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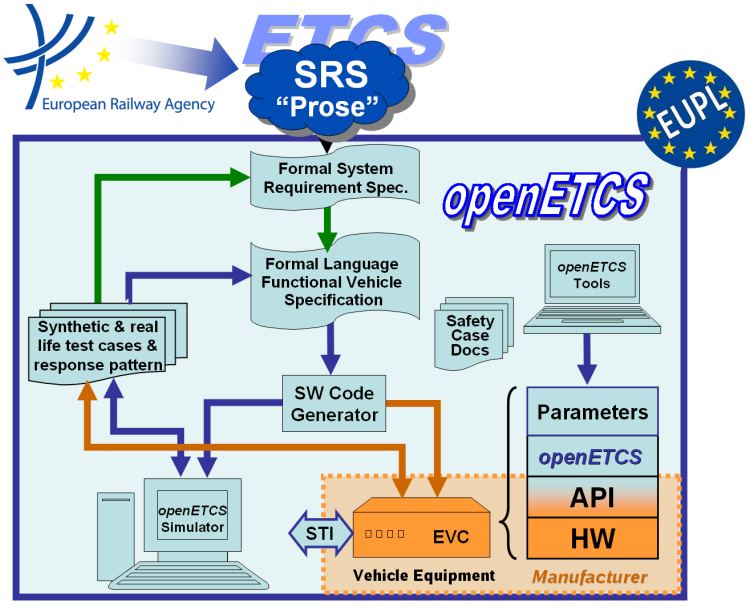
Work-Package 4: “V&V”

ETCS Specification Findings

Findings of ETCS specification analyses

Stefan Rieger

September 2013



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ETCS Specification Findings

Findings of ETCS specification analyses

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Description of work

Prepared for openETCS@ITEA2 Project

Abstract: This document lists analysis results of the ETCS specification and accompagnying standards that indicate problems such as unclearities, inconsistencies, ambiguities, incompleteness or errors. For now it is part of TWT's model verification user story but the goal is to extend its scope.

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1 Purpose of this Document

This document lists findings in the ETCS specification and accompagnying standards indicating problems such as inconsistencies, ambiguities, incompleteness or errors that arise during analysis or modelling. The goals are the following:

- Clarify and correct problems to help in system modelling
- Indicate issues in the standard for future improvement
- ...

This document is to be considered as “living document” that is continuously extended during the runtime of the project. Solutions to issues or workarounds shall be added when available.

2 List of Issues

2.1 Subset 026 3.6 Location Principles, Train Position and Train Orientation

Issue #1 (3.6.1.3 Train Position): What is the difference between the *estimated train front end position* and the *train confidence interval*? Both values are contained in the *train position information*. It seems that the *train confidence interval* is a more conservative approximation. If this is the case, how exactly is the *estimated train front end position* defined?

Resolution: Write resolution here...

2.2 Subset 026 5.4 Procedure Start of Mission

Issue #2 (5.4.2.2 Train Data): It is not clear what the train data consists of.

Issue #3 (5.4.3.2 State S1 - Driver-ID Validation): The specification states that the driver revalidates the Driver-ID. So it can be assumed that the system relies on correct validation by the driver. Is this true? When does the Driver-ID become invalid or unknown? At End of Mission? The same holds for the *train running number*.

Issue #4 (5.4.3.2 State S1 - Virtual Balise Cover): Virtual balise cover is not properly specified. The same holds for the process of setting/removing virtual balise cover. For now this feature is omitted in the models.

Issue #5 (5.4.3.2 State S2 - Enter/Re-validate Level): The specification distinguishes the following three cases

1. Entering level (if state *unknown*)
2. Re-validate level (if state *invalid*)
3. Re-enter level (if state *invalid*)

The purpose of this distinction is not clear as entering the level suffices (the current setting is invalid or unknown and thus irrelevant).

Issue #6 (5.4.3.2 State S3 - Selection of Radio Network): It is not mentioned that a valid *radio network ID* must stored in the onboard, but this is necessary because the driver may not select a new radio network. The type of the radio network IDs is not mentioned, for the modelling strings are assumed.

Issue #7 (5.4.3.2 State S3 - RBC-ID): What is the difference between the *RBC-ID* that may be invalid and the *last stored RBC-ID*? Why can the latter not be invalid?

Issue #8 (5.4.3.2 State S3 - EIRENE Short Number): Clarify *EIRENE* short number and the *trackside call routing function*.

Issue #9 (5.4.3.2 State D7 - Mobile Terminal registered): Definition of a mobile terminal missing. How many mobile terminals are there? Is this equivalent to radio network registration (see state S3)? The latter is assumed for the initial models.

References