# OIIE Scenario 37 – Push Request for Models Matching Known Engineering and Asset Data from REG to OEM PRODUCT

This scenario details the exchange of an RFI, and its response, requesting possible models matching a set of data known about an asset that typically occurs for Brownfield sites after a plant/facility has been operating for a period of time. The request originates from the O&M Registry and is sent to Manufacturer Product Data Management Systems. Engineering Data Sheets, describing the functional requirements, and Asset Data Sheets are provided in an agreed upon standard form, such as an Industry Standard Datasheet Definition (ISDD). Using standardized property sets for equipment classes based on recognized industry standard data sheets improves the understandability of core requirements properties, potentially allowing automated systems to perform matching of the requirements to product models. O/Os and OEMs must create mappings to the standardized data sheets for the properties they wish to share.

## Actors

| | |
|---|---|
| **O&M Registry (REG-LOCATION/-ASSET/-PRODUCT)** | Send requests for models matching known data, including engineering & asset data sheets in an agreed standard format, and receive possible models that meet or exceed those requirements. |
| **Manufacturer Product Management System (OEM PRODUCT)** | External system of record for engineering product data. Receive requests for models matching provided data and reply with a list of models that meet or exceed those requirements. |

## Data Content

The data sent from the O&M Registry to the OEM PDM System is, at a minimum, composed of:

- The asset (its serial number in particular)

In addition, the following data may be sent as available:

- The functional location (P&ID Tag) in which the asset is installed

- The timestamp at which the asset was (first) installed—this may help narrow the search to matching product models that were available before the first install date

- Engineering Data Sheets containing the functional requirements for each location (or group of locations)

- Asset/Product Data Sheets containing any known data (e.g., operating parameters) of the asset that may be helpful in finding the matching model

Optional In addition, the following data can be sent for context:

- The agent (person or organization) making the request, for contact purposes

- A timestamp indicating a deadline by which a response should be made

- Additional property sets/data sheets specifying additional information that may be taken into account when finding models that match the provided data

In response, data sent from the OEM PDM System to the Procurement Management System is, at a minimum, composed of:

- The assets

- The model(s) that match the given data associated with each asset.

## Engineering/Asset Data Sheet Requirements

To achieve interoperability, the data sheets representing functional requirements and asset properties will be exchanged in an agreed upon standard format. By using standardized property sets for the functional requirements of key equipment classes, the properties can be understood by both parties and potentially supports automated methods for matching models. This scenario recommends the use of Industry Standard Datasheet Definitions (ISDDs) as the standardized form for representing Data Sheets. ISDDs are based on industry accepted reference data sheets such as those published by industry standards bodies and associations, for example ISA, API, PIP, etc.

Where possible, the engineering properties of functional locations describing the requirements and operating properties of the installed equipment will conform to a standardized ISDD for each equipment/device class. Where no standardized ISDD is available, the engineering properties may conform to an agreed upon enterprise datasheet definition conforming to the ISDD specification.

The specific ISDDs to be utilized are agreed upon a priori according to Use Case 11.

NOTE    O/Os and OEMs will need to map their engineering data and product data to the ISDD properties.

## MIMOSA CCOM Reference Types

For the purposes of reference data management, the following MIMOSA CCOM types may be referenced:

- AssetType

- PropertySetType/PropertySetDefinition (for Data Sheets)

  - Engineering Data Sheet related attribute sets must be related to the PropertySetType 'Engineering Data Sheet' (UUID: `4d568f12-8f82-4203-bb13-48643cecbb82`) either directly, or through the parent hierarchy of an PropertySetType taxonomy.

  - Asset Data Sheet related attribute sets may be related to the PropertySetType 'Operations Data Sheet' (UUID: `e95e853b-557b-4bea-b337-bdcdf516a6c6`) or 'Maintenance Data Sheet' (UUID: `dc299443-50ae-48c5-b5b8-8c01301b7bce`) either directly, or through the parent hierarchy of an PropertySetType taxonomy.

  - The reference PropertySetTypes and PropertySetDefinitions should come from the catalogue of published ISDDs.

- PropertyType/PropertyDefinition

- EventType

  - Asset installations are represented by the 'Installation of Asset on Segment' EventType UUID: `ecc99353-412b-4995-bd71-1cbc6fc16c7c`

- RequestType

    - The RFI must be of the type 'Model Information Request for Asset'
      (UUID: `04d75755-bda7-4b25-a65a-ec91d9b34c4b`)

- SegmentType

- UnitType

NOTE    For versions of MIMOSA CCOM prior to 4.1, the types referring to 'Property' use the term 'Attribute' instead.

# System Interoperability Events

This scenario the requires the sending/receipt of the following Events:

- Push RFI for Models Matching Asset Data

Optional The following events may be required if the functional components of the O&M Registry (LOCATION, ASSET, PRODUCT) are realized as separate systems:

- Get Functional Locations

- Get Assets

- Get Asset Installation Data

- Get Engineering Data Sheets

- Get Asset Data Sheets

# Data Formats

The data sent/received by the O&M Registry and sent/received by the OEM PDM System must conform to MIMOSA CCOM BODs.

# Infrastructural Components

## ISBM

The communication between all systems occurs via the ISBM using request-response services.

### Implementation Requirements

The O&M Registry must implement a client for the ISBM Consumer Request and Channel Management Services (GetChannel operation only).

The OEM PDM System must implement a client for the ISBM Provider Request and Channel Management Services (GetChannel operation only).

All systems may implement the ISBM Notify Listener Service for message notification.

## Suggested Channel/Topic Configuration

This is an inter-enterprise Scenario involving an OEM PDM system and an O&M system and so two possible ISBM configurations could be used depending on whether the ISBM is shared infrastructure or each party manages their own instance. In the latter case, each party will have their own channel configurations defined from their perspective that must be mapped between the instances.

### *Inter-Enterprise Configuration*

If each party, i.e., the OEM PDM system and O&M system in this case, manage their own ISBM instance then the two ISBMs must be connected and the channels mapped between instances.

The O&M system can create a channel specifically for the model RFIs as follows:

```
/Enterprise/Enterprise Subdivision/.../Model/RFI/ISO18435:D4.2/Request
```

For example:

```
/Demo Enterprise/Refinery A/Area A/ISO18435:D4.2/Model/RFI/Request
```

The OEM PDM system can create channel specifically for model data as follows:

```
/OEM/OEM Subdivision/.../Model/RFI/ISO18435:D4.2/Request
```

For example:

```
/Demo Supplier/Product Management/Model/RFI/ISO18435:D4.2/Request
```

The mapping between these two channels will be recorded as part of the inter-enterprise configuration management of the ISBM.

### *Shared Configuration*

When both parties (OEM PDM system and O&M system) communicate via a single ISBM instance, for example, the O&M system has invited the OEM PDM system to directly connect to their OIIE instance as part of contracting arrangements, a channel can be created specifically for model data as follows:

```
/Enterprise/Suppliers/OEM/Model/RFI/ISO18435:D4.2/Request
```

For example:

```
/Demo Enterprise/Suppliers/Demo Supplier/Model/RFI/IS18435:D4.2/Request
```

### *Topic Configuration*

As outlined in the document ISBM Guidelines, topics should match the message content. Correspondingly, the following topic format should be used:

```
OIIE:S37:V1.1/StandardSchemaName{:Version}
```

For example:

```
OIIE:S37:V1.1/CCOM-XML:ProcessModelRequestForAsset:V1.0
```

## SDAIR

In this Scenario, an SDAIR may participate as an explicit actor in the role of O&M Registry and/or each functional sub-component: REG-LOCATION, REG-ASSET, REG-PRODUCT.

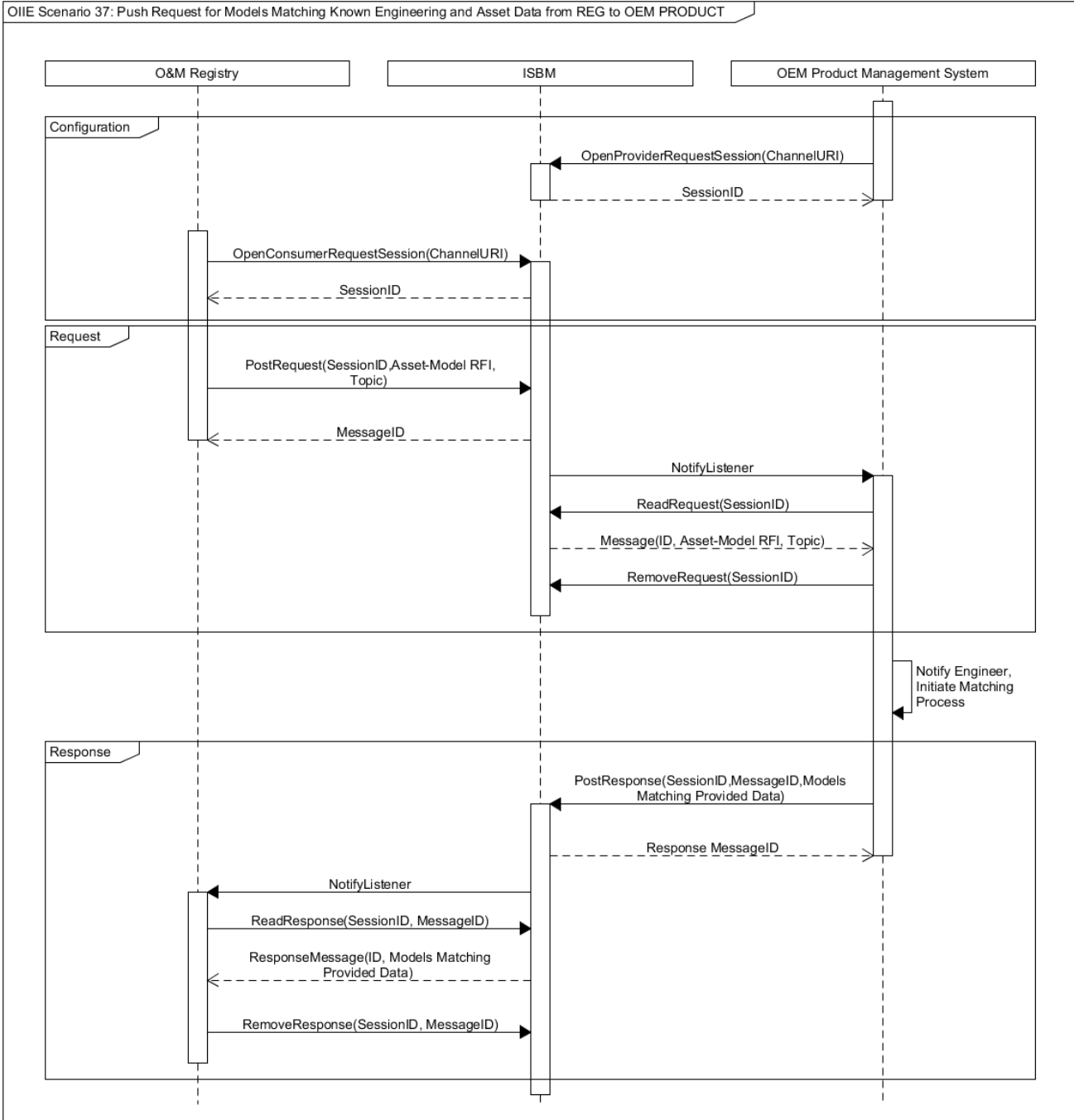The Scenario may require the use of an SDAIR in the following capacities:

- Registry of agreed upon ISDDs and/or Enterprise Data Sheet Definitions (conforming to ISDD specification)

- Registry of mappings between ISDD properties and enterprise (i.e., EPC and OEM) defined properties

# Event Sequence

The following diagram represents a simplified set of exemplar interactions between the systems required to achieve this Scenario. The system actors are assumed to have OIIE/ISBM adaptors implemented as required, with services according to the ISBM Implementation Requirements described above. For simplicity, it is assumed that each system/adaptor implements the optional Notify Listener service.

It is also assumed that the components of the O&M Registry are realized as a single system.

**OIIE Scenario 37: Push Request for Models Matching Known Engineering and Asset Data from REG to OEM PRODUCT**

O&M Registry — ISBM — OEM Product Management System

**Configuration**
- OpenProviderRequestSession(ChannelURI)
- SessionID
- OpenConsumerRequestSession(ChannelURI)
- SessionID

**Request**
- PostRequest(SessionID,Asset-Model RFI, Topic)
- MessageID
- NotifyListener
- ReadRequest(SessionID)
- Message(ID, Asset-Model RFI, Topic)
- RemoveRequest(SessionID)

Notify Engineer, Initiate Matching Process

**Response**
- PostResponse(SessionID,MessageID,Models Matching Provided Data)
- Response MessageID
- NotifyListener
- ReadResponse(SessionID, MessageID)
- ResponseMessage(ID, Models Matching Provided Data)
- RemoveResponse(SessionID, MessageID)

# Version Applicability/Alignment

Scenarios describe general data requirements and, hence, they are aligned to specific versions of CCOM and/or other MIMOSA standards. For example, older versions of CCOM may not include the data elements required by newer Scenarios, while older Scenarios may become obsolete or have their data requirements change over time.

The OpenO&M™ Initiative

This Scenario is applicable to the following versions of CCOM:

- CCOM 4.1 and above

NOTE    Use of 'x' in the version number indicates a variable version. For example, "4.x" indicates applicability to all versions of CCOM with the MAJOR version '4', regardless of MINOR and PATCH versions.

# Document Versioning

| Version | Date | Major Changes |
|---|---|---|
| 1.1 | 2020-06-29 | Updated to use OpenO&M template. Updated suggested channel configuration. |
| 1.0 | 2019-01-31 | Initial write-up. |