



METER DATA MANAGEMENT V2.2

5.6.3.2 Manage Device Installation and Commissioning

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Brief Description

Business Process:	5.6.3.2 MDM.v2.2.Manage Device Installation and Commissioning
Process Type:	Sub-Process
Parent Process:	5.6.3 MDM.v2.2.Manage Supplies/Devices
Sibling Processes:	5.6.3.1 MDM.v2.2.Manage Device and SP 5.6.3.3 MDM.v2.2.Manage Device De-installation, Decommissioning and Retirement 3.3.1.1 MDM.v2.2.Maintain Contact

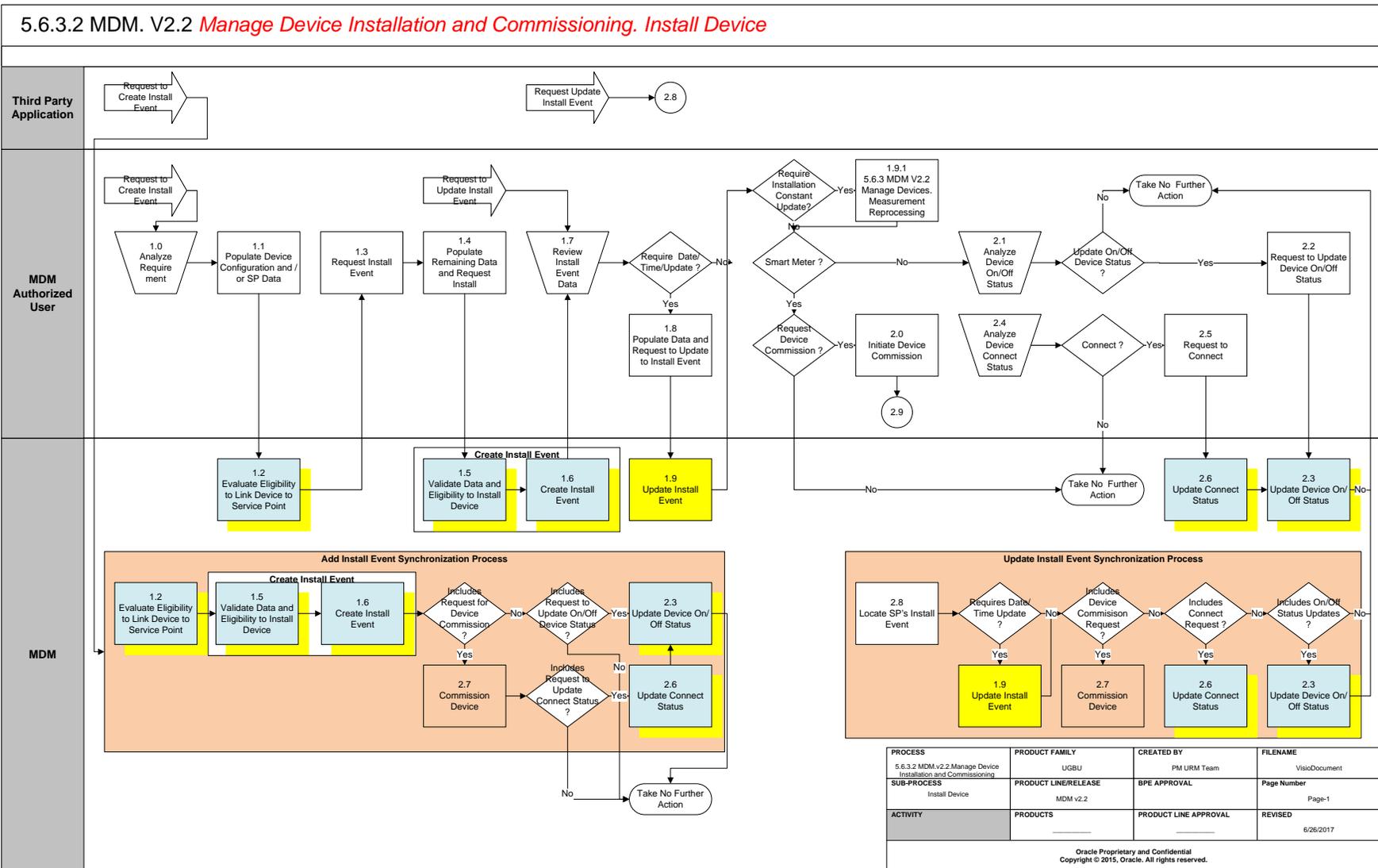
This process describes how to manage device installation and device commission in MDM. Device installation and Device commissioning can be initiated by Authorized User using user interface or automatically using interface with a 3rd party application. The process assumes that the device and service point have already been setup in MDM – refer to Manage Device and Manage SP process for more information. Installation event is the process of connecting the device to the service point. For those smart meters and head-end systems that are part of Oracle Smart Grid Gateway, the process commissioning the device with the head-end system including the ability for the device to communicate (take commands) between the two systems (MDM and the head-end system)

Installation events capture the history of the devices that have been installed at a service point. In technical terms, installation events (or install events) link a specific device configuration to a service point. While a device is installed at a service point, it may be turned off (and back on again). The installation event that records the original installation date and time also records the dates and times when the device has been turned on and off. When a device is removed, the original installation event is updated with the removal date and time.

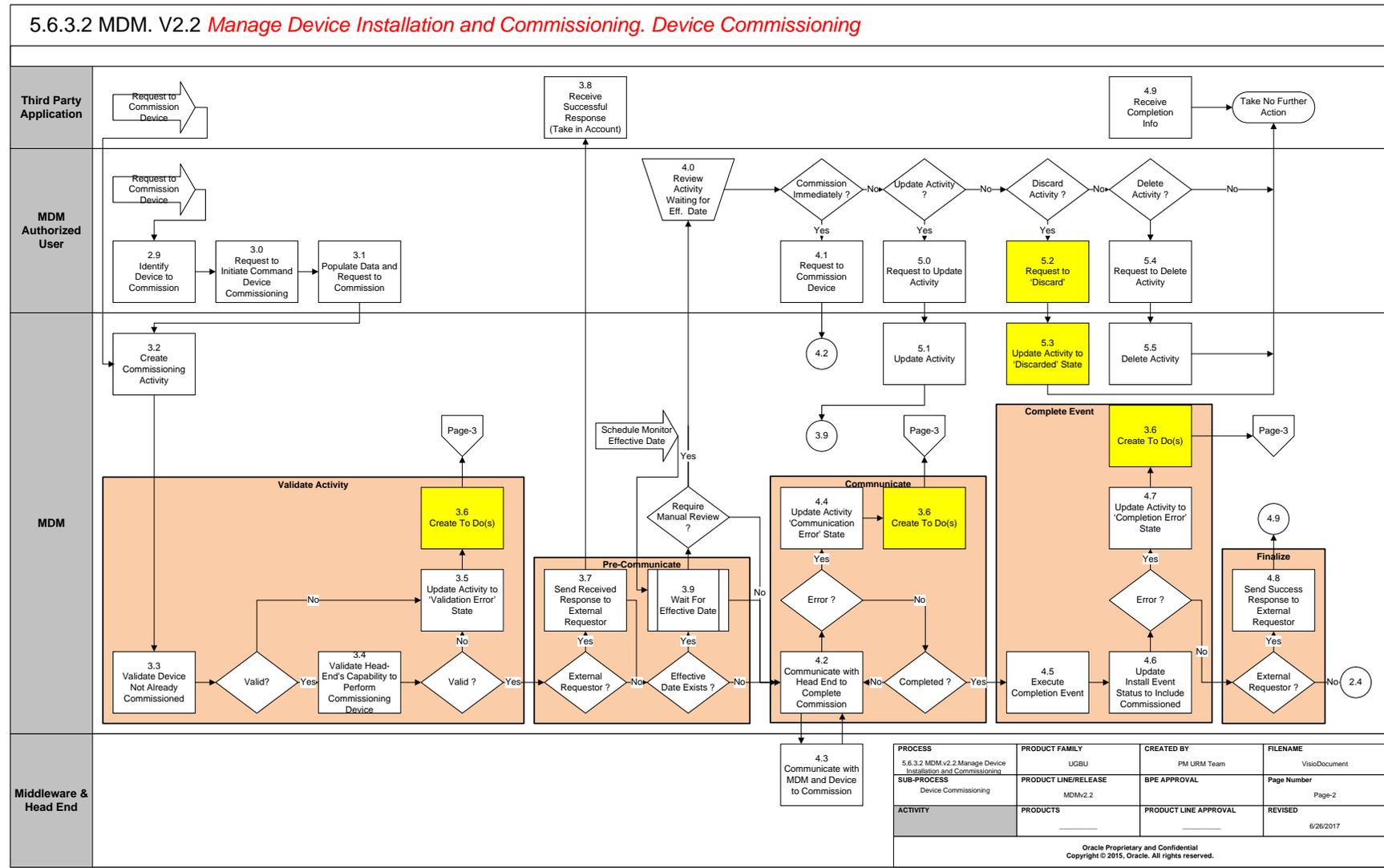
Device Commission is a command issued to establish communication between a device and the head-end system. Commissioning of a Device is reserved for Smart Meters. A Commissioned device is an active device found on the smart grid. Arming status is set (either Armed or blank) and the On/Off history is created. Device Commissioning is a part of the Install Event process.

Note: Current document represents complete process for Device Commissioning. The MDM as an application provides ability to initiate command, orchestrate processing and record results. However the actual communication with any Head End System requires integration with Head End system(s) that could be implemented by using Oracle SGG or any other similar software or custom development

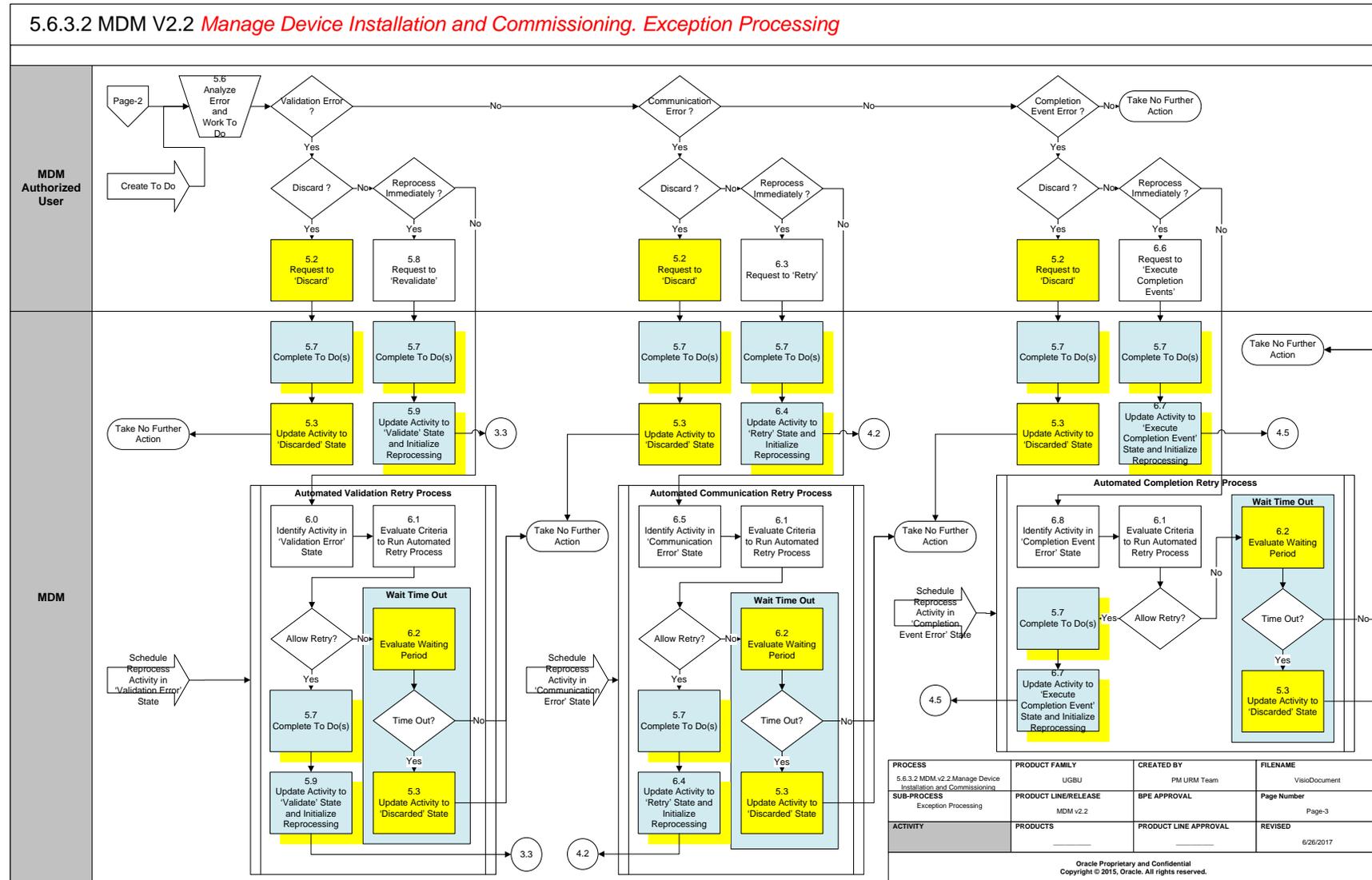
Business Process Model Page 1



Business Process Model Page 2



Business Process Model Page 3



Detail Business Process Model Description

1.0 Analyze Requirement

Actor/Role: MDM Authorized User

Description: When creating an install event, the authorized user gathers all the required attributes for adding an event.

1.1 Populate Device Configuration and/or SP Data

Actor/Role: MDM Authorized User

Description: The authorized user populates and/or updates the maintenance object with the analyzed service point requirements.

Note: Contact on the SP for smart meters is important when the device has arming required set to "arming required".

1.2 Evaluate Eligibility to Link Device to Service Point

Actor/Role: MDM

Description: MDM checks to see if the meter type and service point type match.

Business Object (Y/N)	Business Object	D1-SmartMeterInstallEvent
		D1-ManualMeterInstallEvent
Process Plug-in enabled (Y/N)	Available Algorithm(s):	D1-DEVCFGVAL (Validate the Device Configuration)

Note: There is a validation to check if the meter type and the service point type match.

1.3 Request Install Event

Actor/Role: MDM Authorized User

Description: MDM Authorized makes a request by clicking "Save" - which is the actual request to create the Service Point.

1.4 Populate Remaining Data and Request Install

Actor/Role: MDM Authorized User

Description: The MDM Authorized User enters the remaining install event data and clicks “Save” – which is the actual request to create [install event](#).

Group: Create Install Event

1.5 Validate Data and Eligibility to Install Device

Actor/Role: MDM

Description: MDM runs several validations to check the device and service point.

Business Object (Y/N)	Business Object	D1-ManualMeterInstallEvent D1-SmartMeterInstallEvent
Process Plug-in enabled (Y/N)	Available Algorithm(s):	D1-DEVCFGVAL (Validate the Device Configuration)

Note: *Validations include the following:*

- Check if Device Configuration is installed at another Service Point for the same install date/time
- Determine if any other install event exists for the SP, where the install date/time lies between the current install date/time and removal date/time.
- Device Configuration has "Active" status
- Device Configuration Install on Another SP

Group: Create Install Event

1.6 Create Install Event

Actor/Role: MDM

Description: MDM creates the [install event](#).

Business Object (Y/N)	Business Object	D1-ManualMeterInstallEvent D1-SmartMeterInstallEvent
Process Plug-in enabled (Y/N)	Available Algorithm(s):	D1-CREINSEVT (Create Install Event)

1.7 Review Install Event Data

Actor/Role: MDM Authorized User

Description: The MDM Authorized User [reviews the data after the install event](#) has been added.

1.8 Populate Data and Request to Update to Install Event

Actor/Role: MDM Authorized User

Description: The MDM Authorized User enters the required data and save the data to update the install event.

1.9 Update Install Event

Actor/Role: MDM

Description: MDM updates the install event.

Business Object (Y/N)	Business Object
	D1-ManualMeterInstallEvent
	D1-SmartMeterInstallEvent

1.9.1 5.6.3 MDM V2.2 Manage Devices. Measurement Reprocessing

Actor/Role: MDM

Description: MDM updates the installation constant. This leads to measurement reprocessing. Please refer to process **5.6.3 MDM V2.2 Manage Devices. Measurement Reprocessing** for further details.

2.0 Initiate Device Commission

Actor/Role: MDM Authorized User

Description: The MDM Authorized User selects the Commission button to trigger the device commission request in MDM.

2.1 Analyze Device On/Off Status

Actor/Role: MDM Authorized User

Description: The MDM Authorized User determines the [On/Off status](#).

2.2 Request to Update Device On/Off Status

Actor/Role: MDM Authorized User

Description: The MDM Authorized User makes the request to update the status.

2.3 Update Device On/Off Status

Actor/Role: MDM

Description: The status is updated in MDM to the request.

Business Object (Y/N)	Business Object	D1-ManualMeterInstallEvent
		D1-SmartMeterInstallEvent

Algorithm (Y/N)	Algorithm	D1-CRONOFHIS (Create On/Off History Based on Status)
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2.4 Analyze Device Connect Status

Actor/Role: MDM Authorized User

Description: The MDM Authorized User determines the [Connect](#) status.

2.5 Request to Connect

Actor/Role: MDM Authorized User

Description: The MDM Authorized User makes the request to update the status.

2.6 Update Connect Status

Actor/Role: MDM

Description: The status is updated in MDM to the request.

Business Object (Y/N)	Business Object	D1-ConnectDevice
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Process Plug-in enabled (Y/N)	Available Algorithm(s):	D1-CONNDEV (Connect Device)
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Note: The request to update the Connect Status also updated the On/Off status for a Smart Meter

Group: Add Install Event Synchronization Process

2.7 Commission Device

Actor/Role: MDM

Description: On the Install Event, the request for commission is initiated. This then allows the user to view the connect button.

Group: Update Install Event Synchronization Process

2.8 Locate SP's Install Event

Actor/Role: MDM

Description: During the sync process, MDM looks for the Maintenance Object (MO) that needs to be updated.

2.9 Identify Device to Commission

Actor/Role: MDM Authorized User

Description: MDM Authorized User analyzes the requirements and identifies the device to be commissioned.

3.0 Request to Initiate Command Device Commissioning

Actor/Role: MDM Authorized User

Description: The MDM User will select the [Device Commissioning command](#) and populate the data acquired during analyzing the requirements.

3.1 Populate Data and Request to Commission

Actor/Role: MDM Authorized User

Description: MDM Authorized User populates the needed data based on analysis and selects the appropriate activity to make a request for device commission.

3.2 Create Commissioning Activity

Actor/Role: MDM

Description: MDM creates the maintenance object with the data provided. When the [activity](#) is created, MDM creates an Activity ID.

Business Object (Y/N)

Business Object

[D1-DeviceCommission](#)

Group: Validate Activity

3.3 Validate Device Not Already Commissioned

Actor/Role: MDM

Description: MDM checks whether the device referenced in the current commissioning request (activity) has already been commissioned.

Business Object (Y/N)	Business Object	D1-DeviceCommission
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Process Plug-in enabled (Y/N)	Available Algorithm(s):	D1-VALDVCNAC (Validate Device Not Already Commissioned)
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Group: Validate Activity

3.4 Validate Head-End's Capability to Perform Commissioning Device

Actor/Role: MDM

Description: MDM checks to ensure that the head-end (AMI) system has the capability to support the command request.

Business Object (Y/N)	Business Object	D1-DeviceCommission
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Process Plug-in enabled (Y/N)	Available Algorithm(s):	D1-VHPCOMMS (Validate Head-End's Capability to Commission Device)
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Group: Validate Activity

3.5 Update Activity to 'Validation Error' State

Actor/Role: MDM

Description: MDM updates the status to 'Validation Error' if any of the validations fail.

Business Object (Y/N)	Business Object	D1-DeviceCommission
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Group: Validate Activity

3.6 Create To Do(s)

Actor/Role: MDM

Description: MDM attempts to create a To Do entry using the To Do type and role specified by the first and second algorithm parameters.

Business Object (Y/N)	Business Object	<table border="1"><tr><td>D1-DeviceCommission</td></tr></table>	D1-DeviceCommission
D1-DeviceCommission			

Process Plug-in enabled (Y/N)	Available Algorithm(s):	<table border="1"><tr><td>D1-CTDEBOE (Create To Do Entry for BO in Error)</td></tr></table>	D1-CTDEBOE (Create To Do Entry for BO in Error)
D1-CTDEBOE (Create To Do Entry for BO in Error)			

Group: Pre-communicate**3.7 Send Received Response to External Requestor****Actor/Role:** MDM**Description:** MDM creates the message and sends Response to the External Requestor .

Business Object (Y/N)	Business Object	<table border="1"><tr><td>D1-DeviceCommission</td></tr></table>	D1-DeviceCommission
D1-DeviceCommission			

Process Plug-in enabled (Y/N)	Available Algorithm(s):	<table border="1"><tr><td>D1-RRER (Send Received Response to External Requester)</td></tr></table>	D1-RRER (Send Received Response to External Requester)
D1-RRER (Send Received Response to External Requester)			

3.8 Receive Successful Response (Take in Account)**Actor/Role:** Third Party Requestor**Description:** The 3rd Party request receives a response from MDM in regards to the initial request.**Group: Pre-communicate****3.9 Wait For Effective Date****Actor/Role:** MDM**Description:** MDM transitions the activity to a state configured with a transition condition of F1OK when the activity's effective date time is reached (process date time >= effective date time). If the activity's effective date time is not provided, the application initiates execution of the command and transitions - the activity to a state configured with a transition condition of F1OK without waiting.

Business Object (Y/N)	Business Object	<table border="1"><tr><td>D1-DeviceCommission</td></tr></table>	D1-DeviceCommission
D1-DeviceCommission			

Process Plug-in enabled (Y/N)	Available Algorithm(s):	<table border="1"><tr><td>D1-WAITEFFDT (Wait for Effective Date)</td></tr></table>	D1-WAITEFFDT (Wait for Effective Date)
D1-WAITEFFDT (Wait for Effective Date)			

4.0 Review Activity Waiting for Eff. Date

Actor/Role: MDM Authorized User

Description: The MDM Authorized User reviews the data after the activity has been created.

Business Object (Y/N)	Business Object	D1-DeviceCommission
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4.1 Request to Commission Device

Actor/Role: MDM Authorized User

Description: The MDM Authorized User makes the request to commission the device.

Business Object (Y/N)	Business Object	D1-DeviceCommission
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Group: Communicate

4.2 Communicate with Head End to Complete Commission

Actor/Role: MDM

Description: Application creates Outbound communication.

Business Object (Y/N)	Business Object	D1-DeviceCommission
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Process Plug-in enabled (Y/N)	Available Algorithm(s):	D1-CMSOBCOMM (Commissioning Outbound Communication Creation)
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4.3 Communicate with MDM and Device to Commission

Actor/Role: Middleware & Head-End

Description: Head-End communicates with MDM via Middleware on one-side and with Device on the other side to communicate the Commissioning Instructions/Information between MDM and Devices.

Business Object (Y/N)	Business Object	D1-DeviceCommission
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Group: Communicate

4.4 Update Activity 'Communication Error' State

Actor/Role: MDM

Description: MDM send a response to the initiator of the device commission request.

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

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

Group: Complete Event
4.5 Execute Completion Event

Actor/Role: MDM

Description: MDM transitions all completion events associated to the current activity Business Object (BO) to their executed state.

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

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

Group: Complete Event
4.6 Update Install Event Status to Include Commissioned

Actor/Role: MDM

Description: MDM updates the Install Event to have a status of Commission.

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

Group: Complete Event
4.7 Update Activity to 'Completion Error' State

Actor/Role: MDM

Description: MDM updates the Install Event to have a status of Commission.

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

Process Plug-in enabled (Y/N) **Available Algorithm(s):** D1-CTDEBOE (Create To Do Entry for BO in Error)

Group: Finalize

4.8 Send Success Response to External Requestor

Actor/Role: MDM

Description: MDM sends a response to the initiator of the device commission request.

Business Object (Y/N) **Business Object** [D1-DeviceCommission](#)

Process Plug-in enabled (Y/N) **Available Algorithm(s):** D1-SRER (Send Success Response to External Requester)

4.9 Receive Completion Info

Actor/Role: Third Party Requestor

Description: The Third Party system receives the data provided by MDM.

5.0 Request to Update Activity

Actor/Role: MDM Authorized User

Description: The MDM Authorized User makes the request to update an existing device commission activity.

Business Object (Y/N) **Business Object** [D1-DeviceCommission](#)

5.1 Update Activity

Actor/Role: MDM

Description: MDM accepts the changes made by the user for the device commission.

Business Object (Y/N) **Business Object** [D1-DeviceCommission](#)

5.2 Request to 'Discard'

Actor/Role: MDM Authorized User

Description: MDM Authorized User when reviews the Activity in current state and decides that the Activity cannot be used, can manually make a request to discard it.

Business Object (Y/N)	Business Object	D1-DeviceCommission
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5.3 Update Activity to 'Discarded' State

Actor/Role: MDM

Description: MDM transitions Activity to 'Discarded' state indicating that it cannot be used further. However it remains in the system.

Business Object (Y/N)	Business Object	D1-DeviceCommission
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Process Plug-in enabled (Y/N)	Available Algorithm(s):	D1-COOC (Cancel Outstanding Outbound Communication)
		D1-FRER (Send Fail Response to External Requester)

5.4 Request to Delete Activity

Actor/Role: MDM Authorized User

Description: The MDM Authorized User makes the request to delete an existing [device](#) commission activity.

5.5 Delete Activity

Actor/Role: MDM

Description: MDM updates removes activity that was created.

Business Object (Y/N)	Business Object	D1-DeviceCommission
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5.6 Analyze Error and Work To Do

Actor/Role: MDM Authorized User

Description: MDM Authorized User analyzes the error logged and respective 'To Do' created to determine the corrective action. User performs work to resolve the error.

Business Object (Y/N)	Business Object	D1-DeviceCommission
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5.7 Complete To Do(s)

Actor/Role: MDM

Description: MDM find all non-completed 'To Do' entries and completes them before reprocessing.

Business Object (Y/N)	Business Object	D1-DeviceCommission
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Process Plug-in enabled (Y/N)	Available Algorithm(s):	D1-GTDCBO (Generic To Do Completion for BOs)
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5.8 Request to 'Revalidate'

Actor/Role: MDM Authorized User

Description: When the Activity is in 'Validation Error' state and MDM Authorized User has corrected the error, can manually make request to 'Revalidate'.

Business Object (Y/N)	Business Object	D1-DeviceCommission
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5.9 Update Activity to 'Validate' State and Initialize Reprocessing

Actor/Role: MDM

Description: MDM transitions the Activity to 'Revalidate' state and initializes reprocessing.

Process Plug-in enabled (Y/N)	Available Algorithm(s):	D1-RBOE (Retry BO in Error)
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Business Object (Y/N)	Business Object	D1-DeviceCommission
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6.0 Identify Activity in 'Validation Error' State

Actor/Role: MDM

Description: MDM identifies all Device Commission Activities in 'Validation Error' state.

Business Object (Y/N)	Business Object	D1-DeviceCommission
Process Plug-in enabled (Y/N)	Available Algorithm(s):	D1-RBOE (Retry BO in Error)
Customizable process (Y/N)	Process Name	D1-CRERR (Command Request Error - Retry)

6.1 Evaluate Criteria to Run Automated Retry Process

Actor/Role: MDM

Description: Batch process is configured for this automated retry process. Batch parameters govern whether the processing is further restricted by maintenance object, batch code, command request type, business object, status, etc. Currently, the Batch process used for reprocessing the Activity is "Command Request Error - Retry (D1-CRERR)". This batch process invokes monitoring rules associated with the current state of Activity.

Process Plug-in enabled (Y/N)	Available Algorithm(s):	D1-RBOE (Retry BO in Error)
Business Object (Y/N)	Business Object	D1-DeviceCommission
Customizable process (Y/N)	Process Name	D1-CRERR (Command Request Error - Retry)

6.2 Evaluate Waiting Period

Actor/Role: MDM

Description: MDM evaluates the waiting period to ensure that the Activity does not stay in its current state for too long. On the expiration of the wait time, it transitions the Activity to 'Discard' State.

Process Plug-in enabled (Y/N)	Available Algorithm(s):	D1-WTTMOUT (Wait Time Out - Transition to Rejection)
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Business Object (Y/N)	Business Object	<input type="text" value="D1-DeviceCommission"/>
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Customizable process (Y/N)	Process Name	<input type="text" value="D1-CRERR (Command Request Error – Retry)"/>
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6.3 Request to 'Retry'

Actor/Role: MDM Authorized User

Description: When the Activity is in 'Communication Error' state and MDM Authorized User has corrected the error, can manually make request to 'Retry'.

Business Object (Y/N)	Business Object	<input type="text" value="D1-DeviceCommission"/>
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6.4 Update Activity to 'Retry' State and Initialize Reprocessing

Actor/Role: MDM

Description: MDM transitions the Activity to 'Retry' state and initializes reprocessing.

Process Plug-in enabled (Y/N)	Available Algorithm(s):	<input type="text" value="D1-RBOE (Retry BO in Error)"/>
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Business Object (Y/N)	Business Object	<input type="text" value="D1-DeviceCommission"/>
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6.5 Identify Activity in 'Communication Error' State

Actor/Role: MDM

Description: MDM identifies all Device Commission Activities in 'Communication Error' state.

Process Plug-in enabled (Y/N)	Available Algorithm(s):	<input type="text" value="D1-RBOE (Retry BO in Error)"/>
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Business Object (Y/N)	Business Object	<input type="text" value="D1-DeviceCommission"/>
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Customizable process (Y/N)	Process Name	<input type="text" value="D1-CRERR (Command Request Error - Retry)"/>
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6.6 Request to 'Execute Completion Events'

Actor/Role: MDM Authorized User

Description: When the Activity is in 'Completion Event Error' state and MDM Authorized User has corrected the error, can manually make request to 'Execute completion events'.

Business Object (Y/N)	Business Object	<input type="text" value="D1-DeviceCommission"/>
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6.7 Update Activity to 'Execute Completion Event' State and Initialize Reprocessing

Actor/Role: MDM

Description: MDM transitions the Activity to 'Execute Completion Event' state and initializes reprocessing.

Process Plug-in enabled (Y/N)	Available Algorithm(s):	<input type="text" value="D1-RBOE (Retry BO in Error)"/>
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Business Object (Y/N)	Business Object	<input type="text" value="D1-DeviceCommission"/>
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6.8 Identify Activity in 'Completion Event Error' State

Actor/Role: MDM

Description: MDM identifies all Device Commission Activities in 'Completion Event Error' state.

Process Plug-in enabled (Y/N)	Available Algorithm(s):	<input type="text" value="D1-RBOE (Retry BO in Error)"/>
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Business Object (Y/N)	Business Object	<input type="text" value="D1-DeviceCommission"/>
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Customizable process (Y/N)	Process Name	<input type="text" value="D1-CRERR (Command Request Error - Retry)"/>
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Test Documentation related to the Current Process

ID	Document Name	Test Type

Document Control

Change Record

Date	Author	Version	Change Reference
7/25/2011	Giezelle Raynor	1	Initial draft
9/13/2011	Srinivas Rao Kanteti	2	Second draft
9/17/2011	Galina Polonsky	2	Review
10/17/2011	Layne Nelson	2	Review
12/12/2011	Galina Polonsky	2.1	Minor Updates. Review, Approval
07/12/2015	Galina Polonsky	2.2	Minor Updates. Review, Approval

Attachments

Acronyms & Definitions



Acronyms &
Definitions

Smart Meter Install Event BO



Smart Meter Install
Event BO

Manual Meter Install Event BO



Manual Meter Install
Event BO

Device Commission BO



Device Commission
BO

Install Event - Link DC and Service Point



Install Event - Link
DC and Service Point

Install Event - Details_On_Off_History



Install Event
Details_On_Off_Histc

Install Event - Update_Connect_Disconnect_Remove



Install Event -
Update_Connect_Dis

Device Commission Command



Device Commission
Command

Device Commission Activity



Device Commission
Activity

How to Read and Understand Process Diagram .URM Standards. Notations



URM standards.
Notations.Attachmen