

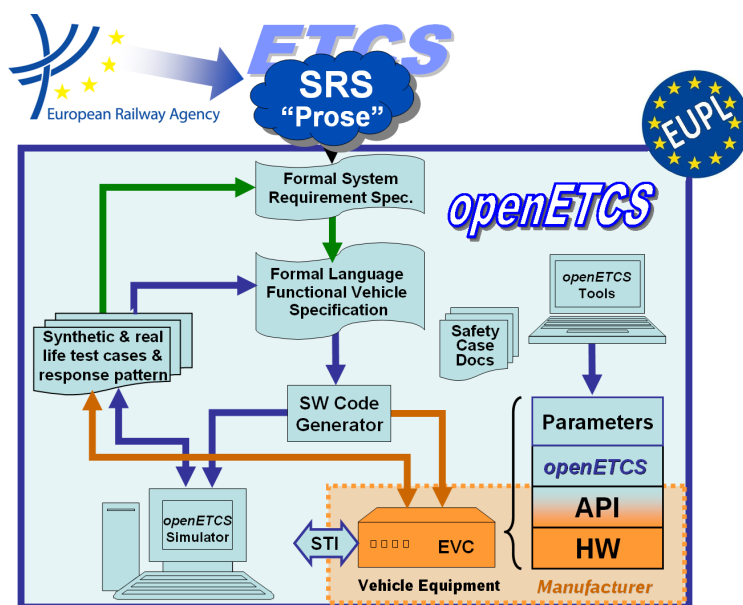
Work-Package 3: "Modeling"

D3.6.1 openETCS Functional Model

First Iteration Functional Model: ETCS Kernel Functions

 Bernd Hekele, Peter Mahlmann, Peyman Farhangi, Uwe Steinke,
 Christian Stahl and David Mentré

December 2014



Funded by:


 Federal Ministry
 of Education
 and Research

 Région de
 Bruxelles-
 Capitale

 GOBIERNO
 DE ESPAÑA
 MINISTERIO
 DE INDUSTRIA, ENERGÍA
 Y TURISMO

This page is intentionally left blank

Work-Package 3: “Modeling”**OETCS/WP3/D3.6.1
December 2014**

D3.6.1 openETCS Functional Model

First Iteration Functional Model: ETCS Kernel Functions

Document approbation

Lead author:	Technical assessor:	Quality assessor:	Project lead:
location / date	location / date	location / date	location / date
signature	signature	signature	signature
Bernd Hekele (DB-Netz)	Uwe Steinke (Siemens)	Izaskun de la Torre (SQS)	Klaus-Rüdiger Hase (DB Netz)

Bernd Hekele, Peter Mahlmann, Peyman Farhangi

DB-Netz AG
Völckerstrasse 5
D-80959 München, Germany

Uwe Steinke

Siemens AG

Christian Stahl

TWT-GmbH

David Mentré

Mitsubishi Electric R&D Centre Europe

Architecture and Design Specification

Prepared for openETCS@ITEA2 Project

Abstract: The document is used to define the deliverable of the functional model.

Disclaimer: This work is licensed under the "openETCS Open License Terms" (oOLT) dual Licensing: European Union Public Licence (EUPL v.1.1+) AND Creative Commons Attribution-ShareAlike 3.0 – (cc by-sa 3.0)

THE WORK IS PROVIDED UNDER openETCS OPEN LICENSE TERMS (oOLT) WHICH IS A DUAL LICENSE AGREEMENT INCLUDING THE TERMS OF THE EUROPEAN UNION PUBLIC LICENSE (VERSION 1.1 OR ANY LATER VERSION) AND THE TERMS OF THE CREATIVE COMMONS PUBLIC LICENSE ("CCPL"). THE WORK IS PROTECTED BY COPYRIGHT AND/OR OTHER APPLICABLE LAW. ANY USE OF THE WORK OTHER THAN AS AUTHORIZED UNDER THIS OLT LICENSE OR COPYRIGHT LAW IS PROHIBITED.

BY EXERCISING ANY RIGHTS TO THE WORK PROVIDED HERE, YOU ACCEPT AND AGREE TO BE BOUND BY THE TERMS OF THIS LICENSE. TO THE EXTENT THIS LICENSE MAY BE CONSIDERED TO BE A CONTRACT, THE LICENSOR GRANTS YOU THE RIGHTS CONTAINED HERE IN CONSIDERATION OF YOUR ACCEPTANCE OF SUCH TERMS AND CONDITIONS.

<http://creativecommons.org/licenses/by-sa/3.0/>
<http://joinup.ec.europa.eu/software/page/eupl/licence-eupl>

Modification History

Version	Section	Modification / Description	Author
0.1	all	Initial document providing the structure	Bernd Hekele
0.2	all	added further text	Peter Mahlmann

Table of Contents

Modification History iii

1 Introduction..... 1

Appendix A: Textual documentation of the functional model 2

1 Introduction

This document represents deliverable D3.6.1 “First iteration of functional model” of the openETCS ITEA2 project and deploys the first iteration of the functional model of the ETCS onboard unit (OBU) as specified in subset-026 (system requirements specification of the ETCS OBU provided by the European Railway Agency (ERA)).

The functional model provides a semi-formal model of subset-026 and is directly linked with deliverable D3.5.1 “First iteration of system specification model”, which focuses on the corresponding system architecture.¹

This deliverable covers the scope of the first iteration of modeling in the openETCS project. Here, the focus was on providing kernel functions allowing a running train to read balise telegrams and determine its position. The deliverable consists of three major parts:

- the Scade Model,
- C-code generated by Scade code generator, and
- a textual documentation of the functional model.

The latter is also directly generated from the Scade model. The Scade model itself is located in the projects public GitHub repository and can be found here:

<https://github.com/openETCS/modeling/releases/tag/v0.1-D3.6.1>.

The textual documentation of the functional model can be found in Appendix A of this deliverable.

¹D3.5.1 is publicly available via the openETCS GitHub repository here: <https://github.com/openETCS/modeling/blob/master/deliverables/D3.5.1.pdf>

Appendix A: Textual documentation of the functional model

The textual documentation is directly generated from the functional model via Scade. Due to the sheer size of the textual documentation, i.e. more than 400 pages, it is not directly included in this document to keep D3.6.1 itself printable. The separate appendix can be found on the public openETCS GitHub repository:

<https://github.com/openETCS/modeling/blob/master/deliverables/D3.6.1.appendix.pdf>