RCA

Reference CCS Architecture

*An initiative facilitated by the ERTMS Users Group
and the EULYNX consortium*

A. Component Specification
TMS-PE

REVISION HISTORY

Version	Date	Superseded documents/description/details	Change Request No
0.0.7	06-12-2019	Initial version of component specification	n/a

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Page No	**4**

TABLE OF FIGURES

LIST OF TABLES

Es konnten keine Einträge für ein Abbildungsverzeichnis gefunden werden.

1. CONCEPT (PHASE 1)

Cenelec Phase 1 is not covered in this document

2. SYSTEM DEFINITION (PHASE 2)

2.1. *System Context*

Description: The SubSys TMS-PE generates the requests to the SubSys APS-SL at the right point in time to execute the Operational Plan. According to the progress, it reports the execution status of the Operational Plan back to SubSys TMS-PE. The execution status describes the parts of the plan that are already executed and the parts of the plan that are allocated (e.g. when Movement Permission is already set). Near-time optimization is done in the TMS-PAS. Includes all traditional (non-safe) functions of interlockings and control systems, that are shifted out of APS (like Flank Protection) to SubSys TMS-PE. APS still ensures, that safety rules are applied (e.g. that Flank Protections are implemented).

Source: RCA Alpha.1 (Description has been modified)

ibd System TMS-PE - Function System Context [SysTMSPE IBD 1]

TMS-PAS : SCI_1 : SubSys TMS-PE : SCI_2 APS-SL
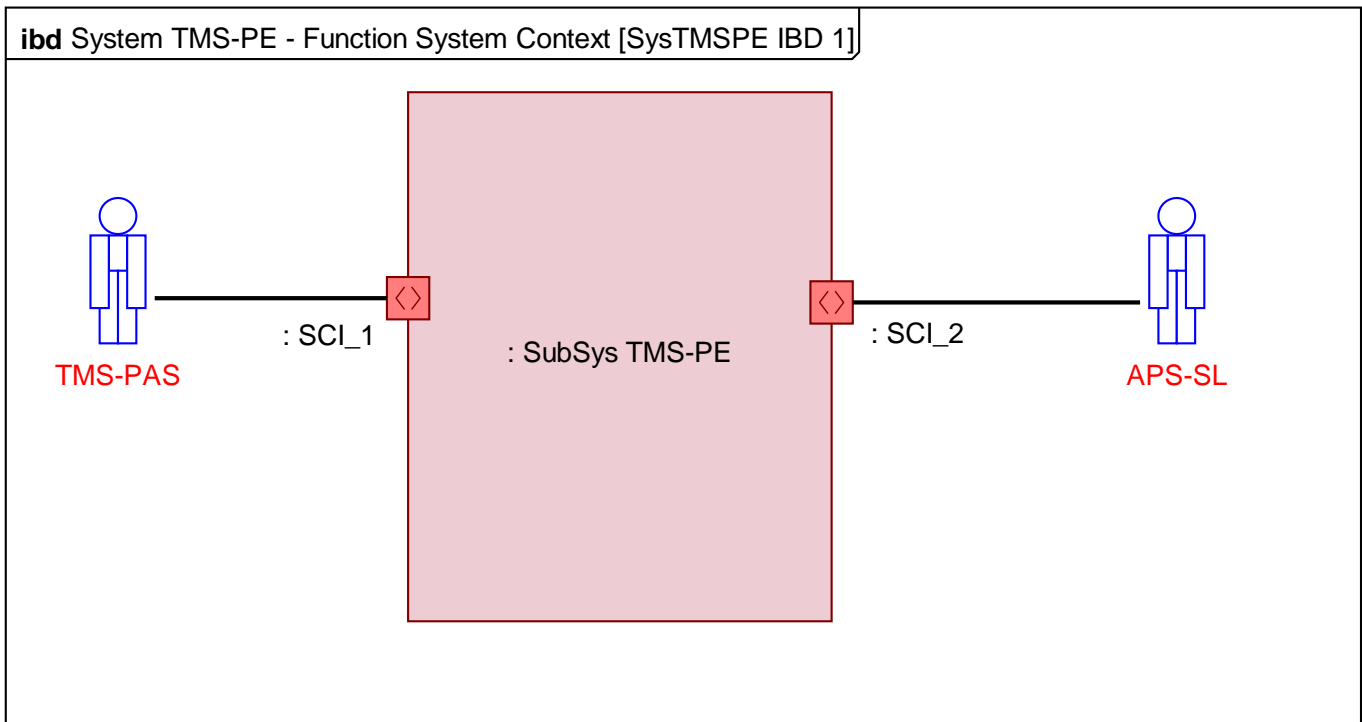
Description:

2.2. *Descriptions of Actors*

This section contains all actors interacting with Sys RCA and the Subsystems of Sys RCA. The actors in this section are external to Sys RCA and therefore not part of the system.

2.2.1. APS-SL

Description: See SubSys APS-SL

2.2.2. TMS-PAS

Description: TMS-PAS is the planning system for the traffic managment. It represents the functionality preparing and optimising the long-term and short-term production plan.

Source RCA Beta.1 (description has been modified)

2.3. *Interface definition*

2.3.1. SCI_1

Description: SCI_1 provides the operation plan from the planning part to the control part and gives the current execution statusback to the planning level. It includes the following information:

Downstream:

- The current version of the operation plan for each planned capacity object includes:

  - In the case of a capacity reservation (Train Run, Shunting Movement, Stabling):

  - The track-precise path defined for the capacity reservation

  - The order in which the different capacity reservations are allowed to use each track

  - Time constraints for departure, arrival or passthrough at cer-tain points in the track network.

   - Relations between capacity reservation for interconnections, usage of vehicles and personnel.

   - The optimized speed profile

- In the case of a planned Capacity Limitation (e.g. planned maintenance work)

  - The affected area on the topology

  - The start and end time of the limitation.

  - Details about the limitation like allowed speed.

   - The order relative to the track usage of the Capacity Reservation, such that a capacity limitation is not activated before the preceding Capacity Reservation have used the track.

Upstream:

- The execution status for each capacity object. The status is not only provided for the Capacity Object planned in the Operation Plan but also for unplanned Capacity Object (e.g. unavailable track due to a failure).

- This includes updates about actions taken by SubSys APS-SM.

Source: RCA Beta.1

2.3.2. SCI_2

Description: SCI_2 allows that the non-safety critical block requests state changes from the SubSys APS-SL and monitors the SubSys APS-SL. It includes the following main information:

Downstream:

- Request required allocation state of the elements in a route (e.g. TA)

- Request Movement Permission for a Moveable Object

. Request Usage Restriction Area

- Request Warning
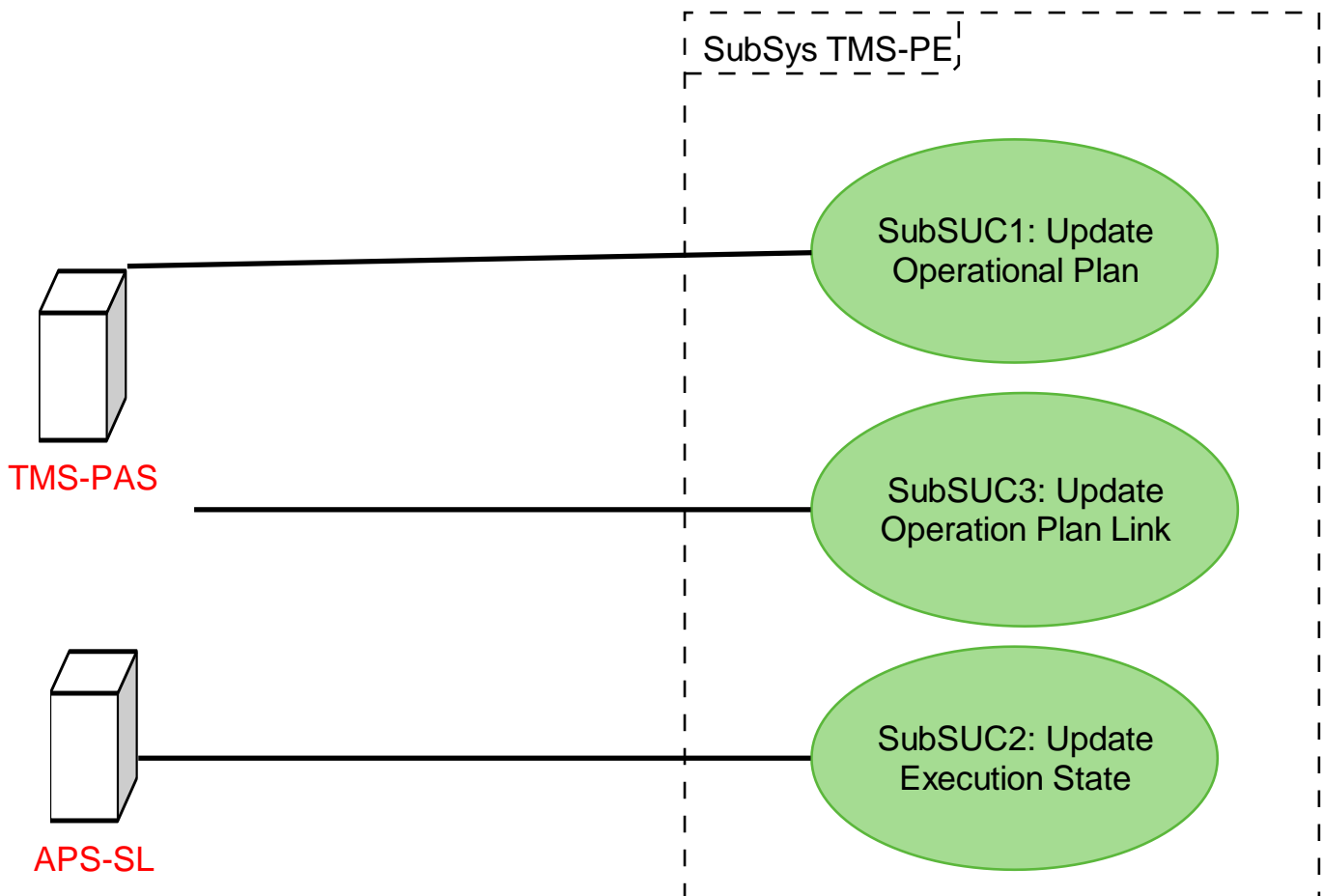
Upstream:

- Provides the current allocation state (updates) of the elements (e.g. TA)

- Provides the state of the Moveable Object, position,and extent

- Provides Usage Restriction Area

- Updates about actions taken by SubSys APS-SM

Candidate interface definition: Adaption of EULYNX SCI-CC.

Source: RCA Beta.1

2.4. UseCases

Description: ToDo

2.4.1. SubSUC1: Update Operational Plan

Description: SubSUC1: Update Operational Plan contains sequence diagrams, that shows TMS-PAS updating an Operational Plan.

2.4.1.1. Alternative Scenario: Update Operational Plan [SubS TMSPE SD 1.1.1]

SubSUC1: Update Operational Plan

Alternative Scenario: Update Operational Plan [SubS TMSPE SD 1.1.1]

Context

Todo

Precondition:

SubSys TMS-PE is operational.

Interaction 1.1.1.A

1. - TMS-PAS sends SubSys TMS-PE an updated Operational Plan.

Postcondition:

SubSys TMS-PE has updated its internal state according to the updated Operational Plan.
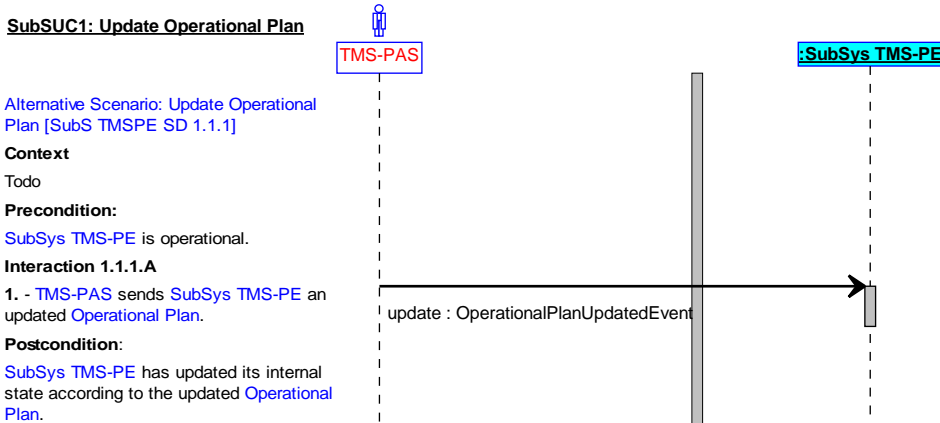
update : OperationalPlanUpdatedEvent

Figure 1 Alternative Scenario: Update Operational Plan [SubS TMSPE SD 1.1.1]

2.4.2. SubSUC2: Update Execution State

Description: SubSUC2: Update Execution State contains sequence diagrams that shows SubSys TMS-PE publishes update of the Execution State. Such updates can be position of Moveable Object, changes on Movement Permission, etc.

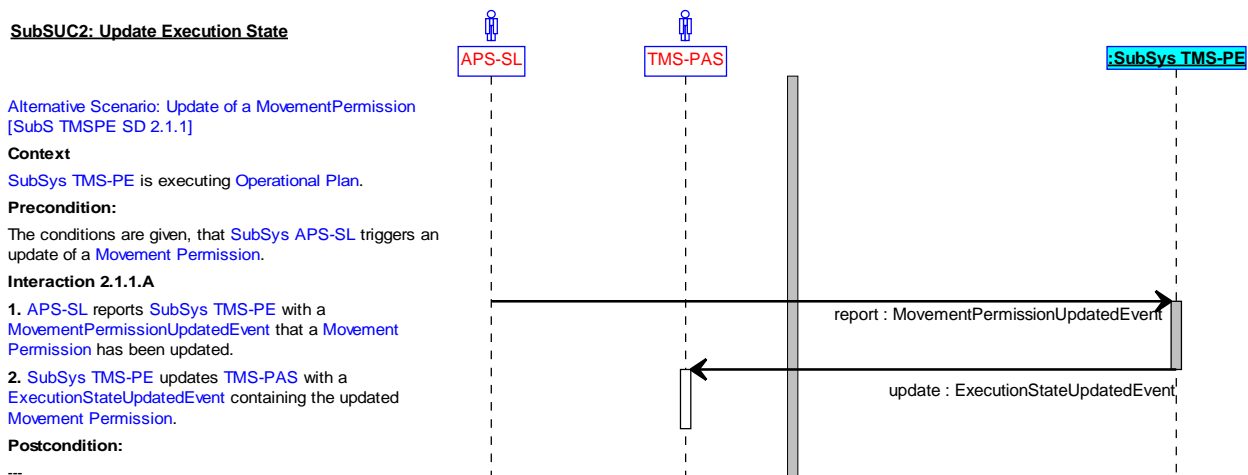### 2.4.2.1. Alternative Scenario: Update of a MovementPermission [SubS TMSPE SD 2.1.1]

SubSUC2: Update Execution State

Alternative Scenario: Update of a MovementPermission [SubS TMSPE SD 2.1.1]

Context

SubSys TMS-PE is executing Operational Plan.

Precondition:

The conditions are given, that SubSys APS-SL triggers an update of a Movement Permission.

Interaction 2.1.1.A

1. APS-SL reports SubSys TMS-PE with a MovementPermissionUpdatedEvent that a Movement Permission has been updated.

2. SubSys TMS-PE updates TMS-PAS with a ExecutionStateUpdatedEvent containing the updated Movement Permission.

Postcondition:

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report : MovementPermissionUpdatedEvent

update : ExecutionStateUpdatedEvent

Figure 2 Alternative Scenario: Update of a MovementPermission [SubS TMSPE SD 2.1.1]

2.4.2.2. Alternative Scenario: Update position of a Moveable Object [SubS TMSPE SD 2.1.1]
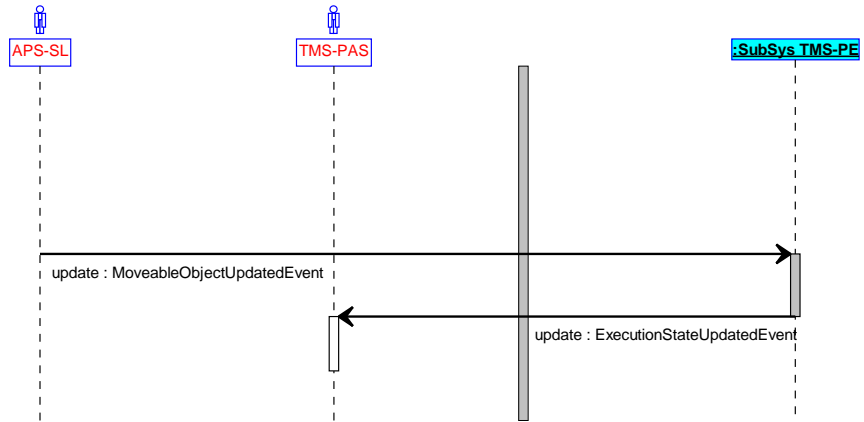

Figure 3 Alternative Scenario: Update position of a Moveable Object [SubS TMSPE SD 2.1.1]

2.4.3. SubSUC3: Update Operation Plan Link

Description: SubSUC3: Update Operation Plan Link contains sequence diagrams that shows the update of an Operational Plan Event Link.

2.4.3.1. Alternative Scenario: Update Operation Plan Link [SubS TMSPE SD 3.1.1]

Figure 4 Alternative Scenario: Update Operation Plan Link [SubS TMSPE SD 3.1.1]

3.   RISK ANALYSIS AND EVALUATION (PHASE 3)

Cenelec Phase 3 is not covered in this document

4. SYSTEM REQUIREMENTS (PHASE 4)

No items found for : Model