OETCS/WP7/O7.1.7 – 00/01

ITEA2
INFORMATION TECHNOLOGY FOR EUROPEAN ADVANCEMENT

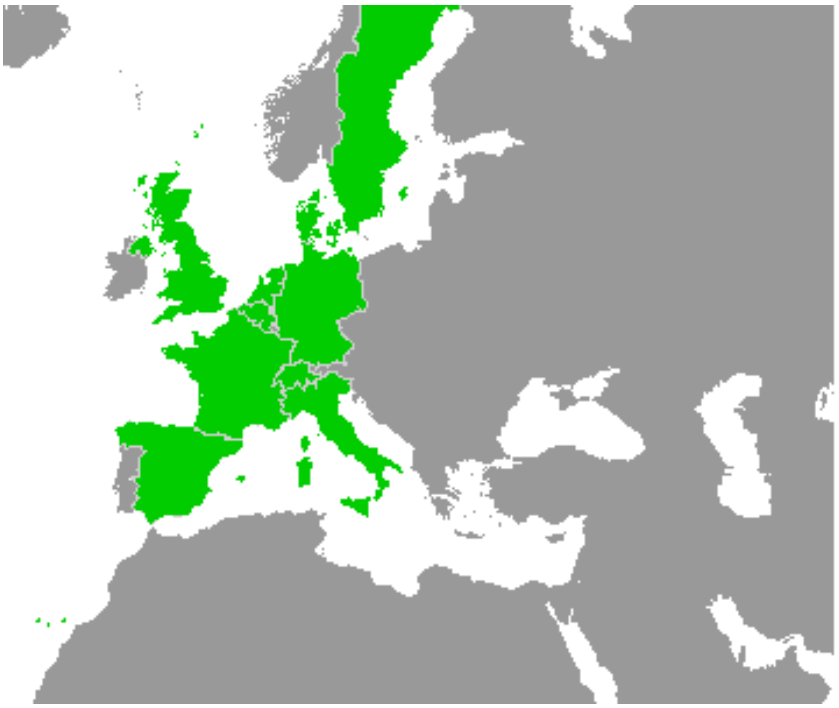
ITEA2 Project
Call 6 11025
2012 – 2015

Work-Package 7: “Primary tool chain”

Evaluation of the tools against the WP2 requirements

List of criteria on tools and results on the benchmark

Marielle Petit-Doche April 2013



openETCS

This page is intentionally left blank

Work-Package 7: “Primary tool chain”

OETCS/WP7/O7.1.7 – 00/01
April 2013

Evaluation of the tools against the WP2 requirements

List of criteria on tools and results on the benchmark

Marielle Petit-Doche

Systerel

Prepared for ITEA2 openETCS consortium
Europa

Abstract: This document gives elements to evaluate the tools to involve in the OpenETCS process according WP2 requirements. Evaluation on the tools of benchmark is also described.

Table of Contents

Figures and Tables

Figures

Tables

Document information	
Work Package	WP7
Deliverable ID or doc. ref.	O7.1.7
Document title	Evaluation of the tools against the WP2 requirements
Document version	00.01
Document authors (org.)	Marielle Petit-Doche (Systerel)

Review information	
Last version reviewed	00.00.00
Main reviewers	

Approbation			
	Name	Role	Date
Written by	Marielle Petit-Doche	WP7-T7.1 Sub-Task Leader	
Approved by	Michael Jastram	WP7 leader	

Document evolution			
Version	Date	Author(s)	Justification
00.00.01	08/04/2013	M. Petit-Doche	Document creation

1 Introduction

The aim of this document is to report the results of the evaluation of the tools to include in the OpenETCS toolchain.

This evaluation task is part on work package WP7, task 1 "Primary tool Chain analyses and recommendations". According to the results of WP2, especially the OpenETCS process and the requirements on tools, the aim of this task is to determine the best candidates to produce models of the on-board units, following the OpenETCS process and the associated tools.

Tools evaluation is linked to the means evaluation described in O7.1.3 " Evaluation o the models against WP2 requirements".

The second section of this document provides a template to describe the tools and a list of criteria according WP2 requirements on tools. The objectives of this description and criteria are to allow to determine the best means of description and associated.

The third section sums up the results of the evaluation at the end of the benchmark activities.

In Appendix, a section is dedicated to each tools evaluated during the benchmark activities :

- CORE
- GOPRR
- ERTMSFormalSpecs
- SysML with Papyrus
- SysML with Entreprise Architect
- SCADE
- EventB
- Classical B
- Petri Nets
- System C
- GNATprove

For each tool, the initial author of the evaluation is the partner in charge of the modelling. Two assessors, for each tool, are in charge of the review of the evaluation and can correct it or add comments.

Languages and tool platforms are not covered by this document but in other output of WP7 : O7.1.3 "Evaluation of the means against the WP2 requirements" and O7.1.9 "Evaluation of each tool platform against WP2 requirements, independent of target tools". Besides, Task 7.1 is focussing on design activities : despite that some tools can provide verification artefacts for example, tools and means for validation, verification, test generation are in the scope of task 2 and will be analysed later.

2 Templates

Author Author of the approaches description %%Name - Company%%

Assessor 1 First assessor of the approaches %%Name - Company%%

Assessor 2 Second assessor of the approaches %%Name - Company%%

In the sequel, main text is under the responsibilities of the author.

Author. *Author can add comments using this format*

Assessor 1. *First assessor can add comments using this format*

Assessor 2. *Second assessor can add comments using this format*

When a note is required, please follow this list :

0 not recommended, not adapted, rejected

1 weakly recommended, adapted after major improvements, weakly rejected

2 recommended, adapted (with light improvements if necessary) weakly accepted

3 highly recommended, well adapted,strongly accepted

***** difficult to evaluate with a note (please add a comment under the table)

All the notes can be commented under each table.

2.1 Presentation

This section gives a quick presentation of the tool.

Name Name of the approach

Web site If available, how to find information

Licence Kind of licence

Abstract

Short abstract on the tool (5 lines max)

Publications

short list of publication on the tool (5 max)

2.2 Main usage of the tool

This section discusses the main usage of the tool.

Which task are covered by the tool ?

	Author	Assessor 1	Assessor 2	Total
Modelling support				
Automatic translation				
Code Generation				
Model verification				
Test generation				
Simulation, execution, debugging				
Formal proof				

Modelling support

Does the tool provide a textual or a graphical editor ?

Automatic translation and code generation

Which translation or code generation is supported by the tool ?

Model verification

Which verification on models are provided by the tool?

Test generation

Does the tool allow to generate tests ? For which purpose ?

Simulation, execution, debugging

Does the tool allow to simulate or to debbug step by step a model or a code ?

Formal proof

Does the tool allow formal proof ? How ?

2.3 Use of the tool

According WP2 requirements, give a note for characteristics of the use of the tool (from 0 to 3) :

	Author	Assessor 1	Assessor 2	Total
Open Source (D2.6-01-029)				
Portability to operating systems (D2.6-01-030)				
Cooperation of tools (D2.6-01-031)				
Robustness (D2.6-01-034)				
Modularity (D2.6-01-034.01)				
Documentation management (D.2.6-01-034.02)				
Distributed software development (D.2.6-01-034.03)				
Issue tracking (D.2.6-01-034.04)				
Differences between models (D.2.6-01-034.05)				
Version management (D.2.6-01-034.06)				
Concurrent version management (D.2.6-01-034.07)				
Model-based version control (D.2.6-01-034.08)				
Role traceability (D.2.6-01-034.09)				
Safety version traceability (D.2.6-01-034.10)				
Model traceability (D.2.6-01-035)				
Tool chain integration				
Scalability				

2.4 Certifiability

This section discusses how the tool can be classified according EN50128 requirements (D.2.6-X-49).

	Author	Assessor 1	Assessor 2	Total
Tool manual (D.2.6-01-42.02)				
Proof of correctness (D.2.6-01-42.03)				
Existing industrial usage				
Model verification				
Test generation				
Simulation, execution, debugging				
Formal proof				

Other elements for tool certification

2.5 Other comments

Please to give free comments on the approach.

3 Conclusion

%%To Be Defined%%

- CORE
- GOPRR
- ERTMSFormalSpecs
- SysML with Papyrus
- SysML with Entreprise Architect
- SCADE
- EventB
- Classical B
- Petri Nets
- System C
- GNATprove

Appendix A: CORE

%%To Be Defined%%

Appendix B: GOPRR

%%To Be Defined%%

Appendix C: ERTMSFormalSpecs

%%To Be Defined%%

Appendix D: Papyrus

%%To Be Defined%%

Appendix E: Entreprise Architect

%%To Be Defined%%

Appendix F: SCADE

%%To Be Defined%%

Appendix G: Rodin

%%To Be Defined%%

Appendix H: Atelier B

%%To Be Defined%%

Appendix I: Petri Nets

%%To Be Defined%%

Appendix J: System C

%%To Be Defined%%

Appendix K: GNATprove

%%To Be Defined%%

