

TM to INFRA Interfaces

Recent TM MID to INSA / TM LOW to INAU ICD updates

Paul Swart - 20 March 2019



TM MID to INSA

SARCH-174

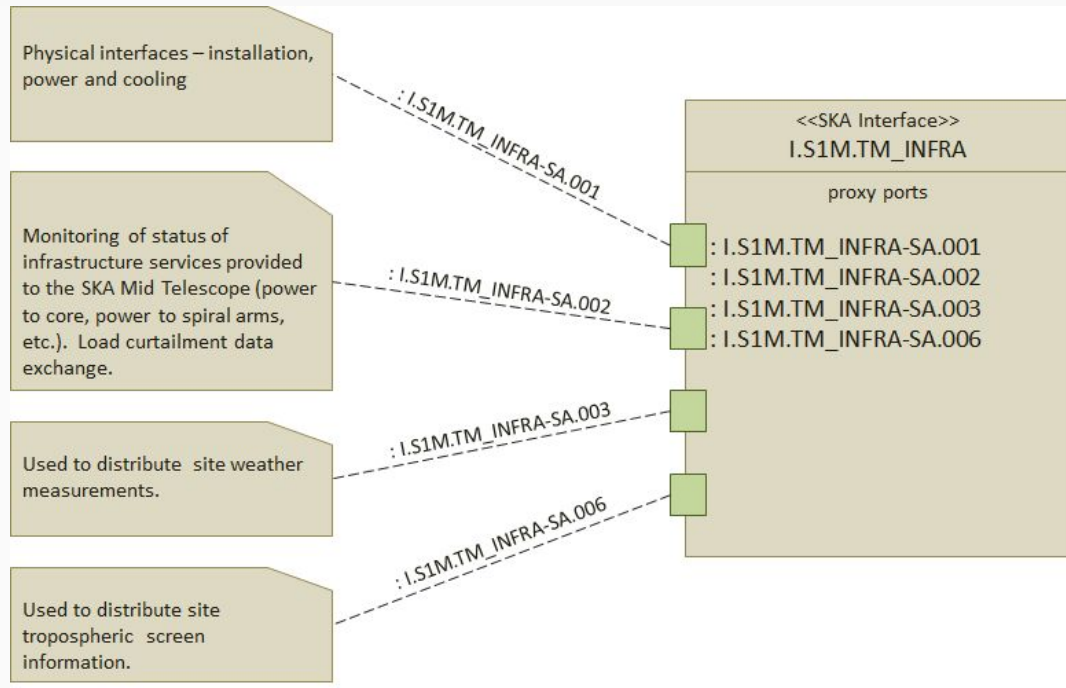


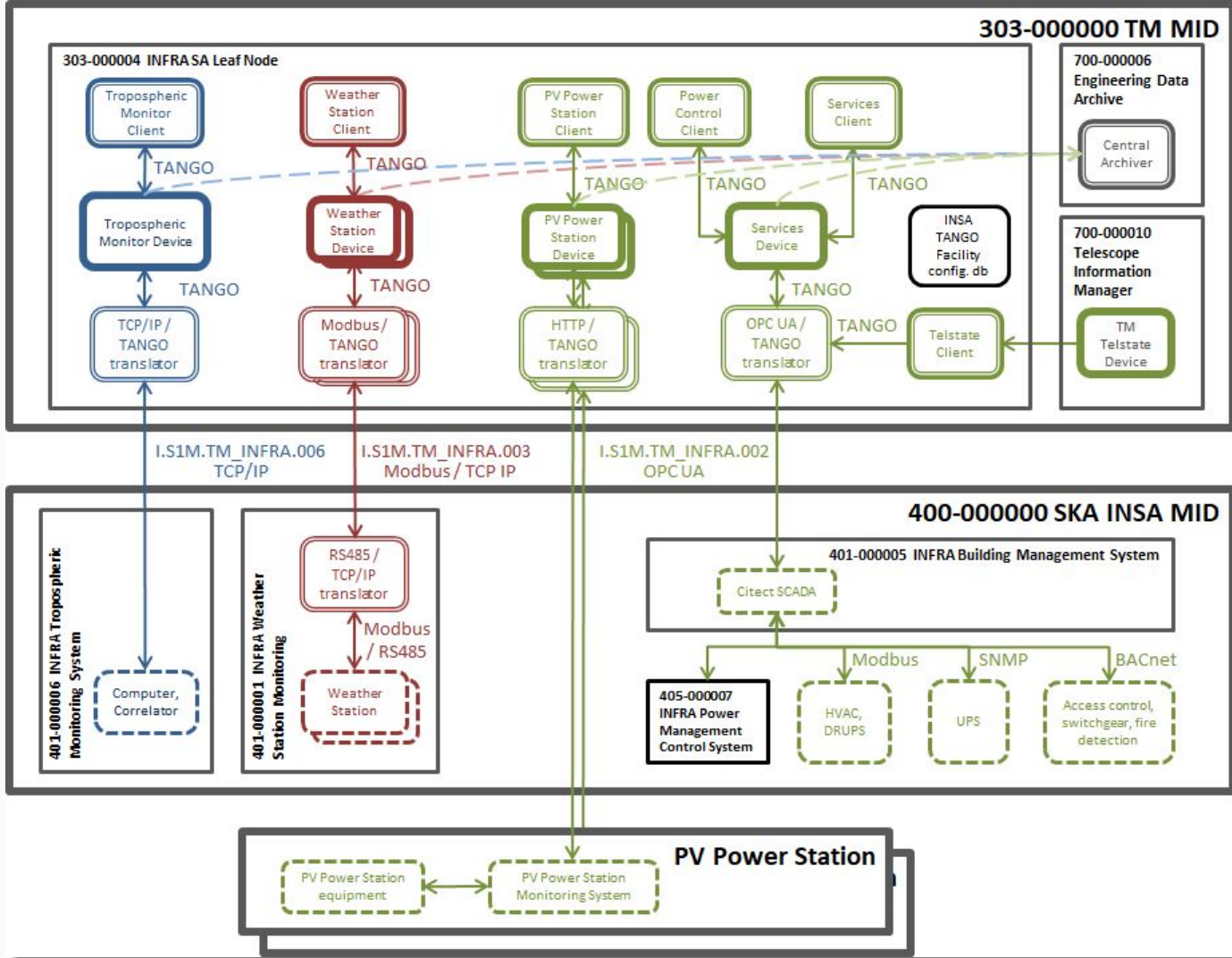
Recent work

Towards INSA CDR closeout, and in preparation for System CDR, the following issues are addressed:

- ICD updated from BMS variables,
- ECP-170001 - SEI standards for development of software CDR deliverables,
- ECP-170006 - Renewable Energy Outer Dishes - described interface concept,
- ECP-180001 - replaced TANGO on interfaces,
- Tropospheric Monitoring System interface - described interface concept,
- Resolved 10 TBDs and 9 TBCs.

TM MID to INSA Interfaces

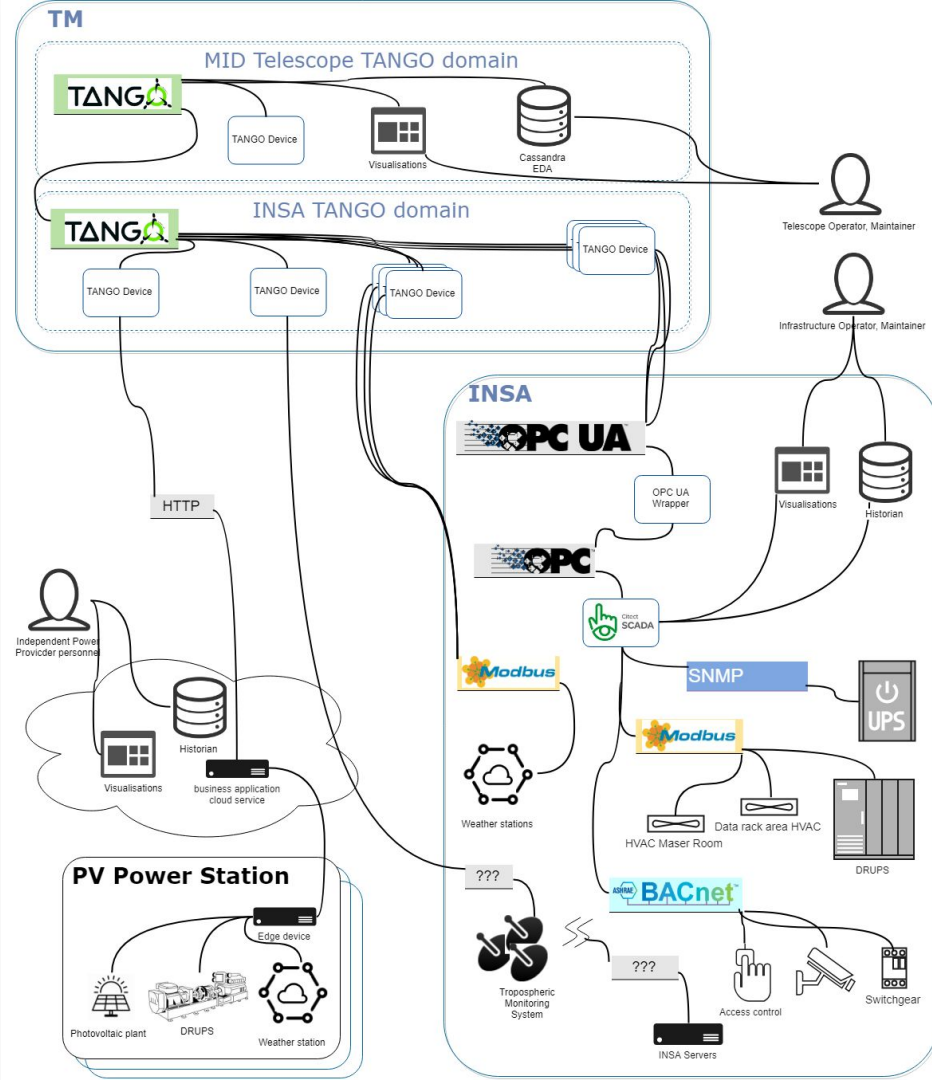




Technologies for interfaces

Application protocols on interfaces:

- OPC UA,
- Modbus (over TCP/IP),
- HTTP.



INSA systems

Services: OPC UA

Weather stations: Modbus

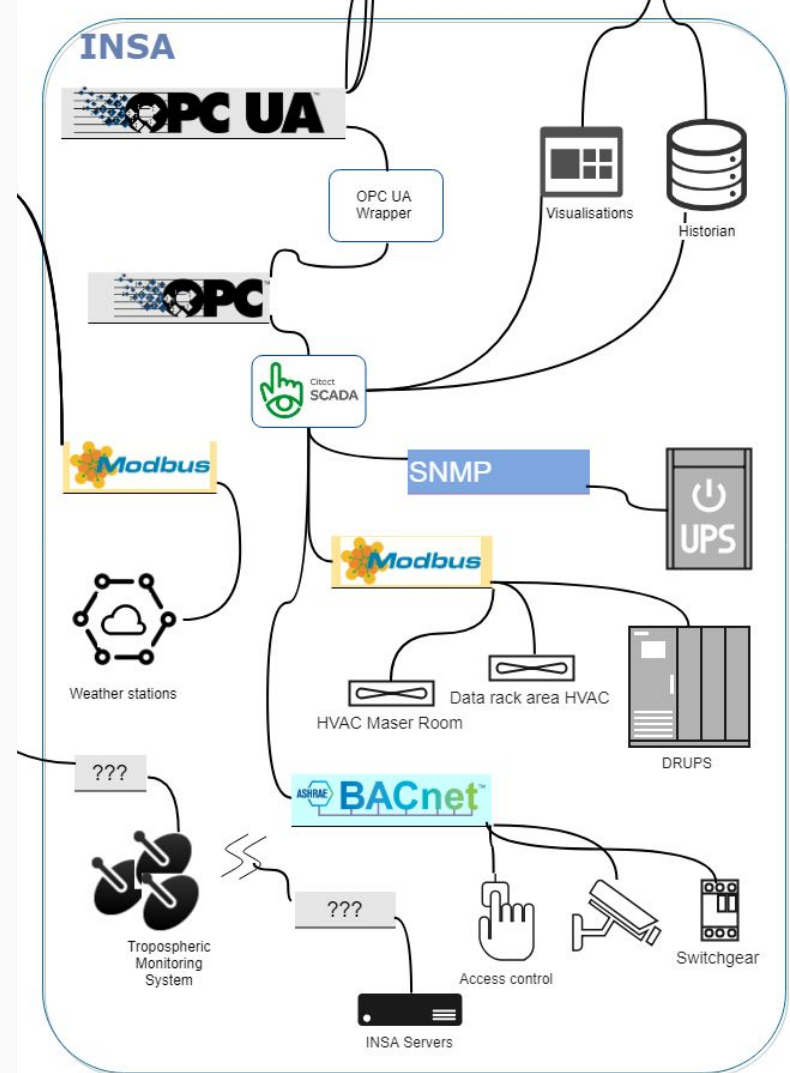
Tropospheric Monitoring System:
protocol TBD (but will be over TCP/IP).

Issue: No analytics/calculations in
BMS, but only measurements!

Issue: Tropospheric Monitoring
System IS NOT PART OF INSA.

Issue: INSA servers not monitoring via
BMS, no interface to TM MID.

Future: Scitect SCADA OPC UA I/F?



PV Power Stations

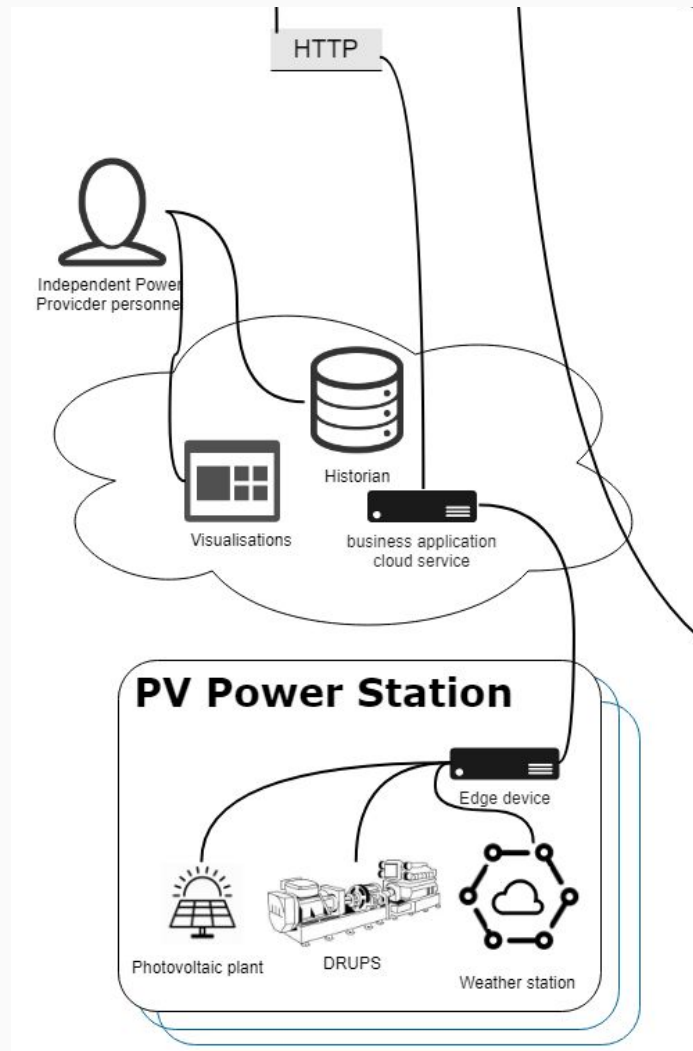
Photovoltaic (PV) Power Station in each spiral arm.

PV Power Station consists of:

- PV plant,
- DRUPS,
- Weather station.

Issue: Unknown whether TM interfaces with PV Power Station directly or via external system.

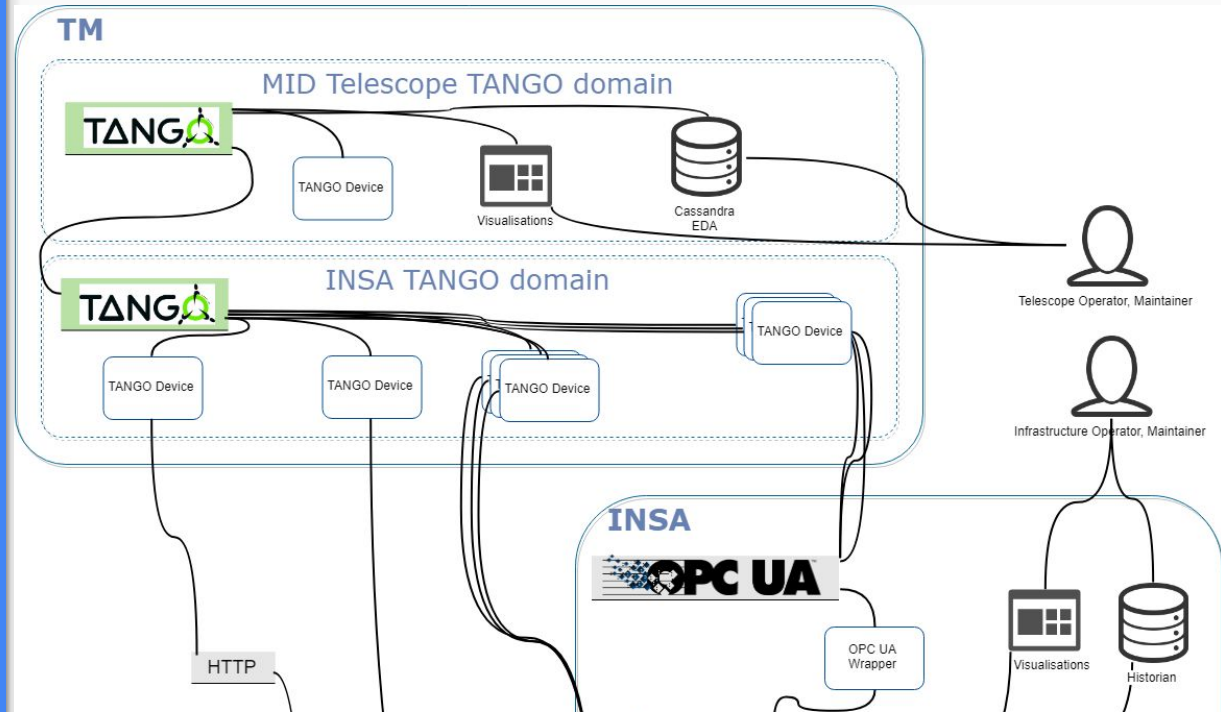
Issue: Why is INSA BMS not interfacing with PV Power Stations???



TM Side

Both MID Telescope and INSA TANGO domains fall within TM MID.

INSA TANGO domain contains TANGO devices, etc. to interface with INSA systems and PV Power Stations.



Still to do this sprint...

- SKAO and INSA still reviewing,
- awaiting some inputs,
- defining interface verification.



TM LOW to INAU

SARCH-176

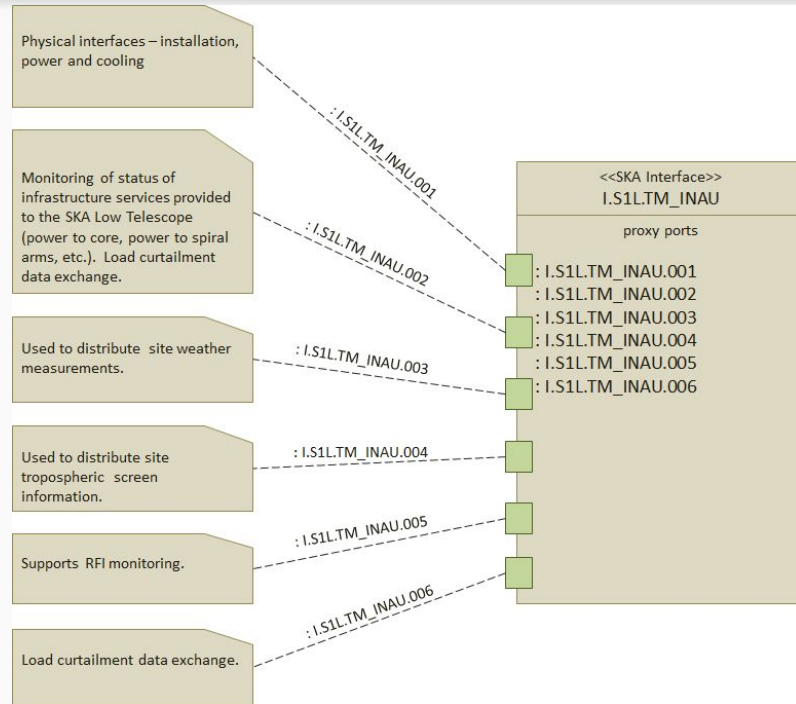


Recent work

In preparation for System CDR, I identified the following issues for this PI:

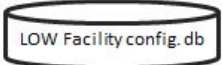
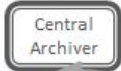
- Cover more aspects of BACnet / TANGO integration, incl. logging,
- ECP-160010 - Solar power on outer LOW stations,
- Site Monitoring Tropospheric Interface - define (TBD22 & TBD26),
- Define interface support for load curtailment (dependency on Adriaan Schutte).

TM LOW to INAU Interfaces

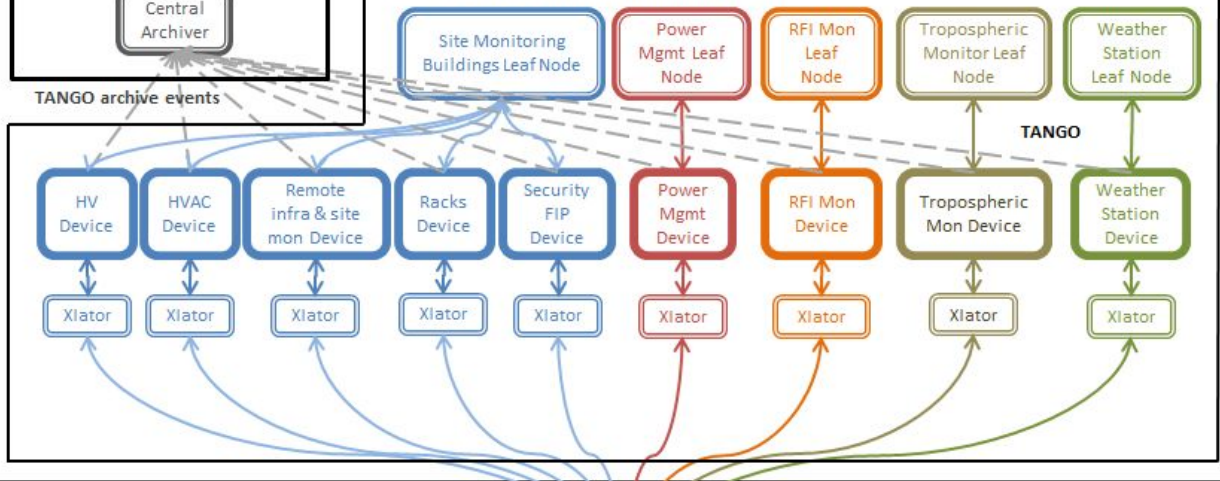


103-000000 Telescope Manager LOW

700-000006 Engineering Data Archive

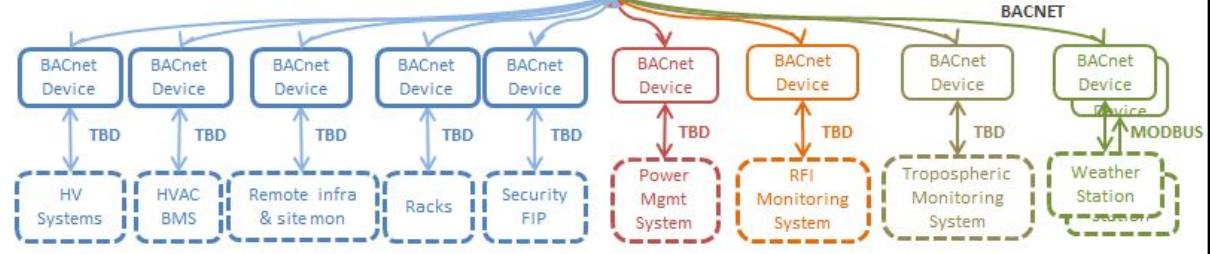
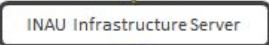


103-000004 INFRA Aus Leaf Node



I.S1M.TM_INFRA.002 I.S1M.TM_INFRA.006 I.S1M.TM_INFRA.005 I.S1M.TM_INFRA.004 I.S1M.TM_INFRA.003 BACNET/IP

500-000000 SKA INAU LOW



Technologies for interfaces

Protocols on interfaces:

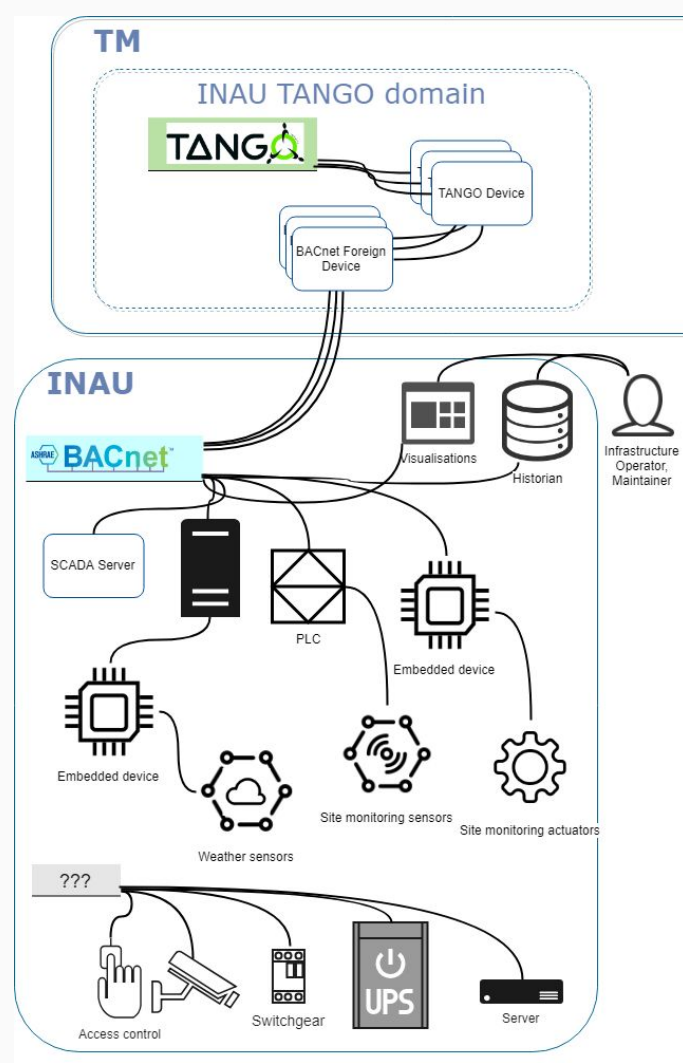
- BACnet/IP

Issue: No analytics/calculations in BMS, but only measurements!

Issue: Little known about Tropospheric Monitoring System (not included in diagram).

Issue: Little known about PV Power Stations.

Issue: Unknown how some switchgear, UPSs and servers are monitored.



BACnet / TANGO integration - details

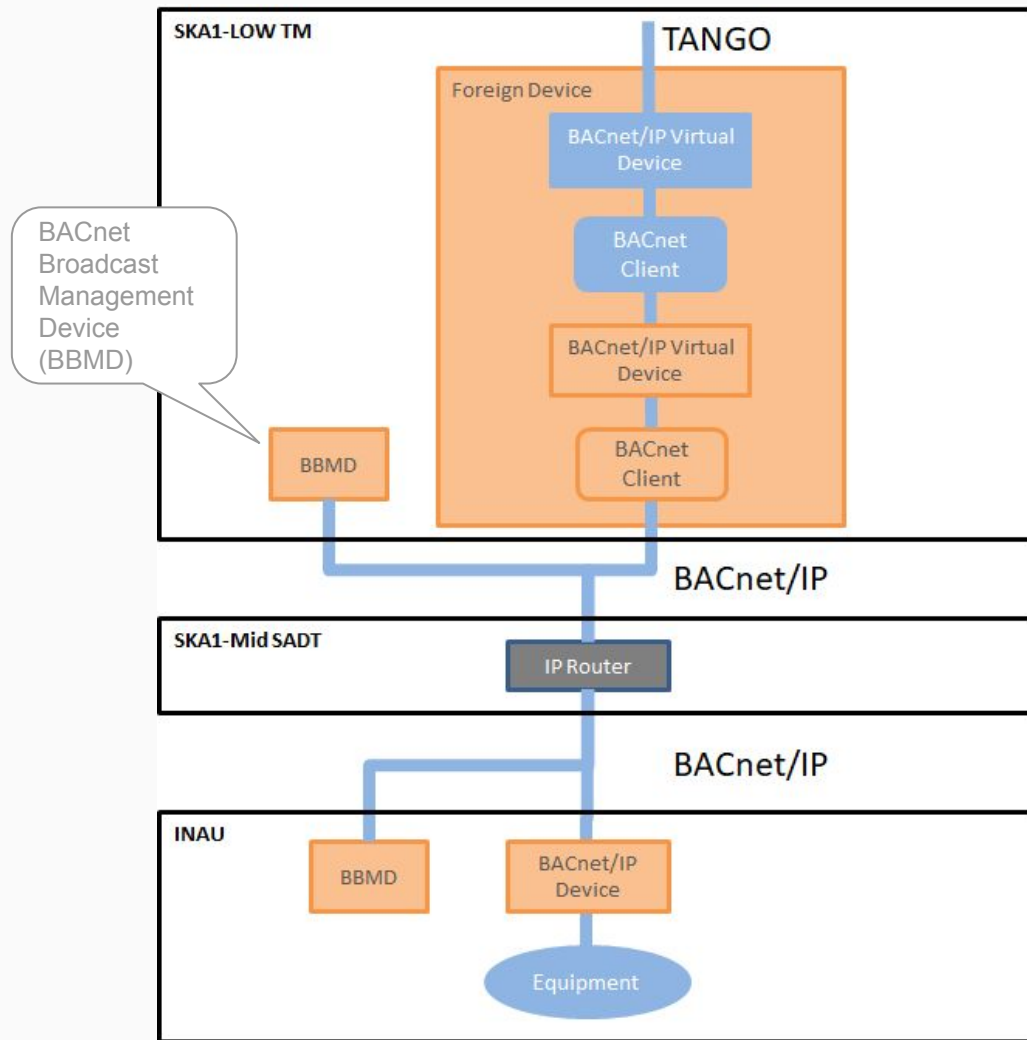
Equipment of INAU are attended by BACnet devices (something like a TANGO device).

INAU implements BACnet/IP.

This means a SaDT IP router can route BACnet/IP packets between TM LOW and INAU.

TM implements BACnet Foreign device (to be on the BACnet "network") with TANGO device in it.

TM and INAU each implements a BBMD to ensure broadcast messages can pass between them.



Still to do this sprint...

- ID issues (up to Fri 22 March),
- Update ICD (work issues).



Thanks!

