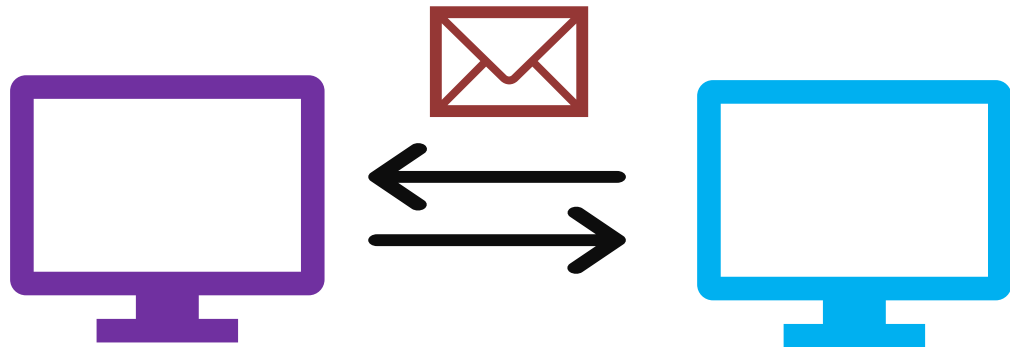# OIIE Event Specifications and BOD

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University of South Australia

OIIE Standardized Use Case Architecture
Standardized Methodology to Define and Re-use OIIE Components

User Stories
- High-level
- Pictographic
- Depict 1 or more
  Use Cases, Scenarios,
  and/or Events
- Actors, Systems,
  Exchanges, Data

User Stories

Use Cases

- Background
- Scope
- Preconditions
- Successful End
  Condition
- Actors
- Triggers
- Process
  Workflows
- Scenarios

Scenarios

- (System) Actors
- Data Content
- Data Formats
- Reference Data
- ISBM Configuration
- (OIIE) Events

(OIIE) Events

- Individual Message
  Exchange
- Specific Data Content
- Required Data Processing
- Expected Response Event
- Reference
  implementation

OIIE Event Specification

Individual Message Exchange

Specific Data Content

Required Data Processing

Expected Response Event

Reference implementation

OIIE Event Specification Examples

Publish Asset Configuration Change Event

Open Standards for
Physical Asset Management

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OIIE Publish Asset Configuration Change Event (Abridged)

Overview

This Event is published to notify receiving system(s) that a serialized asset has been successfully installed at or removed from its functional location.

Specific Data Content

The data sent from the source system is, at a minimum, composed of:

- Functional Location
- Serialized Asset
- Timestamp

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

- Agent (person/intelligent system)
- Calendared maintenance work order

OIIE Publish Asset Configuration Change Event (Abridged)

Data Processing

This Event is publishing asset configuration updates data and does not require any data processing by the receiving systems. The recipient system may either record the information for asset tracking purposes or further trigger an Event to perform some action.

Expected Response

No response is expected.

OIIE Publish Asset Configuration Change Event

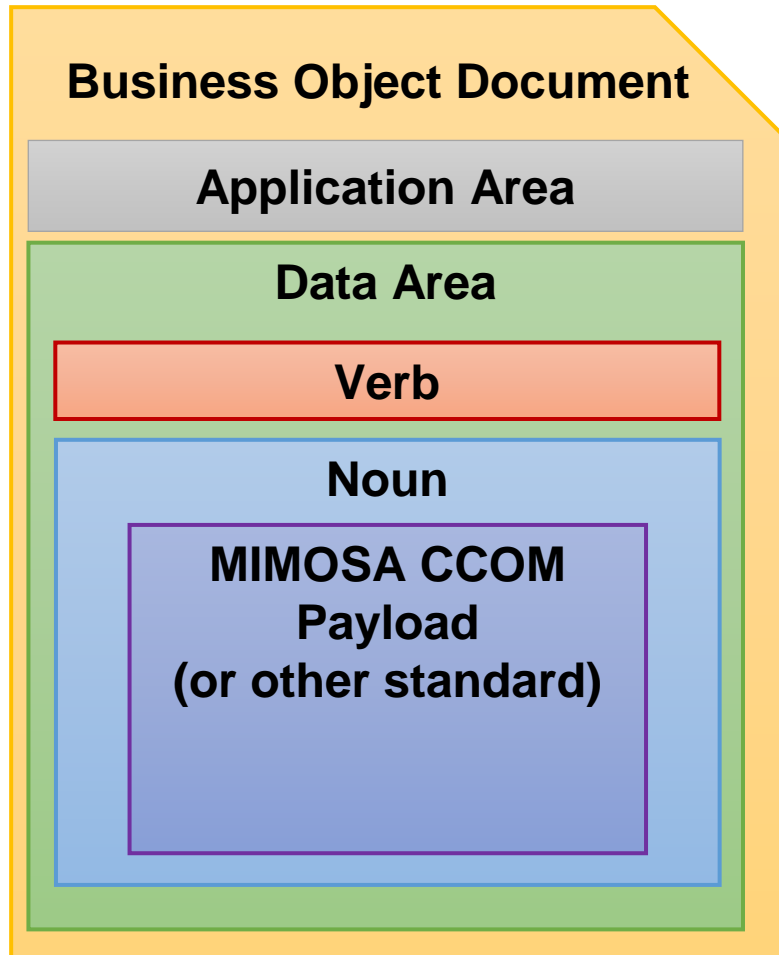**Reference Implementation**

The Asset Configuration Change data can be published in various ways.

The following is the list of current reference implementation(s) available:

1. CCOM BOD: SyncAssetSegmentEvents

```xml
<SyncAssetSegmentEvents xmlns:oa="http://www.openapplications.org/oagis/9"
                        xmlns="http://www.mimosa.org/ccom4"
                        releaseID="1.2.1" versionID="4.1.0">
  <oa:ApplicationArea>
    <oa:Sender>
      <oa:LogicalID>3939cddb-fba2-4e77-bdd7-ac0cae069741</oa:LogicalID>
    </oa:Sender>
    <oa:CreationDateTime>2019-10-01T03:13:09Z</oa:CreationDateTime>
    <oa:BODID>56f60441-cc4c-4fc2-9524-0df921187974</oa:BODID>
  </oa:ApplicationArea>
  <DataArea>
    <oa:Sync/>
    <AssetSegmentEvents>
      <Asset>
        <UUID>df3cb180-e410-11de-8a39-0800200c9a66</UUID>
        <ShortName>3Z84G32AA0-4 AC Induction Motor</ShortName>
        <RegistrationSite>
          <UUID>833d1881-80df-4fcc-be80-bbc5f2395e58</UUID>
          <ShortName>Juneora</ShortName>
        </RegistrationSite>
      </Asset>
      <Segment>
        <UUID>3f8f5618-3ee7-4c30-afe9-0f80e24d4f45</UUID>
        <ShortName>MTR-101</ShortName>
        <RegistrationSite>
          <UUID>833d1881-80df-4fcc-be80-bbc5f2395e58</UUID>
          <ShortName>Juneora</ShortName>
        </RegistrationSite>
      </Segment>
      <AssetSegmentEvent>
        <UUID>76238289-57a9-4ef5-888f-ea131b46dd60</UUID>
        <Type>
          <UUID>ecc99353-412b-4995-bd71-1cbc6fc16c7c</UUID>
          <ShortName>Installation of Asset on Segment</ShortName>
        </Type>
        <End>2019-10-01T13:21:00Z</End>
        <Asset>
          <UUID>df3cb180-e410-11de-8a39-0800200c9a66</UUID>
          <ShortName>3Z84G32AA0-4 AC Induction Motor</ShortName>
        </Asset>
        <Segment>
          <UUID>3f8f5618-3ee7-4c30-afe9-0f80e24d4f45</UUID>
          <ShortName>MTR-101</ShortName>
        </Segment>
      </AssetSegmentEvent>
    </AssetSegmentEvents>
  </DataArea>
</SyncAssetSegmentEvents>
```

MIMOSA CCOM BOD Message

Business Object Document
Application Area
Data Area
Verb
Noun
MIMOSA CCOM Payload (or other standard)

- OAGIS Business Object Document (BOD)

- Consistent structure and metadata regardless of data format or protocol

- BOD schemas specify criteria on message content
  - implement OIIE Events

- Verbs:
  - <u>Get</u>, <u>Show</u>, <u>Sync</u>, <u>Process</u>, <u>Acknowledge</u>, <u>Change</u>, <u>Confirm</u>
  - Map to <u>pub/sub</u> or <u>request/response</u>

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MIMOSA CCOM BOD Message

Business Object Document

Application Area

Data Area

Verb

Noun

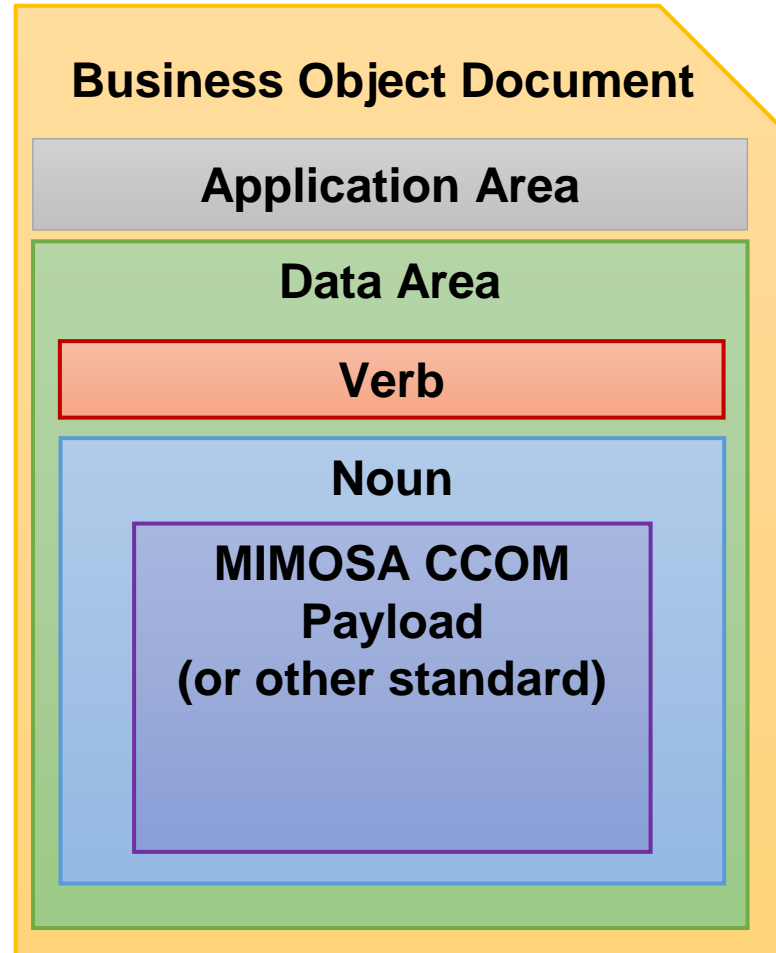**MIMOSA CCOM Payload (or other standard)**

```xml
<SyncAssetSegmentEvents xmlns:oa="http://www.openapplications.org/oagis/9"
                        xmlns="http://www.mimosa.org/ccom4"
                        releaseID="1.2.1" versionID="4.1.0">
  <oa:ApplicationArea>
    <oa:Sender>
      <oa:LogicalID>3939cddb-fba2-4e77-bdd7-ac0cae069741</oa:LogicalID>
    </oa:Sender>
    <oa:CreationDateTime>2019-10-01T03:13:09Z</oa:CreationDateTime>
    <oa:BODID>56f60441-cc4c-4fc2-9524-0df921187974</oa:BODID>
  </oa:ApplicationArea>
  <DataArea>
    <oa:Sync/>
    <AssetSegmentEvents>
      <Asset>
        <UUID>df3cb180-e410-11de-8a39-0800200c9a66</UUID>
        <ShortName>3Z84G32AA0-4 AC Induction Motor</ShortName>
        <RegistrationSite>
          <UUID>833d1881-80df-4fcc-be80-bbc5f2395e58</UUID>
          <ShortName>Juneora</ShortName>
        </RegistrationSite>
      </Asset>
      <Segment>
        <UUID>3f8f5618-3ee7-4c30-afe9-0f80e24d4f45</UUID>
        <ShortName>MTR-101</ShortName>
        <RegistrationSite>
          <UUID>833d1881-80df-4fcc-be80-bbc5f2395e58</UUID>
          <ShortName>Juneora</ShortName>
        </RegistrationSite>
      </Segment>
      <AssetSegmentEvent>
        <UUID>76238289-57a9-4ef5-888f-ea131b46dd60</UUID>
        <Type>
          <UUID>ecc99353-412b-4995-bd71-1cbc6fc16c7c</UUID>
          <ShortName>Installation of Asset on Segment</ShortName>
        </Type>
        <End>2019-10-01T13:21:00Z</End>
        <Asset>
          <UUID>df3cb180-e410-11de-8a39-0800200c9a66</UUID>
          <ShortName>3Z84G32AA0-4 AC Induction Motor</ShortName>
        </Asset>
        <Segment>
          <UUID>3f8f5618-3ee7-4c30-afe9-0f80e24d4f45</UUID>
          <ShortName>MTR-101</ShortName>
        </Segment>
      </AssetSegmentEvent>
    </AssetSegmentEvents>
  </DataArea>
</SyncAssetSegmentEvents>
```
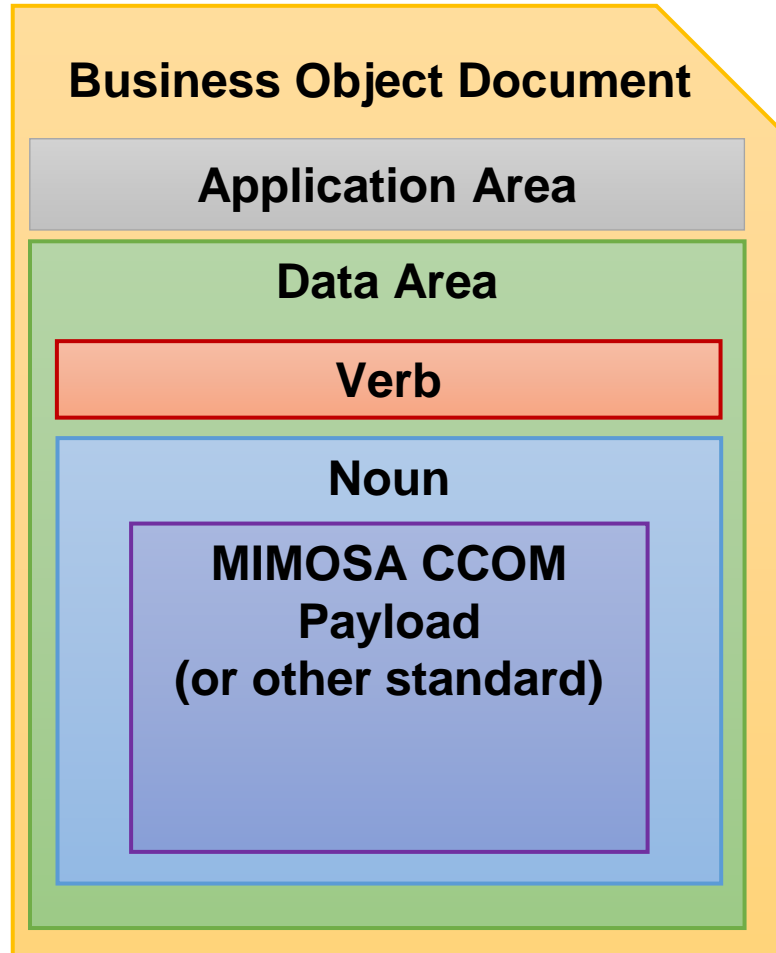
MIMOSA ^SM

MIMOSA CCOM BOD Message

Business Object Document

Application Area

Data Area

Verb

Noun

MIMOSA CCOM Payload (or other standard)

```xml
<SyncAssetSegmentEvents xmlns:oa="http://www.openapplications.org/oagis/9"
                        xmlns="http://www.mimosa.org/ccom4"
  <oa:ApplicationArea>
    <oa:Sender>
      <oa:LogicalID>3939cddb-fba2-4e77-bdd7-ac0cae069741</oa:LogicalID>
    </oa:Sender>
    <oa:CreationDateTime>2019-10-01T03:13:09Z</oa:CreationDateTime>
    <oa:BODID>56f60441-cc4c-4fc2-9524-0df921187974</oa:BODID>
  </oa:ApplicationArea>

  <oa:Sync/>
  <AssetSegmentEvents>
    <Asset>
      <UUID>df3cb180-e410-11de-8a39-0800200c9a66</UUID>
      <ShortName>3Z84G32AA0-4 AC Induction Motor</ShortName>
      <RegistrationSite>
        <UUID>833d1881-80df-4fcc-be80-bbc5f2395e58</UUID>
        <ShortName>Juneora</ShortName>
      </RegistrationSite>
    </Asset>
    <Segment>
      <UUID>3f8f5618-3ee7-4c30-afe9-0f80e24d4f45</UUID>
      <ShortName>MTR-101</ShortName>
      <RegistrationSite>
        <UUID>833d1881-80df-4fcc-be80-bbc5f2395e58</UUID>
        <ShortName>Juneora</ShortName>
      </RegistrationSite>
    </Segment>
    <AssetSegmentEvent>
      <UUID>76238289-57a9-4ef5-888f-ea131b46dd60</UUID>
      <Type>
        <UUID>ecc99353-412b-4995-bd71-1cbc6fc16c7c</UUID>
        <ShortName>Installation of Asset on Segment</ShortName>
      </Type>
      <End>2019-10-01T13:21:00Z</End>
      <Asset>
        <UUID>df3cb180-e410-11de-8a39-0800200c9a66</UUID>
        <ShortName>3Z84G32AA0-4 AC Induction Motor</ShortName>
      </Asset>
      <Segment>
        <UUID>3f8f5618-3ee7-4c30-afe9-0f80e24d4f45</UUID>
        <ShortName>MTR-101</ShortName>
      </Segment>
    </AssetSegmentEvent>
  </AssetSegmentEvents>
  </DataArea>
</SyncAssetSegmentEvents>
```
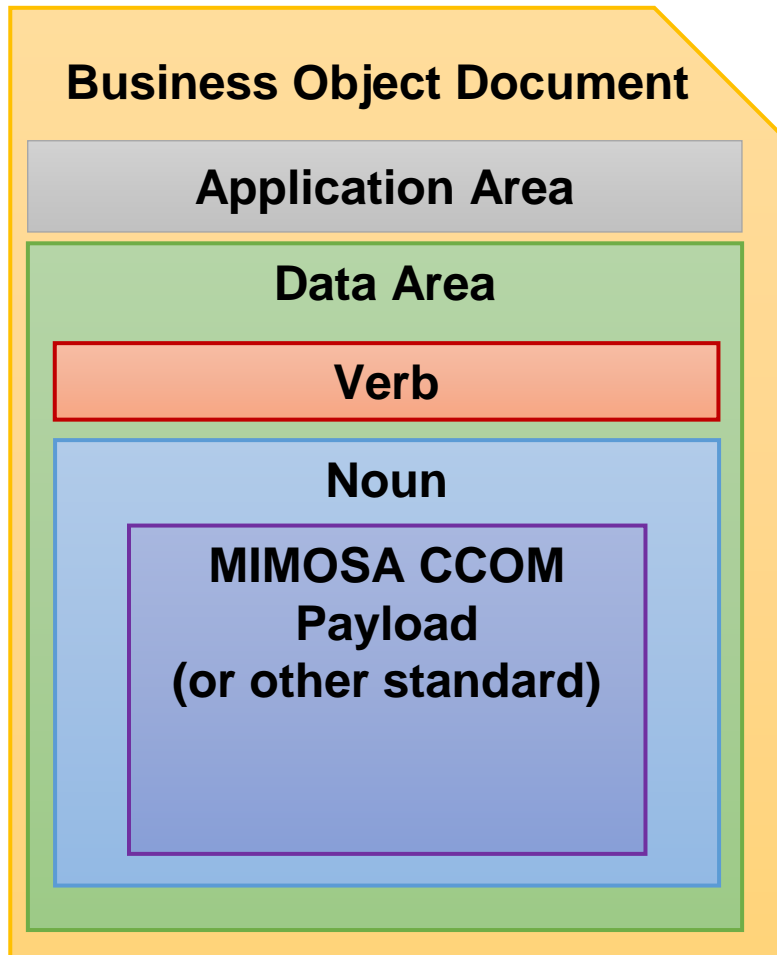
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MIMOSA CCOM BOD Message

Business Object Document

Application Area

Data Area

Verb

Noun

MIMOSA CCOM Payload (or other standard)

```xml
<SyncAssetSegmentEvents xmlns:oa="http://www.openapplications.org/oagis/9"
                        xmlns="http://www.mimosa.org/ccom4"
                        releaseID="1.2.1" versionID="4.1.0">
  <oa:ApplicationArea>
    <oa:Sender>
      <oa:LogicalID>3939cddb-fba2-4e77-bdd7-ac0cae069741</oa:LogicalID>
    </oa:Sender>
    <oa:CreationDateTime>2019-10-01T03:13:09Z</oa:CreationDateTime>
    <oa:BODID>56f60441-cc4c-4fc2-9524-0df921187974</oa:BODID>
  <DataArea>
    <oa:Sync/>
    <AssetSegmentEvents>
      <Asset>
        <UUID>df3cb180-e410-11de-8a39-0800200c9a66</UUID>
        <ShortName>3Z84G32AA0-4 AC Induction Motor</ShortName>
        <RegistrationSite>
          <UUID>833d1881-80df-4fcc-be80-bbc5f2395e58</UUID>
          <ShortName>Juneora</ShortName>
        </RegistrationSite>
      </Asset>
      <Segment>
        <UUID>3f8f5618-3ee7-4c30-afe9-0f80e24d4f45</UUID>
        <ShortName>MTR-101</ShortName>
        <RegistrationSite>
          <UUID>833d1881-80df-4fcc-be80-bbc5f2395e58</UUID>
          <ShortName>Juneora</ShortName>
        </RegistrationSite>
      </Segment>
      <AssetSegmentEvent>
        <UUID>76238289-57a9-4ef5-888f-ea131b46dd60</UUID>
        <Type>
          <UUID>ecc99353-412b-4995-bd71-1cbc6fc16c7c</UUID>
          <ShortName>Installation of Asset on Segment</ShortName>
        </Type>
        <End>2019-10-01T13:21:00Z</End>
        <Asset>
          <UUID>df3cb180-e410-11de-8a39-0800200c9a66</UUID>
          <ShortName>3Z84G32AA0-4 AC Induction Motor</ShortName>
        </Asset>
        <Segment>
          <UUID>3f8f5618-3ee7-4c30-afe9-0f80e24d4f45</UUID>
          <ShortName>MTR-101</ShortName>
        </Segment>
      </AssetSegmentEvent>
    </AssetSegmentEvents>
  </DataArea>
```

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MIMOSA CCOM BOD Message

Business Object Document

- **Application Area**
- **Data Area**
  - **Verb**
  - **Noun**
    - **MIMOSA CCOM Payload (or other standard)**

```xml
<SyncAssetSegmentEvents xmlns:oa="http://www.openapplications.org/oagis/9"
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    </oa:Sender>
    <oa:CreationDateTime>2019-10-01T03:13:09Z</oa:CreationDateTime>
    <oa:BODID>56f60441-cc4c-4fc2-9524-0df921187974</oa:BODID>
  </oa:ApplicationArea>

  <oa:Sync/>
      Events>
    <Asset>
      <UUID>df3cb180-e410-11de-8a39-0800200c9a66</UUID>
      <ShortName>3Z84G32AA0-4 AC Induction Motor</ShortName>
      <RegistrationSite>
        <UUID>833d1881-80df-4fcc-be80-bbc5f2395e58</UUID>
        <ShortName>Juneora</ShortName>
      </RegistrationSite>
    </Asset>
    <Segment>
      <UUID>3f8f5618-3ee7-4c30-afe9-0f80e24d4f45</UUID>
      <ShortName>MTR-101</ShortName>
      <RegistrationSite>
        <UUID>833d1881-80df-4fcc-be80-bbc5f2395e58</UUID>
        <ShortName>Juneora</ShortName>
      </RegistrationSite>
    </Segment>
    <AssetSegmentEvent>
      <UUID>76238289-57a9-4ef5-888f-ea131b46dd60</UUID>
      <Type>
        <UUID>ecc99353-412b-4995-bd71-1cbc6fc16c7c</UUID>
        <ShortName>Installation of Asset on Segment</ShortName>
      </Type>
      <End>2019-10-01T13:21:00Z</End>
      <Asset>
        <UUID>df3cb180-e410-11de-8a39-0800200c9a66</UUID>
        <ShortName>3Z84G32AA0-4 AC Induction Motor</ShortName>
      </Asset>
      <Segment>
        <UUID>3f8f5618-3ee7-4c30-afe9-0f80e24d4f45</UUID>
        <ShortName>MTR-101</ShortName>
      </Segment>
    </AssetSegmentEvent>
  </AssetSegmentEvents>
  </DataArea>
</SyncAssetSegmentEvents>
```
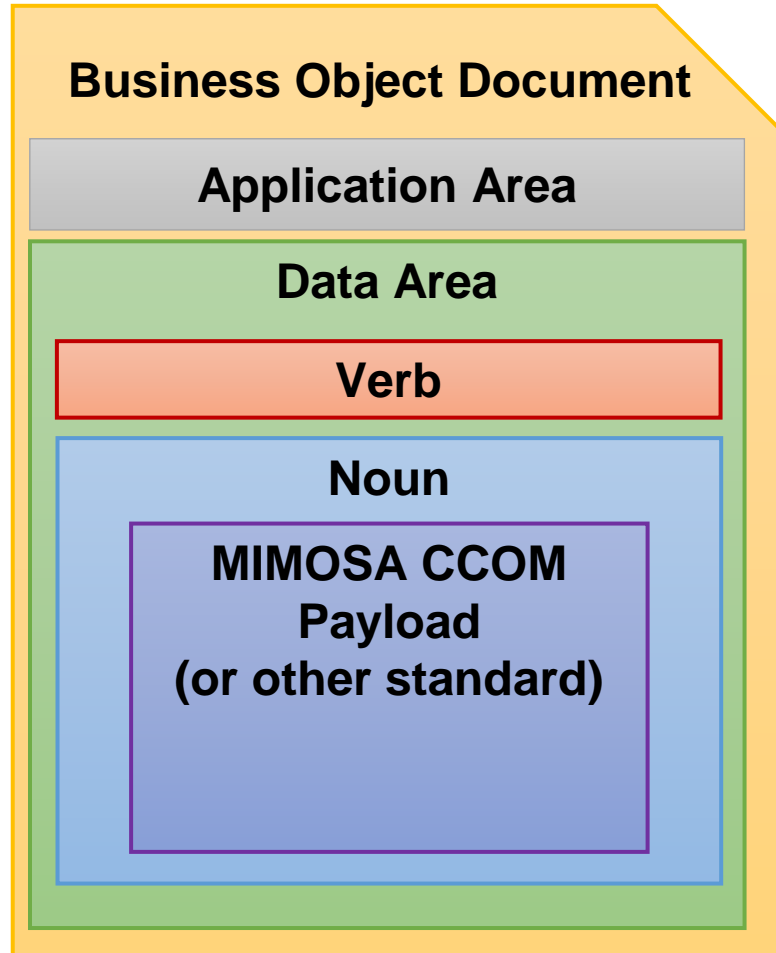
Sync,
Get, Show,
Process,
Acknowledge,
Change,
Confirm

Map to
pub/sub or
request/response

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MIMOSA CCOM BOD Message

Business Object Document

- Application Area
- Data Area
  - Verb
  - Noun
    - MIMOSA CCOM Payload (or other standard)

```xml
<SyncAssetSegmentEvents xmlns:oa="http://www.openapplications.org/oagis/9"
                        xmlns="http://www.mimosa.org/ccom4"
                        releaseID="1.2.1" versionID="4.1.0">
  <oa:ApplicationArea>
    <oa:Sender>
      <oa:LogicalID>3939cddb-fba2-4e77-bdd7-ac0cae069741</oa:LogicalID>
    </oa:Sender>
    <oa:CreationDateTime>2019-10-01T03:13:09Z</oa:CreationDateTime>
    <oa:BODID>56f60441-cc4c-4fc2-9524-0df921187974</oa:BODID>
  </oa:ApplicationArea>
  <DataArea>
    <AssetSegmentEvents>
      <Asset>
        <UUID>df3cb180-e410-11de-8a39-0800200c9a66</UUID>
        <ShortName>3Z84G32AA0-4 AC Induction Motor</ShortName>
        <RegistrationSite>
          <UUID>833d1881-80df-4fcc-be80-bbc5f2395e58</UUID>
          <ShortName>Juneora</ShortName>
        </RegistrationSite>
      </Asset>
      <Segment>
        <UUID>3f8f5618-3ee7-4c30-afe9-0f80e24d4f45</UUID>
        <ShortName>MTR-101</ShortName>
        <RegistrationSite>
          <UUID>833d1881-80df-4fcc-be80-bbc5f2395e58</UUID>
          <ShortName>Juneora</ShortName>
        </RegistrationSite>
      </Segment>
      <AssetSegmentEvent>
        <UUID>76238289-57a9-4ef5-888f-ea131b46dd60</UUID>
        <Type>
          <UUID>ecc99353-412b-4995-bd71-1cbc6fc16c7c</UUID>
          <ShortName>Installation of Asset on Segment</ShortName>
        </Type>
        <End>2019-10-01T13:21:00Z</End>
        <Asset>
          <UUID>df3cb180-e410-11de-8a39-0800200c9a66</UUID>
          <ShortName>3Z84G32AA0-4 AC Induction Motor</ShortName>
        </Asset>
        <Segment>
          <UUID>3f8f5618-3ee7-4c30-afe9-0f80e24d4f45</UUID>
          <ShortName>MTR-101</ShortName>
        </Segment>
      </AssetSegmentEvent>
    </AssetSegmentEvents>
  </DataArea>
</SyncAssetSegmentEvents>
```

OIIE Pull Product Model Data Event

OIIE Pull Product Model Data

This Event is sending a query requesting model data from the manufacturer (or local product register) and expects a reply with the model data, including the data sheets in an agreed standard format.

Specific Data Content

The data included in the request is, at a minimum, composed of:

- The model details, such as model name, type of model etc., necessary to query the desired model

In addition, the following data can be sent:

- The indicator of the type of standard format, e.g. ISDD, the returned data should be.

Data Processing

This Event is querying model data and require that the recipient system processes the data received. The receiving system is expected to respond to the query by sending the model data including data sheets.

Expected Response

The receiving system is expected to send the reply, at a minimum, composed of:

- The model(s)
- The datasheet for each model in a standard format (such as ISDDs)

NOTE   If a particular format where indicated in the request, e.g. ISDD, and it cannot be supplied, a ConfirmBOD indicating the error should be returned, instead of an empty response.

Reference Implementation

The query to request model data can be sent to the target system in many ways. Similarly, the response from the recipient system can be sent back to the source system in many ways. The following is the list of current reference implementation(s) available:

1. Using GetModelDatasheetDefinitions/ShowDatasheetDefinitions CCOM BOD

NOTE   Business Object Document (BOD) message structure is used to provide additional message concepts that encapsulate a MIMOSA CCOM payload. BODs indicate both behavior and structure for messages and the major components of a BOD are depicted below.

Source - https://openoandm.org/files/standards/events/OIIE%20Pull%20Product%20Model%20Data.pdf

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OIIE Push Request For Work Data Event

OIIE Push Request For Work Data

This Event instructs the receiving system to process the request for work and expects a response containing the details of the created work request(s) or work order(s) from the receiving system.

Specific Data Content

The data sent from the source system is, at a minimum, composed of:

- The description of the work
- The function location, serialized asset or list of resources on which the work needs to be performed

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

- The agent (person or intelligent system) who is requesting the work
- The agent (person or intelligent system) who is requested to perform the work
- The event or recommendation that caused the request for work
- The solution package (pre-planned work order) requested to be utilized for the work (if any)
- The priority level type of the request such High, Medium or Low.
- The recommended start and end time for the work.

Data Processing

This Event is pushing request for work and require that the recipient system processes the data received. The receiving system is expected to create the work request(s) or work order(s) and send the details of them as a response back to the source system.

Expected Response

The receiving system is expected to send the response, at a minimum, composed of:

- The details of work request(s) or work order(s) created as per the request for work

In addition, the following data can be sent:

- The agent(s) who will perform the work
- The solution package (pre-planned work order) to be used for the work (if any)
- Any other information that was included in the original request for work but was updated by the receiving system.

Reference Implementation

The request for work message/data can be sent to the target system in many ways. Similarly, the response from the recipient system can be sent back to the source system in many ways. The following is the list of current reference implementation(s) available:

1. Using ProcessRequestsForWok/AcknowledgeRequestsForWork CCOM BOD

Source –
https://openoandm.org/files/standards/events/OIIE%20Push%20Request%20For%20Work%20Data.pdf

MIMOSA SM

Exchange Mechanisms

- MIMOSA CCOM BOD Message

- Compound Document

  - Simple container for MIMOSA CCOM Objects

  - No restrictions on what content can be inserted nor the top-level order of objects

  - Uses CCOMData element

    - can have any combination of entities as sub-elements

- Packaging large amounts of varying data – Compound Document

- Application/Systems interoperability – MIMOSA CCOM BOD

MIMOSA SM

Resources

- OIIE Use Case Architecture Description – https://openoandm.org/files/standards/01-Use%20Case%20Architecture%20Description.pdf

- OIIE Event Specification Example – https://openoandm.org/files/standards/events/OIIE%20Publish%20Asset%20Configuration%20Change.pdf

- OIIE Use Case Catalogue – https://openoandm.org/files/standards/02-List%20of%20Use%20Cases.pdf