

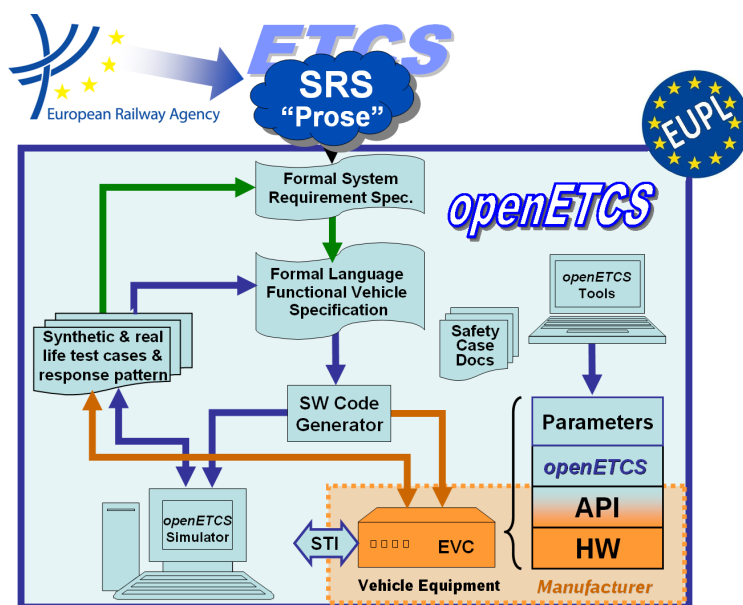
Work Package 3: “Modelling”

openETCS Modelling Work Package

Description of Work

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**OETCS/WP3/DescriptionOfWork
January 2014**

openETCS Modelling Work Package

Description of Work

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Methodology

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Objects)

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WP3 Data Dictionary)

Description of work

Prepared for openETCS@ITEA2 Project

Abstract: This work package...

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1 Introduction

1.1 Motivation

The openETCS work package WP3 aims to provide the architecture and design of the openETCS OBU software as mainly specified in UNISIG Subset₀₂₆version₃.3.0.

The appropriate functionality has been divided into a list of subfunctions of different complexity (see [https://github.com/openETCS/SRS-Analysis/blob/master/System Analysis/List_Functions.xlsx](https://github.com/openETCS/SRS-Analysis/blob/master/System%20Analysis/List_Functions.xlsx))

All these functions are object of the openETCS project and have to be analyzed from their requirements and subsequently modelled and implemented. With limited manpower, a reasonable selection and order of these functions is required for the practical work that allows the distribution of the workload, more openETCS participants to join and leads to an executable – limited – kernel function as soon as possible.

While the first version of this document focuses on the first version of the limited kernel function, it is intended to grow in parallel to the growing openETCS software.

1.2 Objectives

The first objective of WP3 software shall be

- “Make the train run as soon as possible, with a very minimum functionality, and in the form of a rapid prototype.”

This does not contradict the openETCS goal to provide conformance to EN50128.

- After a phase of prototyping, the openETCS software shall be implemented compliant to EN50128 for SIL4 systems.

Additional goals for this document are

- Identification of the functions required for a minimum OBU kernel
- Architecture overview regarding the minimum OBU kernel
- Technical approach: Description of the proceeding and methods to be used
- Road map of the minimum OBU kernel functions
- Road map thereafter

Note: This document will be extended according to the progress of WP3.

Organisation of the Work package

Techniques for Modelling

2 Goals of the openETCS Modelling Work

by Uwe

2.1 Functional Scope: The Minimum OBU Kernel Function

The objective “Make the train run with a very minimum functionality” shall be in terms of on ETCS OBU translated into

- The Train moves on a track equipped with balises and determines its position.

That means, for this very first step the train shall not supervise the maximum speed, shall not activate the brakes. Instead, the minimum function set shall be limited to (see <https://github.com/openETCS/SRS-Analysis/issues/9>)

- Receive, filter and manage balise information, received from track (see <https://github.com/openETCS/SRS-Analysis/issues/12>)
- Calculate the actual train position based on balise and odometry information (see <https://github.com/openETCS/SRS-Analysis/issues/8>)
- Calculate the distances between the actual train position to track elements in its front

A more detailed architectural breakdown of these functions is available in the form of a SysML model at (see <https://github.com/openETCS/modeling/tree/master/model/sysml>).

In addition, the work on this minimum functionality requires to be supported by

- The availability of the ETCS language as specified in Subset UNISIG Subset_026, chapter 7 and 8
- The ability to link intermediate and final results with the requirements of the ETCS specification (subset_026, ..)
- The usability of a data dictionary (see <https://github.com/openETCS/dataDictionary>)

These supporting prerequisites are under construction and therefore not completely operable actually. How to deal with these restrictions, will be outlined in chapter ???

2.2 Actual Status

Some first analysis steps for the required minimum functionality have been gone as results from the SRS-Analysis task force. These results are available on <https://github.com/openETCS/SRS-Analysis>

2.3 Practical Approach

The architecture and design of the minimum OBU kernel shall be developed in consideration of the actual status, restricted prerequisites and limited resources as follows.

3 Organisation of the Work package

BH: Tasks, Repositories

4 Methodology

by Marielle

5 How to handle Findings in the SRS