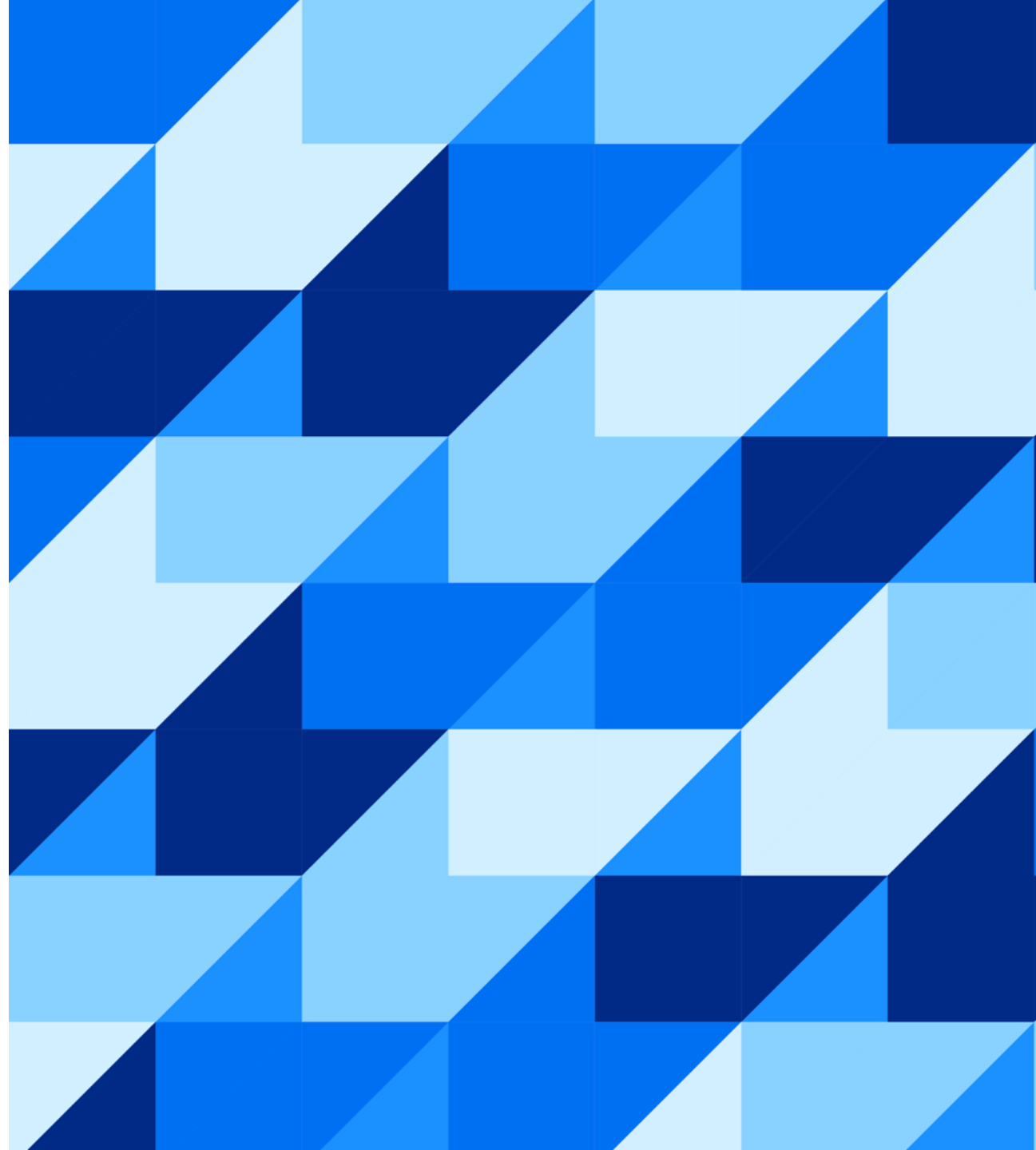




SAP Integration Suite Monthly Updates – March 2024

Product Management Team, SAP Integration Suite
Month 03, 2024

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Agenda

- Cloud Integration Updates – Sunny Kapoor (15')
- Graph Model Extension Editor with Multi- Source Support – Palak Garg (15')
- Pipeline Concept in Cloud Integration – Alexander Bundschuh (25')



Cloud Integration

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Defining Access Policies at Integration Package Level

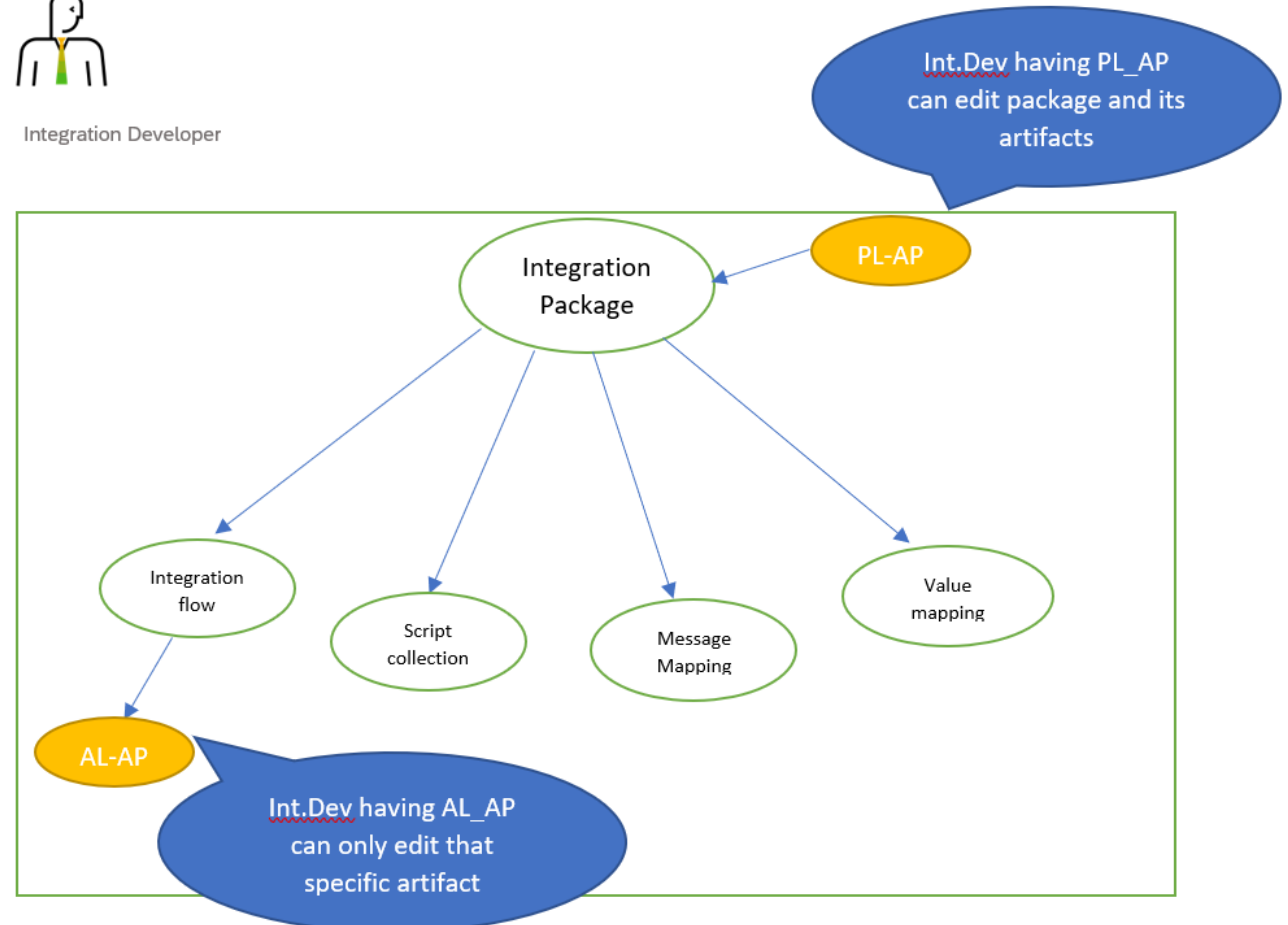
- You can now use access policies to protect all artifacts of an integration package.
- This enhancement simplifies administration efforts for tenant administrator considerably.
- If an access policy has been defined for an integration package, access policies for individual artifacts (within this package) will still be taken into account.

Recommendation

- To protect all artifacts of Package, apply PL-AP
- To protect one or some set of artifacts, apply, AL-AP



Integration Developer



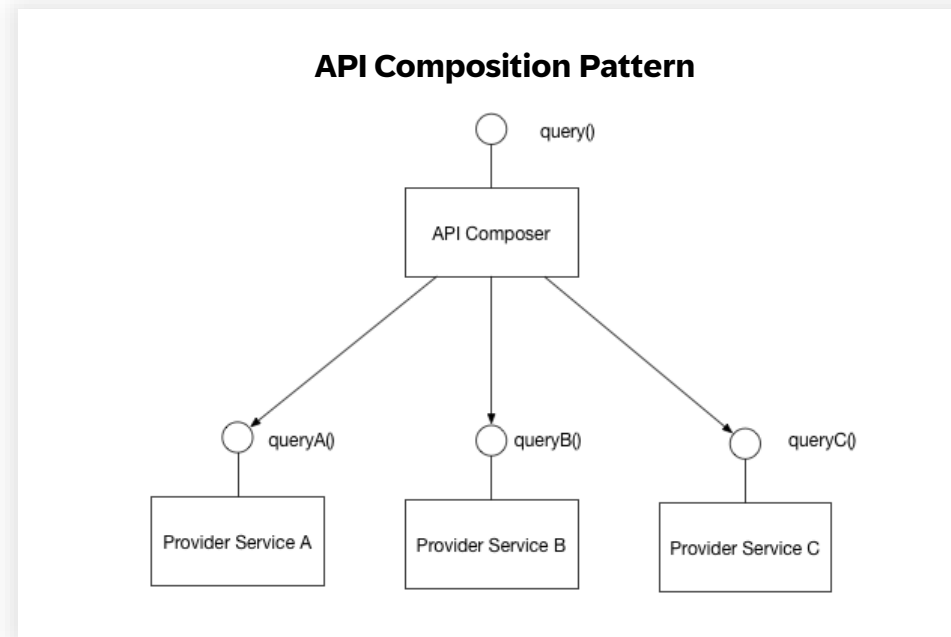
Other updates

- A new property (**SAP_IntegrationFlowID**) is available that contains the ID of the integration flow that sent a message through the **JMS receiver adapter**. The JMS consumer (reading the message through the JMS sender adapter) can use this property to define further steps that depend on the integration flow ID.
See: [Headers and Exchange Properties Provided by the Integration Framework](#)
- In the **SuccessFactors SOAP Receiver Adapter**, you can now dynamically define the **Address** and **Credential Name** fields in the message exchange.
See: [Configure the SuccessFactors SOAP Receiver Adapter](#)
- You can now provide an option to send additional request headers and custom query options for **\$metadata call** in **OData V4 Receiver Adapter**.
See: [Configure the OData V4 Receiver Adapter](#)
- You can now select the **encoding** format for the outgoing payload in **EDI to XML converter**.
See: [Define EDI to XML Converter](#)
- A new property allows you to **set the time zone** for the **XAdES SigningTime** element of the signature created by the **XML Signer step**.
See: [Signing the Message Content with XAdES-BES \(1\)](#)

API Management with Graph

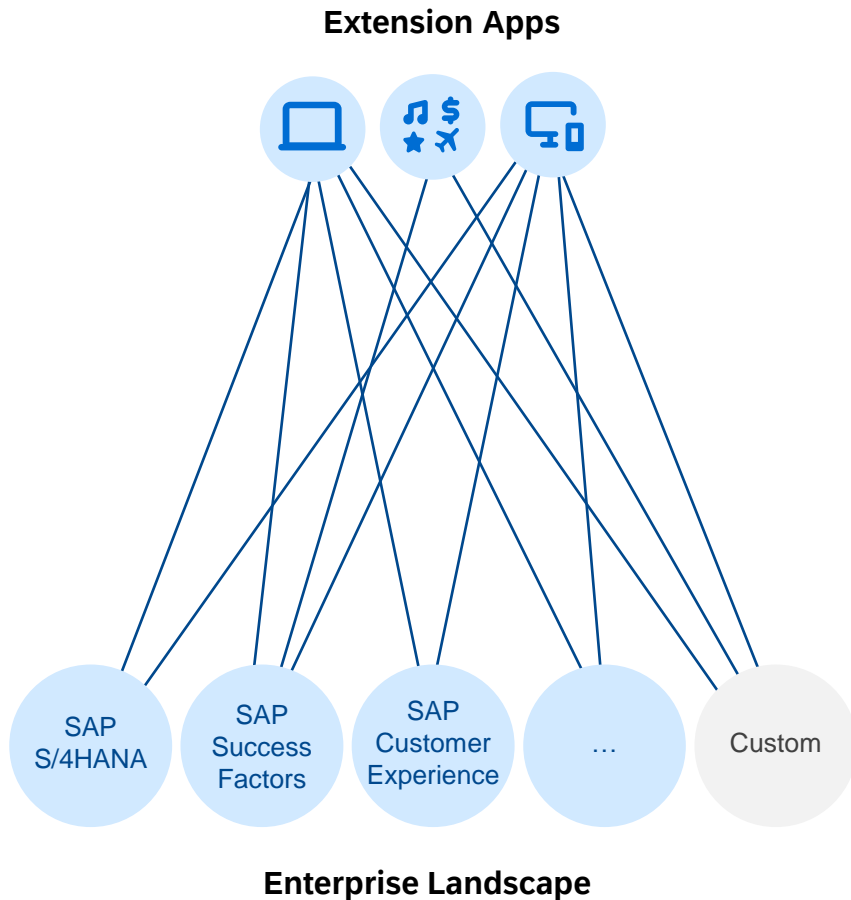
API Composition with Graph - Terminology

API Composition: Create a single unified API endpoint & API data model out of several APIs



microservices.io

The app developer challenge ...



App developers require ever more expertise and skills

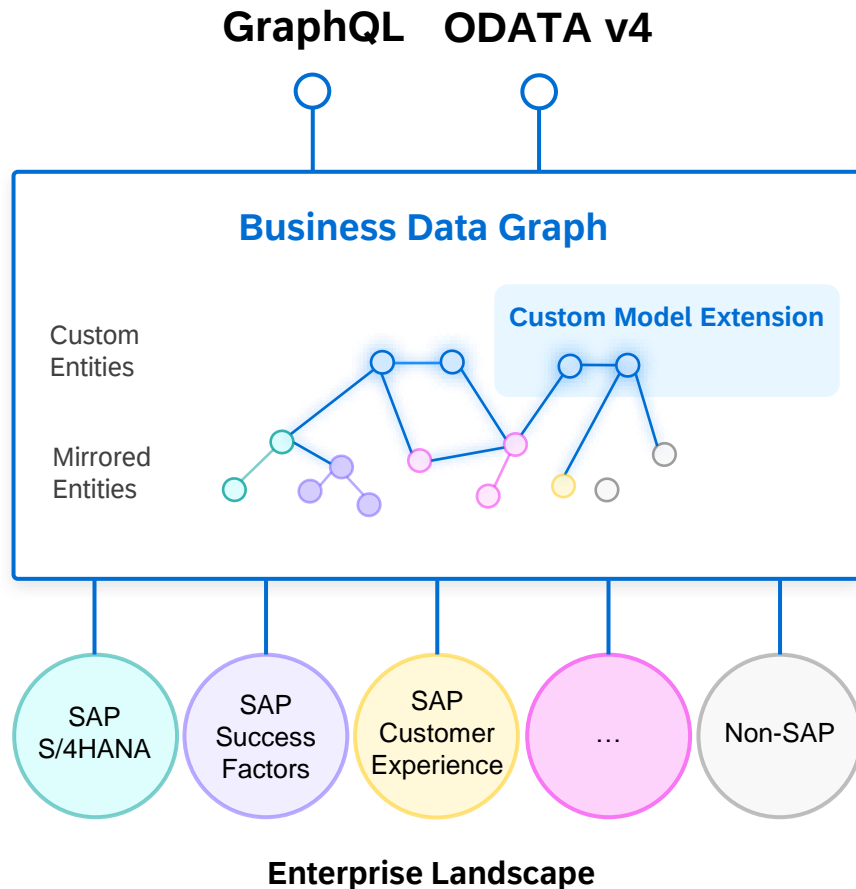
- Understanding the landscape: where data lives, replications, leading systems ...
- Facing diverse connectivity and security challenges
- Identifying and using the correct APIs

Each application deals with the same complexity...

Enterprise landscapes expand in scale and complexity

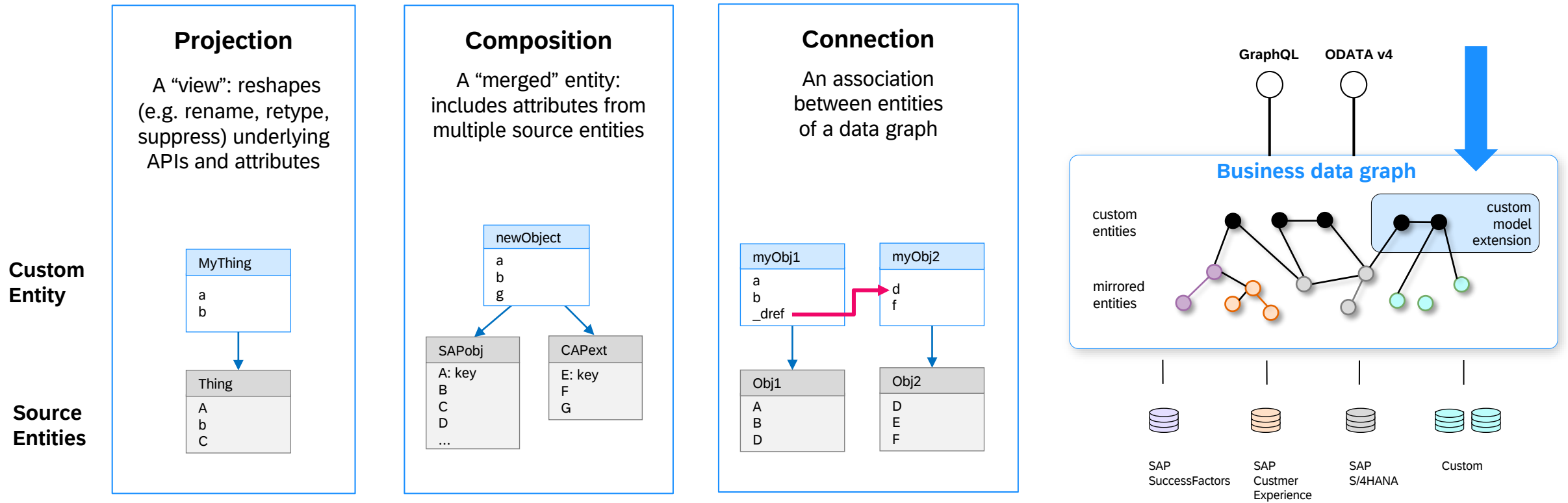
- Growing portfolio of cloud solutions from SAP and other cloud solutions, more diversity
- Various data models, security technologies, tools, APIs and protocols

Anatomy of a Business Data Graph (BDG)



- You control the policy of how data is exposed
- You can introduce your own **custom entities**
- The data objects are discovered: a business data graph is constructed out of **mirrored entities**, one-to-one, grouped into namespaces
- Supported SAP entities are **enriched** with thousands of semantic connections.
- You configure your data sources

Custom Model Extensions



Custom model extensions allow you to compose **your own data graph**.

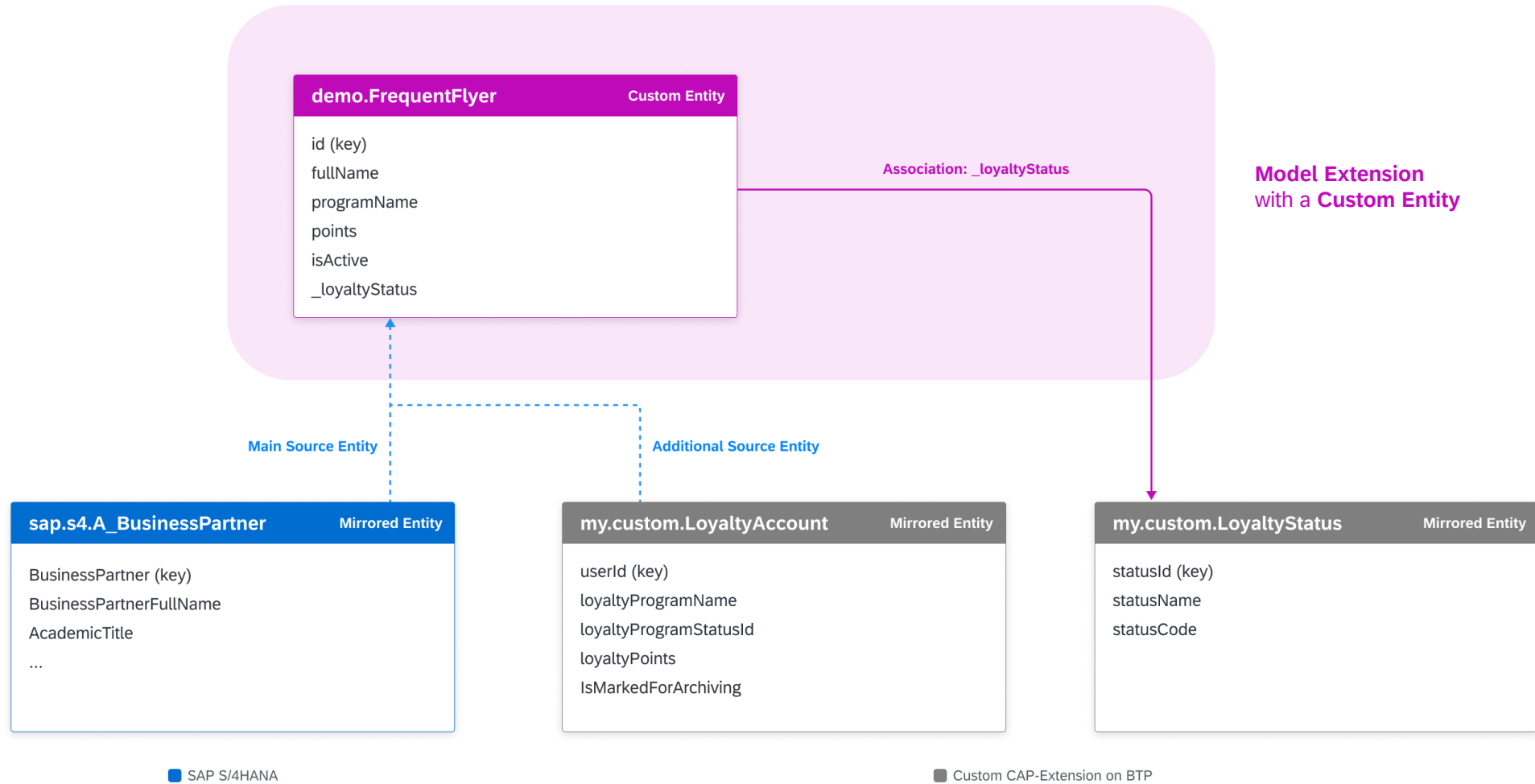


Demo

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Demo Scenario



Create model extensions using custom entities

The image displays a sequence of four screenshots from the SAP Integration Suite 'Create a Custom Entity' wizard, illustrating the process of creating a custom entity model extension.

Screenshot 1: Initial State
The 'demo-extension' workspace shows 'No Custom Entities'. A 'Create a custom entity' button is visible.

Screenshot 2: Step 1 - Name
The wizard prompts for a name and description. The 'Name' field is filled with 'demo.FrequentFlyer'. The 'Description' field is empty. A 'Read-only Custom Entity' checkbox is present.

Screenshot 3: Step 2 - Source Entities
The wizard prompts for the main source entity. 'sap.s4.A.BusinessPartner' is selected as the 'Main Source Entity'. An 'Additional Source Entities (optional)' table is shown below:

Entity	Cardinality	Composition Attribute
my.custom.LoyaltyAccount	0 or 1	-

An 'Add' button is located below the table.

Screenshot 4: Step 3 - Attributes
The wizard prompts for attributes to be added. A table lists attributes from the 'sap.s4.A.BusinessPartner' source entity:

Attribute	Constraint	Data Type	Add as
<input checked="" type="checkbox"/> BusinessPartner	key	String(10)	id
<input type="checkbox"/> Customer		String(10)	
<input type="checkbox"/> Supplier		String(10)	
<input type="checkbox"/> AcademicTitle		String(4)	
<input type="checkbox"/> AuthorizationGroup		String(4)	
<input type="checkbox"/> BusinessPartnerCateg		String(1)	
<input checked="" type="checkbox"/> BusinessPartnerFullna		String(81)	businessPartnerFullName
<input type="checkbox"/> BusinessPartnerGroupi		String(4)	
<input type="checkbox"/> BusinessPartnerName		String(81)	
<input type="checkbox"/> BusinessPartnerUID		UUID	

Below this table, an 'Add an Additional Source Entity' dialog is open, showing a join condition between 'sap.s4.A.BusinessPartner' (Main Source Entity) and 'my.custom.LoyaltyAccount' (Additional Source Entity). The dialog shows 'BusinessPartner (key)' as the Main Source Attribute and 'userid (key)' as the Additional Source Attribute. The 'Relation to Main Source Entity' is set to 'Cardinality: 0 or 1'.

Applying transformations in custom entities

The screenshot displays the SAP Integration Suite interface for configuring a custom entity named 'demo.FrequentFlyer'. The 'Attributes' tab is active, showing a table of attributes. The attribute 'isMarkedForArchiving' is selected, and its configuration details are shown in a sidebar on the right.

Attributes Table:

Name	Constraint	Data Type	Cardinality	Transform
<input type="checkbox"/> id	key	String		
<input type="checkbox"/> businessPartnerFullName		String		
<input type="checkbox"/> loyaltyProgramName		String		
<input type="checkbox"/> loyaltyPoints		Integer		
<input checked="" type="checkbox"/> isMarkedForArchiving		Boolean		

Attribute Details for 'isMarkedForArchiving':

- Name: * isActive
- Description: (empty field)
- Data Type: Boolean
- Key:
- Read-only: ?
- Projection Details:
 - Transformation: negation
 - Source Entity: my.custom.LoyaltyAccount
 - Source Attribute: isMarkedForArchiving

Buttons: Apply, Cancel

Adding a new association in custom entity

The screenshot displays the SAP Integration Suite interface for a custom entity named 'demo.FrequentFlyer'. The 'Attributes' tab is active, showing a list of attributes including 'id', 'businessPart', 'loyaltyProgram', 'loyaltyPoints', and 'isActive'. A modal dialog titled 'Add Association' is open, allowing the user to define a new association. The dialog includes the following fields and options:

- Type:** Radio buttons for 'Association to-one' (selected) and 'Association to-many'.
- Target:** A dropdown menu with the value 'my.custom.LoyaltyStatus'.
- Name:** A text input field containing '_loyaltyStatus'.
- Select matching source attributes for all association target key attributes:** A table with two columns: 'Association Target Key Attribute' and 'Source Attribute (Foreign Key)'. The first row shows 'statusId' in the first column and 'my.custom.LoyaltyAccount.loyaltyProgramSt...' in the second column.

Buttons for 'Add' and 'Cancel' are located at the bottom right of the dialog. The background interface also shows 'Edit' and 'Delete' buttons for the entity, and 'Apply' and 'Cancel' buttons at the bottom right of the main window.

Pipeline Concept in Cloud Integration

Pipeline concept in Cloud Integration: Motivation

Cloud Integration has a very flexible pipeline allowing the design of a rich variety of integration patterns. SAP Process Orchestration in contrary has a very strict pipeline designed for reliable message processing providing sophisticated decoupling, splitting and restarting capabilities while guaranteeing Exactly Once processing. This requirements are also still valid for interfaces in Cloud Integration.

Key achievements of the pipeline in Cloud Integration are:

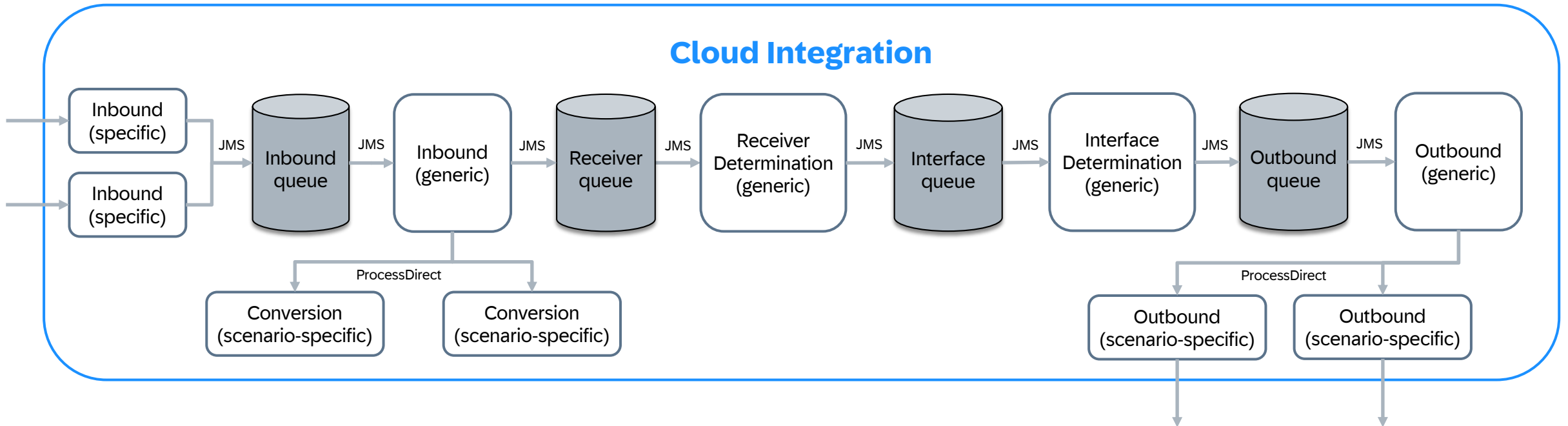
- Ensures decoupling and **Exactly Once** processing for asynchronous processing (also for split and restart)
- Provides sophisticated **restart capabilities** (automatic retries and also manual retry options)
- Simplifies operations by **separating errors** into different generic queues separated by routing/mapping and receiver backend delivery
- Allows **reusability of artifacts** across multiple flows by using generic concept
- Allows **easy isolation** and **tuning of parallelization** for individual receiver systems
- Simplifies **configuration on the sender system** – e.g. just one ALE port on S/4 required
- Requires **lower number of JMS queues** to respect the limits of an Integration Suite tenant, as a side effect simplifying operations
- Supports packaging in IDoc/Proxy, Multi-Message mapping and maintain-order at runtime **in a generic manner**
- **Simplifies integration flow model** especially for content based router and recipient list scenarios

Pipeline concept in Cloud Integration at a glance

Key elements:

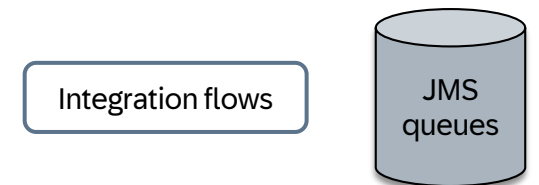
- **Sequence of integration flows** each representing a pipeline step
 - Generic flows are used across all integration scenarios
 - Scenario-specific integration flows handle the scenario-specific message conversions and mappings
- **Partner Directory**
 - to define the message processing behavior, e.g., max number of retries, receiver specific queue
 - to dynamically configure the generic integration flows
- **XSLT mappings** to carry out the receiver determination and interface split pipeline steps
- Combination of **JMS queues and ProcessDirect** adapters to connect the pipeline steps
 - Need of 4 queues and 2 ProcessDirect connections
 - Need of 4 additional queues to park queue in case of errors (dead letter queues)

Sequence of integration flows / pipelines



The pipeline concept in a nutshell:

- Could handle all async scenarios with just 4 JMS queues
- Consists of generic and scenario-specific integration flows
- Dynamic configuration to process messages individually using Partner Directory



Special cases

- Generic inbound integration flow that acts as **one single entry point for XI proxy inbound** scenarios
- Generic inbound integration flow that acts as **one single entry point for IDoc inbound** scenarios
- **Reuse extended receiver determination** message mapping instead of XSLT
- Support for **receiver-specific JMS queues** if required (default is the generic outbound queue)

Pipeline step 1: Example for Scenario-Specific Inbound Processing

The screenshot displays the SAP Integration Suite interface for configuring a pipeline step. The main view shows an integration process with a 'Sender' on the left and a 'Receiver' on the right. The process flow is: Sender (SOAP) → Start → Set SAP headers → End → JMS → Receiver. The 'Set SAP headers' step is expanded, showing a table of headers to be added to the message.

Content Modifier | Externalize | ? | - | ↗

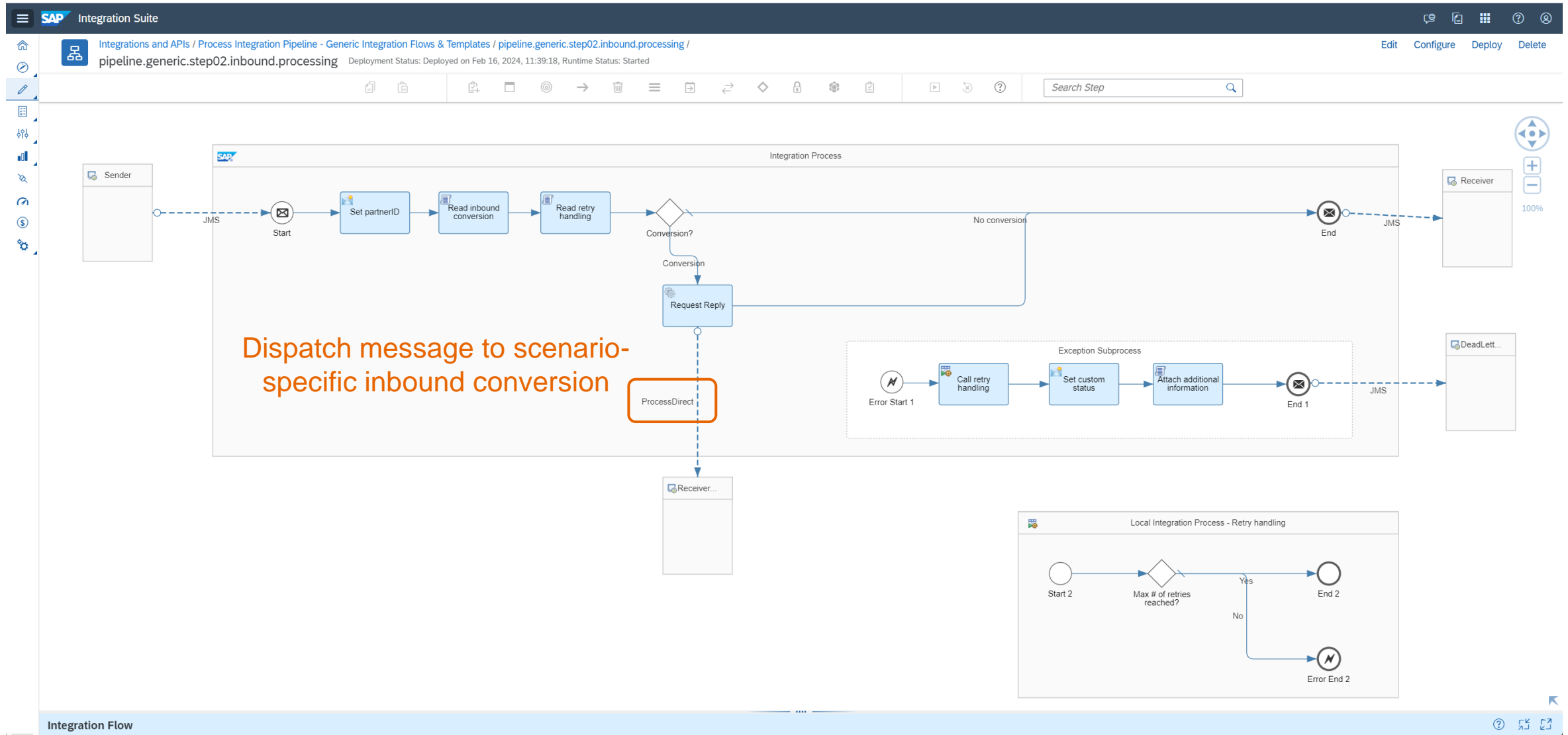
General | **Message Header** | Exchange Property | Message Body

Headers: Add Delete Move Up Move Down

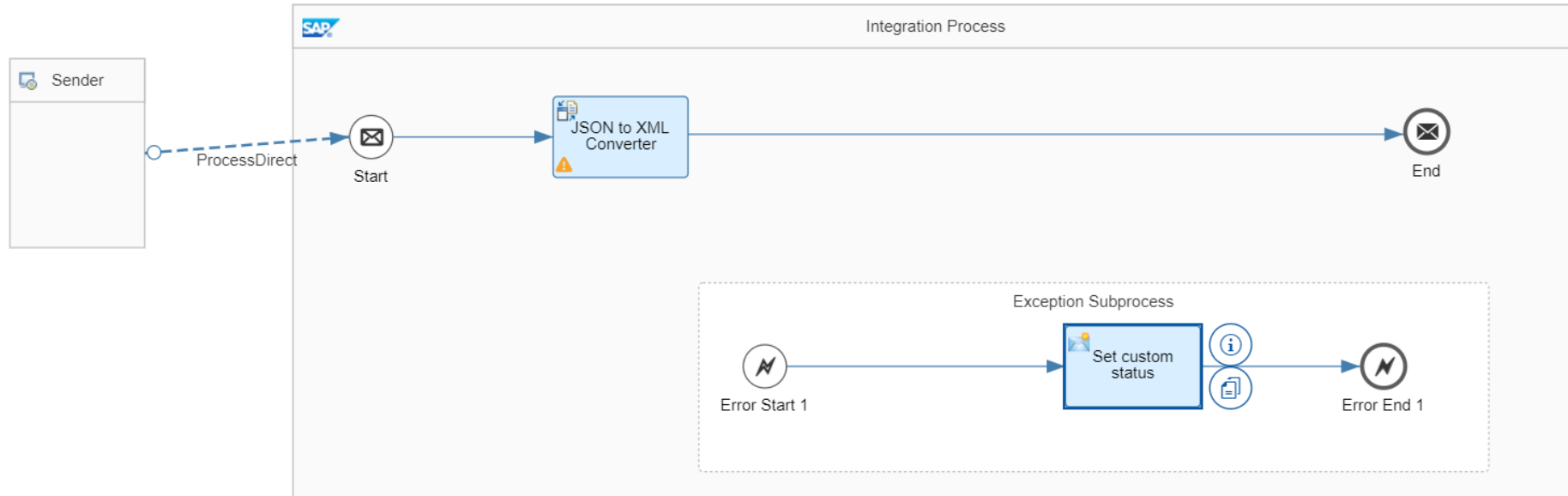
<input type="checkbox"/>	Action	Name	Source Type	Source Value	Data Type	Default Value
<input type="checkbox"/>	Create	SAP_Sender	Constant	Sender_1		
<input type="checkbox"/>	Create	SAP_SenderInterface	Constant	Interface_1		
<input type="checkbox"/>	Create	SAP_MessageType	Header	SAP_SenderInterface		

[Select](#)

Pipeline step 2: Generic Inbound Processing



Pipeline step 3: Example for Scenario-Specific Inbound Conversion



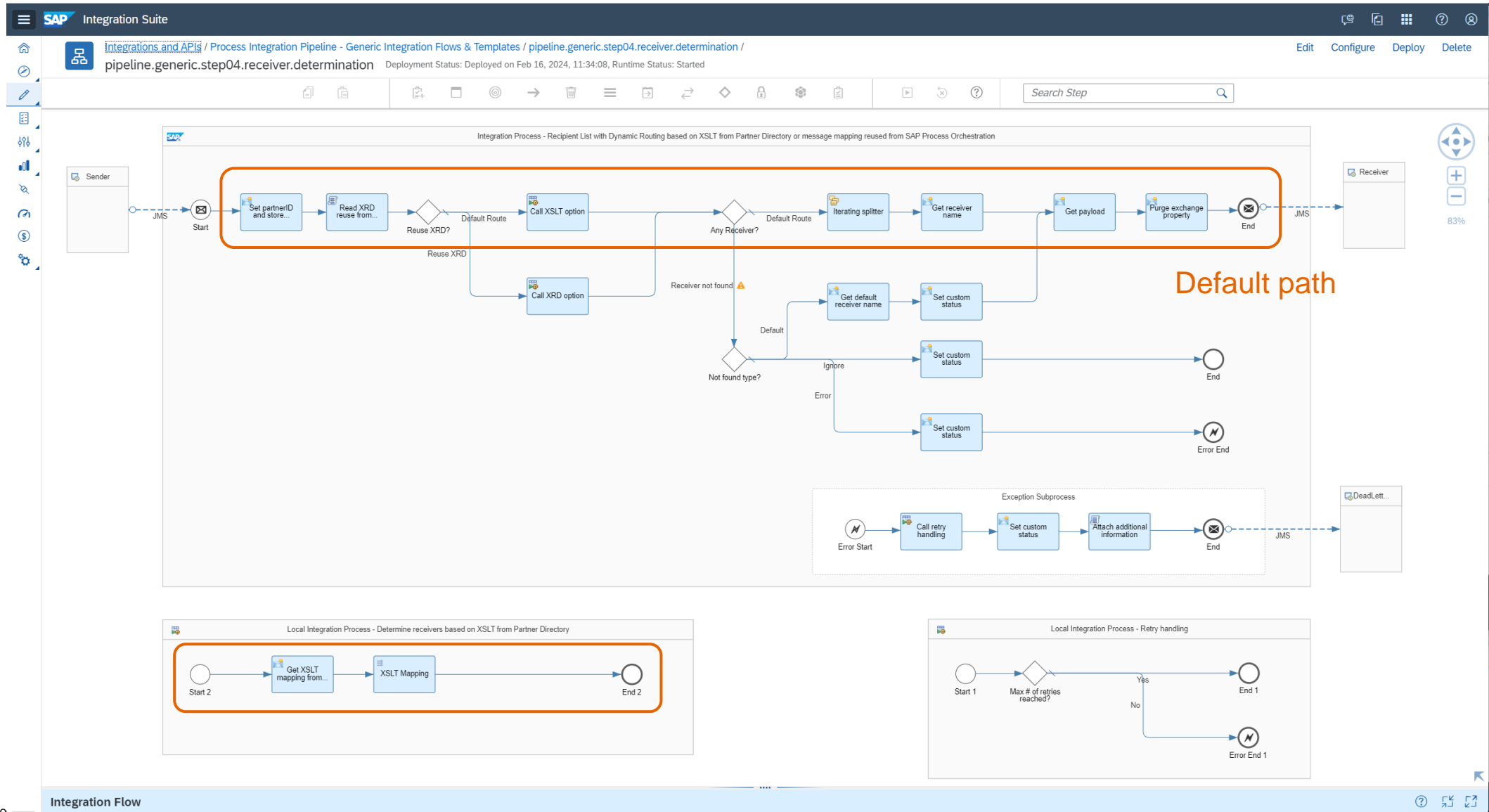
Content Modifier

General Message Header Exchange Property Message Body

Properties:

Action	Name	Source Type	Source Value
Create	SAP_MessageProcessingLogCustomStatus	Constant	RetryViaParentFlow

Pipeline step 4: Generic Receiver Determination



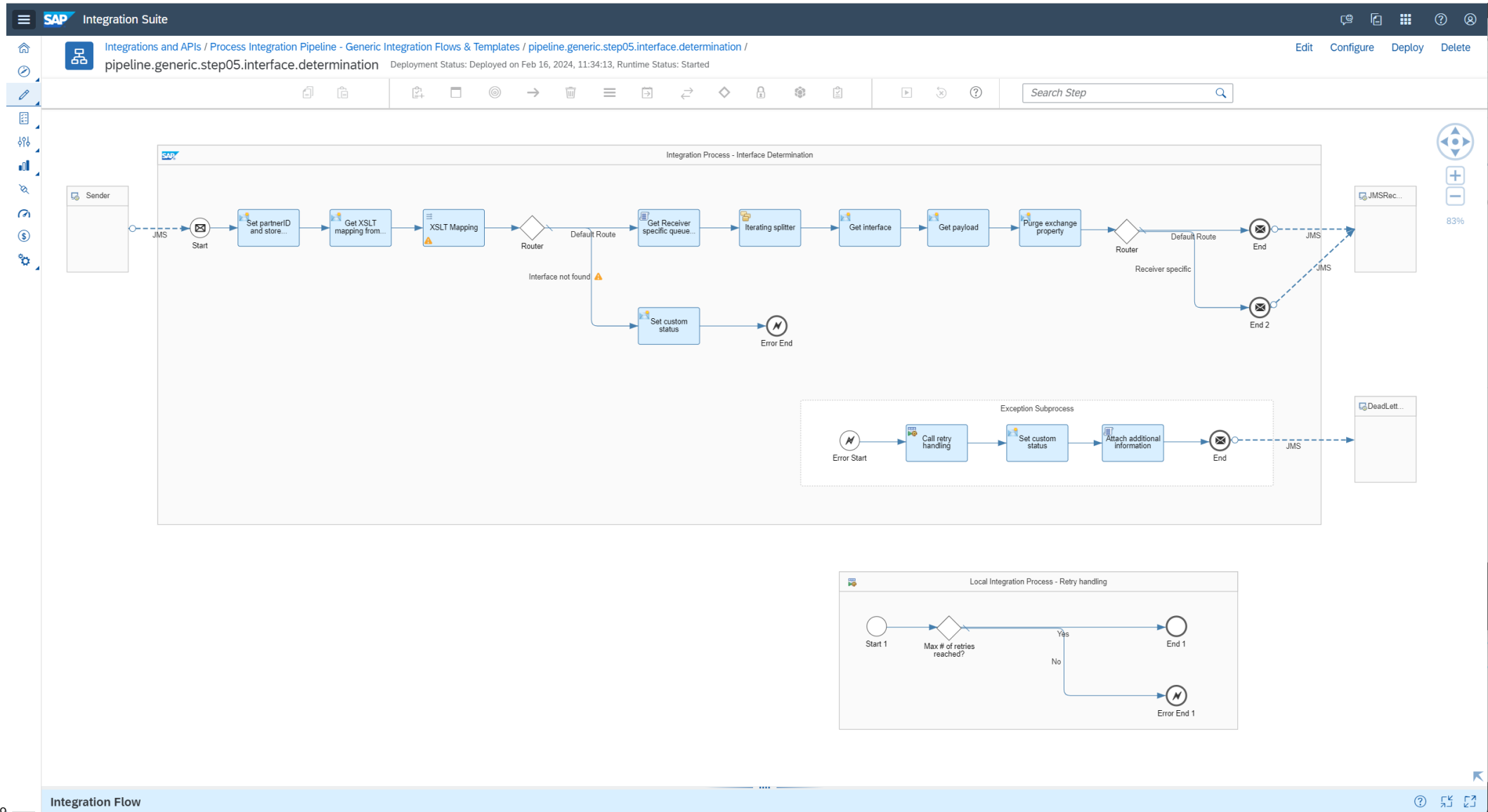
Generic Receiver Determination – Sample Receivers XSLT

```
<?xml version="1.0" encoding="UTF-8"?>
<xsl:stylesheet version="3.0" xmlns:xsl="http://www.w3.org/1999/XSL/Transform">
  <xsl:template match="/">
    <ns0:Receivers xmlns:ns0="http://sap.com/xi/XI/System">
      <ReceiverNotDetermined>
        <Type>Error</Type>
        <DefaultReceiver/>
      </ReceiverNotDetermined>
      <xsl:if test="/*:Item/Category = 'Keyboards'">
        <Receiver>
          <Service>Receiver_1</Service>
        </Receiver>
      </xsl:if>
      <xsl:if test="(/*:Item/Category = 'Keyboards') or (/*:Item/Category = 'Software'">
        <Receiver>
          <Service>Receiver_2</Service>
        </Receiver>
      </xsl:if>
      <xsl:if test="(/*:Item/Category = 'Keyboards') and (/*:Item/ProductName != 'XXXX'">
        <Receiver>
          <Service>Receiver_3</Service>
        </Receiver>
      </xsl:if>
    </ns0:Receivers>
  </xsl:template>
</xsl:stylesheet>
```

Generic Receiver Determination – Sample Receivers XML

```
<?xml version="1.0" encoding="UTF-8"?>
<ns0:Receivers xmlns:ns0="http://sap.com/xi/XI/System">
  <ReceiverNotDetermined>
    <Type>Error</Type>
    <DefaultReceiver/>
  </ReceiverNotDetermined>
  <Receiver>
    <Service>Receiver_1</Service>
  </Receiver>
  <Receiver>
    <Service>Receiver_2</Service>
  </Receiver>
</ns0:Receivers>
```

Pipeline step 5: Generic Interface Determination



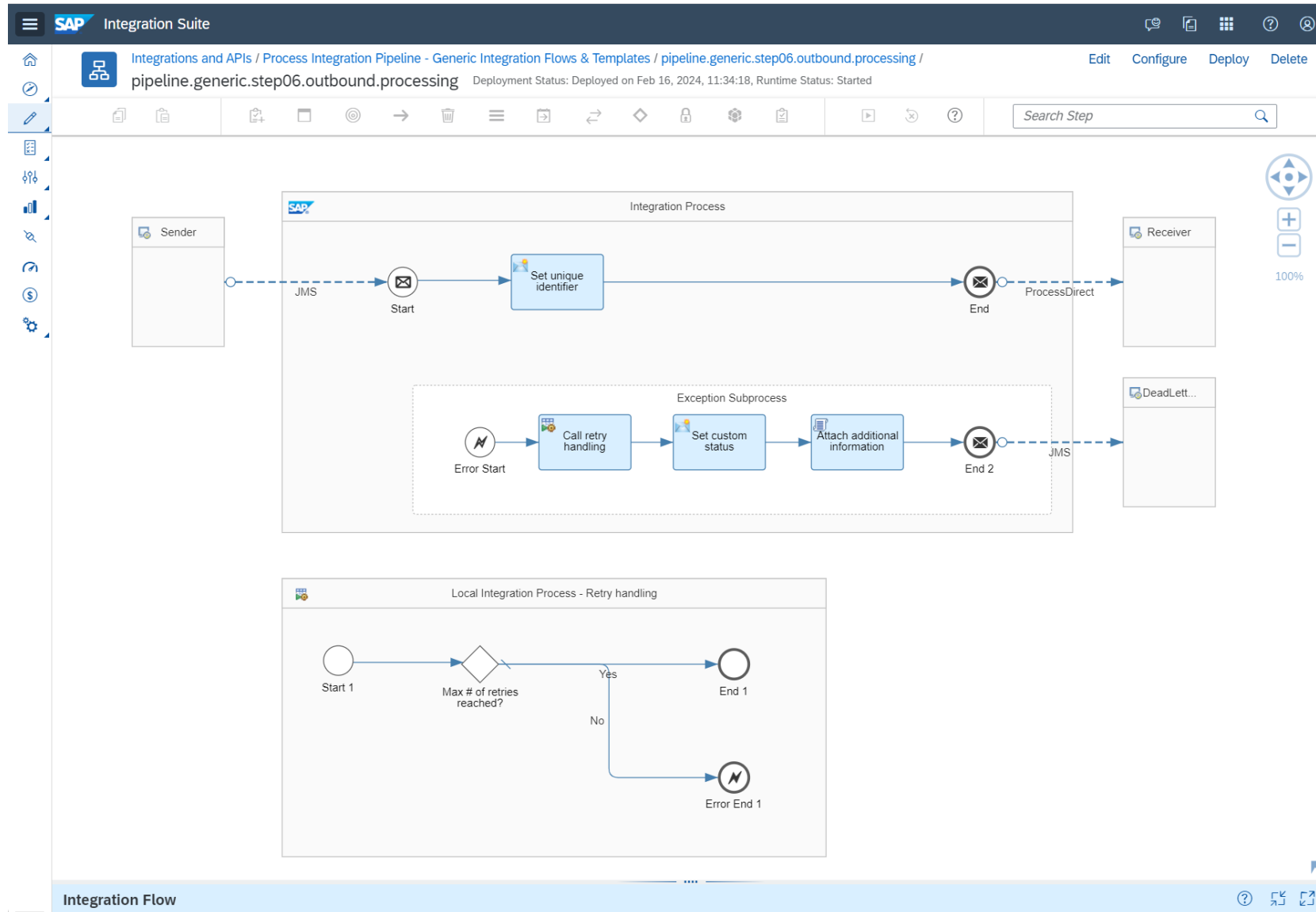
Generic Interface Determination – Sample Interfaces XSLT

```
<?xml version="1.0" encoding="UTF-8"?>
<xsl:stylesheet version="3.0" xmlns:xsl="http://www.w3.org/1999/XSL/Transform">
  <xsl:template match="/">
    <ns0:Interfaces xmlns:ns0="http://sap.com/xi/XI/System">
      <xsl:if test="/*:Item/Quantity = '10'">
        <Interface>
          <Index>1</Index>
          <Service>/pip/07/scenario1/rcvidx1/ifidx1</Service>
        </Interface>
      </xsl:if>
      <xsl:if test="/*:Item/CurrencyCode = 'EUR'">
        <Interface>
          <Index>2</Index>
          <Service>/pip/07/scenario1/rcvidx1/ifidx2</Service>
        </Interface>
      </xsl:if>
      <xsl:if test="/*:Item/Quantity != '10'">
        <Interface>
          <Index>3</Index>
          <Service>/pip/07/scenario1/rcvidx1/ifidx3</Service>
        </Interface>
      </xsl:if>
    </ns0:Interfaces>
  </xsl:template>
</xsl:stylesheet>
```

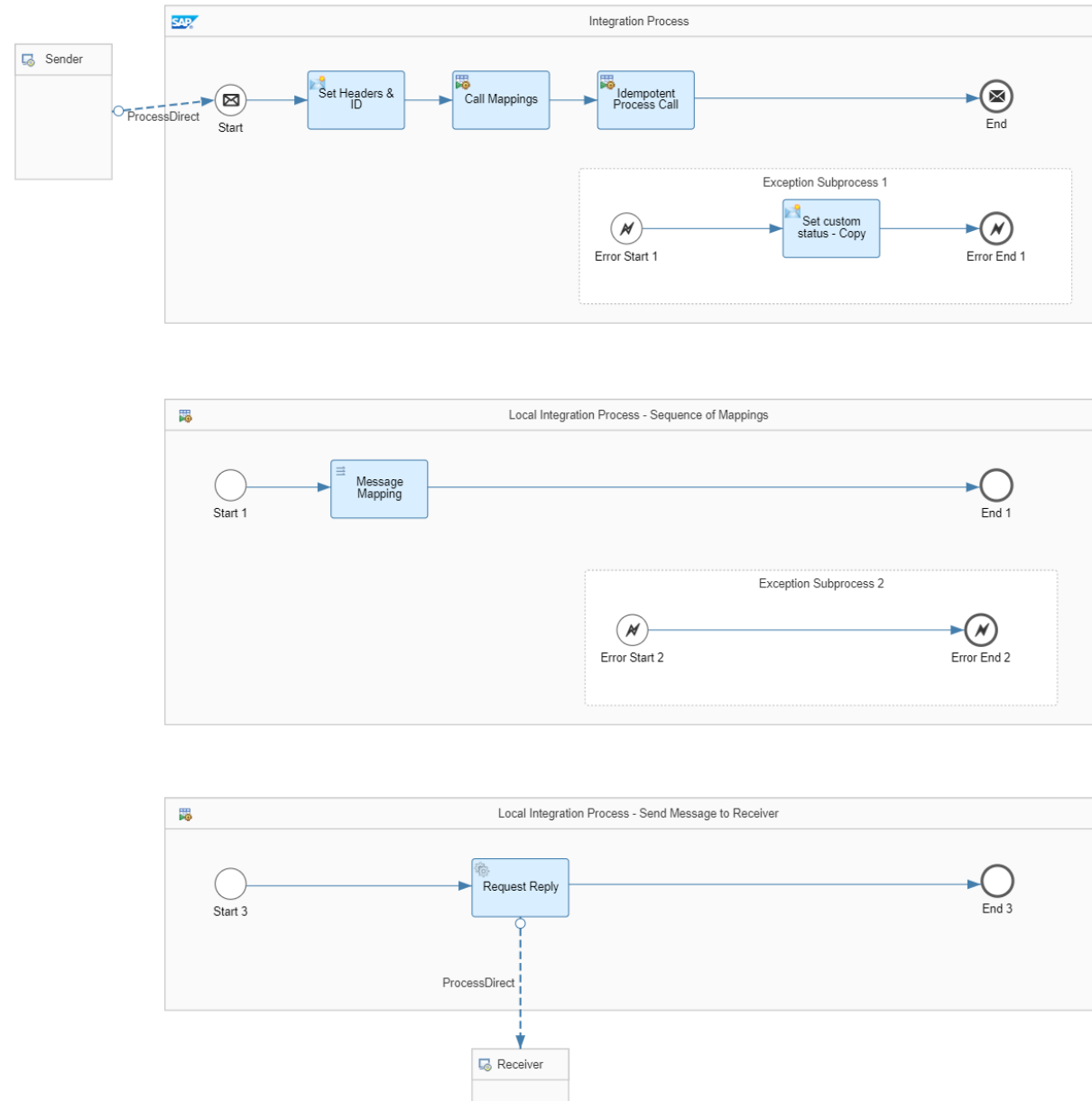
Generic Interface Determination – Sample Interfaces XML

```
<?xml version="1.0" encoding="UTF-8"?>
<ns0:Interfaces xmlns:ns0="http://sap.com/xi/XI/System">
  <Interface>
    <Index>1</Index>
    <Service>/pip/07/scenario1/rcvidx1/ifidx1</Service>
  </Interface>
  <Interface>
    <Index>2</Index>
    <Service>/pip/07/scenario1/rcvidx1/ifidx2</Service>
  </Interface>
</ns0:Interfaces>
```

Pipeline step 6: Generic Outbound Processing



Pipeline step 7: Example for Scenario-Specific Outbound Processing



Further information

[Pipeline concept in migration guide for SAP Process Orchestration](#)

[Integration package at SAP Business Accelerator Hub](#)

[Blog series in SAP Community](#)

The screenshot displays the SAP Business Accelerator Hub interface. At the top, there is a navigation bar with the SAP logo, 'Business Accelerator Hub', and links for 'Explore', 'Resources', 'Discover Integrations', and 'Partner with Us'. A 'Login' button is also present. Below the navigation bar, the main heading is 'Process Integration Pipeline - Generic Integration Flows & Templates'. Underneath this heading, there is a brief description: 'This integration package contains the generic integration flows required to setup a Process Integration pipeline on Cloud Integration for asynchronous message processing incl. templates for setting up the scenario-specific integration flows.' To the right of this description are three buttons: 'Add To Workspace', 'Mark As favourite', and 'Subscribe'. Below the description, there is a tabbed interface with 'Overview', 'Integration Flow' (selected), 'Script Collection', and 'Documents'. The 'Integration Flow' tab shows a list of 14 results, with the first page displaying 8 items. The items are arranged in a grid and include titles like 'Pipeline Generic Step01 - Inbound Processing for Idoc', 'Pipeline Generic Step01 - Inbound Processing for XI', 'Pipeline Generic Step02 - Inbound Processing', 'Pipeline Generic Step04 - Receiver Determination', 'Pipeline Generic Step05 - Interface Determination', 'Pipeline Generic Step06 - Outbound Processing', 'Pipeline Template Step01 - Inbound Processing At Least Once', and 'Pipeline Template Step01 - Inbound Processing Exactly Once'. Each item includes a description and a version number (1.0.0). On the right side of the page, there is a vertical 'FEEDBACK' button and a 'Chat (Beta)' button at the bottom right.

Thank you.

Contact information:

Name
Email



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