



# ***openETCS* itea2 Review**

## WP7 – Toolchain Development

supported by:



Federal Ministry  
of Education  
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openETCS@ITEA2 Project

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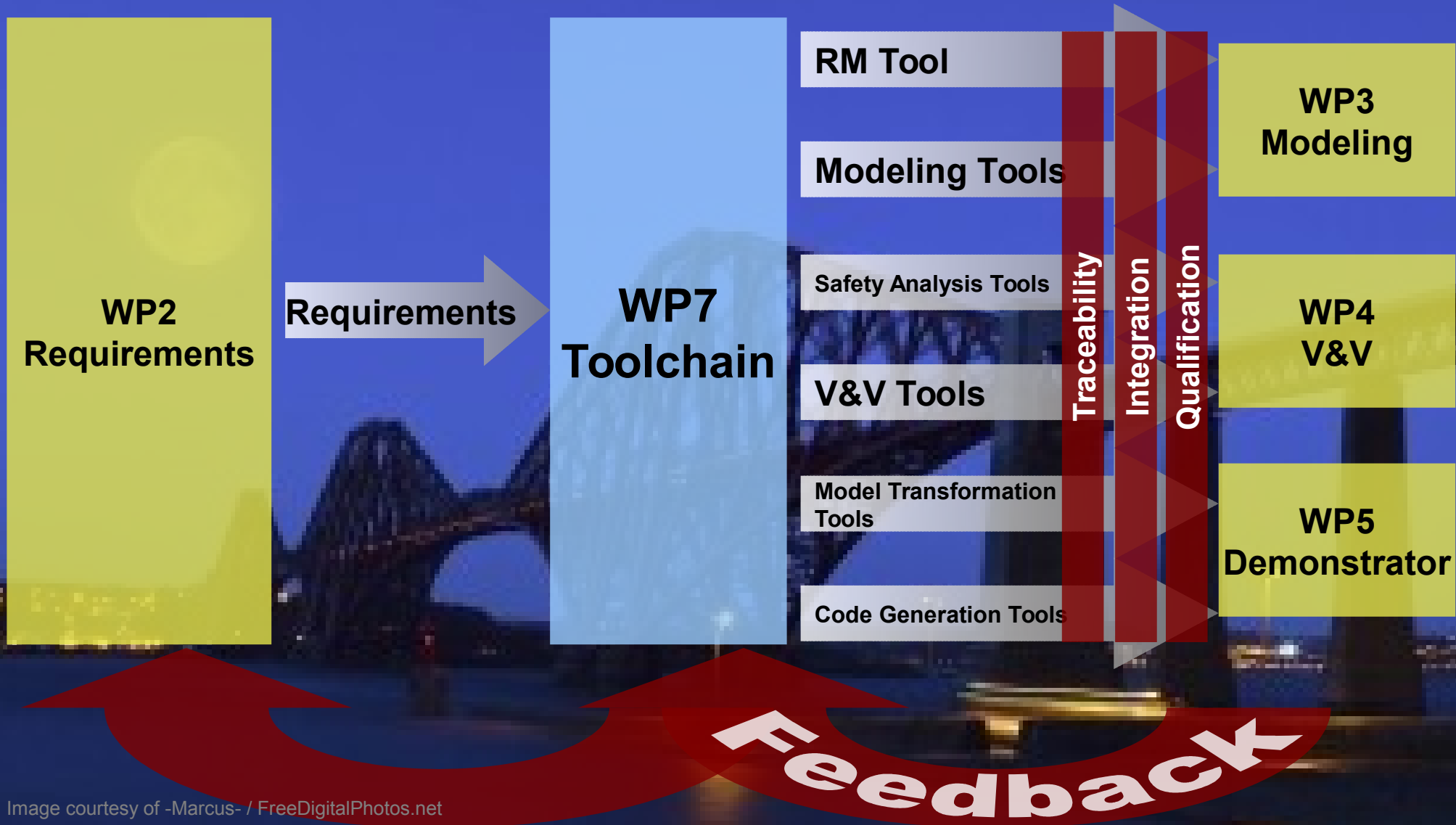
Michael Jastram

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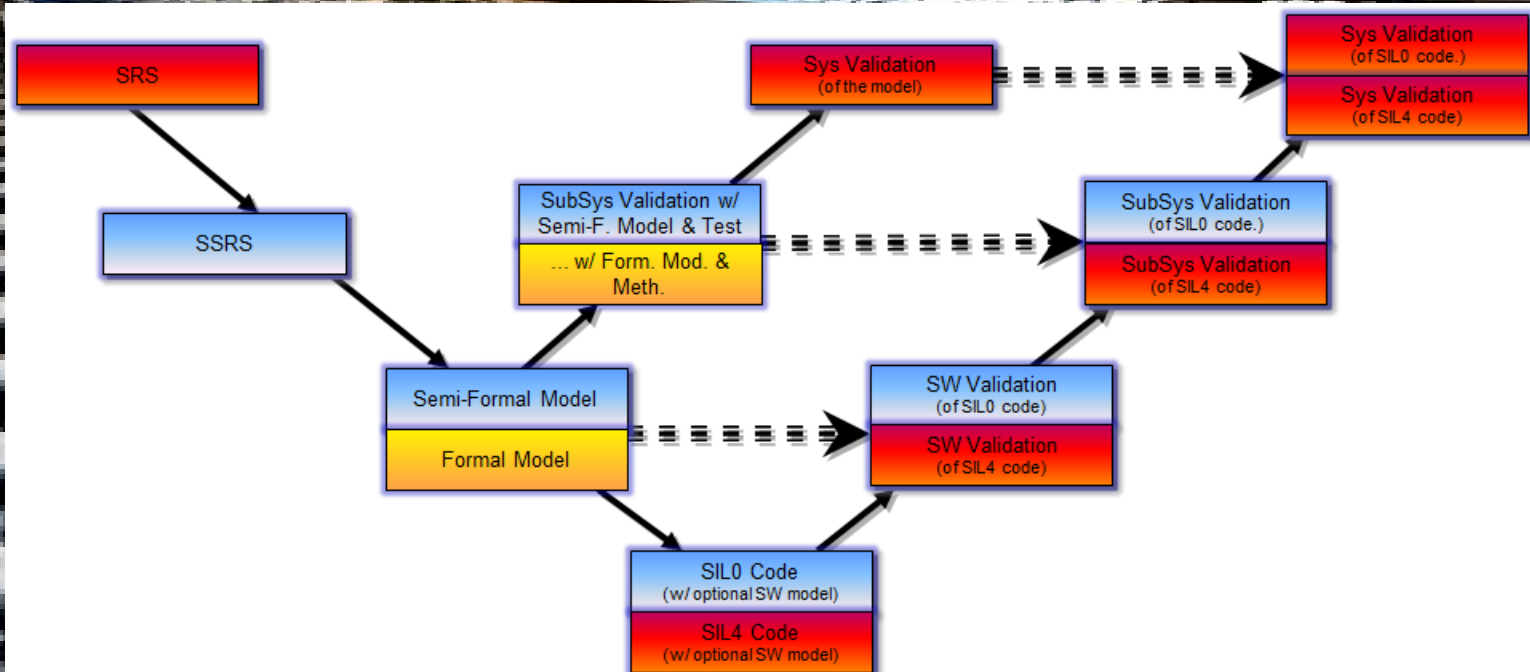
Munich, June 12th, 2014

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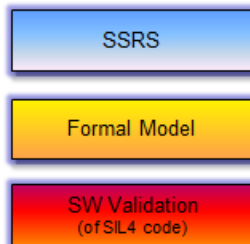
# The Big Picture



# An Integrated Tool Chain



Source: <https://github.com/openETCS/requirements/tree/master/D2.6-9>



Task is part of the project

Task is part of the project but will be done on a sample

Task is not part of the project

Note: Verification tasks between items that are part of the project are also part of the projects. They are not represented here to avoid cluttering of the drawing.



Normal process



Is used by

# Workpackage Structure



## WP7 Toolchain

Michael Jastram / Formal Mind

### T7.1 Primary Toolchain

Marielle Petit-Doche / Systerel

### T7.2 Secondary Toolchain

Marielle Petit-Doche / Systerel

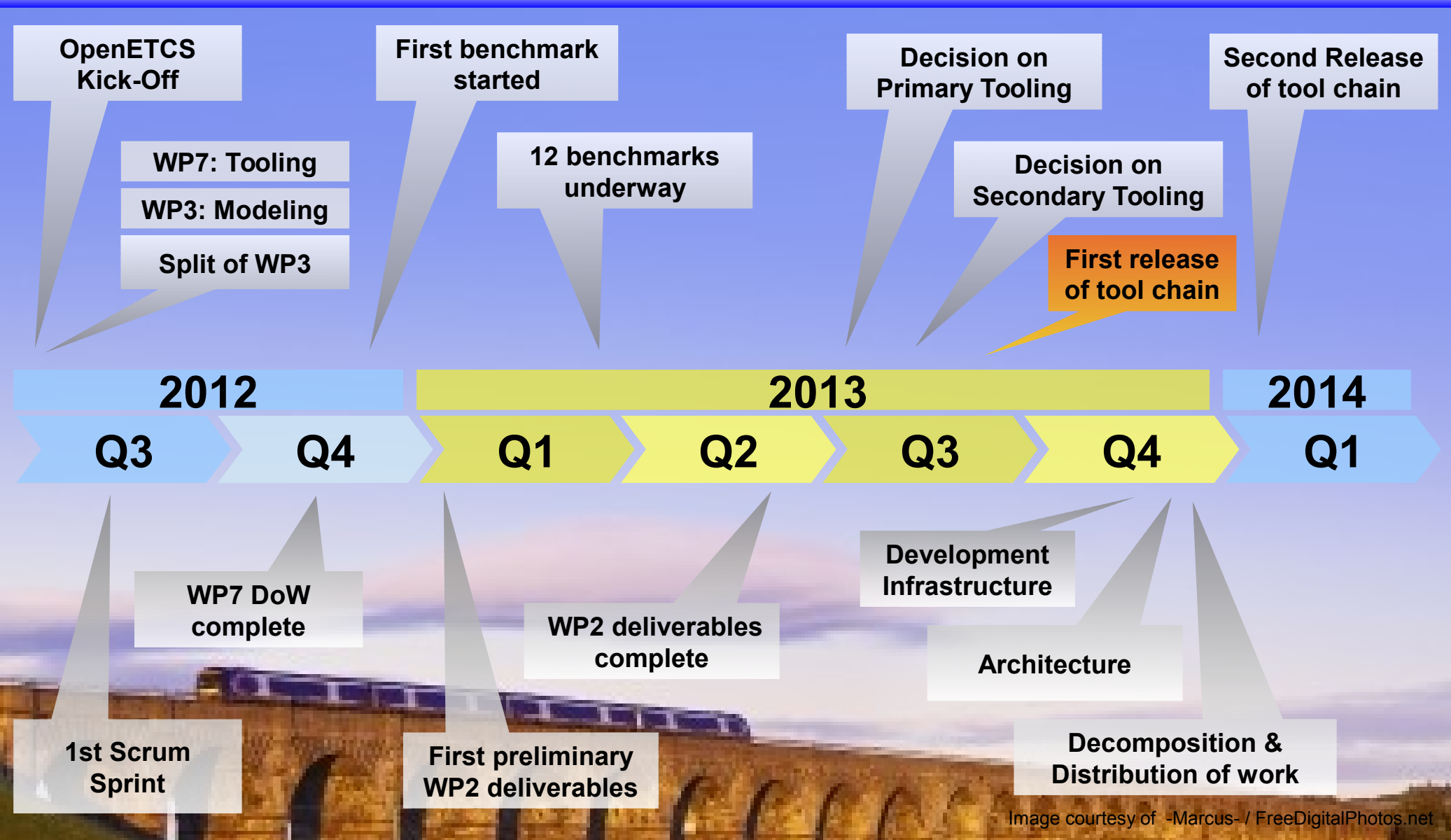
### T7.3 Toolchain Development

Cécile Braunstein / University Bremen

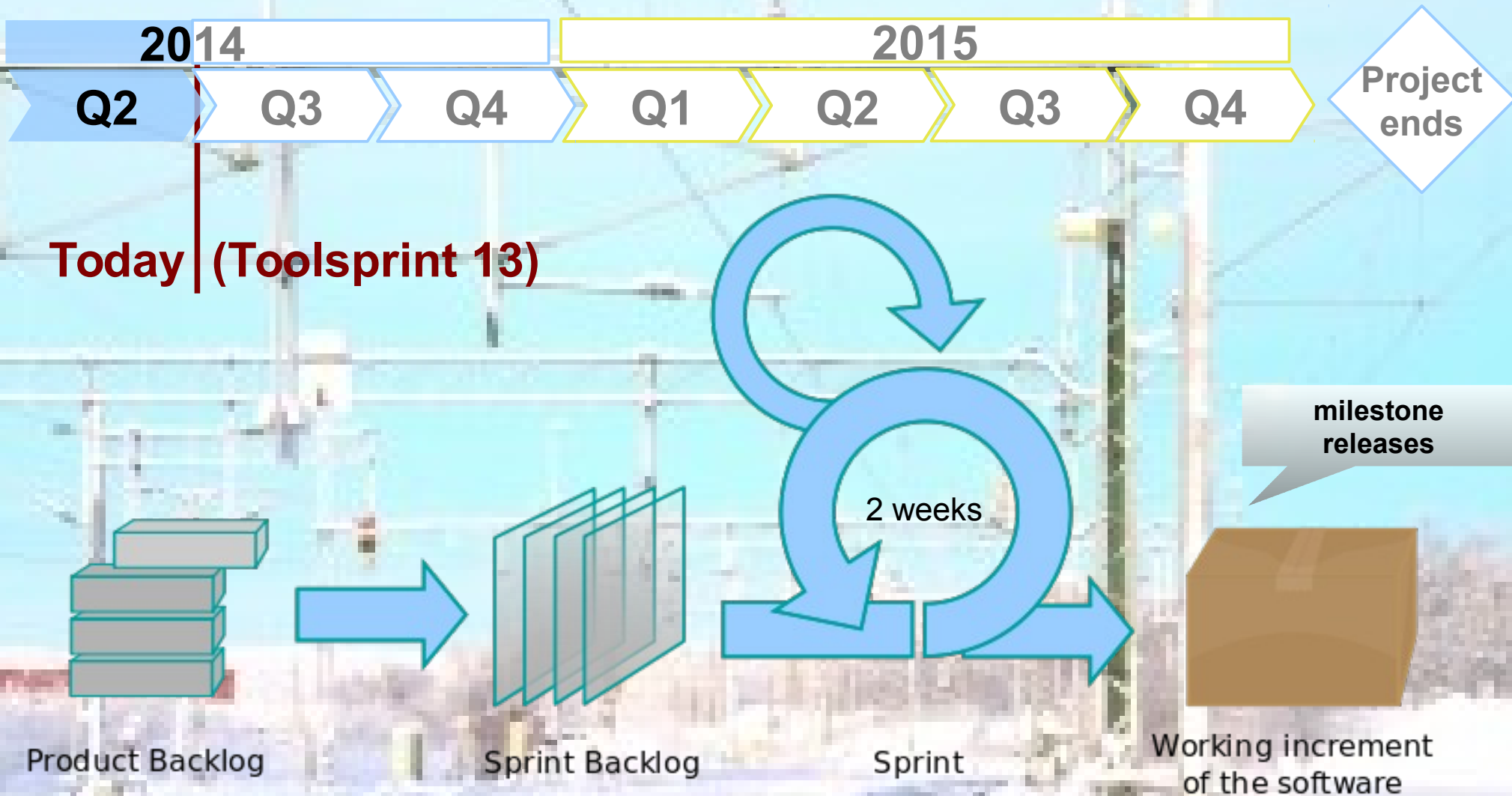
### T7.4 Ecosystem

Jonas Helming / EclipseSource

# Timeline



# 2014 – 2015: Regular releases



# Status Deliverables

**D7.1: Evaluation Primary Tools: Delivered**

**D7.2: Evaluation Secondary Tools: Delivered**

**D7.4: First Toolchain Release: Delivered**

**D7.3: Qualification Process: Delayed**

- Draft available since January 2014
- Lack of resources prompted to focus on too chain development process
- Lack of feedback from the partners
- Lack of expert on tool qualification

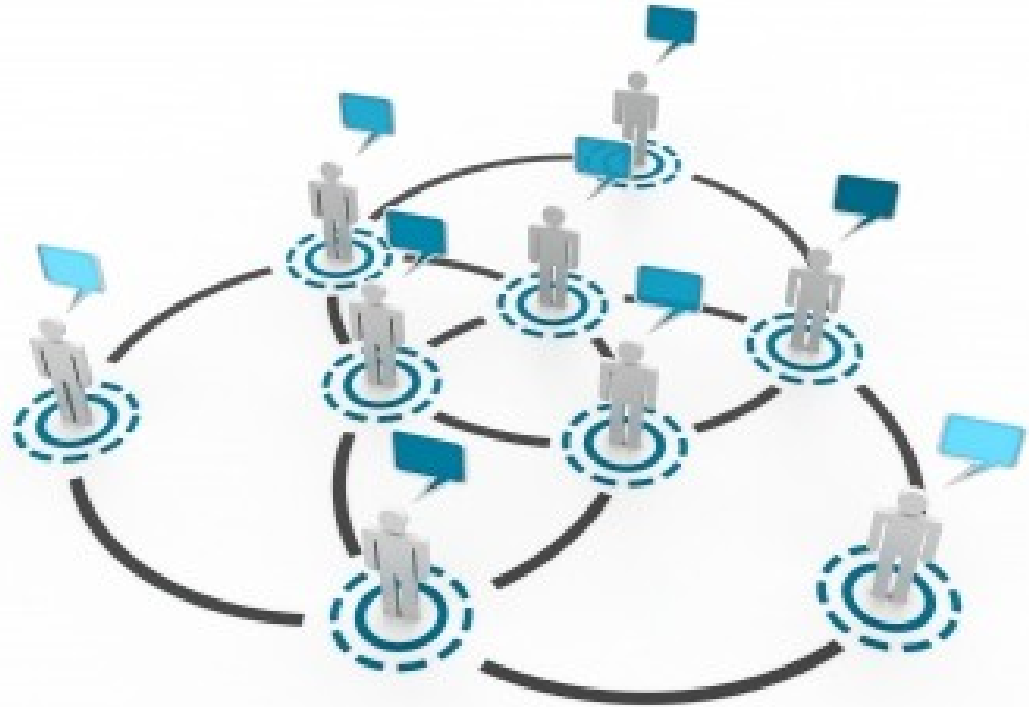


# Collaborations

<https://github.com/openETCS/toolchain/wiki/Collaborations>

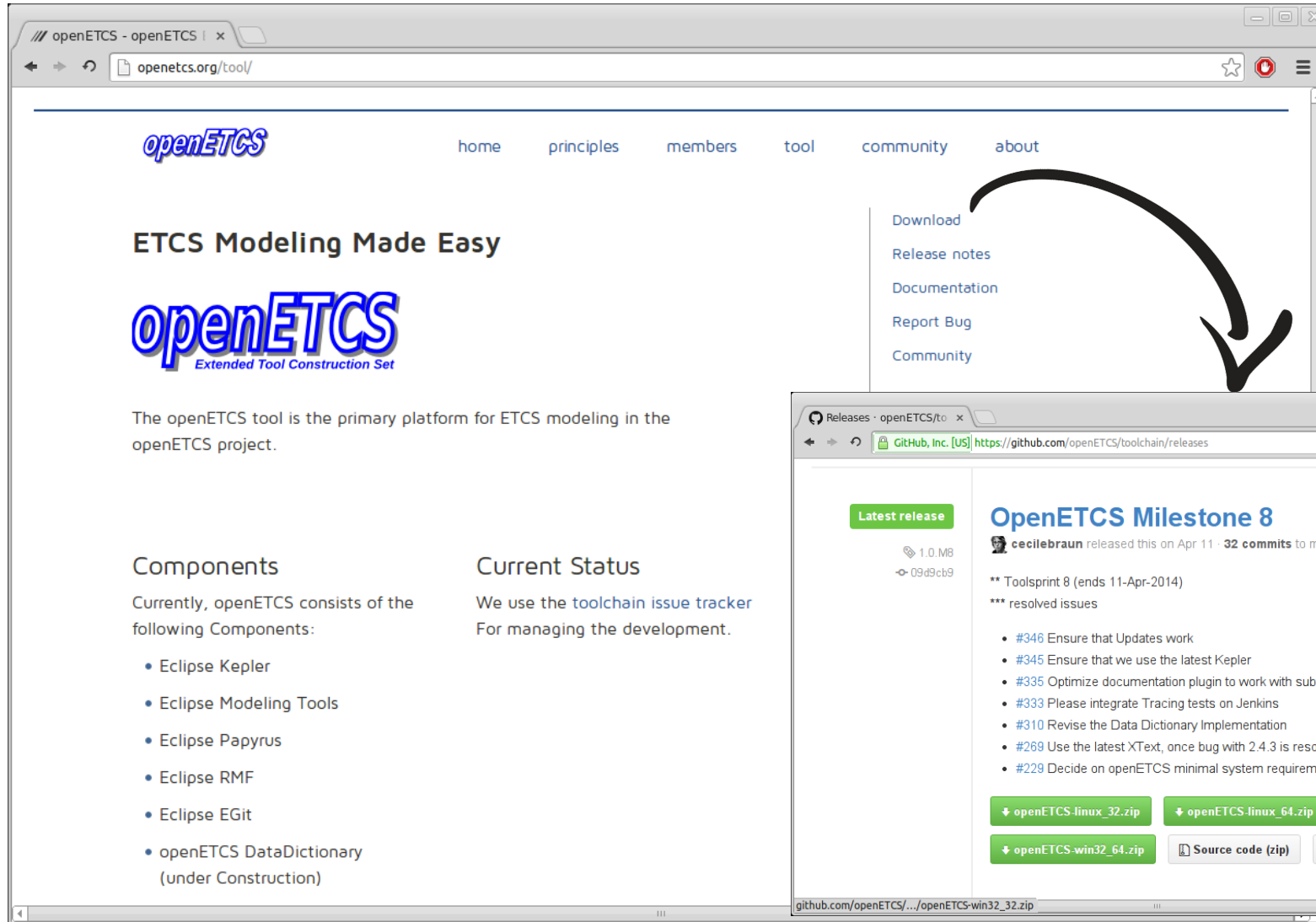
Delegates maintain contact with these projects:

- Polarsys (aka OPEES, aka Topcased)
- shift2rail
- Crystal
- SAFE
- SafeCap
- VeTeSS
- EATS FP7 project
- OpenRBC
- Amalthea
- OpenCOSS





# openETCS: open Extended Tool Construction Set



The image shows two browser windows. The top window displays the openETCS website at [openetcs.org/tool/](https://openetcs.org/tool/). The website features the openETCS logo, a navigation menu (home, principles, members, tool, community, about), and a sidebar with links: Download, Release notes, Documentation, Report Bug, and Community. A large black arrow points from the 'Download' link to the GitHub releases page shown in the bottom window. The bottom window displays the GitHub releases page for the openETCS toolchain at <https://github.com/openETCS/toolchain/releases>. It highlights the 'Latest release' (1.0. M8) and the 'OpenETCS Milestone 8' by cecilebraun, released on April 11. The milestone includes a list of issues resolved and download links for various operating systems and architectures.

**openETCS**  
ETCS Modeling Made Easy

The openETCS tool is the primary platform for ETCS modeling in the openETCS project.

**Components**  
Currently, openETCS consists of the following Components:

- Eclipse Kepler
- Eclipse Modeling Tools
- Eclipse Papyrus
- Eclipse RMF
- Eclipse EGit
- openETCS DataDictionary (under Construction)

**Current Status**  
We use the [toolchain issue tracker](#) For managing the development.

**OpenETCS Milestone 8**  
cecilebraun released this on Apr 11 · 32 commits to master since this release

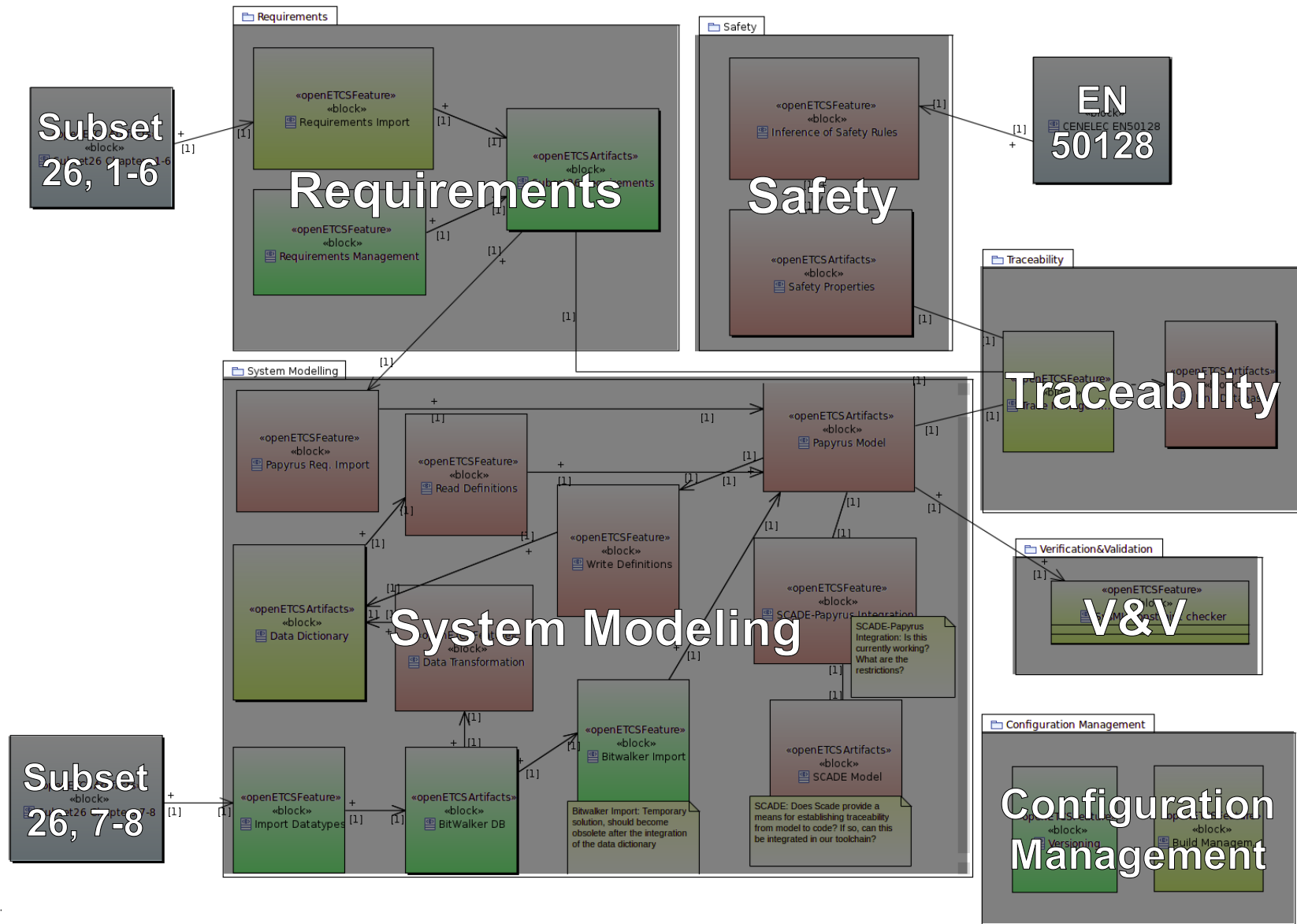
\*\* Toolspint 8 (ends 11-Apr-2014)  
\*\*\* resolved issues

- #346 Ensure that Updates work
- #345 Ensure that we use the latest Kepler
- #335 Optimize documentation plugin to work with subpages
- #333 Please integrate Tracing tests on Jenkins
- #310 Revise the Data Dictionary Implementation
- #269 Use the latest XText, once bug with 2.4.3 is resolved
- #229 Decide on openETCS minimal system requirements

Download links:  
openETCS-linux\_32.zip, openETCS-linux\_64.zip, openETCS-win32\_32.zip, openETCS-win32\_64.zip, Source code (zip), Source code (tar.gz)

# Feature Overview

<https://github.com/openETCS/toolchain/wiki/Feature%20Overview>



# Product Backlog (uses gitHub infrastructure)

## Product Backlog

### As a developer

#### I want to have clear development guidelines

- #70 Write a license guideline 2013-08-02 09:48:00
- #249 Document the release process 2014-01-23 09:15:07
- #254 Document the tool qualification process 2014-01-28 09:49:37
- #322 Provide project specific settings 2014-03-18 03:20:10
- #338 Document the feature/plugin integration process for developer 2014-03-27 10:19:31

### As a modeler

#### I want to get started quickly

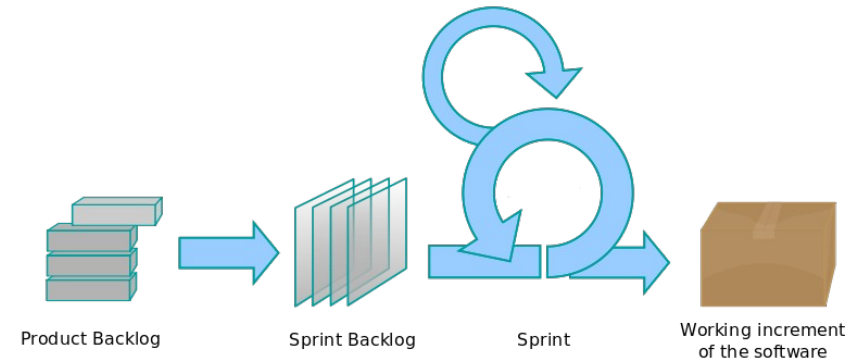
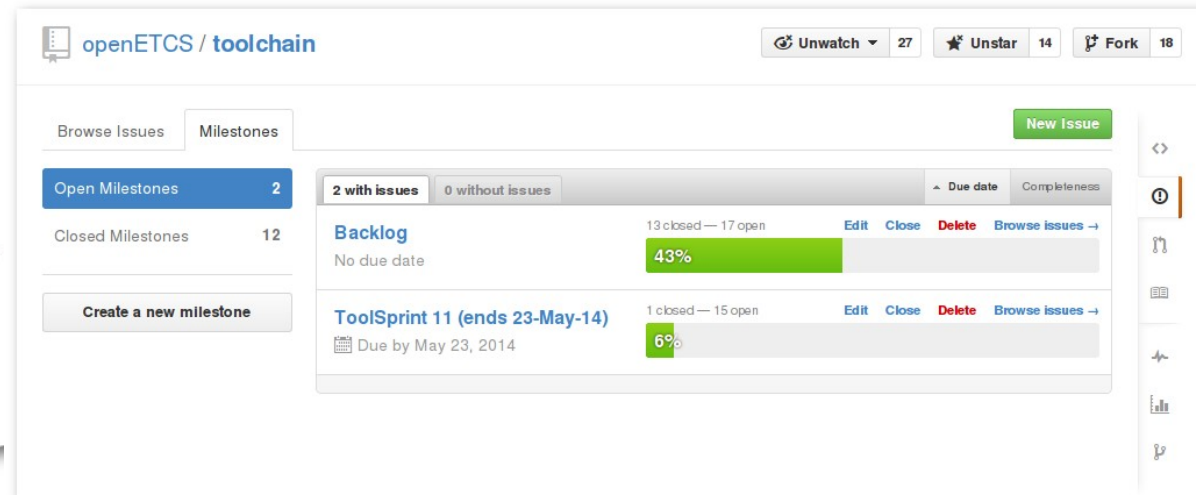
- #243 Automate initial Git clone 2014-01-14 13:22:14
- #257 Include Java in the installation (without the need for admin rights), so that all openETCS features are available. 2014-02-03 13:43:25
- #263 Create an OpenETCS perspective and make it the default perspective. 2014-02-04 13:14:45
- #275 Write a tool chain user guide 2014-02-11 09:30:04
- #315 Automate the generation of the documentation wiki 2014-03-14 08:12:57
- #330 Documentation: Provide high-level overview and terminology 2014-03-21 10:23:29

#### I need to access Subset-26

- #283 Automatic import from subset-026 WORD document to ReqIF 2014-02-13 09:26:15

#### I need to work on my models in a team environment

- #290 Complete problem description for Model Versioning and collaborative work. 2014-02-18 08:54:47
- #294 Provide a model organisation 2014-02-20 08:51:21

The screenshot shows the GitHub interface for the **openETCS / toolchain** repository. At the top, there are buttons for **Unwatch** (27), **Unstar** (14), and **Fork** (18). Below this, there are tabs for **Browse Issues** and **Milestones**. The **Milestones** tab is active, showing a list of milestones. On the left, there are two sections: **Open Milestones** (2) and **Closed Milestones** (12). A button **Create a new milestone** is at the bottom. The main content area shows two milestones:
 

- Backlog**: No due date, 2 with issues, 0 without issues. Progress bar shows 43% completion. Actions: Edit, Close, Delete, Browse issues.
- ToolSprint 11 (ends 23-May-14)**: Due by May 23, 2014, 1 closed — 15 open. Progress bar shows 6% completion. Actions: Edit, Close, Delete, Browse issues.

 A **New Issue** button is in the top right corner of the milestones section.

# Demo



# Escalation: WP Objectives endangered

**Transition from Phase 1 (Analysis) to Phase 2 (Tool Development) unveiled problems:**

- Technology not as mature as expected
- Important Skills are missing
- Resources are Fragmented



# Escalation: Technology Maturity



**“You get what you pay for”**

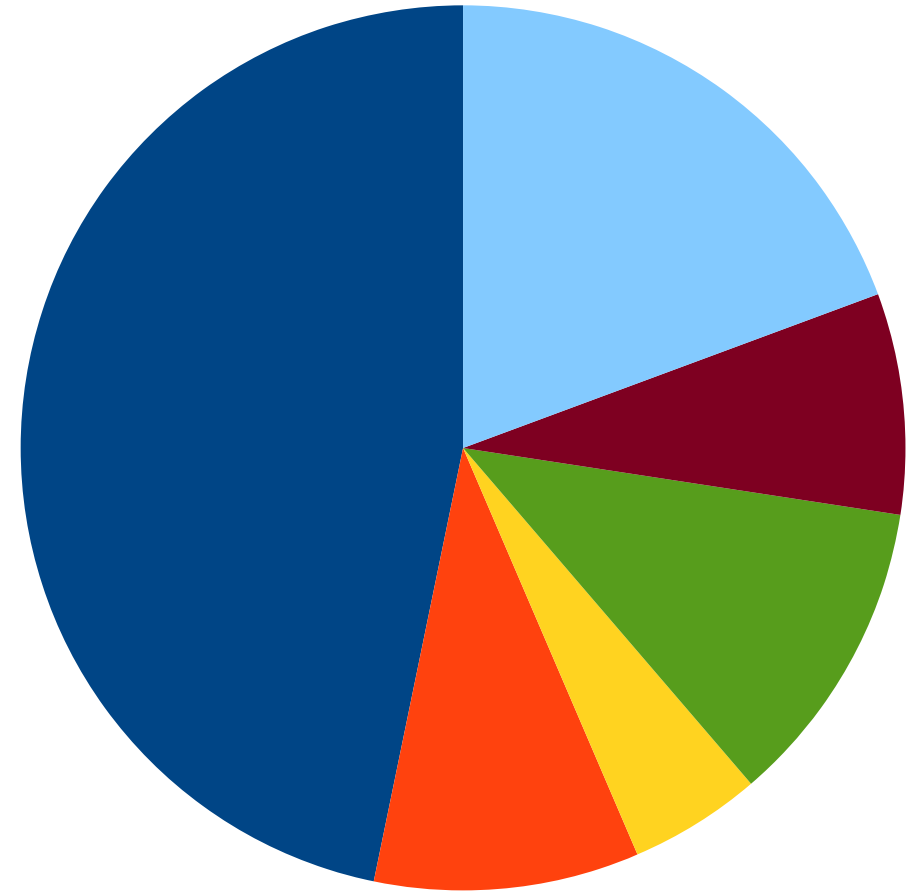
- **Topcased/PolarSys much less mature than expected**
  - Papyrus is the only usable PolarSys Component
  - CEA 100% fixing Papyrus issue (unspecific to openETCS)
  - No mature Traceability solution available
- **ProR/RMF (Requirements) needs significant work**
  - Many “standard” functions still missing
  - Performance issues
- **Minor issues eating up resources**
  - Java 7 in enterprise environment is tricky
  - Providing cross-platform support
  - Building and maintaining infrastructure (update sites, build server, documentation infrastructure, etc.)

# Escalation: Resource Situation



Status	
active	2.9
exhausted	0.6
inactive	0.3
Papyrus	0.7
PM/Leadership	0.5
research	1.2
<b>Total Result</b>	<b>6.2</b>

■ active  
■ exhausted  
■ inactive  
■ Papyrus  
■ PM/Leadership  
■ research



**At first glance, not too bad:**

- 60% active (incl. Papyrus)
- 20% research
- 20% overhead, exhausted and inactivity



# Escalation: Who can Develop Software?

Skill	Status	
Eclipse	active	0.3
	exhausted	0.6
	Papyrus	0.7
	PM/Leadership	0.5
Learning Eclipse	active	1.8
No Eclipse	active	0.8
	inactive	0.3
	research	1.2
Total Result		6.2



## Reason to worry:

- Only 5% of Eclipse development active (excluding Papyrus)
- 30% of active participants learning

# Escalation: Fragmentation



Partner	PY 2014	Status	Skill
CEA	0.7	Papyrus	Eclipse
SQS	0.7	active	No Eclipse
Rostock	0.7	research	No Eclipse
Bremen	0.6	active	Learning Eclipse
Formal Mind	0.5	PM/Leadership	Eclipse
LAAS	0.5	active	Learning Eclipse
ERTMS Solutions	0.5	research	No Eclipse
Systerel	0.5	exhausted	Eclipse
Toulouse	0.4	active	Learning Eclipse
Fraunhofer	0.3	active	Eclipse
Mitsubishi	0.3	active	Learning Eclipse
Alstom	0.1	inactive	No Eclipse
ALSTOM Transport	0.1	inactive	No Eclipse
EclipseSource	0.1	exhausted	Eclipse
Institute Telecom	0.1	inactive	No Eclipse
TWT	0.1	active	No Eclipse

# Escalation: Possible Solutions



## Problem: Technology Maturity

- Use of proprietary technology

## Problem: Missing Skills

- Training
- Get new partners with the right skills by picking up French funds
- Spend funds to hire experts

## Problem: Fragmentation

- **Aggregate resources:** Few partners with many resources, not many partners with few.
- **Build a core team:** Find at least 3 team members (better 4) with the right skills that work full time on WP7.

# Thanks to the team

## **Task Leader 7.1 and 7.2**

Marielle Petit-Doche / Systerel

## **Task Leader 7.3**

Cécile Braunstein / University of Bremen

## **Task Leader 7.4**

Jonas Helming / Eclipse Source

## **Thanks**

to the openETCS WP7 Team

