



openETCS WP6 Review

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openETCS@ITEA2 Project

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Paris, 03.07.2013

Exploitation

- Project Exploitation Plan
- Open Proof Process
- Project Liaisons
- Planned Project Exploitation Activities

Dissemination

- External and internal Communication
- Dissemination plan
- Publications
- ESICS Special Session @ INDIN 2013
- Events

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Expected Results

- Formal specification and reference implementation of ETCS requirements
- OpenETCS Development methodology
- Open Source ETCS Development environment

Exploitation

- Leveraging the Tool Platform by means of OpenProof
- Development of OBU systems based on OpenETCS Demonstrator
- Standardization Activities
 - *Ensuring alignments with existing standards as e.g. EN 50128*

The whole process starting from production of initial requirement documents up to the development of software is basically open

- Open source
- Open document
- Open methodologies
- Open Standard

Includes Open Source Development

- Licence: OpenETCS Open License

All documents are open and published on GitHub

- Includes all technical Deliverables
- Excludes Deliverables on Management and Exploitation

Artemis AIPP Crystal



- Enabling sustainable speeding up of the maturation, integration and cross-sectorial reusability of “technology bricks” for the “factories” for safety-critical systems engineering in transportation (aerospace, automotive, and rail) and healthcare

Artemis VeTeSS



- Verification and Testing to Support Functional Safety Standards

UK Project SafeCap



- Develop modeling techniques and tools for improving railway capacity while ensuring that safety standards are maintained

VDE (German 1st ERTMS Highspeed Infrastructure Project)

Utrecht – Amsterdam

- NS and Pro Rail ERTMS Research Project

UIC Benchmark working group

Wide acceptance of OpenETCS Development environment and methodology crucial for project success and solution rollout

- Ensure awareness and wide acceptance rate

Build eco-system of stakeholders

- Setup of Advisory Board with e.g. CER, ERTMS, ERA, Eclipse, DLR, ...
 - *First Meeting in 02/2013*
- Open Source Community, open project workshops

Examine possibility for workshop organization @ Innotrans 2014

- Most important stakeholder exhibition in railway sector
- 2500 exhibitors in 2012

-> Detailed Exploitation Plans in upcoming D6.2

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Website openETCS.org


- Basic entry to all information related to the openETCS Project

Project Web Site [github.org/openETCS](https://github.com/openETCS)

- All work items

Mailing lists


Project calendar



projectsprinciplesmembersabout

European Train Control System (ETCS)

Open Proofs - Open Source



The purpose of the openETCS project is to develop an integrated modeling, development, validation and testing framework for leveraging the cost-efficient and reliable implementation of ETCS. The framework will provide a holistic tool chain across the whole development process of ETCS software. The tool chain will support the formal specification and verification of the ETCS system requirements, the automatic and ETCS compliant code generation and validation, and the model-based test case generation and execution.

Specification

openETCS will utilize "Open Standards" on all levels, including hardware and software specification, interface definition, design tools, verification and validation procedures and last but not least embedded control software. By applying those technologies and related business concepts a significant cost cut for the final onboard product is expected down to or even below conventional high performance cab signaling systems (e.g. LZB Linien-Zug-Beeinflussung, as used in Germany, Austria and Spain).

Implementation

The openETCS project aims to provide the formal model of the ETCS system, the source code of the ETCS software and the tool chain necessary to develop and verify them. This tool chain will enable to transfer the ETCS specification into a formal model and then to generate the code for an ETCS onboard unit. In parallel to the development, openETCS aims to establish an open-source ecosystem of services around the developed artifacts.


V & V

The open source concept provides for a neutral and formal method based "correct" functioning reference device that will help to overcome existing interoperability problems, supporting manufacturers, infrastructure managers and railway undertakings alike, avoiding exhaustive field tests, transferring verification and validation activities from the track site into laboratories, saving scarce resources and finally accelerating the migration phase and therefore supporting the European ERTMS deployment plan.


Upcoming Events

- openETCS ITEA review
For detailed information see:
<https://github.com/openETCS/management/wiki/ITEA-Review-2013>
- Meeting ERA & openETCS Group [Doodle-tentative]
<http://www.doodle.com/58b38cp2k8pfa3e>
- ERTMS TRAINING [Doodle-tentative]
<http://www.doodle.com/sbgb7cwizqk68g7>


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GitHub Repository

GitHub

Search or type a command

Explore Features Enterprise Blog

Sign up

Sign in



openETCS Project
openETCS

Europe

github@openETCS.org

http://openetcs.org

Joined on Apr 09, 2012

18 **7**
public repos members

Repositories

Members

Find a Repository...

All Sources Forks Mirrors

toolchain

★ 10 8

WP7: Top Level Project for the toolchain

Last updated an hour ago

requirements

Python ★ 2 4

WP2: Top Level Project for openETCS requirements

Last updated a day ago

openetcs.github.com

JavaScript ★ 5 1

Public openETCS Website

Last updated 3 days ago

governance

★ 2 3

part of WP1: information needed to run project management in openetcs

Last updated 3 days ago

validation

★ 3 1

WP4: Validation and verification strategy

Last updated 4 days ago

model-evaluation

C ★ 6 7

part of WP7: collects the various activities regarding selecting a tool and formal specification for modeling

Last updated 4 days ago

playground

★ 1 0

This is a test repository for trying out git

Last updated 5 days ago

Mailing lists

Weekly Scrum Meetings as Web conferences (Goto Meeting)

Various Tutorials organized

- Scade, ERTMSolutions FormalSpecs
- Videos of the tutorials prepared for internal release

Project Glossary

- GitHub-based approach to collect contributions from everybody
- Clear and unambiguous definitions for openETCS terms
- Easy integration in documents (based on LaTeX)

Deliverable D6.1: Project Dissemination Plan and Report

- Deliverable has been submitted in 03/2013
- Summary of the achievements will follow
- For more details please refer to Deliverable

OpenETCS Journal Publications

Authors	Publication	Journal
Klaus-Rüdiger Hase,	openETCS: Applying 'Open Proofs' to European Train Control	European Railway Review, Volume 18, Issue 3, 2012
Jan Peleska, Johannes Feuser and Anne E. Haxthausen	The Model-Driven openETCS Paradigm for Secure, Safe and Certifiable Train Control Systems	In Flammini, Francesco (ed.). "Railway Safety, Reliability, and Security: Technologies and Systems Engineering

Authors	Publication	Journal
Klaus-Rüdiger Hase	openETCS: Von der Idee zur Praxis	12th International SIGNAL+DRAHT-Congress 2012, Fulda, Germany, 08-09/11/2012
Klaus-Rüdiger Hase	openETCS: Applying Open Proof's to the European Train Control System	APTA/UIC High-Speed Congress 2012, Philadelphia, PA, USA, 10-13/07/2012
Klaus-Rüdiger Hase	Infrastructure manager case study: Ensuring systems integration and developing functionality with openETCS	4th annual Signalling and Train and Control Conference, Vienna, Austria, 19-21/03/2013
Klaus-Rüdiger Hase	Open ETCS: Ein internationales ITEA2-Projekt begleitet den Wandel	Graz, Austria, 7-10/04/2013
Michael Jastram	Openness in Systems Engineering with Eclipse	ProSTEP iViP Symposium 2013

Training Github and Scrum tutorial

- Munich, 21-22/08/2012
- Paris, 05-06/09/2012

Workshop and Training Class I on Formal Methods,

- Munich (Germany), 15-17/04/2013

Workshop and Training Class II on Formal Methods,

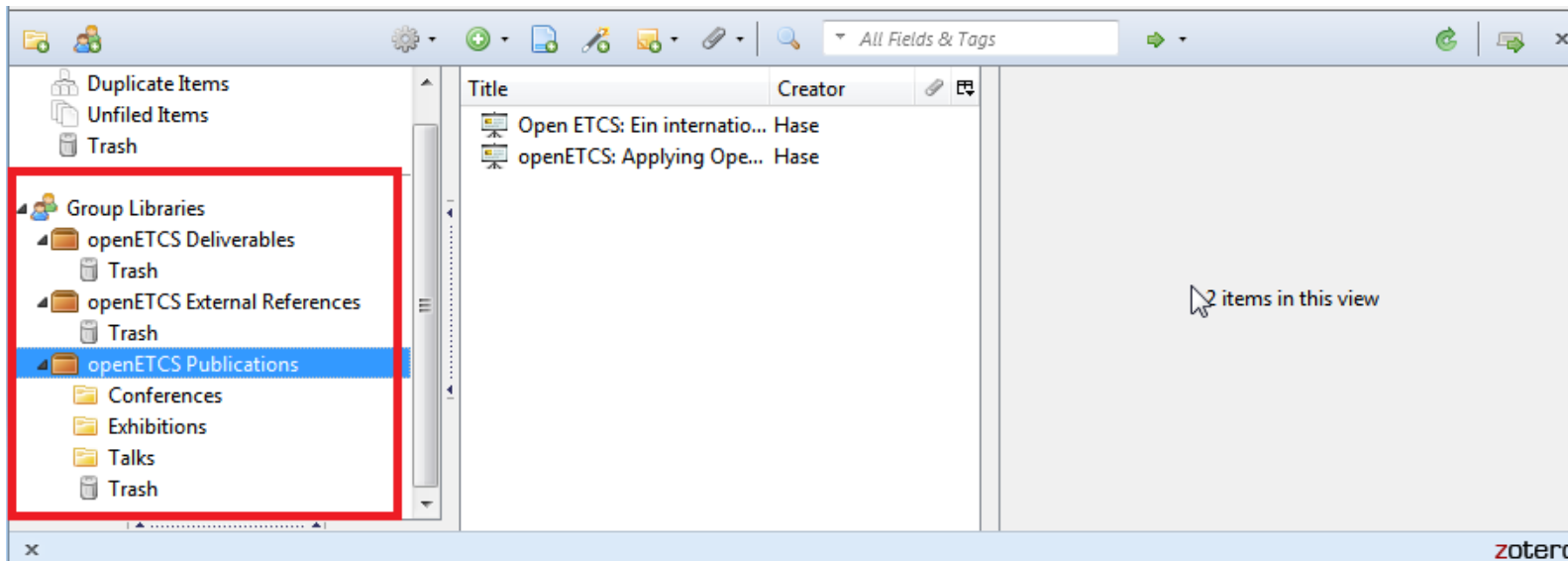
- Munich (Germany), 15-17/04/2013

Hands-on:

- ERTMSolutions ERTMSFormalSpecs
- Scade, Frama-C

Publication Managment

- Central management of publications and references
- Contributions by all project partners
- Based on Open Source platform „Zotero“
- Easy integration in LaTeX and Word documents



Special Session “ESICS- Ensuring Safety in Industrial Critical Systems”

- at 11th International IEEE Conference on Industrial Informatics INDIN 2013, Bochum, Germany, July 29-31, 2013

Organized by

- Michael Ditze, TWT GmbH Science & Innovation, Germany
- Helen Finch, Infineon UK, United Kingdom
- Frank Golasowski, University of Rostock, Germany
- Klaus-Rüdiger Hase, DB Netz AG, Germany

International Program Committee

- OpenETCS Partners (DB, Siemens, DLR, Systerel, Formalmind)
- Volvo, RWTH Aachen, Barcelona Supercomputing Centre, University of Bamberg, IKV Technologies, SP Sweden



11th IEEE International Conference on Industrial
Informatics (INDIN'2013)
July 29-31, 2013, Bochum, Germany

Special Session on
Ensuring Safety in Industrial Critical Systems (ESICS)

– CALL FOR PAPERS –

14 Submitted Papers, 6 Accepted papers / 2 publications from openETCS

- **Formal Specification & Automated Verification of Railway Software with Frama-C**
Jens Gerlach, Virgile Prevosto, Jochen Burghardt, Kerstin Hartig, Kim Völlinger, Hans Pohl
- **Graphical Modelling meets Formal Methods**
Stefan Gulan, Sven Johr, Roberto Kretschmer, Stefan Rieger, Michael Ditzte
- **Model-based Automated Testing of Critical PLC Programs**
Borja Fernández Adiego, Enrique Blanco Viñuela, Jean-Charles Tournier, Victor Manuel González Suárez, Simon Bliudze
- **The AltaRica 3.0 project for Model-Based Safety Assessment**
Tatiana Prosvirnova, Michel Batteux, Antoine Rauzy, Leïla Kloul
- **Steganographic Lightweight Safety Layer for TCP/IP**
Paulo Pisani, Nunzio Torrisi
- **Supporting Industrial Use of Probabilistic Timing Analysis with Explicit Argumentation**
Zoe Stephenson, Jaume Abella, Tullio Vardanega

ITEA & ARTEMIS Co-summit 2012

- General presentation of openETCS at booth
- Presentation to public authority and ITEA board
- Demonstration of openETCS



ITEA2 Symposium OpenETCS Demonstration



ITEA Symposium Impressions



Next steps

- Preparation of D6.2 (Exploitation Plan)
- Midterm Workshop Organization
- Refinement of Individual Project Exploitation Activities
- Organization of next Advisory Board Meeting