



METER DATA MANAGEMENT V 2.2

5.3.3.2 MDM.Manage Device Events

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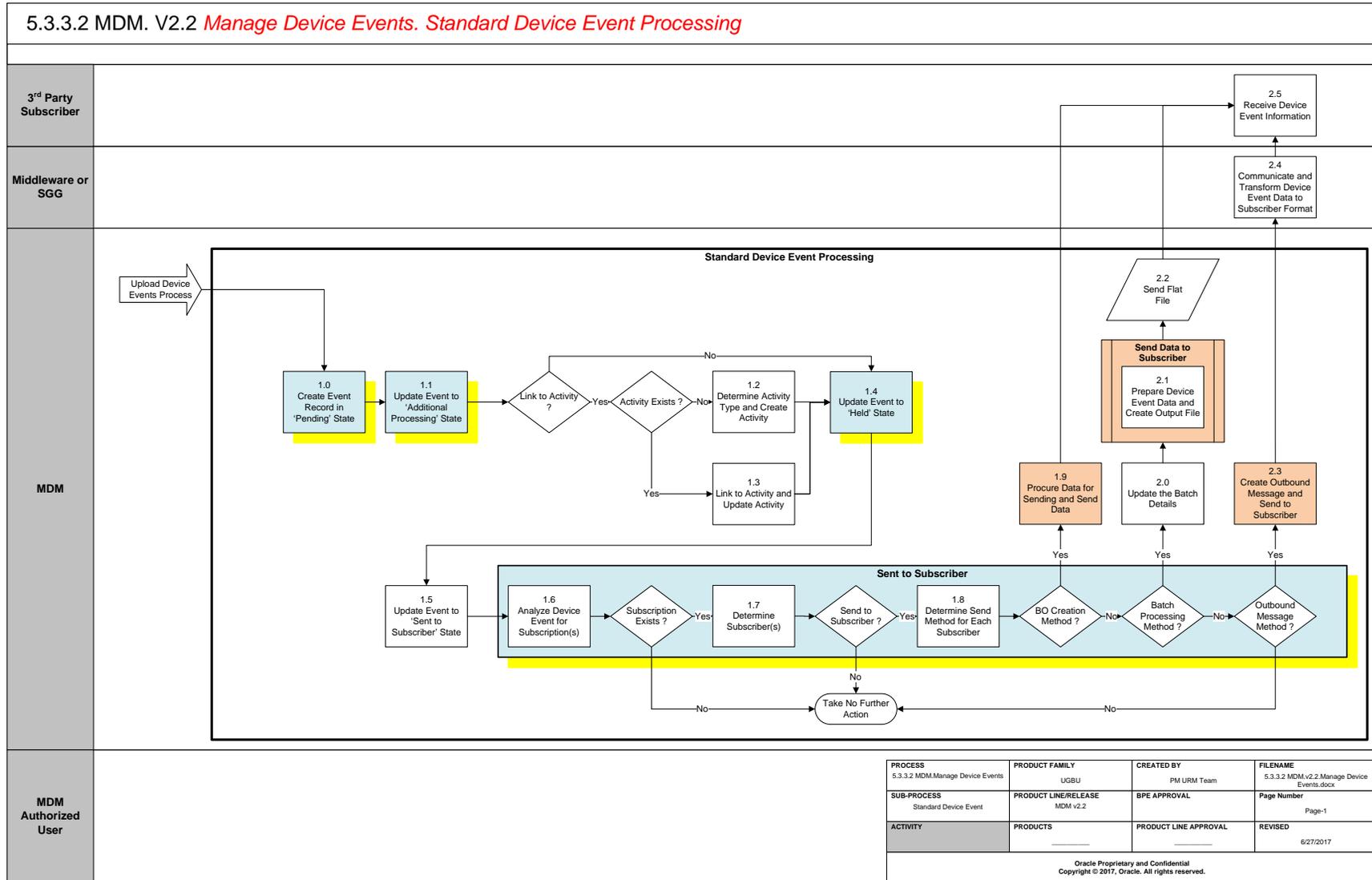


Brief Description

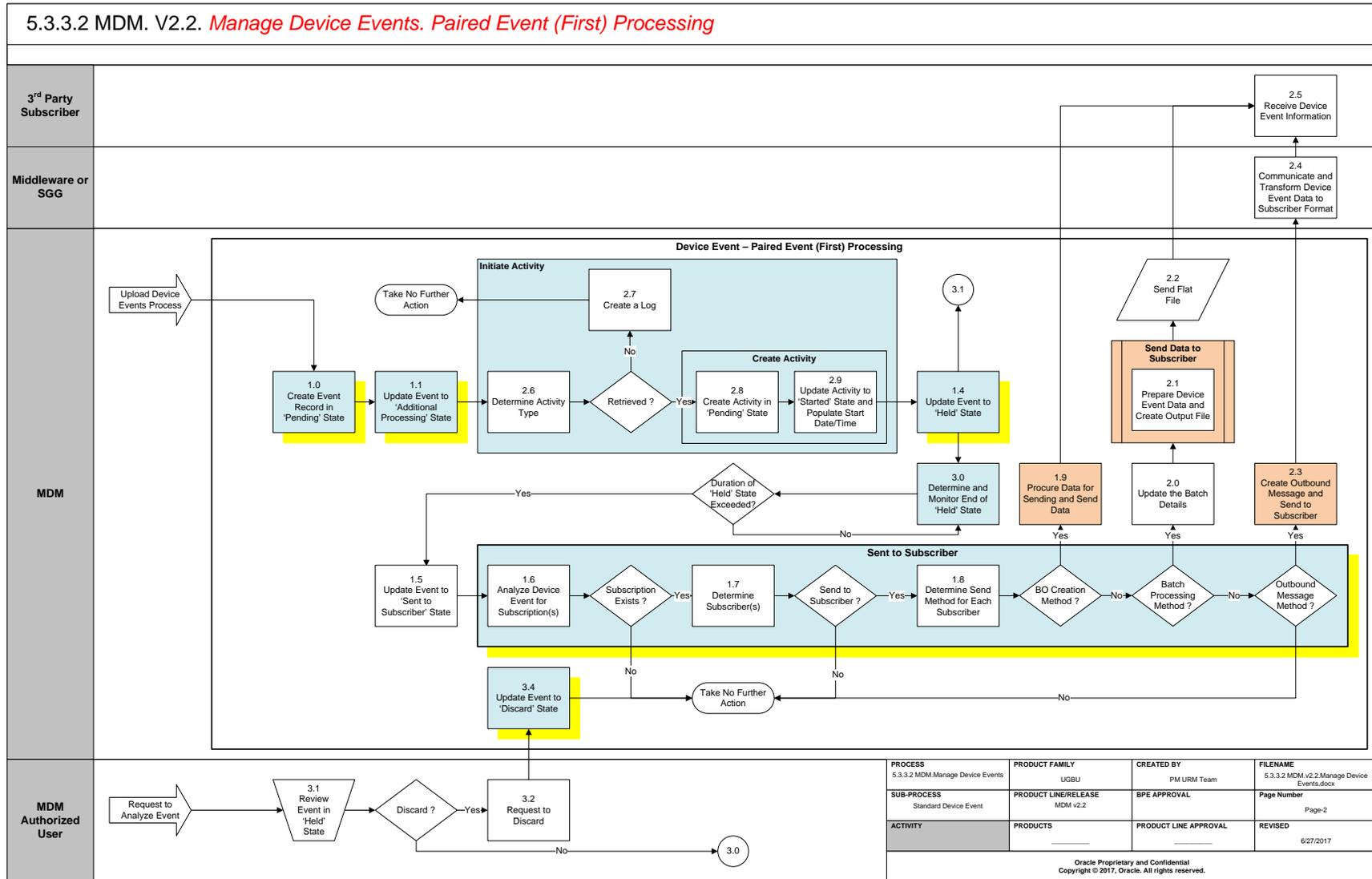
Business Process: 5.3.3.2 MDM.v2.2.Manage Device Events
Process Type: Process
Parent Process: 5.3.3 MDM.v2.2.Manage Events
Sibling Processes: 5.3.3.1 MDM.v2.2.Upload Device Events

This process gets initiated when the Device Events successfully pass through pre-processing Event Seeder validations. This process manages creation of different types of Device Events in SGG, processing them and sending the Device Event information to the Subscribers

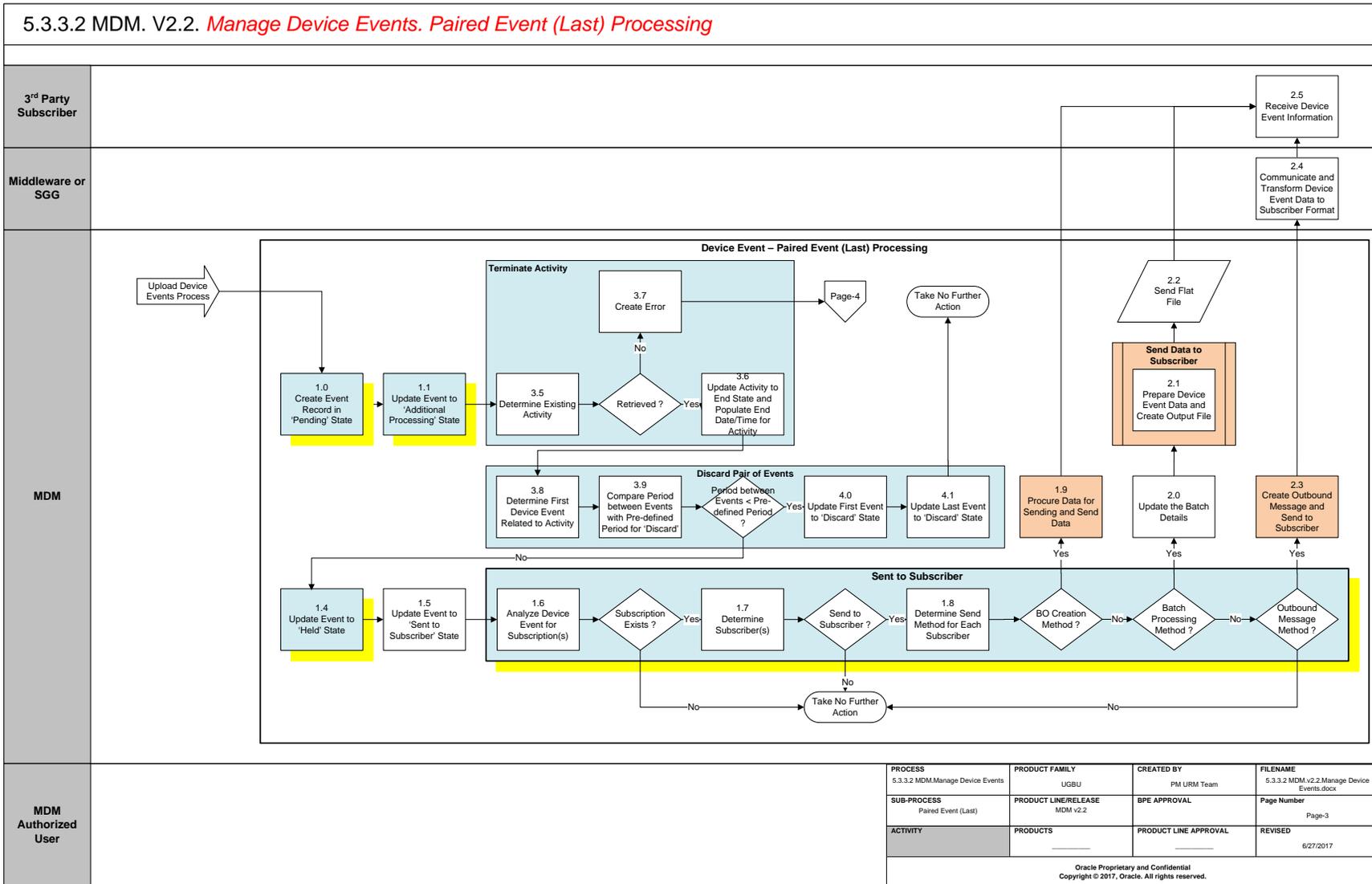
Business Process Model Page 1



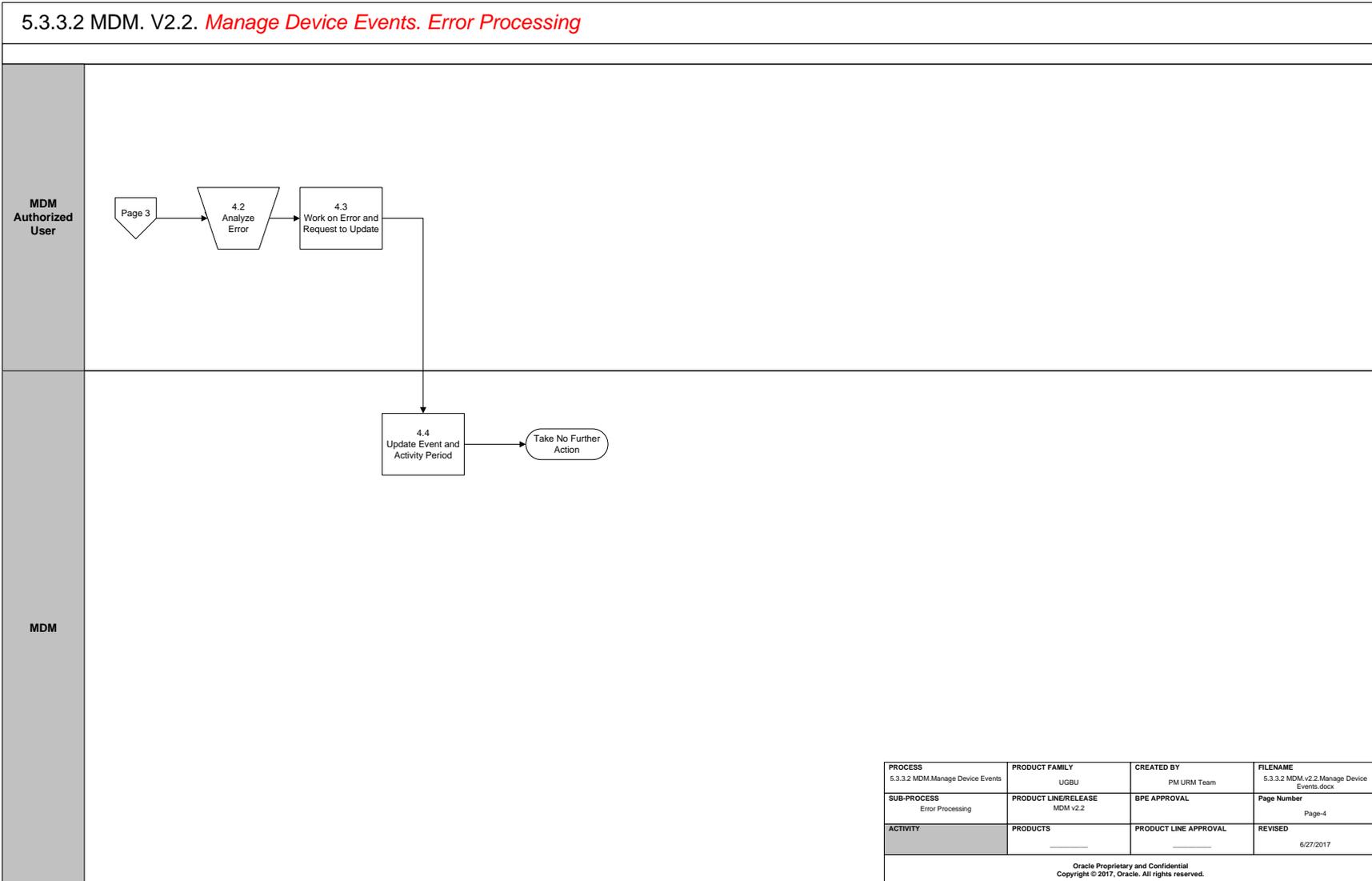
Business Process Model Page 2



Business Process Model Page 3



Business Process Model Page 4



Detail Business Process Model Description

Group: Standard Device Event Processing

Group: Device Event-Paired Event (First) Processing

Group: Device Event-Paired Event (Last) Processing

1.0 Create Event Record in 'Pending' State

Actor/Role: MDM

Description: MDM performs validations to ensure the availability of correct input data such as External Sender ID and External Event Name and creates the Device Event in 'Pending' state.

MDM identifies if Device Event is Standard Device Event, or Paired Event (First) or Paired Event (Last) and processes them accordingly.

Note: Device Event Type is determined during Event Seeder processing (see 5.3.3.1 MDM.Upload Device Events process for details)

Process Plug-in enabled (Y/N)	Available Algorithm(s):	D1-DVEVTINFO (Device Event Info)
		D1-VALDVCEVT (Validate Device Event)
		D1-VALDEXEVT (Validate External Event Name)

Business Object (Y/N)	Business Object	D1-Device Event
		D1-StandardDeviceEvent
		D1-PairedEventFirstDeviceEvent
		D1-PairedEventLastDeviceEvent

Group: Standard Device Event Processing

Group: Device Event-Paired Event (First) Processing

Group: Device Event-Paired Event (Last) Processing

1.1 Update Event to 'Additional Processing' State

Actor/Role: MDM

Description: MDM immediately updates the Device Event life-cycle state from 'Pending' to 'Additional Processing' State. Any additional custom logic can be implemented for this Event in this state.

Process Plug-in enabled (Y/N)	Available Algorithm(s):	F1-AT-RQJ (Transition to Default Next Status)
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Business Object (Y/N)

Business Object

D1-Device Event
D1-StandardDeviceEvent
D1-PairedEventFirstDeviceEvent
D1-PairedEventLastDeviceEvent

Group: Standard Device Event Processing

1.2 Determine Activity Type and Create Activity

Actor/Role: MDM

Description: If there is an Activity associated with the current Standard Device Event, MDM creates Activity with appropriate type.

Business Object (Y/N)

Business Object

D1-Device Event
D1-StandardDeviceEvent
D1-PairedEventFirstDeviceEvent
D1-PairedEventLastDeviceEvent

Note: It is advisable to create a separate Device Event type based on Standard Device Event if there process requires Activity is to be linked to event.

Group: Standard Device Event Processing

1.3 Link to Activity and Update Activity

Actor/Role: MDM

Description: MDM creates link between Device Event and newly created or existing Activity

D1-Device Event
D1-StandardDeviceEvent
D1-PairedEventFirstDeviceEvent

Business Object (Y/N) **Business Object**

D1-PairedEventLastDeviceEvent

Group: Standard Device Event Processing

1.4 Update Event to 'Held' State

Actor/Role: MDM

Description: MDM updates the Device Event to 'Held' state.

Process Plug-in enabled (Y/N) **Available Algorithm(s):**

F1-AT-RQJ (Transition to Default Next Status)

Business Object (Y/N) **Business Object**

D1-Device Event
D1-StandardDeviceEvent
D1-PairedEventFirstDeviceEvent
D1-PairedEventLastDeviceEvent

Group: Standard Device Event Processing

1.5 Update Event to 'Sent to Subscriber' State

Actor/Role: MDM

Description: MDM updates the Device Event to 'Sent to Subscriber' state. This state is meant to implement logic to send the Device Event information to 3rd party subscribers who have interest and subscribed to the '[Device Event Category](#)' in which this Device Event falls.

Process Plug-in enabled (Y/N) **Available Algorithm(s):**

F1-AT-RQJ (Transition to Default Next Status)

Business Object (Y/N) **Business Object**

D1-Device Event
D1-StandardDeviceEvent
D1-PairedEventFirstDeviceEvent
D1-PairedEventLastDeviceEvent

Group: Standard Device Event Processing

Group: Sent to Subscriber

1.6 Analyze Device Event for Subscription(s)

Actor/Role: MDM

Description: MDM analyzes the Processing role, Device Event, and related Device Event Category to determine the available subscriptions.

Process Plug-in enabled (Y/N) **Available Algorithm(s):**

D1-SENDTOSUB (Send to Subscribers)

Business Object (Y/N) **Business Object**

D1-Device Event
D1-StandardDeviceEvent
D1-PairedEventFirstDeviceEvent
D1-PairedEventLastDeviceEvent

Configuration required (Y/N) **Entities to Configure:**

Processing Role
Processing Method for Processing Role for Head-End Systems

Group: Standard Device Event Processing

Group: Sent to Subscriber

1.7 Determine Subscriber(s)

Actor/Role: MDM

Description: MDM identifies the Device Event category, and then determines the list of Service Providers who have subscribed to this Device Event Category.

Process Plug-in enabled (Y/N) **Available Algorithm(s):**

D1-SENDTOSUB (Send to Subscribers)

Business Object (Y/N)	Business Object	D1-Device Event
		D1-StandardDeviceEvent
		D1-PairedEventFirstDeviceEvent
		D1-PairedEventLastDeviceEvent

Configuration required (Y/N)	Entities to Configure:	Processing Role
		Processing Method for Processing Role for Head-End Systems

Group: Standard Device Event Processing**Group: Sent to Subscriber****1.8 Determine Send Method for Each Subscriber****Actor/Role:** MDM**Description:** MDM determines method (sending mechanism) how to send Event information to Subscriber(s).

Process Plug-in enabled (Y/N)	Available Algorithm(s):	D1-SENDTOSUB (Send to Subscribers)
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Business Object (Y/N)	Business Object	D1-Device Event
		D1-StandardDeviceEvent
		D1-PairedEventFirstDeviceEvent
		D1-PairedEventLastDeviceEvent

Configuration required (Y/N)	Entities to Configure:	Processing Role
		Processing Method for Processing Role for Head-End Systems

Note: The actual processing method on how a device event is sent to a subscriber should be configured during implementation. It depends on integration solution. It could be sent real-time, asynchronously, via a flat file, using a service bus, etc. The product provides tools and framework to accommodate solution.

Group: Standard Device Event Processing**1.9 Procure Data for Sending and Send Data****Actor/Role:** MDM**Description:** In the BO method, the MDM procures the Device Event information that need to be sent to the Subscriber.

For the actual event sending process, custom integrated solution should be in place. This task represents one of the solutions that requires create BO to incorporate logic to procure Event data and send it to subscriber

Process Plug-in enabled (Y/N)	Available Algorithm(s):	D1-SENDTOSUB (Send to Subscribers)
--------------------------------------	--------------------------------	------------------------------------

Business Object (Y/N)	Business Object	D1-Device Event
		D1-StandardDeviceEvent
		D1-PairedEventFirstDeviceEvent
		D1-PairedEventLastDeviceEvent

Configuration required (Y/N)	Entities to Configure:	Processing Role
		Processing Method for Processing Role for Head-End Systems

Note: The base product does not deliver any customer specific BO.

Group: Standard Device Event Processing**2.0 Update the Batch Details****Actor/Role:** MDM**Description:** This task represents option to send Event data to Subscriber using batch processing. As a first step, MDM creates the entry in the General process table with Batch process details (such as Batch code, next run number, etc.)

The actual batch process that sends Device Event information to Subscribers is a custom process.

Process Plug-in enabled (Y/N)	Available Algorithm(s):	D1-SENDTOSUB (Send to Subscribers)
--------------------------------------	--------------------------------	------------------------------------

D1-Device Event

Business Object (Y/N)	Business Object	D1-StandardDeviceEvent
		D1-PairedEventFirstDeviceEvent
		D1-PairedEventLastDeviceEvent

Configuration required (Y/N)	Entities to Configure:	Processing Role
		Processing Method for Processing Role for Head-End Systems

Note: The base product does not deliver any batch process.

Group: Standard Device Event Processing

2.1 Prepare Device Event Data and Create Output File

Actor/Role: MDM

Description: MDM prepares the Device Event data and creates an Output File to be used by Batch process for sending information to Subscribers.

Process Plug-in enabled (Y/N)	Available Algorithm(s):	D1-SENDTOSUB (Send to Subscribers)
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Business Object (Y/N)	Business Object	D1-Device Event
		D1-StandardDeviceEvent
		D1-PairedEventFirstDeviceEvent
		D1-PairedEventLastDeviceEvent

Configuration required (Y/N)	Entities to Configure:	Processing Role
		Processing Method for Processing Role for Head-End Systems

Group: Standard Device Event Processing

2.2 Send Flat File

Actor/Role: MDM

Description: MDM sends the flat files comprising of Device Event information to Subscriber(s).

Process Plug-in enabled (Y/N)	Available Algorithm(s):	D1-SENDTOSUB (Send to Subscribers)
Business Object (Y/N)	Business Object	D1-Device Event D1-StandardDeviceEvent D1-PairedEventFirstDeviceEvent D1-PairedEventLastDeviceEvent
Configuration required (Y/N)	Entities to Configure:	Processing Role Processing Method for Processing Role for Head-End Systems

2.3 Create Outbound Message and Send to Subscriber

Actor/Role: MDM

Description: MDM creates outbound message and sends the Device Event information to Subscriber(s) This task represents another option to communicate to Subscriber(s)

Note: the actual Outbound Message processing is a custom process and will be defined during implementation.

Process Plug-in enabled (Y/N)	Available Algorithm(s):	D1-SENDTOSUB (Send to Subscribers)
Business Object (Y/N)	Business Object	D1-Device Event D1-StandardDeviceEvent D1-PairedEventFirstDeviceEvent D1-PairedEventLastDeviceEvent
Configuration required (Y/N)	Entities to Configure:	Processing Role Processing Method for Processing Role for Head-End Systems

2.4 Communicate and Transform Device Event Data to Subscriber Format

Actor/Role: Middleware or SGG

Description: The Middleware or Smart Grid Gateway (SGG) is responsible for communication between the MDM and various Subscribers (E.g. OUNMS, CCB, Head-End Systems, etc.). MDM sends the Outbound Messages, which the Middleware transforms, and converts it into the format compatible with the Subscribers' software.

2.5 Receive Device Event Information

Actor/Role: 3rd Party Subscribers

Description: The subscriber receives and processes the Device Event information from MDM.

Group: Device Event - Paired Event (First) Processing

Group: Initiate Activity

2.6 Determine Activity Type

Actor/Role: MDM

Description: The Paired Event (First) is meant to indicate the start of process that consists of two or more events (e.g. Outage, where Outage event is the first event and Restoration event is the last event). It's recommended to create Activity to monitor events and apply logic required to control the process depends of events and their sequence.

MDM determines Activity Type by analyzing [Device Event type where Activity Type](#) is configured.

Process Plug-in enabled (Y/N)	Available Algorithm(s):	D1-INITACT (Initiate Activity)
Business Object (Y/N)	Business Object	D1-Device Event D1-PairedEventFirstDeviceEvent
Configuration required (Y/N)	Entities to Configure:	Standard Event Names Device Event Types Device Event Category Activity Type

Group: Device Event - Paired Event (First) Processing

Group: Initiate Activity

2.7 Create a Log

Actor/Role: MDM

Description: If MDM is not able to determine any activity for the Paired Event (First) device event, it logs an entry and exits from processing.

Process Plug-in enabled (Y/N) **Available Algorithm(s):**

D1-INITACT (Initiate Activity)

Business Object (Y/N) **Business Object**

D1-Device Event
D1-PairedEventFirstDeviceEvent

Configuration required (Y/N) **Entities to Configure:**

Standard Event Names
Device Event Types
Device Event Category
Activity Type

Group: Device Event - Paired Event (First) Processing

Group: Initiate Activity

Group: Create Activity

2.8 Create Activity in 'Pending' State

Actor/Role: MDM

Description: MDM creates Activity in 'Pending' state.

Process Plug-in enabled (Y/N) **Available Algorithm(s):**

D1-INITACT (Initiate Activity)

Business Object (Y/N) **Business Object**

D1-Device Event
D1-PairedEventFirstDeviceEvent

Configuration required (Y/N)	Entities to Configure:	Standard Event Names
		Device Event Types
		Device Event Category
		Activity Type

Group: Device Event - Paired Event (First) Processing

Group: Initiate Activity

Group: Create Activity

2.9 Update Activity to 'Started' State and Populate Start Date/Time

Actor/Role: MDM

Description: MDM updates Activity with Duration to 'Started' state and populates Start Date/Time.

Process Plug-in enabled (Y/N)	Available Algorithm(s):	D1-INITACT (Initiate Activity)
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Business Object (Y/N)	Business Object	D1-Device Event
		D1-PairedEventFirstDeviceEvent
		D1-DeviceWithDurationActivity (Outage Activity)

Group: Device Event - Paired Event (First) Processing

3.0 Determine and Monitor End of 'Held' State

Actor/Role: MDM

Description: MDM holds the execution of the Paired Event (First) processing for the configurable period. The basic objective of this is to allow wait time for the system to check if any Paired Event (Last) is received.

Process Plug-in enabled (Y/N)	Available Algorithm(s):	D1-HLPRDDEV (Hold Paired Device Event)
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D1-Device Event

Business Object (Y/N)	Business Object	D1-PairedEventFirstDeviceEvent
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3.1 Review Event in 'Held' State

Actor/Role: MDM Authorized User

Description: When the Paired Event (First) is in 'Held' state, the MDM Authorized User reviews and analyses the Device Event.

Process Plug-in enabled (Y/N)	Available Algorithm(s):	D1-HLPRDDEVT (Hold Paired Device Event)
--------------------------------------	--------------------------------	---

Business Object (Y/N)	Business Object	D1-Device Event
		D1-PairedEventFirstDeviceEvent

3.2 Request to Discard

Actor/Role: MDM Authorized User

Description: If required, MDM Authorized User requests to discard event.

Business Object (Y/N)	Business Object	D1-Device Event
		D1-PairedEventFirstDeviceEvent

Group: Device Event - Paired Event (First) Processing

3.4 Update Event to 'Discard' State

Actor/Role: MDM

Description: MDM updates the Paired Event (First) to 'Discard' state.

Business Object (Y/N)	Business Object	D1-Device Event
		D1-PairedEventFirstDeviceEvent

Group: Device Event - Paired Event (Last) Processing

Group: Terminate Activity

3.5 Determine Existing Activity

Actor/Role: MDM

Description: When last Paired Event is received, MDM identifies exiting Activity that has been created when first Paired event was received and processed by MDM.

Note: If no activity is found, it creates a log and exits the processing.

Process Plug-in enabled (Y/N)	Available Algorithm(s):	D1-TERMACT (Terminate Activity)
--------------------------------------	--------------------------------	---------------------------------

Business Object (Y/N)	Business Object	D1-Device Event
		D1-PairedEventLastDeviceEvent

Group: Device Event - Paired Event (Last) Processing

Group: Terminate Activity

3.6 Update Activity to End State and Populate End Date/Time for Activity

Actor/Role: MDM

Description: If existing Activity is identified, MDM updates it with End Date/Time and transitions it to next default state i.e. 'End' state.

Process Plug-in enabled (Y/N)	Available Algorithm(s):	D1-TERMACT (Terminate Activity)
--------------------------------------	--------------------------------	---------------------------------

Business Object (Y/N)	Business Object	D1-Device Event
		D1-PairedEventLastDeviceEvent

Group: Device Event - Paired Event (Last) Processing

Group: Terminate Activity

3.7 Create Error

Actor/Role: MDM

Description: MDM creates an error if application is not able to identify previously created Activity linked to the same device as last Paired Event

Process Plug-in enabled (Y/N) **Available Algorithm(s):**

D1-TERMACT (Terminate Activity)

Business Object (Y/N) **Business Object**

D1-Device Event
D1-PairedEventLastDeviceEvent

Group: Device Event - Paired Event (Last) Processing

Group: Discard Pair of Events

3.8 Determine First Device Event Related to Activity

Actor/Role: MDM

Description: MDM determines Paired Event (First) related to the current Activity.

Process Plug-in enabled (Y/N) **Available Algorithm(s):**

D1-DSCPRDEVT (Discard Pair of Events)

Business Object (Y/N) **Business Object**

D1-Device Event
D1-PairedEventLastDeviceEvent

Group: Device Event - Paired Event (Last) Processing

Group: Discard Pair of Events

3.9 Compare Period between Events with Pre-defined Period for 'Discard'

Actor/Role: MDM

Description: MDM calculates the time interval between the two events and compares this period with a pre-defined 'Period for Discard'.

Process Plug-in enabled (Y/N) Available Algorithm(s):

D1-DSCPRDEVT (Discard Pair of Events)

Business Object (Y/N) Business Object

D1-Device Event
D1-PairedEventFirstDeviceEvent
D1-PairedEventLastDeviceEvent

Group: Device Event – Paired Event (Last) Processing

Group: Discard Pair of Events

4.0 Update First Event to ‘Discard’ State

Actor/Role: MDM

Description: If time interval between Paired Event (First) and Paired Event (Last) is less than configured period for ‘Discard’, MDM transitions the First Event to ‘Discard’ state.

Process Plug-in enabled (Y/N) Available Algorithm(s):

D1-DSCPRDEVT (Discard Pair of Events)

Business Object (Y/N) Business Object

D1-Device Event
D1-PairedEventFirstDeviceEvent
D1-PairedEventLastDeviceEvent

Group: Device Event – Paired Event (Last) Processing

Group: Discard Pair of Events

4.1 Update Last Event to ‘Discard’ State

Actor/Role: MDM

Description: MDM transitions the last Paired Event to ‘Discard’ state.

Process Plug-in enabled (Y/N) Available Algorithm(s):

D1-DSCPRDEVT (Discard Pair of Events)

Business Object (Y/N)

Business Object

D1-Device Event
D1-PairedEventFirstDeviceEvent
D1-PairedEventLastDeviceEvent

4.2 Analyze Error

Actor/Role: MDM Authorized User

Description: MDM Authorized User analyzes the error logged during the Paired Event processing.

4.3 Work on Error and Request to Update

Actor/Role: MDM Authorized User

Description: MDM Authorized User works on the Error and Requests the MDM to update it.

4.4 Update Event and Activity Period

Actor/Role: MDM

Description: MDM updates the Event and Activity with any latest changes that took place based on the work performed by Authorized User

Business Object (Y/N)

Business Object

D1-Device Event
D1-PairedEventFirstDeviceEvent
D1-PairedEventLastDeviceEvent

Test Documentation related to the Current Process

ID	Document Name	Test Type

Document Control

Change Record

Date	Author	Version	Change Reference
9/13/2011	Srinivas Rao Kanteti	1	Initial
9/27/2011	Galina Polonsky	1	Review
6/27/2012	Galina Polonsky	1	Minor changes, Review, Approval
07/12/2015	Galina Polonsky	1	Minor changes, Review, Approval

Attachments

Device Event Lifecycle



Device Event
Lifecycle.doc

Standard Device Event Lifecycle



Standard Device
Event Lifecycle.doc

Paired Event First Device Event Lifecycle



Paired Event First
Device Event Lifecycle

Paired Event Last Device Event Lifecycle



Paired Event Last
Device Event Lifecycle

Outage Activity Lifecycle



Outage Activity
Lifecycle.doc

Device Event Category



Device Event
Category.doc

Processing Role and Method for Service Provider



Processing Role and
Method for Service Pr

Device Event Type and Related Activity Types



Device Event Type
and Related Activity