

# Enrich Composite Application using Oracle AIA

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A composite application is defined as an application built by combining functionality from various sources. The functionality taken from other sources could be individual functionality taken from a source or entire system or application whose output has been packaged as web services. Composite application often consists of orchestration of these functions/services drawn from different sources.

Oracle AIA stands for Oracle Application Integration Architecture. According to Oracle, AIA is the most complete integration solution for orchestrating agile, user centric business processes across your enterprise. Oracle AIA is delivered both as Foundation Pack with common objects, services, best practices and as pre-built PIP (Process Integration Packs).

We try to explain in this article how composite applications can be built quickly and easily using Oracle AIA framework. In this fast changing world, flexibility is the key to any business becoming agile in being able to offer new products or services to its customers. Companies are also grappling with challenges of being cost effective and productive while they try to be agile. Considering those inputs, we try to explore ways in which we can enrich composite applications using Oracle AIA.

## Consideration

To elaborate the point, we consider the following use case. Composite Application built using Oracle Webcenter, Oracle AIA Foundation Pack & Oracle eBusiness Suite (eBS). Oracle Webcenter is used to authenticate and authorize the user. Upon authorisation, Oracle Webcenter sends the user information to Oracle eBS using AIA

framework and displays all the Sales Orders that belong to the end user of the Webcenter. The flow is as follows:

- 1) Portlet can make use of OmniPortlet or PDK (Portal Development Kit) to invoke Web Services. OmniPortlet has the capability of using Web Services or JCA (Java Connector Architecture) as a data source. In the example below, we explore the option of using OmniPortlet to invoke the Requester ABCS (Application Business Connector Service) WSDL.
- 2) Portlet sends the request information in the form of an ABM (Application Business Message) to ABCS.
- 3) Requester ABCS then transforms the ABM to EBM (Enterprise Business Message). EBMs are based on standard EBOs (Enterprise Business Object) exposed by Oracle AIA.
- 4) EBM is then passed as the payload to invoke EBS (Enterprise Business Service).
- 5) EBS then performs the routing of message based on the logic – in this case to Oracle eBS.

6) Provider ABCS then converts the EBM to ABM and invokes the Oracle service to get Sales Orders pertaining to the end user.

7) Webcenter then displays the Sales Orders by applying the required transformation (XSLT) service to get the desired layout in the portlet.

See Figure 1, below.

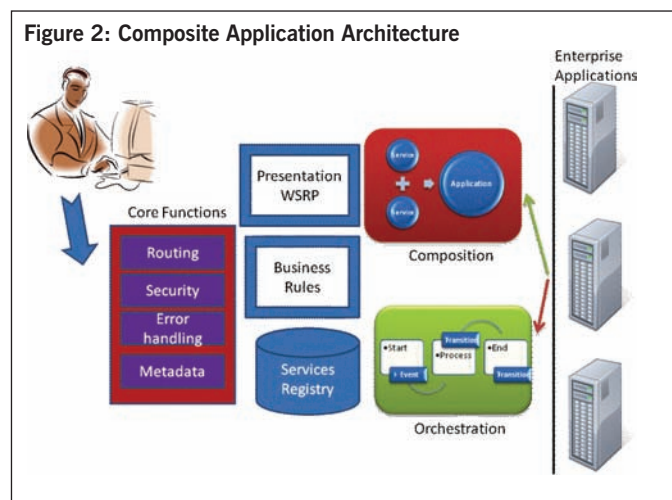
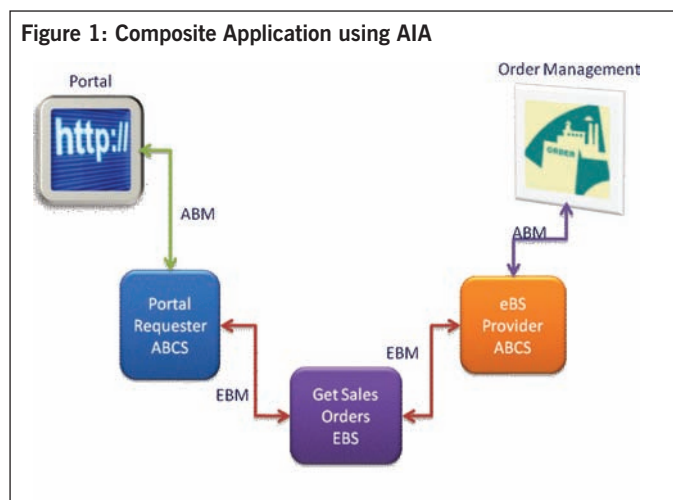
## Architecture

In the architecture below, we see different layers in building composite applications. Composite applications need to provide core functions like routing, error handling, security and metadata which are all part of the Oracle's AIA foundation pack. Services can be exposed and registered in a service repository called BSR (Business Service Registry). Business rules can be written using Business Rules Engine provided by Oracle AIA. Similarly, orchestration of the services/processes can be performed using Oracle BPEL PM, which again is a part of Oracle AIA infrastructure.

See Figure 2, below.

Composite application architecture relies heavily on the following two principles:

- 1) Reuse
- 2) Standardization



## Reuse

Composite application relies a lot on reuse. Reuse could be in the form of components that are provided by vendor/application or custom built that can be reused. Reuse could also be at multiple levels in the case of a composite application. (See Table 3, right.)

Oracle AIA promotes reuse by extending prebuilt services and objects. Oracle AIA Foundation Pack 2.2 has more than 50 prebuilt business objects, more than 500 business service operations, industry specific processes catering to verticals like utilities, insurance, communications or prebuilt PIP (Process Integration Packs) between applications like Siebel CRM, Agile, Oracle eBS and SAP.

## Standardization

Oracle AIA is based on industry standards. At the message level, EBOs (Enterprise Business Objects) support industry standards like OAGIS, UN/CEFACT. By using industry standard, canonical model exchange of information between application inside and outside the enterprise becomes easy.

Use of standards wherever applicable and appropriate is a good practice. Avoid creating your own custom standards. While usage of applicable standards is advised, caution has to be taken in evaluating the standards. This is relevant for those standards which are not yet mature. (See Table 4, below.)

Table 4

| Layer               | Oracle AIA Supported Standard   |
|---------------------|---|
| Data                | <ul style="list-style-type: none"> <li>• XML</li> <li>• XSLT</li> </ul>           |
| Messaging           | <ul style="list-style-type: none"> <li>• SOAP</li> <li>• WS-Addressing</li> </ul> |
| Service description | <ul style="list-style-type: none"> <li>• WSDL</li> </ul>                          |
| Policy              | <ul style="list-style-type: none"> <li>• WS-Policy</li> </ul>                     |
| Security            | <ul style="list-style-type: none"> <li>• WS-Security</li> </ul>                   |
| Discovery           | <ul style="list-style-type: none"> <li>• UDDI</li> <li>• WS-Discovery</li> </ul>  |
| Management          | <ul style="list-style-type: none"> <li>• WSDM</li> </ul>                          |
| Orchestration       | <ul style="list-style-type: none"> <li>• BPEL</li> </ul>                          |
| Modeling            | <ul style="list-style-type: none"> <li>• BPMN</li> </ul>                          |

Table 3

| Integration/orchestration layer |  |
|---------------------------------|--|
| Name of component               | Oracle AIA/PIP Reusable Artifact   |
| Connector                       | <ul style="list-style-type: none"> <li>• Technology and application adapters available               <ul style="list-style-type: none"> <li>- Technology – DB, File/FTP</li> <li>- Application – SAP, Oracle eBS</li> </ul> </li> </ul>        |
| Business Objects                | <ul style="list-style-type: none"> <li>• Standard EBO (Enterprise Business Object) definitions available               <ul style="list-style-type: none"> <li>- More than 50 objects definitions available as of FP 2.2</li> </ul> </li> </ul> |
| Mapping                         | <ul style="list-style-type: none"> <li>• As part of Pre-built PIPs (Process Integration Packs)</li> </ul>  |
| Error handling                  | <ul style="list-style-type: none"> <li>• Error handling framework               <ul style="list-style-type: none"> <li>- Notification</li> <li>- Logging</li> <li>- Retry</li> </ul> </li> </ul>   |
| Testing                         | <ul style="list-style-type: none"> <li>• CAVS (Composite Application Validation System) framework               <ul style="list-style-type: none"> <li>- Integration testing</li> <li>- Simulation testing</li> </ul> </li> </ul>              |
| Backend                         |  |
| Name of component               | Oracle AIA/PIP Reusable Artifact   |
| Extraction Logic                | <ul style="list-style-type: none"> <li>• Currently only restricted to prebuilt PIPs</li> <li>• Composite applications relying on AIA Foundation Pack have to create on their own</li> </ul>  |
| CRUD Logic                      | <ul style="list-style-type: none"> <li>• Currently only restricted to prebuilt PIPs</li> <li>• Composite applications relying on AIA Foundation Pack have to create on their own</li> </ul>  |

## Conclusion

Oracle AIA framework provides a way of staying ahead of competition by being able to quickly develop composite applications that suit your business needs. It also provides an easy and efficient way of sharing information on the portal with users within and outside the enterprise. AIA helps organizations streamline their operations by lowering the cost of composite application development and reducing the cycle times.

## About the Author



**Ramesh Chandra Revuru** is the global head of Integration, DW/BI & Agile at Sierra Atlantic. He has published various articles on integration, SOA and BPM and has been a speaker at Oracle User Conference, TIBCO User Conference and Oracle Open World. Before joining Sierra Atlantic, he worked with companies like Infosys, Computer Associates and Oracle.”