

**Oracle Utilities Meter Data Management
Release 2.0.1**

Utility Reference Model

5.3.3.2 MDM.Manage Device Events

February 2014

Oracle Utilities Meter Data Management Utility Reference Model 5.3.3.2 Release 2.0.1

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Contents

Chapter 1

Overview..... 1-1
 Brief Description 1-2
 Actors/Roles..... 1-2

Chapter 2

Detailed Business Process Model Description 2-1
 Business Process Diagrams..... 2-2
 MDM.Manage Device Events Page 1..... 2-2
 MDM.Manage Device Events Page 2..... 2-3
 MDM.Manage Device Events Description..... 2-4
 1.0 Analyze Requirements and Select US Type..... 2-4
 1.1 Search For Service Point(s)..... 2-5
 1.2 Link Service Point to US..... 2-5
 1.3 Search For Contact (Customer) 2-5
 1.4 Link Contact to US 2-5
 1.5 Search For Usage Groups 2-5
 1.6 Link Usage Group to US..... 2-6
 1.7 Populate Data and Request to Create US..... 2-6
 1.8 Populate Default Data 2-6
 1.9 Validate Data 2-7
 2.0 Create US in Active Status 2-7
 2.1 Analyze Requirements and Select US..... 2-8
 2.2 Create or Update Link Between Service Point and US 2-8
 2.3 Update Link Between Contact and US 2-8
 2.4 Create or Update Link Between Usage Group and US..... 2-8
 2.5 Populate Data And Request to Update US 2-8
 2.6 Update US..... 2-9
 2.7 Request Deactivate US 2-9
 2.8 Update to US State To Inactive 2-9
 Business Objects Lifecycle..... 2-11
 Usage Subscription Lifecycle..... 2-11
 Related Training..... 2-12

Chapter 1

Overview

This chapter provides a brief description of the MDM.Manage Device Events business process and associated process diagrams. This includes:

- **Brief Description**
 - **Actors/Roles**

Brief Description

Business Process: 5.3.3.2 MDM.Manage Device Events

Process Type: Process

Parent Process: 5.3.3 MDM.Manage Events

Sibling Processes: 5.3.3.1 MDM.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

Actors/Roles

The MDM.Manage Device Events business process involves the following actors and roles.

- **MDM Authorized User:** An authorized user of the Meter Data Management application
- **MDM Application:** The Meter Data Management system

Chapter 2

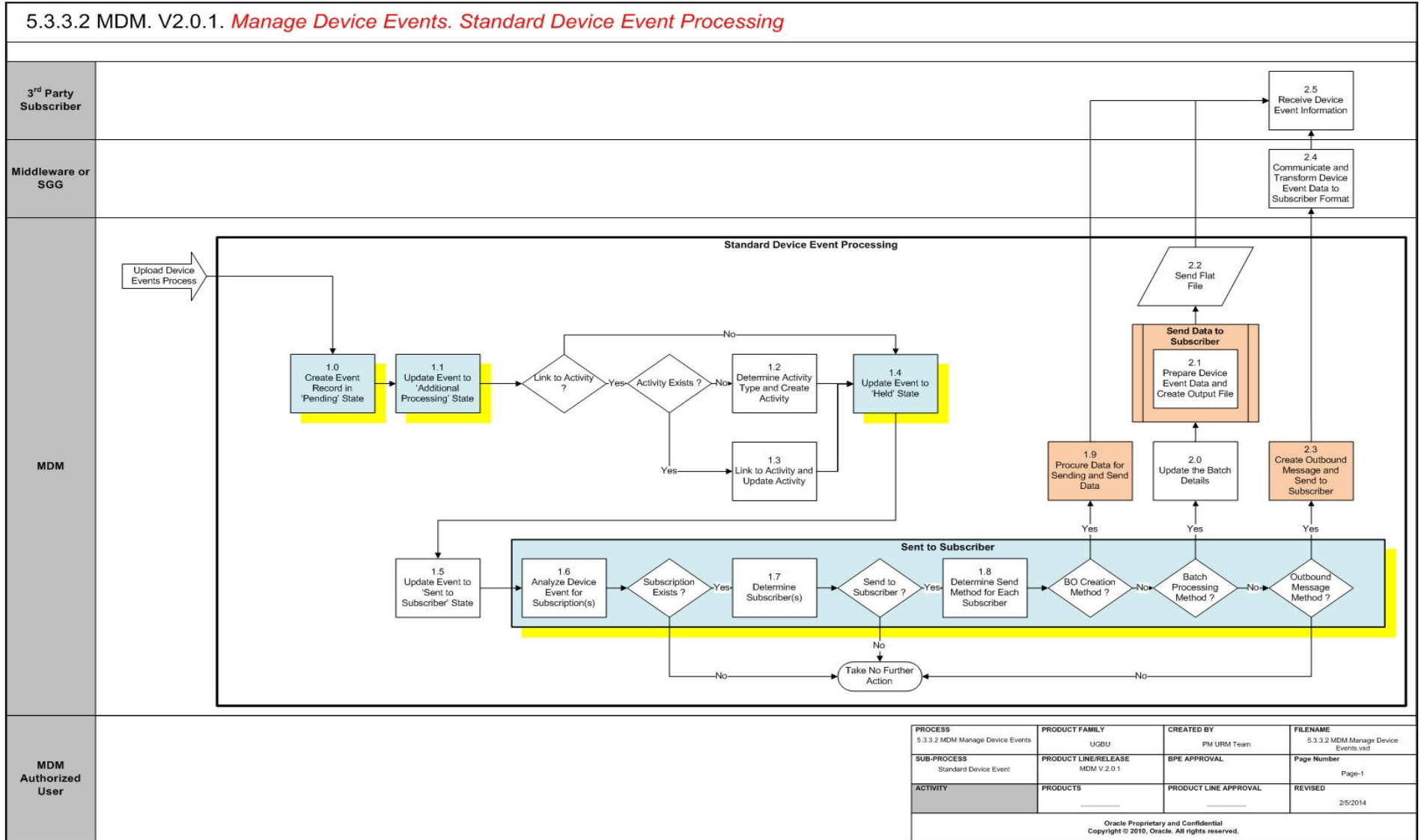
Detailed Business Process Model Description

This chapter provides a detailed description of the MDM.Manage Device Events business process. This includes:

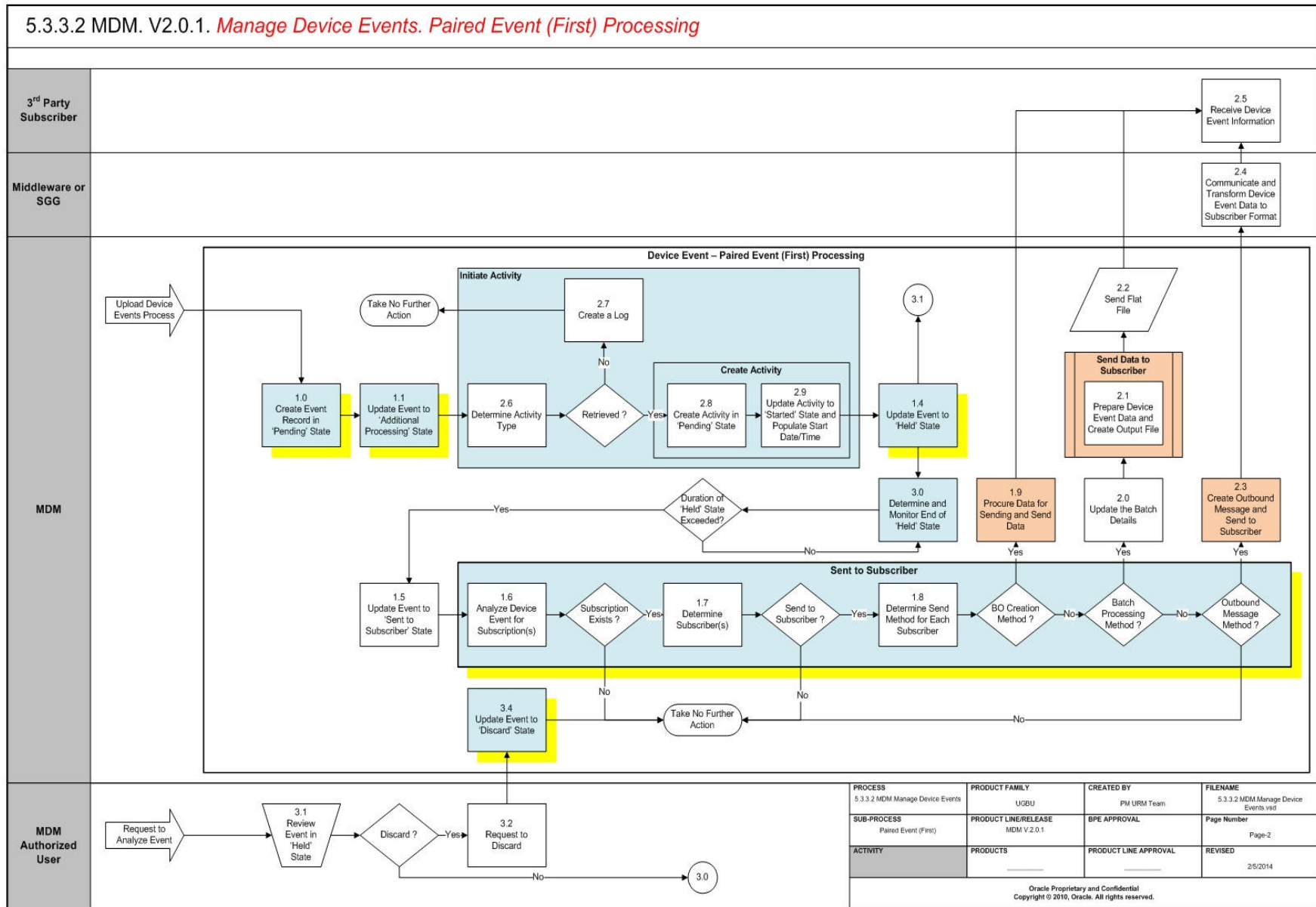
- **Business Process Diagrams**
 - MDM.Manage Device Events Page 1
 - MDM.Manage Device Events Page 2
 - MDM.Manage Device Events Page 3
 - MDM.Manage Device Events Page 4
- MDM.Manage Device Events Page 3
- **Business Objects Lifecycle**
 - D1-Device Event
 - D1-StandardDeviceEvent
 - D1-PairedEventFirstDeviceEvent
 - D1-PairedEventLastDeviceEvent
 - D1-DeviceWithDurationActivity (Outage Activity)
- **Related Training**

Business Process Diagrams

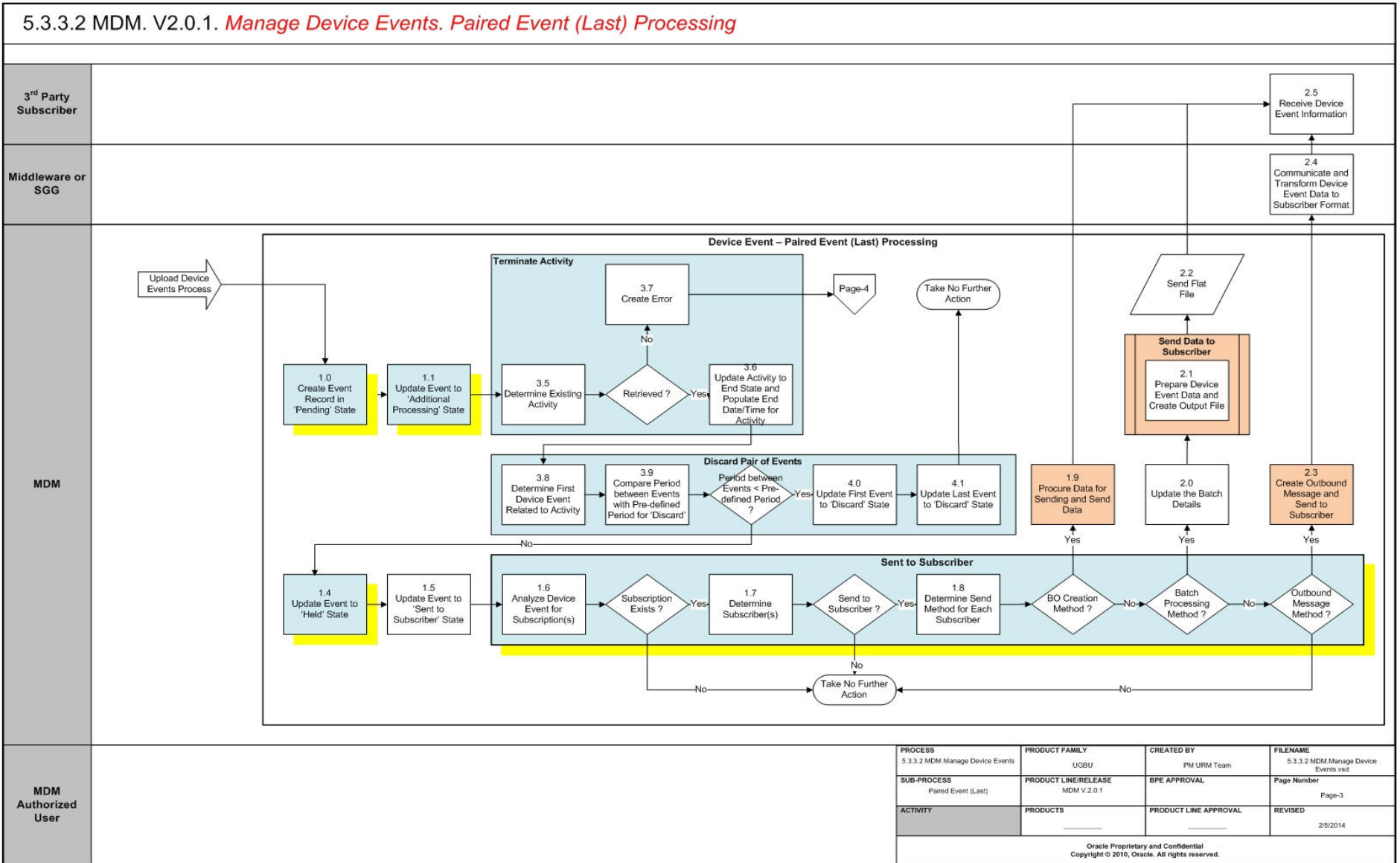
MDM.Manage Device Events Page 1



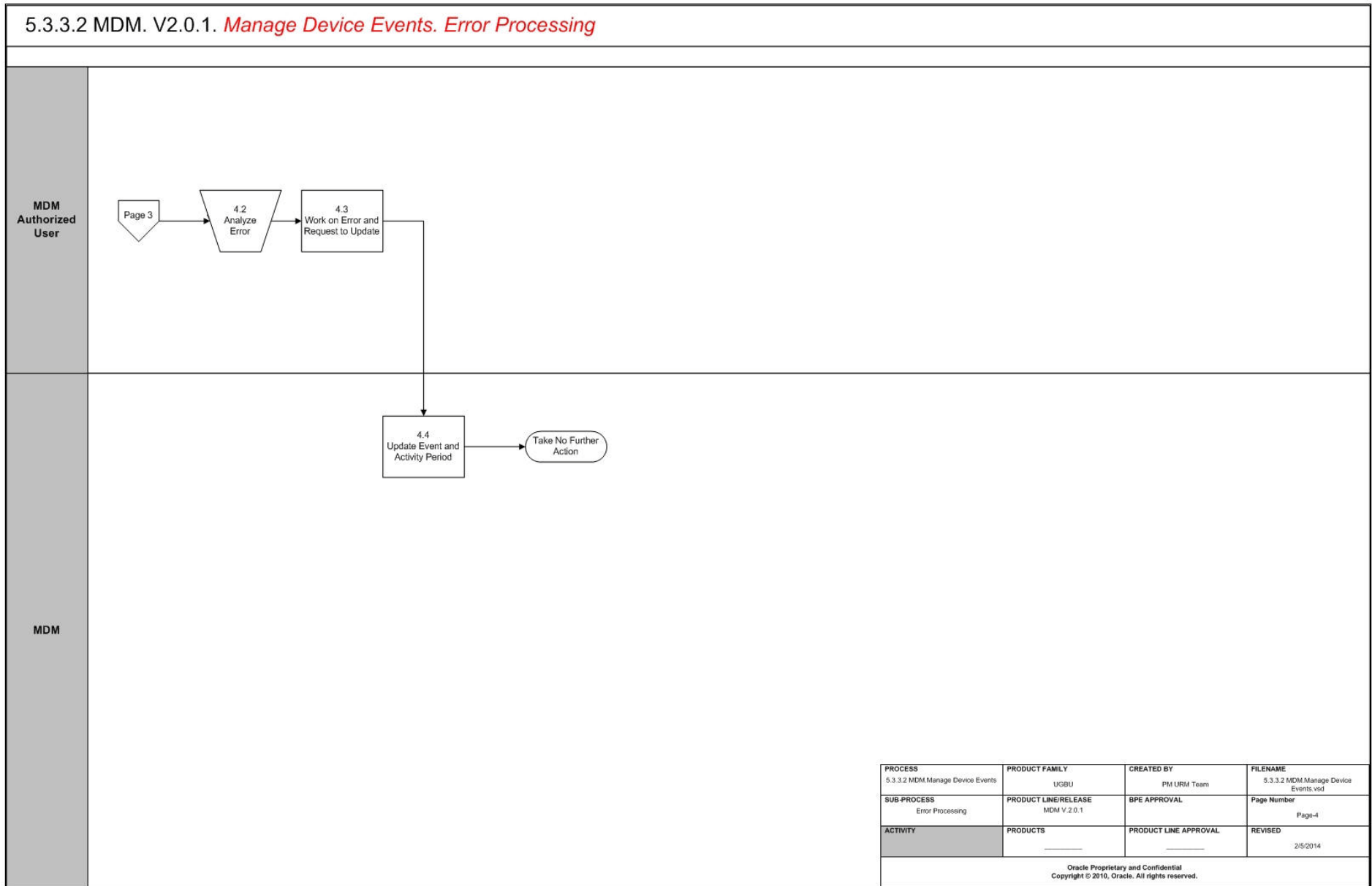
MDM.Manage Device Events Page 2



MDM.Manage Device Events Page 3



MDM.Manage Device Events Page 4



MDM.Manage Device Events Description

This section includes detailed descriptions of the steps involved in the MDM.Manage Device Events business process, including:

- 1.0 Create Event Record in 'Pending' State
- 1.1 Update Event to 'Additional Processing' State
- 1.2 Determine Activity Type and Create Activity
- 1.3 Link to Activity and Update Activity
- 1.4 Update Event to 'Held' State
- 1.5 Update Event to 'Sent to Subscriber' State
- 1.6 Analyze Device Event for Subscription(s)
- 1.7 Determine Subscriber(s)
- 1.8 Determine Send Method for Each Subscriber
- 1.9 Procure Data for Sending and Send Data
- 2.0 Update the Batch Details
- 2.1 Prepare Device Event Data and Create Output File
- 2.2 Send Flat File
- 2.3 Create Outbound Message and Send to Subscriber
- 2.4 Communicate and Transform Device Event Data to Subscriber Format
- 2.5 Receive Device Event Information
- 2.6 Determine Activity Type
- 2.7 Create a Log
- 2.8 Create Activity in 'Pending' State
- 2.9 Update Activity to 'Started' State and Populate Start Date/Time
- 3.0 Determine and Monitor End of 'Held' State
- 3.1 Review Event in 'Held' State
- 3.2 Request to Discard
- 3.4 Update Event to 'Discard' State
- 3.5 Determine Existing Activity
- 3.6 Update Activity to End State and Populate End Date/Time for Activity
- 3.7 Create Error
- 3.8 Determine First Device Event Related to Activity
- 3.9 Compare Period between Events with Pre-defined Period for 'Discard'
- 4.0 Update First Event to 'Discard' State
- 4.1 Update Last Event to 'Discard' State
- 4.2 Analyze Error
- 4.3 Work on Error and Request to Update
- 4.4 Update Event and Activity Period

1.0 Create Event Record in 'Pending' State

See **MDM.Manage Device Events Page 1** on page 2-2 for the business process diagram associated with this activity.

Group: Standard Device Event Processing

Group: Device Event-Paired Event (First) Processing

Group: Device Event-Paired Event (Last) Processing

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).

Business Objects	Available Algorithms
D1-Device Event	D1-DVEVTINFO (Device Event Info)
D1-StandardDeviceEvent	D1-VALDVCEVT (Validate Device Event)
D1-PairedEventFirstDeviceEvent	D1-VALDEXEVT (Validate External Event Name)
D1-PairedEventLastDeviceEvent	

1.1 Update Event to 'Additional Processing' State

See **MDM.Manage Device Events Page 1** on page 2-2 for the business process diagram associated with this activity.

Group: Standard Device Event Processing

Group: Device Event-Paired Event (First) Processing

Group: Device Event-Paired Event (Last) Processing

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.

Business Objects	Available Algorithms
D1-Device Event	F1-AT-RQJ (Transition to Default Next Status)
D1-StandardDeviceEvent	
D1-PairedEventFirstDeviceEvent	
D1-PairedEventLastDeviceEvent	

1.2 Determine Activity Type and Create Activity

See **MDM.Manage Device Events Page 1** on page 2-2 for the business process diagram associated with this activity.

Group: Standard Device Event Processing

Actor/Role: MDM

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

Business Object(s)

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.

1.3 Link to Activity and Update Activity

See **MDM.Manage Device Events Page 1** on page 2-2 for the business process diagram associated with this activity.

Group: Standard Device Event Processing

Actor/Role: MDM

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

Business Object(s)

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

1.4 Update Event to 'Held' State

See **MDM.Manage Device Events Page 1** on page 2-2 for the business process diagram associated with this activity.

Group: Standard Device Event Processing

Actor/Role: MDM

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

Business Objects	Available Algorithms
D1-Device Event D1-StandardDeviceEvent D1-PairedEventFirstDeviceEvent D1-PairedEventLastDeviceEvent	F1-AT-RQJ (Transition to Default Next Status)

1.5 Update Event to 'Sent to Subscriber' State

See **MDM.Manage Device Events Page 1** on page 2-2 for the business process diagram associated with this activity.

Group: Standard Device Event Processing

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.

Business Objects	Available Algorithms
D1-Device Event	F1-AT-RQJ (Transition to
D1-StandardDeviceEvent	Default Next Status)
D1-PairedEventFirstDeviceEvent	
D1-PairedEventLastDeviceEvent	

1.6 Analyze Device Event for Subscription(s)

See **MDM.Manage Device Events Page 1** on page 2-2 for the business process diagram associated with this activity.

Group: Sent to Subscriber

Group: Standard Device Event Processing

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.

Entities to Configure

Processing Role

Processing Method for Processing Role for Head-End Systems

Business Objects	Available Algorithms
D1-Device Event	D1-SENDTOSUB (Send to
D1-StandardDeviceEvent	Subscribers)
D1-PairedEventFirstDeviceEvent	
D1-PairedEventLastDeviceEvent	

1.7 Determine Subscriber(s)

See **MDM.Manage Device Events Page 1** on page 2-2 for the business process diagram associated with this activity.

Group: Sent to Subscriber

Group: Standard Device Event Processing

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.

Entities to Configure

Processing Role

Processing Method for Processing Role for Head-End Systems

Business Objects

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

Available Algorithms

D1-SENDTOSUB (Send to Subscribers)

1.8 Determine Send Method for Each Subscriber

See **MDM.Manage Device Events Page 1** on page 2-2 for the business process diagram associated with this activity.

Group: Sent to Subscriber

Group: Standard Device Event Processing

Actor/Role: MDM

Description: MDM determines method (sending mechanism) how to send Event information to Subscriber(s).

Entities to Configure

Processing Role

Processing Method for Processing Role for Head-End Systems

Business Objects

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

Available Algorithms

D1-SENDTOSUB (Send to Subscribers)

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.

1.9 Procure Data for Sending and Send Data

See **MDM.Manage Device Events Page 1** on page 2-2 for the business process diagram associated with this activity.

Group: Standard Device Event Processing

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.

Entities to Configure

Processing Role

Processing Method for Processing Role for Head-End Systems

Business Objects

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

Available Algorithms

D1-SENDTOSUB (Send to Subscribers)

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

2.0 Update the Batch Details

See **MDM.Manage Device Events Page 1** on page 2-2 for the business process diagram associated with this activity.

Group: Standard Device Event Processing

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.

Entities to Configure

Processing Role

Processing Method for Processing Role for Head-End Systems

Business Objects	Available Algorithms
D1-Device Event D1-StandardDeviceEvent D1-PairedEventFirstDeviceEvent D1-PairedEventLastDeviceEvent	D1-SENDTOSUB (Send to Subscribers)

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

2.1 Prepare Device Event Data and Create Output File

See **MDM.Manage Device Events Page 1** on page 2-2 for the business process diagram associated with this activity.

Group: Sent to Subscriber

Group: Standard Device Event Processing

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.

Entities to Configure

Processing Role

Processing Method for Processing Role for Head-End Systems

Business Objects	Available Algorithms
D1-Device Event D1-StandardDeviceEvent D1-PairedEventFirstDeviceEvent D1-PairedEventLastDeviceEvent	D1-SENDTOSUB (Send to Subscribers)

2.2 Send Flat File

See **MDM.Manage Device Events Page 1** on page 2-2 for the business process diagram associated with this activity.

Group: Standard Device Event Processing

Actor/Role: MDM

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

Entities to Configure

Processing Role

Processing Method for Processing Role for Head-End Systems

Business Objects	Available Algorithms
D1-Device Event D1-StandardDeviceEvent D1-PairedEventFirstDeviceEvent D1-PairedEventLastDeviceEvent	D1-SENDTOSUB (Send to Subscribers)

2.3 Create Outbound Message and Send to Subscriber

See **MDM.Manage Device Events Page 1** on page 2-2 for the business process diagram associated with this activity.

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.

Entities to Configure

Processing Role

Processing Method for Processing Role for Head-End Systems

Business Objects	Available Algorithms
D1-Device Event D1-StandardDeviceEvent D1-PairedEventFirstDeviceEvent D1-PairedEventLastDeviceEvent	D1-SENDTOSUB (Send to Subscribers)

2.4 Communicate and Transform Device Event Data to Subscriber Format

See **MDM.Manage Device Events Page 1** on page 2-2 for the business process diagram associated with this activity.

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

See **MDM.Manage Device Events Page 1** on page 2-2 for the business process diagram associated with this activity.

Actor/Role: 3rd Party Subscribers

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

2.6 Determine Activity Type

See **MDM.Manage Device Events Page 1** on page 2-2 for the business process diagram associated with this activity.

Group: Device Event - Paired Event (First) Processing

Group: Initiate Activity

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.

Entities to Configure

Standard Event Names

Device Event Types

Device Event Category

Activity Type

Business Objects

D1-Device Event

D1-PairedEventFirstDeviceEvent

Available Algorithms

D1-INTACT (Initiate Activity)

2.7 Create a Log

See **MDM.Manage Device Events Page 2** on page 2-3 for the business process diagram associated with this activity.

Group: Device Event - Paired Event (First) Processing

Group: Initiate Activity

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.

Entities to Configure

Standard Event Names

Device Event Types

Device Event Category

Activity Type

Business Objects	Available Algorithms
D1-Device Event D1-PairedEventFirstDeviceEvent	D1-INITACT (Initiate Activity)

2.8 Create Activity in 'Pending' State

See **MDM.Manage Device Events Page 2** on page 2-3 for the business process diagram associated with this activity.

Group: Device Event - Paired Event (First) Processing

Group: Initiate Activity

Group: Create Activity

Actor/Role: MDM

Description: MDM creates Activity in 'Pending' state.

Entities to Configure

Standard Event Names

Device Event Types

Device Event Category

Activity Type

Business Objects	Available Algorithms
D1-Device Event D1-PairedEventFirstDeviceEvent	D1-INITACT (Initiate Activity)

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

See **MDM.Manage Device Events Page 2** on page 2-3 for the business process diagram associated with this activity.

Group: Device Event - Paired Event (First) Processing

Group: Initiate Activity

Group: Create Activity

Actor/Role: MDM

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

Business Objects	Available Algorithms
D1-Device Event D1-PairedEventFirstDeviceEvent D1-DeviceWithDurationActivity (Outage Activity)	D1-INITACT (Initiate Activity)

3.0 Determine and Monitor End of 'Held' State

See **MDM.Manage Device Events Page 2** on page 2-3 for the business process diagram associated with this activity.

Group: Device Event - Paired Event (First) Processing

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.

Business Objects	Available Algorithms
D1-Device Event D1-PairedEventFirstDeviceEvent	D1-HLPRDDEVT (Hold Paired Device Event)

3.1 Review Event in 'Held' State

See **MDM.Manage Device Events Page 2** on page 2-3 for the business process diagram associated with this activity.

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.

Business Objects	Available Algorithms
D1-Device Event D1-PairedEventFirstDeviceEvent	D1-HLPRDDEVT (Hold Paired Device Event)

3.2 Request to Discard

See **MDM.Manage Device Events Page 2** on page 2-3 for the business process diagram associated with this activity.

Actor/Role: MDM Authorized User

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

Business Objects

D1-Device Event
D1-PairedEventFirstDeviceEvent

3.4 Update Event to 'Discard' State

See **MDM.Manage Device Events Page 2** on page 2-3 for the business process diagram associated with this activity.

Group: Device Event - Paired Event (First) Processing

Actor/Role: MDM

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

Business Objects

D1-Device Event
D1-PairedEventFirstDeviceEvent

3.5 Determine Existing Activity

See **MDM.Manage Device Events Page 3** on page 2-4 for the business process diagram associated with this activity.

Group: Device Event - Paired Event (Last) Processing

Group: Terminate 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.

Business Objects
Available Algorithms

D1-Device Event D1-PairedEventLastDeviceEvent	D1-TERMACT (Terminate Activity)
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3.6 Update Activity to End State and Populate End Date/Time for Activity

See **MDM.Manage Device Events Page 3** on page 2-4 for the business process diagram associated with this activity.

Group: Device Event - Paired Event (Last) Processing

Group: Terminate 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.

Business Objects	Available Algorithms
D1-Device Event D1-PairedEventLastDeviceEvent	D1-TERMACT (Terminate Activity)

3.7 Create Error

See **MDM.Manage Device Events Page 3** on page 2-4 for the business process diagram associated with this activity.

Group: Device Event - Paired Event (Last) Processing

Group: Terminate Activity

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.

Business Objects	Available Algorithms
D1-Device Event D1-PairedEventLastDeviceEvent	D1-TERMACT (Terminate Activity)

3.8 Determine First Device Event Related to Activity

See **MDM.Manage Device Events Page 3** on page 2-4 for the business process diagram associated with this activity.

Group: Device Event - Paired Event (Last) Processing

Group: Discard Pair of Events

Actor/Role: MDM

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

Business Objects	Available Algorithms
D1-Device Event D1-PairedEventLastDeviceEvent	D1-DSCPRDEVT (Discard Pair of Events)

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

See **MDM.Manage Device Events Page 3** on page 2-4 for the business process diagram associated with this activity.

Group: Device Event - Paired Event (Last) Processing

Group: Discard Pair of Events

Actor/Role: MDM

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

Business Objects	Available Algorithms
D1-Device Event D1-PairedEventFirstDeviceEvent D1-PairedEventLastDeviceEvent	D1-DSCRDEVT (Discard Pair of Events)

4.0 Update First Event to 'Discard' State

See **MDM.Manage Device Events Page 3** on page 2-4 for the business process diagram associated with this activity.

Group: Device Event - Paired Event (Last) Processing

Group: Discard Pair of Events

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.

Business Objects	Available Algorithms
D1-Device Event D1-PairedEventFirstDeviceEvent D1-PairedEventLastDeviceEvent	D1-DSCRDEVT (Discard Pair of Events)

4.1 Update Last Event to 'Discard' State

See **MDM.Manage Device Events Page 3** on page 2-4 for the business process diagram associated with this activity.

Group: Device Event - Paired Event (Last) Processing

Group: Discard Pair of Events

Actor/Role: MDM

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

Business Objects	Available Algorithms
D1-Device Event D1-PairedEventFirstDeviceEvent D1-PairedEventLastDeviceEvent	D1-DSCRDEVT (Discard Pair of Events)

4.2 Analyze Error

See **MDM.Manage Device Events Page 4** on page 2-5 for the business process diagram associated with this activity.

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

See **MDM.Manage Device Events Page 4** on page 2-5 for the business process diagram associated with this activity.

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

See **MDM.Manage Device Events Page 4** on page 2-5 for the business process diagram associated with this activity.

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 Objects

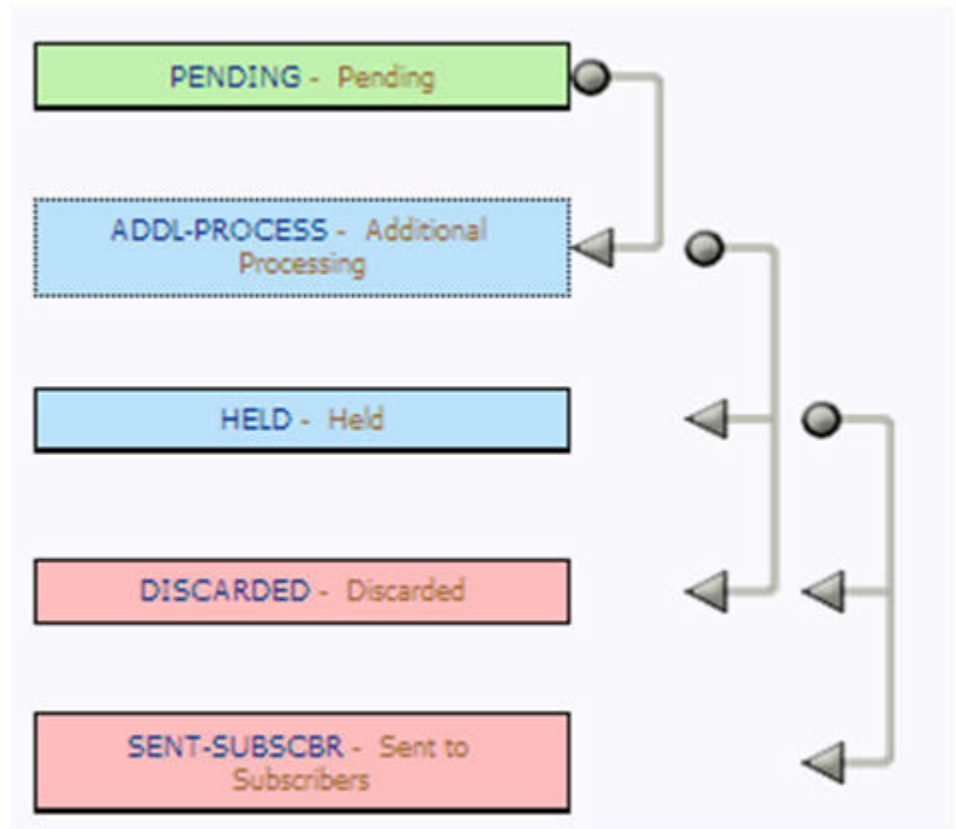
D1-Device Event

D1-PairedEventFirstDeviceEvent

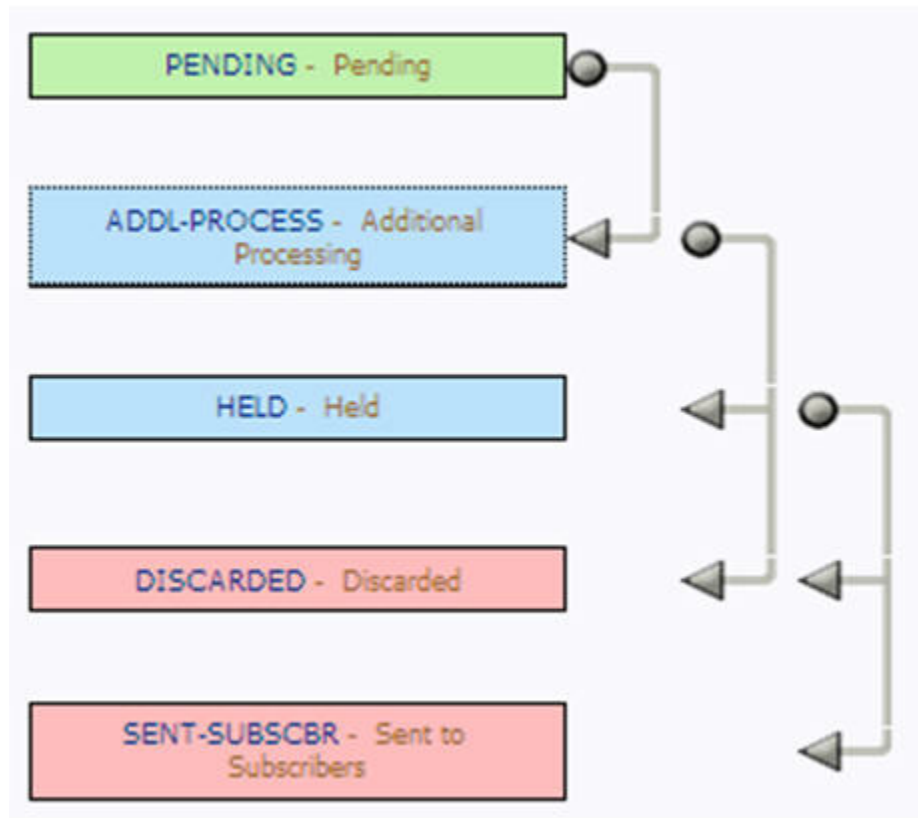
D1-PairedEventLastDeviceEvent

Business Objects Lifecycle

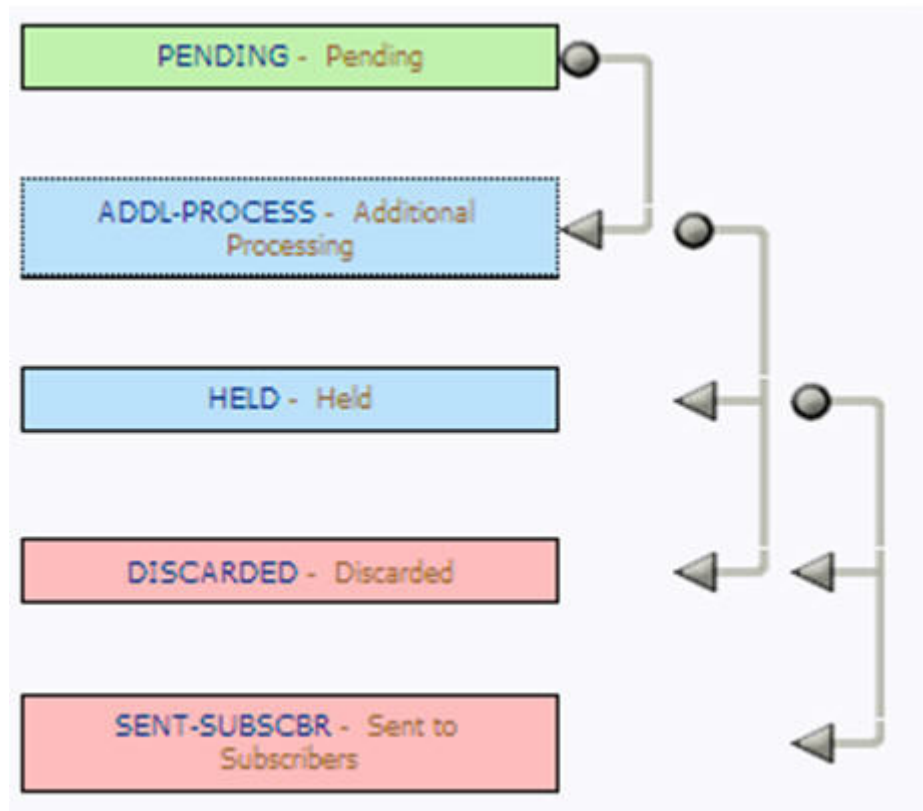
D1-Device Event



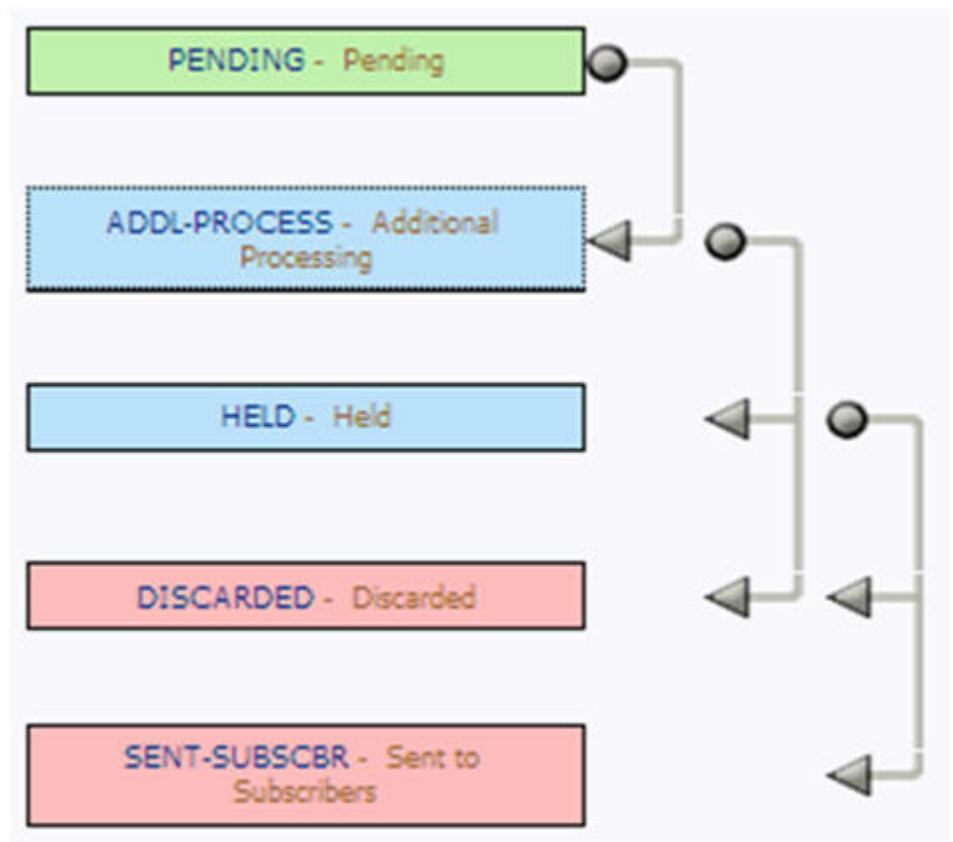
D1-StandardDeviceEvent



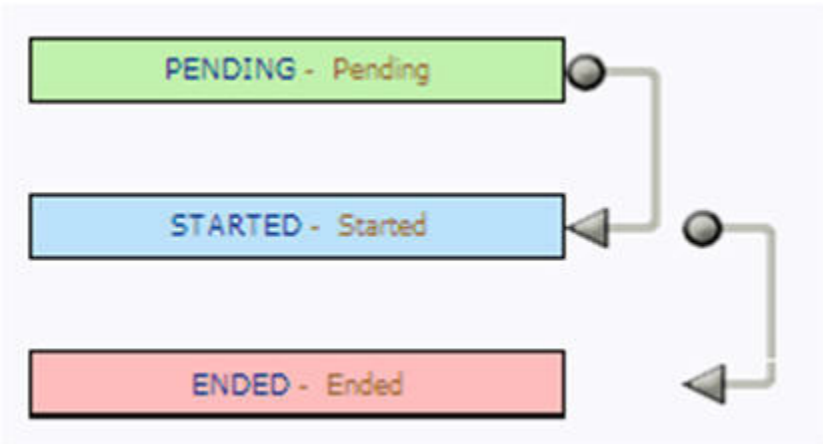
D1-PairedEventFirstDeviceEvent



D1-PairedEventLastDeviceEvent



D1-DeviceWithDurationActivity (Outage Activity)



Related Training

The following User Productivity Kit (UPK) modules provide training related to this business process:

- Oracle Utilities UPK for Meter Data Management Administrative Setup
- Oracle Utilities UPK for Meter Data Management User Tasks
- Oracle Utilities UPK for Meter Data Management VEE and Usage Rules
- Oracle Utilities UPK for Meter Data Management Working with Measurement Data