DSH.LMC-TM Interface

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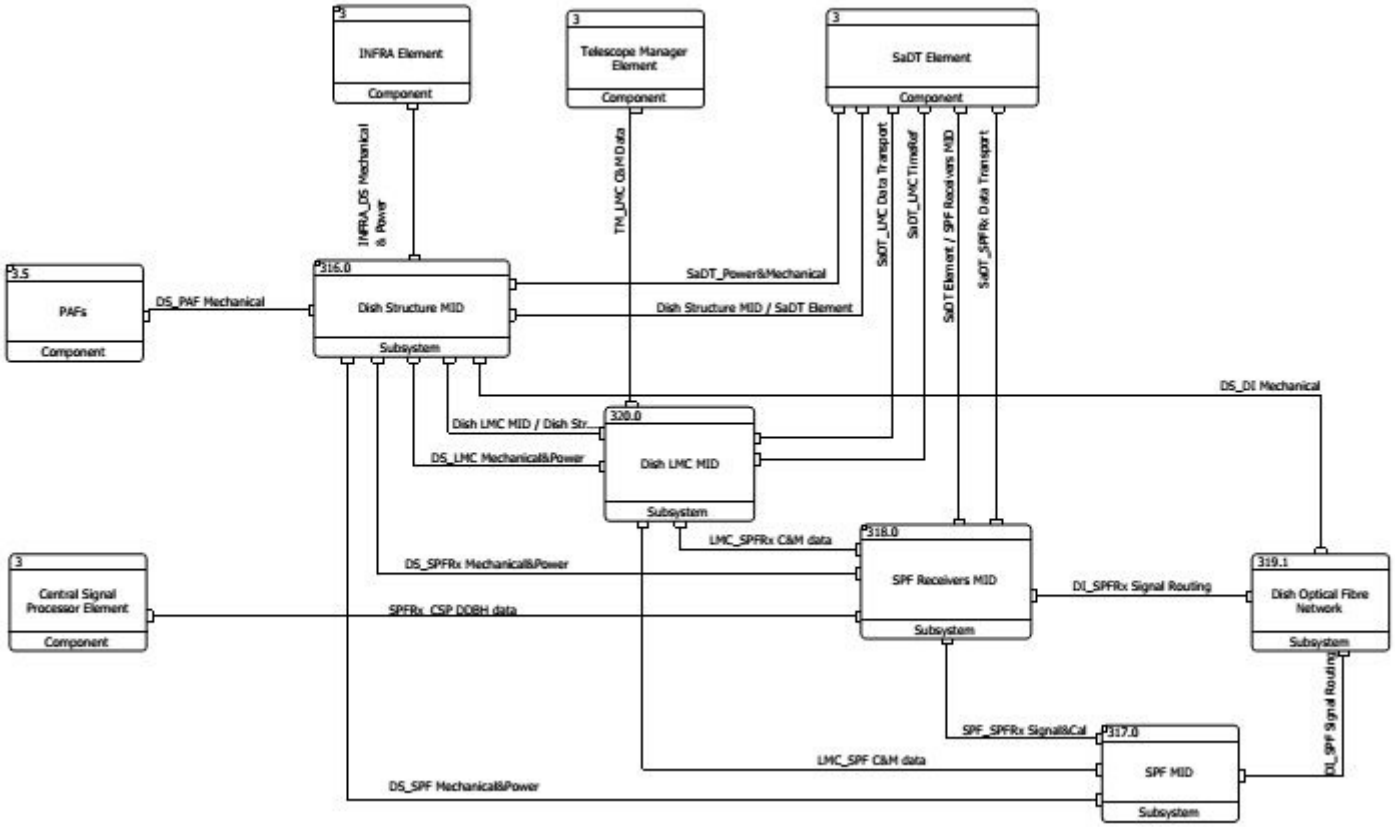
Outline

TM-Dish Interface

- DSH.LMC Overview
- DSH.LMC functions
- DSH.LMC use-cases
- TM-DSH.LMC interface identification
- TM-DSH.LMC interface documents
- TM-DSH.LMC flow of information

DSH.LMC Overview



DSH.LMC Context diagram

DSH.LMC functions

The following basic functions shall be implemented by the LMC:

a) **Managing** the TM_LMC interface.

b) **Configuring** all the components of the Dish in preparation for an observation.

c) Real-time **control** of the Dish pointing and Beam forming during an observation.

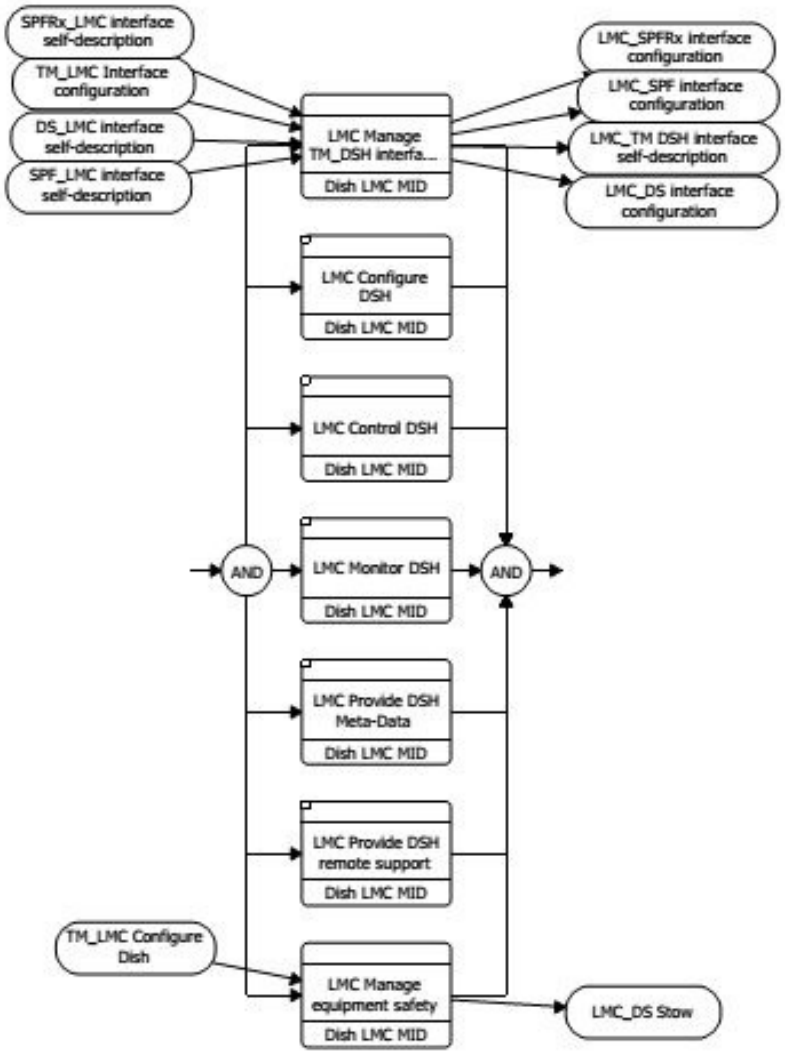
d) **Monitoring** of all Dish components and reporting of this monitoring information to the Telescope Manager.

e) Sending **meta-data** to the TM that is required for the processing of signals.

f) Providing functionality for the **remote support** of the Dish and all its sub-elements.

g) Managing equipment **safety** [Note that all other sub-elements are self-sufficient in terms of critical safety management and the LMC only provides secondary safety functions]

DSH.LMC functions



DSH.LMC Functions EFFBD

ITM Functions

A) Configuration Functions

DSH.LMC configures all the components of DSH in preparation for an observation; sets all internal states, mode and configuration and capability commands received from TM. TM.TelMgt requires LMC to configure sub elements, setting the operative modes and reporting level

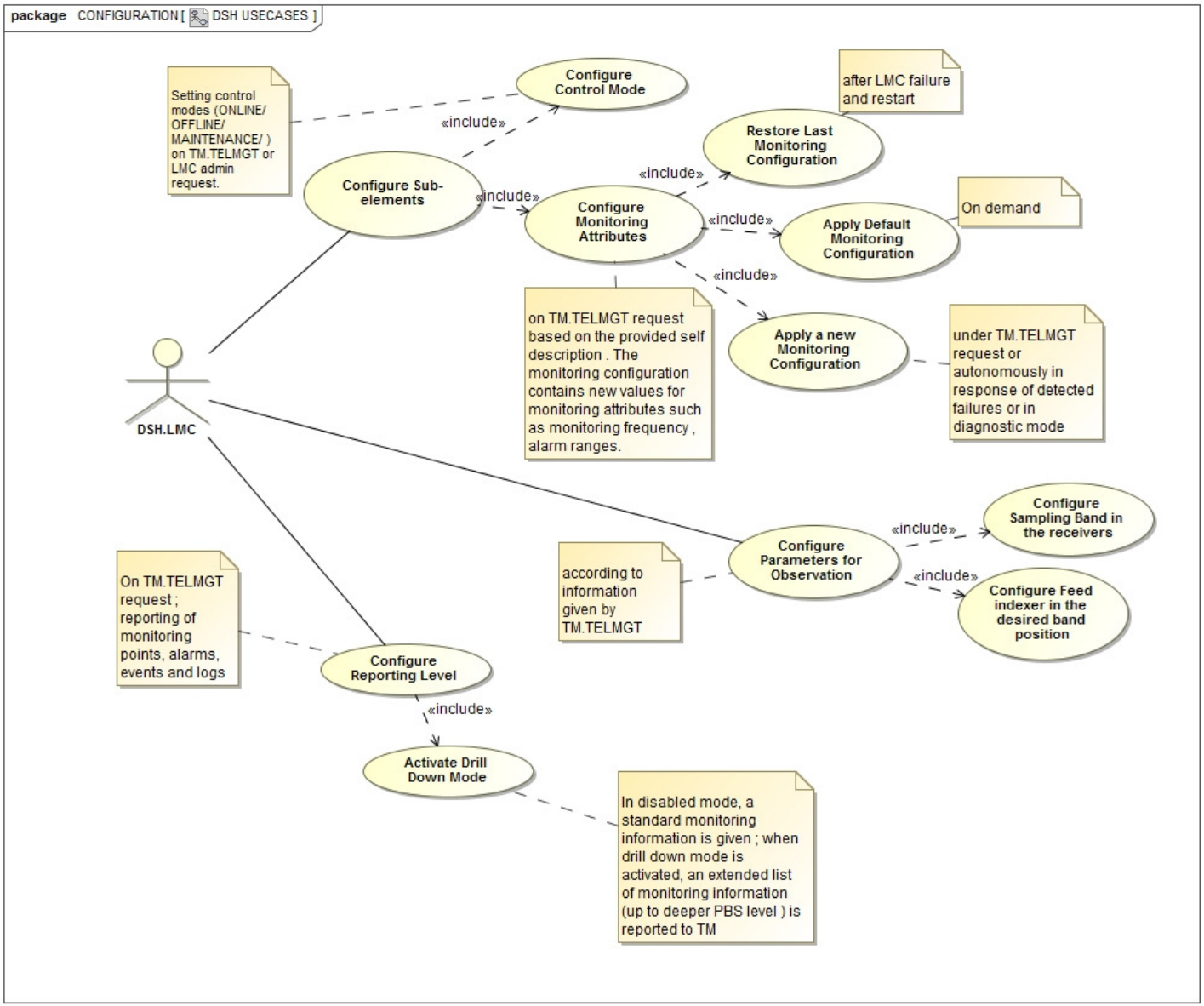
B) Control and Monitoring Functions

DSH. LMC monitors status, performance, behavioral parameters and configurations of all sub-Elements in real time. It triggers action when necessary.

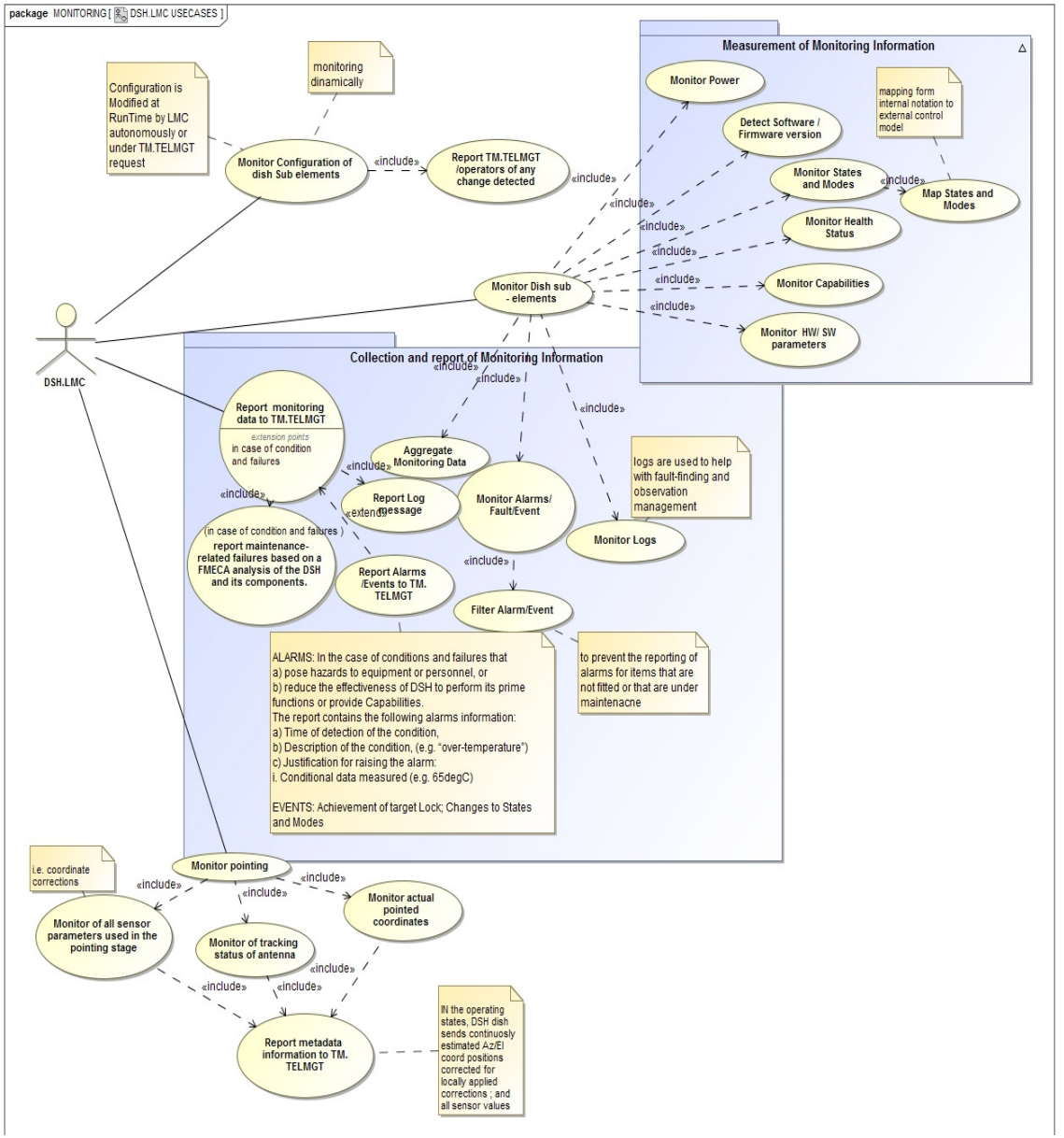
C) Support Functions

Remote support (update software/firmware); Safety (wind, power, TM communication loss); Power management; Diagnostics

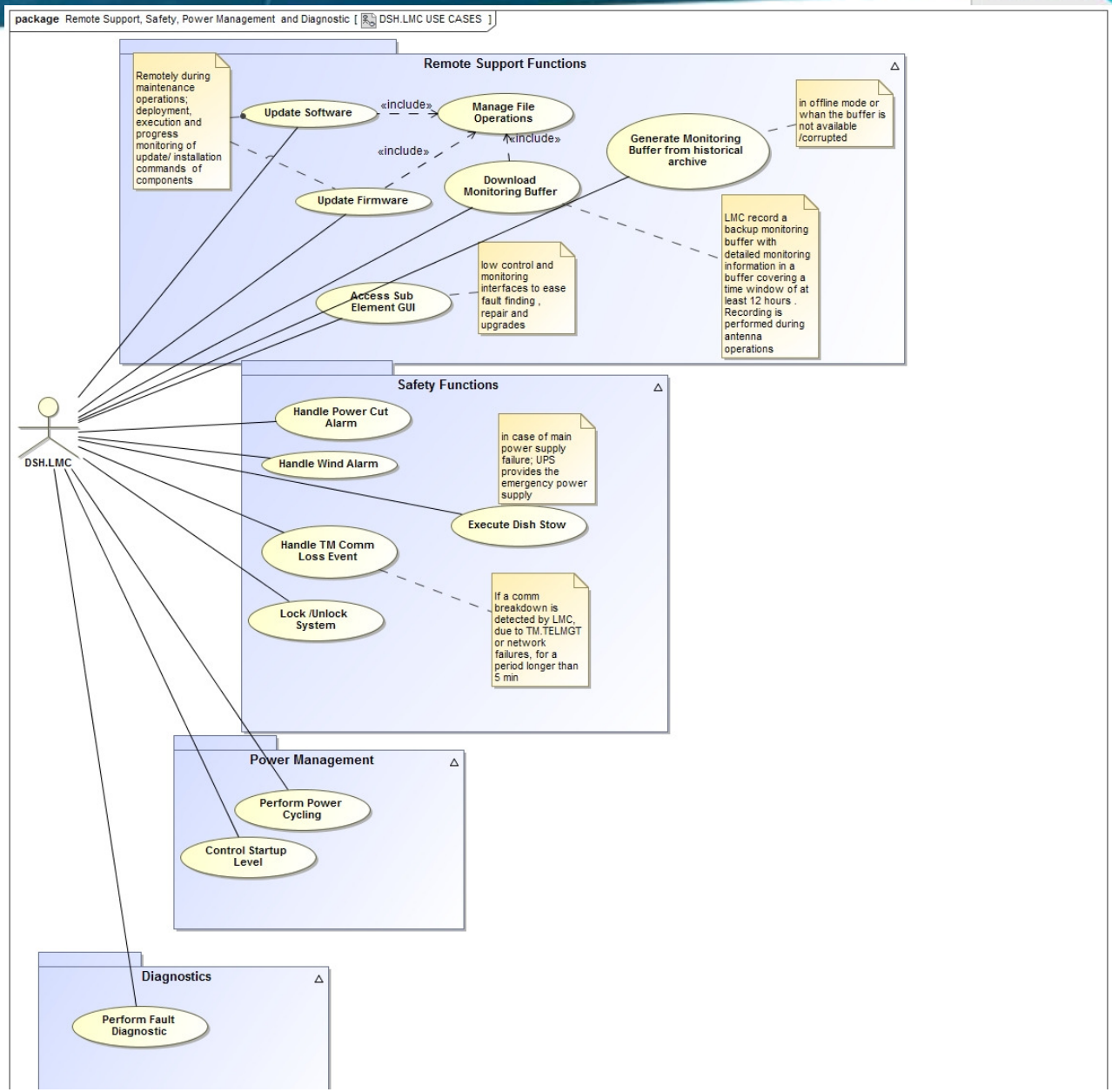
ITM Configuration Use Cases



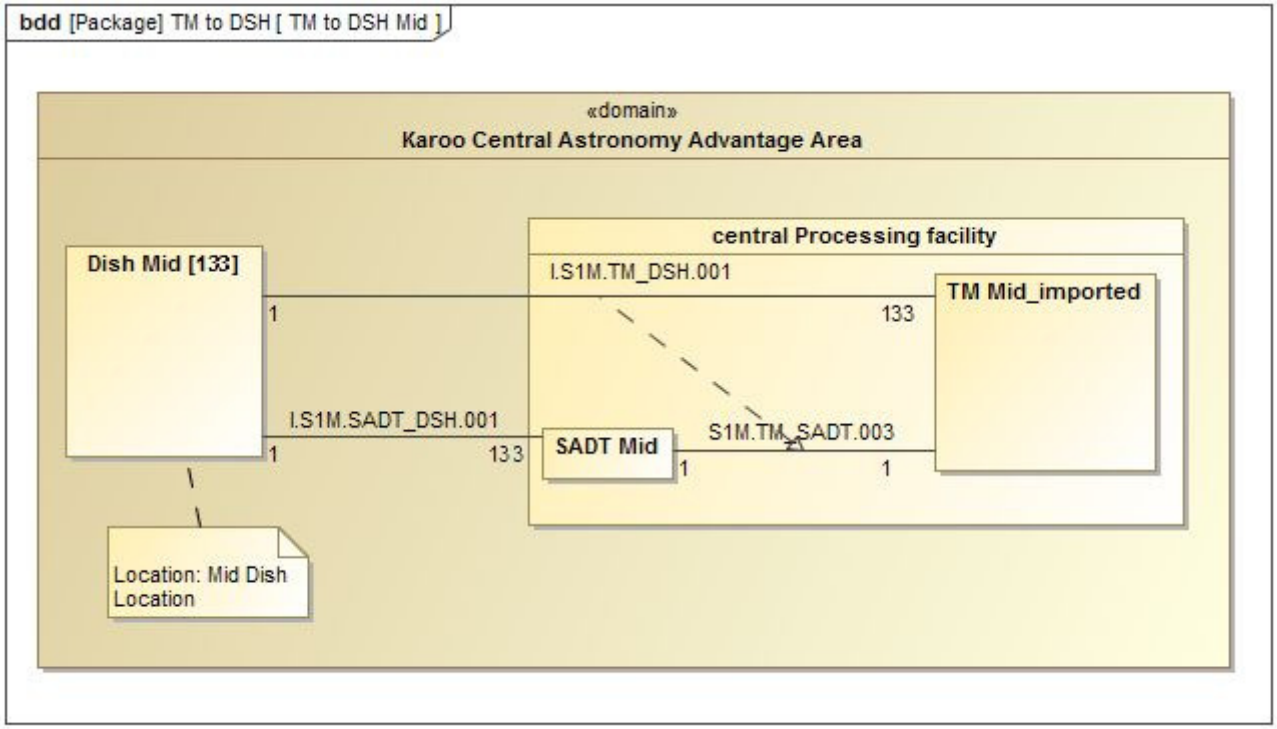
ITM Control and Monitoring Use Cases



ITM Support Use Cases



ITM Identification



TM-DSH Interface diagram

ITM documents

Monitoring and control data exchange interface between SKA1 Telescope Manager I and SKA1 Dish element (DSH):

I.S1M.TM_DSH.001 “SKA_MID Telescope Manager_ DSH Dish (Mid Dish) Interface”

as defined in:

- **SKA-TEL-SKO-0000150,** “SKA1-MID Interface Control Document TM To Dish” , Rev 02

Applicable and reference documents:

- **SKA-TEL-TM-0000030, “**SKA1 LMC Scope and Responsibilities”, Rev 01
- **SKA-TEL-TM-0000031, “**SKA1 LMC Interface Guideline”, Rev 01
- **SKA-TEL-TM-00000161**, “Tango Interface Guidelines”, Rev C

ITM flow of information

TM-Dish Interface Control Document (ICD) defines the requirements and implementation details of the TM-DISH interface

Interface between TM and DSH.LMC is data exchange interface; TM and DSH.LMC exchange hi level messages. Flow of information between TM and DSH.LMC is asymmetric:

- *Management (self-description on request from TM; DSH reports structure of reporting: hierarchical , PBS and capability structure; TM configure level of reporting; DSH alarm and event filtering)*
- *Control (TM states and modes; TM observation parameters; TM pointing)*
- *Safety (DSH locally fail-safe; stow control: TM wind, DSH power, DSH comm)*
- *Monitoring (DSH states and modes; DSH alarms, events: achievements, changes, TBD; DSH logs; drill-down; maintenance; capabilities; pointing; status)*
- *Engineering Interfaces (remote tunnelling)*
- *Life-cycle management (upgrades; versions & serial numbers)*
- *Data Transport (control and monitoring max data rate: 10-200 kbps)*
- *Protocol (TBD)*