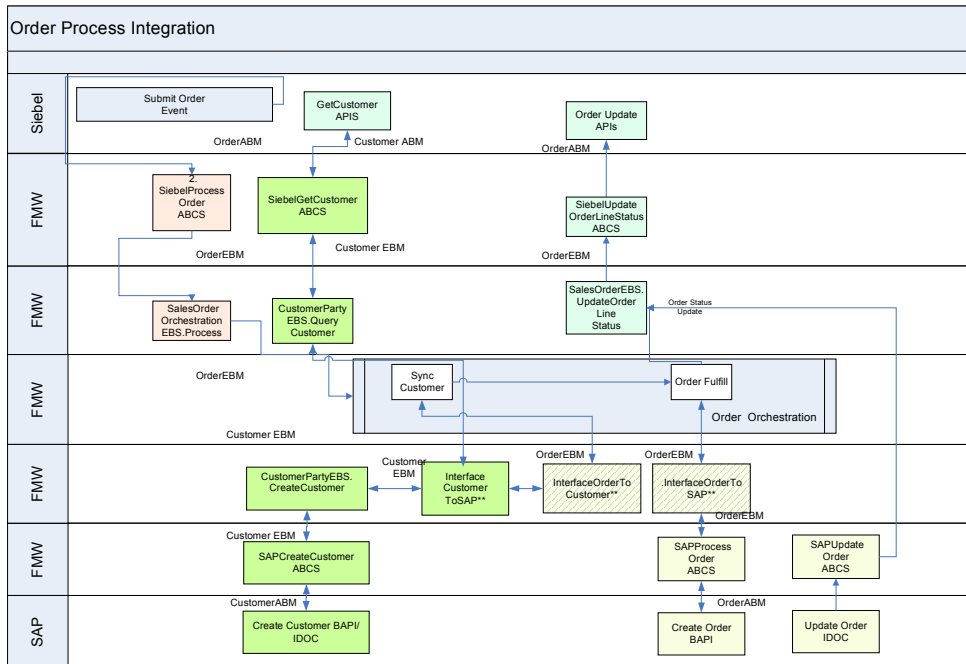


Figure 5: Order processing integration flow between Siebel and SAP

Note that in this flow, AIA is able to use the best available integration point with SAP. In this example, the PIP is reaching out to SAP iDoc interfaces for customer creation and order update, while using a BAPI to create a new order.

Conclusion

Oracle AIA Foundation Pack is the right choice for organizations that want to implement state-of-the-art integrations. They can leverage Foundation Packs' proven architecture and methodology either by building custom AIA integrations or by implementing prebuilt AIA PIPs offered by Oracle or another vendor.

SAP's applications fit very well into this picture. With its PIPs for SAP, Oracle has proven that integration with SAP can be achieved in the same way as with any other application, regardless of its vendor or the connectivity options it offers.

The Oracle PIPs for SAP are proof of the successful uptake of the AIA approach for building modern, flexible integration solutions.



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