

**Agile Product Lifecycle Management Integration
Pack for SAP: Design to Release 2.5 -
Implementation Guide**

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Preface

This preface discusses:

- Additional resources
- Oracle Application Integration Architecture Concepts and Technologies
- Oracle Application Integration Architecture Core Infrastructure Components
- Oracle Application Integration Architecture Integration Developer's Guide
- Oracle Application Integration Architecture Process Integration Packs

Additional Resources

The following resources are available:

Resource	Location
Installation Guide	Metalink https://metalink.oracle.com
Documentation updates	Metalink https://metalink.oracle.com
User Guide	Oracle Technology Network http://www.oracle.com/technology http://www.oracle.com/technology/documentation/agile.html
Release Notes	Oracle Technology Network http://www.oracle.com/technology http://www.oracle.com/technology/documentation/agile.html
Known issues, workarounds, and most current list of patches	Metalink https://metalink.oracle.com

Oracle Application Integration Architecture Concepts and Technologies

Oracle Application Integration Architecture Concepts and Technologies is a companion volume to *Oracle Application Integration Architecture Core Infrastructure Components* and *Oracle Application Integration Architecture Integration Developer's Guide*.

Oracle Application Integration Architecture Concepts and Technologies discusses:

- Enterprise business objects and enterprise business messages.
- Enterprise business services.
- Application business connector services.
- Interaction patterns.
- Extensibility.
- Versioning.
- Business processes.
- Batch processing.
- Infrastructure services.
- Security

Oracle Application Integration Architecture Core Infrastructure Components

Oracle Application Integration Architecture Core Infrastructure Components is a companion volume to *Oracle Application Integration Architecture Concepts and Technologies* and *Oracle Application Integration Architecture Integration Developer's Guide*.

Oracle Application Integration Architecture Core Infrastructure Components discusses how to:

- Work with the Composite Application Validation System (CAVS).
- Work with the Business Service Repository (BSR).
- Set up and use error handling and logging.
- Work with the diagnostics framework.

Oracle Application Integration Architecture Integration Developer's Guide

Oracle Application Integration Architecture Integration Developer's Guide is a companion volume to *Oracle Application Integration Architecture Concepts and Technologies* and *Oracle Application Integration Architecture Core Infrastructure Components*.

The *Oracle Application Integration Architecture Integration Developer's Guide* discusses how to:

- Create an integration scenario.
- Define business service patterns.
- Design and develop enterprise business flows.

- Design and construct application business connector services.
- Work with message transformation, enrichment, and configuration.
- Develop custom xpath functions.
- Design and construct JMS Adapter services.
- Work with enterprise message headers.
- Work with message routing.
- Work with transactions.
- Develop Oracle AIA services to work with the Composite Application Validation System (CAVS).
- Configure Oracle AIA processes to be eligible for error handling and logging.
- Extend enterprise business objects.

In addition, this book provides:

- Application Integration Architecture naming standards.
- Sample and template WSDLs for use with Oracle AIA

Oracle Application Integration Architecture Process Integration Packs

A process integration pack (PIP) is a pre-built set of integrated orchestration flows, application integration logic, and extensible enterprise business objects and services required to manage the state and execution of a defined set of activities or tasks between specific Oracle applications associated with a given process. A PIP provides everything you need to deploy a selected integrated business process area. The PIP product offering is suited to those customers seeking to rapidly implement a discrete business process.

Chapter 1: Agile PLM Integration for SAP

This chapter discusses:

- Architecture of Agile PLM Integration
- Agile to SAP Processes
- SAP to Agile Processes
- Solution Design Assumptions and Constraints
- Components of Agile PLM PIP
- Environment

This integration between Agile PLM and SAP R/3 is designed to address the primary use cases around synchronization of product content information between Agile Product Collaboration and SAP.

The Agile PLM Process Integration Pack (PIP) is aimed to enable and integrate Product Development process between Agile PLM and SAP. This allows for rapid implementation of Agile's next Generation integrated enterprise PLM processes helping customer reduce cost and any risks associated with typical 3rd party and custom integrations.

This integration aims to meet the following objectives:

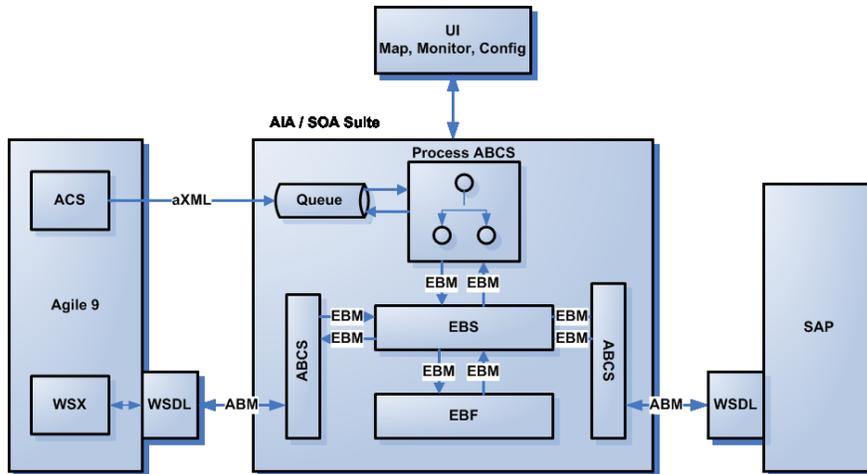
- The integration follows a Business Process flow
- Data Accuracy and Integrity are maintained at all times in both the systems
- The business process flow and data field mappings, as well as transformations, are easy to configure through tools such as Rules, Lookups and User Exits.
- Robust exception handling is done, including ease of understanding for end user, strong notification configurability and ease of troubleshooting.

Functionalities

- Manufacturing Release of new product definition and product launch.
- Change Management of previously launched products.
- Bi-directional synchronization of Engineering Change status and material attribute information, from Manufacturing to PLM.
- Tracking and monitoring of the change processing queue.

Architecture of Agile PLM to SAP Integration

Agile PLM to SAP Integration is Requester-Provider type, as depicted in the diagram below.



Agile to SAP Processes

Change Order Release

During a product design phase, new products/parts are introduced and/or existing parts go through design changes. When the authoring of a part's attributes and design information in association with Change Order is complete and is ready for publishing to the manufacturing system, it is released by means of Change Orders. The Change Order Release Process constitutes of New Part/Product Release (PREL) and Product Design Modification flows of Agile PLM

While Agile is the system of record for item description, design, specs and many other pieces of information above, the ERP system typically has many more attributes and placeholders for information than the PLM system. Hence, the change order release needs to be updated in ERP system.

The release of a change order in Agile PLM system acts as a trigger for the synchronization of product design information with ERP system. Agile system being a system of records for product design data, the synchronization process typically involves transfer of the released revision of product design from Agile PLM to the manufacturing system. The Agile system can be configured to trigger the synchronization process on any Change Order status as required.

Change Order Release Process as well as New Product Release processes use the same integration sequence. [Chapter 2 - Process Integration for Change Order Release](#) describes the integration details for both.

New Part Request

A New Part Request (NPR) process can be triggered On-demand by user. This is a synchronous process, which reserves and fetches the part number from the SAP system.

See [Chapter 3 - Process Integration for New Part Request](#) for complete information.

SAP to Agile Processes

SAP Item Attributes (Unit Cost Information) Update

Though Agile is considered as system of records there might be several part attributes that can be maintained within ERP. The Product Data Management (PDM) group might require visibility into few if not all of these attributes within PLM item data. In order to empower the PDM group with such information within Agile item object, SAP to Agile process enable synchronous or batch update of the configured field values from ERP in to designated item fields of PLM.

For example update in cost of an item in ERP would get updated in to the item in PLM in near real time or batch, based on the setting in SAP. See [Chapter 4 – Process Integration for Item Attributes Update](#).

Solution Design Assumptions and Constraints

Design Assumptions

- Agile Content Server will be the used for Events to trigger the payload from Agile to Integration.
- This design assumes that the following statements are true:
 - There will be pre-defined blank templates made available for Custom fields
 - Transformation logic for classification elements will be pre-coded in the Out-of-the-Box XSL, but you may need to modify it to suit your PLM implementation
- This design leverages AIA error handling framework.

Design Constraints

- In few cases configuration driven XSLT may not reflect the changes immediately and may require a restart as the main XSL sheet would get cached after a successful compilation
- ACS limits the Events to be triggered from workflow only for the Change Status which can be used for this Integration.
- Error handling capabilities of this integration are constrained by the capabilities of AIA framework.

Components of Agile PLM PIP

Agile PLM

Agile Content Service (ACS)

Agile Content Service 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. In addition to allowing employees and supply chain partners to publish the product record on demand, Agile Content Service can be configured to automatically publish the Item Master and BOM changes during any phase of the product lifecycle to multiple destinations, ensuring that everyone is working with up-to-the-minute information.

The output generated by an ACS module is an aXML file or a PDX package.

Web Service Extensions

Web service extensions (WSX) is a Web service engine enabling communication between Agile PLM and disparate systems both internal and external including Enterprise Resource Planning (ERP) systems. They can be used to provide content to exchanges, reports, and custom applications and import Product content data from ERP and other supply chain applications. WSX can simplify the process for aggregating raw product content and making critical product content available in real time to other core systems.

For more details on Agile components, refer "Agile Product Lifecycle Management Administrator Guide" and SDK Developer Guide.

Oracle Fusion Middleware

Oracle Fusion Middleware (OFM) is a portfolio of software products, produced by Oracle, that spans multiple services, including J2EE and developer tools, integration services, business intelligence, collaboration, and content management.

Oracle Fusion Middleware is designed to support development, deployment, and management of Service-Oriented Architecture. It includes what Oracle calls "Hot-Pluggable" architecture, which allows users to leverage existing investments in applications and systems from other software vendors such as IBM, Microsoft, and SAP.

Business Process Execution Language (BPEL)

BPEL is that technology that integrates and assembles the Web Services. BPEL is a XML-based workflow definition language that allows businesses to describe inter or intra enterprise business processes that are connected via Web services. BPEL opens a completely new way or at least enhanced way, for software development for mainstream business applications to allow a programmer to describe a business process that will take place across the Internet.

BPEL provides an XML-based grammar for describing the logic to control and coordinate Web services participating in a process flow.

Enterprise Service Bus (ESB)

An Enterprise Service Bus (ESB) is a software architecture for middleware that provides fundamental services for more complex architectures and can be thought of as a mechanism that manages access to applications and services.

Oracle Service Registry (OSR)

Oracle Services Repository is a Web Services Registry and Repository for building your Service-Oriented Architectures (SOA). It provides a UDDI v3-compliant platform for publishing, categorizing and discovering Web services and related resources across the enterprise. OSR enables service providers to expose and advertise service offerings, Allows service consumers to find, access and/or invoke services that meet defined criteria and provides critical features for SOA governance.

Application Integration Architecture (AIA)

Oracle Application Integration Architecture provides open standards based framework for creating cross-application business processes that support the way you run your business today, while paving the way for your long term, strategic, business transformation plans. Its application independent framework enables you to utilize the applications of your choice to create composite business processes unique to your business, on a flexible service-oriented architecture.

SAP

SAP is an acronym for "System Application and Products" which creates a common centralized database for all the applications running in an organization. SAP products are generally focused on Enterprise Resource Planning (ERP).

SAP applications are built to manage product operations, cost accounting, assets, materials and personnel. SAP ERP runs on majority of platforms including Microsoft Windows and it uses client/server model. SAP provides majority of new dimensional enterprise products namely SEM, SRM, CRM, APO, etc.

Environment

<i>Agile PLM</i>	9.2.2.6 / 9.3
<i>SAP</i>	R/3 4.7E, ECC 6.0
<i>Oracle SOA Suite</i>	10.1.3.4
<i>Oracle AIA Foundation Pack</i>	2.5
<i>Oracle Database</i>	10g Release 2 (10.2.0.1) Enterprise Edition DB upgrade patch 10.2.0.3
<i>Oracle Service Registry</i>	10.1.3.4
<i>Java 2 Platform Standard Edition (J2SE) Development Kit (JDK) 1.5_16 level, MLR7</i>	

Note: Integration to SAP requires iWAY Software Adapter for SAP, which must be procured and installed separately. The PIP deployment and functioning is complete, all the way up to iWAY Software Adapter handshake.

For more information about technical details of infrastructure requirements, see the Capacity Planning Guide at <http://www.oracle.com/technology/documentation/agile.html>.

Chapter 2: Process Integration for Change Order Release

This chapter discusses

- Change Order Release Process
- Posting CO Data to SAP
- CO Release Process Integration Solution Assumptions
- CO Release Integration Sequence
- AIA Services for CO Release
- CO Release Integration Customization Points
- Queue Manager

Integration of Change Order Release, namely the Engineering Change Order (ECO) and New Part/Product Release (PREL) from Agile to SAP is about introducing a new product, components & structure into SAP upon release of design from Agile or updating existing design metadata or structure.

This process is triggered from Agile.

Note: The **Integration** flow is similar for both ECO and PREL use cases.

Change Order Release Process

The process of Change Order Release, which comprises of New Part Introduction and Manufacturing Update, is the flow of Item and BOM Information from Agile to SAP. This information is pushed from Agile, triggered by an Event tied to the change in Status of a Change Order (CO) object. The information is then parsed in an Integration Object format and sent to SAP for implementation. A confirmation of its implementation status is sent back to Agile.

This process of Integration entails the following flow:

1. Release of Change Order in Agile
2. aXML generation by Agile Content Server
3. Parsing and transformation of aXML Data
4. Posting Changer Order Data to SAP
5. Communicating Order Processing Status to Agile

Release of CO in Agile

When a Change Analyst approves the Change Order in Agile, it is marked as Released. This makes all the changes specified in CO take effect in Agile.

Before the release of a CO, it is subject to pre-validation at its approval stage. This involves validation of certain business rules to ascertain that the flow of CO from Agile to SAP would meet all the conditions set in the destination system.

aXML generation by Agile Content Server

The Agile Content Server generates an aXML (Agile XML) file from CO data. This file contains information of Items, BOM, Manufacturers and the CO itself.

For the purpose of Agile to SAP Integration Process, the ACS is configured to ensure the following:

1. The aXML file is configured to carry the following elements from a CO:
 - Change Order Data: Cover Page, Page Two, Page Three, Affected Items tab attributes
 - Revised Item Data: Title Block, Page Two, Page Three
 - BOM Data: BOM tab of Items (including reference designators) with delta BOMs only for the revision on CO.
2. Upon release of a CO, the aXML file goes to a JMS Queue.

Parsing and Transformation of aXML Data

The data contained in aXML file generated by Agile is not in the format that is understood by Enterprise Business Objects. Hence, this data has to be parsed and transformed.

The parsing and transformation of aXML data entails the following:

1. Segregation of Business Objects
2. Sequencing and Queuing of Change Orders
3. Translating Agile 'Site' specific objects into SAP's 'Plant' specific objects
4. Translating Agile CO Types into SAP's CO Type. All the change types from Agile are mapped to Engineering Change Master record in SAP.
5. Ascertaining business objects existence from SAP to prepare the data in create or update mode.
6. Mapping Agile CO Attributes to corresponding attributes in SAP
7. Defining User Exit Points for custom transformations

Segregation of Business Objects

The aXML file contains collective information about the business objects – CO, Item Attributes, Revised Item Lines, BOM Redlines, Reference designators, etc. This information is broken down into individual components and mapped, one to one, with corresponding EBOs, namely Item, Change and Structure.

In order to maintain referential integrity, the Change Number is associated with each individual business object.

Sequencing and Queuing of COs

The CO release process begins with queuing of CO Number in Process Queue Controller, which sequences the COs for transfer of parsed data to SAP. Once the data is processed by SAP, and its implementation status received, the CO is removed from the Process Queue.

For complete details on sequencing and queuing of change orders, refer Queue Manager section in this chapter.

Translating Site Objects

The data coming from Agile is split into individual SAP Organization specific business objects. This is because the data in Agile can be:

- Centralized – all design locations share the same product design information; or
- De-centralized – the Item Attributes, change control, etc. are implemented to multiple sites.

The Data in SAP, however, is segregated by Plants.

Refer [Appendices](#) for information on Attributes Mapping.

Translating CO Types

In Agile, a Change Order is categorized into the following change types:

- Engineering Change Order (ECO)
- Manufacturing Change Order (MCO)
- Site Change Order (SCO)

These categories are called as Classes in Agile. A Class may have one or more sub-classes.

SAP does not have separate categories for each of these change types, and hence, cannot be differentiated. Hence, while parsing and processing of these change types in Agile, they are translated in SAP with the following characteristics:

Feature	ECO	MCO	SCO
Customer adoption	All installations	All installations	---
New Revisions for revised items	Mandatory	Not supported	Not supported
Tables redlined	BOMs; Global as well as site-specific	Global BOM as well as site-specific	Site-specific BOMs.
Effectivity Date	At line level; Global when multi-site is not enabled;	Not specified on Change Order	At line level; site-specific only

Feature	ECO	MCO	SCO
	Separate for each site when multi-site is enabled		
Other line-level attributes	Global when multi-site is not enabled; Separate for each site when multi-site is enabled	Global when multi-site is not enabled; Separate for each site when multi-site is enabled	Site-specific only
New Item Release	Supported	Supported	Only item updates are supported

Mapping CO Attributes

The Source system attributes are mapped to Destination system attributes. This mapping also defines the direction of data flow.

This is accomplished as follows:

- Two different sets of mappings are defined.
 - One for information flowing from Agile to EBOs.
 - Another, for information flowing from EBOs to Agile.

These are accessed in the UI as different 'mapping profiles'.

- A parameter is specified with each mapping done from the UI. This parameter determines whether the mapping applies to one or both of the directions of data flow.

Note: See [Appendices](#) for complete list of Agile to SAP Mappings.

Ascertaining Item Existence in SAP

An Item is created in the SAP Plant in two ways:

- Agile releases New Part Introduction information to SAP through a CO, as a First Time release.
- The Item information is loaded in SAP by an external system, other than SAP and Agile.

If the Item already exists in the SAP Plant, and Agile releases CO to create the same Item, the system would update the item. Since, Agile does not explicitly pass information about first time or subsequent release of Item, a cross reference table is employed to ascertain the existence of the Item in SAP.

This cross reference table maintains unique identifiers for the Items received from Agile and corresponding Items created in SAP. It also maintains the unique identifiers for the Items created in SAP by an external application. These unique identifiers help in ascertaining the existence of an Item in SAP, thus eliminating any duplication errors.

Defining User Exit Points

User Exits have been provided in the integration to allow custom transformations or filtration routines that a customer may want to add in the process without affecting the main integration flow.

The User Exit points for each process are listed in their respective chapters.

Posting CO Data to SAP

PLM records the design specifications of a part. Information about the same is updated either on an Engineering Change Order (ECO) or a Manufacturing Change Order (MCO). A new part is created in the ERP using reference material in SAP. Revisions to a part, Effective Date, Bills of Material, Item and Reference Designator information are all controlled by ECO and later used to transfer the information from Agile to ERP system.

Release of change order in the PLM system therefore acts as a trigger for the synchronization of product design information with ERP system. Synchronization process is nothing but transfer of the released revision of the product design from Agile PLM to the manufacturing system.

Process Queue Controller drives the integration of Change Order Release process between Agile PLM and SAP system. To maintain the integrity of data in the ERP system, it is paramount that Change Orders are transferred to that system in the order in which they were released by the source system.

The Process Flow

Pre-Process ECO

- ABM to EBM transformations
- Invoke Provider
- Receive Response
- Send Response to the Queue

Post-Process ECO

- Update transfer status in Agile

CO Processing in SAP

The processing of Change Order data into the ERP system is the backbone of this integration. As part of this step, the following activities need to be carried out:

- **Item Master synchronization:** For all items pushed to the ERP system, verify whether or not the items already exist. If the item didn't exist in ERP then create it.

If the Item already exists in ERP, then update the Item.

It is assumed that the source and target systems are in synch before the integration come in to play and hence the integration doesn't check if both the systems are in synch before posting the data.

- **Create Change Order:** The actual Change Order is created as change master object in the ERP system. When the Change master record is posted in to SAP, the status would be set to 'Inactive'. Once all the line items on this Change are posted successfully in to SAP then the integration should change the Change master status in SAP to 'Active'. That means this Change Master is complete and all the changes effective on this Change will be in-force from scheduled effectivity/valid from date. This 'Active' Change Order status of SAP is transferred to

the corresponding mapped Page Two field in Agile as "Transferred".

- **Item Plant assignment:** Items are assigned to plants based on criteria specified in the section on supporting distributed manufacturing above.
- **BOM Update** (including reference designator): The aXML data from Agile contains only the changes made to Bills of Material and not the complete Bill of Material. As a result, BOM data needs to be in sync between Agile and ERP for the older revision in order for the new revision of BOM data to be posted successfully.

Communicating CO Implementation status to Agile

When the process of posting Change Order data into the SAP system completes (successfully or with errors), the following steps are taken:

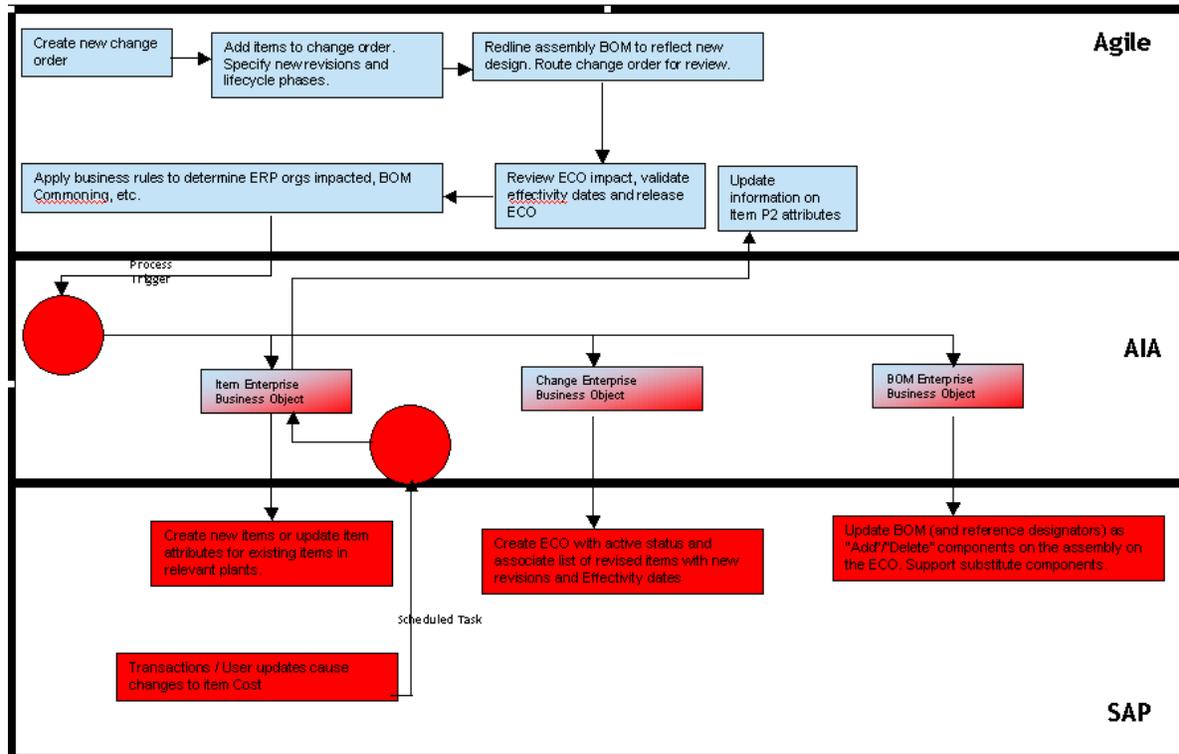
1. If the parameter **Change.TransferStatusAttribute** is assigned to Page Two field in Agile, then upon successful creation of Change Order in SAP with status 'Active' would be propagated back to Agile as 'Transferred' in the specified Page Two field, else "Errored" status is propagated.

CO Release Process Integration Solution Assumptions

- Change Orders should be transferred to the ERP in the order in which they were released by the source system.
- If a part does not exist in ERP system, then create the part.
- If a part exists in ERP system, just update the part.
- Design changes, Effectivity Date, Bill of Material, Item and Reference Designators are all controlled by ECO.
- Part information and design specifications are updated from Agile to ERP system using ECO.
- There is a business process that prioritizes and monitors the Change Order Process.
- At a given time, only one Change Order (i.e.) first one in the queue undergoes ERP Processing. The next process can start its execution only after the execution of the first process is completed.
- Integration administrator has the provision of error handling and reporting the same to the end user.

CO Release Integration Sequence

The Integration flow is same for both ECO and PREL use cases.



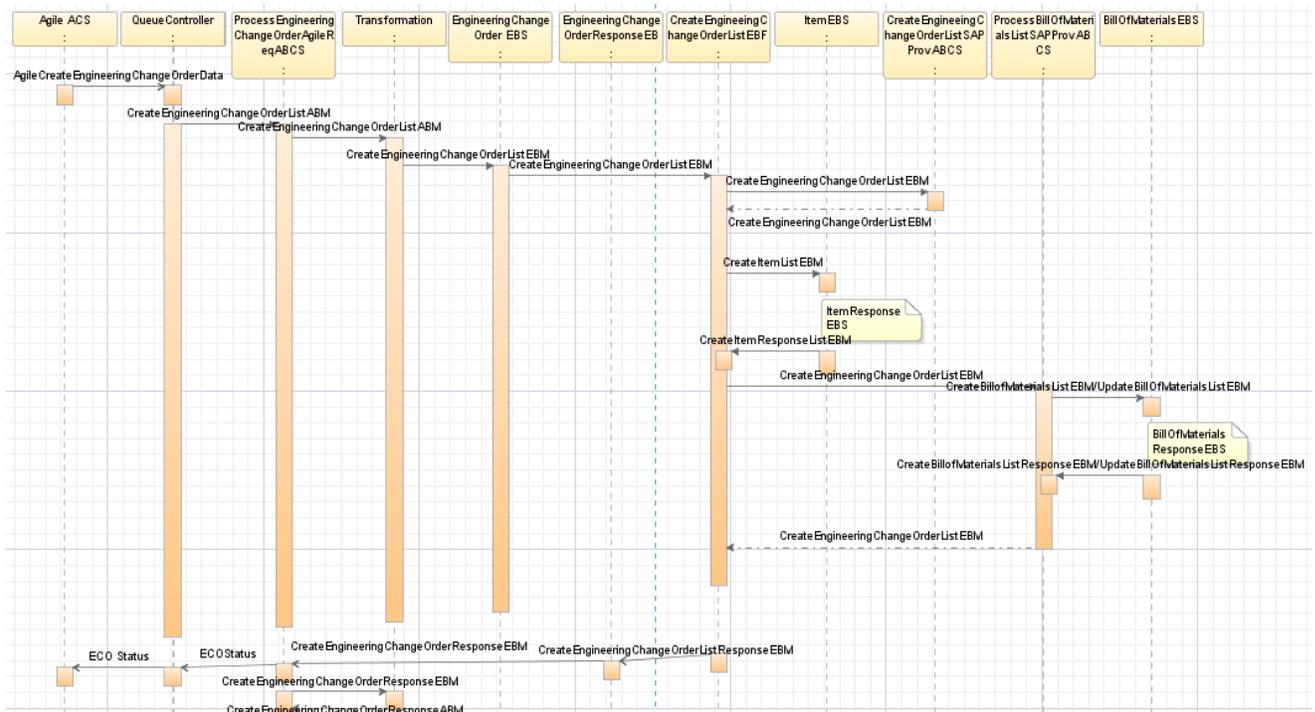
CO Release Integration Flow

An Engineering Change Order is created with items in Affected Items (AI) tab with new revisions and lifecycle phases specified.

1. The ECO is routed for Approval (workflow step).
2. An ACS Workflow Event is generated on Approval of the ECO in Agile to trigger the ECO process flow.
3. The Queue framework captures the ACS payload (AXML) generated for the event and adds it to the integration Queue.
4. The Queue framework identifies the highest priority Queue Message, processes it to create an ECO ABM and triggers the Requestor ABCS.
5. The Requestor ABCS transforms the ECO ABM to ECO EBM and triggers an operation on the EBS which routes the EBM to the ECO business flow with ECO EBM as the input.
6. The ECO Business Flow -
 - Creates new items in ERP

- Creates an Engineering Change Order in the SAP.
 - Associates list of revised items with new revisions and effectivity dates, and Schedules the ECO for effectivity date.
 - Creates new BOM
 - Updates the Transfer Status in Agile.
7. The status of Queue Message is updated in the Integration Queue, for monitoring.

CO Release Services Orchestration



#	Activity	Remarks
1	Agile ACS acts as a trigger for ECO Use case.	Agile ACS transmits Agile Engineering Change Order Data in payload in the form of predefined XML format known as aXML. This file will get queued up for the further processing.
2	QueueController processes the payload	The Queue Controller Framework reads the highest priority Queue Message and transforms the payload (aXML) to <i>AgileCreateEngineeringChangeOrderListABM</i> .
3	Invoke	QueueController invokes the

#	Activity	Remarks
	ProcessEngineeringChangeOrderAgileReqABCS	<i>ProcessEngineeringChangeOrderAgileReqABCS</i> with <i>AgileCreateEngineeringChangeOrderListABM</i> as input.
4	ProcessEngineeringChangeOrderAgileReqABCS makes call back to Agile Web services, if needed.	<i>ProcessEngineeringChangeOrderAgileReqABCS</i> calls the web services exposed in agile side to enrich <i>AgileCreateEngineeringChangeOrderListABM</i> . <i>AgileCreateEngineeringChangeOrderListABM</i> is transformed into <i>CreateEngineeringChangeOrderEBM</i> .
5	ProcessEngineeringChangeOrderAgileReqABCS invokes EngineeringChangeOrderEBS	<i>ProcessEngineeringChangeOrderAgileReqABCS</i> invokes <i>CreateEngineeringChangeOrder</i> operation on <i>EngineeringChangeOrderEBS</i> with <i>CreateEngineeringChangeOrderEBM</i> as input
6	EngineeringChangeOrderEBS routes CreateEngineeringChangeOrderListEBM to CreateEngineeringChangeOrderListEBF	<i>CreateEngineeringChangeOrderListEBM</i> is passed to <i>CreateEngineeringChangeOrderListEBF</i> as input.
7	CreateEngineeringChangeOrderEBF invokes ItemEBS	<i>CreateItemListEBM</i> is passed to <i>ItemEBS</i> as input
8	ItemEBS routes the CreateItemListEBM to SyncItemListSAPProvABCS	<i>CreateItemListEBM</i> is passed to <i>SyncItemListSAPProvABCS</i> as input
9	SyncItemListSAPProvABCS transforms the input and calls the SAP service	<i>SyncItemListSAPProvABCS</i> transforms <i>CreateItemListEBM</i> to the input of SAP service and calls that service. Creates items in ERP
10	SyncItemListSAPProvABCS calls ItemResponseEBS (Response Port) with CreateItemListResponseEBM	<i>SyncItemListSAPProvABCS</i> invokes the <i>CreateItemListResponse</i> operation on <i>ItemResponseEBS</i> with <i>CreateItemListResponseEBM</i> as input
11	CreateEngineeringChangeOrderListEBF calls ProcessBillOfMaterialsListSAPProvABCS	<i>CreateEngineeringChangeOrderListEBM</i> will be passed to <i>ProcessBillOfMaterialsListSAPProvABCS</i> as the input
12	ProcessBillOfMaterialsListSAPProvABCS invokes BillOfMaterialsEBS	
13	Based on the existence of the BOM BillOfMaterialsEBS routes to CreateBillOfmaterialsListSAPProvABCImpl (or) UpdateBillOfMaterialsListSAPProvABCImpl	
a)	BillOfMaterialsEBS calls CreateBillOfMaterialsListSAPProvABCImpl	<i>CreateBillOfMaterialsListEBM</i> is passed to <i>CreateBillOfmaterialsListSAPProvABCImpl</i>
b)	ProcessBillOfMaterialsListSAPProvABCImpl is invoked before BillOfMaterialsEBS calls UpdateBillOfMaterialsListSAPProvABCImpl	<i>CreateEngineeringChangeOrderListEBM</i> is passed to <i>ProcessBillOfMaterialsListSAPProvABCImpl</i> & after this <i>UpdateBillOfMaterialsListEBM</i> is passed to <i>UpdateBillOfMaterialsListSAPProvABCImpl</i>

#	Activity	Remarks
14 a)	CreateBillOfMaterialsListSAPProvABCImpl transforms the input and calls the SAP service	<i>CreateBillOfMaterialsListSAPProvABCImpl</i> will transform <i>CreateBillOfMaterialsListEBM</i> to the input of SAP service and calls that service. Creates the <i>BillOfMaterialsList</i> in ERP
b-i)	ProcessBillOfMaterialsListSAPProvABCImpl transforms the input and calls the SAP service	<i>ProcessBillOfMaterialsListSAPProvABCImpl</i> transforms <i>CreateEngineeringChangeOrderListEBM</i> to the input of SAP service and calls that service
b.ii)	UpdateBillOfMaterialsListSAPProvABCImpl transforms the input and calls the SAP service	<i>UpdateBillOfMaterialsListSAPProvABCImpl</i> transforms <i>UpdateBillOfMaterialsListEBM</i> to the input of SAP service and calls that service. Updates the <i>BillOfMaterialsList</i> in ERP
15 a)	CreateBillOfMaterialsListSAPProvABCImpl calls BillOfMaterialsResponseEBS (Response Port) with CreateBillOfMaterialsListResponseEBM	<i>CreateBillOfMaterialsListSAPProvABCImpl</i> invokes <i>CreateBillOfMaterialsListResponse</i> operation on <i>BillOfMaterialsResponseEBS</i> with <i>CreateBillOfMaterialsListResponseEBM</i> as input
b)	UpdateBillOfMaterialsListSAPProvABCImpl calls BillOfMaterialsResponseEBS (Response Port) with UpdateBillOfMaterialsListResponseEBM	<i>UpdateBillOfMaterialsListSAPProvABCImpl</i> invokes <i>UpdateBillOfMaterialsListResponse</i> operation on <i>BillOfMaterialsResponseEBS</i> with <i>UpdateBillOfMaterialsListResponseEBM</i> as input
16	CreateEngineeringChangeOrderEBF calls CreateEngineeringChangeOrderSAPProvABCS	<i>CreateEngineeringChangeOrderListEBM</i> is passed to <i>CreateEngineeringChangeOrderListSAPProvABCS</i> as input
17	CreateEngineeringChangeOrderListSAPProvABCS transforms the input and calls the SAP service	<i>CreateEngineeringChangeOrderListSAPProvABCS</i> transforms <i>CreateEngineeringChangeOrderListEBM</i> into the input of SAP Service and calls that service. Creates items in ERP, creates an ECO, associates revised items to it and creates BOM
18	CreateEngineeringChangeOrderListEBF calls EngineeringChangeOrderResponseEBS (Response Port) with the CreateEngineeringChangeOrderResponseEBM	<i>CreateEngineeringChangeOrderListEBF</i> invokes <i>CreateEngineeringChangeOrderListResponse</i> operation on <i>EngineeringChangeOrderResponseEBS</i> with <i>CreateEngineeringChangeOrderListResponseEBM</i> as input.
19	EngineeringChangeOrderResponseEBS routes the response message to ProcessEngineeringChangeOrderAgileReqABCS .	<i>EngineeringChangeOrderResponseEBS</i> routes <i>CreateEngineeringChangeOrderListResponseEBM</i> to <i>ProcessEngineeringChangeOrderAgileReqABCS</i> .
20	ProcessEngineeringChangeOrderAgileReqABCS sends the status back to the QueueController to update the queue.	<i>ProcessEngineeringChangeOrderAgileReqABCS</i> replies back to the <i>QueueController</i> with the status of the ECO business process. This status is updated against the Queue message in the database by the <i>QueueController</i>
21	ProcessEngineeringChangeOrderAgileReqABCS	<i>ProcessEngineeringChangeOrderAgileReqABCS</i>

#	Activity	Remarks
	invokes the Agile Web Services.	<p>transforms <i>CreateEngineeringChangeOrderListResponseEBM</i> into <i>AgileUpdateEngineeringChangeOrderListABM</i>.</p> <p><i>AgileUpdateEngineeringChangeOrderListABM</i> is sent as an input to the Agile Web Service.</p> <p>The web services would update transfer status on the Change Order in Agile which will be predefined P2 or P3 attributes on ECO object in Agile.</p> <p><i>AgileUpdateEngineeringChangeOrderListResponseABM</i> is sent back to <i>ProcessEngineeringChangeOrderAgileReqABCS</i>.</p>

AIA Services for CO Release

Core AIA Components for CO Release

The Process Integration for ECO/PREL uses the following industry components:

<i>EBOs</i>	<ul style="list-style-type: none"> • EngineeringChangeOrderEBO • BillOfMaterialsEBO • ItemEBO
<i>EBMs</i>	<ul style="list-style-type: none"> • CreateEngineeringChangeOrderListEBM • CreateEngineeringChangeOrderListResponseEBM • CreateBillOfMaterialsListEBM • CreateBillOfMaterialsListResponseEBM • UpdateBillOfMaterialsListEBM • UpdateBillOfMaterialsListResponseEBM • CreateItemEBM • CreateItemListResponseEBM
<i>EBSs</i>	<ul style="list-style-type: none"> • EngineeringChangeOrderListEBS (CreateEngineeringChangeOrderListResponseEBM) • BillOfMaterialsEBS (CreateBillOfMaterialsListEBM/ CreateBillOfMaterialsListResponseEBM) • ItemEBS (CreateItemEBM/ CreateItemListResponseEBM)

Core Components Locations

<i>EBO & EBM</i>	http://[HOST:PORT]/AIAComponents/EnterpriseObjectLibrary/Core/EBO/
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XSD files	
WSDL files	http://[HOST:PORT]/AIAComponents/EnterpriseBusinessServiceLibrary/Core/EBO/

- For detailed documentation of individual EBOs, click the **EBO Name link** on the *Integration Scenario Summary* page in the *Oracle AIA Console*. You can also use the *Integration Scenario Summary* page to search for and view integration scenarios that utilize a particular EBO or EBS.

For more information, see *Oracle Application Integration Architecture - Foundation Pack: Core Infrastructure Components Guide*, “Using the BSR,” Using the BSR UI to View Integration Scenarios.

- EBOs can be extended, for instance, to add new data elements. These extensions are protected, and will remain intact after a patch or an upgrade.

For more information, see *Oracle Application Integration Architecture – Foundation Pack: Integration Developer’s Guide*, “Extensibility for AIA Artifacts.”

Agile & SAP Components for CO Release

Services	Agile (Requester)	SAP (Provider)
ABMs	AgileCreateEngineeringChangeOrderListABM	BAPI_MATERIAL_GET_ALL
	AgileCreateEngineeringChangeOrderListResponse ABM	BAPI_MATERIAL_GET_ALLResponse
	AgileUpdateEngineeringChangeOrderListABM	BAPI_MATERIAL_GET_DETAIL
	AgileUpdateEngineeringChangeOrderListResponse ABM	BAPI_MATERIAL_GET_DETAILResponse
		BAPI_MATERIAL_SAVEDATA
		BAPI_MATERIAL_SAVEDATAResponse
		CSAP_MAT_BOM_READ
		CSAP_MAT_BOM_READResponse
		CCAP_REV_LEVEL_MAINTAIN
		CCAP_REV_LEVEL_MAINTAINResponse
		BAPI_MAT_BOM_EXISTENCE_CHECK
		BAPI_MAT_BOM_EXISTENCE_CHECKResponse
		CSAP_MAT_BOM_ALLOC_CREATE
		CSAP_MAT_BOM_ALLOC_CREATEResponse
		CSAP_MAT_BOM_CREATE
	CSAP_MAT_BOM_CREATEResponse	
	CSAP_MAT_BOM_MAINTAIN	

Services	Agile (Requester)	SAP (Provider)
		CSAP_MAT_BOM_MAINTAINResponse CCAP_ECN_MAINTAIN CCAP_ECN_MAINTAINResponse
ABCS	ProcessEngineeringChangeOrderAgileReqABCS	CreateEngineeringChangeOrderListSAPProvABCSImpl CreateEngineeringChangeOrderListEBF ProcessBillOfMaterialsListSAPProvABCS ProcessBillOfMaterialsListSAPProvABCImpl CreateBillOfMaterialsListSAPProvABCImpl UpdateBillOfMaterialsListSAPProvABCImpl SyncltemListSAPProvABCS
EBS	EngineeringChangeOrderEBS (CreateEngineeringChangeOrderList Operation)	EngineeringChangeOrderResponseEBS (CreateEngineeringChangeOrderListResponse Operation) BillOfMaterialsEBS BillOfMaterialsResponseEBS ItemEBS ItemResponseEBS
BPEL	CreateQueueService QueueProcessorServiceImpl	---
ESB Service	ACSAXMLJMConsumer ACSAXMLFileConsumer CreateQueueControlService QueueProcessorService EngineeringChangeOrderService	ItemService BOMServiceESB Reserveltemservice ECORouterService

Component Locations

ABO XSD files	<a href="http://<servername>:<portname>/AIAComponents/ApplicationObjectLibrary/Agile/ABO/EngineeringChangeOrder/V1/">http://<servername>:<portname>/AIAComponents/ApplicationObjectLibrary/Agile/ABO/EngineeringChangeOrder/V1/
ABM XSD files	<a href="http://<servername>:<portname>/AIAComponents/ApplicationObjectLibrary/Agile/ABM/EngineeringChangeOrder/V1/">http://<servername>:<portname>/AIAComponents/ApplicationObjectLibrary/Agile/ABM/EngineeringChangeOrder/V1/ <a href="http://<servername>:<portname>/AIAComponents/ApplicationObjectLibrary/SAP/Release1/Core/ABM/EngineeringChangeOrder">http://<servername>:<portname>/AIAComponents/ApplicationObjectLibrary/SAP/Release1/Core/ABM/EngineeringChangeOrder

Integration Services for CO Release

1. EngineeringChangeOrderEBS

EngineeringChangeOrderEBS is the Enterprise Business Service, which exposes the operations related to the Engineering Change Order Integration on the EngineeringChangeOrder EBO. The following are the routing rules:

EngineeringChangeOrderEBS ESB service

1. ProcessEngineeringChangeOrderAgileReqABCS
 - Route CreateEngineeringChangeOrderListEBM to CreateEngineeringChangeOrderListSAPProvABCSImpl

EngineeringChangeOrderResponseEBS ESB service

1. CreateEngineeringChangeOrderListSAPProvABCSImpl
 - Route CreateEngineeringChangeOrderListResponseEBM to ProcessEngineeringChangeOrderAgileReqABCS

2. ItemEBS

ItemEBS ESB Service

1. CreateEngineeringChangeOrderListEBF
 - Route CreateItemEBM to SyncItemEBM

ItemResponseEBS ESB service

1. SyncItemEBM
 - Route CreateItemResponseEBM to CreateEngineeringChangeOrderListEBF

3. BillOfMaterialsEBS

BillOfMaterialsEBS ESB service

1. ProcessBillOfMaterialsListSAPProvABCS
 - Route CreateBillOfMaterialsListEBM to CreateBillOfMaterialsListSAPProvABCSImpl
 - Route UpdateBillOfMaterialsListEBM to UpdateBillOfMaterialsListSAPProvABCSImpl

BillOfMaterialsResponseEBS ESB service

1. CreateBillOfMaterialsListSAPProvABCSImpl
 - Route CreateBillOfMaterialsListResponseEBM to ProcessBillOfMaterialsListSAPProvABCS
2. UpdateBillOfMaterialsListSAPProvABCSImpl
 - Route UpdateBillOfMaterialsListResponseEBM to ProcessBillOfMaterialsListSAPProvABCS

4. ProcessEngineeringChangeOrderAgileReqABCS

ProcessEngineeringChangeOrderAgileReqABCS is used for transforming *AgileCreateEngineeringChangeOrderListABM* into *CreateEngineeringChangeOrderListEBM*. This service invokes the *CreateEngineeringChangeOrder* operation on *EngineeringChangeOrderEBS* for creation of ECO in SAP.

Based on the status of ECO creation in SAP this service updates the Queue Status. Also the Transfer status attribute in Change Order is updated by this service.

This service is implemented as *Asynchronous* BPEL Process

1. The *QueueController* creates the *AgileCreateEngineeringChangeOrderListABM* and invokes the *ProcessEngineeringChangeOrderAgileReqABCS*.
2. Transforms the *AgileCreateEngineeringChangeOrderListABM* to *CreateEngineeringChangeOrderListEBM* and invokes the *CreateEngineeringChangeOrder* operation on *EngineeringChangeOrderEBS* with *CreateEngineeringChangeOrderListEBM* as input. This is routed for creation of ECO in SAP.
3. *CreateEngineeringChangeOrderListResponseEBM* is received from *EngineeringChangeOrderEBS* and based on the status of ECO creation in SAP, The *QueueController* is invoked to update the status of the Queue Message.
4. *ProcessEngineeringChangeOrderAgileReqABCS* transforms *CreateEngineeringChangeOrderListResponseEBM* into *AgileUpdateEngineeringChangeOrderListABM* and sent as an input to the Agile Web Service.
5. The web services update the transfer status of the Change Order in Agile which will be predefined P2 or P3 attributes on ECO object in Agile. *AgileUpdateEngineeringChangeOrderListResponseABM* is sent back to *ProcessEngineeringChangeOrderAgileReqABCS*.

Transformations

1. *AgileCreateEngineeringChangeOrderListABM_to_CreateEngineeringChangeOrderEBM.xsl*
Transforms *AgileCreateEngineeringChangeOrderListABM* to *CreateEngineeringChangeOrderListEBM*
2. *CreateEngineeringChangeOrderResponseEBM_to_AgileUpdateEngineeringChangeOrderListABM.xsl*
Transforms *CreateEngineeringChangeOrderResponseEBM* to *AgileUpdateEngineeringChangeOrderListABM*

5. **CreateEngineeringChangeOrderListSAPProvABCImpl**

This is a single operation service. This accepts an Engineering Change Order containing Item and BOMs information message as a request and returns a response.

In Agile to SAP flow, *CreateEngineeringChangeOrderListSAPProvABCImpl* is used for transforming *CreateEngineeringChangeOrderListEBM* into *CCAP_ECN_MAINTAINABM*, which invokes the *CreateEngineeringChangeOrder* operation in SAP.

In return flow, *CCAP_ECN_MAINTAIN* BAPI sends *CCAP_ECN_MAINTAINResponse* which is transformed by *CreateEngineeringChangeOrderListSAPProvABCImpl* into *CreateEngineeringChangeOrderListResponseEBM*.

This service is implemented as *Asynchronous* BPEL Process.

CO Release Integration Customization Points

Agile

ProcessEngineeringChangeOrderAgileReqABCS (Agile Process ECO requestor flow)	AgileCreateEngineeringChangeOrderListABM_to_CreateEngineeringChangeOrderListEBM_Impl.xml	ReqABM to ReqEBM (main)
	AgileCreateEngineeringChangeOrderListABM_to_CreateEngineeringChangeOrderListEBM_Custom.xml	ReqABM to ReqEBM (custom elements)
	CreateEngineeringChangeOrderListEBM_EBMHeader_Custom.xml	EBM to EBMHeader (custom elements)
	CreateEngineeringChangeOrderListEBM_EBMHeader_Impl.xml	EBM to EBMHeader (main)
	CreateEngineeringChangeOrderListResponseEBM_to_UpdateEngineeringChangeOrderListEBM_Impl.xml	RespEBM to ReqEBM (main)
	UpdateEngineeringChangeOrderListEBM_to_AgileUpdateEngineeringChangeOrderListABM_Impl.xml	ReqEBM to ReqABM (main)

SAP

CreateEngineeringChangeOrderListSAPProvABCImpl	CreateEngineeringChangeOrderListEBMtoABM_Custom.xml	Custom transformations for Engineering Change Order Request EBM to Request ABM
CreateEngineeringChangeOrderListEBF	XformReqEBMtoResEBM_Custom.xml	Custom transformations for Engineering Change Order Request EBM to Engineering Change Order Response EBM
	CreateECOEBMtoItemEBM_Custom.xml	Custom transformations for Engineering Change Order Request EBM to Item List EBM
	UpdateXformEngineeringChangeOrderListEBMtoEBM_Custom.xml	Custom transformations for update Engineering Change Order list EBM to Engineering Change Order list EBM
	XformEBMtoBillOfMaterialProcess_Custom.xml	Custom transformations for Engineering Change Order list EBM to Engineering Change Order list EBM for BOM

	XformECOListEBMtoECOListResponseEBM_Custom.xml	Custom transformations for Engineering Change Order list request EBM to Engineering Change Order list Response EBM
	XformEngineeringChangeOrderListEBMtoEBM_Custom.xml	Custom transformations for create Engineering Change Order list EBM to Engineering Change Order list EBM
	ECOEBMToExistenceCheck_Custom.xml	Custom transformations for Engineering Change Order list EBM to BOM_Existence_Check ABM
ProcessBillOfMaterialsListSAPProvABCS	ECOEBMToGlobalBOMExistenceCheck_Custom.xml	Custom transformations for Engineering Change Order list EBM to global BOM_Existence_Check ABM
	ECOEBMToGlobalUpdateBOMEBM_Custom.xml	Custom transformations for Engineering Change Order list EBM to global Update BillOfMaterials List EBM
	ECOListEBMtoBOMListEBM_Custom.xml	Custom transformations for Engineering Change Order list EBM to Create BillOfmaterials List EBM
	ECOListEBMToUpdateBOMListEBM_Custom.xml	Custom transformations for Engineering Change Order list EBM to Update BillOfMaterials List EBM
	XformEBMHeadertoECOListResponseEBM_Custom.xml	Custom transformations for EBM Header to Create EngineeringChangeOrder List EBM
	XformECOListEBMtoEBMHeader_Custom.xml	Custom transformations for Create EngineeringChangeOrder List EBM to EBM Header
	CreateBillOfMaterialsListSAPProvABCSImpl	BOMEBMToCreateGlobalBOMABM_Custom.xml
BOMEBMToExistenceCheck_Custom.xml		Custom transformations for Create BillOfMaterials List EBM to global BOM Existence Check ABM
BOMEBMToPlantExistenceCheck_Custom.xml		Custom transformations for Create BillOfMaterials List EBM to BOM Existence Check ABM
BOMEBMToPlantExtensionABM_Custom.xml		Custom transformations for Create BillOfMaterials List EBM to BOM Plant Extension ABM

	BillOfMaterialsListEBMToCreateBOM_Custom.xml	Custom transformations for Create BillOfMaterials List EBM to Create BOM ABM
	XformBOMReqEBMToResEBM_Custom.xml	Custom transformations for Create BillOfMaterials List EBM to Create BillOfMaterials List Response EBM
UpdateBillOfMaterialsListSAPProvABCImpl	BOMEBMToGlobalBOMABM_Custom.xml	Custom transformations for Update BillOfMaterials List EBM to Update global BOM ABM
	BOMEBMToPlantExistenceCheck_Custom.xml	Custom transformations for Update BillOfMaterials List EBM to BOM Existence Check ABM
	BOMEBMToPlantExtensionABM_Custom.xml	Custom transformations for Update BillOfMaterials List EBM to BOM Plant Extension ABM
	BOMEBMToUpdateBOMABM_Custom.xml	Custom transformations for Update BillOfMaterials List EBM to Update BOM ABM
	XformBOMReqEBMToResEBM_Custom.xml	Custom transformations for Update BillOfMaterials List EBM to Update BillOfMaterials List Response EBM
ProcessBillOfMaterialsListSAPProvABCImpl	XformECOEBMtoABM.xml	Custom transformations for CreateEngineeringChangeOrderListEBM to Read BOM ABM
	XformABMtoECOEBM.xml	Custom transformations for Read BOM ResponseABM to CreateEngineeringChangeOrderListEBM
SyncItemListSAPProvABC	XFormItemEBMToGetDetailRefMaterial_Custom.xml	Custom transformations for CreateItem List EBM to Get detail Reference Material ABM
	XFormItemEBMToReferenceMaterial_Custom.xml	Custom transformations for CreateItem List EBM to Get Reference Material ABM
	XFormItemEBMToRevisionABM_Custom.xml	Custom transformations for CreateItem List EBM to Create Revision ABM
	XFormItemEBMToSavedData_Custom.xml	Custom transformations for CreateItem List EBM to Create Item List ABM

	XFormItemEBMToUpdateItem_Custom.xml	Custom transformations for CreateItem List EBM to Update Item list ABM(for Get All ReferenceMaterial-4.6)
	XFormItemEBMToUpdate_Item_Custom.xml	Custom transformations for CreateItem List EBM to Update Item list ABM(for Get Detail ReferenceMaterial)
	XformItemEBMtoItemResponseEBM_Custom.xml	Custom transformations for CreateItem List EBM to Create ItemList Response EBM

Essential Properties and DVMs for CO Release

The following mandatory DVMs and Properties (in AIAConfigProperties.xml) should be set for the CO Release process to flow successfully.

DVM

- AGILE_SITE_TARGET_MAPPING
- AGILE_TARGET_SITE_MAPPING
- LANGUAGE_CODE
- ECO_ENGINEERINGCHANGEORDERLINE_REVISED_BILLOF_MATERIALS_BILLOF_MATERIALS_COMPONENTITEM_CHANGE_TYPE_CODE
- ITEM_PRIMARYCLASSIFICATIONCODE
- ITEM_STATUS_CODE
- ITEM_UOM_CODE
- ECO_STATUS_CODE
- REFERENCE_MATERIALS

Chapter 3: Process Integration for New Part Request

This chapter discusses:

- NPR Process in Agile
- NPR Process in SAP
- NPR Process Integration Solution Assumptions
- NPR Integration Sequence
- AIA Services for NPR
- NPR Integration Customization Points

Agile PLM system record for product design and part information, new part numbers themselves may originate in a system outside of Agile. This is easily understood when looking at the interactions of various roles that can be involved in the process of generating new part numbers.

An engineer designing an electronic assembly (say, a board) may need a part that he can't find in the system (say, a new resistor) to reduce the heat generated on operating the assembly. He'd then raise a new part request to doc control, who will then route it to materials managers for review. A buyer will look into catalogs offered by approved manufacturers and find a couple of parts that meet the criteria. He'll contact the manufacturers, confirm availability, procure specs, and then approve the new part request with the new manufacturer part numbers attached to it. Doc control will compile all the information and assign an internal part number corresponding to the manufacturer parts and inform the engineer.

A New Part Request (NPR) process can be triggered On-demand by user. This is a synchronous process, which reserves and fetches the part number from the SAP system.

NPR Process in Agile

A New Part Request process in Agile is executed using an object of the Engineering Change Requests (ECR) class. Since the part number(s) being requested do not exist yet in Agile, there are no affected items on this ECR.

A number of variants of this process are possible.

- A single item number is reserved in SAP per ECR
- Multiple item numbers are reserved in SAP per ECR

On Demand New Part Request

The synchronous on-demand NPR process fulfills the following simple use case:

User in Agile requires a new part number to be used on a design. In Agile, user clicks on New Object icon to create a new item for a given subclass such as Part or Document. The on-demand NPR process compliments or replaces the new item creation process in Agile by providing the user a Process Extension that a user can use to trigger the creation of a new item. The overall process flow proceeds as follows:

1. User calls a process extension (PX) from Agile's auto number menu on the Create New Item popup. This option is available whenever the part number generation process is generic (mainly using a sequence)..

However, as the SAP material type is required to get the next available sequence number from SAP. Hence, the item type (subclass) is still passed as a parameter as part of this process. In DVM (Domain Value Mapping) the Agile's subclass is mapped to corresponding SAP material type.

2. The PX requests a new part number from SAP. This process would actually reserve the next available part number in SAP.
3. New reserved part number is sent back to Agile.

The new part number is returned to the calling PX, and the Agile new part creation process proceeds as usual from there onwards. If an error is encountered as part of the PX execution, then the error message is displayed as a popup window in Agile. For detail error information, log on to BPEL console.

NPR Process in SAP

It is assumed that the internal number range assignments are configured in SAP for those material types which are mapped to corresponding Part or Document subclass of Agile that requires auto number generation.

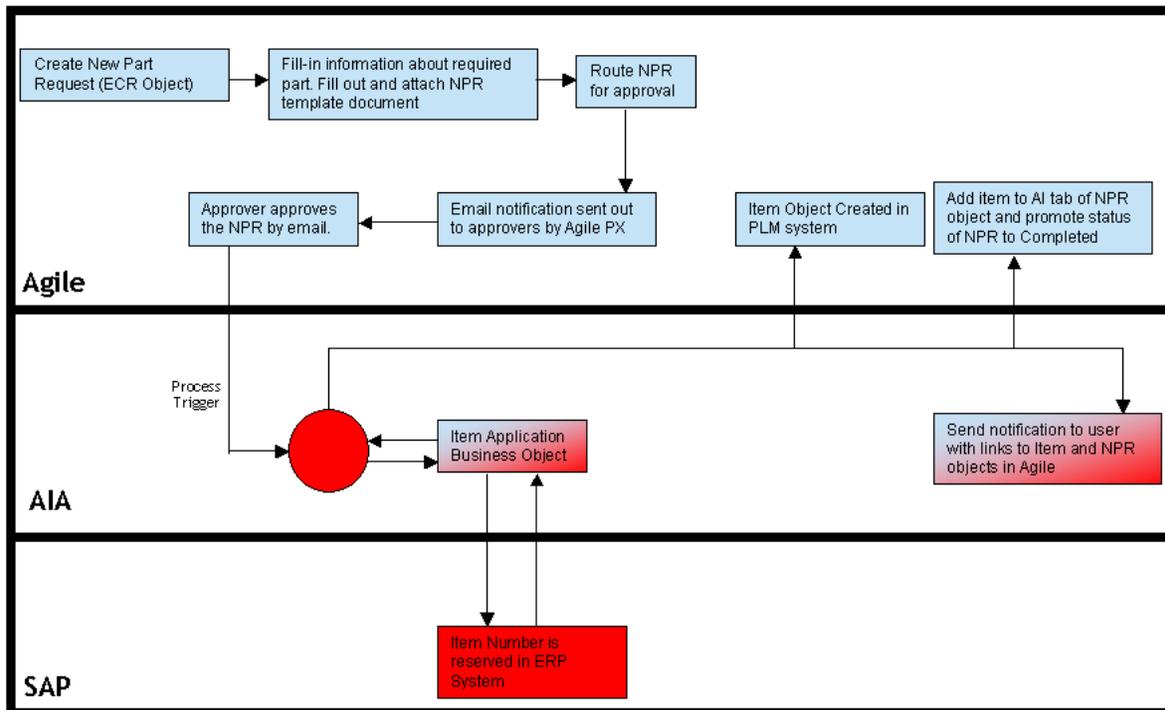
1. When the synchronous auto number PX is executed from Agile, it will call a standard SAP API with input as material type.
2. SAP will check whether there's a valid internal number range is defined for the provided material type. If yes, the program will return next available number to the calling program.
3. If no valid internal number range is defined, it'll return an error to the calling program.

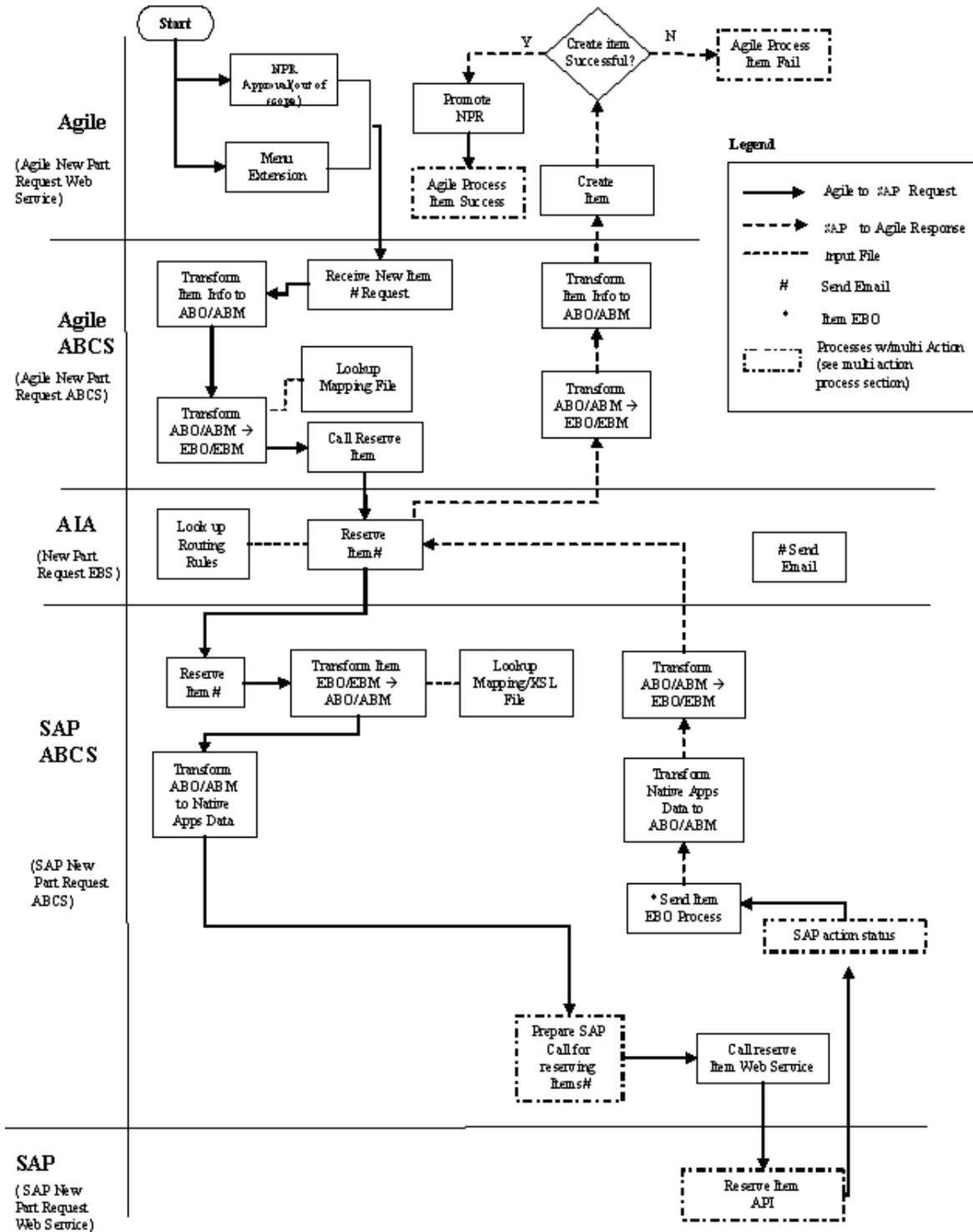
Since this complete process is synchronous, user will not experience the SAP processes at all as they run in the background to return the SAP assigned number. However, for user, it's appears just like the auto number assignment within Agile.

NPR Process Integration Solution Assumptions

Item type/Agile subclass type is mapped to material type (MARA-MTART) in SAP.. For a given valid material type, internal number range assignment is already configured in SAP.

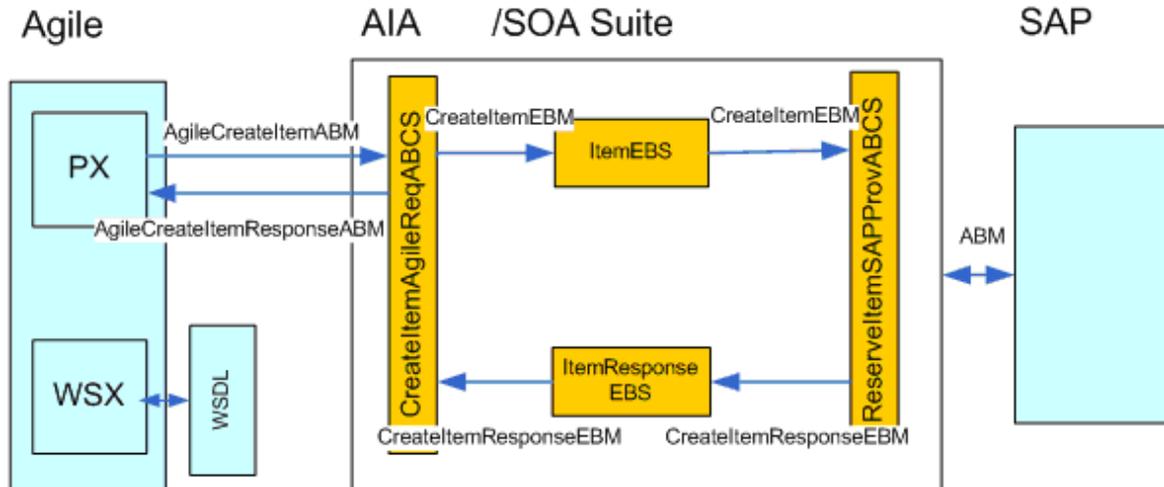
NPR Integration Sequence





NPR Integration Flow

The New Part Request process is triggered from a PX and will be a synchronous process; hence the process is designed based on the Requestor – Provider pattern as shown in the figure.



1. The PX creates the Agile request ABM (*AgileCreateItemABM*) for the *CreateItemAgileReqABCS* and invoke the same.
2. The request *AgileCreateItemABM* is transformed to the *CreateItemEBM* for NPR process.
3. Using the Asynchronous Message Pattern NPR Process is invoked on the *ItemEBS* by the *CreateItemAgileReqABCSImpl* with the *CreateItemEBM* as input.
4. The *CreateItemEBM* is routed to the *ReserveItemSAPProvABCS* with the *CreateItemEBM* as input.
5. The *ReserveItemSAPProvABCS* will implement the business logic for generating the New Part number in SAP.
6. A response *CreateItemResponseEBM* with New Part Number is returned to the *ItemResponseEBS* and routed back to the *CreateItemAgileReqABCSImpl*.
7. The *CreateItemAgileReqABCSImpl* transforms the response *CreateItemResponseEBM* to Agile response *AgileCreateItemResponseABM*.
8. *CreateItemAgileReqABCS* receives *AgileCreateItemResponseABM* and returns back to the PX.
9. The Part Number from the response ABM (*AgileCreateItemResponseABM*) is returned to the web client and displayed in the Number field in the Create Item screen.

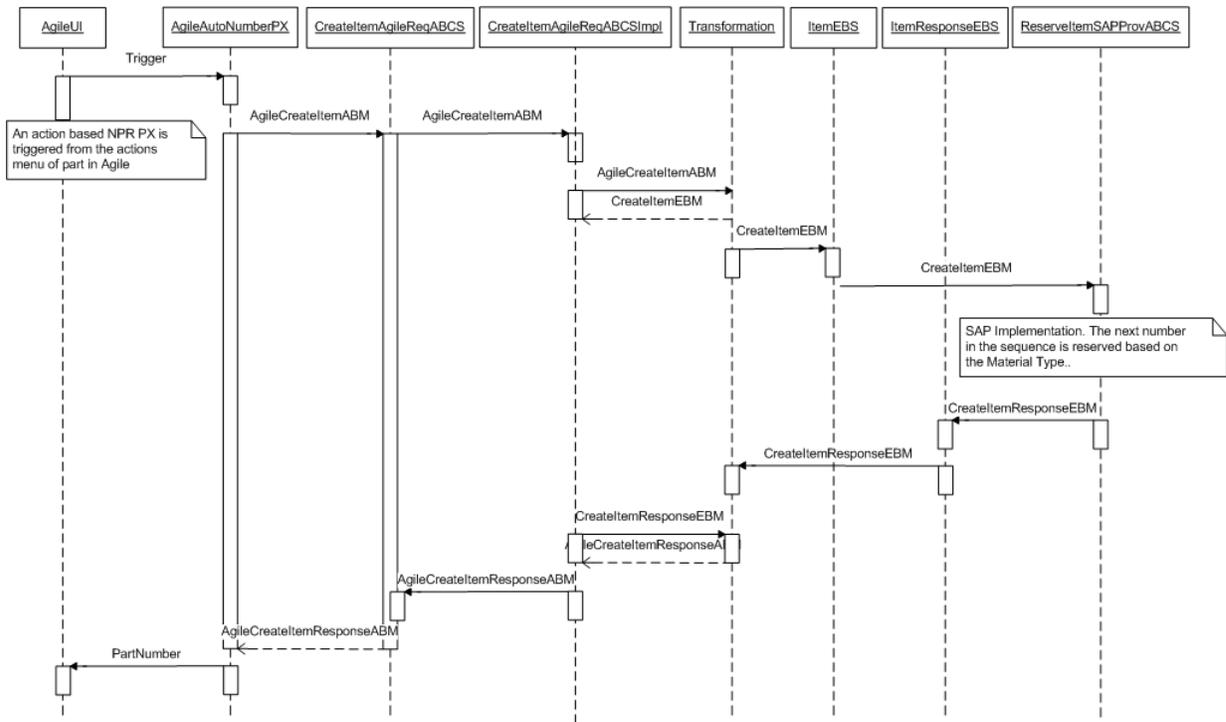
NPR Services Orchestration

NPR Process itself is an Asynchronous process whereas PX expects the response synchronously. There could be a delayed response from the provider the *CreateItemAgileReqABCSImpl* is implemented as an *Asynchronous BPEL process*. To facilitate this *Synchronous BPEL process CreateItemAgileReqABCS* is used to invoke the *CreateItemAgileReqABCSImpl* and receive the response back. *CreateItemAgileReqABCS* is invoked by the PX synchronously.

The Asynchronous Message pattern Request-Delayed Response Pattern with One-Way calls in Enterprise Business Services is used here with EB MID as the Correlation ID.

Between the *CreateItemAgileReqABCS* and *CreateItemAgileReqABCSImpl* ABMHeaderId is used as the Correlation ID.

AutoNumber PX



#	Activity	Remarks
1	Agile NPRAutoNumberPX is triggered	The Agile NPRAutoNumberPX is triggered by an Agile user from the Agile Web client as part of New Part creation in Agile.
2	Invoke CreateItemAgileReqABCS with AgileCreateItemABM as input	NPRAutoNumberPX process invokes the CreateItemAgileReqABCS with AgileCreateItemABM ABM as input.
3	Invoke CreateItemAgileReqABCSImpl with	NPRAutoNumberPX process invokes the CreateItemAgileReqABCSImpl with

#	Activity	Remarks
	AgileCreateItemABM as input	<i>AgileCreateItemABM</i> ABM as input.
4	CreateItemAgileReqABCImpl invokes the ItemEBS with CreateItem operation	An invoke activity in <i>CreateItemAgileReqABCImpl</i> transforms the <i>AgileCreateItemABM</i> ABM to <i>CreateItemReqMsg</i> EBM and invokes the <i>CreateItem</i> operation on <i>ItemEBS</i> with <i>CreateItemReqMsg</i> as the input. <i>CreateItemReqMsg</i> will be routed to SAP <i>ReserveItemSAPProvABCS</i> .
5	ReserveItemSAPProvABCS on the SAP first transforms & then calls the SAP service	<i>ReserveItemSAPProvABCS</i> will first transform <i>CreateItemReqMsg</i> into the input of SAP Service to reserve the item in SAP and then calls that service. This would create an Item in using a generic part number generation process (mainly using a sequence). <i>ReserveItemSAPProvABCS</i> invokes <i>ItemResponseEBS</i> with <i>CreateItemResponseMsg</i> as input which is routed back to the <i>CreateItemAgileReqABCImpl</i> .
6	CreateItemAgileReqABCImpl first transforms & then returns the response to CreateItemAgileReqABC	<i>CreateItemAgileReqABCImpl</i> will first transform <i>CreateItemResponseMsg</i> to <i>AgileCreateItemResponseABM</i> and returns the same to <i>CreateItemAgileReqABC</i> .
7	CreateItemAgileReqABC returns AgileCreateItemResponseABM to NPRAutnumberPX .	
8	NPRAutnumberPX returns the partNumber to New Part Creation UI in Agile	<i>NPRAutnumberPX</i> gets the partNumber from the <i>AgileCreateItemResponseABM</i> and returns it to the New Part Creation UI in Agile web client which gets displayed in the Number field.

AIA Services for NPR

Core AIA Components for NPR

The Process Integration for NPR uses the following industry components:

EBOs	ItemEBO
EBMs	CreateItemEBM CreateItemResponseEBM
EBSs	ItemEBS

Core Components Locations

EBO & EBM XSD files	http://[HOST:PORT]/AIAComponents/EnterpriseObjectLibrary/Core/EBO/
WSDL files	http://[HOST:PORT]/AIAComponents/EnterpriseBusinessServiceLibrary/Core/EBO/

- For detailed documentation of individual EBOs, click **EBO Name link** on the *Integration Scenario Summary* page in the *Oracle AIA Console*. You can also use the *Integration Scenario Summary* page to search for and view integration scenarios that utilize a particular EBO or EBS.

For more information, see *Oracle Application Integration Architecture - Foundation Pack: Core Infrastructure Components Guide*, “Using the BSR,” Using the BSR UI to View Integration Scenarios.

- EBOs can be extended, for instance, to add new data elements. These extensions are protected, and will remain intact after a patch or an upgrade.

For more information, see *Oracle Application Integration Architecture – Foundation Pack: Integration Developer’s Guide*, “Extensibility for AIA Artifacts.”

Agile & SAP Components for NPR

Services	Agile (Requester)	SAP (Provider)
ABMs	AgileCreateItemABM AgileCreateItemResponseABM	BAPI_STDMATERIAL_GETINTNUMBER BAPI_STDMATERIAL_GETINTNUMBERResponse
ABCS	CreateItemAgileReqABCS CreateItemAgileReqABCSImpl	ReserveItemSAPProvABCS
EBS	ItemEBS	ItemResponseEBS

Component Locations

ABO XSD files	http://<servername>:<portname>/AIAComponents/ApplicationObjectLibrary/Agile/ABO/Item/V1/
ABM XSD files	http://<servername>:<portname>/AIAComponents/ApplicationObjectLibrary/Agile/ABM/Item/V1/ http://<servername>:<portname>/AIAComponents/ApplicationObjectLibrary/SAP/Release1/Core/ABM/Item

Integration Services for NPR

1. ItemEBS

ItemEBS is the Enterprise Business Service, which exposes the operations related to the Item Integration on the Item EBO. The following are the routing rules:

ItemEBS ESB service

1. CreateItemAgileReqABCSEImpl
Route CreateItemEBM to ReserveItemSAPProvABCS

ItemResponseEBS ESB service

1. ReserveItemSAPProvABCS
Route CreateItemResponseEBM to CreateItemAgileReqABCSEImpl

2. CreateItemAgileReqABCSEImpl

CreateItemAgileReqABCSEImpl will transform the Agile message (*AgileCreateItemABM*) into *CreateItemEBM* & call the routing service to Create Item and get the *CreateItemResponseEBM* response from the SAP system. It then transforms the *CreateItemResponseEBM* response from the routing EBS back to an Agile message (*AgileCreateItemResponseABM*) & send it to *CreateItemAgileReqABCSEImpl* which returns it to the calling Agile PX.

Flow

1. Receives *AgileCreateItemABM* from *CreateItemAgileReqABCSEImpl*, which gets the same from *NPRAutonumberPX* process extensions.
2. Transforms this message into the *CreateItemEBM* -
 - a. Populates EBM header
Determines Target System ID(s) and adds into the EBM header to control routing
 - b. Validates Required fields
 - c. Maps to EBM

Note Refer mapping sheet for complete details of field mappings.

3. Call Target 'ItemEBS' Service with operation *CreateItem*
4. Transform *CreateItemResMsg* Response EBM(*CreateItemResponseEBM*) to *AgileCreateItemResponseABM* Agile message.

Note Refer mapping sheet for complete details of field mappings.

5. Send '*AgileCreateItemResponseABM*' back to *CreateItemAgileReqABCSEImpl*, which in turn sends it back to the respective PX.

CreateItemAgileReqABCImpl has the following transformation:1.
 AgileCreateItemABM_to_CreateItemEBM2.
 CreateItemResponseEBM_to_AgileCreateItemResponseABM

3. ReserveItemSAPProvABCS

This is a single operation service. This accepts a Material Type of an Item information message as a request and returns a response.

In Agile to SAP flow, ReserveItemSAPProvABCS is used for transforming CreateItemEBM into BAPI_STDMATERIAL_GETINTNUMBER ABM, which invokes the Reserve Item operation in SAP.

In return flow, BAPI_STDMATERIAL_GETINTNUMBER sends BAPI_STDMATERIAL_GETINTNUMBERResponseABM which is transformed by ReserveItemSAPProvABCS into CreateItemResponseEBM.

This service is implemented as Asynchronous BPEL Process.

NPR Integration Customization Points

Agile

CreateItemAgileReqABCImpl (Agile Process Item requestor flow)	AgileCreateItemABM_to_CreateItemEBM_Custom.xml	Request ABM to Request EBM
	CreateItemEBM_EBMHeader_Custom.xml	Request EBM to EBM Header

SAP

ReserveItemSAPProvABCS	GenerateItemEBMtoABM_Custom.xml	Request EBM to Request ABM
	GenerateItemABMtoEBM_Custom.xml	ResponseABM to ResponseEBM

Essential Properties and DVMs for NPR

The following mandatory DVMs and Properties (in AIAConfigProperties.xml) should be set for the New Part Request process to flow successfully.

DVM

- ITEM_PRIMARYCLASSIFICATIONCODE

Chapter 4: Process Integration for Item Attribute Update

This chapter discusses:

- Item Attribute Update Process
- IA Update Process Integration Solution Assumptions
- IA Update Integration Sequence
- AIA Services for IA Update
- IA Update Integration Customization Points

Required as part of the Manufacturing Update process for product information synchronization, the Item Attributes information from ERP system is required to be updated in Agile. The term Item applies to both Parts and Documents in Agile considering the documents are integrated in to SAP as part object only and not as Document Info Record (DIR). DIR is not in scope for this version of PIP.

Since item attribute information can exist in multiple plants in the ERP system, it is supported only for cases where the system can accurately determine which plants(s) in ERP to pick up item attribute information from.

Item Attribute Update Process

The update of Item Attribute information from ERP to PLM is done event based and in near real time.

The following steps are executed:

1. The process kicks off when configured field/s are modified and saved on an item in SAP.
2. Retrieve the attributes that have changed on the item in SAP. This data is retrieved from one or more organizations (plants) as per site-org mappings or from the configured single organization.
3. Update the information into Agile.

The input consists of the item attribute values, which need to be updated in Agile. Unique identifiers for the item, along with values for all the attributes mapped for transfer from ERP to Agile are provided as input.

As of Agile 9.2.2.6, an item number is the only attribute that is required for uniquely identifying the item to be updated. A planned enhancement in the next major release of Agile PLM would require that the item revision be specified as part of the unique key as well, since all the item attributes could potentially be under revision control with that enhancement. Even in Agile 9.2.2.2, Item Description and Mass can have different values for different revisions of the item.

A unique item revision in Agile is composed of a Rev Number as well as a Change Order number (since it's possible for certain types of Change Orders in Agile to revise an item without changing its revision number). In the context of integration, however, updates to item attributes applies to the latest released revision in most cases.

The following guidelines are followed when querying an item from Agile for update:

- In the first release of integration, developed on Agile 9.2.2.5, only the item number is used to query the item to be updated. The item number will pull up the latest released revision of the item by default, and all updates are made to the latest released revision of the item.
- A future release of the integration should plan on enhancing this capability to accept a revision number (and optionally, a Change number) along with the item number to pull up a unique item revision for update (if a Change number is not specified, the latest released Change corresponding to that revision is assumed).

Processing

Item attribute update is done near real time, or batch. In order to achieve this implementation needs one time configuration of change pointers and *Application Link Enabling* (ALE) in SAP. For more details please refer to Chapter 5: Implementing the Process Integration Pack Section: Setup for SAP.

As part of this configuration, all the fields that need to be updated back in to Agile will be configured such that any changes saved to these fields on an item would trigger the update process immediately. For the batch process, it is required to schedule the **IDOC** as a background job.

The moment user saves the changes on item in SAP the change pointers configuration would trigger an event. The event will push the data to the configured partner (ALE configurations) and in this case it is Agile system. All the changes made on the item are captured and will be updated on the specified item in Agile. This process triggers once for each item change save event.

Exceptions

In all cases, the exception message displayed to the user must contain the item number that was being updated along with other supporting information as indicated.

- Insufficient privilege to discover, read or update the item
- Invalid field value
 - Invalid list value
 - Invalid data format for text, money or date fields
- Item does not exist

IA Update Process Integration Solution Assumptions

If item information needs to be retrieved from multiple plants in SAP (ERP) system, the following constraints must be met in order to support this process:

1. Agile multi-sites is configured
2. There is a one-to-one mapping between Agile sites and ERP plants
3. The attribute(s) to be updated with ERP data are on the Sites tab of the item

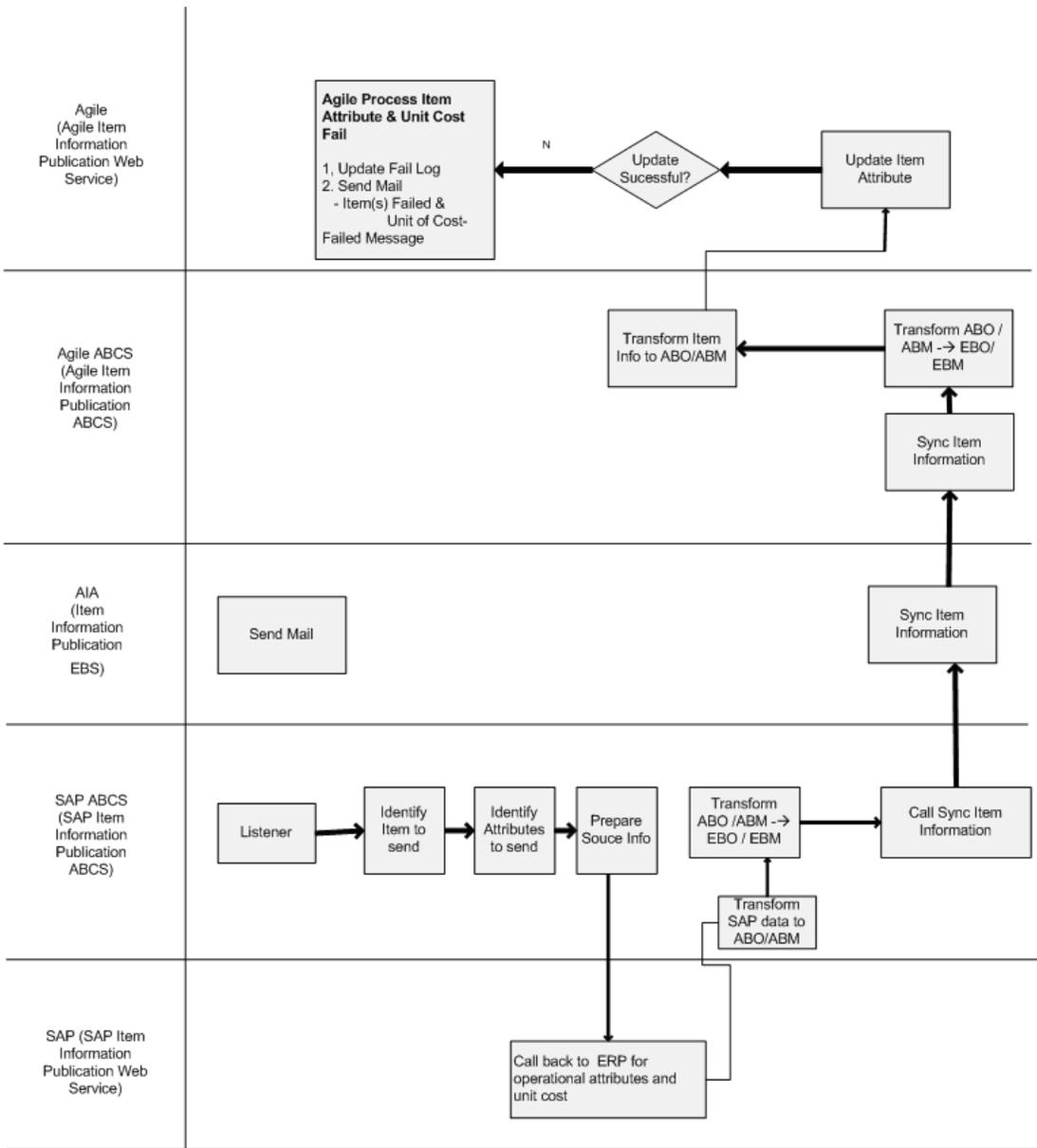
This release of the integration intends to solve a use case where any given Change is interfaced to only one destination system.

The following exception conditions are tested to make sure that they return user-friendly error messages. In all cases, the exception message displayed to the user must contain the Item number that was being updated and the step at which the error occurred, along with other supporting information as needed.

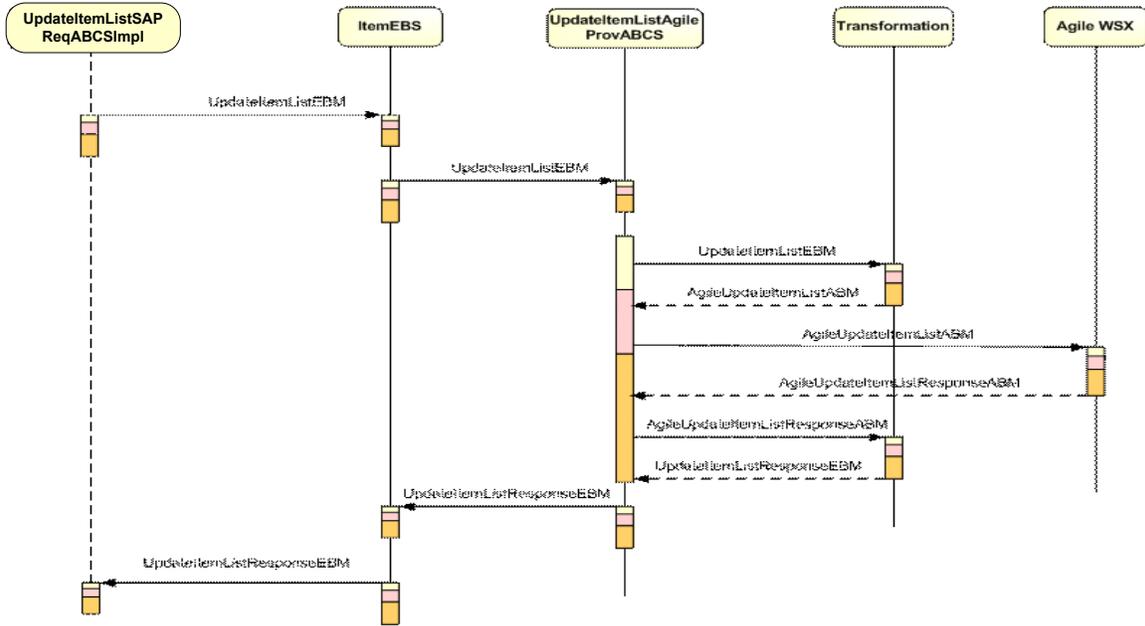
- Insufficient privilege to discover, read, or update attributes on the Item object
- Invalid field value (indicate the field for which the value is incorrect, and the value that is being passed on to the field)
- Item object does not exist

Note: New Item Creation is not part of the scope for this activity. It is assumed that the item exists in both Agile and SAP, by means of a prior New Part Introduction or independent offline load processes.

IA Update Integration Sequence



IA Update Services Orchestration



#	Activity	Remarks
1	SAP Item Operational Attribute Update Action Trigger	SAP Item Operational Attribute Update Action trigger Invokes the <i>UpdateItemListSAPReqABCImpl</i>
2	UpdateItemListSAPReqABCImpl calls UpdateItemListSAPReqABCImpl	UpdateItemListABM will be passed to UpdateItemListSAPReqABCImpl as the input
3	UpdateItemListSAPReqABCImpl invokes ItemEBS	An invoke activity in <i>UpdateItemListSAPReqABCImpl</i> invokes the <i>UpdateItemList</i> operation on ItemEBS with <i>UpdateItemListEBM</i> as input
4	ItemEBS routes UpdateItemListEBM to UpdateItemListAgileProvABCImpl	<i>ItemEBS</i> routes <i>UpdateItemListEBM</i> as input to <i>UpdateItemListAgileProvABCImpl</i>
5	UpdateItemListAgileProvABCImpl invokes Agile's Item Operational Attribute Update Web Service	<i>UpdateItemListAgileProvABCImpl</i> transforms the <i>UpdateItemListEBM</i> to <i>AgileUpdateItemListABM</i> and invokes <i>UpdateItem</i> service operation on Agile Web Service to update Item cost related attribute information from SAP to Agile. The <i>AgileUpdateItemListResponseABM</i> is returned back to <i>UpdateItemListAgileProvABCImpl</i>

AIA Services for IA Update

Core AIA Components for IA Update

The Process Integration for IA Update uses the following industry components:

EBOs	<ul style="list-style-type: none"> ItemEBO
EBMs	<ul style="list-style-type: none"> UpdateItemListEBM UpdateItemListResponseEBM
EBSs	<ul style="list-style-type: none"> ItemEBS ItemResponseEBS

Core Components Locations

EBO & EBM XSD files	http://[HOST:PORT]/AIAComponents/EnterpriseObjectLibrary/Core/EBO/
WSDL files	http://[HOST:PORT]/AIAComponents/EnterpriseBusinessServiceLibrary/Core/EBO/

- For detailed documentation of individual EBOs, click **EBO Name link** on the *Integration Scenario Summary* page in the *Oracle AIA Console*. You can also use the *Integration Scenario Summary* page to search for and view integration scenarios that utilize a particular EBO or EBS.

For more information, see *Oracle Application Integration Architecture - Foundation Pack: Core Infrastructure Components Guide*, “Using the BSR,” Using the BSR UI to View Integration Scenarios.

- EBOs can be extended, for instance, to add new data elements. These extensions are protected, and will remain intact after a patch or an upgrade.

For more information, see *Oracle Application Integration Architecture – Foundation Pack: Integration Developer’s Guide*, “Extensibility for AIA Artifacts.”

SAP & Agile Components for IA Update

Services	SAP (Requester)	Agile (Provider)
ABMs	UpdateItemListABM	AgileUpdateListABM AgileUpdateListResponseABM
ABCS	UpdateItemListSAPReqABCImpl UpdateItemListSAPReqABCS	UpdateItemListAgileProvABCImpl

Services	SAP (Requester)	Agile (Provider)
EBS	ItemEBS	ItemResponseEBS

Component Locations

ABO XSD files	http://<servername>:<portname>/AIAComponents/ApplicationObjectLibrary/Agile/ABM/Item/V1/
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Integration Services for IA Update

1. ItemEBS

ItemEBS is the Enterprise Business Services which exposes the following operations related to the Item Attribute Update Integration on the ItemEBO.

The following are the routing rules:

ItemEBS ESB service

- UpdateItemListSAPReqABCImpl
 - Route UpdateItemListEBM to UpdateItemListAgileProvABCImpl

2. UpdateItemListSAPReqABCImpl

This is called when there is a need to update multiple items in Agile with all the operational attributes as well as attributes such as unit cost from SAP. This is a push from SAP to the Agile.

- The requester ABCS, defined as a "synchronous" process, receives a list of Item Ids from the SAP Change Pointer program. The lists of Ids are those which have last_update_date greater than the last run date of the Change Pointer.
- The requester BPEL process filters the list of Ids to a list of Ids that are present in the xref tables in the FMW layer. This provides a list of Items that were actually from the Agile system alone. The original list of Item Ids may be those which are from non-Agile sources as well.
- The BPEL process then makes an ESB call out for end point virtualization. This ESB layer has an SAP Adapter which calls the BAPI that provides the Item details that is needed to be sent out. This is the Item ABM.
- A transformation converts the ABM to an EBM.
- An Asynchronous request-delayed response call is made to the ItemEBS with the ItemListEBM. This is routed to the appropriate provider.
- The BPEL instance gets invoked when the asynchronous call gets back from the provider and provides the status of the transaction back to the caller concurrent program (since that is a synchronous call).
- The concurrent program logs the status of this call.

3. UpdateItemListAgileProvABCImpl

UpdateItemAgileProvABCImpl is used to facilitate the communication between ItemEBS and Agile web service used for updating the Items' operational attributes, item cost information in batch mode in Agile.

- Receives UpdateItemReqMsg that contains UpdateItemEBM
- Transform operation is called to convert the UpdateItemEBM into AgileUpdateItemABM.
- AgileUpdateItemABM is sent as input to the web service operation UpdateItems (Coarse Grained APIs on Agile side) to update Items in Agile.
- AgileUpdateItemResponseABM is received on successful execution of Coarse Grained API.
- Transform operation is called to convert the AgileUpdateItemABM to UpdateItemResponseEBM, which is returned as output of this BPEL process.
- If the UpdateItems service operation fails on the Agile side, a new Fault is generated and is sent across with appropriate error message.

IA Update Integration Customization Points

SAP

UpdateItemSAPReqABCImpl	XFormABMToEBM_Custom.xsl	Custom transformations for Item Request ABM to Request EBM
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Agile

UpdateItemAgileProvABCImpl (Agile update item attributes provider flow)	AgileUpdateItemResponseABM_to_UpdateItemResponseEBM_Custom.xsl	RespABM to RespEBM (custom element)
	AgileUpdateItemResponseABM_to_UpdateItemResponseEBM_Impl.xsl	RespABM to RespEBM (main)
	UpdateItemEBM_to_AgileUpdateItemABM_Impl.xsl	ReqEBM to ReqABM (main)

Essential Properties and DVMs for IA Update

The following mandatory DVMs and Properties (in AIAConfigProperties.xml) should be set for the Item Attribute Update process to flow successfully.

DVM

- AGILE_SITE_TARGET_MAPPING
- AGILE_TARGET_SITE_MAPPING
- ITEM_PRIMARYCLASSIFICATIONCODE

Chapter 5: Implementing the Process Integration Pack

This chapter discusses:

- Setting up the Participating Applications
- Loading Cross Reference Data
- Configuring the PIP
- Domain Value Maps
- Application Interfaces
- Handling Errors

For complete information on Process Integration Pack, refer Oracle AIA Installation Guide.

Prerequisites

Deployment of Agile PLM PIP is carried out by AIA Installer. However, for conducive functioning, this requires certain settings and configurations in Partner Applications like Agile PLM and SAP ERP, and in AIA Configuration Property files.

The following applications should be existing before the PIP is installed:

- SOA 10.1.3.4 should be installed and relevant patches are to be applied.
- AIA Foundation Pack - FP2.5 should be installed with relevant patches applied if any.
- Agile PLM must be installed and configured accordingly.
- SAP environment must be installed and configured accordingly.

Setting up the Participating Applications

Agile PLM

After installation of Agile PIP, the Agile Administrator is required to setup Agile Content Services. The following are the settings/configurations:

This section discusses the following post-installation configurations using Java client for the Agile PLM SAP PIP:

1. Create new JMS Destination.
2. Create new events for ECO, MCO and SCO.
3. Create new subscribers for ECO, MCO and SCO.
4. Creating Auto Numbers
5. Updating Change Order Page Two Fields
6. Configuring Sites
7. Configuring Site Attributes
8. Configuring and Deploying PX

Creating New JMS Destination

To create new JMS Destination:

1. Login to Agile Java Client using the login credentials provided.
2. Navigate to **Admin, System Settings, Agile Content Service, Destinations**.
3. Click  (New) button to create a new JMS Destination.

Populate the appropriate Name, Description, Username (SOA Application server Username for ex:oc4jadmin), password (SOA Application server Password), Provider Context Factory, Connection Factory, Default Provider URL (SOA Application server details: For Ex: opmn:ormi://<SOA_HOSTNAME>:<OPMN_REQUESTPORT>:<OC4J_INSTANCE>), and Destination Name. You can get these values from the SOA Suite Administrator.

4. Test the JMS Destination. The test needs to be successful.

Create New Events for ECO, MCO and SCO

To create new events for ECO, MCO and SCO

1. Navigate to **Admin, System Settings, Agile Content Service, Events**.

2. Click  button to create new Event(s).
 - a. Enter **Name** and **Description**.
 - b. Choose relevant workflows.
 - i. For SCO choose **Default Site Change Orders**.
 - ii. For ECO choose **Default Change Orders**.
 - iii. For MCO choose **Default Manufacturer Orders**.
 - c. Choose the workflow status as **Released**.

Creating New Subscribers for ECO, MCO and SCO

To create new subscribers for ECO, MCO and SCO:

1. Navigate to **Admin, System Settings, Agile Content Service, Subscribers**.
2. Click  button to create new Subscribers for ECO, MCO and SCO.
 - a. Enter a **Name** and a **Description** for subscribers.
 - b. Associate the workflow as Automated Transfer Orders(ATO).
 - c. Choose **All Change Orders**, **All Manufacturer Orders**, and **All Site Change Orders** as **Criteria** for ECO, MCO and SCO respectively.
 - d. Choose appropriate **Event** that you created for ECO, MCO and SCO.
 - e. Click **OK**.
3. Select the **Subscriber Details** tab to add the subscriber detail information.
4. Click  button to create a new row.

This opens Subscriber Detail window.

 - a. Click **Destinations** field and select JMS Destination that was created.
 - b. Click **Filters** field and choose the following filters for **Filters** field using **> button** in the pop up that appears.
 - i. ECO: **Default Change Order Filter**
 - ii. MCO: **Default Manufacture Order Filter**.
 - iii. SCO: **Default Site Changes Order Filter**.

Note: Also add the **Default Item Filter** as filter for all the three; ECO, MCO and SCO.

- c. Click **Role(s)** field and select all the roles using **> button** in the pop up that appears.
- d. Select **aXML** as **Format**.

- e. Select **English** as **Language**.
 - f. Select **All** as **Site**.
5. Select each subscriber at a time and click  button to enable all the created subscriptions.
 6. Navigate to **Admin, System Settings, Agile Content Service, Filters**.
 7. Select **Default Item Filter** and double-click.
 8. Navigate to the **Filters** tab and append **Sites** to the **View Tabs** field value.
 - a. Choose **Tab and Items** in the **BOM Options** field.
 - b. Select **All Levels** checkbox in the **BOM Level** field.
 - c. Choose **Tab and Manufacturer Parts** in the AML Options field.
 9. Select **Default Change Order Filter** and double-click.
 10. Navigate to Filters tab and,
 - a. Choose **Redline Changes Only** option as **No**.
 - b. Choose **Affected Items Options** as **Tab and Items**.
 11. Select **Default Site Change Order Filter** and double-click.
 12. Navigate to Filters tab and,
 - a. Choose Redline Changes Only option as **No**.
 - b. Choose Affected Items Options as **Tab and Items**.
 13. Navigate to **Admin, User Settings, Privileges**.
 14. Click  button to create **Modify** privileges for Changes, MCO and SCO.
 - a. Enter **Name** and **Description**.
 - b. Select **Yes** for **Enabled**.
 - c. Select **Modify** for **Privilege**.
 - d. Click **Criteria** field and choose the relevant criteria for each of the Changes, MCO and SCO.
 - e. Click **Applied to** field and select all attributes, including the invisible/disabled attributes.
 - f. Click **OK**.

This opens the privilege screen of the entity for which you set privileges. You now need to assign roles to the privileges that you have created for Changes, MCO, and SCO.
 15. Navigate to **Where Used** tab.
 16. Click  button and select the roles in the **Select Roles** pop up.

17. Click **OK** to assign these roles to the privilege that you have created.
18. Navigate to **Admin, User Settings, Privileges** and double click **Read**.
19. Click  button in **Privileges to Read** screen to create **Read** privileges for MCO.
20. In the Create Privilege pop up that opens
 - a. Enter **Name** and **Description** for the privilege in respective fields
 - b. Choose **Yes** for **Enabled** field.
 - c. Choose **Read** for **Privilege** field.
 - d. Choose **All Manufacturer Orders** for **Criteria** field.
 - e. Choose both visible and invisible/disabled attributes in the **Applied to** field.
 - f. Click **OK**.

This opens privilege information screen for MCO.

21. Navigate to **Where Used** tab.
22. Click  button to select roles and assign to the created privilege.
23. Modify the **Read Changes** and **Read Items** to include **Admin** user.
24. Click **OK**.
25. Navigate to **Admin, Data Settings** and double click **Classes**
26. Double click **Parts** in Classes window.
27. Navigate to **User Interface Tabs** tab.
28. Double click **Page Two**.
29. Navigate to **Attributes Page Two** tab.
30. Check for the attribute **Numeric01** and double click it and change the **Name** to **ERP Manufacturer Cost**.
31. Follow the same process and change the following:
 - a. Change **Name** of **Numeric02** to **ERP Available Quantity**.
 - b. Change **Name** of **Numeric03** to **ERP On Hand Quantity**.
 - c. Change **Name** of **Numeric04** to **ERP Reserved Quantity**.

Follow the above process and change attributes **Numeric01**, **Numeric02**, **Numeric03** and **Numeric04** names for **Document Classes** to *ERP Manufacturer Cost*, *ERP Available Quantity*, *ERP On Hand Quantity*, *ERP Reserved Quantity* respectively.

Note: If the user does not have Sites version on the Agile application then, perform the steps till the end of this section. Else move to the next section.

32. Navigate to **Admin, Data Settings** and double click **Classes**.

33. Double click **Parts** in Classes window.

Note: Repeat the process also for Document.

34. Navigate to **User Interface Tabs** tab.

35. Double click **Page Two**.

36. Navigate to **Attributes Page Two** tab.

37. Check for the **MultiList01** and double click it and change the **Name** to **OrganizationCodes**.

You also need to assign the values that are specific to sites or organization codes on the Agile side.

38. Click **New List** button to create the **List** of values.

39. Click **OK**.

This opens **Create a new list value** screen.

40. Enter the values for **Name** and **Description** specifying the list of Organizations used.

41. Click **Add**.

42. Navigate to **List** tab.

43. Click  button to add the batch list.

44. Add batch list values in the pop up window.

45. Click **OK**.

46. Ensure that **Page Two** on these classes is enabled.

Creating Auto Numbers

To create auto numbers:

1. Navigate to **Admin, Data Settings, AutoNumbers**.

2. Click  button to create auto numbers for NPR Document Number.

3. Enter the following fields in the Define the AutoNumber screen.

a. Enter name as NPR Document Number

b. Choose **Yes** for **Enabled**.

- c. Choose **Custom** for **Type**.
 - d. Choose **Document** for **Where Used**.
 - e. Choose **com.oracle.aia.npr.NPRAutoNumber** for **Custom AutoNumber**.
 - f. Click **OK**.
4. Click  button to create auto numbers for NPR Part Number.
 5. Enter the following fields in the Define the AutoNumber screen:
 - a. Enter name as NPR Part Number
 - b. Choose **Yes** for **Enabled**.
 - c. Choose **Custom** for **Type**.
 - d. Choose **Part** for **Where Used**.
 - e. Choose **com.oracle.aia.npr.NPRAutoNumber** for **Custom AutoNumber**.
 - f. Click **OK**.

Updating Change Order Page Two Fields

To update Change Order Page Two fields:

1. Navigate to **Admin, DataSettings, Classes**.
2. Double click **Classes** and navigate to **Changes, Change Orders**.
3. Double click **Change Orders** and navigate to **User Interface Tabs** in **Change Order** window.
4. Double click Page Two and Navigate to Attribute Page Two tab.
5. Select **Text02** and double click.
6. Set Visible to **Yes** in Attributes **Text02** window.
7. Click **Save**.
8. Navigate to **Admin, User Settings, Privileges** and double click **Read**.
9. Click  to create a new Read privilege to read all the ECO fields.
10. Select required fields in **Applied To** field in Read Changes Page Two window.
11. Click **OK**.
12. Navigate to **Where Used** tab.
13. Click  to select roles and select appropriate users in **Select Roles** window.

Use the same procedure that you used for setting Read privileges and set Modify privilege for ECO fields.

Configuring Sites

You need to configure sites only if the Agile application is enabled with Sites version.

To configure sites:

1. Login to web client using `http://<AGILE_HOSTNAME>/Agile/PLMServlet`.
2. Click  button.
3. Select **Sites** from the options.
4. Select **Site** for **Type** and enter **Site Name**.
5. Click **Finish**.

Configuring Sites Attributes

To configure Site attributes:

1. Navigate to **Admin, Data Settings, Classes**.
2. Double click **Classes** and navigate to **Items, Parts** in Classes window.
3. Double click **Parts** and navigate to **User Interface Tabs, Sites**.
4. Double click **Sites** and navigate to **Attributes: Sites** tab.
5. Select **Numeric01** and double click and in the window that opens
 - a. Change **Name** to **UnitCostAttribute**.
 - b. Set **Visibility** to **Yes**.
6. Select **Numeric02** and double click and in the window that opens
 - a. Change **Name** to **AvailableQuantityAttribute**.
 - b. Set **Visibility** to **Yes**.
7. Select **Numeric03** and double click and in the window that opens
 - a. Change **Name** to **OnHandQuantityAttribute**.
 - b. Set **Visibility** to **Yes**.
8. Select **Numeric03** and double click and in the window that opens
 - a. Change **Name** to **ReservedQuantityAttribute**.

- b. Set **Visibility** to **Yes**.

Setting up SAP

SAP ALE (Application Link Enabling) interface is a part of integration layer within SAP's Business Framework Architecture (BFA). It is a component based architecture that enables business process integration and asynchronous data communication either between two or more SAP systems or between SAP and external systems.

Application systems are loosely coupled in an ALE integrated system and the data is exchanged asynchronously. Consistency is maintained as data is exchanged between application systems in a controlled manner.

The following are the details that have to be maintained for ALE Configuration. Each step is dealt in detail with the help of a screen shots.

1. Defining Logical System
2. Assigning Logical Systems
3. Modeling Distribution Scenario
4. Defining RFC Destination
5. Defining Ports
6. Defining Partner Profiles
7. Activation of Change Pointers Globally

Defining Logical System

1. Enter transaction code **SALE** in the transaction space. Go to *Sending and Receiving Systems > Logical Systems*. Select **Define Logical System** option.
2. In *Change View "Logical System" Overview* screen, select **New Entries** option.
3. In *New Entries: Overview of Added Entries* screen, type in the **logical system names** which have to be assigned to the systems that are in communication and **save** the entries.

Assigning Logical Systems

1. Enter the transaction code **SALE**. Go to *Sending and Receiving Systems > Logical Systems*. Select **Assign Client to Logical Systems** option.
2. In *Change View "Clients": Overview* screen, select **New Entries** option.
3. As per the selection, user would be redirected to the *New Entries: Details of Added Entries* screen. Enter the Client & Logical System defined earlier. Also enter the other appropriate values and **save** the data.

Modeling the Distribution Scenario

1. Enter transaction code **BD64**, switch to **edit** mode and select **Create Model View**.

2. In *Create Model View* screen, enter **Short text**, **Technical name**, **Start date** and **End Date**.
3. Select the Model view and Add Message Type 'MATMAS. Save the entries. Select the Model view and then choose the EDIT option in the menu bar. Choose model view & then Distribute. The Model view is Distributed now.

Defining RFC Destination

1. Enter transaction **SM59**, choose **TCP/IP connections** and click on **Create** button in the menu..
2. In *RFC Destination* screen, enter data in **RFC destination**, **Connection type** as **T** and **Description**, respectively.
 - a. Click **Enter** to enable TCP/IP connection related fields.
 - b. Choose **Registration** and provide **Program ID** and **save** the entries.

Defining Ports

1. Enter transaction code **WE21** in the transaction space..
 - a. Select **Transactional RFC** and choose **Create** option.
2. In *Ports in IDoc processing* pop-up, select **Generate port name** option.
 - a. Provide **port name**, if **Own port name** option is selected.
3. In *creating a tRFC port* screen, enter **Description**, **RFC Destination** and select an appropriate **Version** and **save** the entries.

Defining Partner Profiles

1. Enter transaction code **WE20** in the transaction space.
2. From the drop down list, choose **Partner Type LS** and select **Create** option.
3. In *Partner profiles* screen, add message type **SYNCH** in **out bound parameters** and **MATMAS** in **inbound parameters**. Provide any other relevant information, like ports, idoc type and **save** the inputs.

Partner profiles: Outbound parameters screen displays the parameters and the setup of *ALE Configuration* is completed.

Activating Change Pointers Globally

This section explains about the configuration of **Change Pointers** for triggering **MATMAS Idoc** to send **Material Attributes** from SAP to Agile.

1. Enter transaction code **BD61** in the transaction area. In the *Activate Change Pointers Generally* screen, select **Change Pointers** checkbox and save the transaction.

Activation of Change Pointers for MATMAS Message Type

Enter transaction code **BD50**. In *Change View "Activate Change Pointers for Message Type": Overview* screen, select **MATMAS** message type checkbox and Save the transaction.

Activation of Change pointers for Individual fields in Material Master

Enter transaction code **BD52**. In the work area give the Message Type as MATMAS and click continue. Delete those fields for which Change Pointer activation are not required. Save the transaction.

Reference Material Setup in SAP

To create an Item in SAP, reference material need to be configured based on the Material type. In case if the Item need to be created in more than one Plant then reference material need to be maintained in all the Plants. The purpose of this reference material is to default all the mandatory values which are needed for creation of material in SAP. This reference material varies from customer to customer based on their implementation setup.

Loading Cross Reference Data

This PIP uses the xref_data table present in AIA schema to maintain a cross-reference between Agile and SAP. This cross-reference information helps map Agile Parts/Documents/Change Orders to SAP Items/Change Orders.

There are two main virtual tables in the aia.xref_data table that maintain this cross-reference information.

- CHANGE_CHANGEID - maintains all the Change Order information
- ITEM_ITEMID - maintains Item information.

For example:

- A Change Order ECO001 contains two revised items
 - P0001 in site 'Detroit'
 - P0002 in site 'Michigan'
- Both these revised items have component items.
 - P0001 has component items C0001 and C0002
 - P0002 has component items C0003 and C0004
- When this Change Order is released from Agile to the SAP, the following entries are made in the CHANGE_CHANGEID virtual table.

XREF_TABLE	XREF_COLUMN	ROW_NUMBER	VALUE
CHANGE_CHANGEID	AGILE_01	E45E015046AF11DD9F2E 436FB39961A8	ECO001::DETROIT
CHANGE_CHANGEID	COMMON	E45E015046AF11DD9F2E 436FB39961A8	2d37383330323730313238 3837353631
CHANGE_CHANGEID	SAP_01	E45E015046AF11DD9F2E 436FB39961A8	11075
CHANGE_CHANGEID	AGILE_01	E45E015046AF11DD9F2E	ECO001::MICHIGAN

XREF_TABLE	XREF_COLUMN	ROW_NUMBER	VALUE
		436FB39961A9	
CHANGE_CHANGEID	COMMON	E45E015046AF11DD9F2E 436FB39961A9	2d37383330323730313238 3837353632
CHANGE_CHANGEID	SAP_01	E45E015046AF11DD9F2E 436FB39961A9	11076

- The first row entry is made by the Agile BPEL flow for Change Order number ECO001 that is created on an item, which belongs to a site mapped to the 0001 Plant in SAP.
- The second entry (Common) is also created by the Agile BPEL flow. It indicates the common "business component id" for this particular in integration entity and is used for linking change orders to SAP Change Orders.
- The third row entry represents the SAP change id corresponding to the Agile change order ECO001. Another set of entries will be made for the change order ECO0001 for site PAV0.
- For each revised item and component items in the Change Order, entries will be made into the ITEM_ITEMID virtual table.

For example:

For ECO001 the following entries will be made in the ITEM_ITEMID table.

XREF_TABLE	XREF_COLUMN	ROW_NUMBER	VALUE
ITEM_ITEMID	AGILE_01	0078BE703EC711DDBF9C A7AA7FE3BDFB	P0001::DETROIT
ITEM_ITEMID	COMMON	0078BE703EC711DDBF9C A7AA7FE3BDFB	3531383537373935373238 3638303435
ITEM_ITEMID	SAP_01	0078BE703EC711DDBF9C A7AA7FE3BDFB	66247::204
ITEM_ITEMID	AGILE_01	0078BE703EC711DDBF9C A7AA7FE3BDFC	P0002::MICHIGAN
ITEM_ITEMID	COMMON	0078BE703EC711DDBF9C A7AA7FE3BDFC	3531383537373935373238 3638303436
ITEM_ITEMID	SAP_01	0078BE703EC711DDBF9C A7AA7FE3BDFC	66248::207
ITEM_ITEMID	AGILE_01	0078BE703EC711DDBF9C A7AA7FE3BDFD	C0001::DETROIT
ITEM_ITEMID	COMMON	0078BE703EC711DDBF9C A7AA7FE3BDFD	3531383537373935373238 3638303437
ITEM_ITEMID	SAP_01	0078BE703EC711DDBF9C A7AA7FE3BDFD	66249::204

XREF_TABLE	XREF_COLUMN	ROW_NUMBER	VALUE
ITEM_ITEMID	AGILE_01	0078BE703EC711DDBF9C A7AA7FE3BDFE	C0002::DETROIT
ITEM_ITEMID	COMMON	0078BE703EC711DDBF9C A7AA7FE3BDFE	3531383537373935373238 3638303438
ITEM_ITEMID	SAP_01	0078BE703EC711DDBF9C A7AA7FE3BDFE	66250::204
ITEM_ITEMID	AGILE_01	0078BE703EC711DDBF9C A7AA7FE3BDFE	C0003::MICHIGAN
ITEM_ITEMID	COMMON	0078BE703EC711DDBF9C A7AA7FE3BDFE	3531383537373935373238 3638303439
ITEM_ITEMID	SAP_01	0078BE703EC711DDBF9C A7AA7FE3BDFE	66251::207
ITEM_ITEMID	AGILE_01	0078BE703EC711DDBF9C A7AA7FE3BDFG	C0004::MICHIGAN
ITEM_ITEMID	COMMON	0078BE703EC711DDBF9C A7AA7FE3BDFG	3531383537373935373238 3638303440
ITEM_ITEMID	SAP_01	0078BE703EC711DDBF9C A7AA7FE3BDFG	66252::207

- The first row entry is made by the Agile BPEL flow for part P0001. This part belongs to an Agile site that is mapped to site DETROIT.
 - The second entry (Common) is also created by the Agile BPEL flow. It indicates the common "business component id" for this particular in integration entity and is used to link Agile Parts/Documents/Change orders to SAP Items/Change Orders.
 - The third row entry represents the SAP inventory item id corresponding to the item P1B and the organization id for the item. The rest of the entries represent the revised and component items for the ECO001.
- The ITEM_ITEMID virtual table contains the similar xref entries for each item/part created through the new part request process.

Creating Cross Reference Data

If data needs to be ported from other existing integrations to the Agile PLM PIP, first the relationship between the Agile entities and the SAP entities should be established and each Agile site should be mapped to corresponding SAP organization by inserting the relevant data in the **xref_data** table.

The ESB out of the box utility **xrefimport.sh** can be used to load the required integration data in the **xref_data** table to establish the link between the Agile and the SAP. This data will map the Agile entities to the SAP entities as described in the section above.

Even for existing Agile PLM PIP integrations, if an item or change order needs to be created in SAP and then is created in Agile, for the PIP to process the item xref entry for that item needs to be made. All the update (reverse) flows for the PIP will update the item attributes in Agile only if there is an entry in the **xref_data** table for that particular item.

xrefimport.sh Usage

The **xrefimport.sh** is present under

```
$ORACLE_HOME/integration/esb/bin/.
```

Before we run the **xrefimport.sh**, set the following environment variables:

- OC4J_USERNAME
- OC4J_PASSWORD
- DB_URL
- DB_USER
- DB_PASSWORD.

The values should point to the schema where xref table is created.

Sample values are:

```
export DB_URL="jdbc:oracle:thin:@//<database server name>:< database
port>/<sid>"
export DB_USER=aia
export DB_PASSWORD=aia
export OC4J_USERNAME=oc4jadmin
export OC4J_PASSWORD=welcomel
```

Then the data that has to be inserted in the xref_data table should be put in an XML file with the following format.

Sample Change Order Data File

```
<xref xmlns="http://xmlns.oracle.com/xref">
  <table name="CHANGE_CHANGEID">
    <columns>
      <column name="SAP_01"/>
      <column name="COMMON"/>
      <column name="AGILE_01"/>
    </columns>
    <rows>
      <row>
        <cell colName="SAP_01">11075</cell>
        <cell
colName="COMMON">2d373833303237303132383837353631</cell>
        <cell colName="AGILE_01">ECO001::DETROIT</cell>
      </row>
      <row>
        <cell colName="SAP_01">11076</cell>
```

```

        <cell
colName="COMMON">2d373833303237303132383837353632</cell>
        <cell colName="AGILE_01"> ECO001::MICHIGAN</cell>
    </row>
</rows>
</table>
</xref>

```

- The change id number that is inserted in the SAP_01 column for a particular change order can be obtained using the following query:-

```

select change_id from eng_engineering_changes
where
change_notice=<AgileChangeOrder>;

```

- The business component id that is inserted in the COMMON column can be any unique number.
- The Agile change order number and the SAP organization corresponding to the Agile site are inserted into the AGILE_01 column separated by "::".

Sample Item Data File

```

<xref xmlns="http://xmlns.oracle.com/xref">
  <table name="ITEM_ITEMID">
    <columns>
      <column name="SAP_01"/>
      <column name="COMMON"/>
      <column name="AGILE_01"/>
    </columns>
    <rows>
      <row>
        <cell colName="SAP_01">66247::0001</cell>
        <cell
colName="COMMON">35313835373739353732383638303435</cell>
        <cell colName="AGILE_01"> P0001::DETROIT</cell>
      </row>
      <row>
        <cell colName="SAP_01">66248::PAV0</cell>
        <cell
colName="COMMON">35313835373739353732383638303436</cell>
        <cell colName="AGILE_01"> P0002::MICHIGAN</cell>
      </row>
      <row>
        <cell colName="SAP_01">66249::0001</cell>
        <cell
colName="COMMON">35313835373739353732383638303437</cell>
        <cell colName="AGILE_01"> C0001::DETROIT</cell>
      </row>
      <row>
        <cell colName="SAP_01">66250::0001</cell>
        <cell
colName="COMMON">35313835373739353732383638303438</cell>

```

```

        <cell colName="AGILE_01"> C0002::DETROIT</cell>
    </row>
<row>
    <cell colName="SAP_01">66251::PAV0</cell>
    <cell
colName="COMMON">35313835373739353732383638303439</cell>
    <cell colName="AGILE_01"> C0003::MICHIGAN</cell>
</row>
<row>
    <cell colName="SAP_01">66252::PAV0</cell>
    <cell
colName="COMMON">35313835373739353732383638303440</cell>
    <cell colName="AGILE_01"> C0004::MICHIGAN</cell>
</row>
</rows>
</table>
</xref>

```

- The Item inventory number and the organization id is inserted in the SAP_01 column separated by "·"
- The business component id that is inserted in the COMMON column can be any unique number.
- The Agile item number and the SAP plant corresponding to the Agile site are inserted into the AGILE_01 column separated by "::".
- The command to execute the xrefimport.sh to load the data in the xref_data table is.

```

$ORACLE_HOME/integration/esb/bin/xrefimport.sh -file
<xmldatafilename>.

```

The result of the import are logged in `$ORACLE_HOME/integration/esb/bin/xrefimport.log`

Configuring the PIP

This PIP uses various configuration parameters that control the behavior of the flow. Standard AIA XML configuration file, **AIAConfigurationProperties.xml**, is used for capturing configuration parameters. AIA configuration file supports system level configuration parameters, service level parameters and module configuration parameters. System level parameters apply to all PIPs running on the SOA suite. Service level parameters can be configured at the individual service levels, such as ABCS.

The configuration properties from Agile Module and SAP Module are listed separately in this section, only for the purpose of identification. The actual **AIAConfigurationProperties.xml** file on AIA Server is a merger of both.

Configuration Parameters

This PIP uses the following type of configuration parameters -

- **PIP Level** configuration parameters: PIP Configuration parameters are implemented using AIA module configuration entry. The module configuration entry has a name and can contain any number of configuration parameters. A naming convention of *PIPS.PIPName* is used for naming modules. The parameters inside the module are named using with cascaded naming convention where individual words are separated with dots. For example, *agile.replicate.item*.
- **Service Level** configuration parameters: While most configuration requirements are satisfied by the PIP Level configuration parameters, sometimes the behavior of a flow needs to be controlled at the service level. These parameters can be captured using AIA service configuration parameters. Service configuration entry is identified by the service name such as *CreateItemAgileReqABCImpl*. The parameter names themselves are named using cascaded naming convention as explained above.

Whenever the **AIAConfigurationProperties.xml** file is updated, the file must be reloaded for updates to be reflected in the applications or services that use the updated properties. You can perform this reload by clicking the Reload button on the Configuration page in the Oracle AIA Console. Alternatively, you can perform the reload by rebooting the server.

See Oracle AIA Core Components Guide, "Working with the BSR," Loading Oracle AIA Configuration Properties File Updates.

Agile Configurations

Properties	(default) Value/Setting	Description
moduleName	Agile	
MULTISITE_ENABLED	TRUE	When set to True, the sites specified in Sites Tab of Items are used to determine the Plants in SAP to which they are mapped. When set to False, Page2 Multilist01 attribute is used to determine the Plants in SAP to which the Item will be extended to.
Item.UnitCostAttribute	Site.Numeric01	Determines the attribute to which the unit cost from SAP would be updated in Agile.
Change.TransferStatusAttribute	PageTwo.Text02	Determines the attribute to which the transfer status of a Change should be written. When the Change flow is from Agile to SAP, the possible values are "Transferred" or "Errored".

Properties	(default) Value/Setting	Description
		When the Change flow is from SAP to Agile, the value would be the same as that of the Status of the Change in all the Plants of SAP.
<p>Notes: Multisite_Enabled property is governed by Distributed Processing aspects covered in Chapter 2: Process Integration for ECO/PREL.</p> <p>When it is set to TRUE (default), the Item.UnitCostAttribute is set to Site Tab Flex Attributes. You can use Numeric, Text or Money flex fields of Site tab for these settings, and is denoted by the first element, <i>Site</i>. For example, Site.Numeric01.</p> <p>When it is set to FALSE, all these attributes will be set to Page2 or Page3 flex fields. Hence, the settings will need to be changed to PageTwo.Numeric01 or PageThree.Numeric01 accordingly.</p> <p>The names of the attributes can be derived from the ItemABM Schema, which can be found in Agile Application Interfaces.</p>		
serviceName	CreateQueueService	
TRACE.LOG.ENABLED	false	Use tracelog for the flow
serviceName	QueueProcessorServiceImpl	
TRACE.LOG.ENABLED	false	Use tracelog for the flow
serviceName	UpdateItemListAgileProvABCServiceImpl	
ABCSExtension.PreProcessABM	FALSE	User exit for the pre-process ABM should be called or not
ABCSExtension.PreProcessEBM	FALSE	User exit for the pre-process EBM should be called or not
ABCSExtension.PostProcessEBM	FALSE	User exit for the post-process EBM should be called or not
ABCSExtension.PostProcessABM	FALSE	User exit for the post-process ABM should be called or not
TRACE.LOG.ENABLED	FALSE	Use tracelog for the flow
ROUTE_TO_CAVS	FALSE	Route to CAVS, if set as True
DEFAULT_TARGET_ENDPOINT_URI	http://localhost:8888/event/CoreAgile/ItemResponseEBS	ItemResponseEBS runtime target endpoint URI
serviceName	ProcessEngineeringChangeOrderAgileReqABCS	
ABCSExtension.PreProcessABM	FALSE	User exit for the pre-process ABM should be called or not
ABCSExtension.PreProcessEBM	FALSE	User exit for the pre-process EBM should be called or not
ABCSExtension.PostProcessEBM	FALSE	User exit for the post-process EBM should be called or not

Properties	(default) Value/Setting	Description
ABCSExtension.PostProcessABM	FALSE	User exit for the post-process ABM should be called or not
TRACE.LOG.ENABLED	FALSE	Use tracelog for the flow
ROUTE_TO_CAVS	FALSE	Route to CAVS, if set as True
DEFAULT_TARGET_ENDPOINT_URI	http://<host>:<port>/event/CoreAgile/EngineeringChangeOrderEBS	EngineeringChangeOrderEBS runtime target endpoint URI

SAP Configurations

Properties	(default) Value/Setting	Description
ModuleName	SAP	
LANG_LOCALE	en-US	Used to specify the language code and locale of the SAP system
GLOBAL_LEVEL_BOM	FALSE	When this property is set to FALSE, in SAP the BOM are created at plant level and not at the global level. If set to TRUE, the BOM will be created at the global level.
DEFAULT_SYSTEM_ID	SAP_01	Used to get the default XREF Target column name when TargetId is empty in incoming EBM. It should be kept SAP_01 as default for this release
MATERIAL_TYPE	FERT	Used to specify the material type in SAP to be "Finished Product"
SAP46_N_ABOVE	TRUE	Specifies that the version of SAP used is greater than 4.6.
BOM_USAGE	1	BOM_USAGE denotes the usage of the BOM. 1 indicates production level BOM. This value is dependent on the business process implemented at the client site. Some other values are: 2 indicates engineering/design BOM 3 indicates universal BOM 4 indicates plant maintenance BOM
ITEM_CATEGORY	L	ITEM_CATEGORY denotes the category of the item that is added to the BOM. L indicates stock item. This value is dependent on the business process implemented at the client

Properties	(default) Value/Setting	Description
		site. Some other values are: N indicates non-stock item T denotes text item D denotes document item
ServiceName	ReserveItemSAPProvABCS	
ABCSEXTENSION.PREPROCESSEBM	false	User exit for the pre-process EBM should be called or not
ABCSEXTENSION.POSTPROCESS EBM	False	User exit for the post-process EBM should be called or not
ABCSEXTENSION.POSTPROCESSI TEMEBM	false	User exit for the post-process Item EBM should be called or not
ABCSEXTENSION.PREPROCESSIT EMEBM	False	User exit for the pre-process Item EBM should be called or not
Default.SystemID	SAP_01	Used to get the default XREF Target column name when TargetId is empty in incoming EBM. It should be kept SAP_01 as default for this release
Routing.ItemResponseEBS.RouteToCAVS	False	Route to CAVS, if set as True
Routing.ItemResponseEBS.SAP_01.EndpointURI	http://<host>:<port>/event/AIASystem/EBS/ItemResponseEBS	ItemResponseEBS runtime target endpoint URI
Routing.ItemResponseEBS.CAVS.EndpointURI	http://<host>:<port>/AIAValidationSystemServlet/asyncresponserecipient	CAVS Endpoint URI
Routing.GenerateItemNumberService_Reserve.RouteToCAVS	False	Route to CAVS, if set as True
Routing.GenerateItemNumberService_Reserve.SAP_01.EndpointURI	http://<host>:<port>/event/Core/GenerateItemNumberService_Reserve	ReserveItemSAP runtime target endpoint URI
Routing.GenerateItemNumberService_Reserve.CAVS.EndpointURI	http://<host>:<port>/AIAValidationSystemServlet/syncresponsesimulator	CAVS Endpoint URI
TRACE.LOG.ENABLED	False	Use tracelog for the flow
Service Name	CreateEngineeringChangeOrderList EBF	
ABCSEXTENSION.PREPROCESSEBM	False	User exit for the pre-process EBM should be called or not
ABCSEXTENSION.POSTPROCESS EBM	False	User exit for the post-process EBM should be called or not

Properties	(default) Value/Setting	Description
ABCSEXTENSION.POSTPROCESSITEMEBM	False	User exit for the post-process Item EBM should be called or not
ABCSEXTENSION.PREPROCESSITEMEBM	False	User exit for the pre-process Item EBM should be called or not
Default.SystemID	SAP_01	Used to get the default XREF Target column name when TargetId is empty in incoming EBM. It should be kept SAP_01 as default for this release
Routing.ItemEBS.RouteToCAVS	False	Route to CAVS, if set as True
Routing.ItemEBS.SAP_01.EndpointURI	http://<host>:<port>/event/AIASystem/EBS/ItemEBS	ItemEBS runtime target endpoint URI
Routing.ItemEBS.CAVS.EndpointURI	http://<host>:<port>/AIAValidationSystemServlet/asyncresponserecipient	CAVS Endpoint URI
Routing.EngineeringChangeOrderResponseEBS.RouteToCAVS	False	Route to CAVS, if set as True
Routing.EngineeringChangeOrderResponseEBS.SAP_01.EndpointURI	http://<host>:<port>/event/AIASystem/EBS/EngineeringChangeOrderEBS	EngineeringChangeOrderEBS runtime target endpoint URI
Routing.EngineeringChangeOrderResponseEBS.CAVS.EndpointURI	http://<host>:<port>/AIAValidationSystemServlet/asyncresponserecipient	CAVS Endpoint URI
TRACE.LOG.ENABLED	False	Use tracelog for the flow
Service Name	CreateEngineeringChangeOrderListSAPProvABCS	
ABCSEXTENSION.PREPROCESSABM	False	User exit for the pre-process ABM should be called or not
ABCSEXTENSION.POSTPROCESSABM	False	User exit for the post-process ABM should be called or not
ABCSEXTENSION.PREPROCESSEBM	False	User exit for the pre-process EBM should be called or not
ABCSEXTENSION.POSTPROCESSEBM	False	User exit for the post-process EBM should be called or not
Default.SystemID	SAP_01	Used to get the default XREF Target column name when TargetId is empty in incoming EBM. It should be kept SAP_01 as default for this release
Routing.CreateEngineeringChangeOrderService.RouteToCAVS	FALSE	Route to CAVS, if set as True
Routing.CreateEngineeringChangeOrderService.SAP_01.EndpointURI	http://<host>:<port>/event/Core/CreateEngineeringChangeOrderService	CreateEngineeringChangeOrderService runtime target endpoint URI

Properties	(default) Value/Setting	Description
Routing.CreateEngineeringChangeOrderService.CAVS.EndpointURI	http://<host>:<port>/event/AIASystem/ValidationSystem/SyncResponseSimulator	CAVS Endpoint URI
TRACE.LOG.ENABLED	False	Use tracelog for the flow
Service Name	SyncItemListSAPProvABCS	
ABCSEXTENSION.PREPROCESSREVLABELABM	False	User exit for the pre-process ABM should be called or not
ABCSEXTENSION.POSTPROCESSREVLABELABM	False	User exit for the post-process ABM should be called or not
ABCSEXTENSION.PREPROCESSSAVEDDATAABM	False	User exit for the pre-process SAVED DATA ABM should be called or not
ABCSEXTENSION.POSTPROCESSSAVEDDATAABM	False	User exit for the post-process SAVED DATA ABM should be called or not
ABCSEXTENSION.PREPROCESSREFMATERIALABM	False	User exit for the pre-process REF MATERIAL ABM should be called or not
ABCSEXTENSION.POSTPROCESSREFMATERIALABM	False	User exit for the post-process REF MATERIAL ABM should be called or not
ABCSEXTENSION.PREPROCESSEBM	False	User exit for the pre-process EBM should be called or not
ABCSEXTENSION.POSTPROCESSEBM	False	User exit for the post-process EBM should be called or not
Default.SystemID	SAP_01	Used to get the default XREF Target column name when TargetId is empty in incoming EBM. It should be kept SAP_01 as default for this release
Routing.Call_ItemListResponseEBS.RouteToCAVS	False	Route to CAVS, if set as True
Routing.Call_ItemListResponseEBS.SAP_01.EndpointURI	http://<host>:<port>/event/AIASystem/EBS/ItemResponseEBS	ItemResponseEBS runtime target endpoint URI
Routing.Call_ItemListResponseEBS.CAVS.EndpointURI	http://<host>:<port>/AIAValidationSystemServlet/asyncreponserecipient	CAVS Endpoint URI
Routing.CreateReferencematerial.RouteToCAVS	False	Route to CAVS, if set as True
Routing.CreateReferencematerial.SAP_01.EndpointURI	http://<http>:<port>/event/Core/CreateReferencematerial	CreateReferenceMaterial runtime target endpoint URI
Routing.CreateReferencematerial.CAVS.EndpointURI	http://<http>:<port>/event/AIASystem/ValidationSystem/SyncResponseSim	CAVS Endpoint URI

Properties	(default) Value/Setting	Description
	ulator	
Routing.CreateDetailReferencematerial.RouteToCAVS	False	Route to CAVS, if set as True
Routing.CreateDetailReferencematerial.SAP_01.EndpointURI	http://<http>:<port>/event/Core/CreateDetailReferencematerial	CreateDetailReferenceMaterial runtime target endpoint URI
Routing.CreateDetailReferencematerial.CAVS.EndpointURI	http://<http>:<port>/event/AIASystem/ValidationSystem/SyncResponseSimulator	CAVS Endpoint URI
Routing.CreateItemService.RouteToCAVS	False	Route to CAVS, if set as True
Routing.CreateItemService.SAP_01.EndpointURI	http://<http>:<port>/event/Core/CreateItemService	CreateItemService runtime target endpoint URI
Routing.CreateItemService.CAVS.EndpointURI	http://<http>:<port>/event/AIASystem/ValidationSystem/SyncResponseSimulator	CAVS Endpoint URI
Routing.CreateItemRevisionService.RouteToCAVS	False	Route to CAVS, if set as True
Routing.CreateItemRevisionService.SAP_01.EndpointURI	http://<http>:<port>/event/Core/CreateItemRevisionService	CreateItemRevisionService runtime target endpoint URI
Routing.CreateItemRevisionService.CAVS.EndpointURI	http://<http>:<port>/event/AIASystem/ValidationSystem/SyncResponseSimulator	CAVS Endpoint URI
TRACE.LOG.ENABLED	False	Use tracelog for the flow
ServiceName	ProcessBillOfMaterialsListSAPProvABCS	
ABCSEXTENSION.PREPROCESSABM	False	User exit for the pre-process ABM should be called or not
ABCSEXTENSION.POSTPROCESSABM	False	User exit for the post-process ABM should be called or not
ABCSEXTENSION.PREPROCESSEBM	False	User exit for the pre-process EBM should be called or not
ABCSEXTENSION.POSTPROCESSEBM	False	User exit for the post-process EBM should be called or not
Default.SystemID	SAP_01	Used to get the default XREF Target column name when TargetId is empty in incoming EBM. It should be kept SAP_01 as default for this release
Routing.BillOfMaterialsEBS.RouteToCAVS	False	Route to CAVS, if set as True
Routing.BillOfMaterialsEBS.SAP_01.	http://<host>:<port>/event/AIASystem/	BillOfMaterialsEBS runtime target

Properties	(default) Value/Setting	Description
EndpointURI	EBS/BillOfMaterialsEBS	endpoint URI
Routing.BillOfMaterialsEBS.CAVS.EndpointURI	http://<host>:<port>/AIValidationSystemServlet/asyncresponserecipient	CAVS Endpoint URI
Routing.GlobalBillOfMaterialExistenceCheckService.RouteToCAVS	False	Route to CAVS, if set as True
Routing.GlobalBillOfMaterialExistenceCheckService.SAP_01.EndpointURI	http://<host>:<port>/event/Core/BillOfMaterialExistenceCheckService	Global BillOfMaterialExistenceCheckService runtime target endpoint URI
Routing.GlobalBillOfMaterialExistenceCheckService.CAVS.EndpointURI	http://<host>:<port>/event/AIASystem/ValidationSystem/SyncResponseSimulator	CAVS Endpoint URI
Routing.BillOfMaterialExistenceCheckService.RouteToCAVS	False	Route to CAVS, if set as True
Routing.BillOfMaterialExistenceCheckService.SAP_01.EndpointURI	http://<host>:<port>/event/Core/BillOfMaterialExistenceCheckService	BillOfMaterialExistenceCheckService runtime target endpoint URI
Routing.BillOfMaterialExistenceCheckService.CAVS.EndpointURI	http://<host>:<port>/event/AIASystem/ValidationSystem/SyncResponseSimulator	CAVS Endpoint URI
TRACE.LOG.ENABLED	False	Use tracelog for the flow
ServiceName	CreateBillOfMaterialsListSAPProvABCImpl	
ABCSEXTENSION.PREPROCESSBOMEXISTENCECHECKABM	False	User exit for the pre-process BOM Existence Check ABM should be called or not
ABCSEXTENSION.POSTPROCESSBOMEXISTENCECHECKABM	False	User exit for the post-process BOM Existence Check ABM should be called or not
ABCSEXTENSION.PREPROCESSBOMPLANTEXTENSIONABM	False	User exit for the pre-process BOM Plant Existence Check ABM should be called or not
ABCSEXTENSION.POSTPROCESSBOMPLANTEXTENSIONABM	False	User exit for the post-process BOM Plant Existence Check ABM should be called or not
ABCSEXTENSION.PREPROCESSBOMCREATEABM	False	User exit for the pre-process BOM Create ABM should be called or not
ABCSEXTENSION.POSTPROCESSBOMCREATEABM	False	User exit for the post-process BOM Create ABM should be called or not
ABCSEXTENSION.PREPROCESSEBM	False	User exit for the pre-process EBM should be called or not
ABCSEXTENSION.POSTPROCESS	False	User exit for the post-process EBM

Properties	(default) Value/Setting	Description
EBM		should be called or not
Default.SystemID	SAP_01	Used to get the default XREF Target column name when TargetId is empty in incoming EBM. It should be kept SAP_01 as default for this release
Routing.BillOfMaterialsResponseEBS.RouteToCAVS	False	Route to CAVS, if set as True
Routing.BillOfMaterialsResponseEBS.SAP_01.EndpointURI	http://<host>:<port>/event/AIASystem/EBS/BillOfMaterialResponseEBS	BillOfMaterialResponseEBS runtime target endpoint URI
Routing.BillOfMaterialsResponseEBS.CAVS.EndpointURI	http://<host>:<port>/AIValidationSystemServlet/asyncresponserecipient	CAVS Endpoint URI
Routing.CreateGlobalBillOfMaterialService.RouteToCAVS	False	Route to CAVS, if set as True
Routing.CreateGlobalBillOfMaterialService.SAP_01.EndpointURI	http://<host>:<port>/event/Core/CreateBillOfMaterialService	CreateBillOfMaterialService runtime target endpoint URI
Routing.CreateGlobalBillOfMaterialService.CAVS.EndpointURI	http://<host>:<port>/event/AIASystem/ValidationSystem/SyncResponseSimulator	CAVS Endpoint URI
Routing.CreateBillOfMaterialService.RouteToCAVS	False	Route to CAVS, if set as True
Routing.CreateBillOfMaterialService.SAP_01.EndpointURI	http://<host>:<port>/event/Core/CreateBillOfMaterialService	CreateBillOfMaterialService runtime target endpoint URI
Routing.CreateBillOfMaterialService.CAVS.EndpointURI	http://<host>:<port>/event/AIASystem/ValidationSystem/SyncResponseSimulator	CAVS Endpoint URI
Routing.BOMPlantExtensionService.RouteToCAVS	False	Route to CAVS, if set as True
Routing.BOMPlantExtensionService.SAP_01.EndpointURI	http://<host>:<port>/event/Core/BOMPlantExtensionService	BOMPlantExtensionService runtime target endpoint URI
Routing.BOMPlantExtensionService.CAVS.EndpointURI	http://<host>:<port>/event/AIASystem/ValidationSystem/SyncResponseSimulator	CAVS Endpoint URI
Routing.BillOfMaterialExistenceCheckService.RouteToCAVS	False	Route to CAVS, if set as True
Routing.BillOfMaterialExistenceCheckService.SAP_01.EndpointURI	http://<host>:<port>/event/Core/BillOfMaterialExistenceCheckService	BillOfMaterialExistenceCheckService runtime target endpoint URI
Routing.BillOfMaterialExistenceCheckService.CAVS.EndpointURI	http://<host>:<port>/event/AIASystem/ValidationSystem/SyncResponseSimulator	CAVS Endpoint URI

Properties	(default) Value/Setting	Description
TRACE.LOG.ENABLED	False	Use tracelog for the flow
ServiceName	UpdateBillOfMaterialsListSAPProvABCSImpl	
ABCSEXTENSION.PREPROCESSBOMEXISTENCECHECKABM	False	User exit for the pre-process BOM Existence Check ABM should be called or not
ABCSEXTENSION.POSTPROCESSBOMEXISTENCECHECKABM	False	User exit for the post-process BOM Existence Check ABM should be called or not
ABCSEXTENSION.PREPROCESSBOMPLANTEXTENSIONABM	False	User exit for the pre-process BOM Plant Existence Check ABM should be called or not
ABCSEXTENSION.POSTPROCESSBOMPLANTEXTENSIONABM	False	User exit for the post-process BOM Plant Existence Check ABM should be called or not
ABCSEXTENSION.PREPROCESSBOMUPDATEABM	False	User exit for the pre-process BOM Update ABM should be called or not
ABCSEXTENSION.POSTPROCESSBOMUPDATEABM	False	User exit for the post-process BOM Update ABM should be called or not
ABCSEXTENSION.PREPROCESSEBM	False	User exit for the pre-process EBM should be called or not
ABCSEXTENSION.POSTPROCESSEBM	False	User exit for the post-process EBM should be called or not
Default.SystemID	SAP_01	Used to get the default XREF Target column name when TargetId is empty in incoming EBM. It should be kept SAP_01 as default for this release
Routing.BillOfMaterialsResponseEBS.RouteToCAVS	False	Route to CAVS, if set as True
Routing.BillOfMaterialsResponseEBS.SAP_01.EndpointURI	http://<host>:<port>/event/AIASystem/EBS/BillOfMaterialsResponseEBS	BillOfMaterialResponseEBS runtime target endpoint URI
Routing.BillOfMaterialsResponseEBS.CAVS.EndpointURI	http://<host>:<port>/AIAValidationSystemServlet/asyncreponserecipient	CAVS Endpoint URI
Routing.UpdateGlobalBillOfMaterialService.RouteToCAVS	False	Route to CAVS, if set as True
Routing.UpdateGlobalBillOfMaterialService.SAP_01.EndpointURI	http://<http>:<port>/event/Core/UpdateBillOfMaterialService	UpdateBillOfMaterialService runtime target endpoint URI
Routing.UpdateGlobalBillOfMaterialService.CAVS.EndpointURI	http://<http>:<port>/event/AIASystem/ValidationSystem/SyncResponseSimulator	CAVS Endpoint URI

Properties	(default) Value/Setting	Description
Routing.BillOfMaterialExistenceCheckService.RouteToCAVS	False	Route to CAVS, if set as True
Routing.BillOfMaterialExistenceCheckService.SAP_01.EndpointURI	http://<http>:<port>/event/Core/BillOfMaterialExistenceCheckService	BillOfMaterialExistenceCheckService runtime target endpoint URI
Routing.BillOfMaterialExistenceCheckService.CAVS.EndpointURI	http://<http>:<port>/event/AIASystem/ValidationSystem/SyncResponseSimulator	CAVS Endpoint URI
Routing.BOMPlantExtensionService.RouteToCAVS	False	Route to CAVS, if set as True
Routing.BOMPlantExtensionService.SAP_01.EndpointURI	http://<http>:<port>/event/Core/BOMPlantExtensionService	BOMPlantExtensionService runtime target endpoint URI
Routing.BOMPlantExtensionService.CAVS.EndpointURI	http://<http>:<port>/event/AIASystem/ValidationSystem/SyncResponseSimulator	CAVS Endpoint URI
Routing.UpdateBillOfMaterialService.RouteToCAVS	False	Route to CAVS, if set as True
Routing.UpdateBillOfMaterialService.SAP_01.EndpointURI	http://<http>:<port>/event/Core/UpdateBillOfMaterialService	UpdateBillOfMaterialService runtime target endpoint URI
Routing.UpdateBillOfMaterialService.CAVS.EndpointURI	http://<http>:<port>/event/AIASystem/ValidationSystem/SyncResponseSimulator	CAVS Endpoint URI
TRACE.LOG.ENABLED	False	Use tracelog for the flow
ServiceName	UpdateItemListSAPReqABCSImpl	
ABCSEXTENSION.PREPROCESSABM	False	User exit for the pre-process ABM should be called or not
ABCSEXTENSION.PREPROCESSEBM	False	User exit for the pre-process EBM should be called or not
ABCSEXTENSION.POSTPROCESSABM	False	User exit for the post-process ABM should be called or not
ABCSEXTENSION.POSTPROCESSEBM	False	User exit for the post-process EBM should be called or not
Default.SystemID	SAP_01	Used to get the default XREF Target column name when TargetId is empty in incoming EBM. It should be kept SAP_01 as default for this release
Routing.Call_ItemEBS.RouteToCAVS	False	Route to CAVS, if set as True
Routing.Call_ItemEBS.SAP_01.EndpointURI	http://<host>:<port>/event/AIASystem/EBS/ItemEBS	ItemEBS runtime target endpoint URI

Properties	(default) Value/Setting	Description
Routing.Call_ItemEBS.CAVS.EndpointURI	http://<host>:<port>/AIAValidationSystemServlet/asyncresponserecipient	CAVS Endpoint URI
ServiceName	UpdateItemListSAPReqABCS	
ABCSEXTENSION.POSTPROCESSABM	False	User exit for the post-process ABM should be called or not
ABCSEXTENSION.PREPROCESSABM	False	User exit for the pre-process ABM should be called or not
ServiceName	ProcessBillOfMaterialsListSAPProvABCImpl	
ABCSEXTENSION.PREPROCESSABM	False	User exit for the pre-process ABM should be called or not
ABCSEXTENSION.POSTPROCESSABM	False	User exit for the post-process ABM should be called or not
ABCSEXTENSION.PREPROCESSEBM	False	User exit for the pre-process EBM should be called or not
ABCSEXTENSION.POSTPROCESSEBM	False	User exit for the post-process EBM should be called or not
Default.SystemID	SAP_01	Used to get the default XREF Target column name when TargetId is empty in incoming EBM. It should be kept SAP_01 as default for this release
Routing.Retrieve_BOMData.RouteToCAVS	False	Route to CAVS, if set as True
Routing.Retrieve_BOMData.SAP_01.EndpointURI	http://<host>:<port>/event/Core/ProcessBillOfMaterialsListImpl	ProcessBillOfMaterialsListImpl runtime target endpoint URI
Routing.Retrieve_BOMData.CAVS.EndpointURI	http://<host>:<port>/event/AIASystem/ValidationSystem/SyncResponseSimulator	CAVS Endpoint URI
TRACE.LOG.ENABLED	False	Use tracelog for the flow

Setting up National Language Support

For complete information about National Language Support, refer [Appendix A](#).

Setting up NLS in Agile

1. In Agile Java Client, for each subscriber of MCO, SCO, ECO, go to the subscriber details page and set the language.

For ease of understanding, we are using "Japanese" as language.

2. Change the language preference of all the users creating CO and Items, including integration user, to Japanese.

Setting up NLS in FMW for Agile

Edit the Transformations

3. Edit the following XSL file and replace the hard-coded string 'Priliminary' to Japanese equivalent coming from Agile List values

```
<SOA_HOME>/Apache/Apache/htdocs/AIAComponents/Transformations/Agile/Release1/QueueProcessorServiceImpl/AgileData_to_AgileCreateEngineeringChangeOrderListABM_Impl.xsl
```

4. Edit the following XSL file and replace the following values:

```
<SOA_HOME>/Apache/Apache/htdocs/AIAComponents/Transformations/Agile/Release1/ProcessEngineeringChangeOrderAgileReqABCS/AgileCreateEngineeringChangeOrderListABM_to_CreateEngineeringChangeOrderListEBM_Impl.xsl
```

Replace the hard-coded string 'Priliminary' to the Japanese equivalent coming from Agile list values.

Replace the hard-coded string 'SCO' to Japanese equivalent coming from Agile list values.

5. Edit the following XSL file and replace hard coded strings 'Errored' with Japanese equivalent:

```
<SOA_HOME>/Apache/Apache/htdocs/AIAComponents/Transformations/Agile/Release1/ProcessEngineeringChangeOrderAgileReqABCS/AgileCreateEngineeringChangeOrderListABM_to_AgileUpdateEngineeringChangeOrderListABM_Impl.xsl
```

6. Edit the following XSL file and replace the following values:

```
<SOA_HOME>/Apache/Apache/htdocs/AIAComponents/Transformations/Agile/Release1/ProcessEngineeringChangeOrderAgileReqABCS/UpdateEngineeringChangeOrderListEBM_to_AgileUpdateEngineeringChangeOrderListABM_Impl.xsl
```

Replace the hard coded string 'Transferred' with its Japanese equivalent.

Replace the hard coded string 'Errored' with its Japanese equivalent..

Note: use an UTF-8 based editor like JEdit to carry out these changes. Choose UTF-8 as the character set while loading the file to edit. Set FTP transfer mode to Binary while uploading these files to AIA components.

Editing AIAConfigurations

Edit the property 'LANG_LOCALE' under module 'Agile' to 'Japanese'. Its language value is available under column COMMON in the DVM - 'LANGUAGE_CODE'

Set-up DVMs

Enter the Japanese language values under Agile column **AGILE_01** in the following DVMs:

- ITEM_PRIMARYCLASSIFICATIONCODE
- ITEM_STATUS_CODE
- ITEM_UOM_CODE
- ECO_STATUS_CODE

Setting up the DVMs for NLS

- In the *LANGUAGE_CODE* DVM, configure **SAP_01**.with the appropriate language code of SAP.

Domain Value Maps

Domain Value Maps templates are XML files that conform to the Oracle SOA Suite DVM schema. The DVMs are stored in the ESB database and are maintained using the ESB Console user interface. Domain values are to used for static lookups. Using ESB administration, you may import these XML files and then modify them according to your needs.

Out-of-the-Box DVMs

During installation, the DVMs used for the PIP are imported with default data mappings. The values mapped by these DVMs have to be changed as needed. There are many DVMs that are seeded and need not be touched. Since most of the Agile attributes being mapped are list values, the Agile data is not seeded. Hence, it should be changed accordingly.

Some of the most used DVMs, with their Out-of-the-Box values, are listed below. You can modify their values as per your requirements. For complete list of available DVMs, including the most used ones, see the List of DVMs.

You can only add more rows of value mappings but should not change the DVM name, the column names, or the number of columns.

To see or modify a DVM:

1. Logon to ESB Control in Enterprise Manager

The path would be http://<environment_name>.us.oracle.com:<port_number>/esb

- 2. Click Maps Icon to retrieve the DVMs



- 3. Click the requisite DVM to see/modify.

Sample DVMs

ECO_ENGINEERINGCHANGEORDERLINE_STATUS_CODE

Used for SAP attribute -
 ECO_ATTR/ECO_REVISSED_ITEM_TYPE/ECO_REVISSED_ITEM_TYPE_ITEM/STATUS_NAME

SAP_01	COMMON
Release	RELEASE
Open1	OPEN_1
EBS_Release	EBS_RELEASE
EBS Open	EBS_OPEN
Implemented	IMPLEMENTED
Create	CREATE
In Progress	IN_PROGRESS
Scheduled1	SCHEDULED_1
Cancelled	CANCELLED
Approval	APPROVAL
Pending Response	PENDING_RESPONSE
EBS_Create	EBS_CREATE
EBS_Review	EBS_REVIEW
EBS_Archive	EBS_ARCHIVE
Completed	COMPLETED
Hold	HOLD
Draft	DRAFT
Review	REVIEW
Released	RELEASED
Archive	ARCHIVE

ECO_STATUS_CODE

Used for SAP attribute - ECO_CHANGE_ORDER_TYPE/STATUS_NAME,
ECO_REVISSED_ITEM_TYPE/STATUS_NAME. Use for Agile's Status attribute of a Change.

SAP_01	COMMON	AGILE_01
Release	RELEASE	
EBS_Approval	EBS_APPROVAL	
Open1	OPEN_1	
EBS_Release	EBS_RELEASE	
EBS Open	EBS_OPEN	
Implemented	IMPLEMENTED	Implemented
Create	CREATE	
In Progress	IN_PROGRESS	
Scheduled	SCHEDULED	Released
Cancelled	CANCELLED	
Approval	APPROVAL	
Pending Response	PENDING_RESPONSE	
EBS_Create	EBS_CREATE	
EBS_Review	EBS_REVIEW	
EBS_Archive	EBS_ARCHIVE	
Completed	COMPLETED	
Hold	HOLD	
Draft	DRAFT	
Review	REVIEW	
Released	RELEASED	
Archive	ARCHIVE	

ITEM_STATUS_CODE

Used for SAP Item attribute - ITEM_OBJ/MAIN_OBJ_TYPE/INVENTORY_ITEM_STATUS_CODE.
The Agile Item Lifecycle phase attribute is mapped.

SAP_01	COMMON	AGILE_01
A	A	
Concept	CONCEPT	
Design	DESIGN	Preliminary
Engineer	ENGINEER	Pilot

SAP_01	COMMON	AGILE_01
Inactive	INACTIVE	Inactive, 02
Lease	LEASE	
Non-Stock	NONSTOCK	
Nwe B	NWEB	
OPM	OPM	
Obsolete	OBSOLETE	Obsolete, 02
Pending	PENDING	
Phase-Out	PHASEOUT	
Production	PRODUCTION	Production, 03
Prototype	PROTOTYPE	Prototype
R&D	R&D	

AGILE_SITE_TARGET_MAPPING

DEFAULT_MASTER_ORG in SAP is specified here. This is used when the Multisite_Enabled property is set to False and no Plant is specified for the Item where it extends to.

When the Multisite_Enabled property is true, the Sites in Agile are mapped to various Plants in SAP. A Site could be mapped to multiple Plants in the SAP column with "|" delimiter.

AGILE_TARGET_SITE_MAPPING

The SAP Plants to Agile Sites are mapped. This is used for SAP to Agile flows. There is one to one mapping between the SAP Plant to Agile Site.

List of DVMs

The most important DVMs are listed in **bold** typeface.

Domain Value Map	Description
ITEM_UOM_CODE:	This DVM is used to maintain the Unit of Measure values of Agile corresponding to SAP
REFERENCEMATERIALS:	We are maintaining this DVM to populate the mandatory parameters of SAP BasicData1, Basic data2, MRP1, MRP2, MRP3 views which are not being sent from Agile
LANGUAGE_CODE:	This DVM is used to populate the Multi languages, as of now we are dealing with only English language
ITEM_STATUS_CODE:	This DVM is used to maintain the Life Cycle Phase codes and Special Plant Material Status of SAP

Domain Value Map	Description
ITEM_PRIMARYCLASSIFICATIONCODE:	This DVM is used to populate the Material type of SAP
ECO_STATUS_CODE:	The DVM is used to handle the Status Codes of Change Order in SAP.
AGILE_SITE_TARGET_MAPPING	This DVM is used to map SAP Plants to Agile Sites. This is used for Agile to SAP flows
AGILE_TARGET_SITE_MAPPING	This DVM is used to map SAP Plants to Agile Sites. This is used for SAP to Agile flows
ECO_ENGINEERINGCHANGEORDERLINE_REVISEDBILL OFMATERIALS_BILLOFMATERIALSCOMPONENTITEM_C HANGETYPECODE:	We are using this DVM to recognize the Creation or updation of Bill of Materials in Agile

Application Interfaces

Application Interfaces are the Web Services and APIs that communicate and transact between Application and Integration Layers.

Agile PLM Interfaces

WSDLs

CreateItemAgileReqABCS CreateItemAgileReqABCImpl	
ItemABS.wsdl	Used to create an item in SAP
UpdateItemListAgileProvABCImpl	
ItemABS.wsdl	Used to update an Item in SAP
ProcessEngineeringChangeOrderAgileReqABCS	
ChangeABS.wsdl	Used to create an EngineeringChangeOrder in SAP

XSDs

CreateItemAgileReqABCS CreateItemAgileReqABCImpl	
ItemABM.xsd	Contains the Item Request and Response ABM
UpdateItemListAgileProvABCImpl	
ItemABM.xsd	Contains the Update Item List Request and Response ABM

ProcessEngineeringChangeOrderAgileReqABCS	
EngineeringChangeOrderABM.xsd	Contains CreateEngineeringChangeOrderListABM and CreateEngineeringChangeOrderListResponseABM

SAP Interfaces

WSDLs

ReservItemSAPProvABCS	
ReservItemservice.wsdl	The interface to the SAP Process Item API
GenerateItemNumberService_Reserve.wsdl	BAPI_STDMATERIAL_GETINTNUMBER
SyncItemListSAPProvABCS	
ItemServiceESB.wsdl	The interface to the SAP Process Item API -
CreateReferencematerial.wsdl	BAPI_MATERIAL_GET_ALL
CreateItemService.wsdl	BAPI_MATERIAL_SAVEDATA
CreateDetailReferencematerial.wsdl	BAPI_MATERIAL_GET_DETAIL
CreateItemRevisionService.wsdl	CCAP_REV_LEVEL_MAINTAIN
CreateBillOfMaterialsListSAPProvABCImpl	
BOMServiceESB.wsdl	The interface to the SAP Process BOM API
BOMPlantExtensionService.wsdl	CSAP_MAT_BOM_ALLOC_CREATE
CreateBillOfMaterialService.wsdl	CSAP_MAT_BOM_CREATE
BillOfMaterialExistenceCheckService.wsdl	BAPI_MAT_BOM_EXISTENCE_CHECK
UpdateBillOfMaterialsListSAPProvABCImpl	
BOMServiceESB.wsdl	The interface to the SAP Process BOM API -
BOMPlantExtensionService.wsdl	CSAP_MAT_BOM_ALLOC_CREATE
UpdateBillOfMaterialService.wsdl	CSAP_MAT_BOM_MAINTAIN
BillOfMaterialExistenceCheckService.wsdl	BAPI_MAT_BOM_EXISTENCE_CHECK
ProcessBillOfMaterialsListSAPProvABCS	
BOMServiceESB.wsdl	The interface to the SAP Process BOM API -
BillOfMaterialExistenceCheckService.wsdl	BAPI_MAT_BOM_EXISTENCE_CHECK
CreateEngineeringChangeOrderListSAPProvABCS	
ECORouterService.wsdl	The interface to the SAP Process ECO API -
CreateEngineeringChangeOrderService.wsdl	CCAP_ECN_MAINTAIN

UpdateItemListSAPReqABCS	
MATMAS01_receive.wsdl	The interface to the SAP Process Item API - MATMAS01
ProcessBillOfMaterialsListSAPProvABCSImpl	
ProcessBOMService.wsdl	The interface to the SAP Process BOM API
ProcessBillOfMaterialsListImpl.wsdl	CSAP_MAT_BOM_READ

XSDs

ProcessBillOfMaterialsListSAPProvABCS	
BAPI_MAT_BOM_EXISTENCE_CHECK_request.xsd	Contains the BillOfMaterialExistenceCheck Request ABM
BAPI_MAT_BOM_EXISTENCE_CHECK_response.xsd	Contains the BillOfMaterialExistenceCheck Response ABM
CreateEngineeringChangeOrderListSAPProvABCS	
CCAP_ECN_MAINTAIN_request.xsd	Contains the CreateEngineeringChangeOrderList Request ABM
CCAP_ECN_MAINTAIN_response.xsd	Contains the CreateEngineeringChangeOrderList Response ABM
UpdateItemListSAPReqABCS	
MATMAS01_event.xsd	Contains the UpdateItemList ABM
ReserveItemSAPProvABCS	
BAPI_STDMATERIAL_GETINTNUMBER_request.xsd	Contains the ReserveItem Request ABM
BAPI_STDMATERIAL_GETINTNUMBER_response.xsd	Contains the ReserveItem Response ABM
SyncItemListSAPProvABCS	
BAPI_MATERIAL_GET_ALL_request.xsd	Contains the CreateReferencematerial Request ABM
BAPI_MATERIAL_GET_ALL_response.xsd	Contains the CreateReferencematerial Response ABM
BAPI_MATERIAL_GET_DETAIL_request.xsd	Contains the CreateDetailReferencematerial Request ABM
BAPI_MATERIAL_GET_DETAIL_response.xsd	Contains the CreateDetailReferencematerial Response ABM
BAPI_MATERIAL_SAVEDATA_request.xsd	Contains the CreateItem Request ABM
BAPI_MATERIAL_SAVEDATA_response.xsd	Contains the CreateItem Response ABM
CCAP_REV_LEVEL_MAINTAIN_request.xsd	Contains the CreateItemRevision Request ABM
CCAP_REV_LEVEL_MAINTAIN_response.xsd	Contains the CreateItemRevision Response ABM
CreateBillOfMaterialsListSAPProvABCSImpl	
BAPI_MAT_BOM_EXISTENCE_CHECK_request.xsd	Contains the BillOfMaterialExistenceCheck Request ABM
BAPI_MAT_BOM_EXISTENCE_CHECK_response.xsd	Contains the BillOfMaterialExistenceCheck Response

	ABM
CSAP_MAT_BOM_ALLOC_CREATE_request.xsd	Contains the BOMPlantExtension Request ABM
CSAP_MAT_BOM_ALLOC_CREATE_response.xsd	Contains the BOMPlantExtension Response ABM
CSAP_MAT_BOM_CREATE_request.xsd	Contains the CreateBillOfMaterial Request ABM
CSAP_MAT_BOM_CREATE_response.xsd	Contains the CreateBillOfMaterial Response ABM
UpdateBillOfMaterialsListSAPProvABCSImpl	
BAPI_MAT_BOM_EXISTENCE_CHECK_request.xsd	Contains the BillOfMaterialExistenceCheck Request ABM
BAPI_MAT_BOM_EXISTENCE_CHECK_response.xsd	Contains the BillOfMaterialExistenceCheck Response ABM
CSAP_MAT_BOM_ALLOC_CREATE_request.xsd	Contains the BOMPlantExtension Request ABM
CSAP_MAT_BOM_ALLOC_CREATE_response.xsd	Contains the BOMPlantExtension Response ABM
CSAP_MAT_BOM_MAINTAIN_request.xsd	Contains the UpdateBillOfMaterial Request ABM
CSAP_MAT_BOM_MAINTAIN_response.xsd	Contains the UpdateBillOfMaterial Response ABM
ProcessBillOfMaterialsListSAPProvABCSImpl	
CSAP_MAT_BOM_READ_request.xsd	Contains the Read BOM Request ABM
CSAP_MAT_BOM_READ_response.xsd	Contains the Read BOM Response ABM

Handling Errors

Based on the roles defined for the services, email notifications are sent if an error occurs. The roles below can be assigned at various levels in a hierarchy (service, process, domain) so that when a service errors out -- the Error Handling Framework will use the role value to derive the user(s) that need to be notified of the error. The Error Handling Framework then notifies the user(s) via their preferred notification method, puts the error in the user's Oracle Worklist, and puts the error in the error log.

- **Role:** Actor role associated with the error notification. Actor roles receive notifications for and are assigned to error scenarios occurring in Oracle AIA integration flows. An example of an Actor role is a task editable in the Error Console and is meant to be worked on, and resolved by the actor assigned to the task.
- **FYI Role:** FYI role associated with the error notification. This role receives for-your-information (FYI) notifications for error scenarios occurring in Oracle AIA integration flows. An example of an FYI role is a customer service representative. The task is displayed in read-only view in the Error Console.

The roles specified for the 'Role' and 'FYI Role' parameters should be defined and associated with users in the **system-jazn-data.xml** File. The details of mail ids of the users will be taken from the 'user-properties.xml' file.

For more information about the errors thrown by the applications - Agile SDK and SAP, see their product documentation.

Configuring AIA Error Notifications

The steps involved in configuring the Error Notifications are:

1. Identify the Users to be configured and their Respective roles to be assigned.
2. Configure the user properties file with the user objects and the group objects.
3. Configure the **ns-emails.xml** file with the required details.
4. Finally configure the BSR with the notifications in the AIA Console Setup > Error Notification page.

To configure Users and Roles:

1. Go to **\$SOA_ORACLE_HOME/j2ee/oc4j_soa/config/system-jazn-data.xml**

In the **system-jazn-data.xml** file under the users add a new user by using the template below.

```
<user>
  <name>UserName</name>
  <credentials>!password</credentials>
</user>
```

SAP_TO_AGILE is the role assigned to user AGILE_INTEGRATION_SAP

```
<role>
  <name>SAP_To_AGILE</name>
  <members>
    <member>
      <type>user</type>
      <name>AGILE_INTEGRATION_SAP</name>
    </member>
  </members>
</role>
```

To configure User Properties:

1. Go to **\$SOA_ORACLE_HOME/bpel/system/services/config/users-properties.xml**

Under the **userObject** add a new userObject using the following template:

```
<userObject >
  <name>UserName</name>
  <description>Description</description>
  <email>UserMailId</email>
  <title>Product CollaborationTitle</title>
  <firstName>UserFirstName</firstName>
  <lastName />
  <timeZone>America/Los_Angeles</timeZone>
  <languagePreference>en-US</languagePreference>
  <notificationPreferences>Mail</notificationPreferences>
</userObject>
```

Similarly, add the group object using the following template:

```

<groupObject >
  <name>UserName</name>
  <email>MailId</email>
  <owners>OwnerName</owners>
</groupObject>

```

Example

```

<userObject >
  <name>AGILE_INTEGRATION_SAP</name>
  <description>AGILE_INTEGRATION_SAP User</description>
  <email>testuser@oracle.com</email>
  Product CollaborationAGILE_INTEGRATION_AGILE</title>
  <firstName>SAP_To_AGILE</firstName>
  <lastName />
  <timeZone>America/Los_Angeles</timeZone>
  <languagePreference>en-US</languagePreference>
  <notificationPreferences>Mail</notificationPreferences>
</userObject>
<groupObject >
  <name>AGILE_INTEGRATION_SAP</name>
  <email>testuser@oracle.com</email>
  <owners>AGILE_INTEGRATION_SAP</owners>
</groupObject>

```

See that the User Object and Group Object are declared before closing of the </principalObjects> tag in the **User-properties.xml** file.

To configure ns-emails.xml:

1. Go to **\$SOA_ORACLE_HOME/bpel/system/services/config/ns_emails.xml**

Edit the file **ns_emails.xml** file and set the NotificationMode="EMAIL". Then change *from name* and *from Email* to the address you want to configure. Set the SMTP Host name and port details for the outgoing mail settings.

To configure BSR:

The BSR provides a UI for managing mappings between actor and FYI roles and their participating applications for use during AIA error notifications. The error notifications you define on the Error Notifications page are stored in the BSR_ERROR_NOTIFICATIONS table.

Login to the AIA Console and navigate to **Setup.Error Notifications** Tab to see the page for configuring the Error Notifications.

The fields should be filled with the following details.

<i>Error Code</i>	Enter the error code associated with the error notification you are searching for. For all practical purposes, this can be set to any logical name in this release.
<i>System Code</i>	Select the system code associated with the error notification you are searching for. This is the system code of the participating application which should be configured using the System tab

	under Setup in BSR.
<i>Process Name</i>	Enter the BPEL process name associated with the error notification you are searching for.
<i>Service Name</i>	Enter the service name associated with the error notification you are searching for. This is the business process in which the service is participating. For all practical purposes, this can be the same as the BPEL process name.
<i>Role</i>	Select the actor role associated with the error notification you are searching for. Specify an actor role that you want to receive notification regarding this error. This is the role that will be responsible for taking action to correct the error that generated the notification.
<i>FYI Role</i>	Select the FYI role associated with the error notification you are searching for. This is the role that will be notified of the error, but will not be responsible for taking any actions to correct the error that generated the notification.
<i>Search</i>	Click to execute a search for error notifications based on your search criteria. For a given process, if no entry is found in the BSR_ERROR_NOTIFICATIONS table, the default roles specified in AIAConfigurationProperties.xml are used. Therefore, you are not required to populate the BSR_ERROR_NOTIFICATIONS table unless there is an explicit need.
<i>Delete</i>	Select radio button for the error notification row you want to delete and click the Delete button to execute the deletion.
<i>Create</i>	Click to add a row to the Search Result grid, where you can enter details for a new error notification.
<i>Save</i>	Click to save all entries and updates to the page.
<i>Undo</i>	Click to undo all updates made to the page after the last save.

Logic Used to Determine Notification Roles for an Error

The Error Handling Framework uses runtime values and the data you enter on this page to execute the following hierarchical logic to determine the appropriate notification roles for an error:

- If all four runtime values (SYSTEM_CODE, ERROR_CODE, SERVICE_NAME, and PROCESS_NAME) are available and they map to an error notification entry in this table, use the specified notification roles.
- If the ERROR_CODE, SERVICE_NAME, and PROCESS_NAME are available and map to an error notification entry in this table, use the specified notification roles.
- If the SERVICE_NAME and PROCESS_NAME are available and map to an error notification entry in this table, use the specified notification roles.
- If the SERVICE_NAME is available and maps to an error notification entry in this table, use the specified notification roles.
- If none of these values are available, the default values are fetched from the AIAConfigurationProperties.xml file.

Error Notification | System | Flexfield | Configuration | PIPs

setup > Error Notification

Error Notification

Error Code System Code Error Type

Process Name Role Error Ext Handler

Service Name FYI Role

Search Result

Select	Error Code	System Code	Process Name	Service Name	Role	FYI Role	Error Type	Error Ext Handl
<input type="radio"/>	DIG_ERROR_CODE	DIAGNOSTICS_SYSTEM	DIAGNOSTICSE	DIAGNOSTICSE	DIAGNOSTICS_	DIAGNOSTICS_	AIA_EH_DEFAL	ERRORHANDLEI

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Worklist Application

The Oracle Worklist application is used to provide an Error Console for the Oracle Application Integration Architecture (AIA). The Error Console application is a user interface (UI) that Actor roles, such as integration administrators, and FYI roles can use to access details about Oracle AIA ecosystem service errors that have been assigned to them. Based on their roles, users will be able to interact with the following types of tasks in the Error Console:

Login into the worklist using the UserName and Password you configured in the **system-jazn-data.xml** to see the worklists in the below URL.

```
http://<hostname>:<port>/integration/worklistapp/Login
```

Example

Login with AIAIntegrationAdminUser/welcome1 to worklist app to see the error notifications assigned to this user.

ORACLE BPM Worklist

Welcome, AIAIntegrationAdminUser [jazn.com]

Home | Reports | Preferences

My Tasks | Initiated Tasks

My Tasks (Inbox)

Work Queues

- Inbox
- My Work Queues
 - Standard Views
 - High Priority Tasks
 - Tasks Due Soon
 - New Tasks
 - My Views
 - None
 - Proxy Work Queues
 - Delegated Views
 - None

Search: My & Group | Any | Assigned | Go

Task Number	Title	Priority	Assigned Users	Assigned Groups	State	Created Date	Expiration Date	Actions
10006	Error in AIA SyncItemListSAPProvABCS Process	3		AIAIntegrationAdmin	Assigned	Feb 6, 2009 2:29 AM		-- Select an Action --
10007	Error in AIA ProcessBilOfMaterialsListSAPProvABCS Process	3		AIAIntegrationAdmin	Assigned	Feb 6, 2009 3:08 AM		-- Select an Action --
10008	Error in AIA ProcessBilOfMaterialsListSAPProvABCS Process	3		AIAIntegrationAdmin	Assigned	Feb 6, 2009 3:49 AM		-- Select an Action --
10009	Error in AIA ProcessBilOfMaterialsListSAPProvABCS Process	3		AIAIntegrationAdmin	Assigned	Feb 6, 2009 3:49 AM		-- Select an Action --
10010	Error in AIA ProcessBilOfMaterialsListSAPProvABCS Process	3		AIAIntegrationAdmin	Assigned	Feb 6, 2009 3:49 AM		-- Select an Action --
10011	Error in AIA Process	3		AIAIntegrationAdmin	Assigned	Feb 6, 2009 3:49 AM		-- Select an Action --
10020	Error in AIA ProcessBilOfMaterialsListSAPProvABCS Process	3		AIAIntegrationAdmin	Assigned	Feb 11, 2009 12:43 AM		-- Select an Action --
10021	Error in AIA CreateBilOfMaterialsListSAPProvABCSImpl Process	3		AIAIntegrationAdmin	Assigned	Feb 11, 2009 12:44 AM		-- Select an Action --

Error Handling in PIP Queue Manager

Any failure in the processing of a Change Order is captured by the Queue Manager. This "Errored" process can be identified in the Queue Monitor, symbolized by . See the sample screen below.

Change Order Queue

<input type="button" value="Resubmit"/> <input type="button" value="Remove"/> <input type="button" value="Suspend"/> <input type="button" value="Resume"/> <input type="button" value="Refresh"/> <input type="button" value="Select All"/> <input type="button" value="Select None"/>						
	Reference	Change Number	Release Time	Processed Time	Process Status	
<input type="checkbox"/>	 AT003096	EC3014	13-Jul-2008 23:23:17 PDT	13-Jul-2008 23:24:01 PDT	Errored	
<input checked="" type="checkbox"/>	AT003095	M00208	13-Jul-2008 23:17:56 PDT	13-Jul-2008 23:18:53 PDT	Completed	
<input checked="" type="checkbox"/>	AT003094	EC3012	13-Jul-2008 23:17:50 PDT	13-Jul-2008 23:18:42 PDT	Completed	

To see the reason of error, click the link 'Errored' in the Process Status column. It pops-up an Error Message window, similar to the sample message given below:

```
com.oracle.bpel.client.BPELFault: faultName:
{{http://xmlns.oracle.com/ABCImpl/Agile/ProcessEngineeringChangeOrderAgileReqABCS/V1}fault} messageType:
{{http://xmlns.oracle.com/ABCImpl/Agile/ProcessEngineeringChangeOrderAgileReqABCS/V1}FaultMsg} parts:
{{payload= A Blank row exists in the BOM }}
```

Details

Name: ProcessEngineeringChangeOrderAgileReqABCS Id: 890323

Stack Trace

This Error Message comprises of two parts:

1. Error Text - This is the text of error source, which can be from any participating ABCS that may have faulted.
2. Details - The Error Details consist of:
 - Service Name - The name of the service where an Instance failed to process.
 - Instance ID - The identification number of the Instance that failed.

Multiple faults generated by the service are captured and displayed in this UI. In addition to this, any failures in the flows would be captured in the AIA's Error Logs. These can be seen from Enterprise Manager Console logs section.

In an event when a certain service is down and the error is not related to the payload, users may resubmit the change in the Queue Manager UI.

Chapter 6: Customizations

This chapter discusses:

- Customizing the Transformations
- User Exits

The Integration provides two approaches of customizations:

- **Customizing the Transformations** - This approach allows to modify and/or add the mappings between the attributes of the participating applications.
- **User Exits** - These Pre-defined extension points provided in the OOTB BPEL flow. You can plug-in your own logic at these exit points to validate, enrich and transform data.

Customizing the Transformations

There may be a need for Out-of-the-Box and User Defined attributes mapping between applications, which are not covered as part of standard transformations. Considering this, the transformation files, i.e., the XSLs, have been externalized to facilitate the implementers to carry out the following:

- Modify the Out-of-the-Box transformations.
- Add new mappings for the Agile attributes to EBM attributes. These Agile attributes could either be the ones that have not been mapped out-of-the-box including any of the flex-fields.

The transformations support the following requirements:

- In the integration flow, there are multiple transformations involving multiple ABO/Ms and EBO/Ms.
- The transformations support the flex field mappings
- In this mechanism of transformations, customer can provide XSLs for complex transformations that are not part of the standard transformations. It is required to support the transformations for user-defined EBO extensions (ex. Custom tags) and in places where customer want to override the standard transformation logic.

Transformation Rules

- For a transformation from ABM into EBM, all the flex-fields (interchangeably user defined attribute / Flex attribute) go under SpecificationGroup element under the main EBM element with a matching type like ValueText (for text values), ValueNumeric (for numeric values) etc carrying the values.

- For the transformations from EBM into ABM depending upon the identification element of Specification and SpecificationGroup pull processing is done to populate the UDAs.
- For Classification elements, like ItemClassification etc, the field values are translated using a configuration, into EBM and vice-versa. The configuration states are <<Name in Agile>> <<Name on EBO>> <<Name SAP ERP>>. For rest of the classification elements like part type, product family etc fields need to be packed/ unpacked on/from the XXCatalog element on the EBM.

Customization in Agile

The XSL transformations in Agile PLM Integration are externalized, i.e., these are hosted on implementation server under

```
<oracle_home>/Apache/Apache/htdocs/AIAComponents/Transformations/Agile/Release1/<ABCName>
```

Refer Customization Points of each Process (in corresponding chapters).

The implementers modify the XSLs based on the customization points against each process to modify, include new mappings for the Agile attributes to the EBM elements. The entire behavior of the OOTB mappings can be enhanced using this approach.

Server has to be restarted to bring the changes into effect.

A few sample customizations have been provided at <AIA_HOME>\PIPS\Core\Agile\Samples. A sample customization of ECO attributes is given below.

Sample Customization

User-Defined ECO - in Sites Tab Under Items

Mapping

Agile	EBM	SAP
Item.Site:List01	corecomEBO:RevisedItem/corecomEBO:BaseUOMCode	Primary UOM Code

Custom Code

Location:

Templates:

```
createEngineeringChangeOrderLines_With_SiteData
createEngineeringChangeOrderLines_With_OrgData
createEngineeringChangeOrderLines_With_DefaultMasterOrgData
```

Customization in SAP

To customize a Mapping File:

1. Pickup the <flow>_Custom XSL file from

```
oracle_home/Apache/Apache/htdocs/AIAComponents/Transformations/<flow_name>/
```

where <flow> is the process name, such as ECO_CHANGE_ORDER_TYPE

- a. If only flex-field transformation has to be modified then the custom targets can be modified to include the new mappings.
For example, ECO_CHANGE_ORDER_TYPE_Custom in Create Eco flow for the change order flex attributes
 - b. The user need not set the custom transformations property in this case as the targets are already included in the base transformation file.
2. If the entire mapping has to be modified then the user can copy the base mappings into the custom target (e.g. Custom in Create ECO flow) in the custom file and modify the mappings as desired.
 - a. After modifying the file the user has to set the Custom Transformations property in the AIA Configurations file and reload the configurations from the AIA console.
 3. After doing either 2) or 3) the server has to be re-started so that the new transformations get loaded into the JVM.
 4. The changes transformations will now take effect.

Templates in the Custom Files

1. **CreateEngineeringChangeOrderListEbmToAbm:** The following templates are used in the custom transformation files that are used to map the flex field attributes.
 - ECO_CHANGE_ORDER_TYPE_Custom
 - ECO_REVISIED_ITEM_TYPE_ITEM_Custom
 - REFERENCE_DESIGNATOR_TBL_Custom
 - COMPONENT_ITEM_TBL_Custom
 - SUBSTITUTE_COMPONENT_TBL_ITEM_Custom
 - STRUCTURE_HEADER_Custom

The **Custom** template is used for modifying the entire mapping.
2. **ItemEbmToAbm:** The template CUSTOM_OBJ_TYPE_Custom is used to map the flex field attributes. The template "Custom" is used to replace the entire mapping.

3. **UpdateItemListABMtoEBM**: The template `ItemSpecificationGroup_Custom` is used to map the flex field to the specification group in the EBM. The “`UpdateItemListABMtoEBMCustom`” template is used to replace the entire file.

Since the templates are directly included inside the objects only the specific attributes being mapped should be put in the custom xsl and not the entire hierarchy.

Replacing the Entire Mapping

Here the template **UpdateItemListABMtoEBMCustom** is actually used to do the entire ABM to EBM transformation.

1. Change the Property in AIA Configurations file:
 - a. File Path: `<AIA_HOME>/config/AIAConfigurationProperties.xml`
 - b. Not needed when only the flex field mapping is done.
 - c. The use custom transformation property is per integration flow and has to be set accordingly.
2. Reload the AIA Configurations file
3. Restart the Server

User Exits

Extensibility Points

Requester Flows

- Just prior to the execution of transformation of ABM to EBM
- Just prior to the invocation of Enterprise Business Service
- Just prior to the execution of transformation of EBM to ABM
- Just prior to the invocation of callback service or response return

Provider Flows

- Just prior to the execution of transformation of EBM to ABM
- Just prior to the invocation of Application Service
- Just prior to the execution of transformation of ABM to EBM
- Just prior to the invocation of callback EBS or return of response message

Development Steps for User Exits

1. Identify which out-of-box flow is to be extended.
2. Identify the suitable exit point in the Flow.
3. Develop the Flow
4. Configure the Out-of-box flow to include the newly developed flow
5. Test the developed flow

Appendix A: National Language Support in Agile – SAP PIP

National Language Support has been implemented in the PIP for Agile to SAP Integration.

Requester Flows

Before sending the EBM to Agile, the Language code is converted to the common value, which is configured from the DVM *LANGUAGE_CODE*.

Note: Have to make sure that the values are configured for the DVM's *LANGUAGE_CODE* before the flows are triggered.

In AIA Release 2.3 PIP, a change in ECO status returns the SID and the Change ID as an input to the Requester ABCS. However, from AIA Release 2.4 PIP onwards, another field called **Language_Code** has been added to input parameters in the transformations, which has a default value as **en-US**.

Provider Flows

In the AIA Release 2.3 PIP, the default language code in Agile is set to **en-US**. This code value is sent over to the provider ABCS in SAP without any conversion. However, from AIA Release 2.4 PIP onwards, this language code from Agile PLM is converted to a SAP system value using the *LANGUAGE_CODE* DVM.

Appendix B: Functionalities Available

The following functionalities are available across different versions of Agile PLM and SAP combination deployments.

Features/Agile and SAP Versions	Agile 9226 and SAP 4.7	Agile 9226 and SAP ECC 6.0	Agile 93 and SAP 4.7	Agile 93 and SAP ECC 6.0
NPR (Action PX)	N	N	N	N
NPR (Auto Number PX)	Y	Y	Y	Y

PREL(ECO Forward Flow From Agile to SAP)	Y	Y	Y	Y
ECO Update Flow (From SAP to Agile)	N	N	N	N
Item Balance Update Flow (From SAP to Agile)	N	N	N	N
Item Operational Attribute Update Flow (Cost Attribute Updates only) (From SAP to Agile)	Y	Y	Y	Y
Queue Functionality (AQ (Database Persistent))	Y	Y	Y	Y

Appendix c: Agile to SAP Entity Maps

Bill of Materials Mappings

Agile Entity Attribute	Bill of Materials EBO	SAP Entity: Attribute Group: Attribute	Comments
Part/Document. Title Block. Number	\\BillOfMaterialsEBO\ItemReference\Identification\ID	MATNR:Material Number	
Changes.changeNumber	\\BillOfMaterialsEBO\Identification\ContextID	AENNR:Change Number	
BOM.ITEM_NUMBER	\\BillOfMaterialsEBO\BillOfMaterialsComponentItem\ItemReference\ID	IDNRK:BOM Component	
BOM.FIND_NUMBER	\\BillOfMaterialsEBO\BillOfMaterialsComponentItem\	POSNR:Position Number	

Agile Entity Attribute	Bill of Materials EBO	SAP Entity: Attribute Group: Attribute	Comments
	Identification\ContextID		
REFDESIG.LABEL	\\BillOfMaterialsEBO\BillOfMaterialsComponentItem\ProcessingInstruction\Identification\ID	EBORT:Installation point for sub-item	
BOM.QUANTITY	\\BillOfMaterialsEBO\BillOfMaterialsComponentItem\Quantity	Menge:Quantity	
BOM.DESCRPTION	\\BillOfMaterialsEBO\Identification\ItemReference\Description	POTX1:BOM item text (line 1)	
	\\BillOfMaterialsEBO\BillOfMaterialsComponentItem\StorageUnitCode	MEINS:Comp Unit Of Measure	
	\\BillOfMaterialsEBO\BillOfMaterialsComponentItem\ItemReference\ClassificationCode	POSTP:Item Category	
	\\BillOfMaterialsEBO\BillOfMaterialsComponentItem\ItemReference\TypeCode	STLAN:BOM Usage	
BOM. Sites. Site Name	\\BillOfMaterialsEBO\Identification\ContextID	werks:Plant	

Item EBO Mappings

Agile Entity Attribute	Item EBO	BAPI_MATERIAL_SAVEDATA	Comments
Part/Document. Title Block. Number	\\ItemEBO\Name	BAPIMATHEAD: MATNR: Material number:	Associate type Field Description
Part/Document. Title Block. Description	\\ItemEBO\Description	BAPI_MAKT: MATL_DESC Material Description:	
	\\ItemEBO\TypeCode	BAPIMATHEAD: MATI_TYPE Material Type	

Agile Entity Attribute	Item EBO	BAPI_MATERIAL_SAVEDATA	Comments
Mass	\\ItemEBO\BaseUOMCode	BAPI_MARA: BASE_UOM: Base Unit of Measure	
	\\ItemEBO\PrimaryClassificationCode	BAPI_MARA: MATL_GROU:P Material group	
	\\ItemEBO\TemplateltemReference\ ClassificationCode	BAPI_MARA: MAT_GRP_SM: Material group	
	\\ItemEBO\ItemCatalog\IdentificationID	BAPI_MARA: ITEM_CAT: General Item Category Group:	
Part/Document. Title Block. Lifecycle Phase	\\ItemEBO\ItemLifecycleCharacteristics\Lifecycle Code	BAPI_MARA: MSTAE: X-Plant matl status	
Part/Document. Title Block. Description	\\ItemIdentification\BaseUOMCode\Revision/Label	BAPI_MLTX: TEXT_ID / TEXT_NAME: Basic Data text	
	\\ItemEBO\ItemPhysicalCharacteristics\ VolumeMeasure	BAPI_MARM: VOLUME:	
		VOLUMEUNIT: Volume Unit of Measure	
	\\ItemEBO\ItemPurchasingCharacteristics\ UnitListPrice\Amount	BAPI_MBEW: STD_PRICE: Standard Price	
	\\ItemPhysicalCharacteristics\heightmeasure	BAPI_MARM: HEIGHT,LENGTH,WIDTH	
	\\ItemPhysicalCharacteristics\lengthmeasure	UNIT_DIM Unit of Dimension	
	\\ItemPhysicalCharacteristics\widthmeasure	for height,length,width	
	\\ItemOrderManagementCharacteristics\custom/Delivery Plant	BAPI_MVKE: DELYG_PLNT: Delivery Plant	
Part/Document. Sites. Site	\\ItemIdentification\Contextl	BAPI_MARC:	

Agile Entity Attribute	Item EBO	BAPI_MATERIAL_SAVEDATA	Comments
Name	D	PLANT: PLANT	
	\\ItemEBO\InventoryLocation\SerialNumberSpecificationCode	BAPI_MARC: SERNO_PROF: Serial Number Profile	
	\\ItemEBO\relatedItem\relationshipCode	BAPI_MARA: BASIC_MATL WRKST_NEW	
	\\ItemEBO\itemClassification\classificationCode	BAPI_MARA: DIVISION: DIVISION	
	\\ItemEBO\itemManufacturingCharacteristics\custom\laborOffice	BAPI_MARA: DSN_OFFICE LABOR	
	\\ItemIdentification\Gtin	BAPI_MARM: EAN_UPC: International Article Number	
	\\ItemIdentification\EANCode	BAPI_MARM: EAN_CAT: Category of International Article Number	
	\\ItemEBO\itemRevisionHistory\identificationId	BAPI_MARA: OLD_MAT_NO: Old material number	
	\\ItemEBO\itemPurchasingCharacteristics\custom\purchasingGroup	BAPI_MARC: PUR_GROUP: Purchasing Group	
	\\ItemPurchasingCharacteristics/ AssetClassificationCode/CodeType	BAPI_MARC: COMM_CODE: Harmonized code	
	\\ItemPlanningCharacteristics\inventoryPlanningCode	BAPI_MARC: AVAILCHECK: Availability check	
	\\ItemAttachment\attachment\note\status	BAPI_MARA: DOC_CHG_NO: Document change number	
Part/Document. Changes.	\\ItemEBO\itemLifecycleCharacteristics\LifecyclePhase	BAPI_MARA: SAL_STATUS:	

Agile Entity Attribute	Item EBO	BAPI_MATERIAL_SAVEDATA	Comments
Lifecycle Phase	Code	Cross distribution chain status	
	\\Item Order Management Characteristics\Custom\TransportationGroup	BAPI_MARA: TRANS_GRP: Transportation group	
	\\ItemEBO\InventoryLocation\Identification\ID	BAPI_MARD: STGE_LOC: Storage Location	
Part/Document. Sites. Make/Buy	\\ItemPlanningCharacteristics\MakeOrBuycode		
	\\ItemPlanningCharacteristics\MakeOrBuycode	BAPI_MARC: SPPROCTYPE: Special procurement type	
	\\ItemPlanningCharacteristics\ProcessingLeadTimeCharacteristics\fixedDuration	BAPI_MARC: GR_PR_TIME: Goods receipt processing time in days	
	\\ItemPlanningCharacteristics\ProcessingLeadTimeCharacteristics\postProcessingDuration	BAPI_MARC: PLND_DELRY: Planned Delivery Time	
	\\ItemEBO\Custom/Product Hierarchy	BAPI_MARA: PROD_HIER: Product Hierarchy	
	\\ItemPhysicalCharacteristics\custom/Netweight	BAPI_MARA: NET_WEIGHT: Net weight	
		UNIT:OF_WT Unit Of weight: Weight	
	\\ItemEBO\ItemPhysicalCharacteristics\WeightMeasure	BAPI_MARAM: GROSS_WT: Gross Weight	
		UNIT_OF_WT UNIT OF WEIGHT:	

Agile Entity Attribute	Item EBO	BAPI_MATERIAL_SAVEDATA	Comments
		Unit of weight	
	\\ItemPlanningCharacteristics\Custom\MRPController	BAPI_MARC: MRP_CTRLER: MRP Controller	
	\\ItemOrderManagementCharacteristics\Custom>LoadingGroup	BAPI_MARC: LOADINGGRP: Loading Group	
	\\ItemOrderManagementCharacteristics\custom\Sales Organization	BAPI_MVKE: SALES_ORG: Sales Organization	
	\\ItemEBO\Custom/Product Allocation	BAPI_MARA: PROD_ALLOC: Product Allocation Determination Procedure	
	\\ItemEBO\Custom\Authorization Group	BAPI_MARA: AUTHORITYGROUP Authorization Group	
	\\ItemManufacturingCharacteristics\Custom\CountryOf Origin	BAPI_MARC: COUNTRYORI: Country of Origin	

Item Attribute Update Mappings

Agile Entity Attribute	Item EBO	MATMAS01	Comments
Part/Document. Title Block. Number	\\ItemEBO\Name	E1MARAM: MATNR Material number:	
Part/Document. Title Block. Unit Cost Attribute	\\ItemEBO\ItemPurchasing Characteristics\UnitListPrice\Amount	E1MBEWM: STPRS Standard Price E1MBEWM: VERPR Moving Average Price	
Part/Document. Sites. Site Name	\\ItemIdentification\ContextID	E1MARCM: WERKS Plant	

Engineering Change Order EBO Mappings

Agile Entity Attribute	Engineering Change Order EBO	CCAP_ECN_MAINTAIN IN SAP Entity: Attribute:Description	Comments
CHANGE.CHANGE_NUMBER	\\Identification\ ID	AENR_API01:CHANGE_NUMBER:Change Number	Change Notice
CHANGE.DESCRPTION	\\Identification\ Description	AENR_API01: DESCRIPT: Change number description	
CHANGE.RELEASE_DATE	InitiationDate	AENR_API01:VALID_FROM:Valid from date	
ECO/MCO/SCO. Affected Item. Effectivity Date	EngineeringChangeOrderLine/ EffectiveDate	AEDT_API01:ALT_DATE:Alternative date external key	
CHANGE.REASON	\\Identification\Revision\Reason	AENR_API01:REASON_CHANGE:Reason for change	
	\\Identification\Status	AENR_API01:STATUS:Status of change number	
Changes .Affected Items. New Revision	\\EngineeringChangeOrderLine\EffectivityControllItem Reference\Revision\Number	REVLV:Revision level	
Agile Entity Attribute	Engineering Change Order EBO	CCAP_REL_LEVEL_MAINTAIN	
CHANGE.CHANGE_NUMBER	\\Identification\ ID	AENNR Change Number	
ECO/MCO/SCO. Affected Item. Item Number	\\EngineeringChangeOrderLine\RevisedItem	MATNR Material Number	
Change Orders Class.Affected Items. New Revision	\\EngineeringChangeOrderLine\EffectivityControllItemReference\Revision\Number	REVLV Revision level	

Appendix D: Queue Management

For complete information on features and functionality of Queue Manager, and how to use it, refer Agile PLM Integration Pack for SAP Rel. 2.5 – User Guide at <http://www.oracle.com/technology/documentation/agile.html>.

The Queue Management feature in the PIP caters to the following requirements:

- An Event to produce filtered payload to a File Destination or JMS Destination.
- The Payload is defined using a standard XSD.
- The files or JMS Messages produced by Events are sequenced in the order in which the objects are released.

Note: These requirements are leveraged using the Agile Content Service (ACS). ACS has the ability to produce payload to a File or JMS destination. The payload is based on filters configured for the ACS Event defined by Agile provided AXML schema definition. Also the ACS transmits the messages in the order in which the ATOs are released.

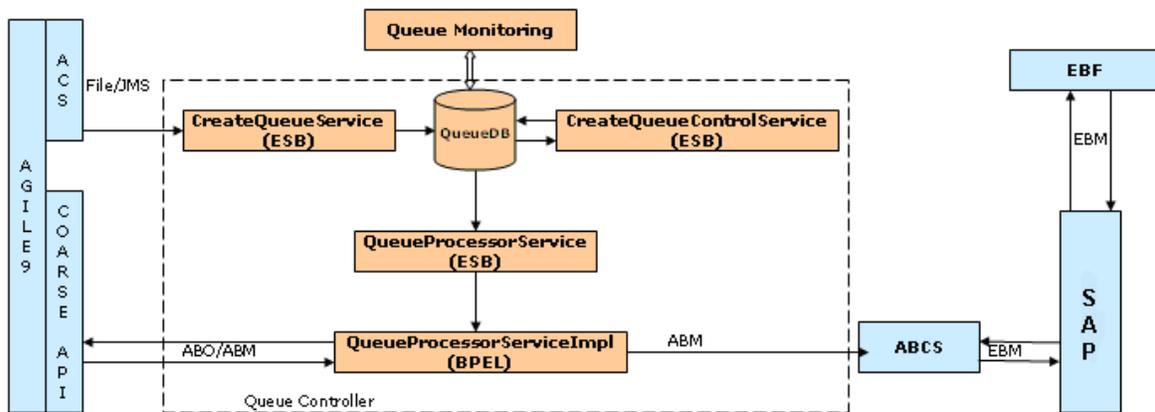
- A Queue to manage the order of Messages.
- A Queue Monitoring UI to enable reordering and resubmitting unprocessed messages.
- The Queue manages the payloads based on the Business Process for which the message is produced by the Event.
- A Queue controlling mechanism
 - Triggers the Business Flow based on the business process of message.
 - Processes the messages sequentially depending upon the order specified in the message (the highest order message is picked first for processing).
 - A message is not picked for processing unless the processing of the previous message is complete.
 - The order of the messages, which have not been picked for processing, can be re-ordered.

Queue Management Solution

The Queue Management Solution comprises of the following components:

- **Queue DB:** The database persist the data related to a Queue messages.

- **Queue Controller:** Polls for new Event payloads and add them to the Queue DB. The highest priority message for each Business Process is picked and processed sequentially to trigger its Business Flow.
- **Queue Monitoring:** UI which monitors the Queue message status supports Re ordering of priorities of the Queue Messages. Also provides the facility to re submit the un processed messages.



Queue Schema

In order to support the above solution flow a polling strategy similar to “PollingControlTableStrategy” is used. Two tables are used to manage the sequential processing and reordering of messages.

The first table QUEUE_TABLE will have all the queue messages that are being provided by the Event trigger. The QUEUE_CONTROL_TABLE table will store the relevant information of the message from the QUEUE_TABLE which has not been processed yet.

The Queue Manager needs to ensure that there is only one message in the control table which is not yet processed. When the processing of a message is complete, a Pending message from the Queue table is inserted into this table. This would facilitate the sequential processing of messages. Also since all the pending messages are stored in the Queue table, they could be reordered.

Queue DB Details

The Queue Schema has the following tables:

ECO_QUEUE	This table holds the data of Process ECO. The PROCESS_TYPE column is used as identifier for Process ECO.
ECO_QUEUE_CONTROL	This table stores the details about the rows that are currently under processing state.
ECO_QUEUE_TABLE_CRITERIA	This table contains the data needed for a criteria. One set of criteria forms a filter.

ECO_QUEUE_TABLE_FILTER	This table contains the data needed to form a filter, i.e., the criterion to be used to form a specific filter.
ECO_QUEUE_STATUS	This table holds the data to control the simultaneous processing and suspending the Queue. By changing the values in the ECO_QUEUE_STATUS column, the number of simultaneously processed ECOs can be changed.

The structure of ECO_QUEUE_STATUS table is:

ECO_QUEUE_STATUS_ID	ECO_QUEUE_STATUS	Description
1	1 or 0	The status of the Queue - in suspended or resume mode.
2	1	The count of rows that can be processed simultaneously for Process ECO. A value of 1 means sequential processing.
3	5	The count of rows that can be processed simultaneously for Validate ECO.

Queue Controller

A polling strategy on the Queue DB is used for addressing the Queue Management business requirements. The Queue Controller provides an ECO system to ensure that this polling strategy works in tandem to ensure the following:

- All Event transmitted File/JMS Messages are added to the Queue.
- At any given point of time there is only one pending message in the control table
- Once the processing of a message in control table is complete, insert the highest priority queue message from the queue table to the control table.
- In case the Integration flow errors out, the queue manager will wait until the message is resubmitted or removed.

Queue Monitor

When a Change Order is released by Agile Content Service (ACS), it is picked up by the Queue Controller. The Queue Monitor displays a list of all the Change Orders awaiting processing and facilitates you to reorder their sequence of processing.

For the first time after deployment, the Queue is in Suspended state. You are required to Resume it. For complete details on Queue Monitor, refer Agile to SAP Integration User Guide.

ORACLE® Application Integration Architecture

Filter

Filters:

Criteria:

Change Order Queue

	Reference	Change Number	Release Time	Processed Time	Process Status
✓	ATO0000310	CO-000229	13-Apr-2009 13:57:13	13-Apr-2009 21:48:08	Completed
✓	ATO0000309	CO-000228	13-Apr-2009 13:54:20	13-Apr-2009 21:46:30	Completed
✓	ATO0000308	CO-000227	13-Apr-2009 13:34:54	13-Apr-2009 21:28:58	Completed
✓	ATO0000307	CO-000226	13-Apr-2009 13:31:24	13-Apr-2009 21:22:20	Completed
✓	ATO0000306	CO-000225	13-Apr-2009 13:29:25	13-Apr-2009 21:20:23	Completed
✓	ATO0000305	CO-000225	13-Apr-2009 13:25:42	13-Apr-2009 21:16:38	Completed
✓	ATO0000304	CO-000224	13-Apr-2009 13:22:16	13-Apr-2009 21:13:13	Completed
✓	ATO0000303	CO-000223	13-Apr-2009 13:17:10	13-Apr-2009 21:08:58	Completed
✓	ATO0000280	CO-000210	10-Apr-2009 18:58:49	11-Apr-2009 02:51:07	Completed
✓	ATO0000279	CO-000209	10-Apr-2009 18:24:17	11-Apr-2009 02:15:44	Completed
✓	ATO0000278	CO-000208	10-Apr-2009 17:49:33	11-Apr-2009 01:42:12	Completed
✓	ATO0000277	CO-000207	10-Apr-2009 17:42:00	11-Apr-2009 01:33:48	Completed
✓	ATO0000276	CO-000206	10-Apr-2009 17:29:59	11-Apr-2009 01:23:14	Completed

Queue Manager Services

The following services are deployed as part of the Queue Manager:

1. CreateQueueService
2. CreateQueueControlService
3. QueueProcessorService
4. QueueProcessorServiceImpl

CreateQueueService

The CreateQueueService is implemented as an ESB Routing Service. An Adapter Service (File/JMS Adapter) polls on the destinations for any Event payloads. The payload is in the form of aXML files. This service receives message as a binary element (aXML File). For each payload received the service inserts a new row into the QUEUE table. An Adapter Service (DB Adapter) is used for the same. The Toplink solution generates the required schema from the table for this DB Adapter.

- The service uses transformation services to populate any NOT NULL columns in the table.
- OBJECT_REFERENCE is inserted with the file name of the AXML file using the ESB header transformation extension functions.

- PROCESS_STATUS is Pending for the newly inserted row.
- PROCESS_PRIORITY is captured from the file name. (ACS can be configured to append an default order for the file name)

CreateQueueControlService

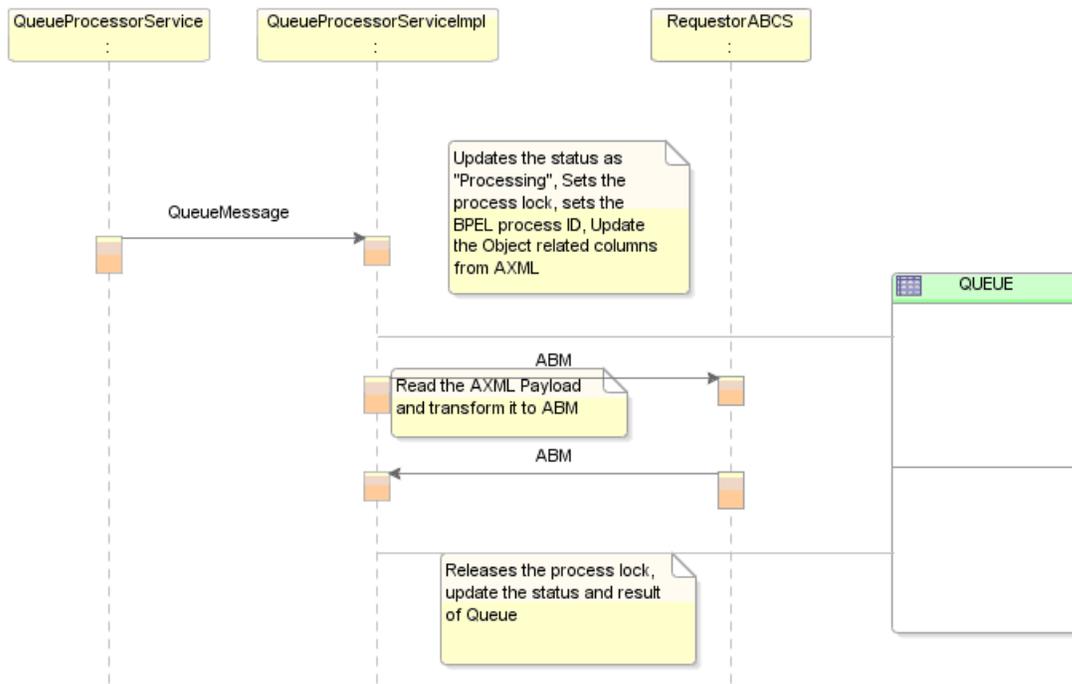
The CreateQueueControlService is implemented as an ESB Routing Service. A DB Adapter polls on the QUEUE_CONTROL_TABLE table. If there are no rows which are in Pending status, the CreateQueueControlService invokes a DB Adapter service which executes a custom SQL. This SQL identifies the highest priority pending Queue message from QUEUE_TABLE table and inserts the same in QUEUE_CONTROL_TABLE table.

This polling strategy ensures that at any point of time there is only one Pending message in the QUEUE_CONTROL_TABLE table. Once the Pending message is processed and status completed, a new Pending message is inserted from QUEUE_TABLE table to the QUEUE_CONTROL_TABLE table. When the status for a message is completed in the QUEUE_CONTROL_TABLE that row would be deleted from the table.

QueueProcessorService

The QueueProcessorService is implemented as an ESB service which acts like an Interface and provides a façade in front of the QueueProcessorServiceImpl service. A DB Adapter polls on the QUEUE_CONTROL table for any Pending messages. A Pending message in the table is routed to the QueueProcessorServiceImpl service which processes the message. Based on the result from the implementation service the status of the message is updated in the control table.

QueueProcessorServiceImpl



The primary task of this service is to invoke the RequestorABCS. The Response from RequestorABCS is processed and the Queue is updated with processing status.

Input: The QueueMessage generated by Toplink solution in the QueueProcessorService is used as the input for this Service.

Output: QueueStatusMessage which contains the status and result of processed Queue message.

#	Name	Step Description
1.	QueueProcessorService Invokes QueueProcessorServiceImpl process	The <i>QueueProcessorService</i> invokes <i>QueueProcessorServiceImpl</i> with QueueMessage (generated by Toplink solution for QUEUE table) as input.
2	Invoke UpdateQueueStatus DB Adapter service	The input QueueMessage in this process is assigned with following values to update the Queue message in the Queue DB PROCESS_STATUS = Processing PROCESS_ID = BPEL Process Id PROCESS_LOCK = 1
3.	Transform AgileData(AXML) to ABM	The QueueMessage will have the AgileData payload which is transformed to ABM
4.	Invoke RequestorABCS	<i>QueueProcessorServiceImpl</i> invokes the <i>RequestorABCS</i> with ABM as input.
5.	Invoke Coarse Grained Web Service	<i>RequestorABCS</i> optionally invokes the coarse grained web services to get the ABM populated with any missing information required for the Integration flow.
6.	RequestorABCS Transforms ABM to EBM	The response ABM from coarse grained WS is transformed to EBM and an operation on EBS is invoked with EBM as the input.
7.	RequestorABCS orchestrates the business flow	The <i>RequestorABCS</i> routes the EBM to the EBS.
8.	EBS routes the response to RequestorABCS	The response EBM from EBS is routed to the <i>RequestorABCS</i> which is transformed to ABM and returned to the <i>QueueProcessorServiceImpl</i>
9.	QueueProcessorServiceImpl invokes UpdateQueueResult DB Adapter service	The result from the <i>RequestorABCS</i> is used to update the status of Queue in the Queue DB. Also the Process lock is released.

Transformations

The AXML payload is transformed to the ABM which is input for the **RequestorABCS**. Since the ABM schema is defined on the lines of AXML schema this transformation will be simpler to do in the Jdeveloper XSL mapper.

Implementation Details

The **QueueProcessorServiceImpl** is implemented as an *Asynchronous BPEL process*. There are calls to the **RequestorABCS**, DB Adapters for updating Queue status and invoking the **RequestorABCS**. These involve some logic (parsing the AXML payload) which cannot be achieved using the ESB.

Note: The QueueId is used for correlation set between the **QueueProcessorServiceImpl** and the **RequestorABCS**.

Error Management

All errors in the Integration flow are handled in the RequestorABCS and EBF. Any such errors leading to failure of the Queue processing will be handled in this process. As a result of such error the Queue Status and Result with failure status is updated in the Queue DB.

Appendix E: Troubleshooting

1. **Issue:** Creating an ECO fails with the error "The SQL Exception is: "javax.resource.ResourceException: RollbackException: Transaction has been marked for rollback: Timed out".

Solution:

Increase the timeout values.

For example, for 100 Affected Items [without any BOM data] being created in SAP through a Change Order released from Agile.

Location	Property to modify	Sample Value
<SOA_ORACLE_HOME>/bpel/domains/<domain_name>/config/domain.xml	syncMaxWaitTime	120
<SOA_ORACLE_HOME>/integration/esb/config/esb_config.ini	xa_timeout	120
	jms_receive_timeout	120
<SOA_ORACLE_HOME>/j2ee/<domain_name>/application-deployments/orabpel/ejb_ob_engine/orion-ejb-jar.xml	transaction-timeout	120
<SOA_ORACLE_HOME>/j2ee/<domain_name>/config/transaction-manager.xml	transaction-timeout	120

2. **Issue:** In ECO forward flow, after the ECO is processed successfully but the transfer status attribute (flex) in the ECO in Agile is not getting updated.

Solution: Check which flexfield attribute has been enabled corresponding to the change. Then, ensure that the same attribute has been configured in the `AIAConfigurationProperties.xml` for that property.

3. **Issue:** For the Item Cost update update flows, the attributes in Agile are not getting updated.

Solution: First check whether `Multisite_Enabled` property is set to True or False. Based on this given value, it should be ensured that the Cost attributes in `AIAConfigurationProperties.xml` are correctly set. Refer Chapter 4 of *Agile PLM Integration Pack for SAP: Design to Release - Implementation Guide*.

Installation Issues

1. **Issue:** After an un-successful install or uninstall, it is sometimes re-install the FP in the same directory location as the directory used for the earlier FP installation gets recreated after the server restart. You may see a directory like, D:\product\10.1.3.1\AIAFP_201, which contains just the logs as its sub-directory.

Solution:

- a. Stop SOA suite.
 - b. Go to <SOA_HOME>\j2ee\home\config
 - c. Open **j2ee-logging.xml** to edit.
 - d. Remove the logger and log handler configurations for AIA loggers
 - e. Restart SOA.
2. **Issue:** After an unsuccessful uninstall\installation sometimes we cannot re-install the FP in the same directory location as the FP installed complains there is already installed FP in the home given.

Solution:

Stop SOA suite.

- a. Go to <SOA_HOME>\opmn\conf\opmn.xml
- b. Go to process-type (defines the JVM) under /opmn/process-manager/ias-instance/ias-component corresponding to the SOA JVM in use
- c. Remove **aia home start-up** parameter from the start-up parameter list
- d. Restart the SOA.

You should be able to install the FP now.

Queue Issues

1. **Issue:** Once an ECO/MCO/SCO has been released in Agile, the Queue does not display any corresponding entry for the change order.

Solution:

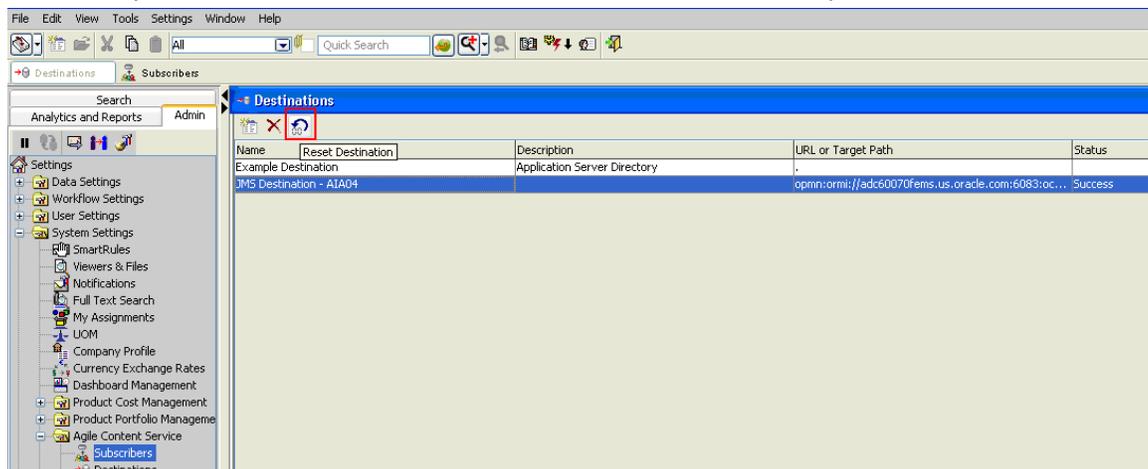
- a. Check Agile for ATO which was created on the release of the particular change order. Check the status on the **Where Sent** tab of the ATO.
- b. If it shows a 'Failure' message, this implies that an error occurred while ACS was processing the publishing of the data to JMS destination. The error message is specified in the Transmission Notes column.

Destination	Filters	Data Format	Language	Site	Date Sent	Transmission Status	Transmission Notes	Response	Roles
JMS Destination - AIA04	Default Change Order Filter, Default Item Filter	aXML	English	All		Failure	jms/QueueConnectionFactory not found		Execu (Rest) (Rest) Manag (Rest)

- c. After you make any necessary changes to the transfer order or the destination to correct the problem, 'Reset' the destination to attempt delivery again. Once a destination has failed, no other transfer orders can be sent to that destination until it has been reset.

To reset the destination:

- a. In Agile Java client, go to **Admin > System Settings > Agile Content Service > Destinations**.
- b. Select the particular destination and click on the **Reset** button on the top.



After resetting the Destination, test the Destination to ensure the Test is Successful for the Destination. In case it fails, this has to be resolved, mainly by ensuring all the ECO Queue settings are correct and OPMN Port specified in the URL is correct.

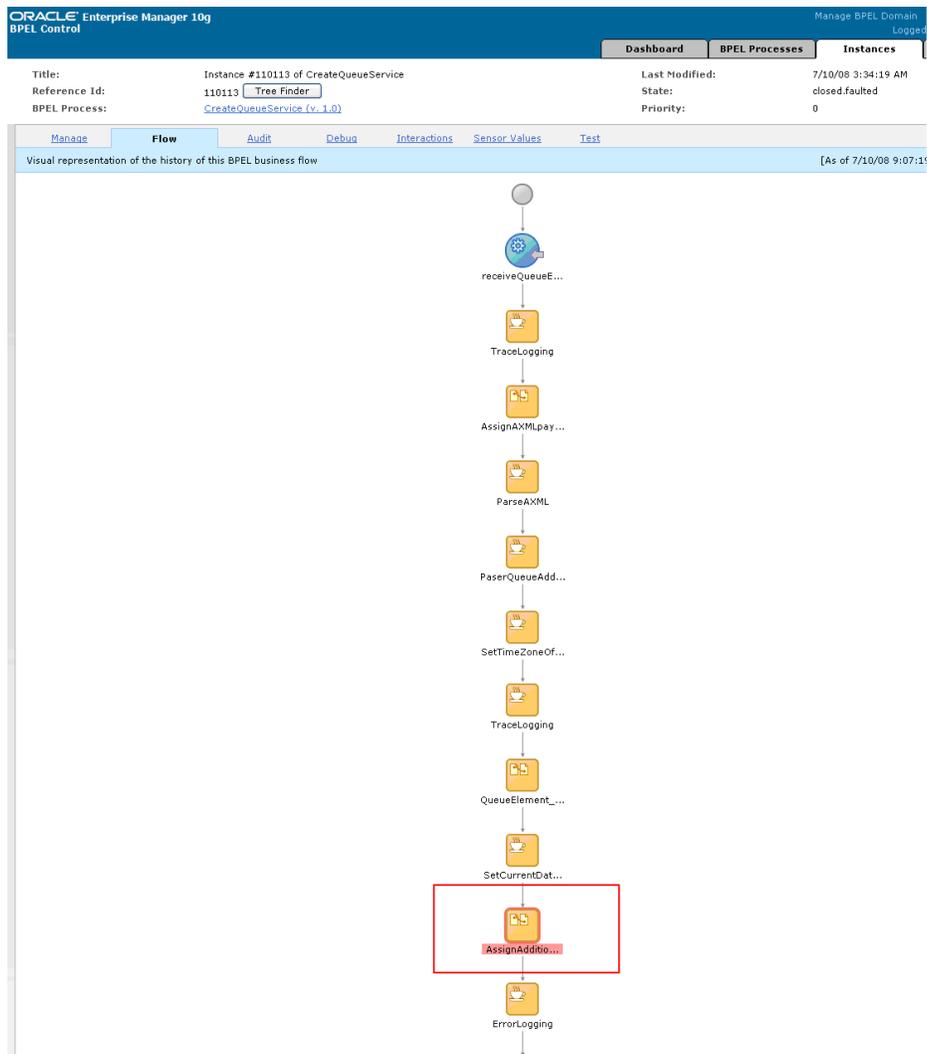
If the status of the ATO transfer is **Success**, it implies that the ACS publishing of data to JMS queue was successful. Then we need to troubleshoot in the BPEL console.

- c. Navigate to the BPEL Console: <http://<server name>:<port number>/BPELConsole>
- d. Click on the Instances tab. Check for the instance of the *CreateQueueService* for which the error has occurred.

The screenshot shows the Oracle Enterprise Manager 10g BPEL Control interface. The 'Instances' tab is selected, displaying a table of BPEL process instances. The table has columns for Instance, BPEL Process, and Last Modified. The instance 110114 is highlighted with a red box, indicating an error.

Instance	BPEL Process	Last Modified
110128 : Instance #110128 of QueueProcessorServiceImpl	QueueProcessorServiceImpl (v. 1.0)	7/10/08 9:06 PM
110129 : Instance #110129 of ProcessEngineeringChangeOr ...	ProcessEngineeringChangeOrderAgileReqABCS (v. 1.0)	7/10/08 9:06 PM
110130 : Instance #110130 of CreateEngineeringChangeOrd ...	CreateEngineeringChangeOrderListEbizProvABCSImpl (v. 1.0)	7/10/08 9:06 PM
110127 : Instance #110127 of CreateQueueService	CreateQueueService (v. 1.0)	7/10/08 9:05 PM
110124 : Instance #110124 of QueueProcessorServiceImpl	QueueProcessorServiceImpl (v. 1.0)	7/10/08 8:55 PM
110125 : Instance #110125 of ProcessEngineeringChangeOr ...	ProcessEngineeringChangeOrderAgileReqABCS (v. 1.0)	7/10/08 8:55 PM
110126 : Instance #110126 of CreateEngineeringChangeOrd ...	CreateEngineeringChangeOrderListEbizProvABCSImpl (v. 1.0)	7/10/08 8:55 PM
110123 : Instance #110123 of CreateQueueService	CreateQueueService (v. 1.0)	7/10/08 8:55 PM
110120 : Instance #110120 of QueueProcessorServiceImpl	QueueProcessorServiceImpl (v. 1.0)	7/10/08 8:19 AM
110114 : Instance #110114 of CreateQueueService	CreateQueueService (v. 1.0)	7/10/08 3:52 AM
110113 : Instance #110113 of CreateQueueService	CreateQueueService (v. 1.0)	7/10/08 3:34 AM

- e. Click on the Instance Name and go to the *Flow* link. In the BPEL flow shown, find the element at which the error has occurred.



- f. Click on the element to view the Activity Audit trail which will have details of the error.

SAP Issues

4. **Issue:** If there is an error in the BPELConsole for **SyncltemListSAPProvABCS** process with the error description as "*javax.xml.rpc.soap.SOAPFaultException: java.lang.Exception: BapiError: You have not fully maintained the descriptions*"

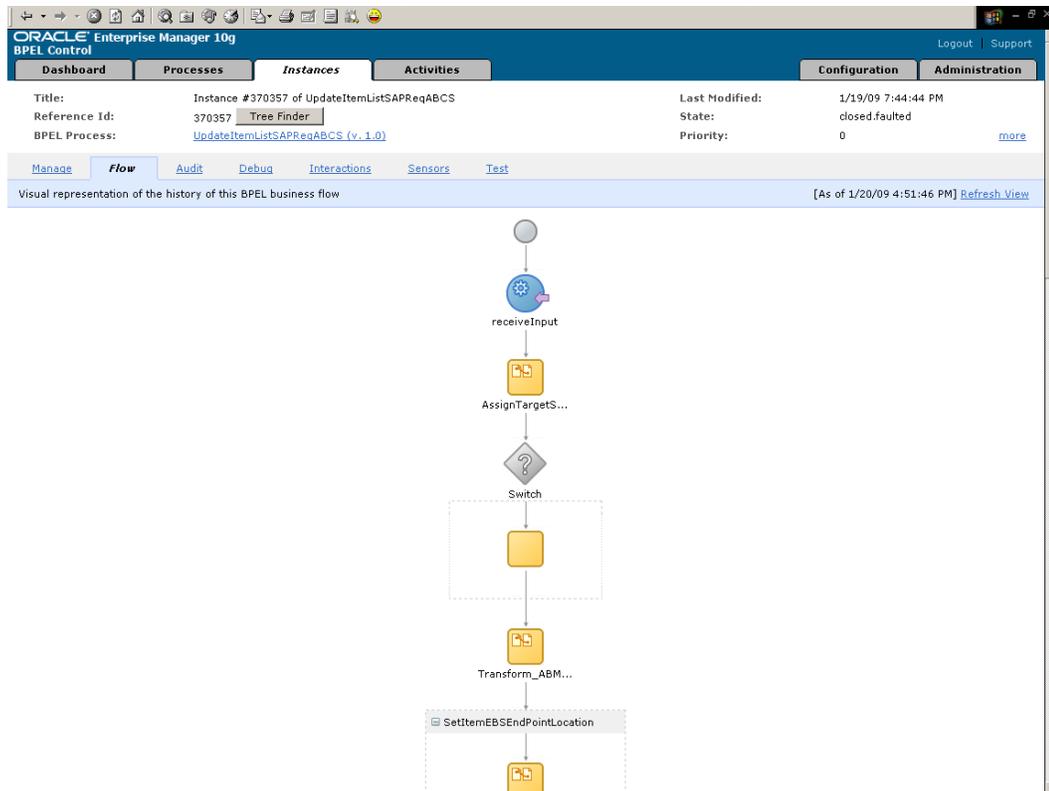
Solution: Check whether the particular Affected item has the description value being defined.

5. **Issue:** In case of SAP Item attributes update to Agile, if Agile application is down or there is any error in processing the data then the data cannot be resubmitted to Agile.

Solution: If there is any error in the SAP item attributes update to Agile an email will be sent to the customer/admin specifying the failure.

Follow the steps given below to identify the IDOC failed and resubmit the same from SAP:

- Open the error mail that was sent to the customer/user/admin.
- Click on the hyperlink provided on the error mail
- Open the BPELConsole and navigate to the instance that was given in the link



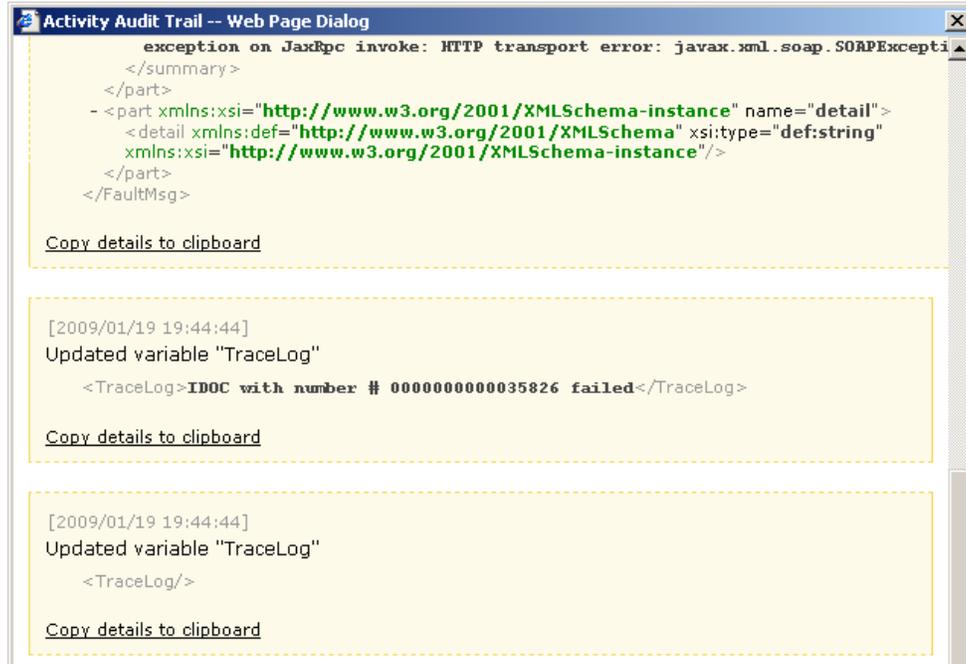
d. Scroll down to the AssignFault as shown below:

The screenshot shows a BPMN diagram with the following activities: Invoke_ItemEBS, Receive_ItemR..., Switch, and AssignFault. Below the diagram is an 'Activity Audit Trail' window for the 'AssignFault' activity. The audit trail shows the following log entry:

```
[2009/01/19 19:44:44]
Updated variable "FaultMsg"
- <FaultMsg>
- <part xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" name="code">
<code/>
</part>
- <part xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
name="summary">
<summary xmlns="" xmlns:def="http://www.w3.org/2001/XMLSchema"
xsi:type="def:string" xmlns:xsi="http://www.w3.org/2001/XMLSchema-
instance"/>
</part>
- <part xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" name="detail">
<detail xmlns="" xmlns:def="http://www.w3.org/2001/XMLSchema"
xsi:type="def:string" xmlns:xsi="http://www.w3.org/2001/XMLSchema-
instance"/>
</part>
</FaultMsg>
Copy details to clipboard

[2009/01/19 19:44:44]
Updated variable "FaultMsg"
```

- e. Scroll down to the edge and check the IDOC number that failed as given below



- f. Navigate to SAP application and re-submit the IDOC with the item attribute details provided.

Note: Please check whether the Agile application server is up and running before initiating the process.

2. **Issue:** If there is an error in **CreateBillOfMaterialsListSAPProvABCImpl** with the error description as *"javax.xml.rpc.soap.SOAPFaultException: com.sap.mw.jco.JCO\$AbapException: (126) ERROR: Terminate processing"*.

Solution:

- Check whether the components in the Bill Of Materials created in SAP. If the components are not created, add the components to the affected item and then release the ECO.
- Check whether the components have a valid Item Category, BOM Usage and Effectivity date.

3. **Issue:** If there is an error in **UpdateBillOfMaterialsListSAPProvABCImpl** with the error description as *"javax.xml.rpc.soap.SOAPFaultException: com.sap.mw.jco.JCO\$AbapException: (126) ERROR: Terminate processing"*

Solution:

- Check whether the components in the Bill Of Materials created in SAP or not. If the components are not created, add the components to the affected item and then release the ECO.
- Check whether the components have a valid Item Category, BOM Usage and Effectivity date.

- c. Check whether the components defined while creating the Bill Of Material have unique Find Number on Agile side.
4. **Issue:** If there is an error in **SyncItemListSAPProvABCS** with the error description as "*Exception during SOAP invoke: com.sap.mw.jco.JCO\$AbapException: (126) REVISION_LEVEL_EXISTS: REVISION_LEVEL_EXISTS*" even though the process is showing as success.
Solution: This error can be ignored as it is only a check for revision existence for the particular item/material.
5. **Issue:** If there is an error in **SyncItemListSAPProvABCS** or **ReserveItemSAPProvABCS** with the error description as "*Exception during SOAP invoke: java.lang.Exception: BapiError: Enter a material type; nested exception is: javax.xml.rpc.soap.SOAPFaultException: java.lang.Exception: BapiError: Enter a material type*"
Solution:
 - a. Check whether the ITEM_PRIMARYCLASSIFICATIONCODE DVM is mapped correctly. If not modify the same and re-submit from the queue management console.
 - b. Check whether the REFERENCEMATERIALS is mapped with the corresponding material on the SAP system.
6. **Issue:** If there is an error in **SyncItemListSAPProvABCS** with the error description as "*Exception during SOAP invoke: com.ibi.sap.SapAdapterException: Field: REV_LEVEL_NEW exceeds defined in structure INPUT allowed length 2: ABC; nested exception is: javax.xml.rpc.soap.SOAPFaultException: com.ibi.sap.SapAdapterException: Field: REV_LEVEL_NEW exceeds defined in structure INPUT allowed length 2: ABC*"
Solution: Check whether the revision level defined for the affected item is 2 characters.
7. **Issue:** **ESBMessageProcessingFailed** due to Timed out exception
Solution: Remove the ECO from the queue with processing state and re-release the ECO from Agile.

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