ITEA 2

INFORMATION TECHNOLOGY FOR EUROPEAN ADVANCEMENT

openETCS

openETCS itea2 Review

WP7 – Toolchain Development

supported by:

Federal Ministry of Education and Research

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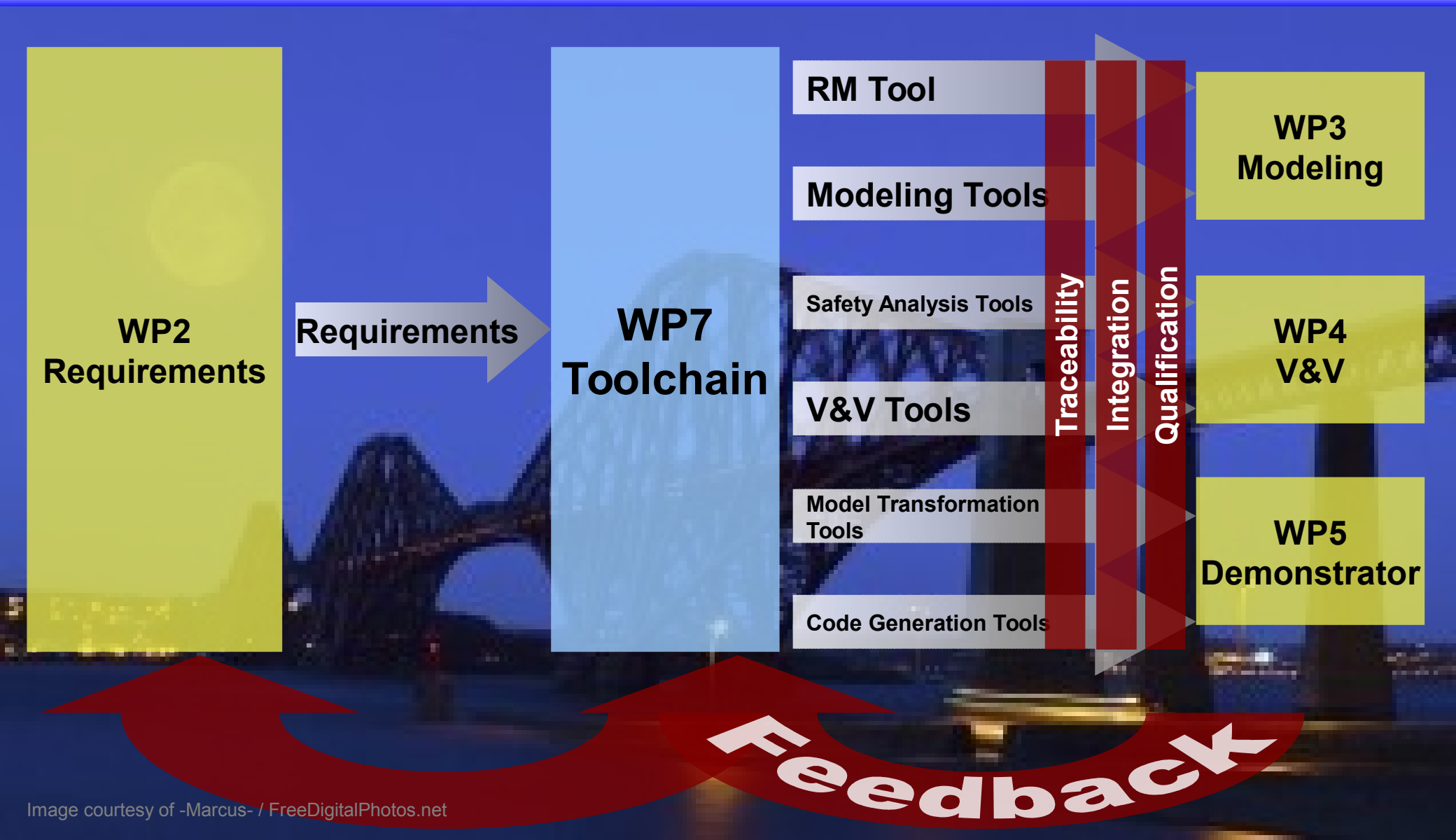
openETCS@ITEA2 Project

Michael Jastram

Munich, June 12th, 2014

The Big Picture



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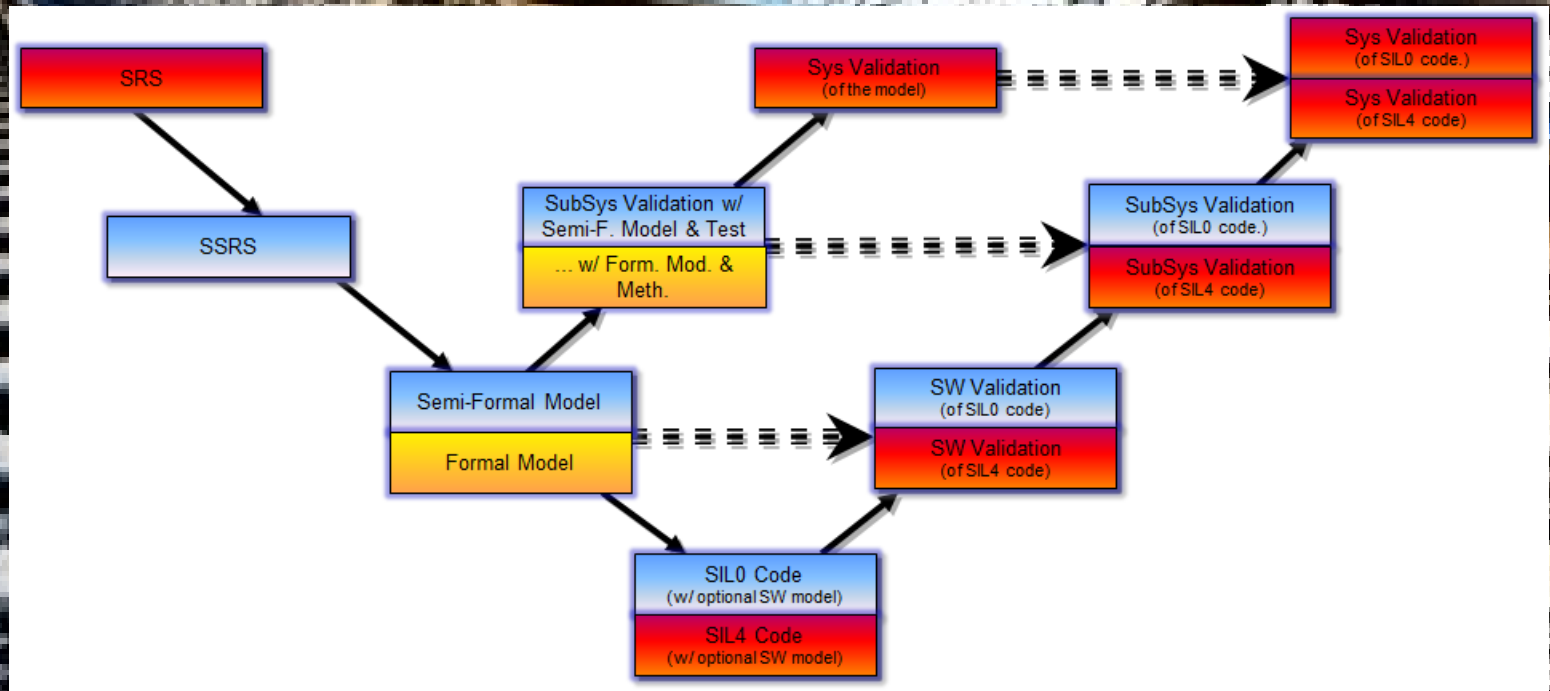
An Integrated Tool Chain



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

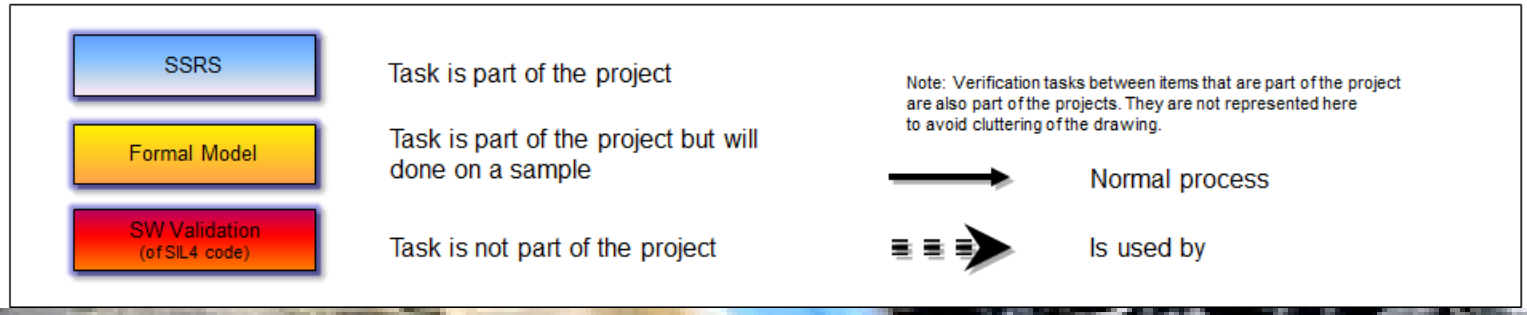


Image courtesy of graur codrin / FreeDigitalPhotos.net

Workpackage Structure

WP7 **Toolchain**
Michael Jastram / Formal Mind

T7.1 **Primary Toolchain**
Marielle Petit-Doche / Systerel

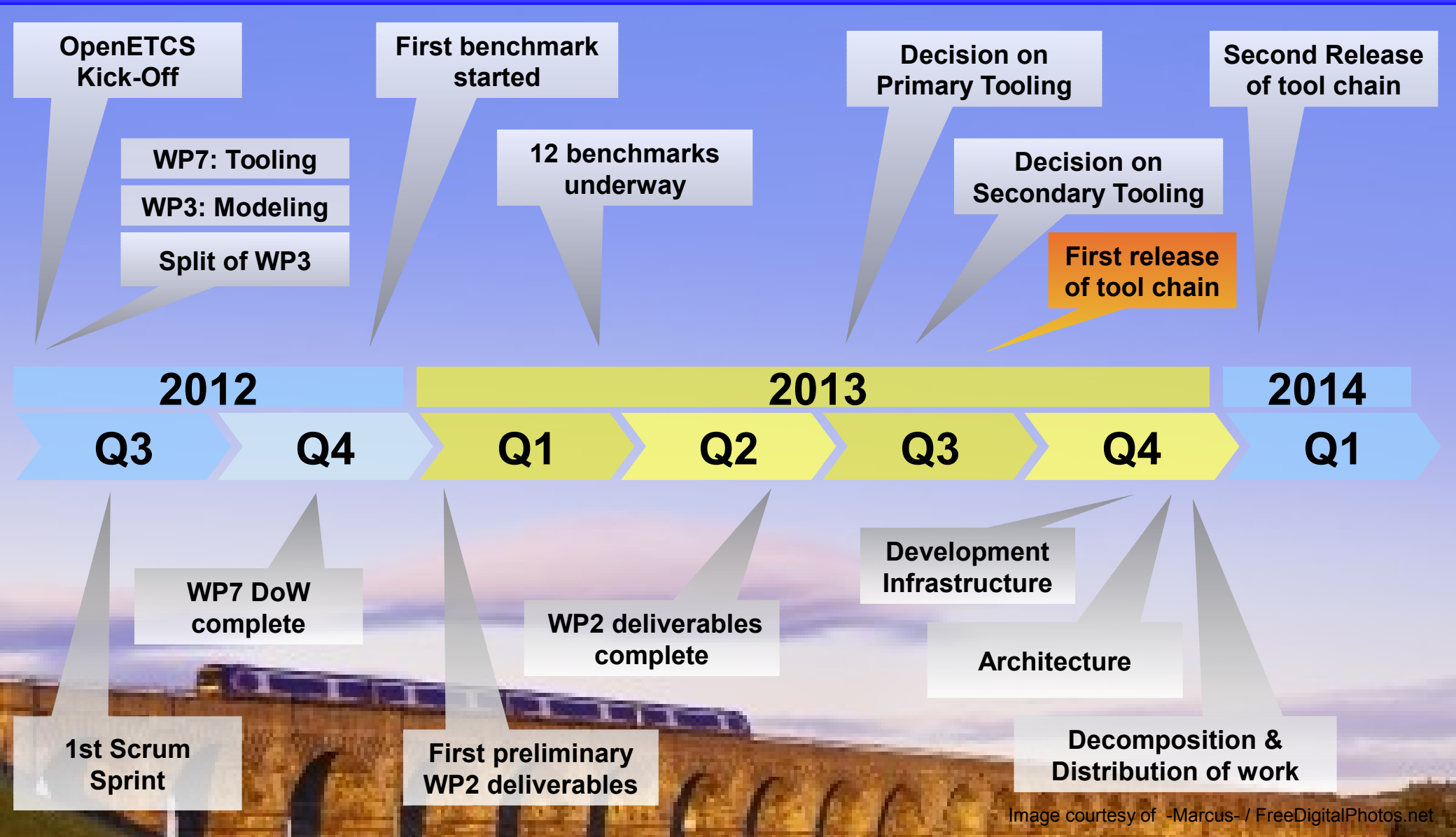
T7.2 **Secondary Toolchain**
Marielle Petit-Doche / Systerel

T7.3 **Toolchain Development**
Cécile Braunstein / University Bremen

T7.4 **Ecosystem**
Jonas Helming / EclipseSource

Image courtesy of Vichaya Kiatying-Angsulee / FreeDigitalPhotos.net

Timeline



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2014 – 2015: Regular releases

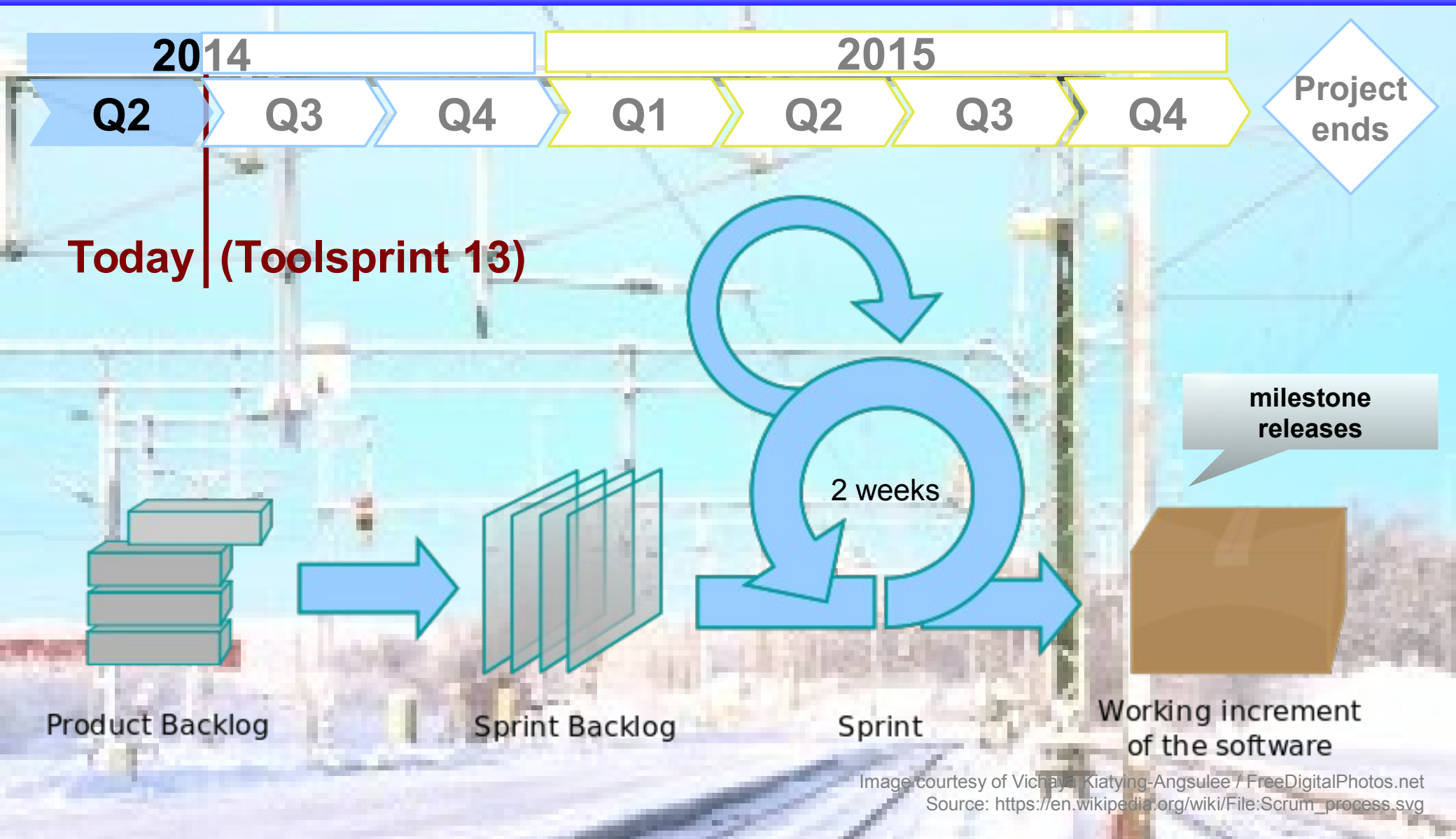


Image courtesy of Vichaya Kiatying-Angsulee / FreeDigitalPhotos.net
Source: https://en.wikipedia.org/wiki/File:Scrum_process.svg

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**

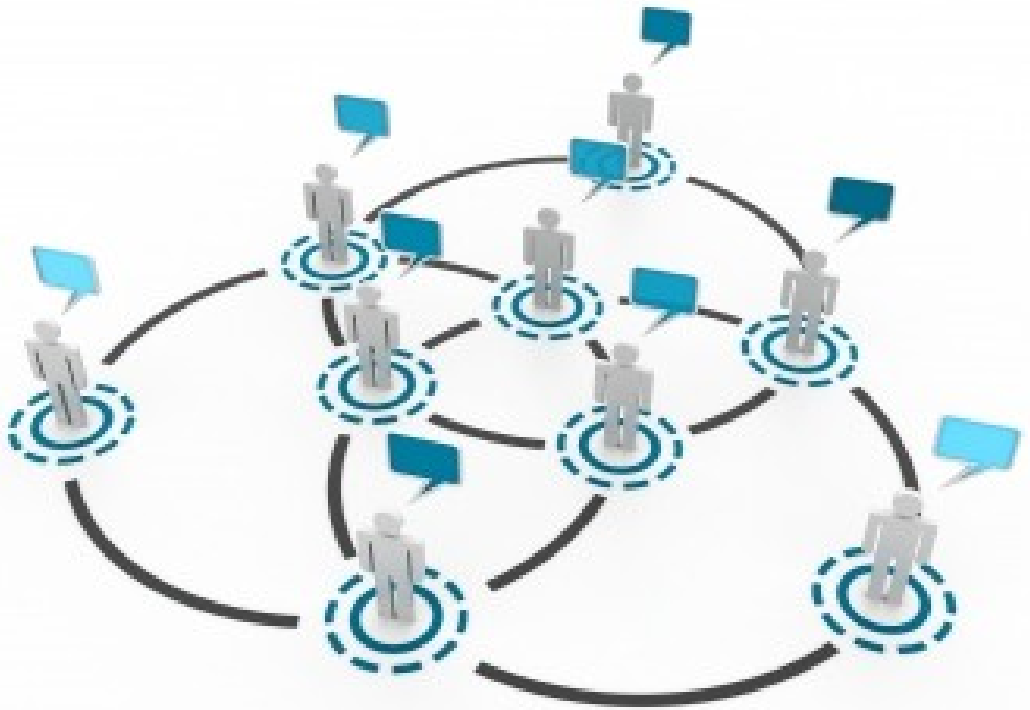
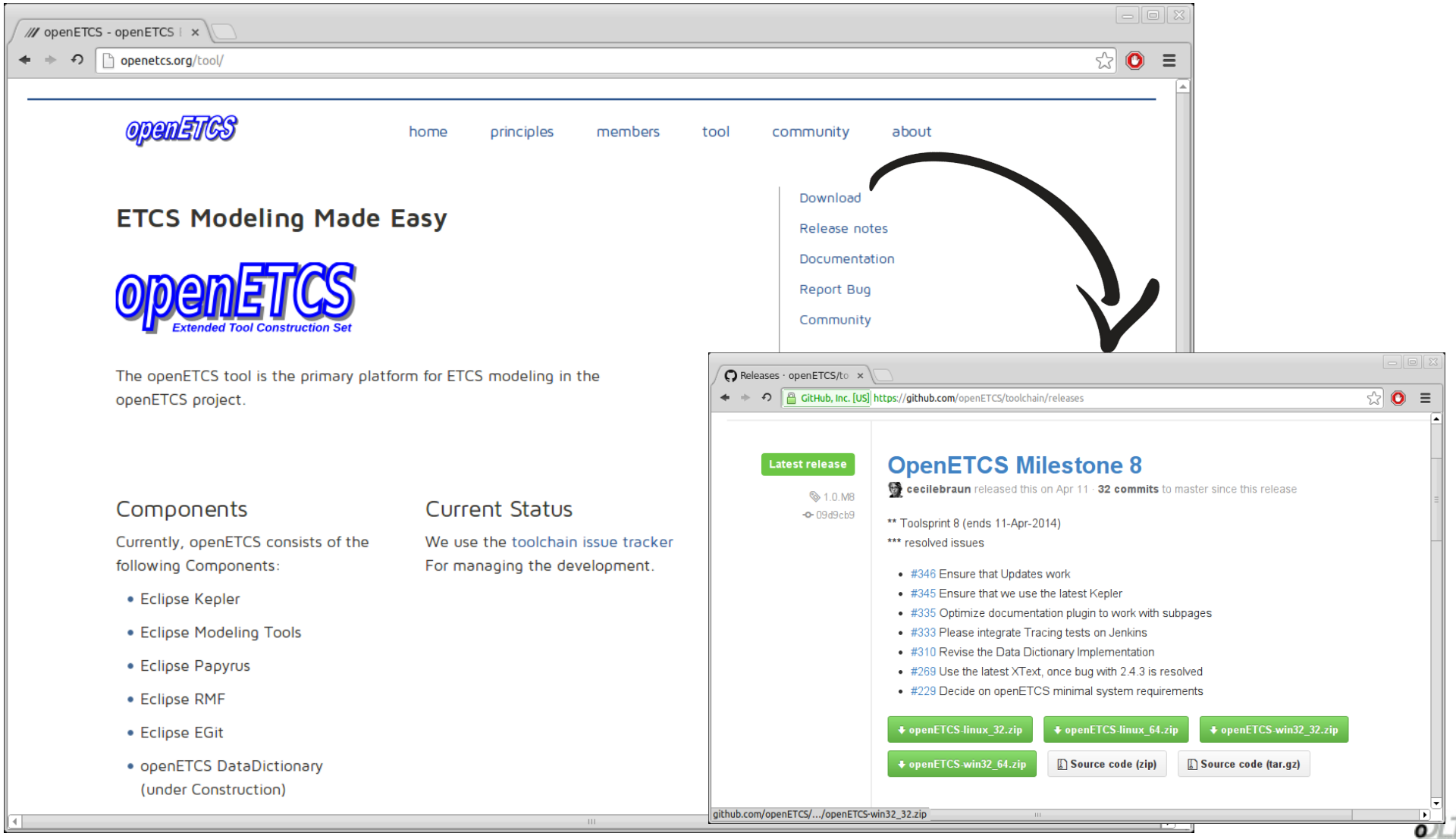


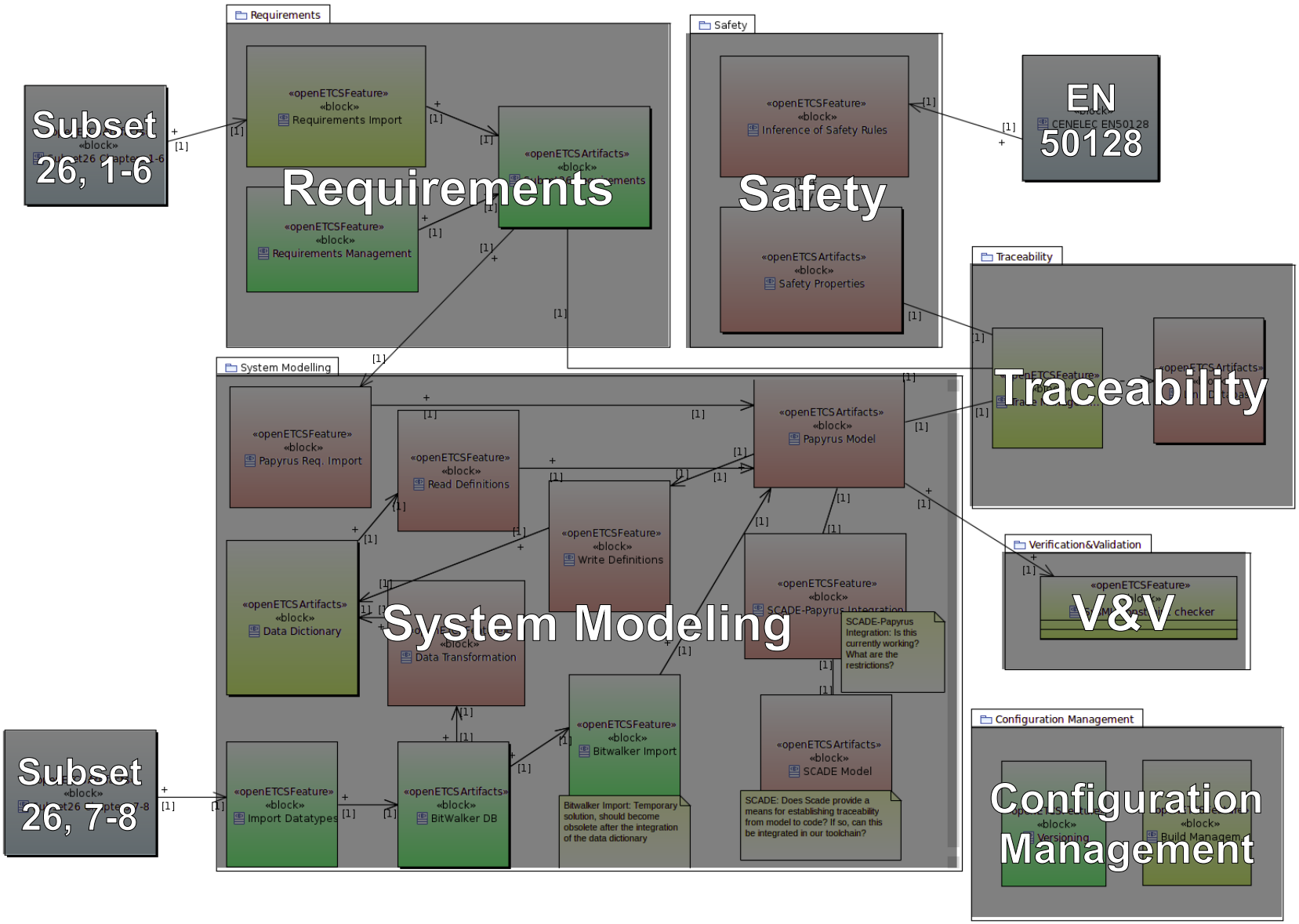
Image courtesy of hywards Kiatying-Angsulee / FreeDigitalPhotos.net

openETCS:
open Extended Tool Construction Set



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/plug-in integration process for developer *2014-03-27 10:19:31*

As a modeler

I want to get started quickly

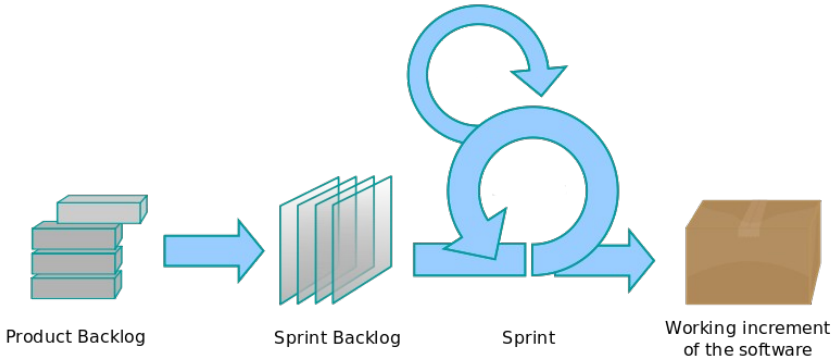
- #243 Automate initial Git clone *2014-01-14 13:22:14*
- #257 Include Java in the installation (without the need for admin rights), so that all openETCS features are available. *2014-02-03 13:43:25*
- #263 Create an OpenETCS perspective and make it the default perspective. *2014-02-04 13:14:45*
- #275 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*

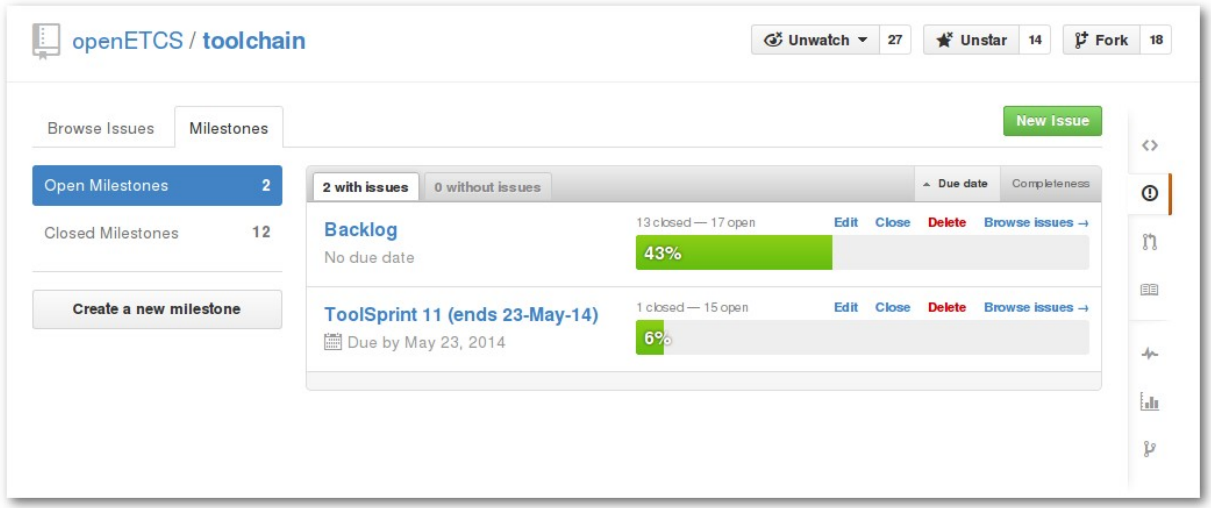
I need to access Subset-26

- #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 organisati... *...20 08:51:21*





Demo

Image courtesy of Stuart Miles / FreeDigitalPhotos.net

ERTMSFormalSpecs (EFS)

- **Open Source Modeling Tool used for cross-validation by WP4**
- **65% of requirements modeled to date**
- **Improved Tool**
  - Improved structural editor
  - flexible views
  - Graphical view of the model
  - Better reporting and communication
  - Animation support for tests
- **.NET based, therefore no plans to integrate with openETCS tool**
- **Talk to Laurent Ferier for a 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

Image courtesy of David Castillo Dominici / FreeDigitalPhotos.net

Escalation: Technology Maturity

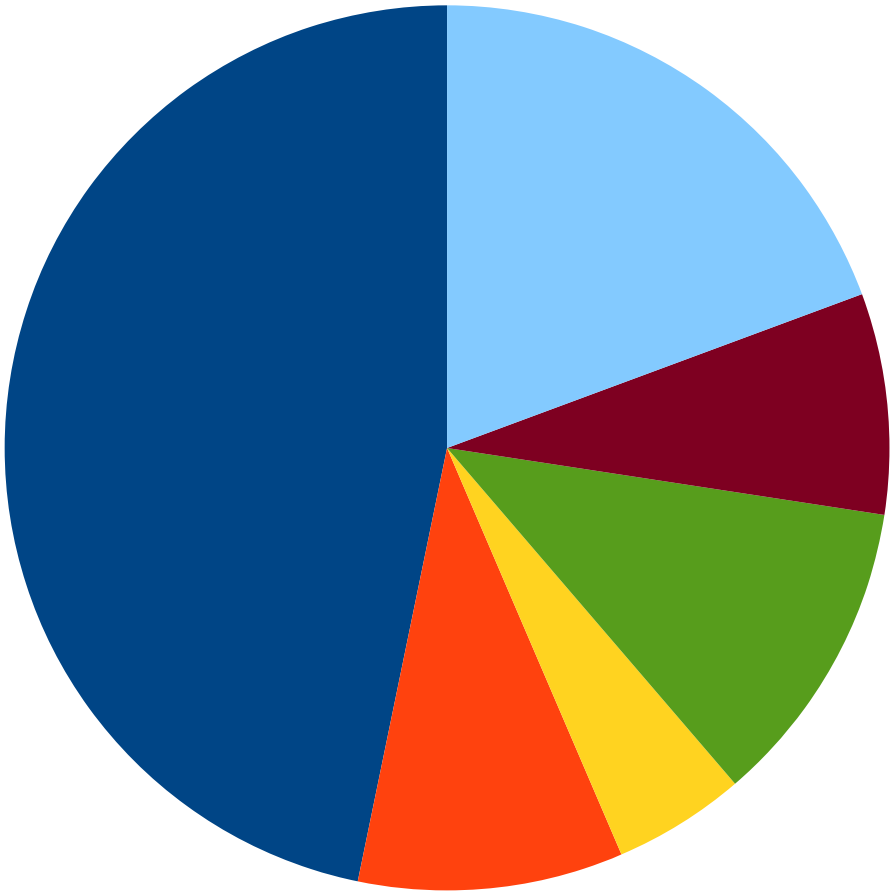
“You get what you pay for”

- **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.)

Image courtesy of David Castillo Dominici / FreeDigitalPhotos.net

Escalation: Resource Situation

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



At first glance, not too bad:

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

Image courtesy of David Castillo Dominici / FreeDigitalPhotos.net

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**

Image courtesy of David Castillo Dominici / FreeDigitalPhotos.net

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

Image courtesy of David Castillo Dominici / FreeDigitalPhotos.net

Escalation: Possible Solutions

Problem: Technology Maturity

- **Use of proprietary technology**

Problem: Missing Skills

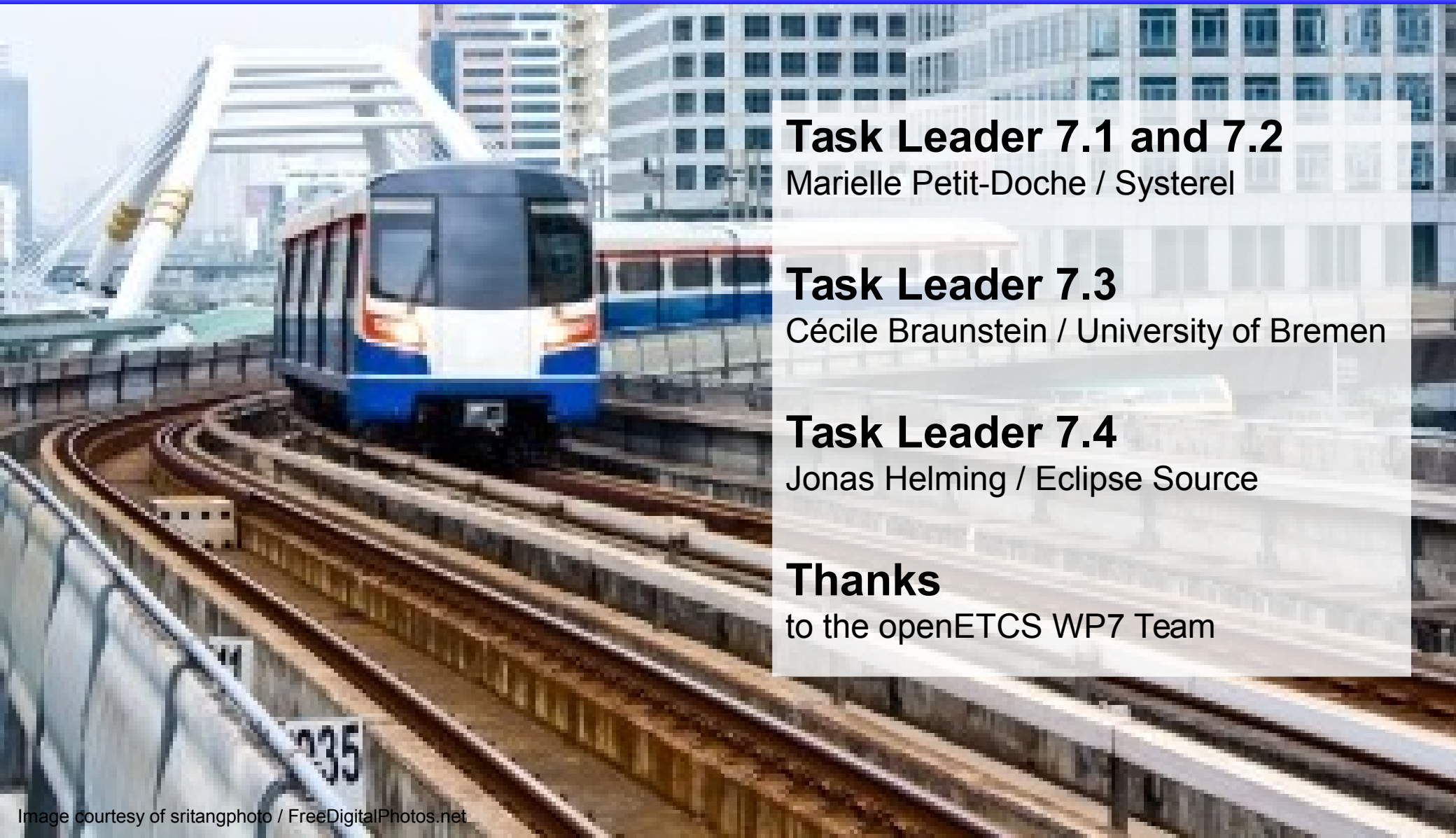
- **Training**
- **Get new partners with the right skills by picking up French funds**
- **Spend funds to hire experts**

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.

Image courtesy of David Castillo Dominici / FreeDigitalPhotos.net

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

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