OIIE Scenario 14 – Push CBM Advisories from ORM to MMS

From analysis of measurements, events, and alarms, the ORM system must be able generate a standardized CBM request for work advisory to an MMS to cause maintenance actions to occur.

Actors

Operational Risk Management System	Harvests measurements, alarms, and events from CONTROL systems and Condition Monitoring Systems, determines the health state of the equipment or system, diagnoses/prognoses incipient/potential faults, and pushes recommended maintenance work request packages to Maintenance Management Systems, optionally specifying a solution package pre-defined in the MMS.
Maintenance Management System	Responds to queries for Solution Packages applicable to a specific monitored entity, i.e., functional location (Segment), serialized asset, or model. Responds to queries for Agents to be assigned future work. Accepts pushes of maintenance work request packages from an ORMS including a recommended solution package. From this information, the MMS can generate a Work Request and/or a Work Order which can include multiple Work Order Steps.

Data Content

The data sent from the ORM to the MMS consists of:

- The functional location, serialized asset, or make/model where work is to be performed

- The system agent requesting the CBM work

- The solution package (pre-planned work order) requested for the MMS to utilize for the CBM work

- The request for work package which includes a description of the work, the creation timestamp, priority level, work management type, work task type, if to be automatically approved and a work order generated, a repeat interval, what agent is requested to be assigned the work, a solution package, and a recommendation

MIMOSA CCOM Reference Types

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

- AgentType
- AssetType
- PropertyType/PropertyDefinition
- ModelType
- PriorityLevelType
- SegmentType
- SolutionPackageType
- UOMQuantity

- UnitOfMeasure
- WorkManagementType
- WorkTaskType

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 Request for Work Data

Optional The following events may be required if the ORM needs to specify an Agent (to be assigned the work) and/or Solution Package (pre-planned work order) to accompany the Request for Work:

- Get Maintenance Personnel (Agent)

- Get Solution Packages

Data Formats

The data published by the ORM and received by the MMS 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 ORM must implement a client for the ISBM Provider Request and Channel Management Services. The ORM may implement the ISBM Notify Listener Service for request notification.

The MMS must implement a client for the ISBM Consumer Request and Channel Management Services. The MMS may implement the ISBM Notify Listener Service for response notification.

Suggested Channel/Topic Configuration

A channel should be created for work advisories and should conform to the following format:

```
/Enterprise/Enterprise Subdivision/.../ISO18435:D2.3/Request
```

For example:

```
/Enterprise/Refinery A/Area A/Light Ends Area/ISO18435:D2.3/Request
```

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

```
OIIE:S14:V1.2/StandardSchemaName{:Version}
```

For example:

```
OIIE:S14:V1.2/CCOM-XML:ProcessRequestForWork:V1.0
OIIE:S14:V1.2/CCOM-XML:AcknowledgeRequestForWork:V1.0
OIIE:S14:V1.2/CCOM-XML:GetAgents:V1.0
OIIE:S14:V1.2/CCOM-XML:GetSolutionPackages:V1.0
```

Note   An 'Acknowledge' topic will not appear when using Request/Response ISBM Services (which is the expected mapping) but may be used where Publish/Subscribe services are the only option.

CIR

The CIR is used to keep track of the object mappings between all systems.
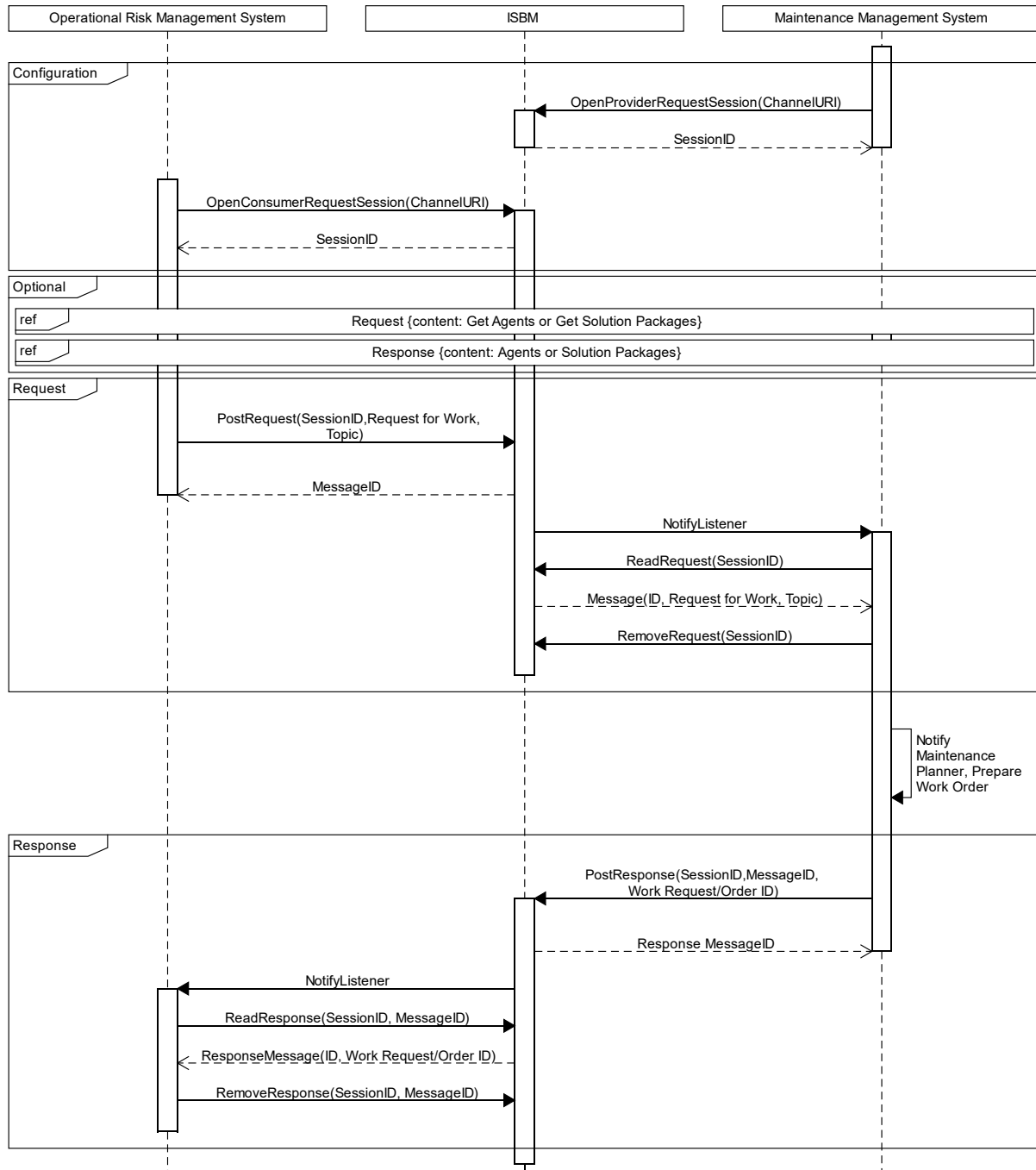
Suggested Categories Configuration

The following CIR categories are suggested:

Data Type	MIMOSA CCOM Categories
Functional Locations	Segment
Serialized assets	Asset
Product make/model	Model
Agents	Agent
Solution Packages	Solution Package

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.

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Operational Risk Management System	ISBM	Maintenance Management System

Configuration

OpenProviderRequestSession(ChannelURI)

SessionID

OpenConsumerRequestSession(ChannelURI)

SessionID

Optional

ref — Request {content: Get Agents or Get Solution Packages}

ref — Response {content: Agents or Solution Packages}

Request

PostRequest(SessionID,Request for Work, Topic)

MessageID

NotifyListener

ReadRequest(SessionID)

Message(ID, Request for Work, Topic)

RemoveRequest(SessionID)

Notify Maintenance Planner, Prepare Work Order

Response

PostResponse(SessionID,MessageID, Work Request/Order ID)

Response MessageID

NotifyListener

ReadResponse(SessionID, MessageID)

ResponseMessage(ID, Work Request/Order ID)

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.

This Scenario is applicable to the following versions of CCOM:

- CCOM 3.x (part of OSA-EAI 3.x)

- CCOM 4.x

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
1.2	2020-06-29	Updated to use OpenO&M template
1.1	2019-02-06	Updated to new Use Case Architecture.
1.0	2018-11-05	Imported from website-based documentation.