openETCS

3rd openETCS@ITEA2 Project Cooperation Committee Meeting

openETCS@ITEA2 Project

Klaus-Rüdiger Hase

Braunschweig October 7, 2013

3rd PCC Meeting AGENDA (1)

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Time	Room	Subject / Remark - Speaker / Responsible
12:00	TBD	Welcome, Lunch, Registration / TBD (Building 118.6)
12:45	A015	**3rd PROJECT COOPERATION COMMITTEE MEETING:** Welcome address / Objectives for this PCC Meeting: Discussion / Proposals and Agreement on the Agenda *Klaus-Rüdiger Hase, DB Netz / all Partners*
13:00	A015	**Wrap-up of ITEA2 review and recent activities in WP3 + WP7:** Results so far and action to be taken: • Recommendations from ITEA2 review team --> POLARSYS • Feedback from various stakeholders: • ERA: Entire SRS to be formalized, High quality OBU reference SW • EUG: Entire SRS to be formalized, not just OBU • CEO ITEA2: Future project strategy and “Plan B” activities • Other inputs: • POLARSYS/Eclipse Workshops, • CEO Esterel Technologies, • SHIFT²RAIL FP7 Project Proposal, • OPENCOSS Advisory Board Workshop Discussion and agreement on further action *Klaus-Rüdiger Hase, DB Netz / all Partners*

3rd PCC Meeting AGENDA (2)

Time	Room	Subject / Remark - Speaker / Responsible
13:45	A015	**Proposals for further actions:** • Results from Doodle poll on resource spending • Further strategy on formalization, Tools R&D, and V&V activities • SCADE full scale formal Model & SW development • EFS semi-formal Model (& SW) development • EFS' role inside the V&V activities • Further Tools Chain development + Proof of concept • Resource allocation & commitment confirmation • Q&A / open discussion *Klaus-Rüdiger Hase, DB Netz / all Partners*
14:15	A015	**Decisions** • D7.1: All decisions documented in D7.1 shall be confirmed by PCC • Resource Allocation of Partners as committed in the doodle: to be confirmed • Kick-Off for PCC Charta Activities *Klaus-Rüdiger Hase, DB Netz / all Partners*
14:30	TBD	END of PCC Meeting *) - Coffee Break

Wrap-up of ITEA2 review and recent activities WP3&7:

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Results so far and action to be taken:

Recommendations from ITEA2 review team ➔ POLARSYS

Feedback from various stakeholders:

- ERA: Entire SRS to be formalized, High quality OBU reference SW
- EUG: Entire SRS to be formalized, not just OBU
- CEO ITEA2: Future project strategy and “Plan B” activities

Other inputs:

- POLARSYS/Eclipse Workshops,
- CEO Esterel Technologies,
- SHIFT²RAIL FP7 Project Proposal,
- OPENCOSS Advisory Board Workshop

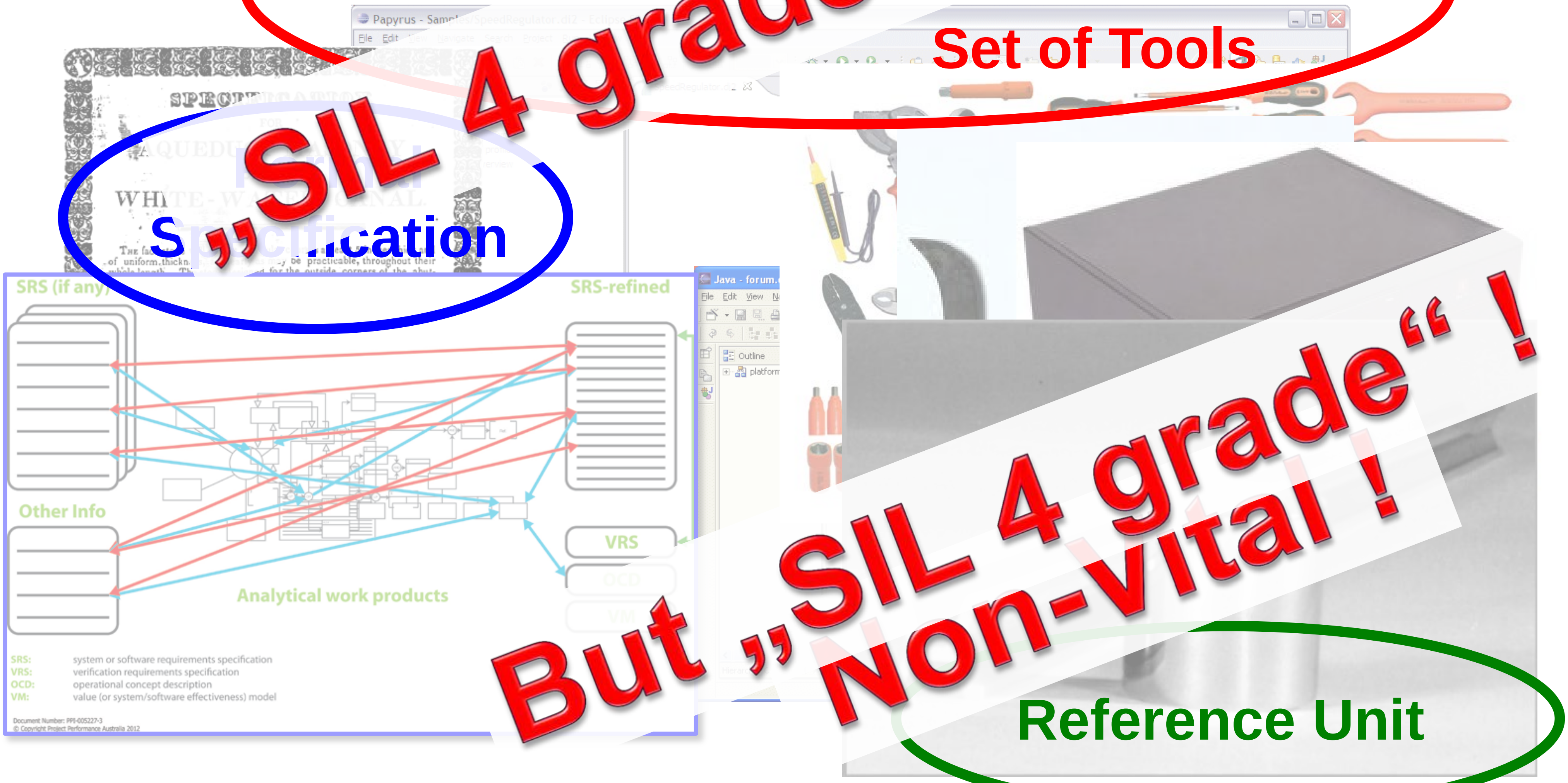
Discussion and agreement on further action

Proposals for further actions:

Results from Doodle poll on resource spending

- Further formalization strategies, Tools, R&D, and V&V activities
  - SCADE full scale formal Model & SW development
  - EFS semi-formal Model (& SW) development
  - EFS’ role inside the V&V activities
- Further Tools Chain development + Proof of concept
- Resource allocation & commitment confirmation
- Q&A / open discussion

The Goals and Major Expected Outcomes (FPP V.2.2)



SRS: system or software requirements specification
VRS: verification requirements specification
OCD: operational concept description
VM: value (or system/software effectiveness) model

Document Number: PPI-005227-3
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Modeling, development, … Framework

Set of Tools

„SIL 4 grade“ !

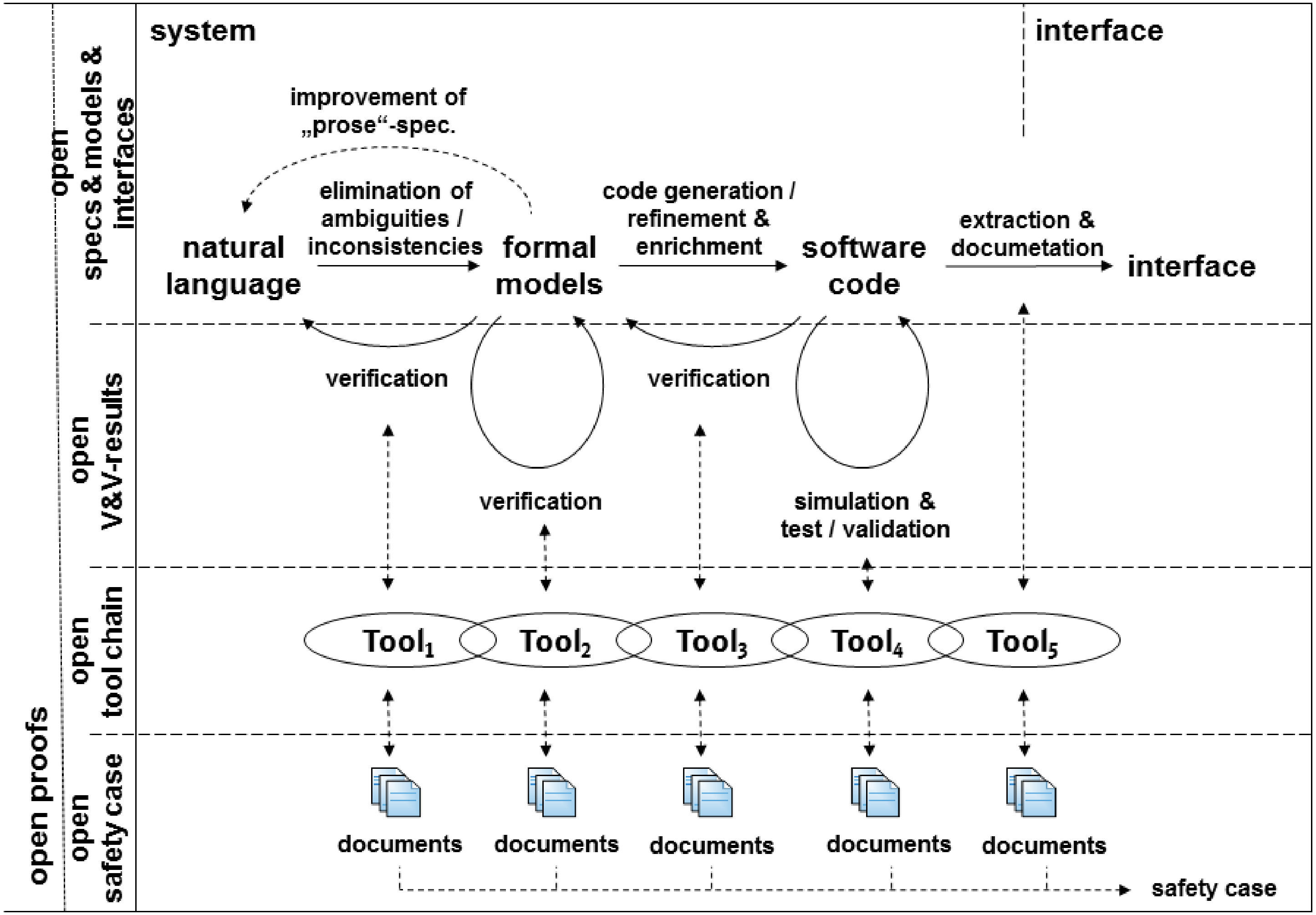
Specification

But „SIL 4 grade“ !

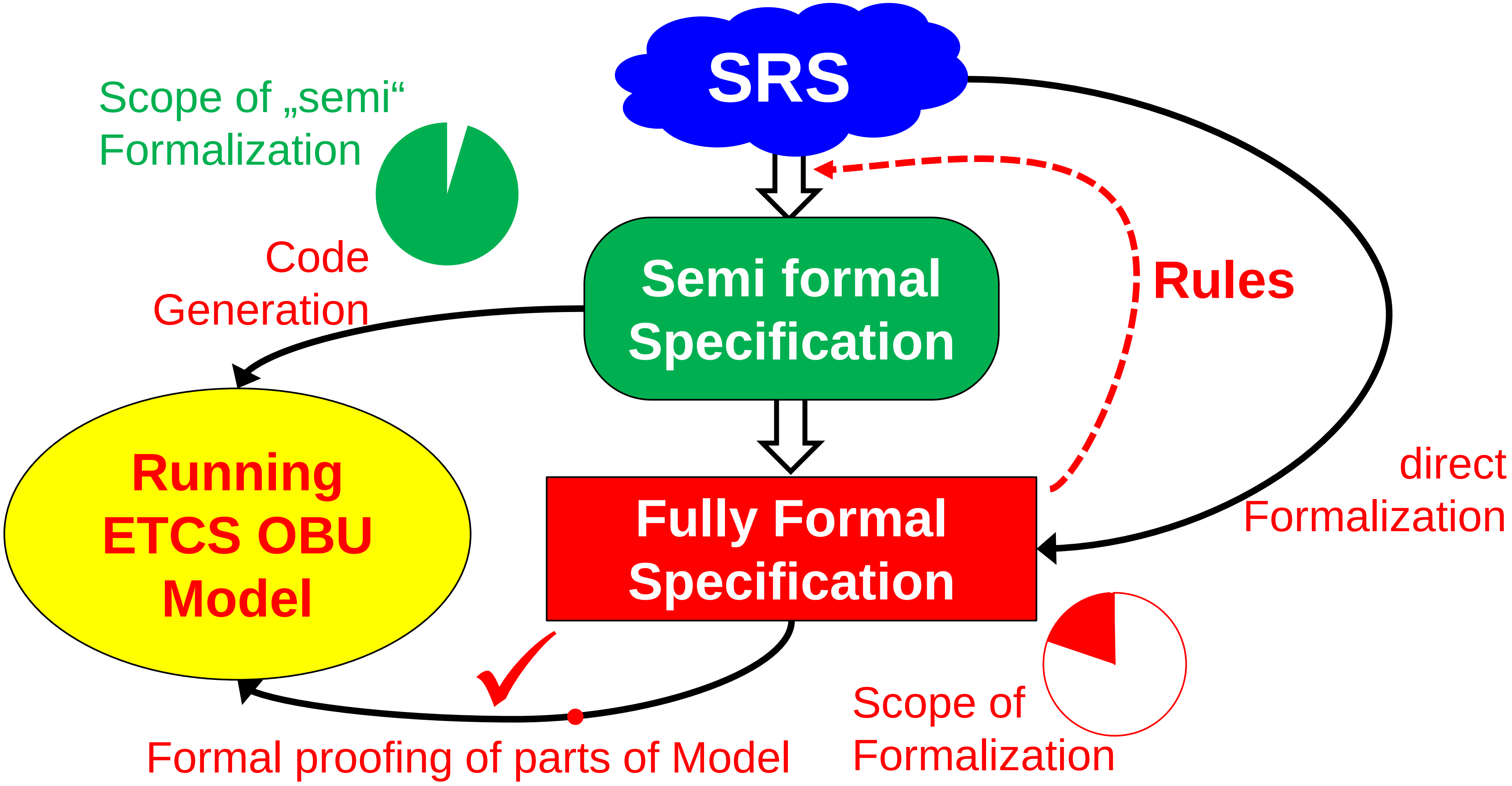
Non-Vital !

Reference Unit

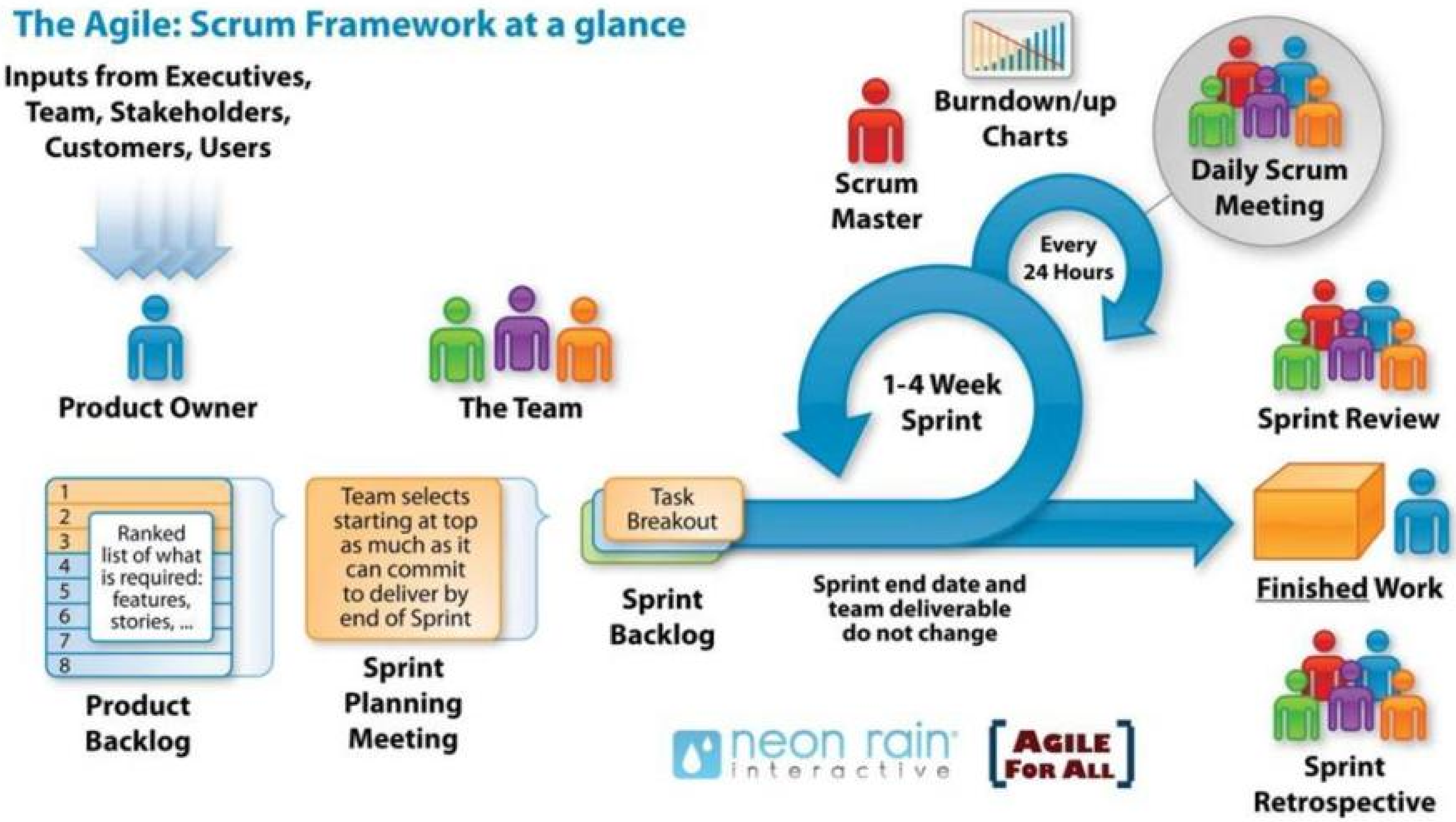
Tools Chain from the FPP



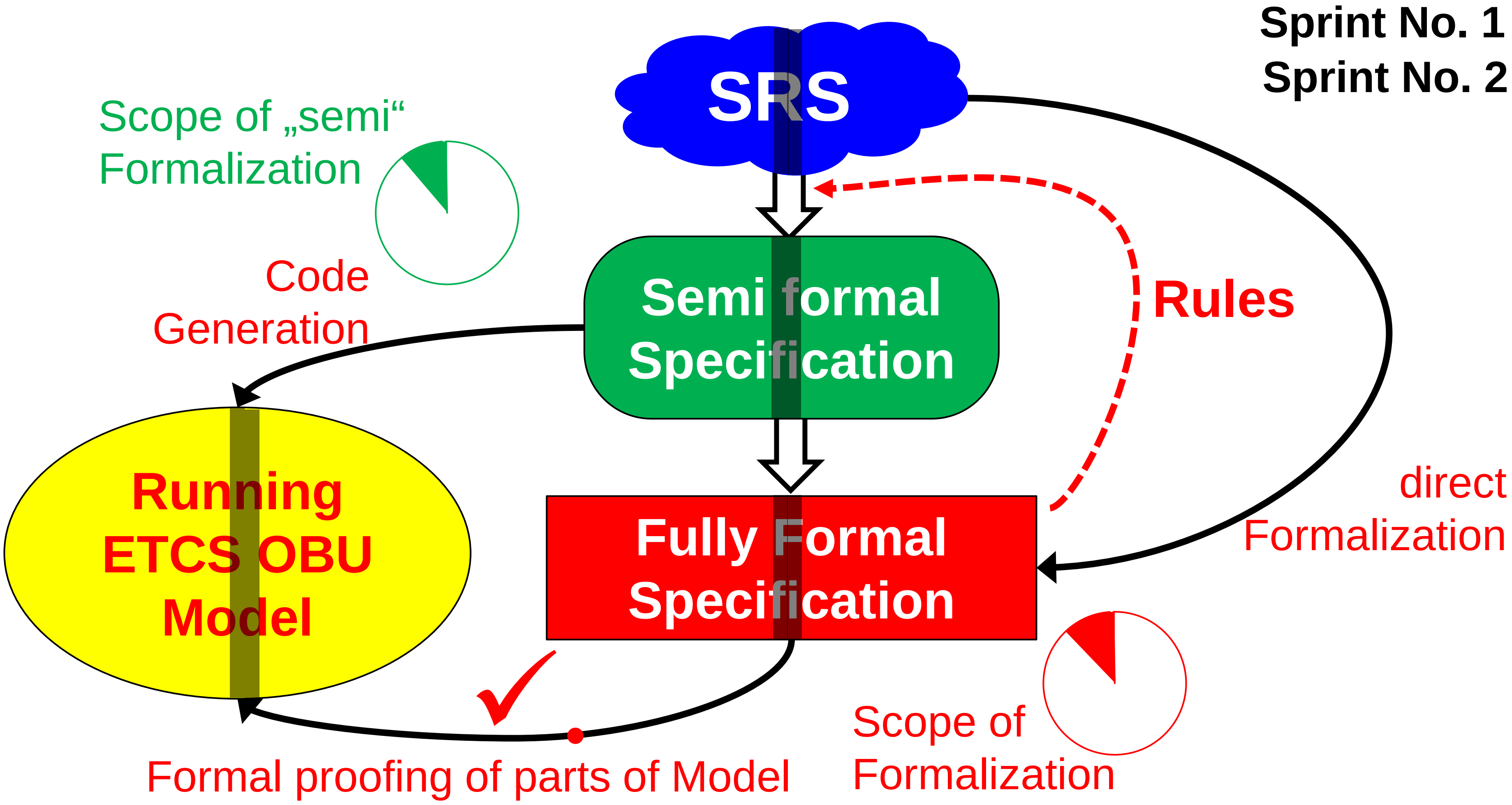
Formalization of SRS within openETCS


SRS
Scope of „semi“ Formalization
Code Generation
Semi formal Specification
Rules
Running ETCS OBU Model
Fully Formal Specification
direct Formalization
Scope of Formalization
Formal proofing of parts of Model

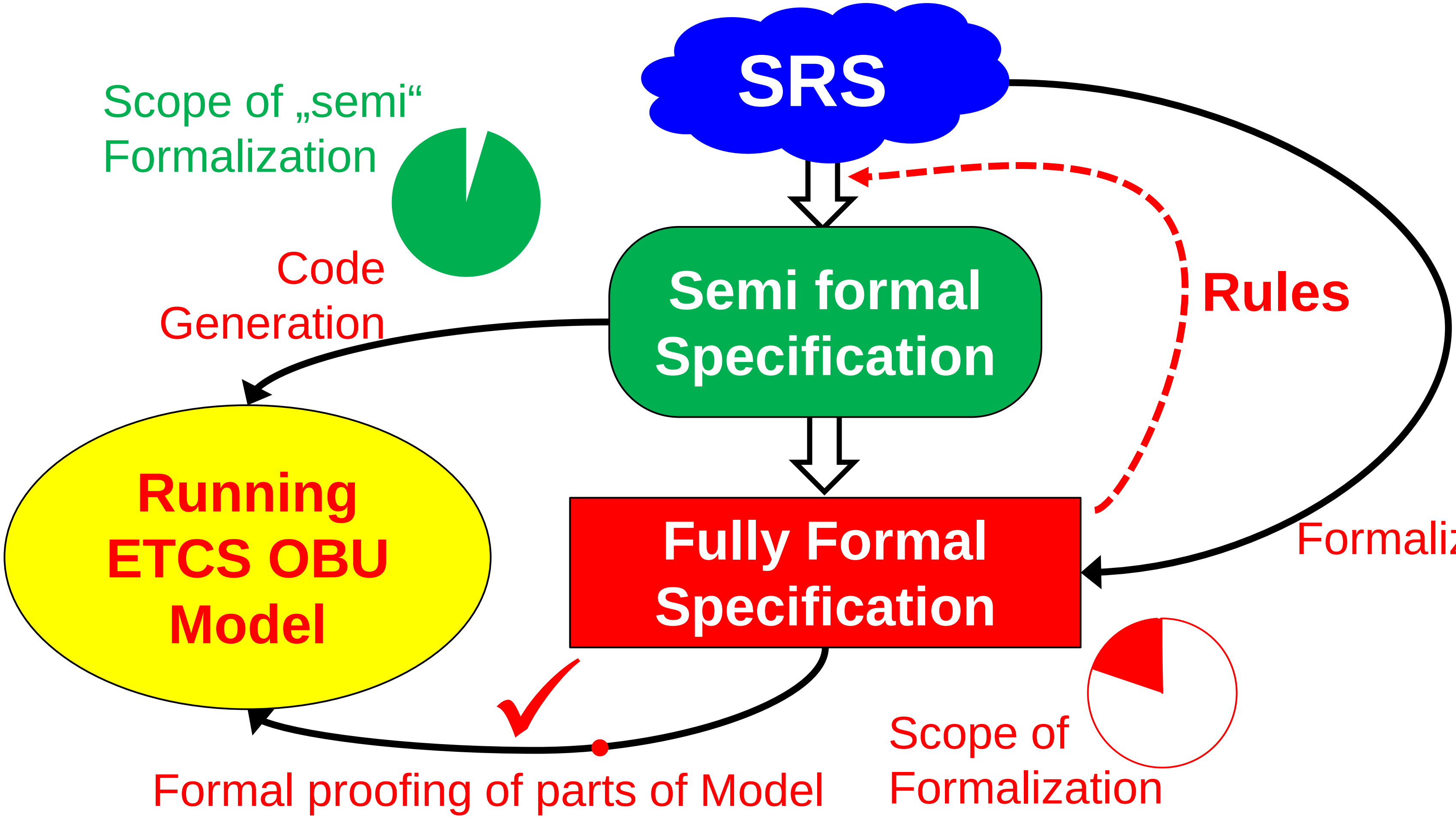
Apply SCRUM ➔ incremental deliverables


The Agile: Scrum Framework at a glance
Inputs from Executives, Team, Stakeholders, Customers, Users
Product Owner
The Team
Scrum Master
Burndown/up Charts
Daily Scrum Meeting
Every 24 Hours
1-4 Week Sprint
Sprint Review
1
2
3
4
5
6
7
8
Ranked list of what is required: features, stories, ...
Product Backlog
Team selects starting at top as much as it can commit to deliver by end of Sprint
Sprint Planning Meeting
Task Breakout
Sprint Backlog
Sprint end date and team deliverable do not change
Finished Work
Sprint Retrospective
neon rain interactive
AGILE FOR ALL

Formalization of SRS within openETCS



Formalization of SRS within openETCS



SRS

Scope of „semi“ Formalization

Code Generation

Semi formal Specification

Rules

Running ETCS OBU Model

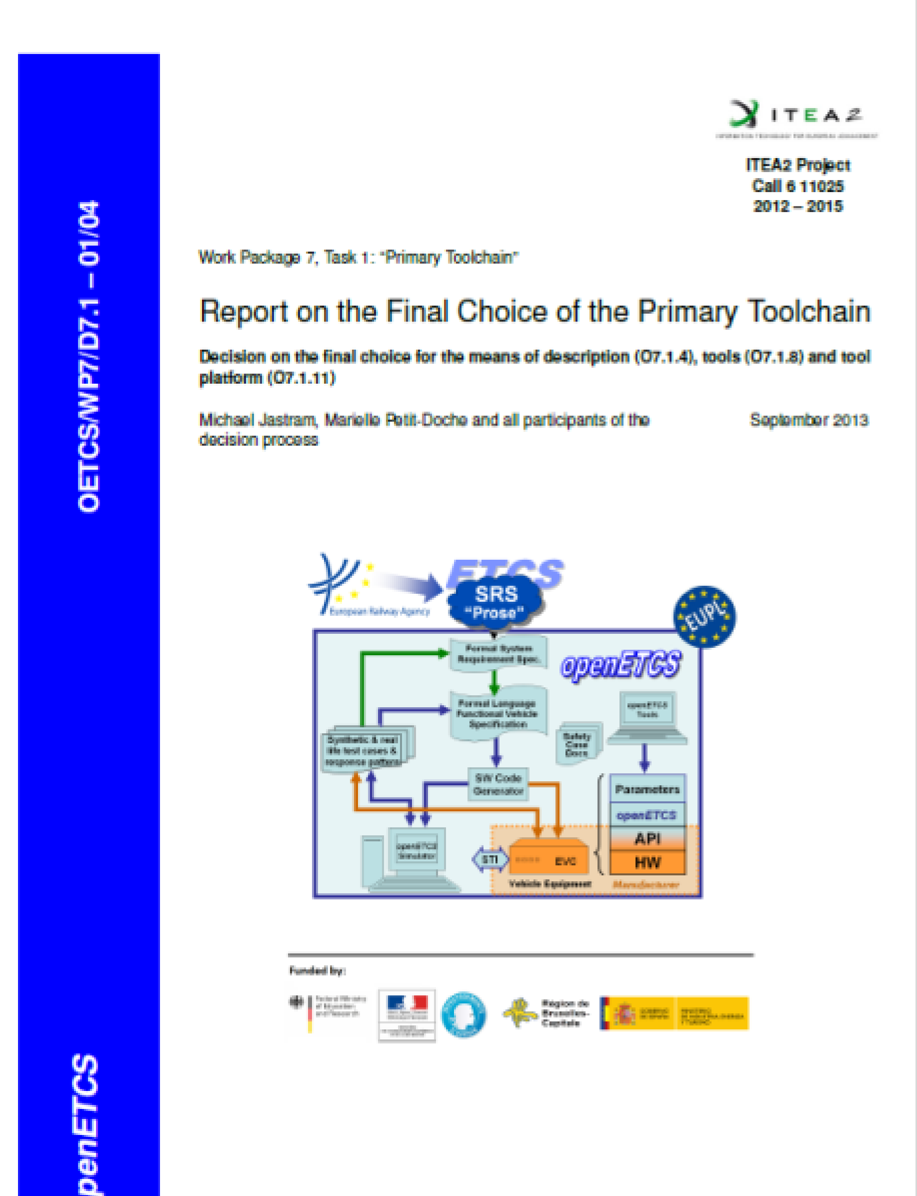
Fully Formal Specification

direct Formalization

Scope of Formalization

Formal proofing of parts of Model

D7.1 Results



OETCS/WP7/D7.1 – 01/04

ITEA2 Project
Call 6 11025
2012 – 2015

Work Package 7, Task 1: "Primary Toolchain"

Report on the Final Choice of the Primary Toolchain

Decision on the final choice for the means of description (O7.1.4), tools (O7.1.8) and tool platform (O7.1.11)

Michael Jastram, Marielle Petit-Doche and all participants of the decision process

September 2013

Funded by:

Région de Bruxelles-Capitale

penETCS

Key results:

- Eclipse EMF + SysML are selected
- No complete OSS “pro” tools chain available
- “Formal Spec.” & “Ref. OBU SW” cannot wait !

  ➔ Need to use CSS tool SCADE (SIL4)
- EFS for V&V and Content Resource (no SIL)
  ➔ May be used for “rapid prototyping”
- WP7 needs to look for CSS ➔ OSS tools migration path ➔ join POLARSYS ?

D7.1 Decision Recommendations (1)

Decision 1

By vote in Paris on July 4th, 2013, all the partners agree on the use of Eclipse as tool platform.

Want to go … eclipse … EMF

D7.1 Decision Recommendations (1)

Decision 1

By vote in Paris on July 4th, 2013, all the partners agree on the use of Eclipse as tool platform.

Decision 2

By vote in Paris on July 4th, 2013, all the partners agree on the use Papyrus/SysML to cover the highest level of the OpenETCS V-cycle. Later it was clarified that it will be an original or bidirectional synchronized (but not a derived) artifact.

We will start with …

SysML

D7.1 Decision Recommendations (2)

Decision 3

With input from WP2 and WP3, a WP7 will develop a validator for Papyrus-based SysML.

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Decision 3

With input from WP2 and WP3, a WP7 will develop a validator for Papyrus-based SysML.

Decision 4

As the first tool chain release, WP7 will provide at a minimum a Papyrus SysML environment to WP3, under the assumption that this is suficient for WP3 to start modeling, until the final decision has been made (see Decision 5).

D7.1 Decision Recommendations (3)

Decision 5

A final decision on the primary tool chain must be made by the end of January 2014. After this point, WP7 resources must not be spread between competing tools.

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Decision 5

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Decision 6

EFS activities will be coordinated with WP4, to support V&V activities (as these are modeling activities, they still belong in WP3). *This issue must be raised and resolved with the PCC.*

D7.1 Decision Recommendations (4)

Decision 7

Unless new evidence is provided in agreement with Decision 5, SCADE will be considered the foundation for the primary tool chain. In that case, a feasible migration from what had been done with SCADE is essential.

D7.1 Decision Recommendations (5)

Decision 8

Work on the tool chain must always take the objective of an OSS migration into account, e.g. by standardizing interfaces between tools. It is acknowledged that such a migration may not be feasible within the timeframe of the openETCS project. However, by the end of the project, feasibility of a migration must be demonstrated (e.g. with a prototype or case study).

D7.1 Decision Recommendations (6)

Decision 9

All openETCS project partners must be made aware of the need for acquiring a SCADE license (depending on their activities). If a partner feels that this is not achievable, this must be escalated to the project office by November 15, 2013. The project office will assist in finding a solution. If no solution has been found by January 31, 2014 for all partners who escalated, then SCADE will be abandoned for anything on the critical path of the tool chain.

D7.1 Decision Recommendations (7)

Decision 10

According to the spirit of an open proofs project, team members are permitted to continue evaluating B, even with the objective of contradicting Decision 7. However, if unsuccessful by the deadline set by Decision 5, they must refocus either by contributing elsewhere, or by focusing on the transition to OSS, as outlined in Figure 57. The team is strongly encouraged to coordinate with POLARSYS.

D7.1 Decision Recommendations (8)

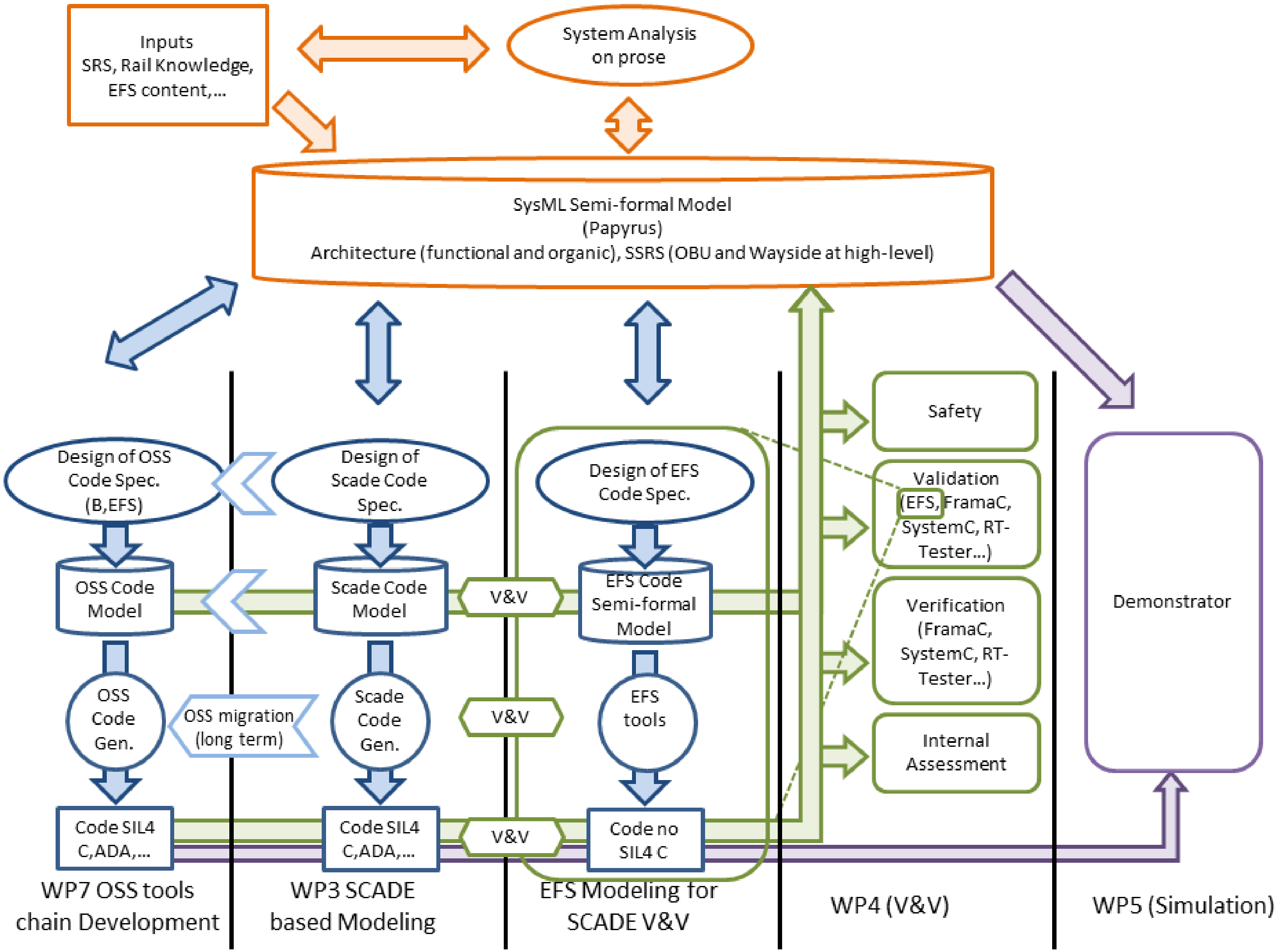
Decision 11

WP4 is going to consider the artifacts of "SysML+ SCADE" tool chain for the first round of verification and validation launched in July 2013.

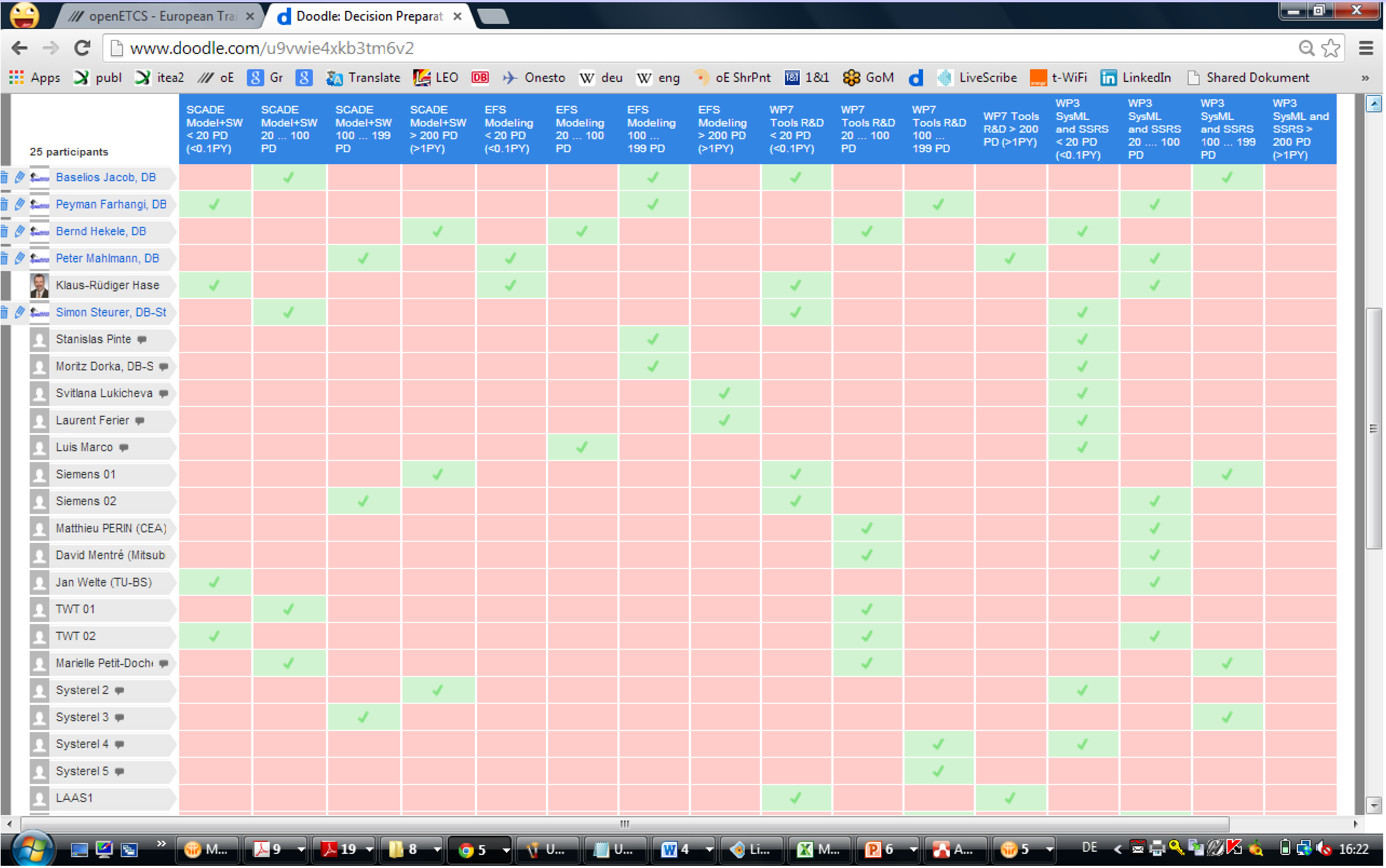
Decision 12

For the following rounds, starting in February 2014, WP4 will adapt the verification and validation activities to the models and code provides by WP3.

Activities according to D7.1 recommendation


Inputs
SRS, Rail Knowledge, EFS content,…
System Analysis on prose
SysML Semi-formal Model
(Papyrus)
Architecture (functional and organic), SSRS (OBU and Wayside at high-level)
Design of OSS Code Spec. (B,EFS)
Design of Scade Code Spec.
Design of EFS Code Spec.
OSS Code Model
Scade Code Model
V&V
EFS Code Semi-formal Model
OSS Code Gen.
OSS migration (long term)
Scade Code Gen.
V&V
EFS tools
Code SIL4 C,ADA,…
Code SIL4 C,ADA,…
V&V
Code no SIL4 C
Safety
Validation (EFS, FramaC, SystemC, RT-Tester…)
Verification (FramaC, SystemC, RT-Tester…)
Internal Assessment
Demonstrator
WP7 OSS tools chain Development
WP3 SCADE based Modeling
EFS Modeling for SCADE V&V
WP4 (V&V)
WP5 (Simulation)

Resources estimate via Doodle:



25 participants	SCADE Model+SW < 20 PD (<0.1PY)	SCADE Model+SW 20 … 100 PD	SCADE Model+SW 100 … 199 PD	SCADE Model+SW > 200 PD (>1PY)	EFS Modeling < 20 PD (<0.1PY)	EFS Modeling 20 … 100 PD	EFS Modeling 100 … 199 PD	EFS Modeling > 200 PD (>1PY)	WP7 Tools R&D < 20 PD (<0.1PY)	WP7 Tools R&D 20 … 100 PD	WP7 Tools R&D 100 … 199 PD	WP7 Tools R&D > 200 PD (>1PY)	WP3 SysML and SSRS < 20 PD (<0.1PY)	WP3 SysML and SSRS 20 …. 100 PD	WP3 SysML and SSRS 100 … 199 PD	WP3 SysML and SSRS > 200 PD (>1PY)
Baselios Jacob, DB		✓					✓		✓						✓	
Peyman Farhangi, DB	✓						✓				✓			✓		
Bernd Hekele, DB				✓		✓				✓			✓			
Peter Mahlmann, DB			✓		✓							✓		✓		
Klaus-Rüdiger Hase	✓				✓				✓					✓		
Simon Steurer, DB-St		✓							✓				✓			
Stanislas Pinte							✓						✓			
Moritz Dorka, DB-S							✓						✓			
Svitlana Lukicheva								✓					✓			
Laurent Ferier								✓					✓			
Luis Marco						✓							✓			
Siemens 01				✓					✓						✓	
Siemens 02			✓						✓					✓		
Matthieu PERIN (CEA)										✓				✓		
David Mentré (Mitsub										✓				✓		
Jan Welte (TU-BS)	✓													✓		
TWT 01		✓								✓						
TWT 02	✓									✓				✓		
Marielle Petit-Doch		✓								✓					✓	
Systerel 2				✓									✓			
Systerel 3			✓												✓	
Systerel 4											✓		✓			
Systerel 5											✓					
LAAS1									✓			✓				

We should…

openETCS

wisely use our resources!

We need a decision:

Voting on the

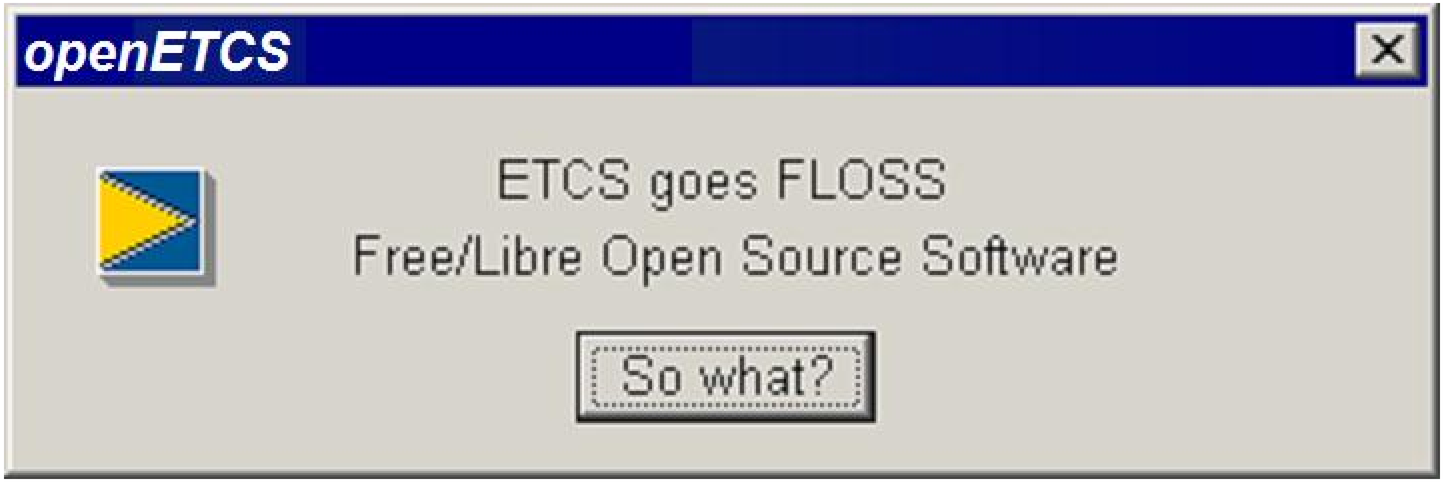
D7.1

Recommendations

We need a PCC Charta:

PCC Charta

Working Group



ETCS goes FLOSS

Free/Libre Open Source Software

Thank you for your attention.