METER DATA MANAGEMENT V2.2

5.6.3.1 Manage Device and SP

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ORACLE

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Brief Description

Business Process: **5.6.3.1 MDM.v2.2.Manage Device and SP**
Process Type: **Sub-Process**
Parent Process: **5.6.3 MDM.v2.2.Manage Supplies/Devices**
Sibling Processes: **5.6.3.2.MDM. v2.2.Manage Device Installation and Commissioning**
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 takes place when business requires to store and maintain information about Devices and their locations after installation in MDM application. It describes how Devices and Service Points (SPs) managed in MDM. This can be done via a request to add a device or a request to update a device. Both requests can be done by User using user interface or through an automatically via inbound sync request. The process includes setting up the device, the device configuration, and measuring component. This document also includes creating and maintaining a SP. However, it does not include creating an installation event – connecting the device to the service point. Please refer to 5.6.3.2.Manage Device Installation and Commissioning for that process.

Note: Devices are physical objects that hold one or more measuring components that can produce data to be handled by the system. Examples of devices include meters, demand response devices, weather stations, etc.

A Device can have one or more device configurations over time. A device's measuring components are associated with the device via device configurations.

Each Device configuration can have one or more measuring components associated with it.

Measuring Components (MC) are single channels for which data will be received and stored in the system.

A measuring component can be associated to a physical device, which can have one or more measuring components, or it can be one of several other types of measuring components. Examples of other measuring components include:

- **Aggregator**: A class of measuring component that stores measurements that represent a summarization of other measurements from a potentially diverse set of devices..
- **Interval Scratchpad**: A class of measuring component that provides users with a means to manipulate "scratchpad" measurement data without affecting existing "live" measurement data.
- **Standalone**: A measuring component that is not related to a physical meter, e.g., market prices, weather data, etc.

When either a Meter Multiplier or Installation Constant is changed, it is validated and may become eligible for measurement reprocessing. MDM creates system IMDs skipping the process of VEE and Consumption sync. The reprocessed IMDs are sent as subsequent correction to Billing system.

Service points are locations at which a company supplies service. Service points are used to store information describing the attributes of the service point

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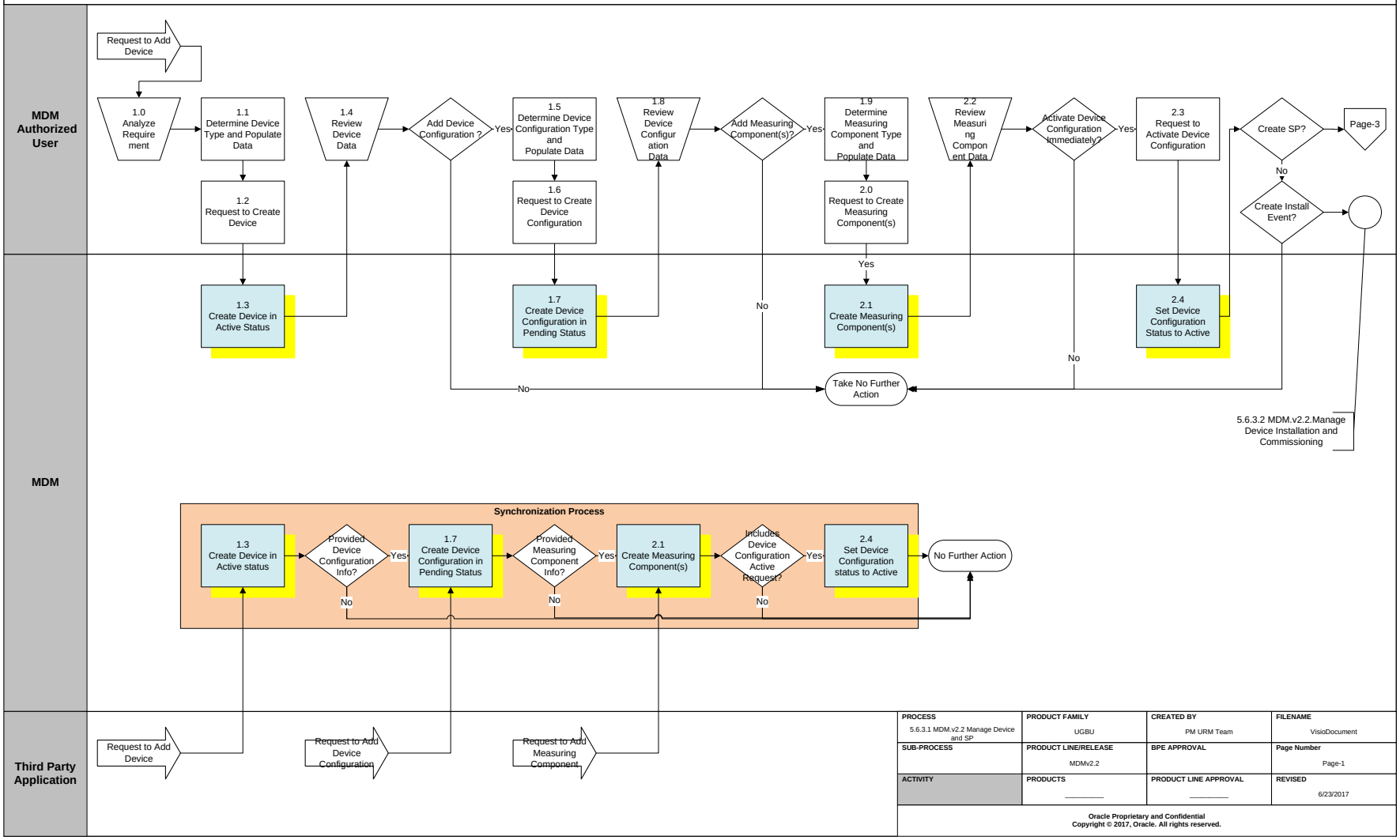
Business Process Model Page 1

5.6.3.1 MDM V2.2 *Manage Device and SP. Add Device and Device Configuration - Manual and Automated process*



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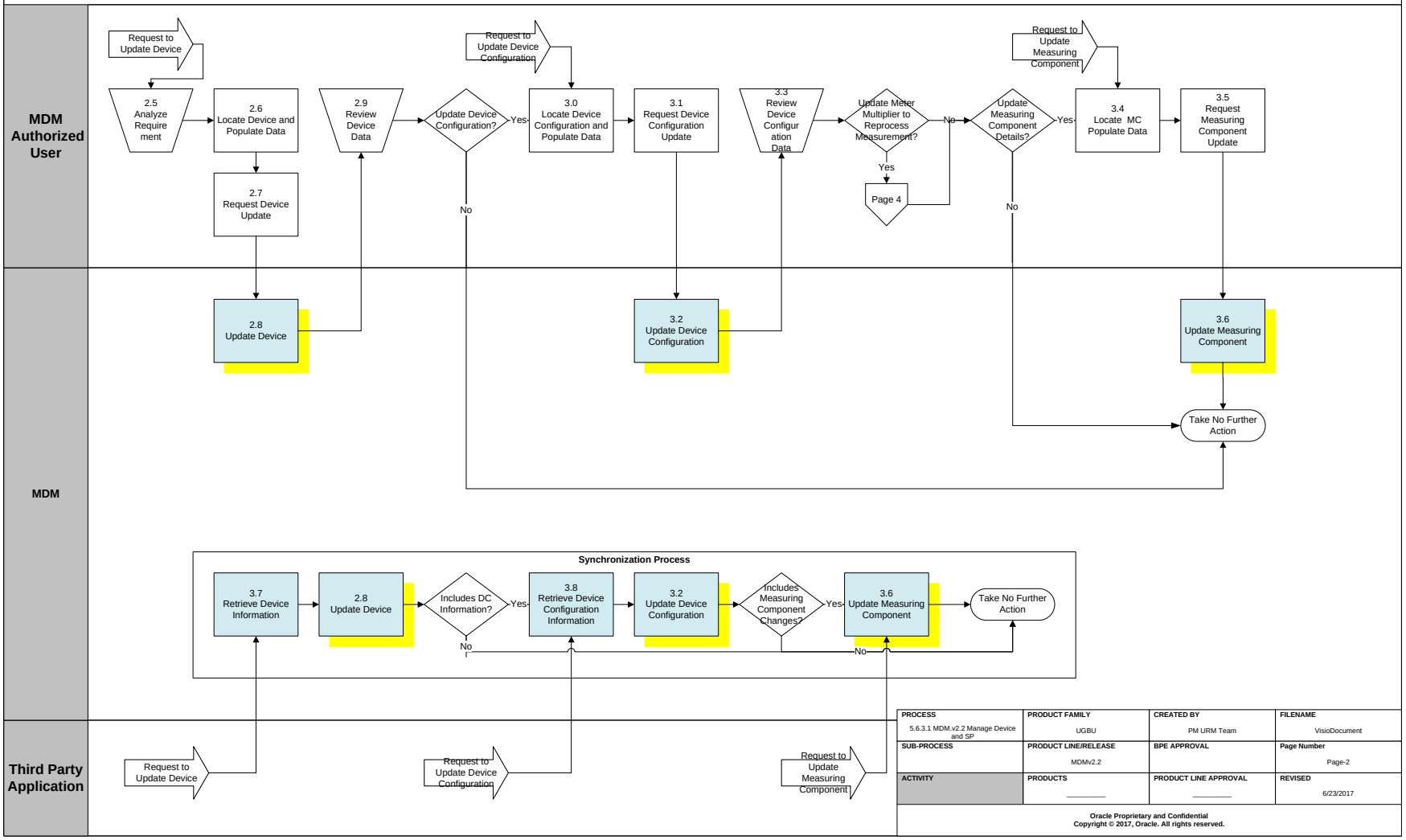
Business Process Model Page 2

5.6.3.1 MDM V2.2 *Manage Device and SP. Update Device and Device Configuration - Manual and Automated process*



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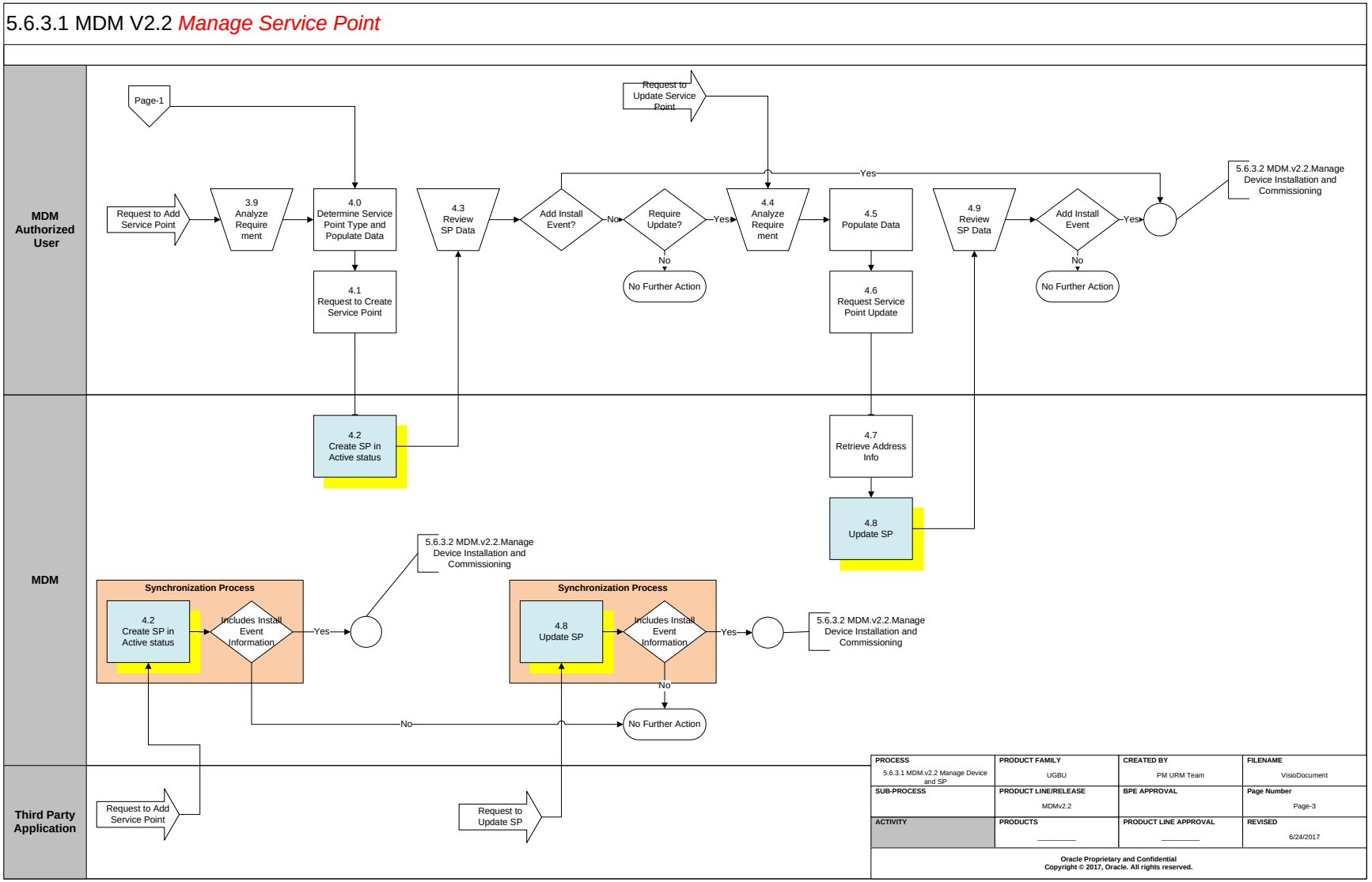
Business Process Model Page 3



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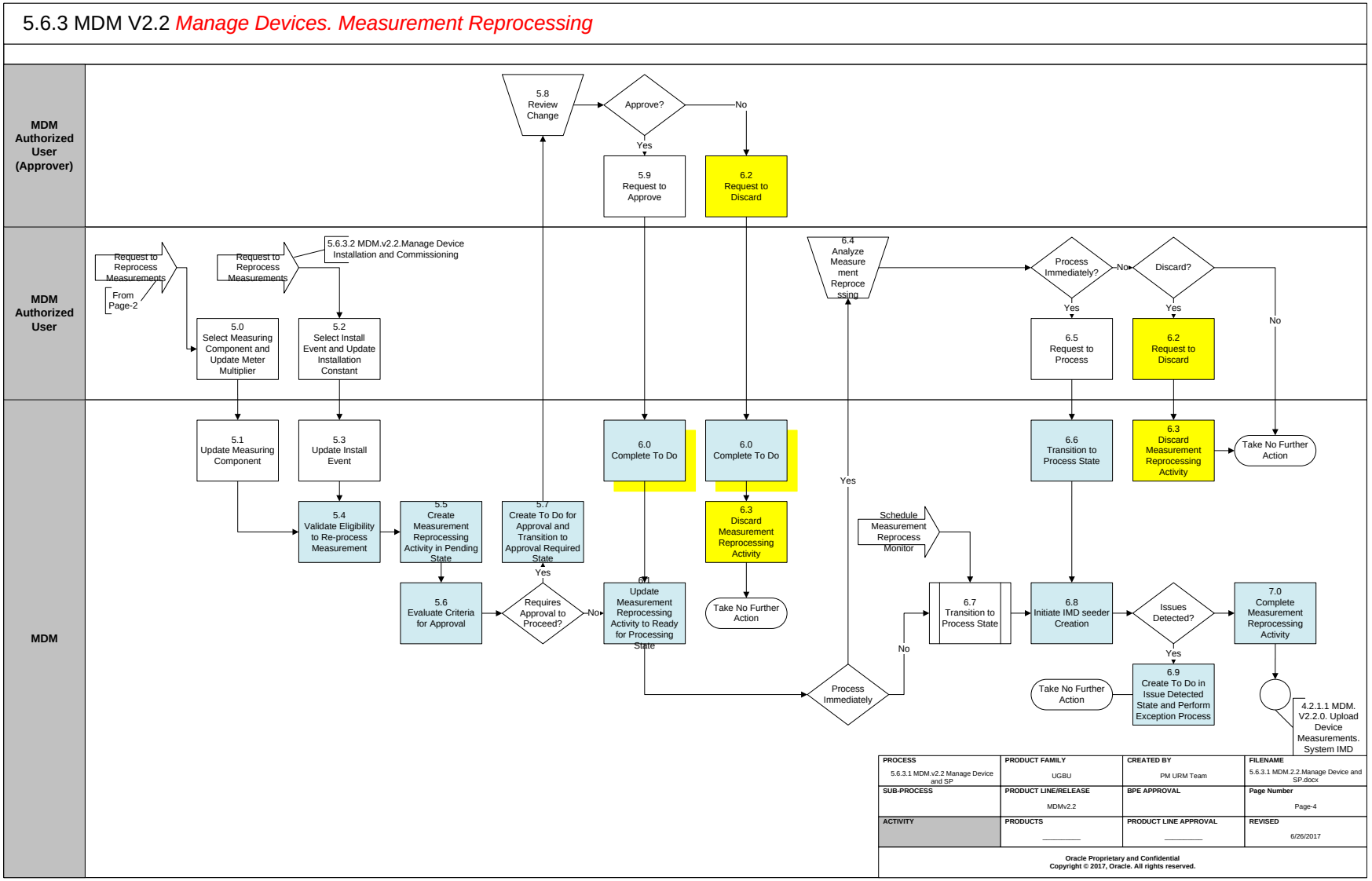
Business Process Model Page 4



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Detail Business Process Model Description

1.0 Analyze Requirement

Actor/Role: MDM Authorized User
Description: When creating a new device online, the authorized user gathers all the required attributes for adding the device.

1.1 Determine Device Type and Populate Data

Actor/Role: MDM Authorized User
Description: The authorized user analyzes the device information that is provided.

1.2 Request to Create Device

Actor/Role: MDM Authorized User
Description: MDM Authorized User requests to create the Device.

1.3 Create Device in an "Active" Status

Actor/Role: MDM
Description: MDM creates the Device in Active status
Note: This task can be triggered from Manual and automated (Synchronization) processes

Business Object (Y)	**Business Object**	D1-SmartMeter
		D1-ManualMeter
		D1-SynchronizationAddDevice
Configuration required (Y)	**Entities to Configure:**	Device Type

1.4 Review Device Data

Actor/Role: MDM Authorized User
Description: The MDM Authorized User reviews the data after the device has been created.

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1.5 Determine Device Configuration Type and Populate Data

Actor/Role: MDM Authorized User
Description: The MDM Authorized User determines the device configuration type and populates the information in MDM.

1.6 Request to Create Device Configuration

Actor/Role: MDM Authorized User
Description: MDM Authorized User requests to create the Device Configuration.

Group – Synchronization Process

1.7 Create Device Configuration in a "Pending" Status

Actor/Role: MDM
Description: MDM creates the Device Configuration in Pending status.
Note: This task can be triggered from Manual and automated (Synchronization) processes

Business Object (Y)	**Business Object**	D1-DeviceConfiguration D1-SynchronizationAddDC
Process Plug-in enabled (Y)	**Available Algorithm(s):**	F1-AT-RQJ
Configuration required (Y)	**Entities to Configure:**	Device Configuration Type

1.8 Review Device Configuration Data

Actor/Role: MDM Authorized User
Description: The MDM Authorized User reviews the data after the device configuration has been created.

1.9 Determine Measuring Component Type and Populate Data

Actor/Role: MDM Authorized User
Description: The MDM Authorized User determines the measuring component type and populates the information in MDM.

Note: If the Channel Multiplier field is not populated with data a default of "1.000000" will populate.

If the Measuring Component Type has been configured with *Fallback VEE Group for Initial Load*, *VEE Group for Estimation*, and *Fallback VEE Group for Manual Override*., those fields will be populated if the data is not supplied upon creation.

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2.0 Request to Create Measuring Component

A**ctor/Role: MDM Authorized User**
Description: MDM Authorized User requests to create the Measuring Component.

Group – Synchronization Process
2.1 Create Measuring Component

A**ctor/Role:** MDM
Description: MDM creates the Measuring Component
Note: This task can be triggered from Manual and automated (Synchronization) processes

Business Object (Y)	**Business Object**	D1-SynchronizationAddMC
		D1-IntervalChannel
		D1-Register
		D1-Register Auto-Read

Configuration required (Y)	**Entities to Configure:**	Measuring Component Type

2.2 Review Measuring Component Data

A**ctor/Role:** MDM Authorized User
Description: The MDM Authorized User reviews the data after the measuring component has been created.

2.3 Request to Activate Device Configuration

A**ctor/Role:** MDM Authorized User
Description: After the device, device configuration, and measuring component have been created, the MDM Authorized User determines if the device configuration need to be "Active". If so, the MDM Authorized User requests to activate the device configuration using Device Configuration screen

Note: If the request to activate the device configuration is made before any measuring components have been added, an error message will be created.

Group – Synchronization Process
2.4 Set Device Configuration Status to "Active"

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A**ctor/Role:** MDM
Description: MDM updates Device Configuration with a status of "Active".
Note: If the Device Configuration is set to active before any measuring components are created, an error is created.
Note: This task can be triggered from Manual and automated (Synchronization) processes

Business Object (Y)	**Business Object**	D1-DeviceConfiguration
Process Plug-in enabled (Y)	**Available Algorithm(s):**	F1-AT-RQJ

2.5 Analyze Requirement

Actor/Role: MDM Authorized User
Description: When updating a device online, the authorized user gathers all the required attributes for updating the device.

2.6 Locate Device and Populate Data

A**ctor/Role:** MDM Authorized User
Description: The MDM user finds the device and populates and/or updates the data after analyzing the requirements.

2.7 Request Device Update

A**ctor/Role:** MDM Authorized User
Description: MDM Authorized requests to update the Device information.

Group: Synchronization Process

2.8 Update Device

A**ctor/Role:** MDM
Description: MDM updates the device with the data provided
Note: Task can be triggered from manual and automated (Synchronization) processes.

Business Object (Y)	**Business Object**	D1-SmartMeter
		D1-ManualMeter
		D1-OngoingSyncRequestDevice

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2.9 Review Device Data

Actor/Role: MDM Authorized User
Description: The MDM Authorized User reviews the data after the device has been updated.

3.0 Locate Device Configuration and Populate Data

Actor/Role: MDM Authorized User
Description: MDM Authorized User finds the Device Configuration and populates and/or updates the Device Configuration with the analyzed device configuration requirements.

3.1 Request Device Configuration Update

Actor/Role: MDM Authorized User
Description: MDM Authorized User requests to update the Device Configuration.

Group : Synchronization Process

3.2 Update Device Configuration

Actor/Role: MDM
Description: MDM updates Device Configuration with the data provided.
Note: Task can be triggered from manual and automated (Synchronization) processes

Business Object (Y)	**Business Object**
	D1-DeviceConfiguration
	D1-OngoingSyncRequestDC

3.3 Review Device Configuration Data

Actor/Role: MDM Authorized User
Description: The MDM Authorized User reviews the data after the device configuration has been updated.

3.4 Locate MC and Populate Data

Actor/Role: MDM Authorized User
Description: The user finds the device and populates and/or updates the data with the analyzed requirements.

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3.5 Request Measuring Component Update

Actor/Role: MDM Authorized User
Description: MDM Authorized User requests to update the measuring component.

Group – Synchronization Process

3.6 Update Measuring Component

Actor/Role: MDM
Description: MDM updates the Measuring Component with the data provided.
Note: Task can be triggered from manual and automated (Synchronization) processes

Business Object (Y)	**Business Object**	D1-IntervalChannel
		D1-Register
		D1-Register Auto-Read
		D1-OngoingSyncRequestMC
Process Plug-in enabled (Y)	**Available Algorithm(s):**	D1-DETTARGMC

Group: Manage Device (Synchronization Process)

3.7 Retrieve Device Information

Actor/Role: MDM
Description: MDM retrieves the device information which includes retrieving the device type, the latest installation, head end system, and status.

Business Object (Y)	**Business Object**	D1-OngoingSyncRequestDevice
Process Plug-in enabled (Y)	**Available Algorithm(s):**	D1-DETTARGDV

3.8 Retrieve Device Configuration Information

Actor/Role: MDM
Description: MDM retrieves the device configuration information which includes retrieving the device type, device configuration type, status, count of measuring component, and format effective date/time.

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Business Object (Y)	**Business Object**	D1-OngoingSyncRequestDC
Process Plug-in enabled (Y)	**Available Algorithm(s):**	D1-DETTARGDC

3.9 Analyze Requirement

Actor/Role: MDM Authorized User
Description: When creating a service point online, the authorized user gathers all the required attributes for adding a service point.

4.0 Determine Service Point Type and Populate Data

A**ctor/Role:** MDM Authorized User
Description: The authorized user analyzes the service point information that is provided.

4.1 Request to Create Service Point

A**ctor/Role: MDM Authorized User**
Description: MDM Authorized User requests to create the Service Point.

Group – Synchronization Process
4.2 Create SP in Active Status

A**ctor/Role:** MDM
Description: MDM creates the Service Point in Active status with the data provided.
Note: task can be triggered from manual and automated (Synchronization) processes

Business Object (Y)	**Business Object**	D1-ServicePoint
		D1-SynchronizationAddSP

4.3 Review SP Data

A**ctor/Role:** MDM Authorized User
Description: The MDM Authorized User reviews the data after the service point has created.

4.4 Analyze Requirement

Actor/Role: MDM Authorized User

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Description: When updating the service point online, the authorized user gathers all the required attributes for updating the device.

4.5 Populate Data

Actor/Role: MDM Authorized User
Description: The MDM Authorized User populates and/or updates the Service Point with the analyzed service point requirements.

4.6 Request Service Point Update

Actor/Role: MDM Authorized User
Description: MDM Authorized User requests to create the Service Point.

4.7 Retrieve Address Information

Actor/Role: MDM Authorized User
Description: MDM retrieves the service point information which includes retrieving the address, SP type, measuring cycle, and status.

Business Object (Y)	**Business Object**	D1-OngoingSyncRequestsp
Process Plug-in enabled (Y)	**Available Algorithm(s):**	D1-DETTARGSP

Group – Synchronization Process

4.8 Update SP

Actor/Role: MDM
Description: MDM updates the device with the information provided
Note: task can be triggered from manual and automated (Synchronization) processes

Business Object (Y)	**Business Object**	D1-ServicePoint
		D1-OngoingSyncRequestSP

4.9 Review SP Data

Actor/Role: MDM Authorized User
Description: The MDM Authorized User reviews the data after the service point has been updated.

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5.0 Select Measuring Component and Update Meter Multiplier

Actor/Role: MDM Authorized User
Description: MDM Authorized User selects measuring component and updates meter multiplier.

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

5.1 Update Measuring Component

Actor/Role: MDM
Description: MDM updates Measuring Component and meter multiplier information.

5.2 Select Install Event and Update Installation Constant

Actor/Role: MDM Authorized User
Description: MDM Authorized User selects Install Event and updates Installation Constant.

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

5.3 Update Install Event

Actor/Role: MDM
Description: MDM updates Install Event and Installation Constant information.

5.4 Validate Eligibility to Re-process Measurement

Actor/Role: MDM
Description: MDM validates the eligibility to re-process measurement. MDM validates that there is a change between the old value and the new multiplier or installation constant value and if the new value is different it next determines the period affected by the change.

Further, it validates that there are no other in-progress Activities for the same Activity type and MC. This is intended to prevent a user from creating a new Activity that will be in conflict with any existing system-generated Measurement Reprocessing Activity. There will be only one Activity created for Measuring Component.

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Process Plug-in enabled (Y/N)	Available Algorithm(s):
	D1-MRACTINFO (Measurement Reprocess Activity Information)
	D1-VALUNIQ (Validate Uniqueness)

Business Object (Y/N)	Business Object
	D1-MeasurementReprocessParent
	D1-MeasurementReprocessScalar
	D1-MeasurementReprocesInterval

5.5 Create Measurement Reprocessing Activity in Pending State

Actor/Role: MDM
Description: MDM creates measurement reprocessing activity in 'Pending' state. Prior to creation it pre-processes to determine the Activity Type and to generate a GUID i.e. a unique ID for the reprocessing activity. MDM auto-transitions measurement reprocessing activity to next state based on evaluation. A batch monitor may be scheduled in the rare case when measurement reprocessing activity encounters error during auto-transition to next state and stays in 'Pending' state.

Process Plug-in enabled (Y/N)	Available Algorithm(s):
	D1-DETACTTYP (Determine Activity Type)
	D1-POPGUID (Populate GUID)

Business Object (Y/N)	Business Object
	D1-MeasurementReprocessParent
	D1-MeasurementReprocessScalar
	D1-MeasurementReprocesInterval

5.6 Evaluate Criteria for Approval

Actor/Role: MDM
Description: MDM evaluates criteria for approval. MDM checks the Measurement Reprocessing Activity Type configuration for whether 'Approval Required?' is set. If set to "No", then the Activity will move on to the 'Ready for Processing' status. If set to "Yes", then the logic checks if any of the 'Preapproved Percentages' are set on the Measurement Reprocessing Activity Type. If the 'Preapproved Percentages' are set then those are compared to the Multiplier or Installation Constant percentage of change that originally initiated the Activity. If the percentage of change falls outside of the 'Preapproved Percentages' or they aren't populated, then a manual approval is required.

Process Plug-in enabled (Y/N)	Available Algorithm(s):
	D1-DETMRAPPR (Determine Measurement Reprocessing Approval)

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Business Object (Y/N)	**Business Object**	D1-MeasurementReprocessParent D1-MeasurementReprocessScalar D1-MeasurementReprocesInterval
Configuration required (Y/N)	**Entities to Configure:**	Activity Type for Measurement Reprocessing - Scalar Activity Type for Measurement Reprocessing - Interval

5.7 Create To Do for Approval and Transition to Approval Required State

Actor/Role: MDM
Description: MDM creates 'To Do' for approval required and transitions to 'Approval Required' state.

Process Plug-in enabled (Y/N)	**Available Algorithm(s):**	F1-AT-RQJ (Transition to Default Next Status (Java)) D1-MRAPPTODO (Create Measurement Reprocessing Requiring Approval To Do Entry)
Business Object (Y/N)	**Business Object**	D1-MeasurementReprocessParent D1-MeasurementReprocessScalar D1-MeasurementReprocesInterval
Configuration required (Y/N)	**Entities to Configure:**	To Do Type and Role in Activity Type

5.8 Review Change

Actor/Role: MDM Authorized User (Approver)
Description: MDM Authorized User (Approver) reviews the change and the update performed on Meter Multiplier of Installation Constant.

5.9 Request to Approve

Actor/Role: MDM Authorized User (Approver)
Description: MDM Authorized User (Approver) makes a request to approve the measurement reprocessing activity.

6.0 Complete To Do

Actor/Role: MDM
Description: MDM completes 'To Do' created.

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Process Plug-in enabled (Y/N)	**Available Algorithm(s):**	D1-GTDCBO (Generic To Do Completion for BOs)

Business Object (Y/N)	**Business Object**	D1-MeasurementReprocessParent
		D1-MeasurementReprocessScalar
		D1-MeasurementReprocesInterval

6.1 Update Measurement Reprocessing Activity to Ready for Processing State

Actor/Role: MDM
Description: MDM updates measurement reprocessing activity to 'Ready for Processing' state.

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

Business Object (Y/N)	**Business Object**	D1-MeasurementReprocessParent
		D1-MeasurementReprocessScalar
		D1-MeasurementReprocesInterval

Customizable process (Y/N)	**Process Name**	D1-MRAC (Measurement Reprocessing Monitor)

6.2 Request to Discard

Actor/Role: MDM Authorized User
Description: MDM Authorized User can make a request to discard measurement reprocessing activity.

Note: An activity discarded stays in database and is not completely removed from system.

6.3 Discard Measurement Reprocessing Activity

Actor/Role: MDM
Description: MDM discards measurement reprocessing activity.

6.4 Analyze Measurement Reprocessing

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Actor/Role: MDM Authorized User
Description: MDM Authorized User analyzes measurement reprocessing activity.

6.5 Request to Process

Actor/Role: MDM Authorized User
Description: MDM Authorized User makes a request to process measurement reprocessing activity.

6.6 Transition to Process State

Actor/Role: MDM
Description: MDM transitions measurement reprocessing activity to 'Process' state.

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

Business Object (Y/N)	Business Object
	D1-MeasurementReprocessParent
	D1-MeasurementReprocessScalar
	D1-MeasurementReprocesInterval

6.7 Transition to Process State

Actor/Role: MDM
Description: MDM transitions measurement reprocessing activity to Process State. A batch monitor is configured here to monitor and take forward the processing of measurement reprocessing activity towards initiating the creation of IMD Seeder for reprocessing.

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

Business Object (Y/N)	Business Object
	D1-MeasurementReprocessParent
	D1-MeasurementReprocessScalar
	D1-MeasurementReprocesInterval

Customizable process (Y/N)	Process Name	D1-MRAC

6.8 Initiate IMD seeder Creation

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Actor/Role: MDM
Description: MDM initiates the creation of IMD Seeder. MDM identifies the type of measuring component and initiate IMD creation specific to scalar or interval channel. In case of Install Event, it determines the measuring components associates and accordingly initiates the creation.

MDM looks for the measurements in the effective period to populate the new IMDs. If the Measurement Reading isn't populated, then MDM will look to the original IMD linked to the Measurement in order to pull the reading required for the new IMD. If neither exist, then the Measurement reprocessing will be skipped.

Process Plug-in enabled (Y/N)	**Available Algorithm(s):**
	D1-REPSCMSRS (Reprocess Scalar Measurements)
	D1-REPINMSRS (Reprocess Interval Measurements)

Business Object (Y/N)	**Business Object**
	D1-MeasurementReprocessParent
	D1-MeasurementReprocessScalar
	D1-MeasurementReprocesInterval
	D1-IMDSeeder
	D1-SystemIMDScalar
	D1-SystemIMDInterval

6.9 Create To Do in Issue Detected State and Perform Exception Process

Actor/Role: MDM
Description: MDM creates a To Do for issues encounters during the creation of IMDs and transitions the measurement reprocess activity to 'Issue Detected' state. The User can perform the standard exception process in terms of analyzing the To Do for the error and request MDM to either initiate to reprocess or discard.

If the User doesn't take any action, the measurement reprocess activity in 'Issue Detected' state is reprocessed through a batch scheduler. Finally, it is rejected by the system.

Process Plug-in enabled (Y/N)	**Available Algorithm(s):**
	D1-WTTMOUT (Wait Time Out - Transition to Rejection)
	D1-RBOE (Retry BO in Error)
	D1-GTDCBO (Generic To Do Completion for BOs)

Business Object (Y/N)	**Business Object**
	D1-MeasurementReprocessParent
	D1-MeasurementReprocessScalar
	D1-MeasurementReprocesInterval

Customizable process (Y/N)	**Process Name**
	D1-MRER (Measurement Reprocessing - Retry Monitor)

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7.0 Complete Measurement Reprocessing Activity

Actor/Role: MDM
Description: MDM completes measurement reprocessing activity. In parallel, the IMD Creation process continues. Please refer to process 4.2.1.1 MDM. V2.1.0. Upload Device Measurements. System IMD for more details.

Process Plug-in enabled (Y/N)	Available Algorithm(s):
	D1-REPSCMSRS (Reprocess Scalar Measurements)
	D1-REPINMSRS (Reprocess Interval Measurements)

Business Object (Y/N)	Business Object
	D1-MeasurementReprocessParent
	D1-MeasurementReprocessScalar
	D1-MeasurementReprocesInterval

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Test Documentation related to the Current Process

ID	Document Name	Test Type

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Document Control

Change Record

Date	Author	Version	Change Reference
7/25/2011	Giezelle Raynor	1	Initial draft
9/1/2011	Galina Polonsky	1	Reviewed
10/23/2011	Layne Nelson	1	Edited. Reviewed
4/25/2012	Galina Polonsky	1.1	Minor Changes. Reviewed, Approved
7/13/2015	Galina Polonsky	1.2	Minor Changes. Reviewed, Approved

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Attachments

Device

Manage Device_1.4.doc

Device Configuration – Create and Update

Manage Device_1.8.doc

Measuring Component – Create and Update

Manage Device_2.3.doc

Device Configuration – Activation

Manage Device_2.6.doc

Service Point

Sceenshots Manage SP.doc

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Meter Multiplier

Meter Multiplier

Installation Constant

Installation Constant

Activity Type

Activity Type

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

URM standards. Notations.Attachmen

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