# T7.2: Secondary toolchain

WP7 Review meeting Task 7.2

Marielle Petit-Doche



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WP7 - Task 7.2



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## Outline

- T7.2 Presentation
- T7.2 Items and artifacts management
- T7.2 Means and tools for VnV
- T7.2 Support of safety activities
- 5 T7.2 Model transformation and code generation
- 6 T7.2 Conclusion



Identify the means and tools to complete the primary toolchain to provide SIL4 software

- to support VnV
- · to support safety analysis
- to support management of items and artifacts
- to support model transformation or code generation

 $\Rightarrow$  **Proposal**: Benchmark of means and tools as for T7.



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- ⇒ Proposal : Benchmark of means and tools as for T7.1





## Main steps

- Inputs: WP2 deliverables
  - States of art: D2.1 and D2.2 (and partly D2.4)
  - OpenETCS requirements: D2.6-9
  - Primary toolchain: D7.1
  - End users requirements (WP3, WP4, SSRS,..)
- Outputs :
  - Set of models: O7.1.1, O7.1.5
  - Criteria template: O7.2.1
  - Selection: O7.2.2, O7.2.3, O7.2.4, O7.2.5, O7.2.6, O7.2.7, O7.2.8
  - Decision: D7.2
- Key dates for T7.2
  - April 2013: Start with benchmark candidates
  - September 2013: First Criteria templates and Telco meetings
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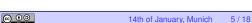
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  - · Open Source approaches
  - Complementarity with primary toolchain
  - · Integration to the primary toolchain
  - Qualification according EN50128 criteria
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- Criteria for each categories
- Heterogeneous tools for heterogeneous activities
- ⇒ Proposal : Four independent templates of criteria
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- · Artifacts (version, multi-users,...)
- Data: common dictionary
- Function: common dictionnary and architecture
- Requirements: definition, traceability and allocation

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### Candidates

### Heterogeneous propositions:

- Directly linked to primary toolchain proposals: SCADE
- Linked to Eclipse: ProR, EMF client platform, EMF Store, Rodin
- Others: Matelo, GSN
- Challengers: Ecore model, UML library, RegCycle



## Selection

How to proceed for the selection?

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### Means and tools to support VnV activities:

- Step and Phases (SSRS, model, code,...)
- Kind of properties (functional, performance, safety,...)
- Methods and tools (static verification, testing, formal verification,...)

Heterogeneous list of activities and solutions

⇒ Difficulties to settle the criteria

Active collaboration with WP4 partners:

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### Candidates

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- · Directly linked to primary toolchain proposals: SCADE, Classical B
- Model-based testing: System C, Matelo, RT-Tester, CPN Tools
- · Model-Checking: UPPAAL, Fiacre, Tina, Spin
- · Simulation: Diversity
- · Formal Proof: Frama-C, Rodin





## Selection

How to proceed for the selection?





Means and tools to support Safety activities:

- PHA, SHA,...
- Safety Requirement Specification and Allocation
- Safety Requirement VnV
- Safety Case

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⇒ Criteria based on WP4 T4 early document

Active collaboration with WP4 partners: strong connections with VnV



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Active collaboration with WP4 partners: strong connections with VnV



### Candidates

#### Heterogeneous propositions:

- · Safety analysis: Safety Architect
- Requirement specification and safety Case: Goal Structuring Notation
- Formal Proof and Requirement allocation: CPN tools, Event-B and Rodin



### Selection

How to proceed for the selection?



Means and tools to support model transformation and code generation:

- Depends on D7.1 decision
- Depends on how to use SysML
- Depends on model representation (EMF, textual, graphical,..)
- Traceability is a major items
- Reverse transformation ?

⇒ Criteria have to be clarified

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### Candidates

- Directly linked to primary toolchain proposals: SCADE
- Linked to EMF: Acceleo, ATL, QVTO, Xtend



## Selection

How to proceed for the selection?



## T7.2 Proposition

- Six months for the evaluation
- · Needs appear "on the fly"
- Few participation to the activities
- Few resources available

Final version of D7.2 for the 30th of January, 2014 with conclusion of today meeting
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