SV62 MCU Platform Software Architecture Report

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Revision History

*to be updated in reverse chronological order

Version	Date	Comment
0.1	17.09.2024	First draft export based on the architecture parts that were demonstrated in the common architecture meeting between TTTech. Mobileye and PAG

1 Introduction and Goals

SV62 is a continuation of the HCP2.low/tv project, targeting Level 2+ ADAS functionalities for series vehicle projects. TTTech Auto AG is the Software Tier-2 to Mobileye and is responsible for the Platform Software on NXP S32G, which is the gateway for vehicle communication on the SV62 ECU.

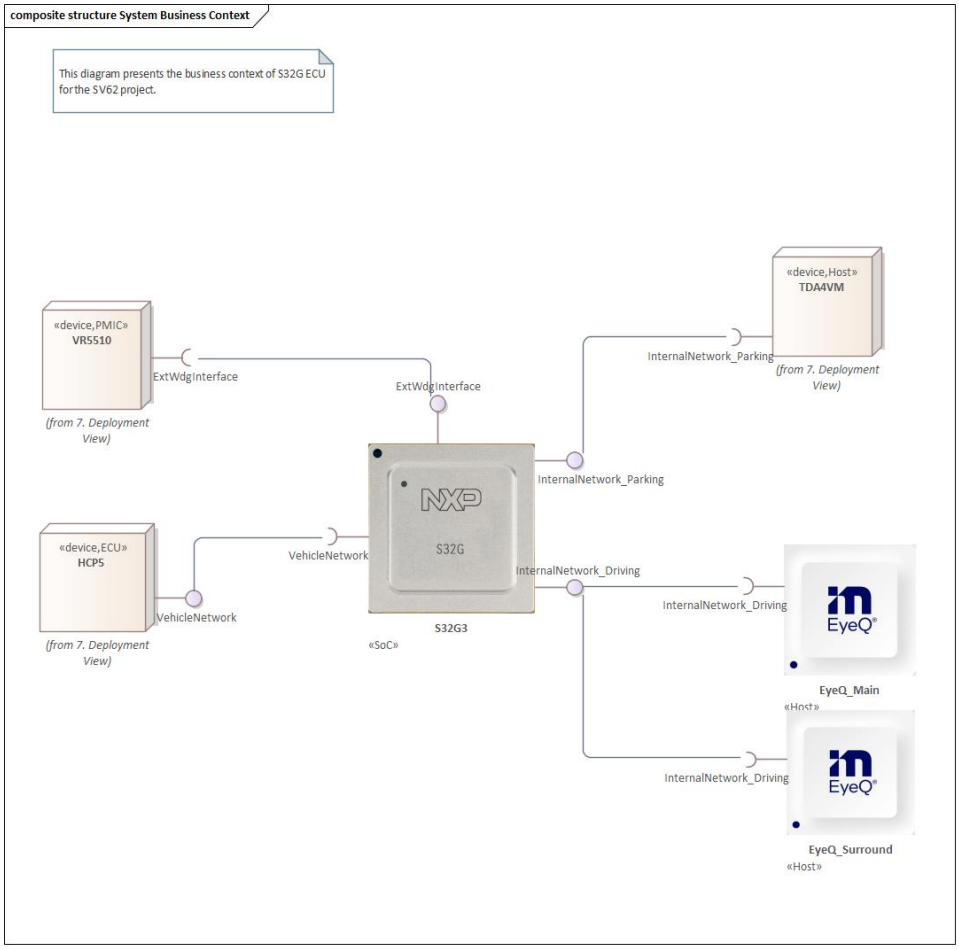
This document is an extract of the architecture of the SV62 platform documented at ASPICE level SWE.2 supported by a model in Enterprise Architect. Aim of document is to show the updated deployment of the platform software and its configuration in SV62, and to list new concepts that extend the existing platform software.

2 Architecture Constraints

The platform SW is expected to be a reuse of HCP2.low to the extent possible.

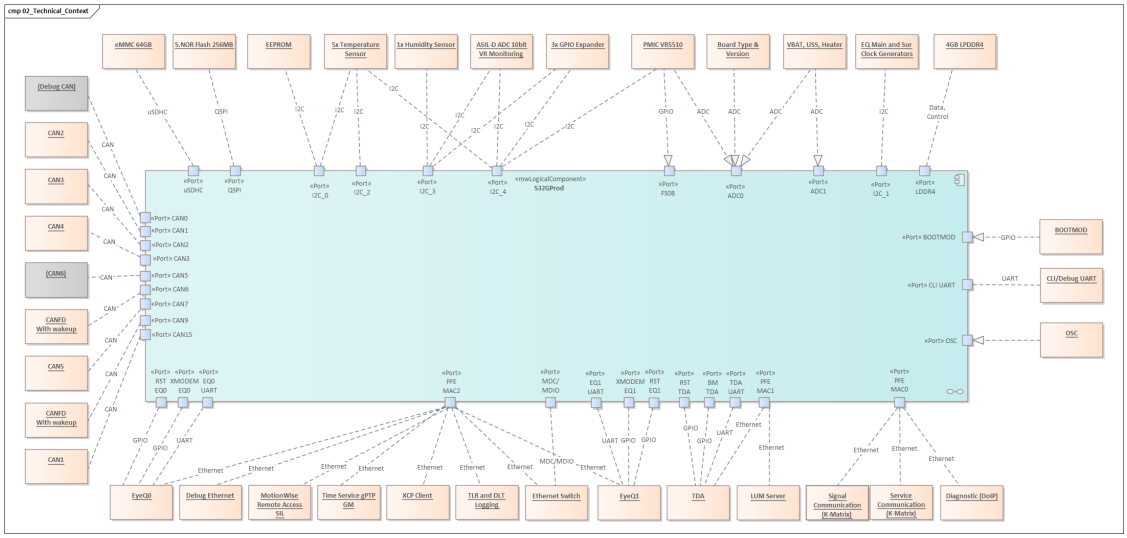
3 System Scope and Context

3.1 Business Context



[HCP2MEP-147230]

3.2 Technical Context



[S32GPRODP-256424]

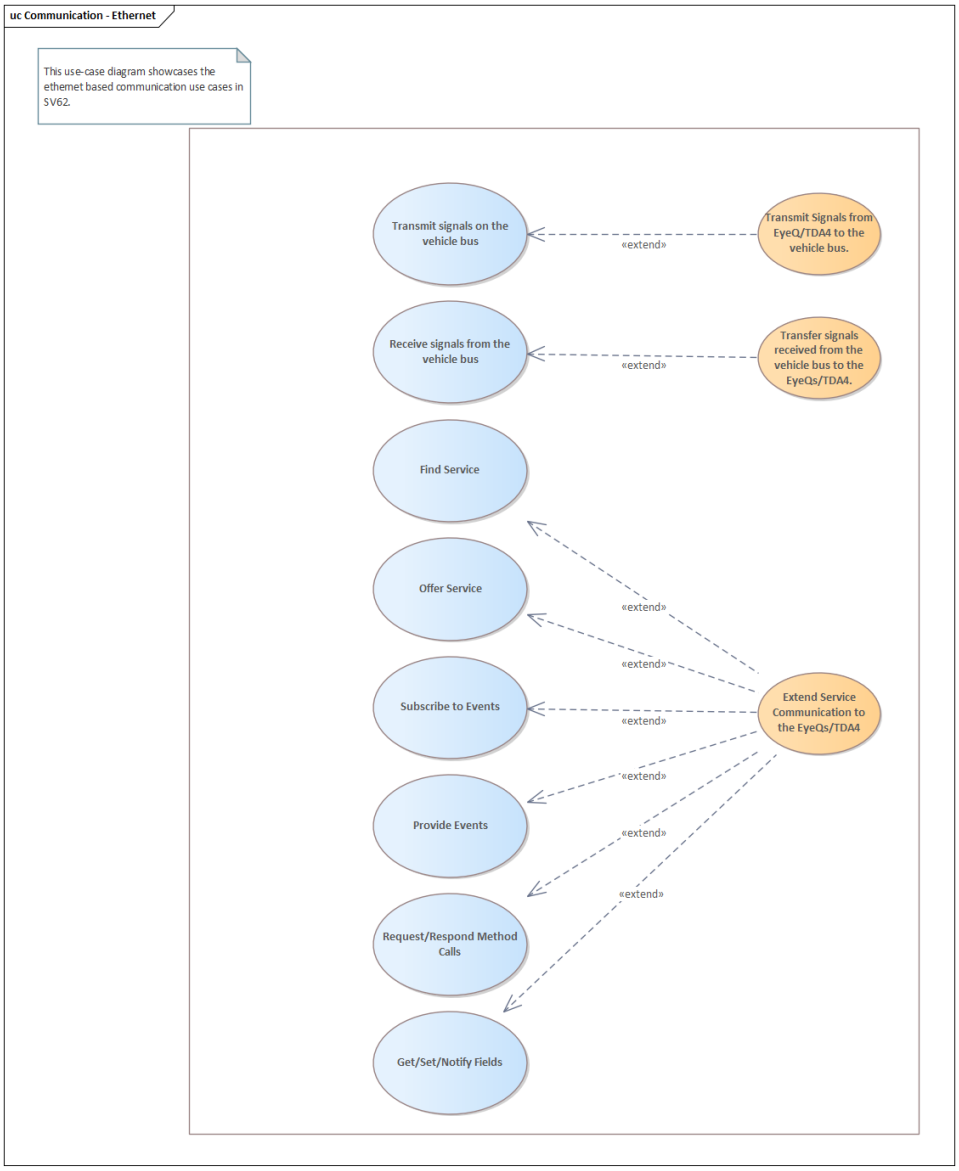
3.3 Use Cases

The following view presents the domains supported by SV62 platform SW:

[HCP2MEP-97954]

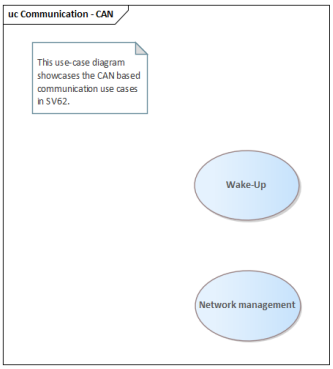
3.3.1 Communication

3.3.1.1 Communication - Ethernet



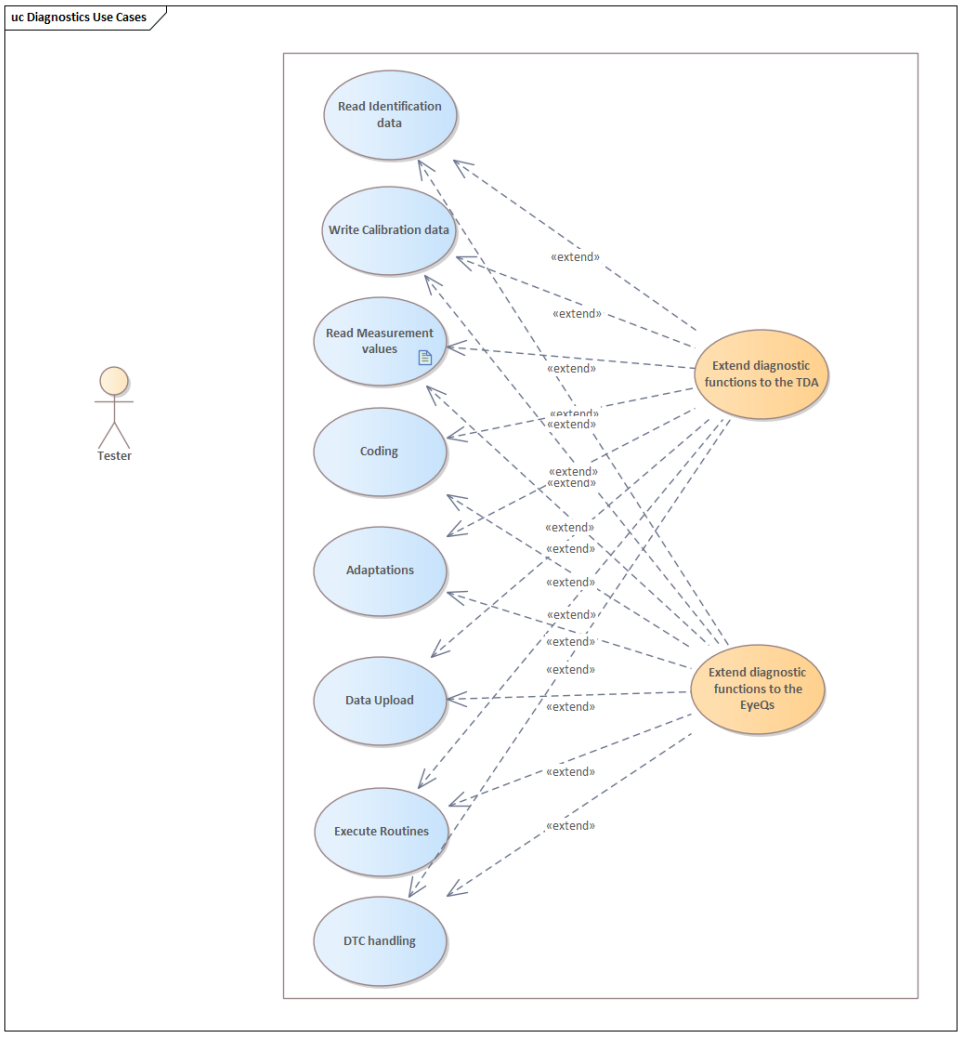
[HCP2MEP-97955]

3.3.1.2 Communication - CAN



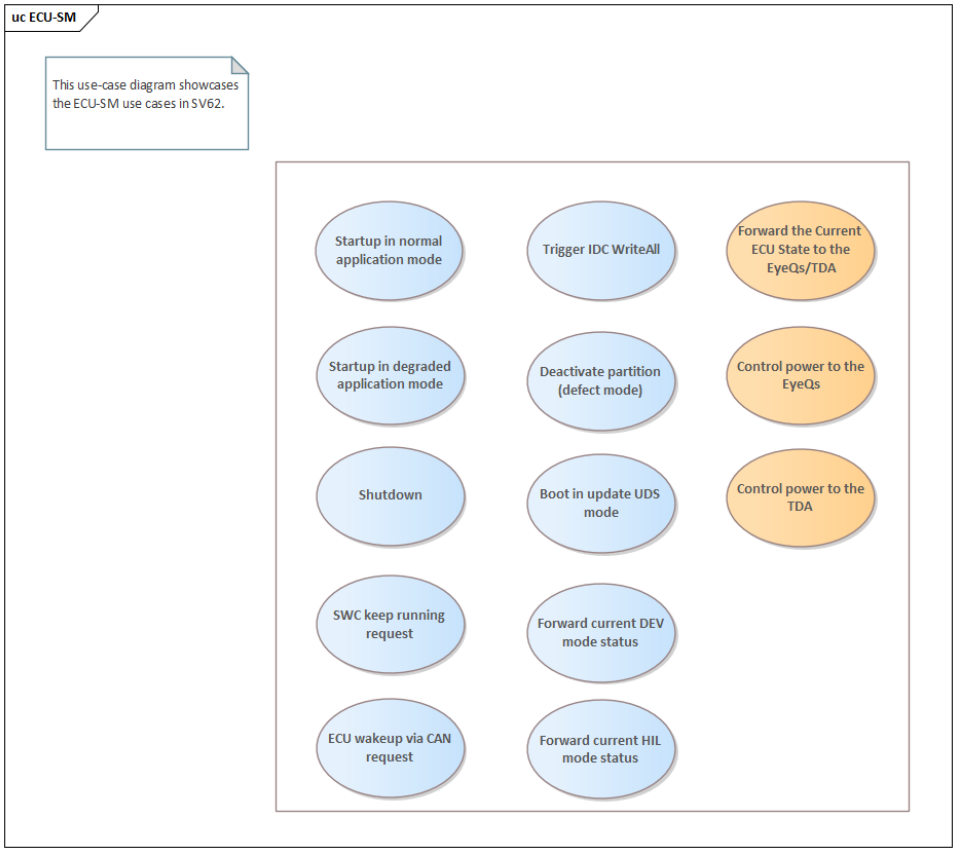
[HCP2MEP-147234]

3.3.2 Diagnostic



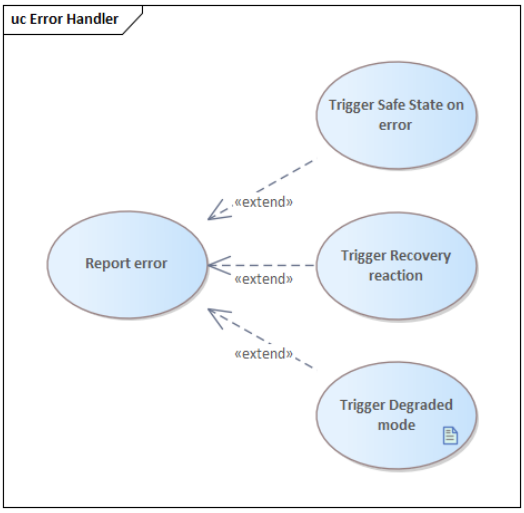
[HCP2MEP-147241]

3.3.3 State management



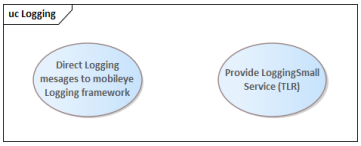
[HCP2MEP-147244]

3.3.4 Error Handling



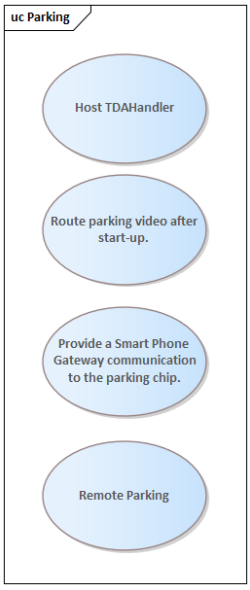
[HCP2MEP-147248]

3.3.5 Logging



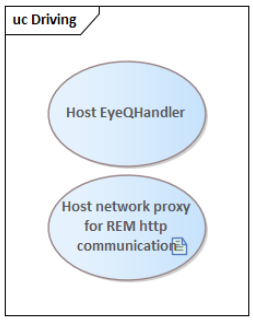
[HCP2MEP-147251]

3.3.6 Parking



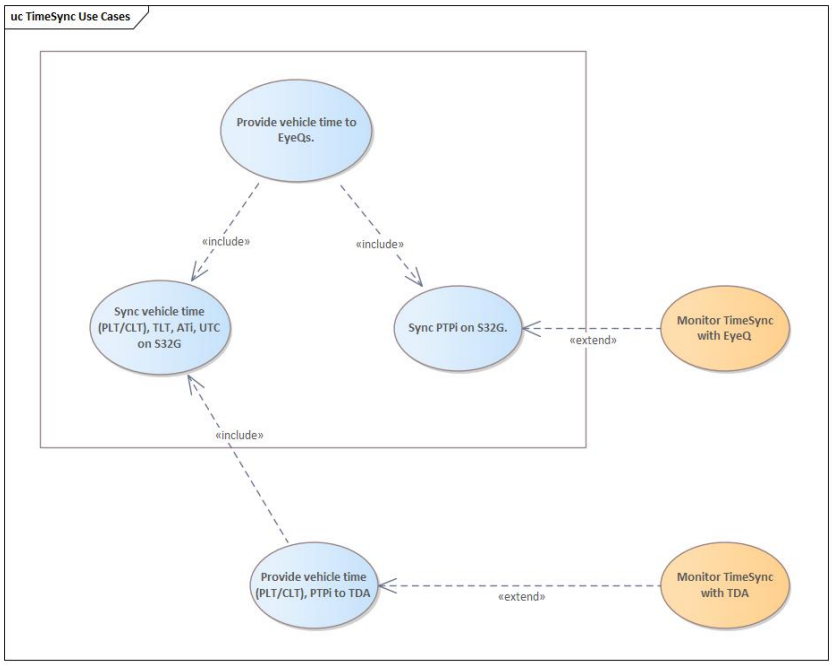
[HCP2MEP-147252]

3.3.7 Driving



[HCP2MEP-147505]

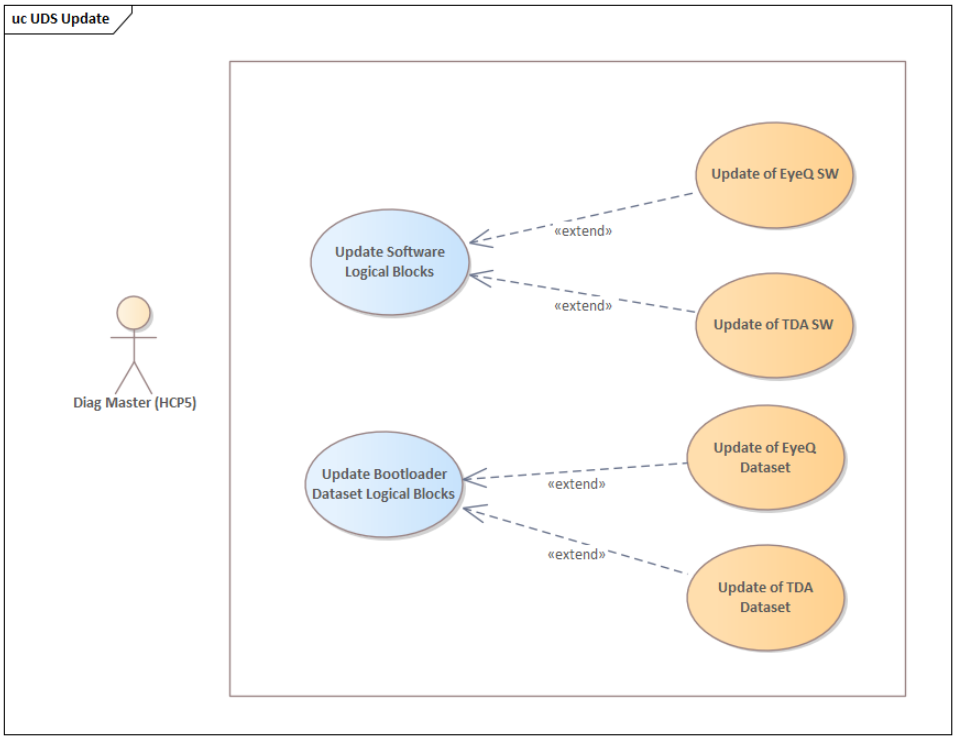
3.3.8 Time sync



[HCP2MEP-97967]

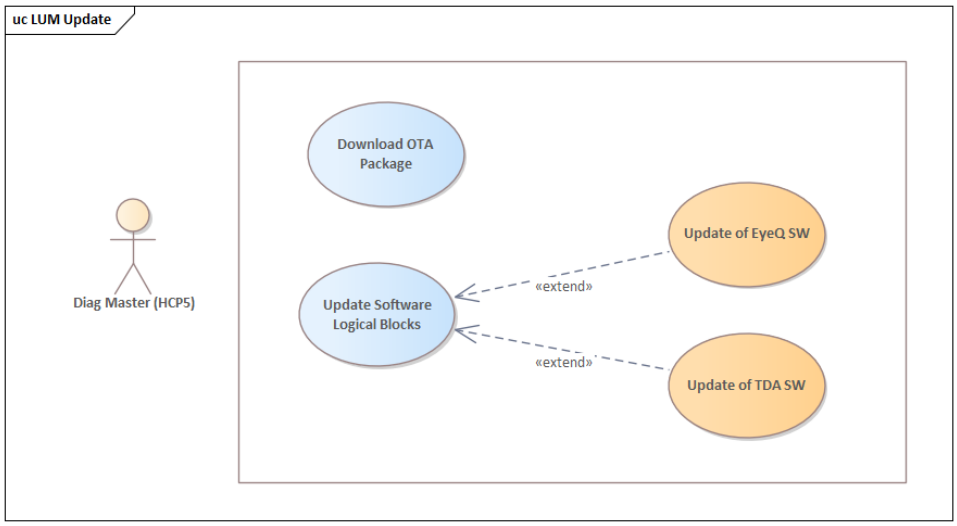
3.3.9 SW Update

3.3.9.1 UDS Update



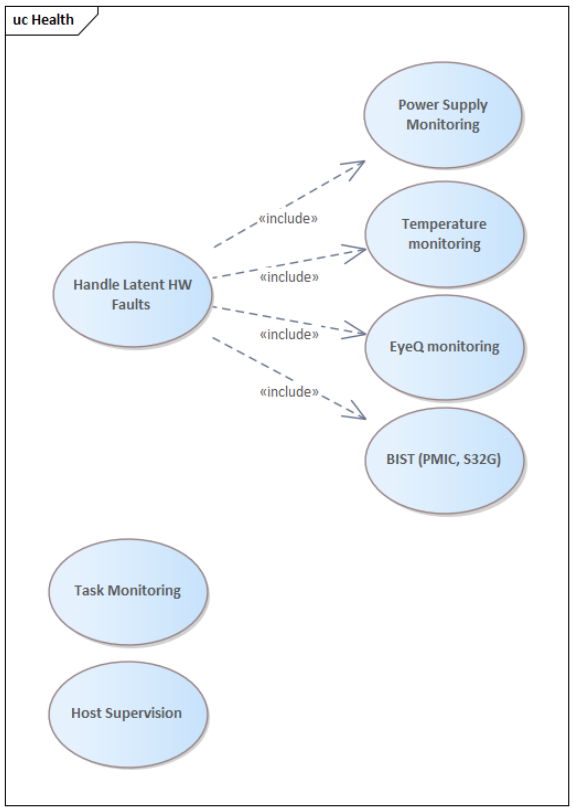
[HCP2MEP-147361]

3.3.9.2 LUM Update



[HCP2MEP-147362]

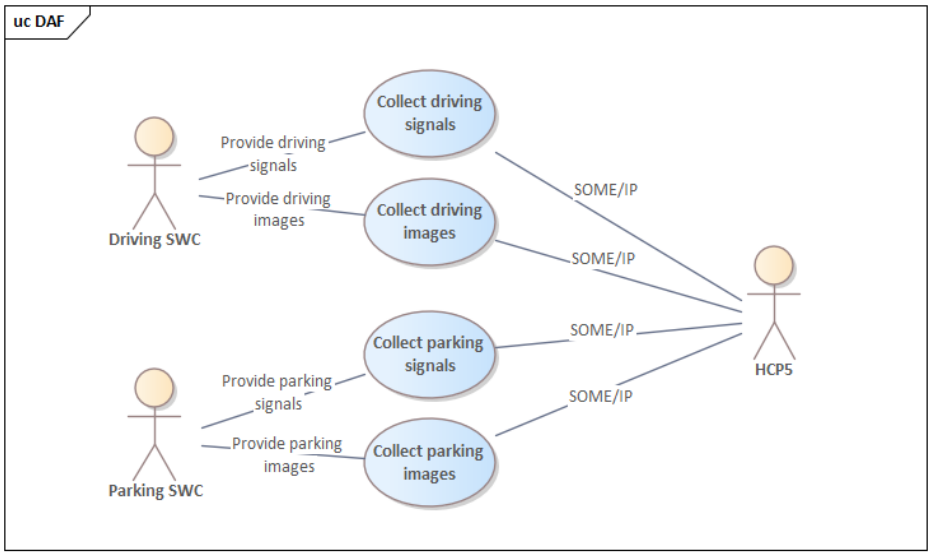
3.3.10 Health



[HCP2MEP-147372]

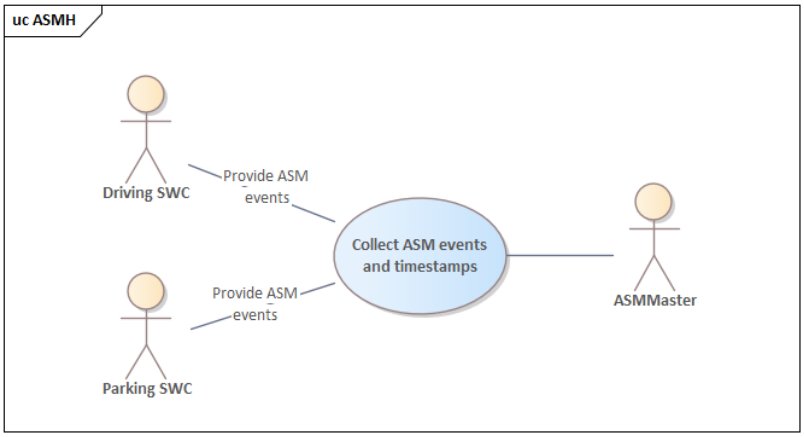
3.3.11 IDC

3.3.11.1 DAF



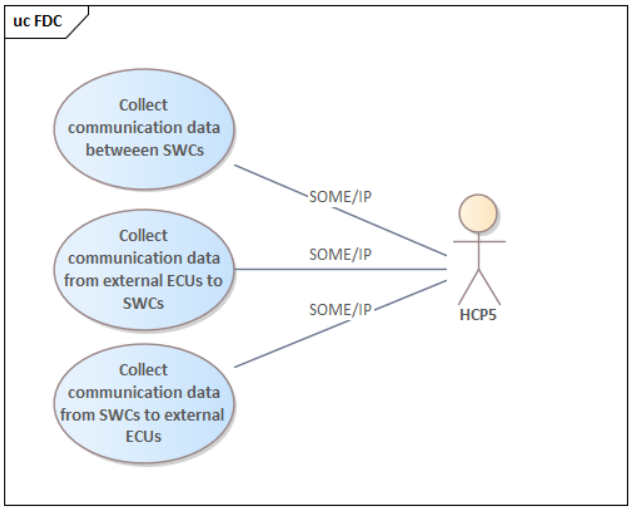
[HCP2MEP-147370]

3.3.11.2 ASMH



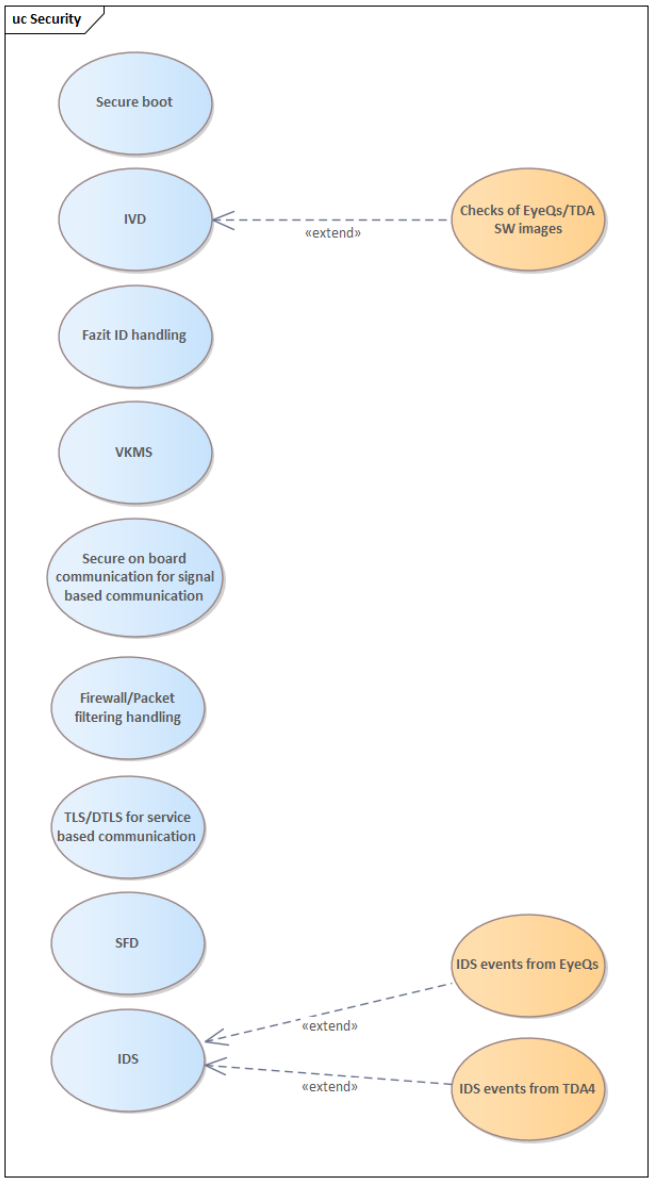
[HCP2MEP-147571]

3.3.11.3 FDC



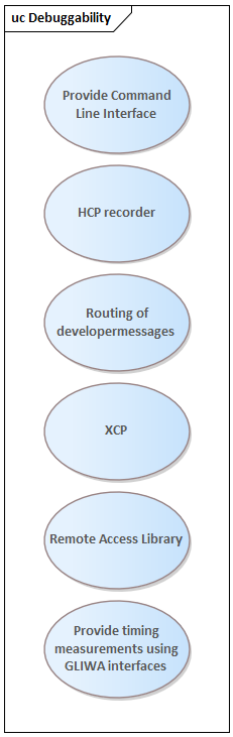
[HCP2MEP-147572]

3.3.12 Security



[HCP2MEP-147377]

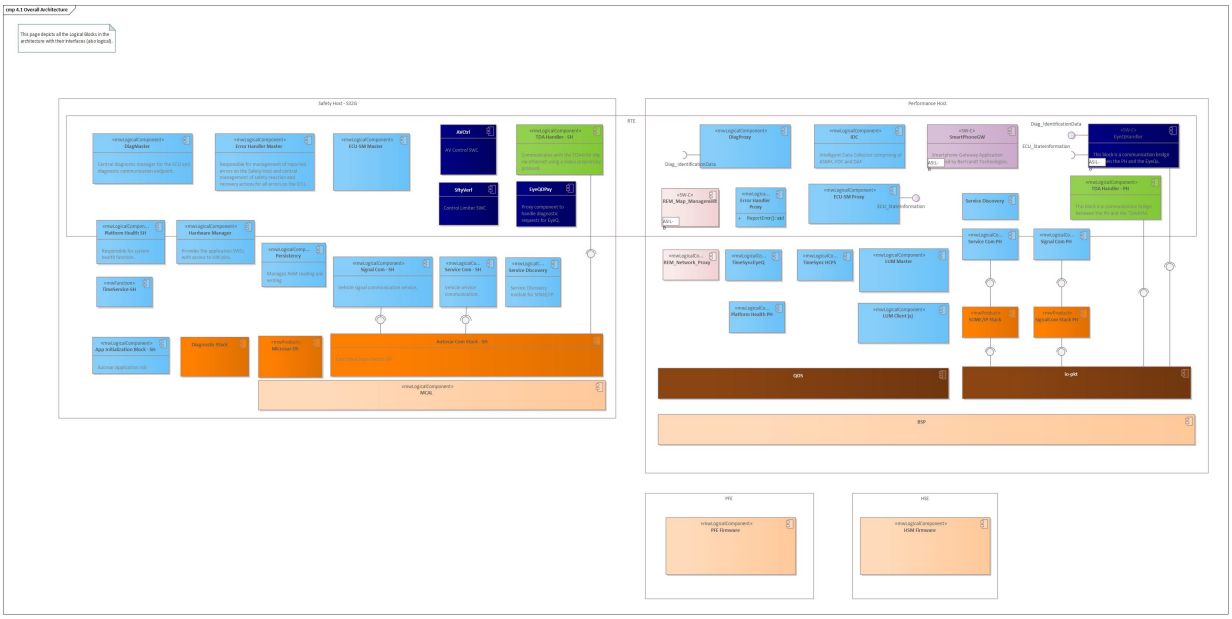
3.3.13 Debuggability



[HCP2MEP-147509]

4 Solution Strategy

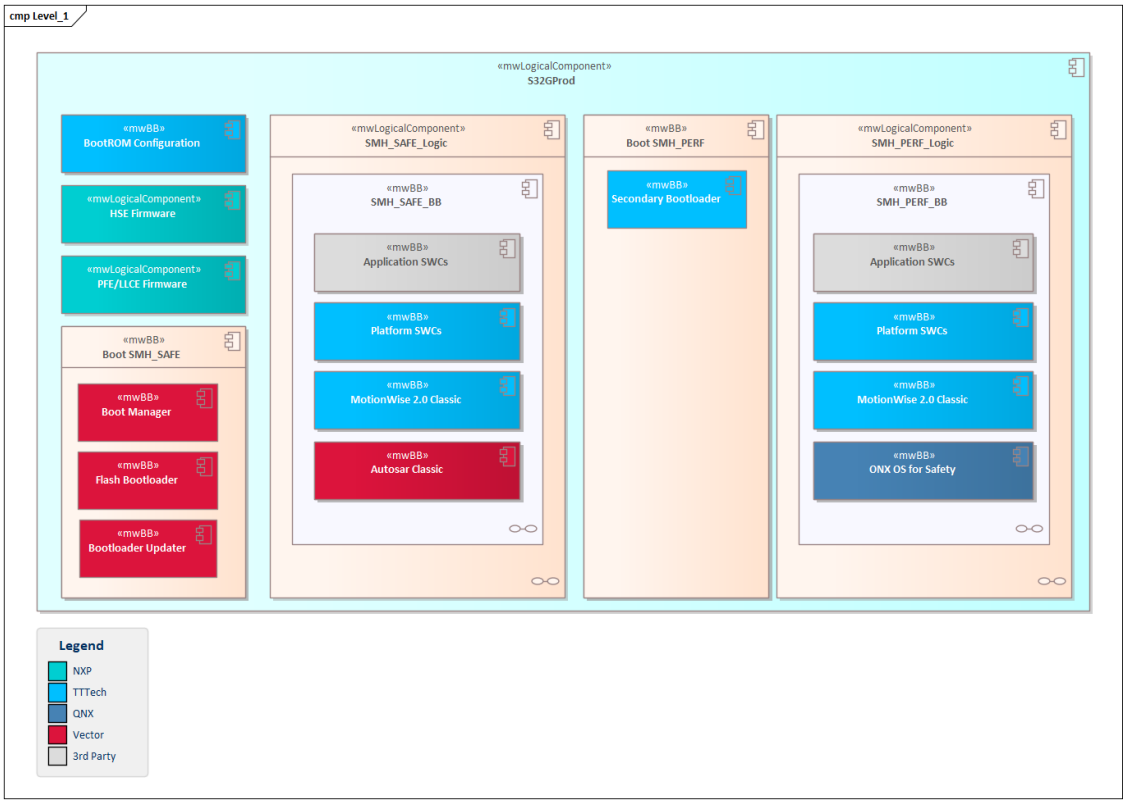
Logical Architecture View



[HCP2MEP-87072]

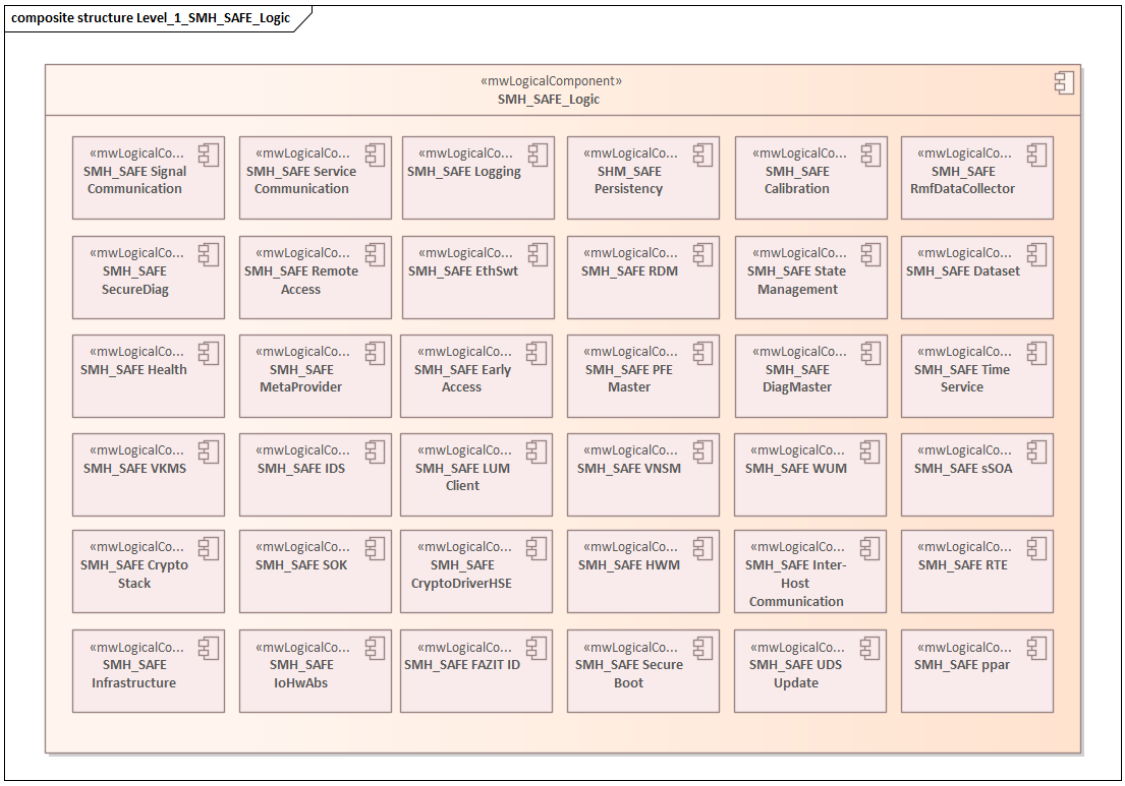
5 Building Block View

5.1 Level 1 View



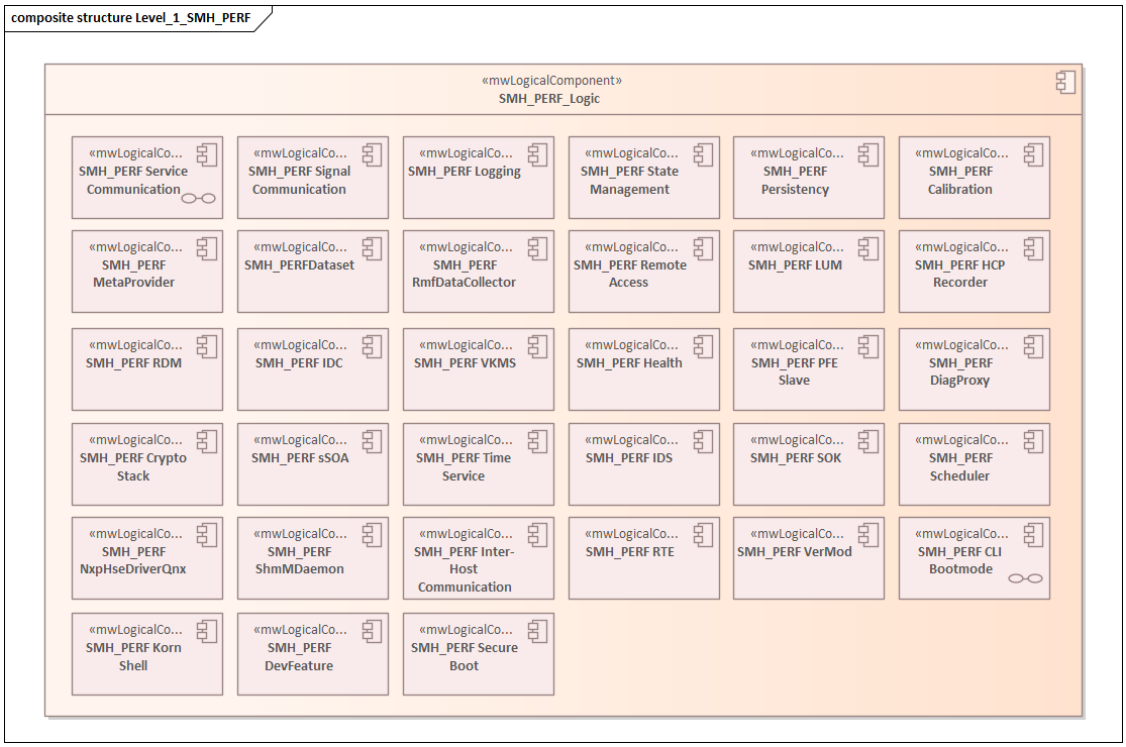
[S32GPRODP-256468]

5.1.1 Logical Services - Safety Partition



[S32GPRODP-256470]

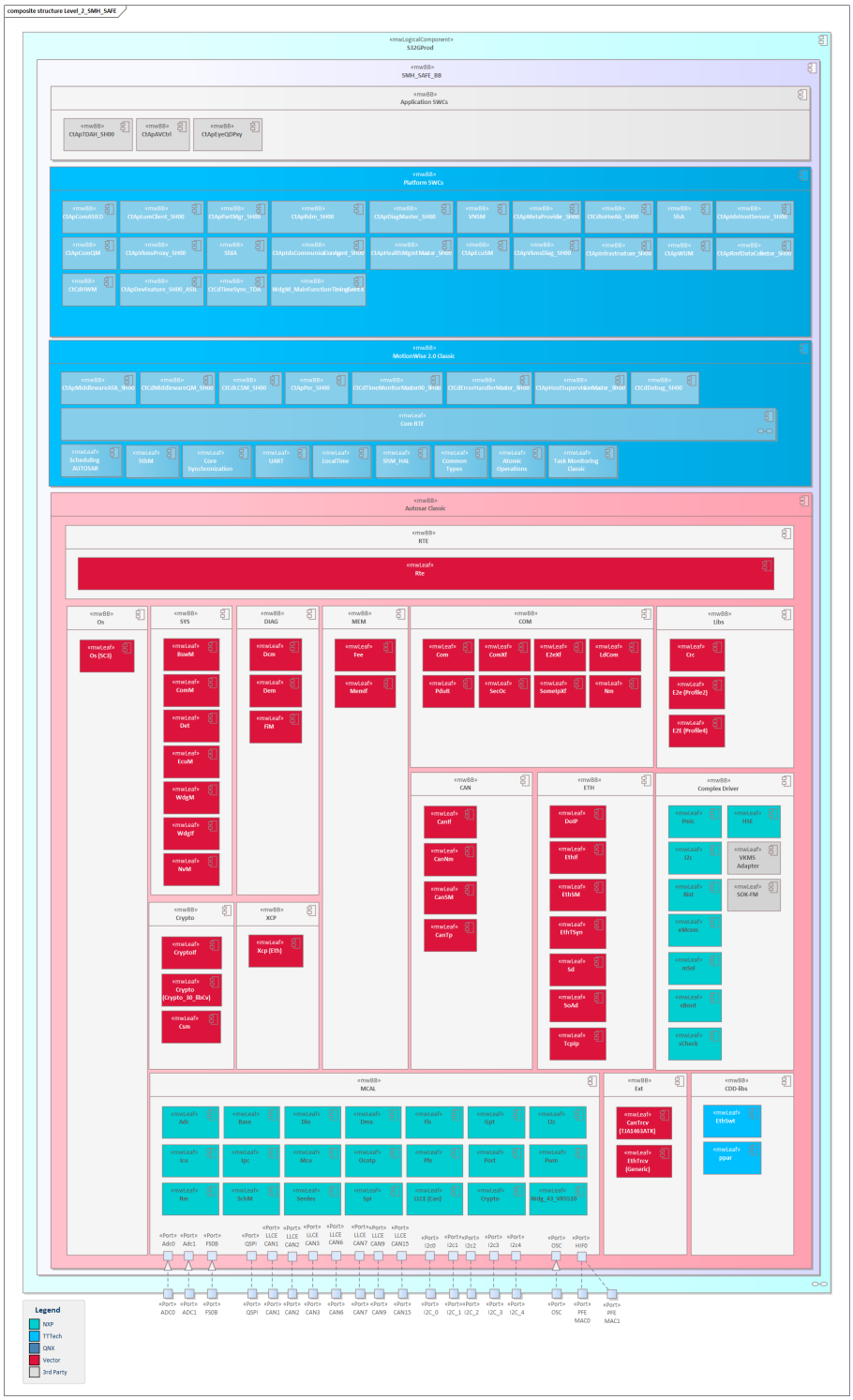
5.1.2 Logical Services - Performance Partition



[S32GPRODP-256469]

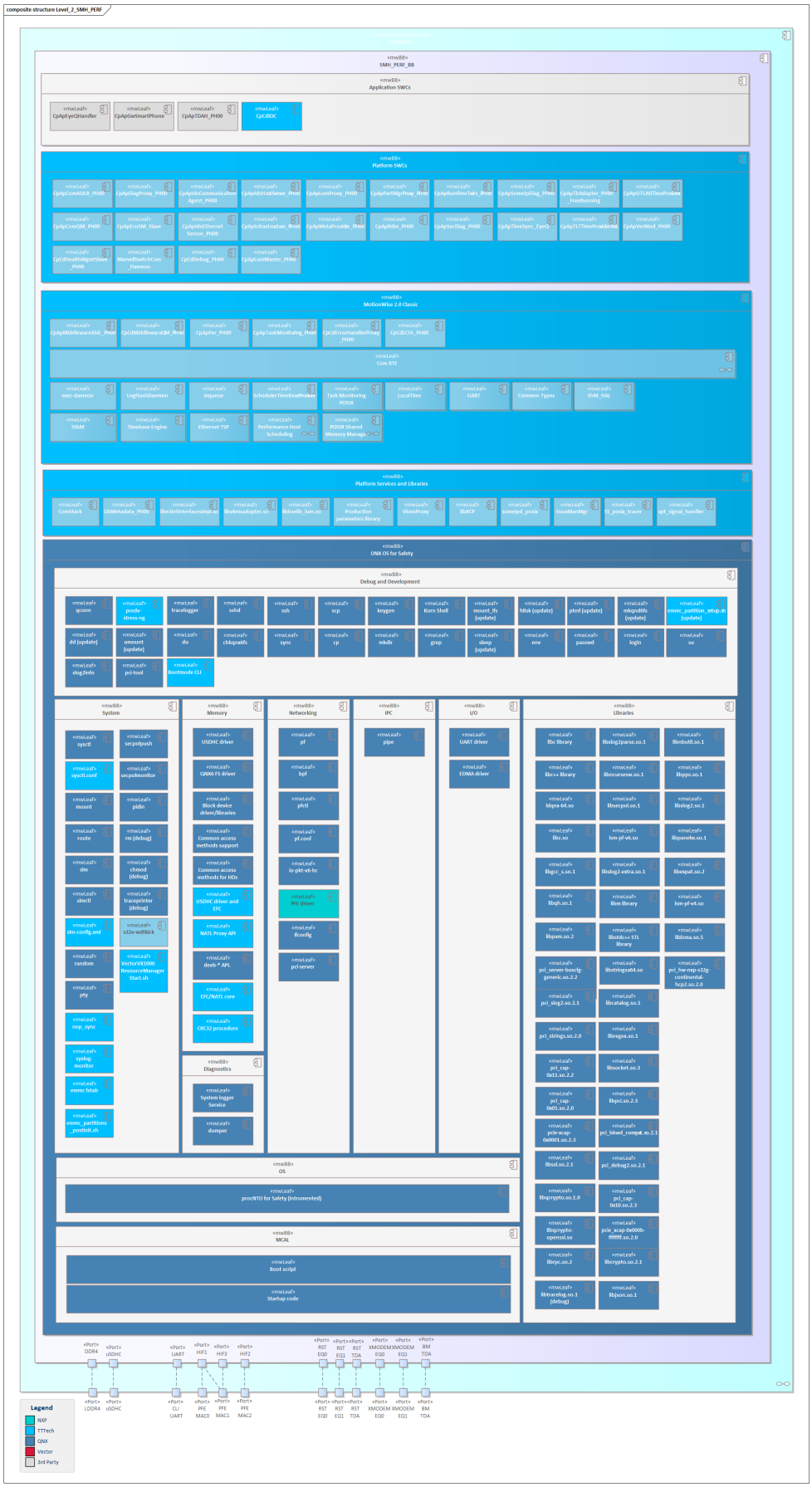
5.2 Level 2 View

5.2.1 Safety Partition - SMH_SAFE



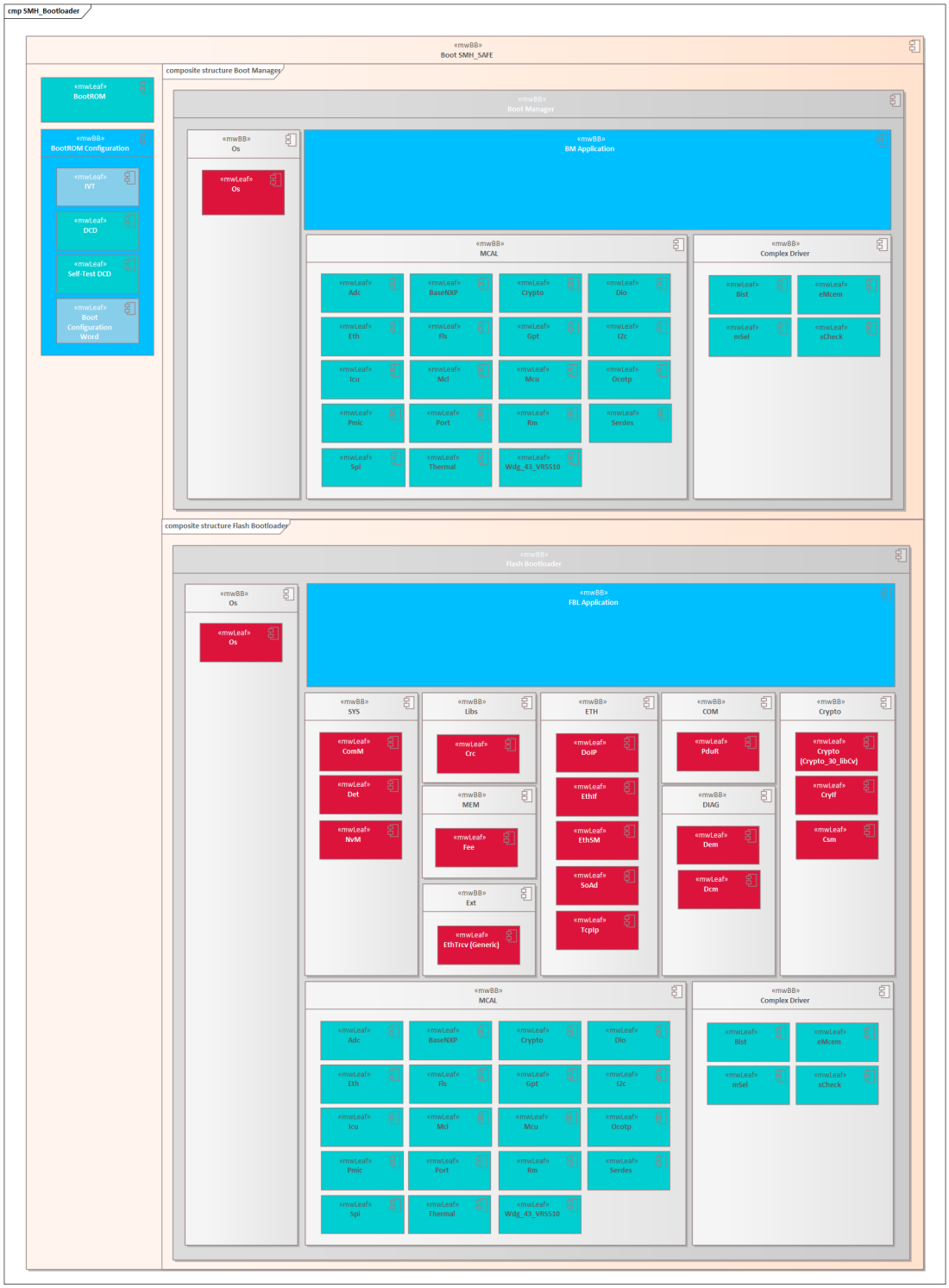
[S32GPRODP-256472]

5.2.2 Performance Partition - SMH_PERF



[S32GPRODP-256471]

5.2.3 Bootloader Safety partition



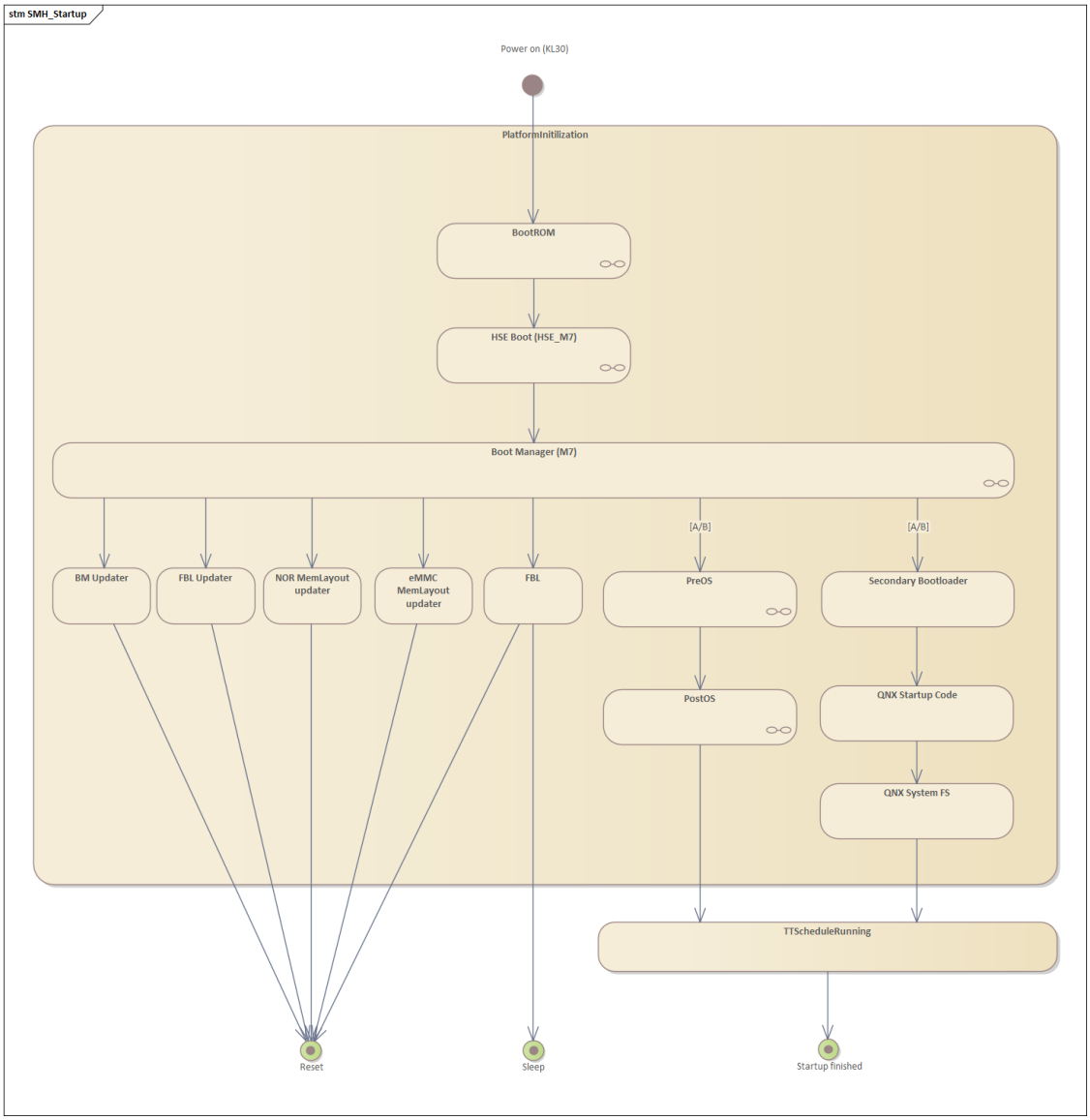
[S32GPRODP-257533]

6 Runtime View

This section aims at providing runtime views for new concepts that extend the already existing concepts in HCP2.low and MotionWise product.

This section will be extended by future SV62 concepts and based on requests.

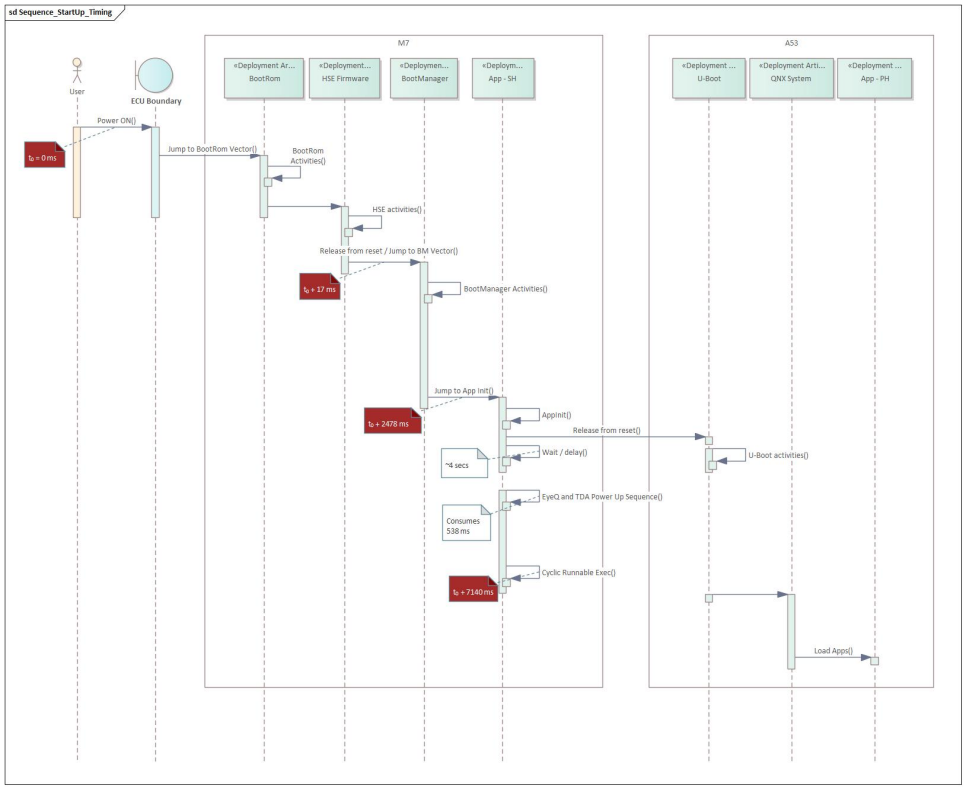
6.1 Overall System start-up



[S32GPRODP-286846]

6.1.1 System Start-Up Sequence with Timing

The following sequence diagram illustrates the start-up sequence of the SH and PH on MCU, with the timing information on key steps:

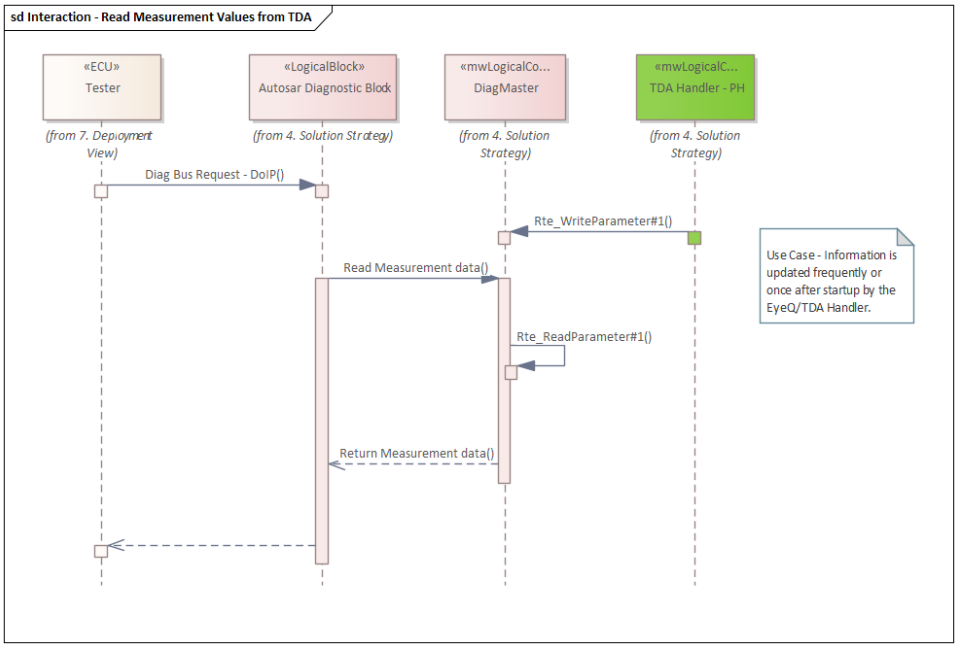


[HCP2MEP-147299]

6.2 Runtime

6.2.1 Diagnostic

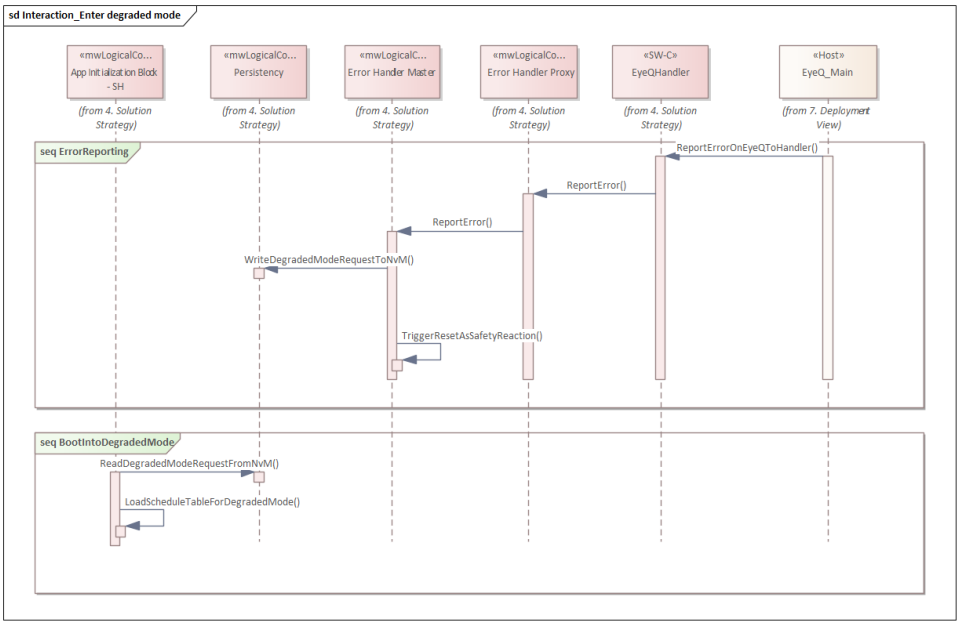
6.2.1.1 Read Measurement Values from TDA



[HCP2MEP-147242]

6.2.2 Error handling

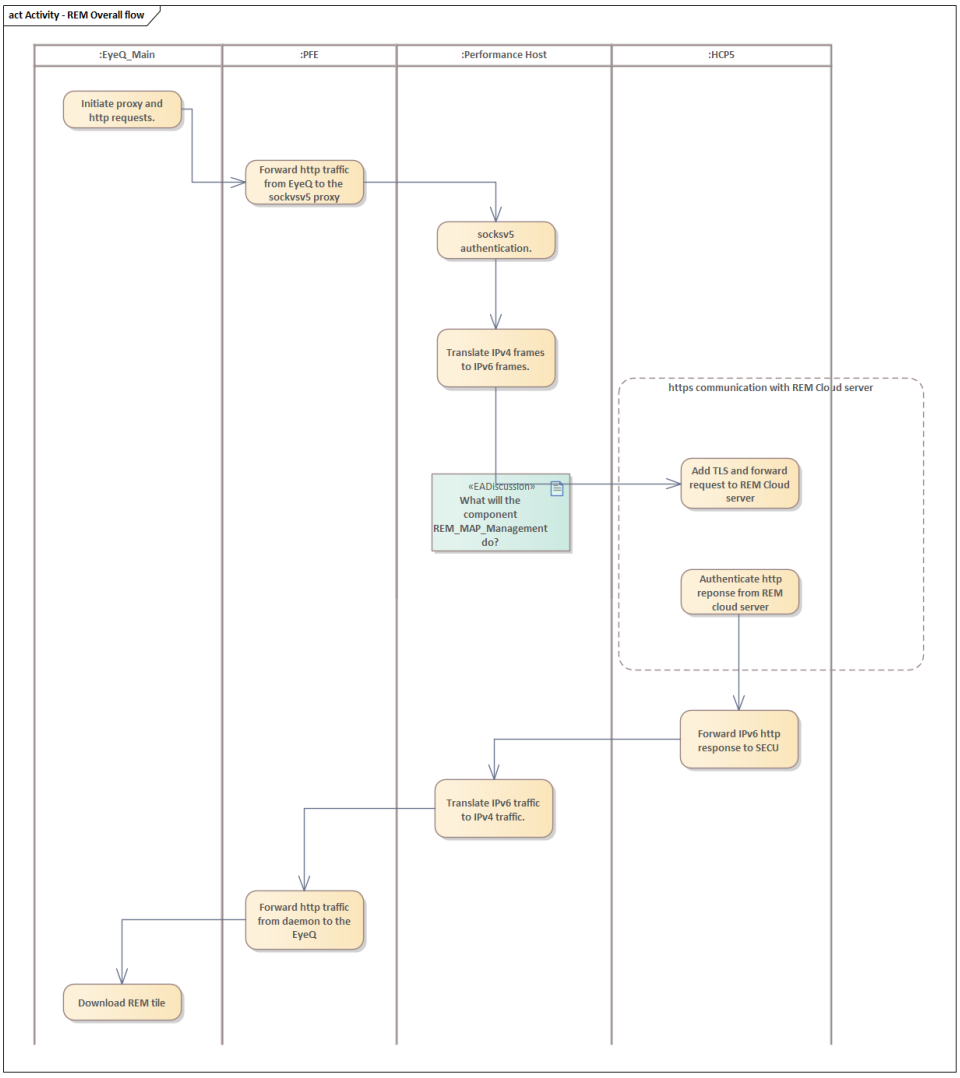
6.2.2.1 Entering Degraded Mode



[HCP2MEP-147249]

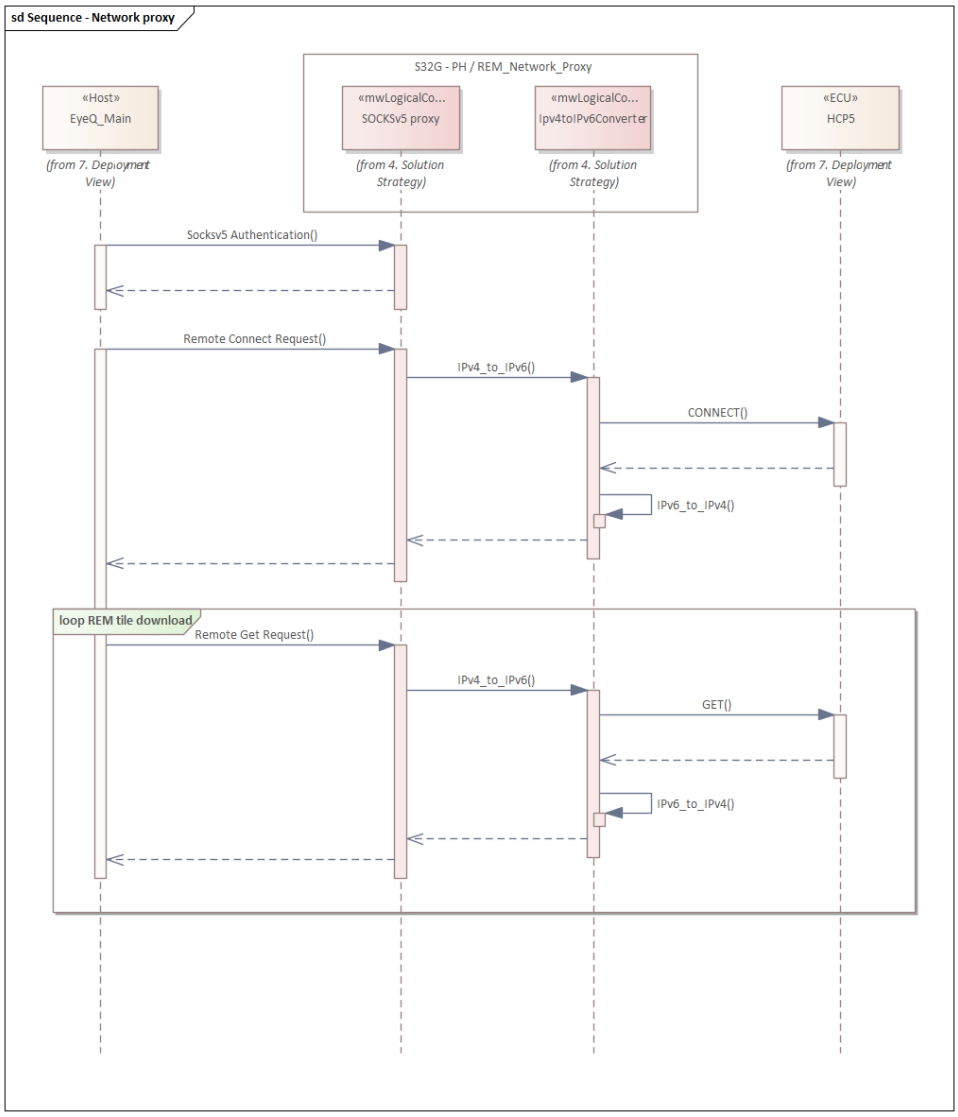
6.2.3 Driving

6.2.3.1 REM activity - overall flow



[HCP2MEP-147239]

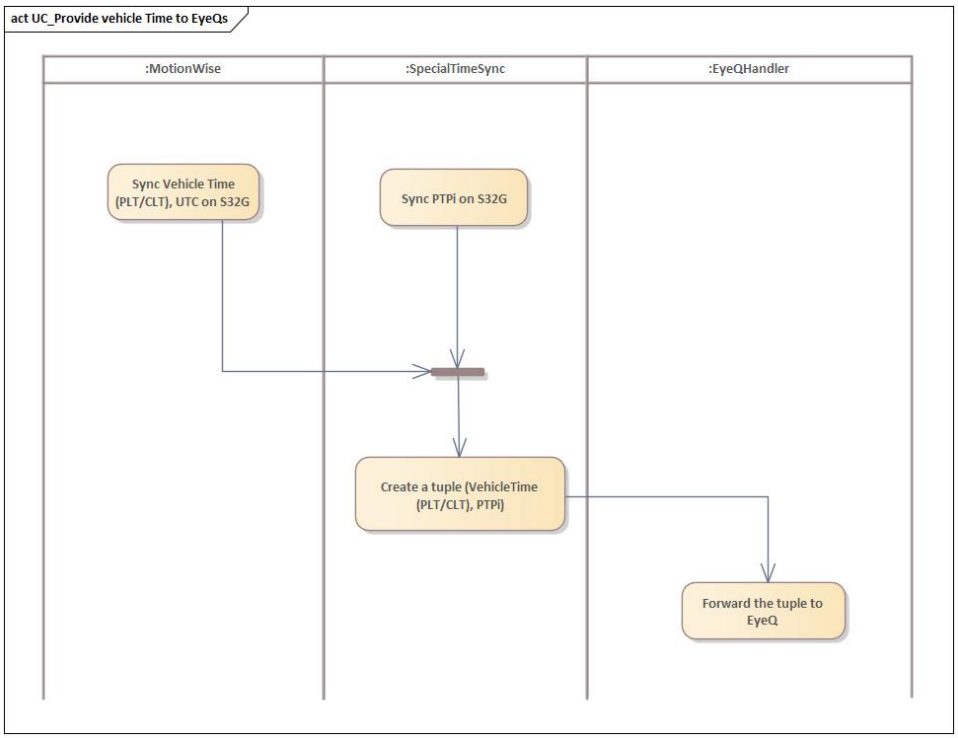
6.2.3.2 REM Network Proxy



[HCP2MEP-147236]

6.2.4 Time sync

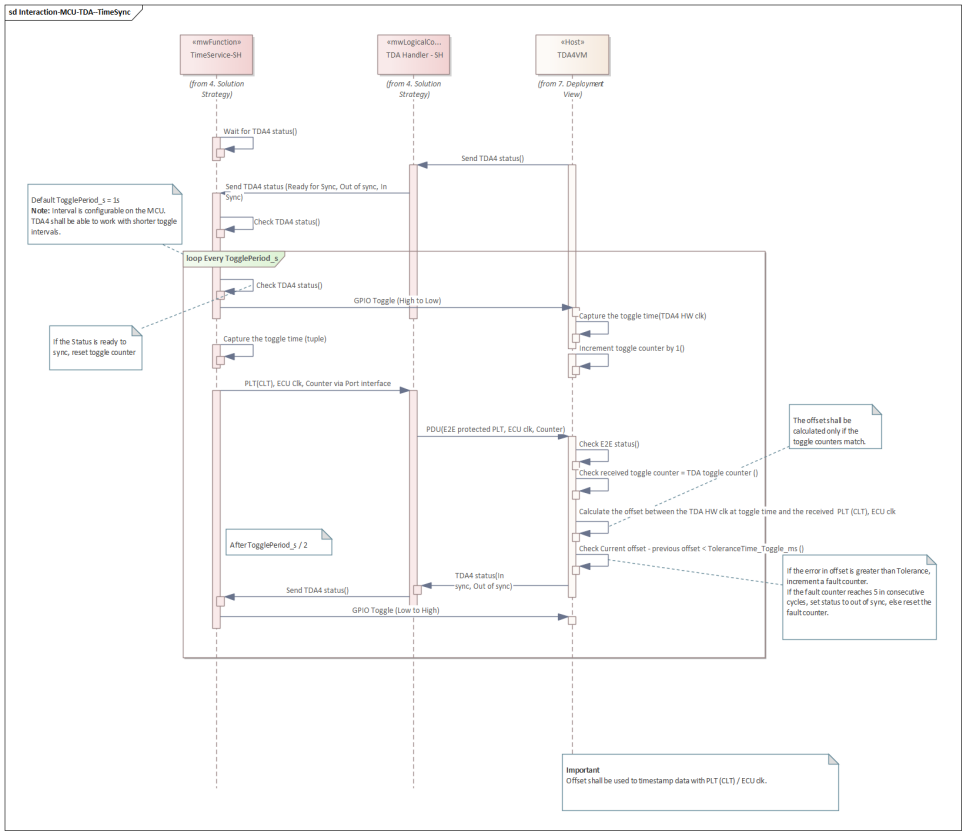
6.2.4.1 Provide Vehicle Time to EyeQs



[HCP2MEP-147255]

6.2.4.2 Provide Vehicle Time to TDA4

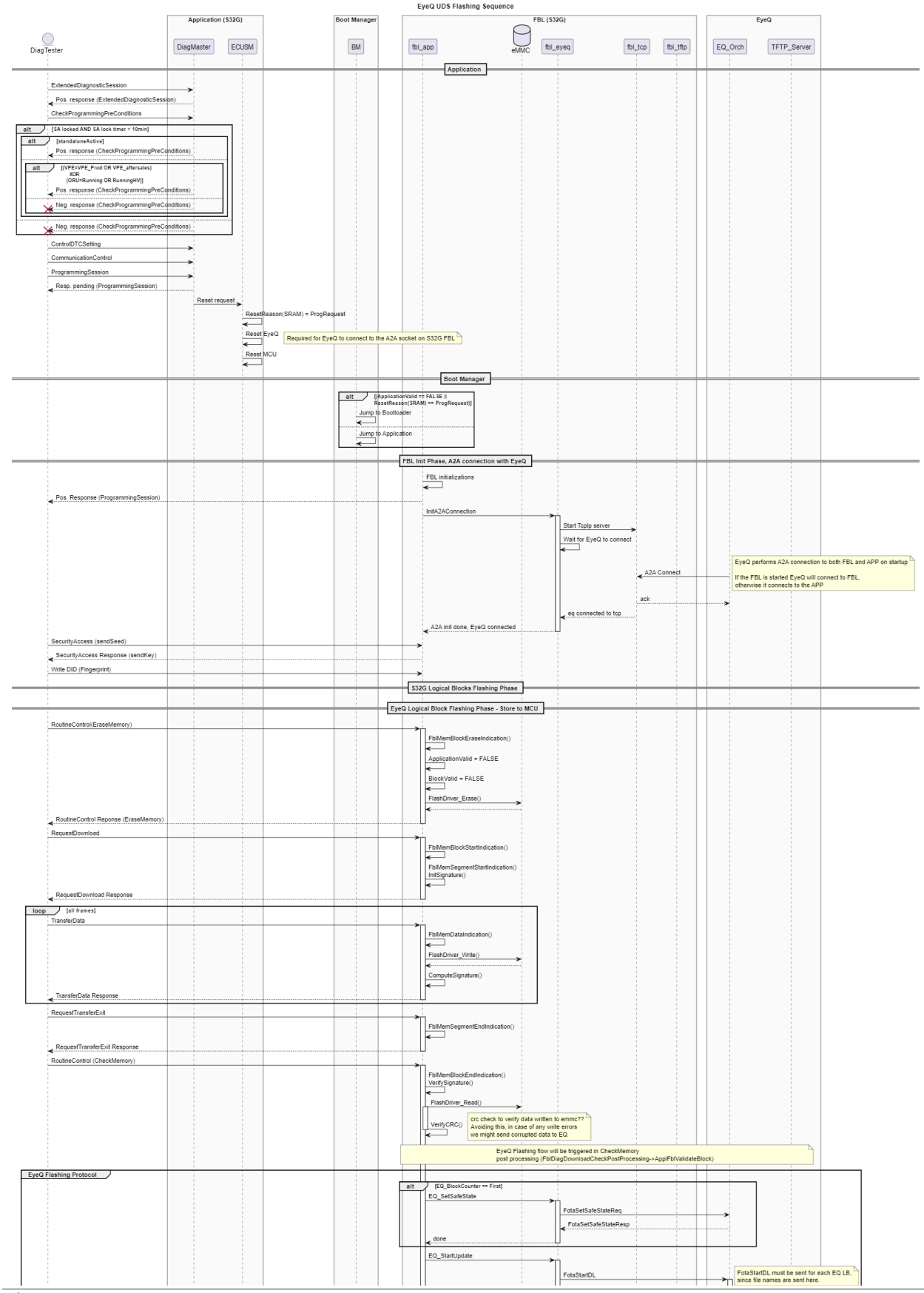
Behavioural View for UC 'Provide Vehicle Time to TDA'

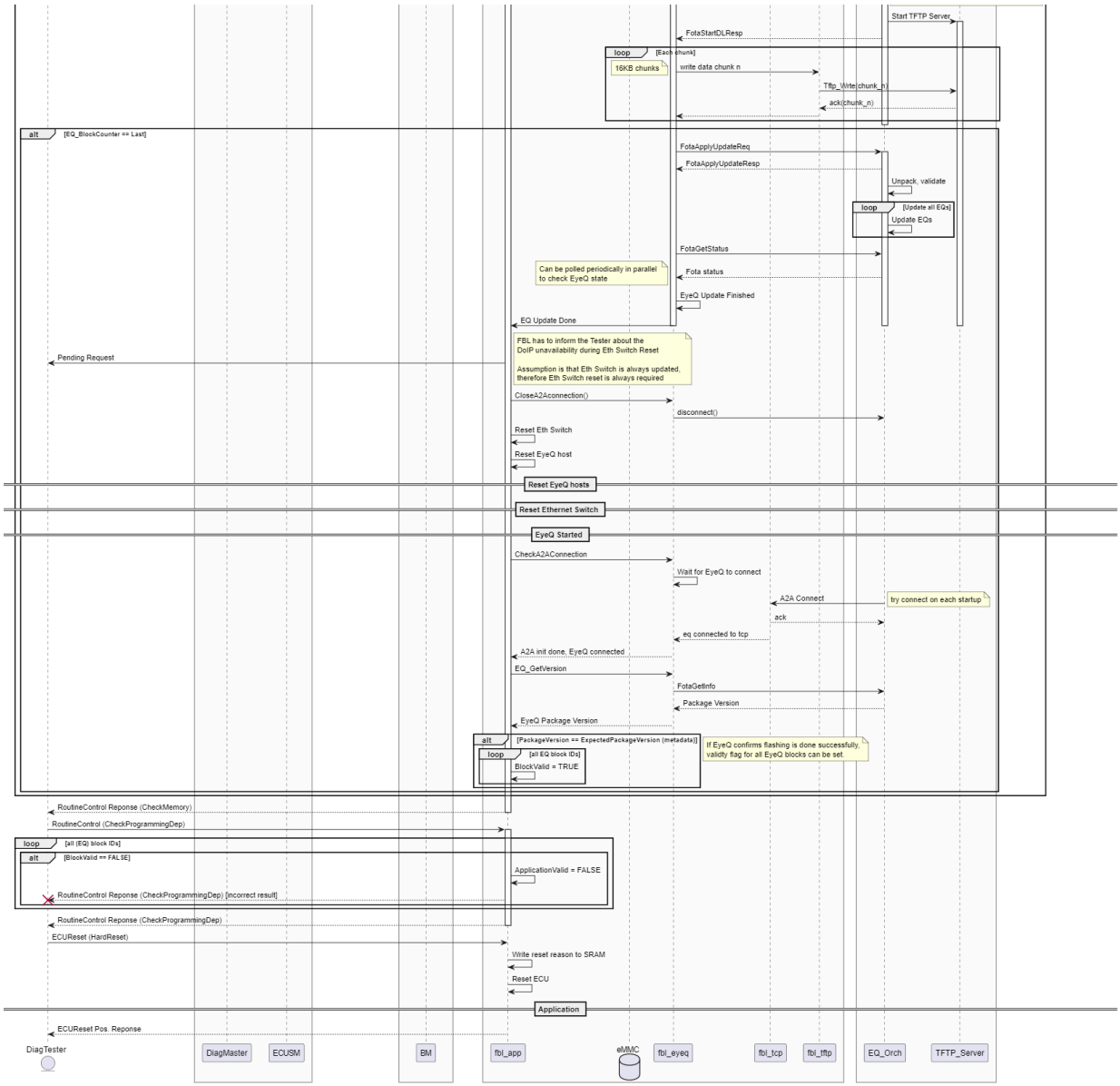


[HCP2MEP-97968]

6.2.5 SW Update

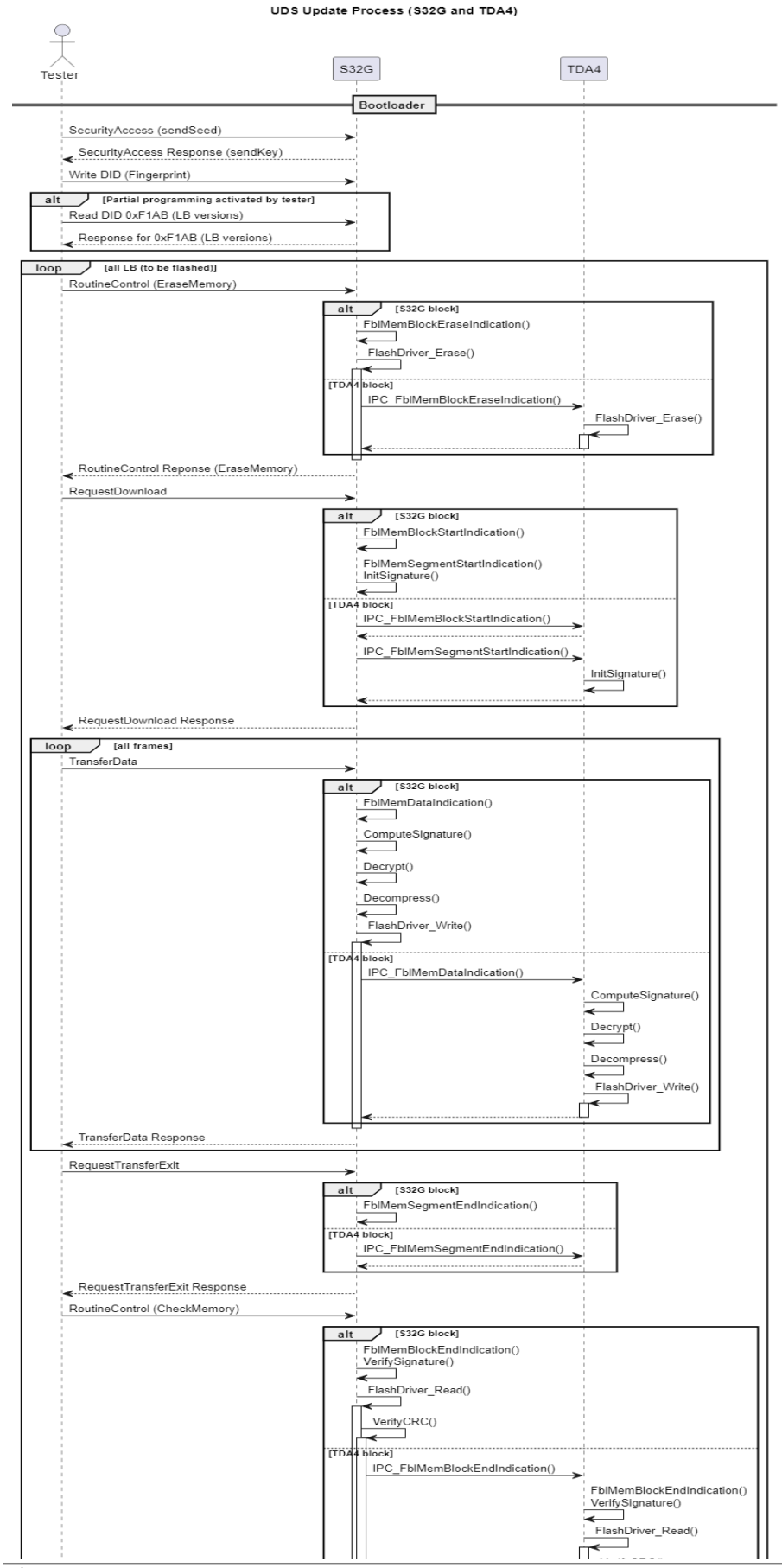
6.2.5.1 UDS Update of EyeQ

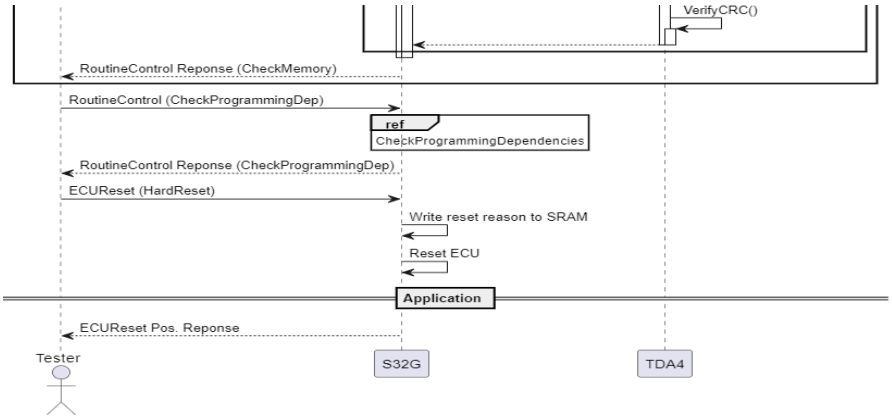




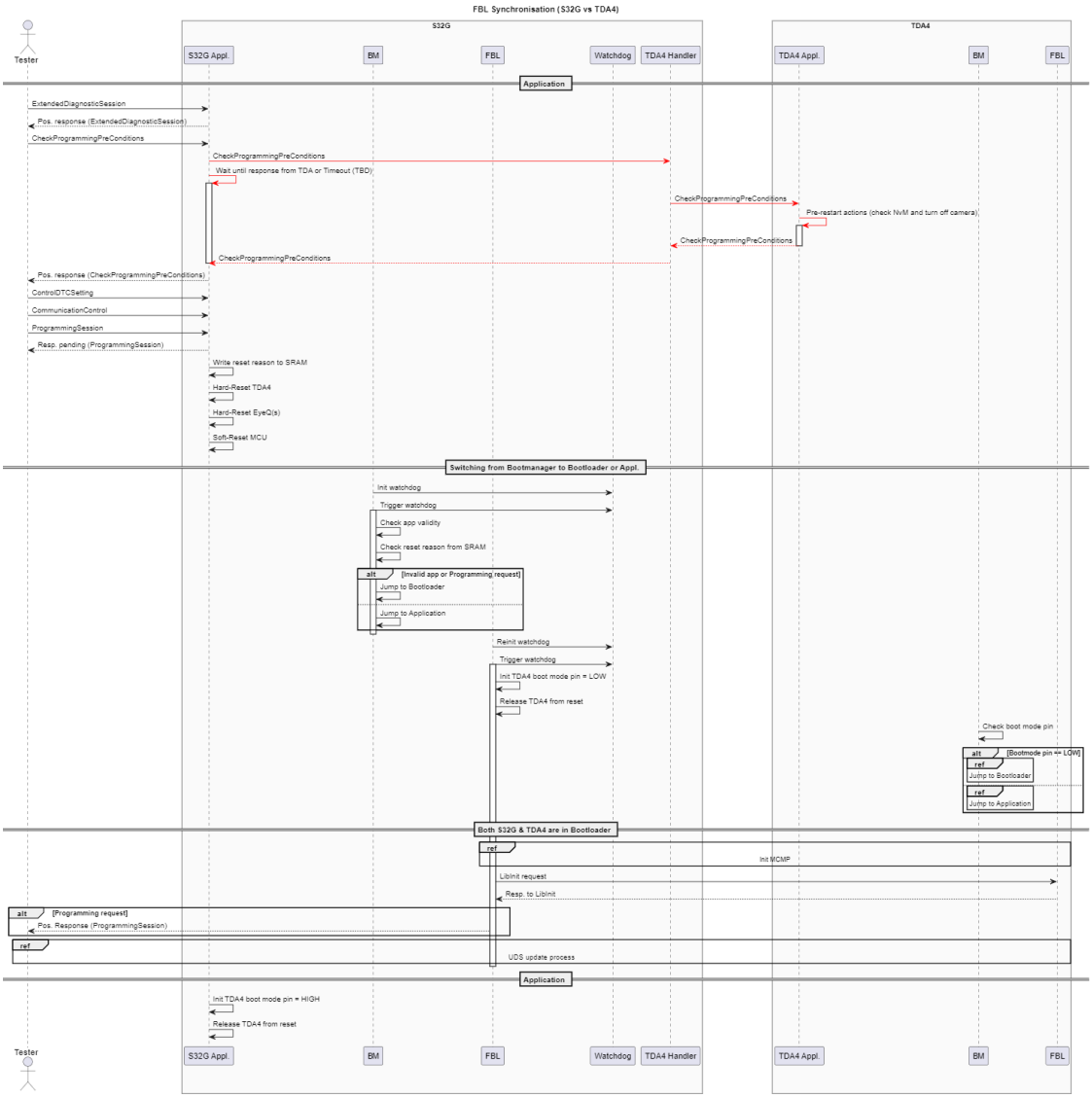
[S32GPRODP-286986]

6.2.5.2 UDS Update of TDA4





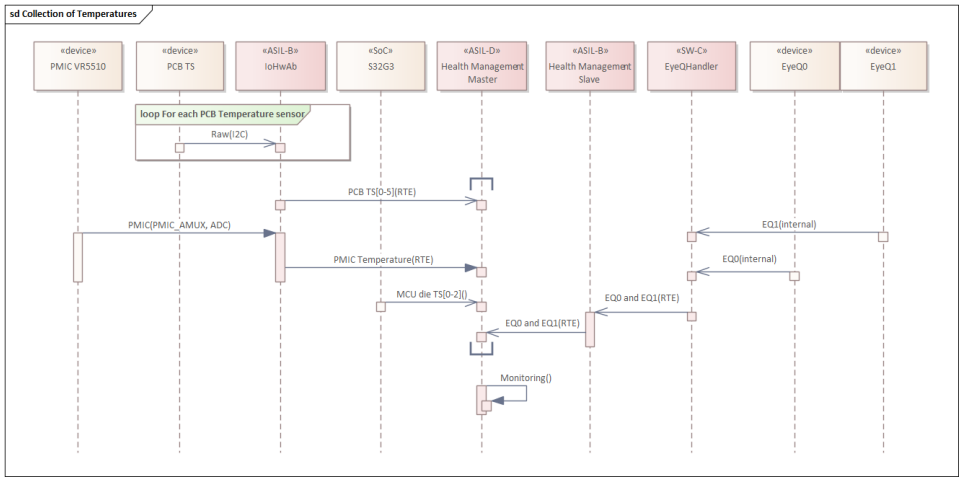
[S32GPRODP-287002]



[S32GPRODP-287001]

6.2.6 Health

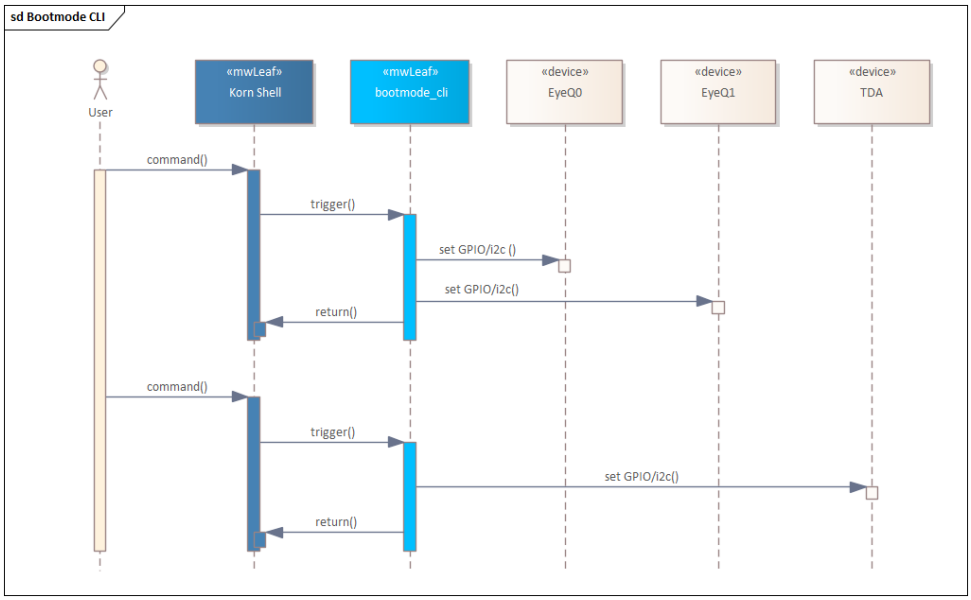
6.2.6.1 Temperatures collection



[HCP2MEP-147310]

6.2.7 Debuggability

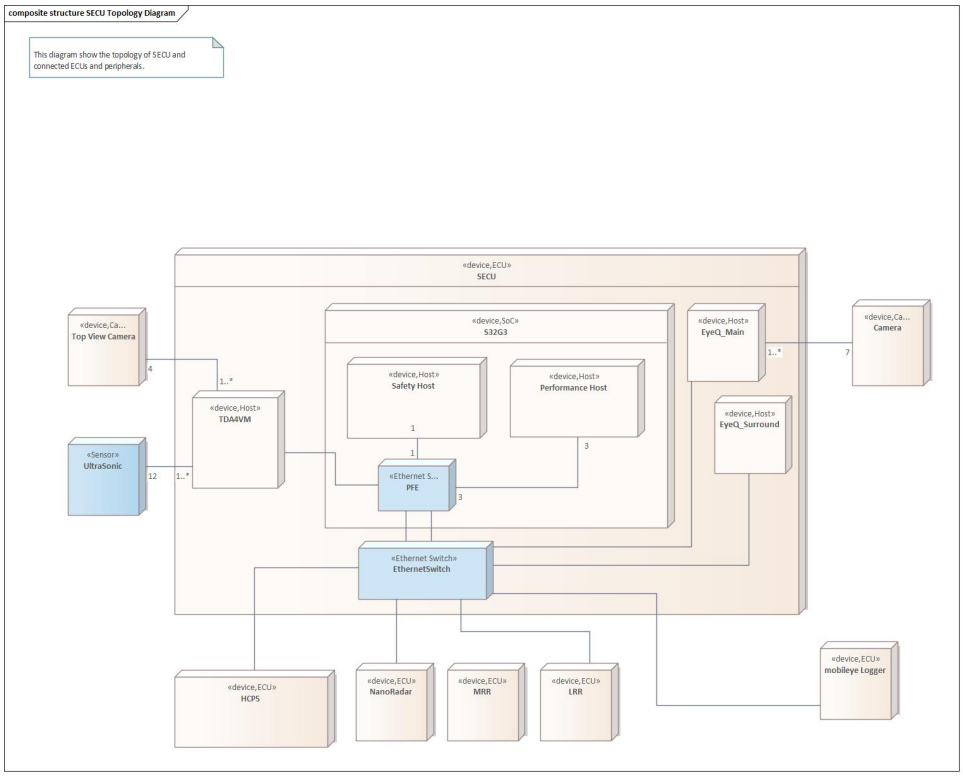
6.2.7.1 Command Line Interface commands



[S32GPRODP-244056]

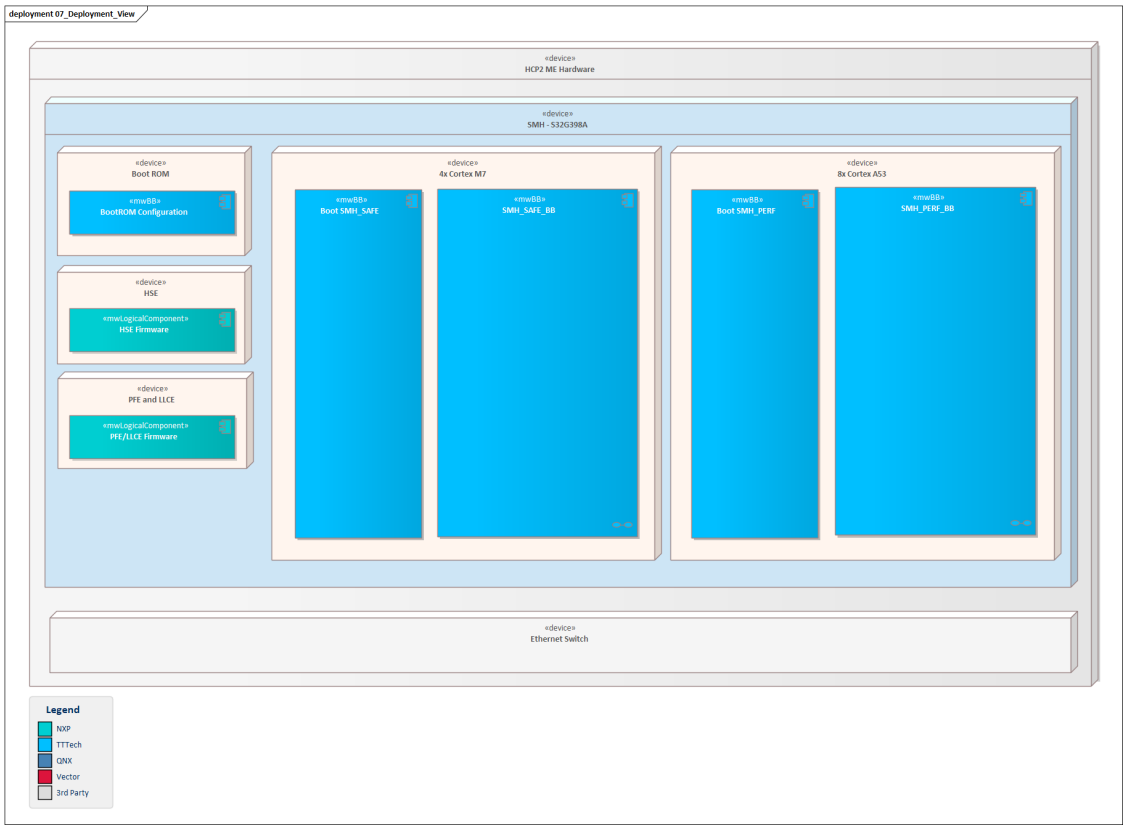
7 Deployment View

7.1 System level deployment



[HCP2MEP-147275]

7.2 S32G3 device deployment

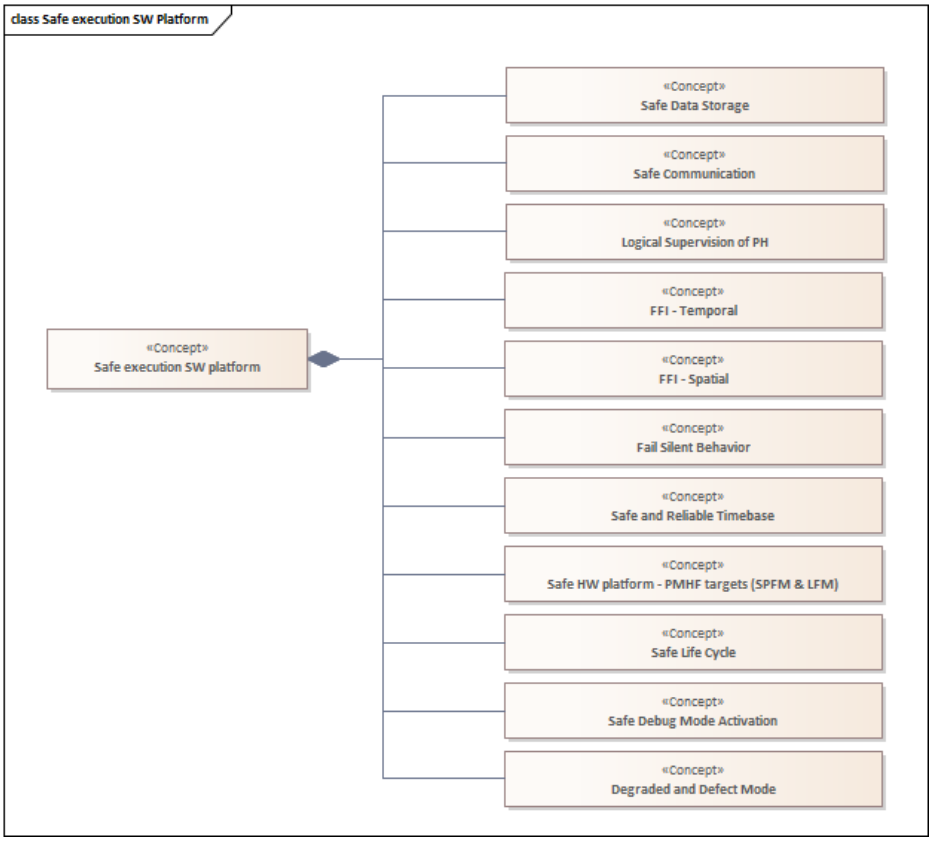


[S32GPRO DP-286955]

8 Crosscutting Concepts

8.1 High level Safety Concept (TSC)

Safe Execution SW platform (overall concept), is composed of following concepts:



[HCP2MEP-78326]