

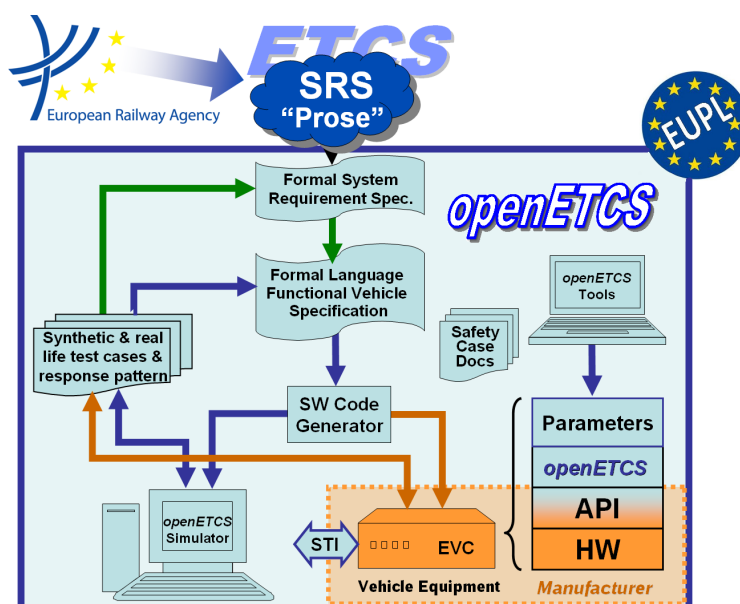
Work-Package 7: “Secondary tools”

Evaluation of supporting tools and methods against the WP2 requirements and task 1

List of criteria on supporting tools and methods and results on the benchmark

Marielle Petit-Doche, all participants of the benchmark and all participants of VnV and Safety process

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Evaluation of supporting tools and methods against the WP2 requirements and task 1

List of criteria on supporting tools and methods and results on the benchmark

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Evaluation

Prepared for openETCS@ITEA2 Project

Abstract: This document gives elements to evaluate the tools and methods to complete the primary toolchain and to support verification and validation activities, safety activities, model transformation and data management for the whole project. Evaluation on the means and tools of benchmark is also described.

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1 Introduction

Comment. MPD : Todo

1.1 Glossary

API Application Programming Interface

FME(C)A Failure Mode Effect (and Criticality) Analysis

FIS Functional Interface Specification

HW Hardware

I/O Input/Output

OBU On-Board Unit

PHA Preliminary Hazard Analysis

QA Quality Analysis

RBC Radio Block Center

RTM RunTime Model

SIL Safety Integrity Level

SRS System Requirement Specification

SSHA Sub-System Hazard Analysis

SSRS Sub-System Requirement Specification

SW Software

THR Tolerable Hazard Rate

V&V Verification & Validation

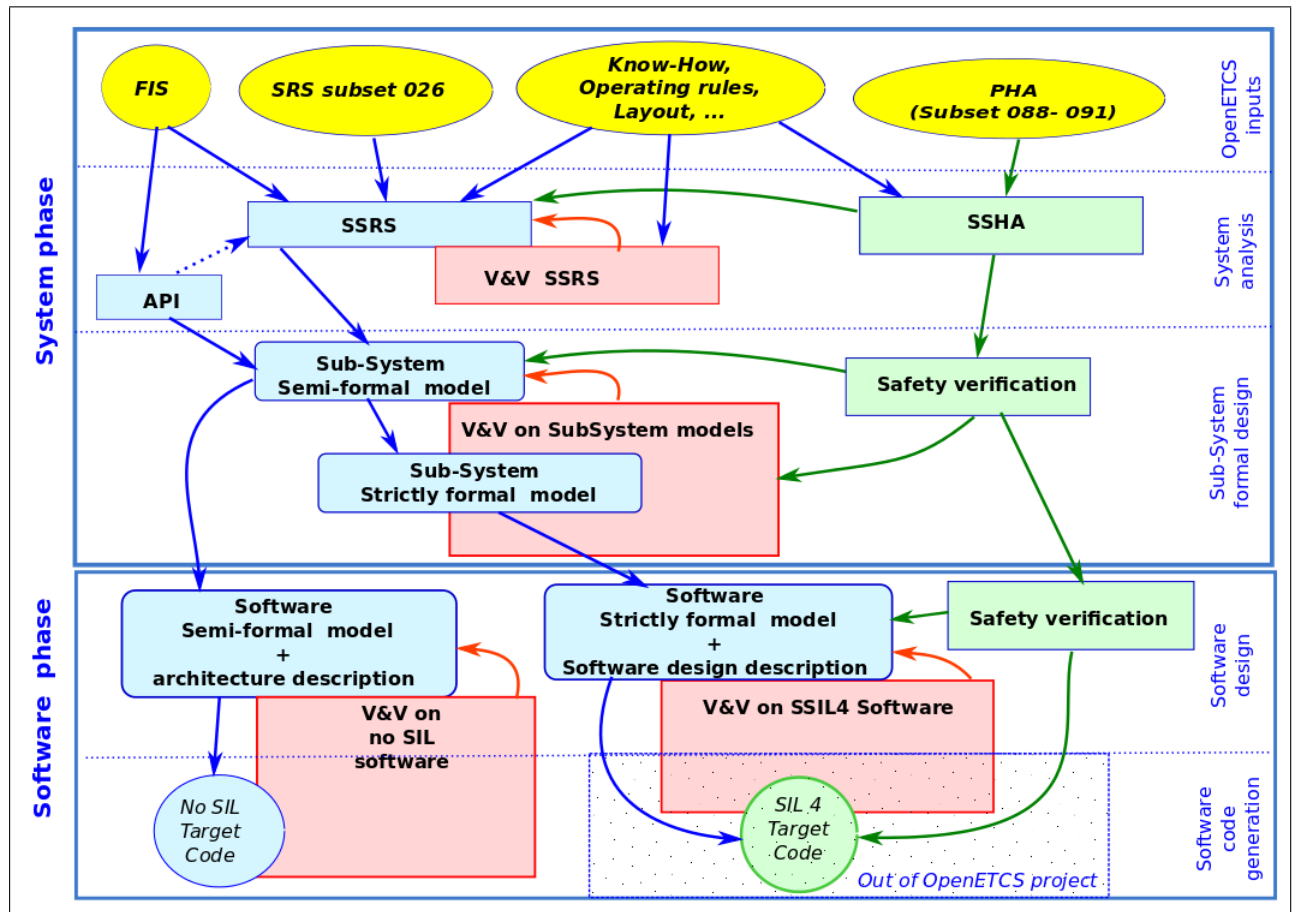


Figure 1. Main OpenETCS process

2 Common criteria on secondary means and tools

Comment. MPD : Todo

The sequel is let as an example is this early version.

Criteria to discuss here are those which concerns all the secondary tools as open-source issues, compatibility with primary tool-chain, compatibility with eclipse,...

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 at any place.

Assessor 1: First assessor can add comments using this format at any place.

Assessor 2: Second assessor can add comments using this format at any place.

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 approach and the tool.

Name %%Name of the approach and the tool%%

Web site %%if available, how to find information%%

Licence %%Kind of licence%%

Abstract

Short abstract on the approach and tool (10 lines max)

Publications

Short list of publications on the approach (5 max)

2.2 Main usage of the approach

This section discusses the main usage of the approach.

According to the figure 1, for which phases do you recommend the approach (give a note from 0 to 3) :

	Author	Assessor 1	Assessor 2	Total
System Analysis				
Sub-system formal design				
Software design				
Software code generation				

3 Means and tools for verification and validation purposes

Comment. MPD : Todo

The sequel is let as an example is this early version.

Criteria to discuss here are those which concerns means and tools for VnV

3.1 Main usage of the approach

This section discusses the main usage of the approach.

According to the figure 1, for which phases do you recommend the approach (give a note from 0 to 3) :

	Author	Assessor 1	Assessor 2	Total
System Analysis				
Sub-system formal design				
Software design				
Software code generation				

4 Means and tools for safety activities support

Comment. MPD : Todo

The sequel is let as an example is this early version.

Criteria to discuss here are those which concerns support of safety activities

4.1 Main usage of the approach

This section discusses the main usage of the approach.

According to the figure 1, for which phases do you recommend the approach (give a note from 0 to 3) :

	Author	Assessor 1	Assessor 2	Total
System Analysis				
Sub-system formal design				
Software design				
Software code generation				

5 Means and tools for data, function and requirement management

Comment. MPD : Todo

The sequel is let as an example is this early version.

Criteria to discuss here are those which concerns management of repository for data, function and requirements

5.1 Main usage of the approach

This section discusses the main usage of the approach.

According to the figure 1, for which phases do you recommend the approach (give a note from 0 to 3) :

	Author	Assessor 1	Assessor 2	Total
System Analysis				
Sub-system formal design				
Software design				
Software code generation				

6 Means and tools for model transformation and code generation

Comment. MPD : Todo

The sequel is let as an example is this early version.

Criteria to discuss here are those which concerns means and tools to model transformation and code generation

6.1 Main usage of the approach

This section discusses the main usage of the approach.

According to the figure 1, for which phases do you recommend the approach (give a note from 0 to 3) :

	Author	Assessor 1	Assessor 2	Total
System Analysis				
Sub-system formal design				
Software design				
Software code generation				

7 Conclusion

Comment. MPD : Todo

The sequel is let as an example is this early version.

Criteria to discuss here are those which concerns all the secondary tools as open-source issues, compatibility with primary tool-chain, compatibility with eclipse,...

This conclusion give a sum up of the evaluation results for each approach. The detailed results of each approach are given in the appendix.

The evaluation of Core (see Appendix ??) and Why3 (see Appendix ??) have been stopped by the authors and do not appear in this conclusion.

Minus mark "-" means this criteria as not been evaluated for this approach.

Star mark "*" means this criteria has been difficult to evaluate for this approach.

The figures correspond to the sum of the scores put by one author and two assessors for each criteria and each means. In the case of PetriNets and GnatProve, there is only one assessors thus the first figure is the sum of the 2 scores and the second in parenthesis is the result multiplied by 1.5.

The highest score is **9** and means that the criteria is fully respected, the lowest score is **0**.

7.1 Main usage of the approach

This section discusses the main usage of the approach.

According to the figure 1, for which phases do you recommend the approach (give a note from 0 to 3) :

	GOPRR	ERTMSFormalSpecs	SysML with Papyrus	SysML with EA	SCADE	EventB	Classical B	System C	Petri Nets	GNATprove
System Analysis	5	1	7	9	3	9	3	2	6(9)	2 (3)
Sub-system formal design	9	9	6	7	9	9	5	5	6(9)	3 (4)
Software design	9	0	6	7	9	6	9	9	6(9)	6(9)
Software code generation	9	0	3	3	9	3	9	6	2 (3)	6(9)