

# RCA



Reference CCS Architecture

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

## A. Component Specification APS-MT

**This is a snapshot version. Please use it with caution.**  
There is ongoing work. The content of this document  
may be unfinished, will likely contain errors and can be  
changed without prior notice.

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## 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Version	Date	Superseded documents/description/details	Change Request No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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**Es konnten keine Einträge für ein Abbildungsverzeichnis gefunden werden.**

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**1. CONCEPT (PHASE 1)**

Cenelec Phase 1 is not covered in this document

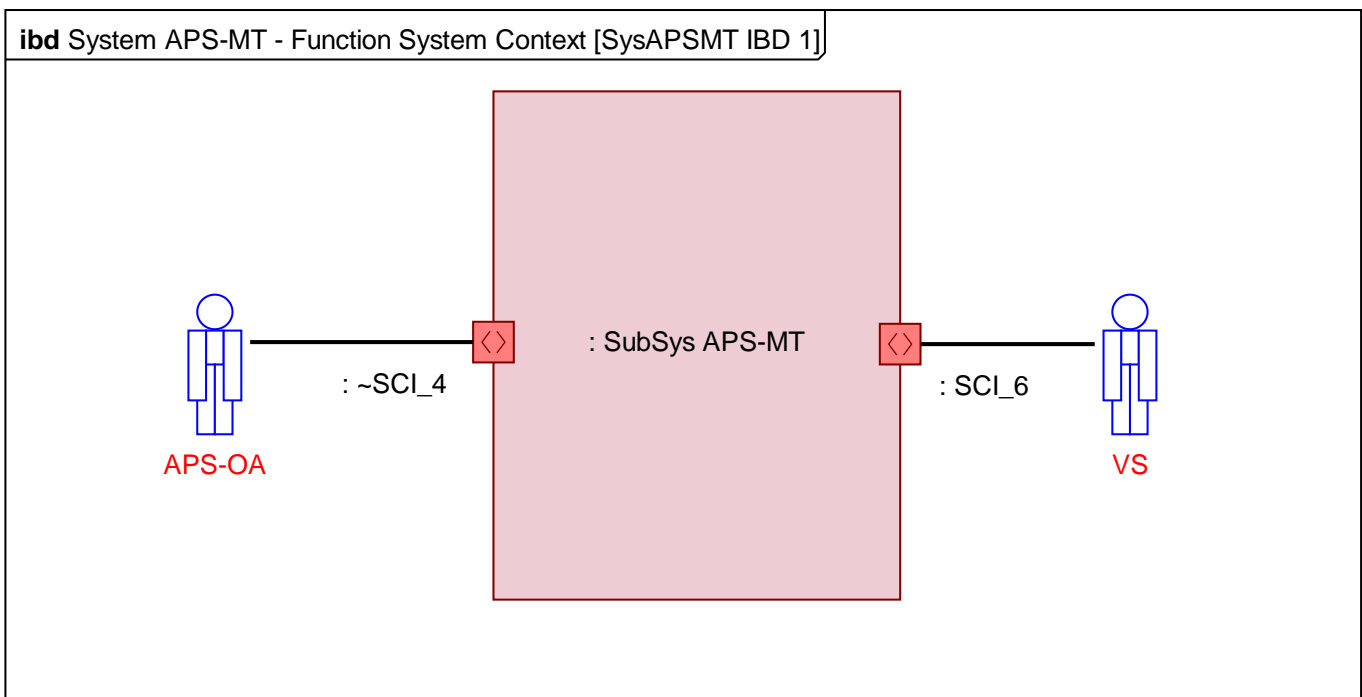
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## 2. SYSTEM DEFINITION (PHASE 2)

### 2.1. System Context

Description: [SubSys APS-MT](#) communicates with [SubSys VS](#) using the [ETCS](#) communication protocol (SUBSET 026). Among others it translates the movement permissions to [ETCS Movement Authority](#)s and send them to the [SubSys VS](#). In the other direction it will receive the train position reports, train data, etc. from the [SubSys VS](#) and forward them to [SubSys APS-OA](#). Only radio-based [ETCS](#) is supported.

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



Description:

### 2.2. Descriptions of Actors

#### 2.2.1. APS-OA

Description: See [SubSys APS-OA](#)

#### 2.2.2. VS

Description: See [SubSys VS](#)

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## 2.3. *Interface definition*

### 2.3.1. **SCI\_4**

Description: This interface is a single device-oriented interface, which can provide or consume only part of the control or monitor information. It includes the following information:

Downstream:

- Requests the required allocation state of the elements in a route (e.g. [TA](#))
- Grant [Movement Permissions](#) directly to the [Moveable Object](#) or indirectly via a trackside signal.
- Warn a [Moveable Object](#) (e.g. [TracksidePerson](#))

Upstream:

- Provides the current allocation state (updates) of the elements in a route (e.g. [TA](#)).
- Provides information about the position and extent (length) of a [Moveable Object](#). The information can already be assigned to a [Moveable Object](#) or be just location based without an assignment to a [Moveable Object](#) (e.g. [Occupancy](#)).

Source: RCA Beta.1

### 2.3.2. **SCI\_6**

Description: [SCI\\_6](#) is the existing [ERTMS](#) interface ([ETCS](#) trackside-[ETCS OBU](#)) with additional functions that are necessary for the [RCA](#). Needed change requests will be handled using established [CR](#) processes. An example for such a [CR](#) would be inclusion of more train data from the vehicle "upwards" e.g. the current brake capabilities (for lambda and gamma trains).

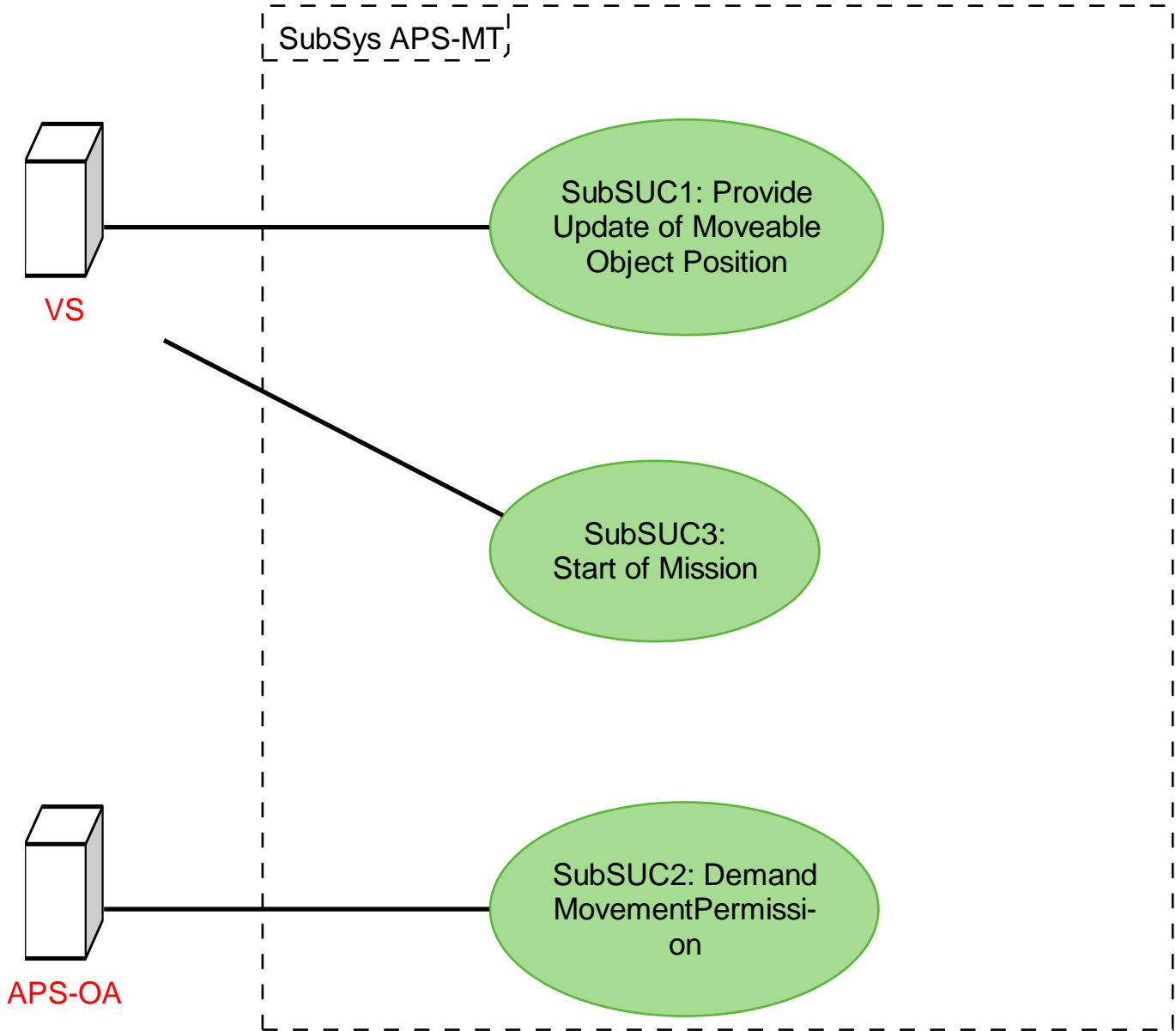
Candidate interface definition: [ERTMS](#) SUBSET-026 System Requirements Specification, ongoing work at S2R, EUG, UIC.

Source: RCA Beta.1



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## 2.4. UseCases



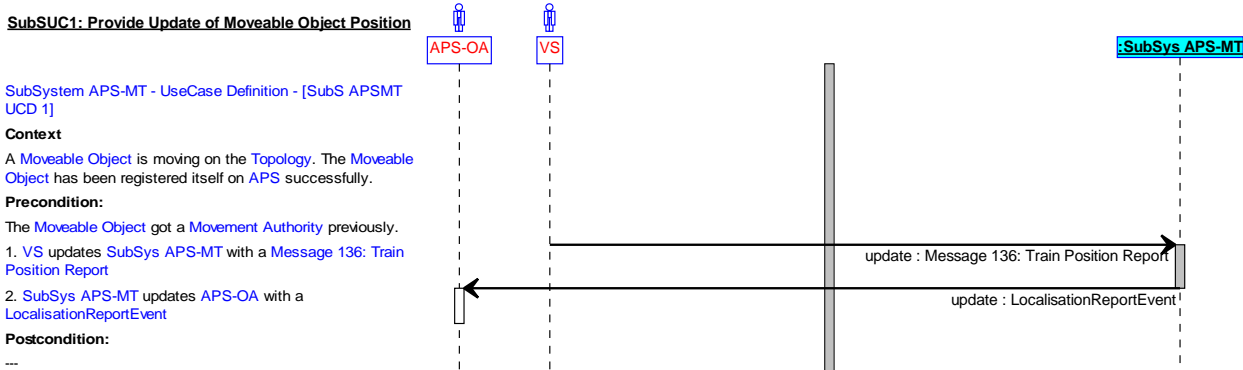
Description: Use cases of [SubSys APS-MT](#)

### 2.4.1. SubSUC1: Provide Update of Moveable Object Position

Description: Use case for [Moveable Object](#) updating its position.

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### 2.4.1.1. *Alternative Scenario: Provide Update of Moveable Object Position [SubS APSMT SD 1.1.1]*

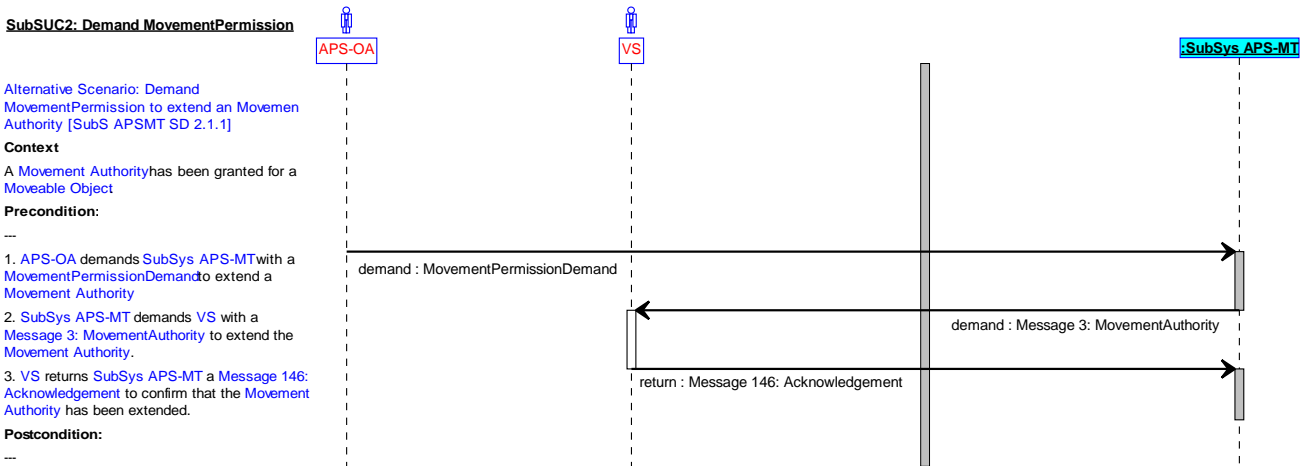


**Figure 1 Alternative Scenario: Provide Update of Moveable Object Position [SubS APSMT SD 1.1.1]**

### 2.4.2. **SubSUC2: Demand MovementPermission**

Description: Use case for demanding a new [Movement Permission](#)

#### 2.4.2.1. *Alternative Scenario: Demand MovementPermission to extend an Movement Authority [SubS APSMT SD 2.1.1]*



**Figure 2 Alternative Scenario: Demand MovementPermission to extend an Movement Authority [SubS APSMT SD 2.1.1]**

### 2.4.3. **SubSUC3: Start of Mission**

Description: Use Case which shows a [Moveable Object](#) registering itself to [APS](#).

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### 2.4.3.1. *Alternative Scenario: Moveable Object starts up and registers successfully [SubS APSMT SD 3.1.1]*

**SubSUC3: Start of Mission**

Alternative Scenario: Moveable Object starts up and registers successfully [SubS APSMT SD 3.1.1]

**Context**

The Moveable Object is offline and not registered in APS. An Occupancy has been created in which the Moveable Object stands.

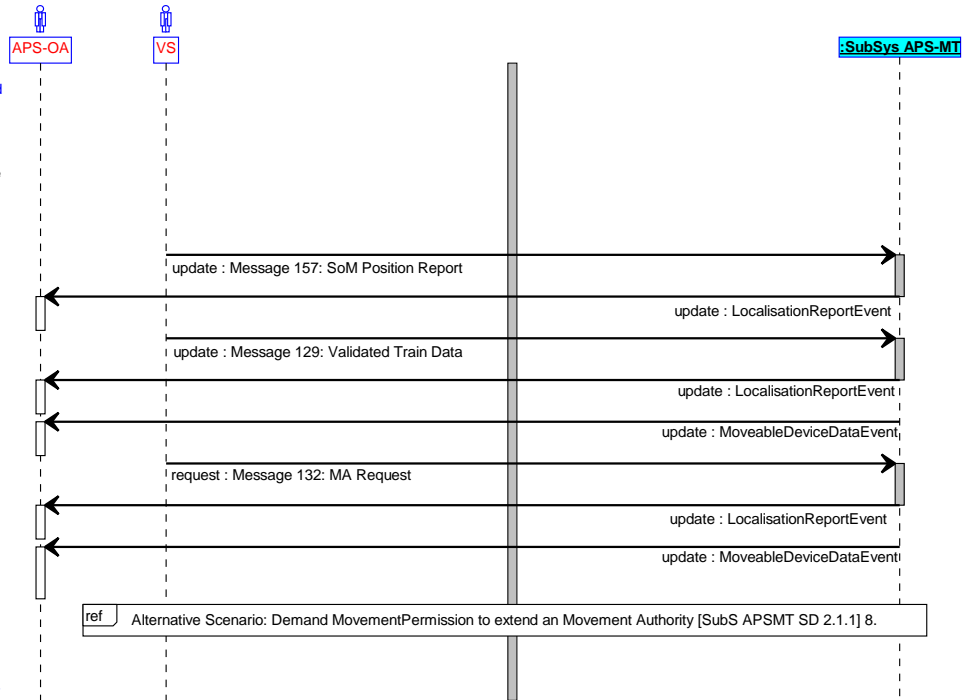
**Precondition:**

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1. VS updates SubSys APS-MT with a Message 157: SoM Position Report
2. SubSys APS-MT updates APS-OA with a LocalisationReportEvent
3. VS updates SubSys APS-MT with a Message 129: Validated Train Data
4. SubSys APS-MT updates APS-OA with a LocalisationReportEvent
5. SubSys APS-MT updates APS-OA with a MoveableDeviceDataEvent on the train data
5. VS requests SubSys APS-MT for a Movement Authority
6. SubSys APS-MT updates APS-OA with a LocalisationReportEvent
7. SubSys APS-MT updates APS-OA with a MoveableDeviceDataEvent on the request of a Movement Authority
8. Execution of SubS APSMT SD 2.1.1]

**Postcondition:**

The Moveable Object has been registered in APS.  
The Moveable Object has got a Movement Authority



**Figure 3 Alternative Scenario: Moveable Object starts up and registers successfully [SubS APSMT SD 3.1.1]**

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**3. RISK ANALYSIS AND EVALUATION (PHASE 3)**

Cenelec Phase 3 is not covered in this document

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#### **4. SYSTEM REQUIREMENTS (PHASE 4)**

No items found for : Model