ITEA 2

INFORMATION TECHNOLOGY FOR EUROPEAN ADVANCEMENT

openETCS

openETCS itea2 Review

WP7 – Toolchain Development

supported by:

Federal Ministry of Education and Research

Liberté • Égalité • Fraternité
RÉPUBLIQUE FRANÇAISE
MINISTÈRE DE L'ENSEIGNEMENT SUPÉRIEUR ET DE LA RECHERCHE

INVESTISSEMENTS D'AVENIR

Région de Bruxelles-Capitale

GOBIERNO DE ESPAÑA
MINISTERIO DE CIENCIA E INNOVACIÓN

openETCS@ITEA2 Project

Michael Jastram

Paris, July 3rd 2013

The Big Picture

Image courtesy of -Marcus- / FreeDigitalPhotos.net

The Big Picture

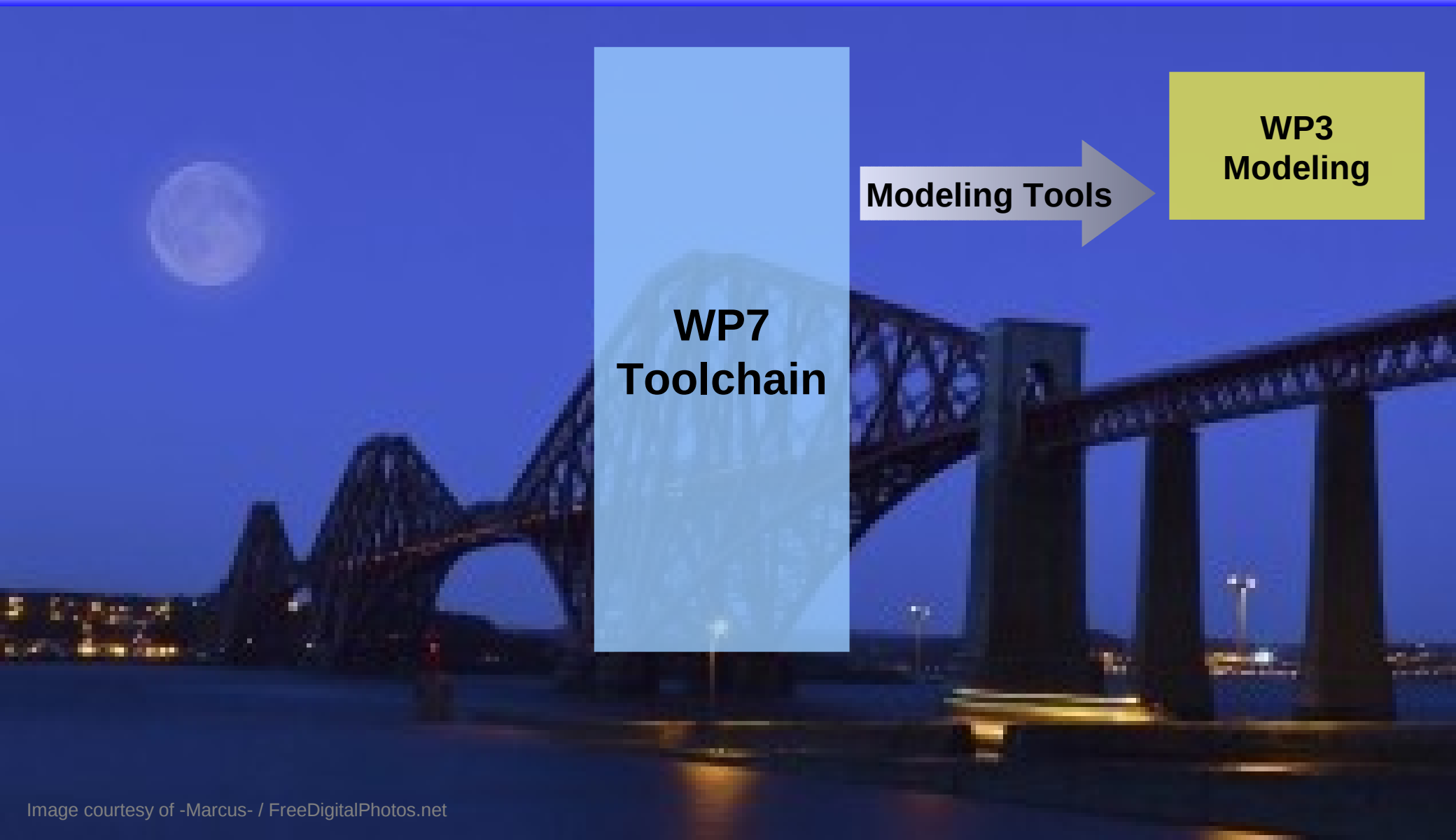
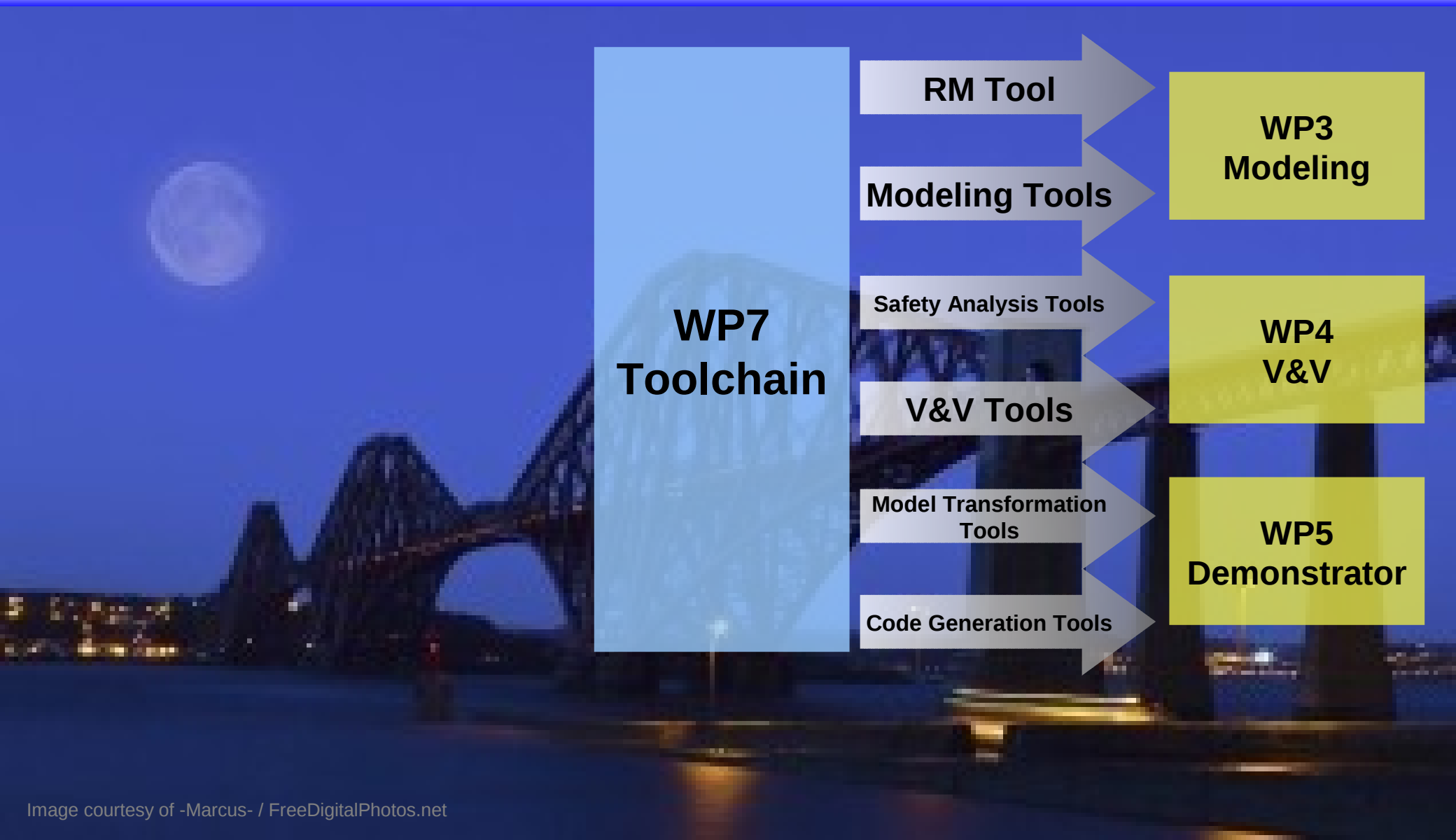


Image courtesy of -Marcus- / FreeDigitalPhotos.net

The Big Picture



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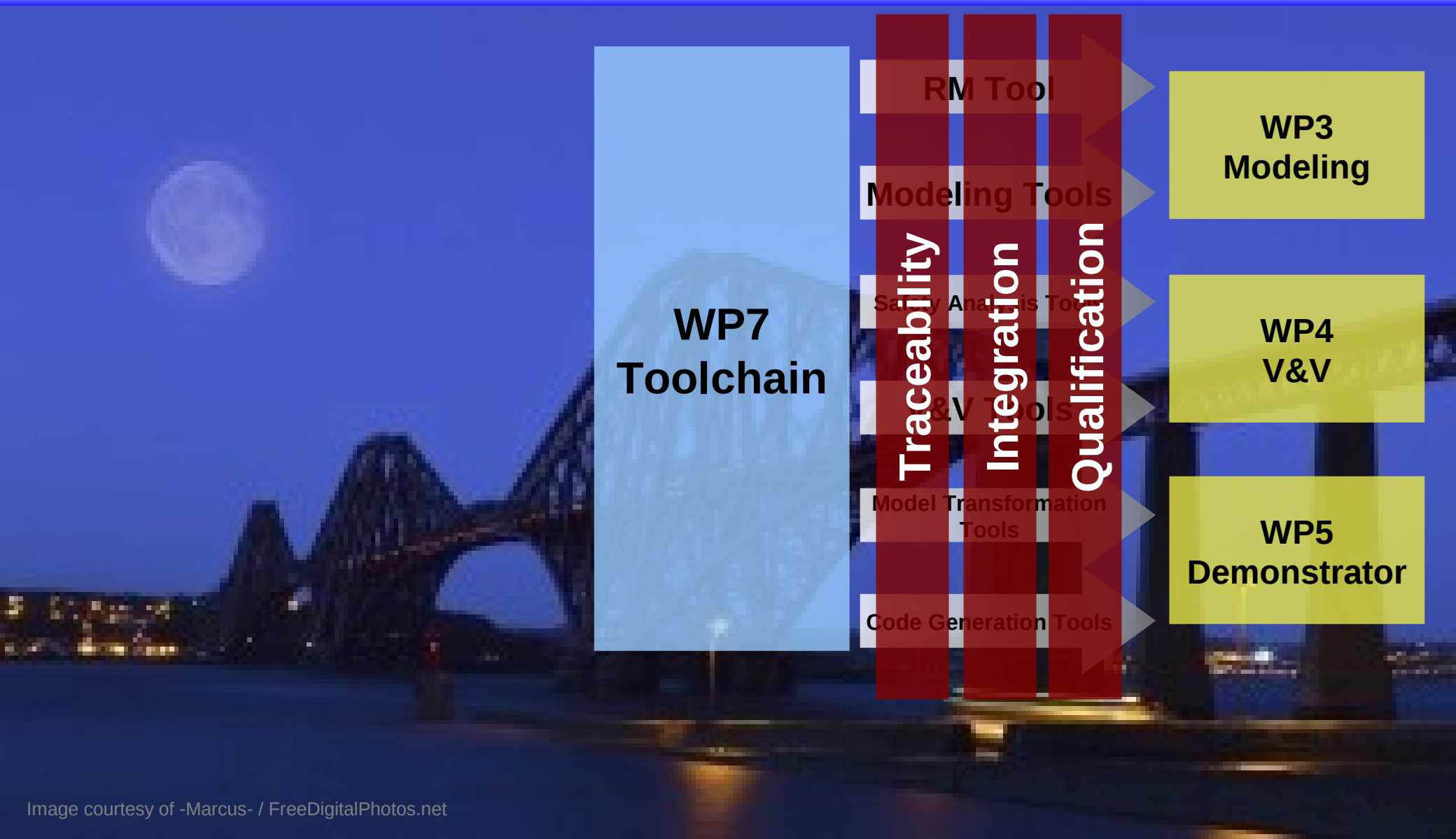
The Big Picture



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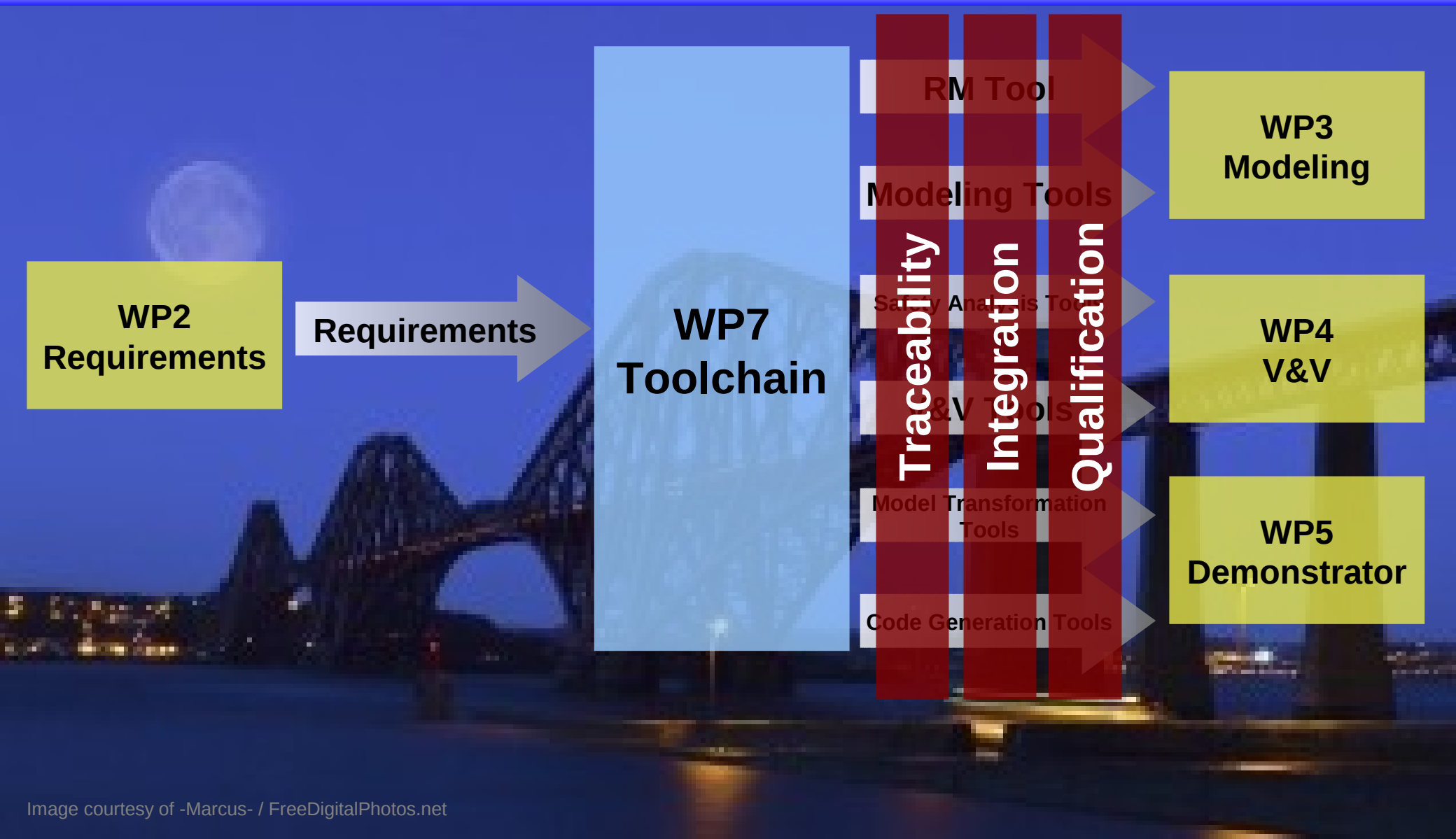
The Big Picture



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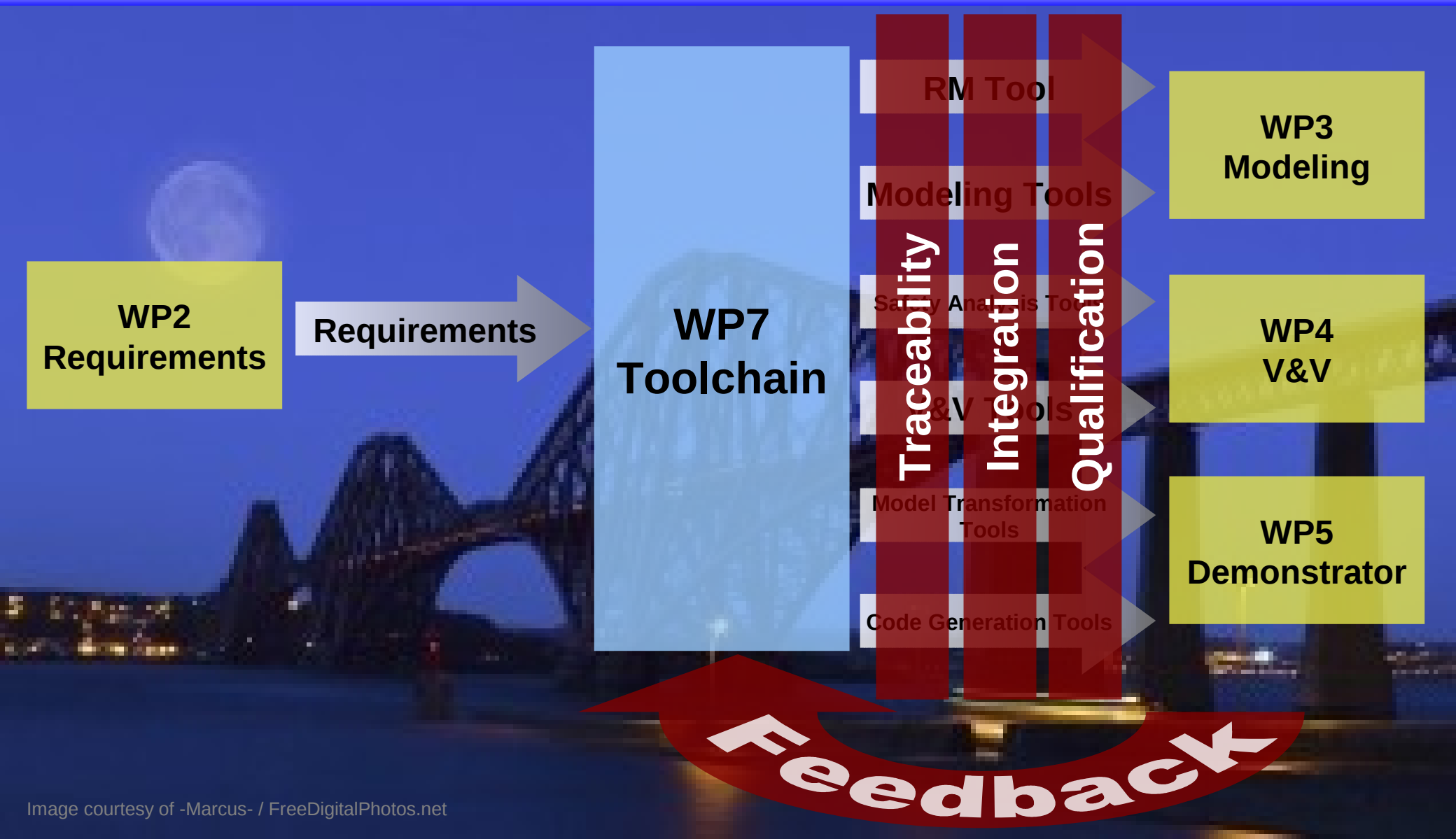
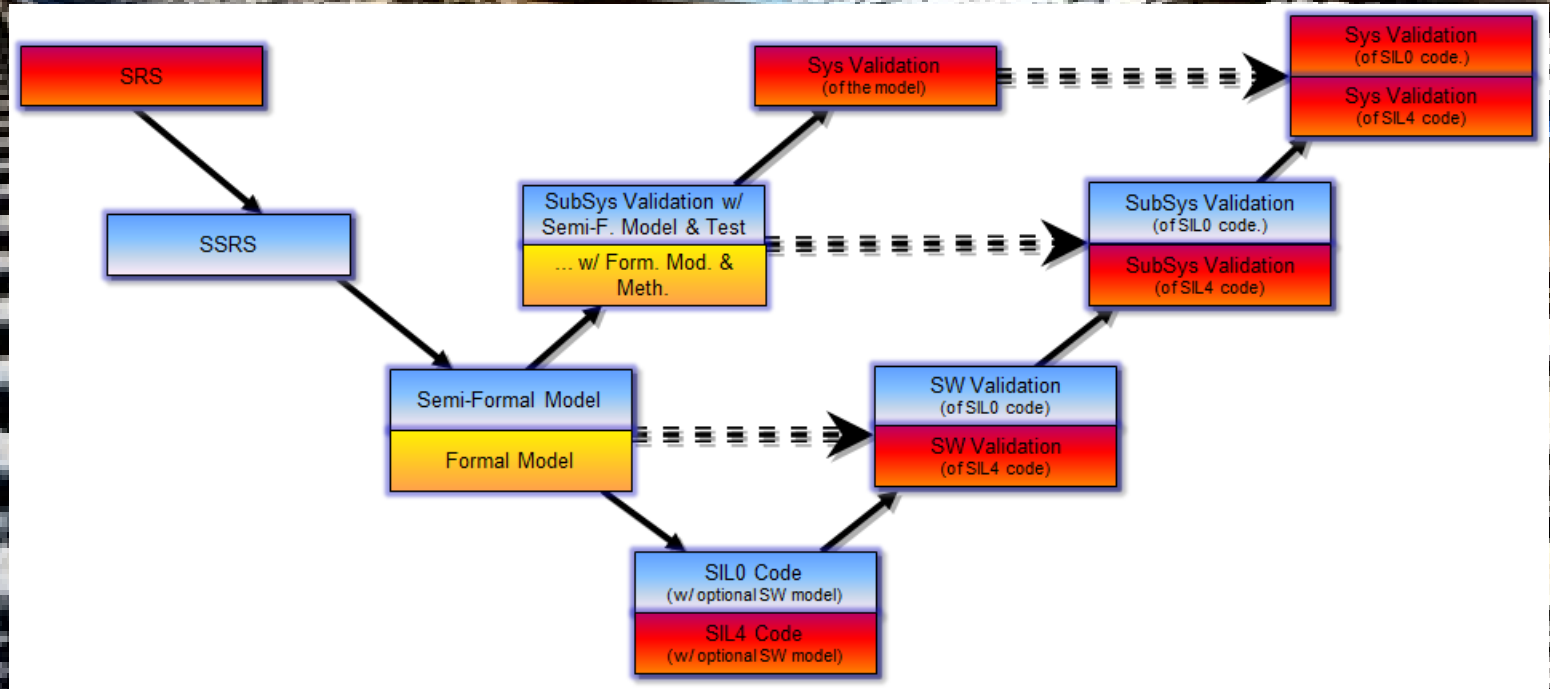


Image courtesy of -Marcus- / FreeDigitalPhotos.net

An Integrated Tool Chain



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

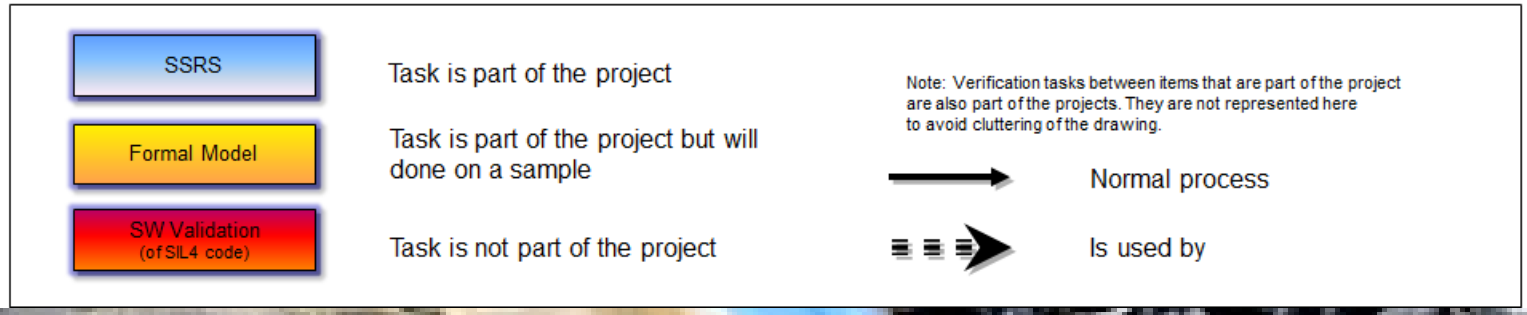


Image courtesy of graur codrin / FreeDigitalPhotos.net

Workpackage Structure

WP7 **Toolchain**
Michael Jastram / Formal Mind

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

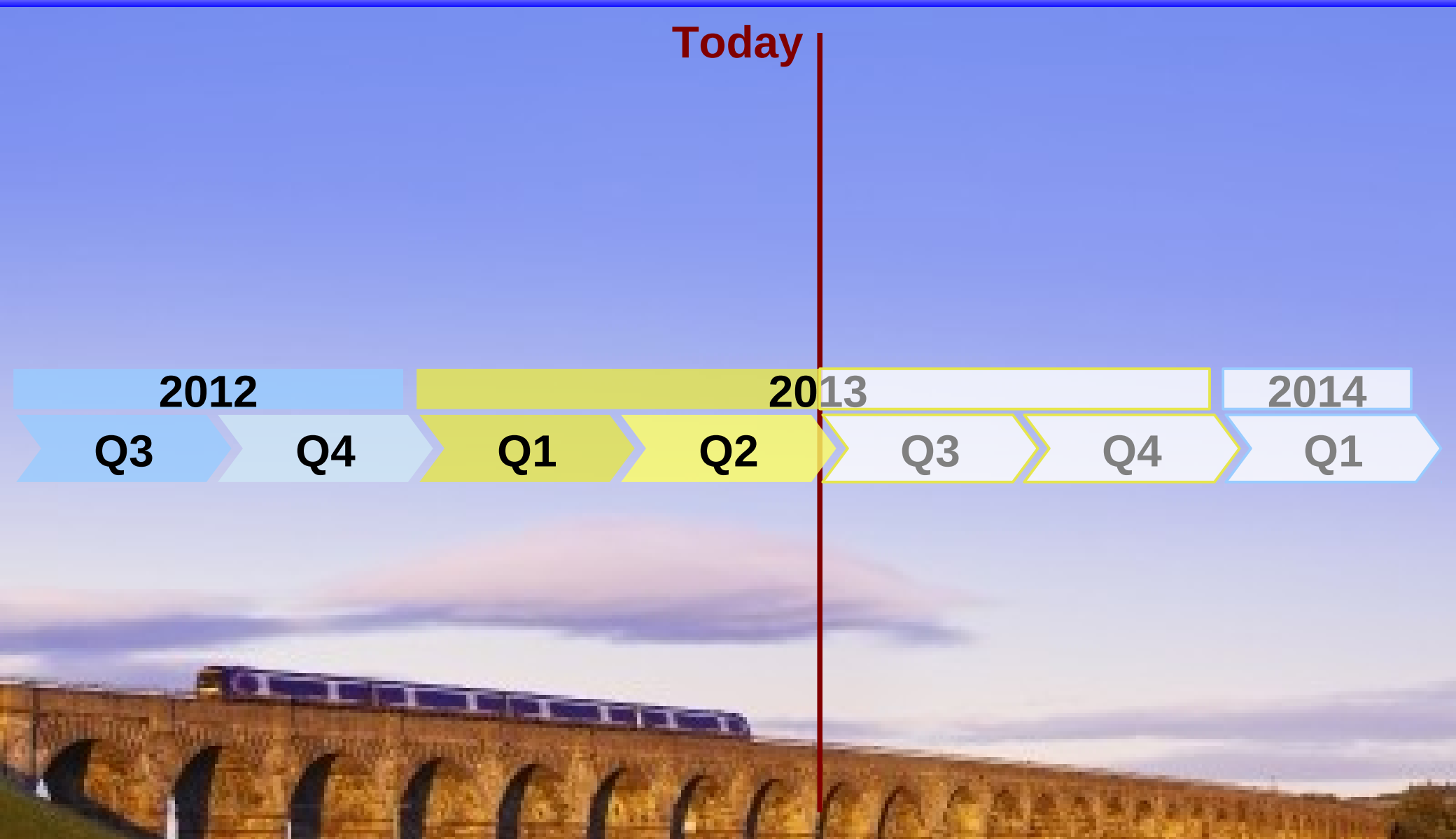
T7.2 **Secondary Toolchain**
Marielle Petit-Doche / Systerel

T7.3 **Toolchain Development**
Jan Peleska & Cécile Braunstein
University Bremen

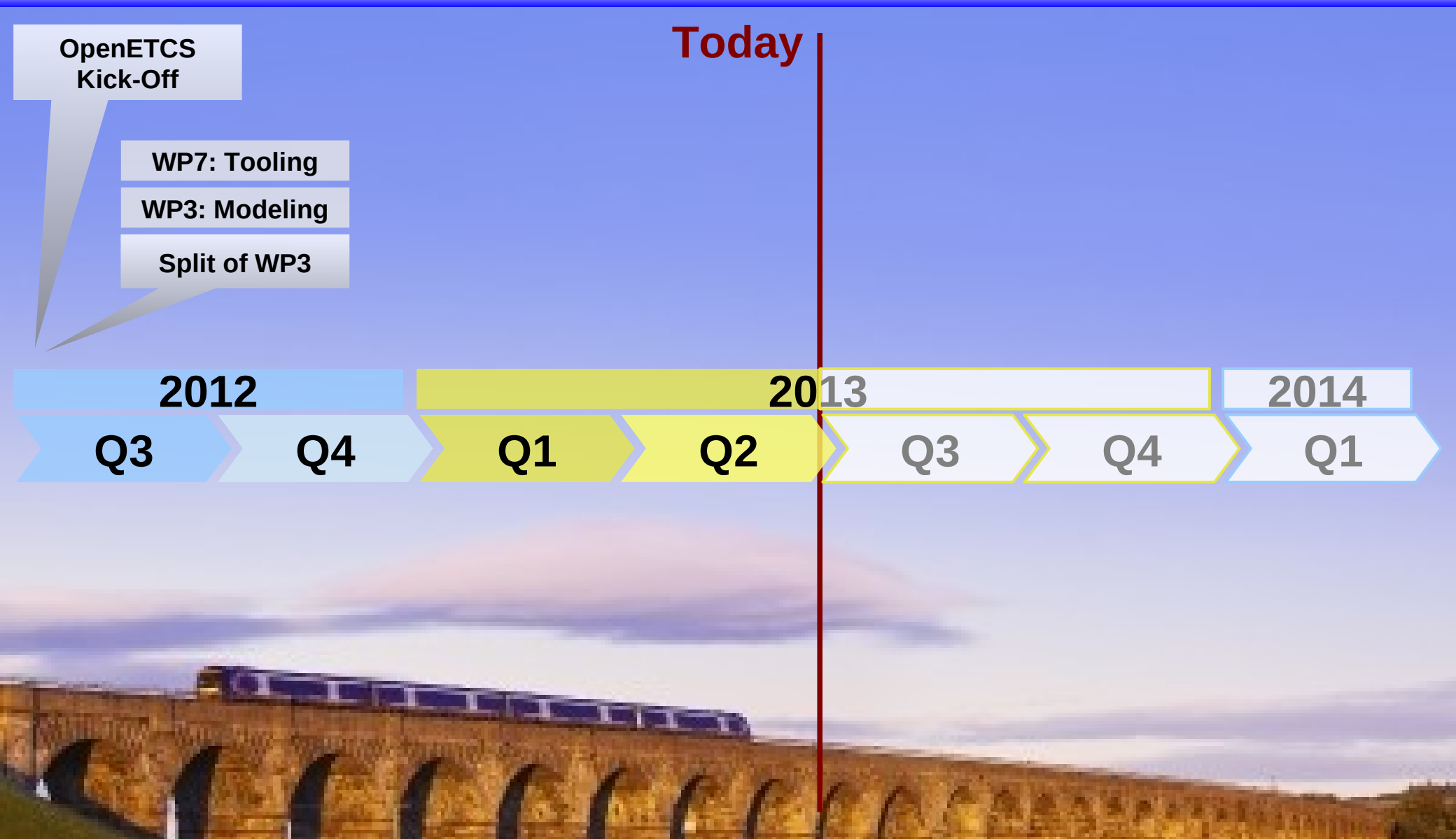
T7.4 **Ecosystem**
Jonas Helming / EclipseSource

Image courtesy of Vichaya Kiatying-Angsulee / FreeDigitalPhotos.net

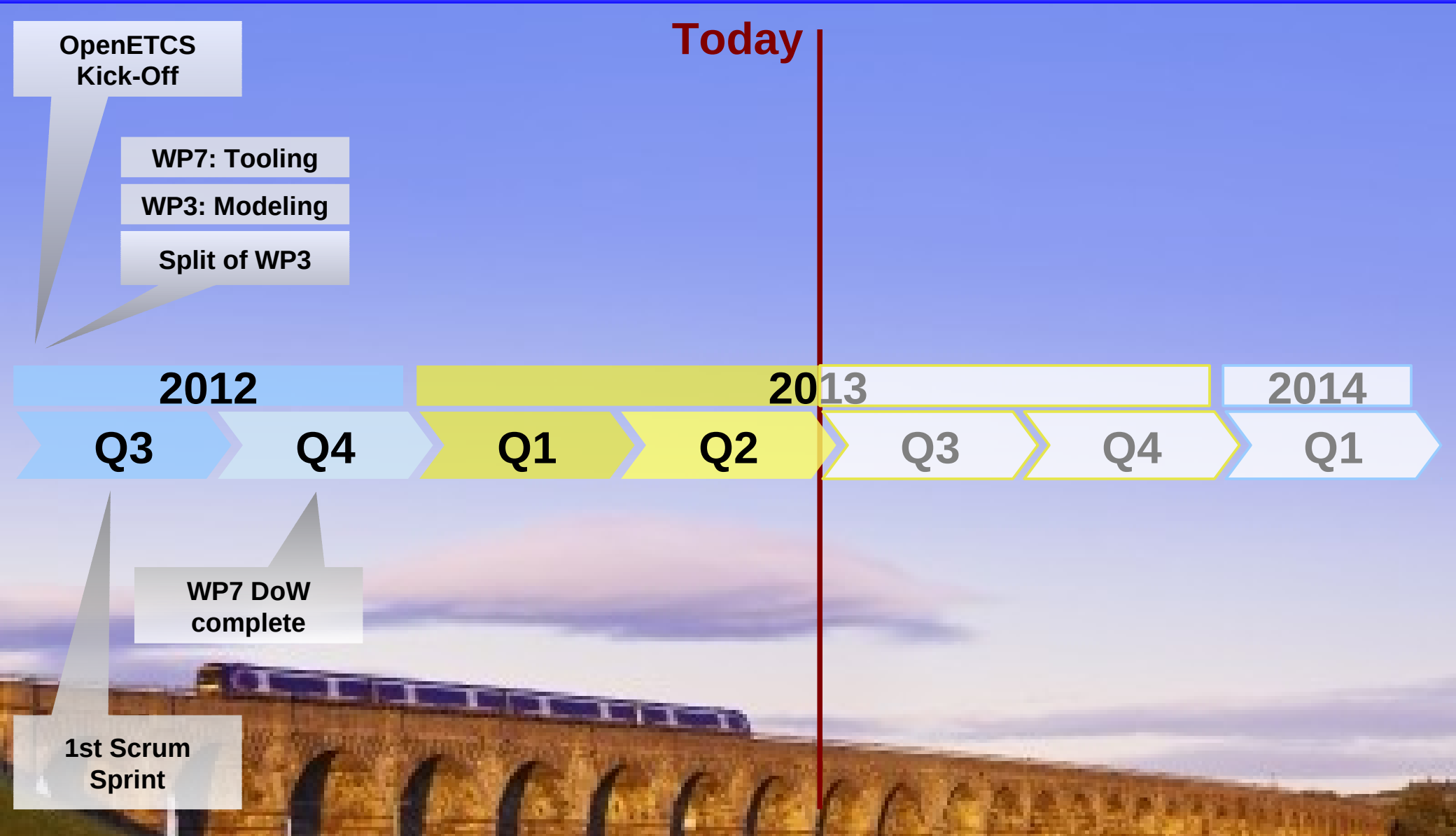
Timeline



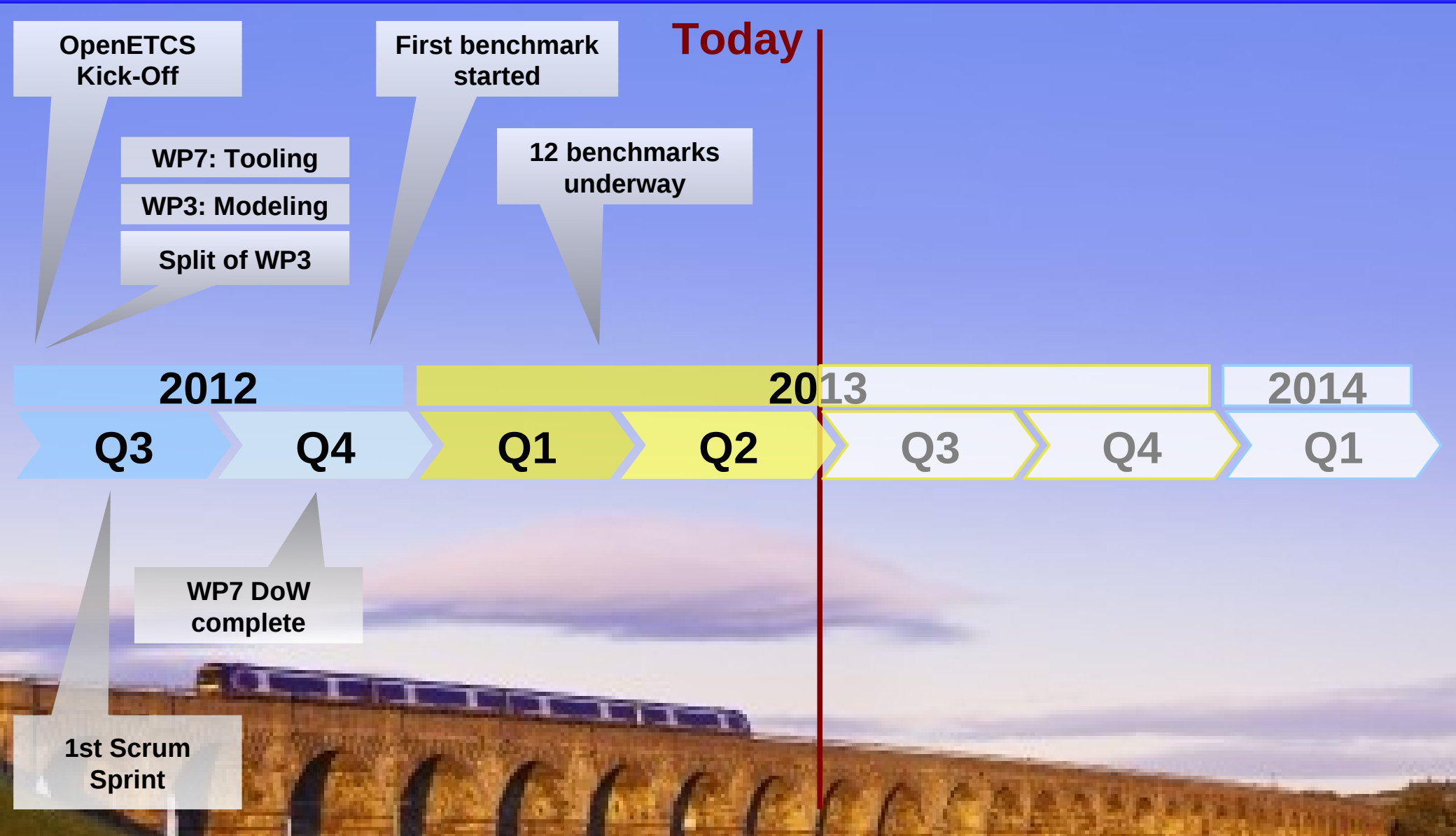
Timeline


Today
OpenETCS Kick-Off
WP7: Tooling
WP3: Modeling
Split of WP3
2012
2013
2014
Q3
Q4
Q1
Q2
Q3
Q4
Q1

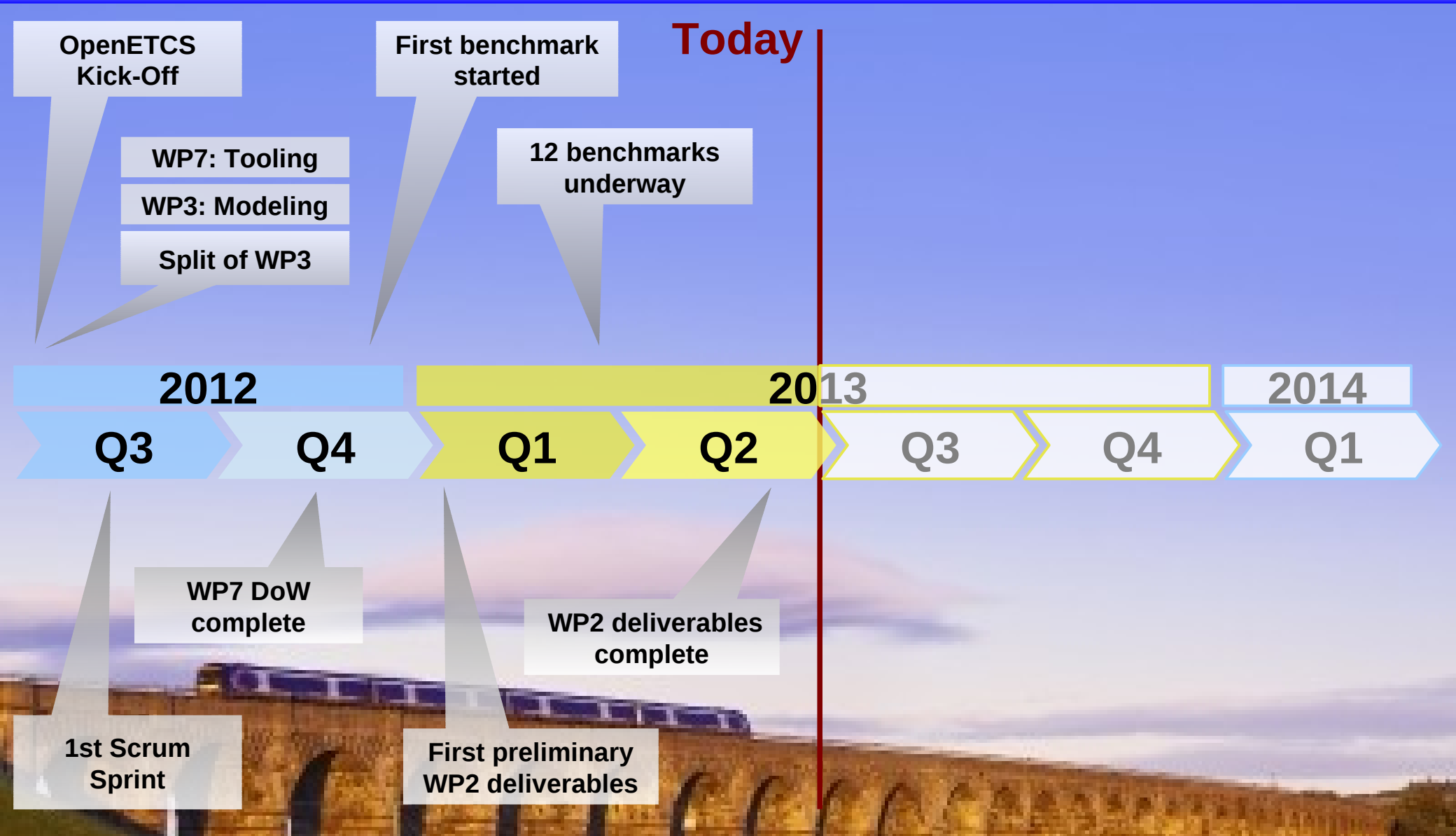
Timeline


Today
OpenETCS Kick-Off
WP7: Tooling
WP3: Modeling
Split of WP3
2012
2013
2014
Q3
Q4
Q1
Q2
Q3
Q4
Q1
WP7 DoW complete
1st Scrum Sprint

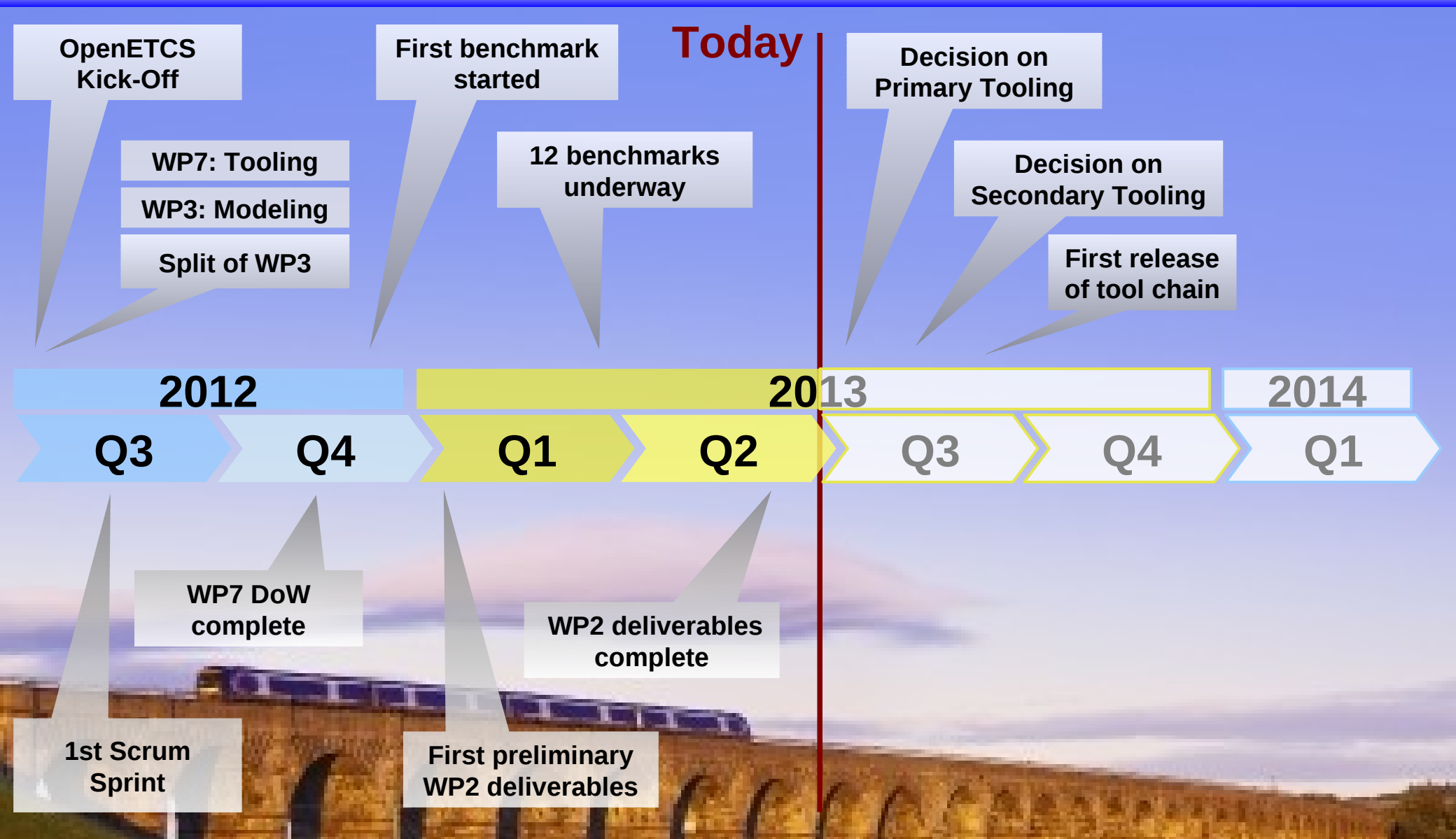
Timeline


OpenETCS Kick-Off
First benchmark started
Today
WP7: Tooling
WP3: Modeling
Split of WP3
12 benchmarks underway
2012
2013
2014
Q3
Q4
Q1
Q2
Q3
Q4
Q1
WP7 DoW complete
1st Scrum Sprint

Timeline


OpenETCS Kick-Off
First benchmark started
Today
WP7: Tooling
WP3: Modeling
Split of WP3
12 benchmarks underway
2012
2013
2014
Q3
Q4
Q1
Q2
Q3
Q4
Q1
WP7 DoW complete
WP2 deliverables complete
1st Scrum Sprint
First preliminary WP2 deliverables

Timeline


OpenETCS Kick-Off
WP7: Tooling
WP3: Modeling
Split of WP3
First benchmark started
12 benchmarks underway
Today
Decision on Primary Tooling
Decision on Secondary Tooling
First release of tool chain
2012
2013
2014
Q3
Q4
Q1
Q2
Q3
Q4
Q1
1st Scrum Sprint
WP7 DoW complete
First preliminary WP2 deliverables
WP2 deliverables complete

Timeline

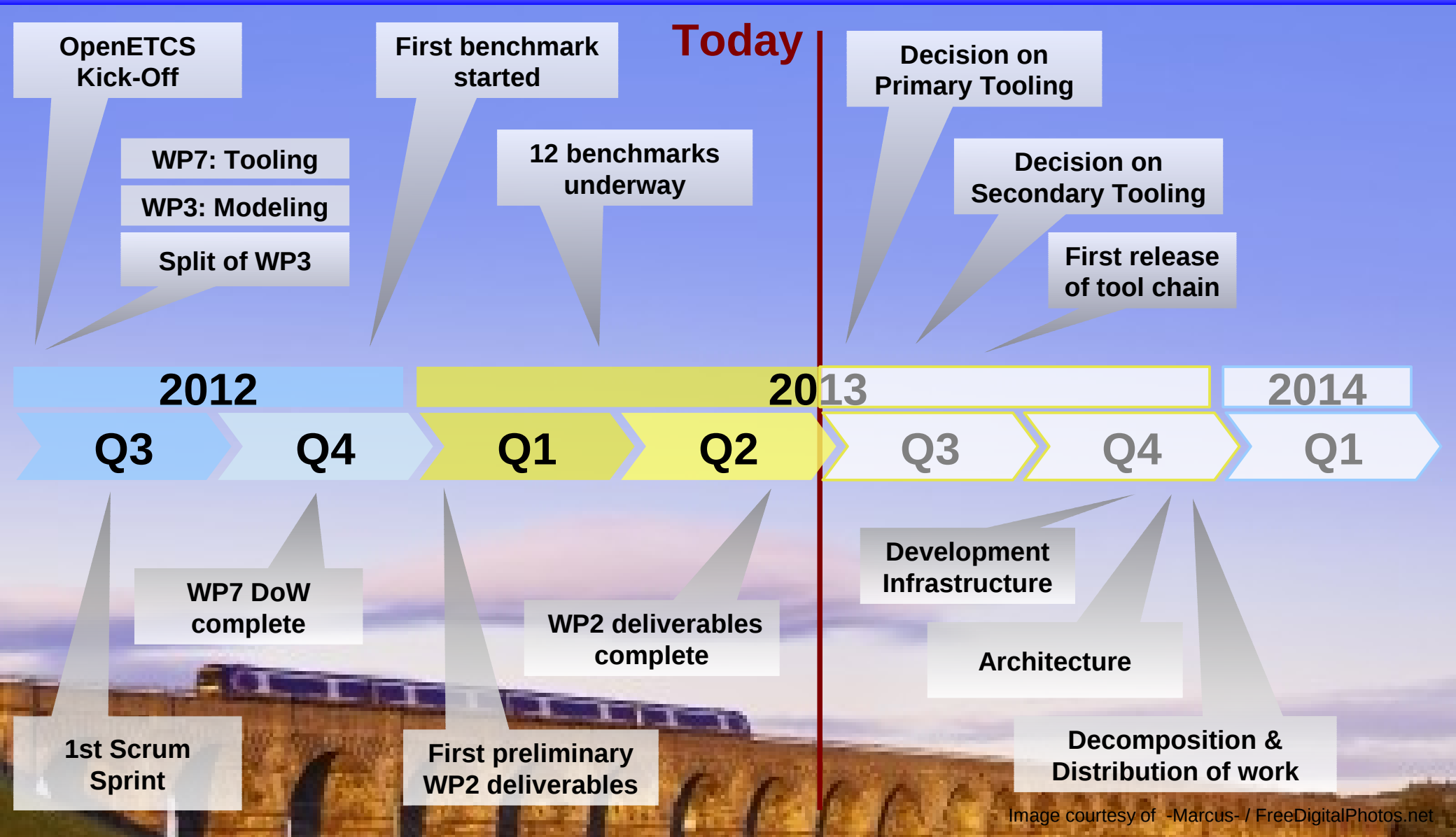


Image courtesy of -Marcus- / FreeDigitalPhotos.net

Timeline

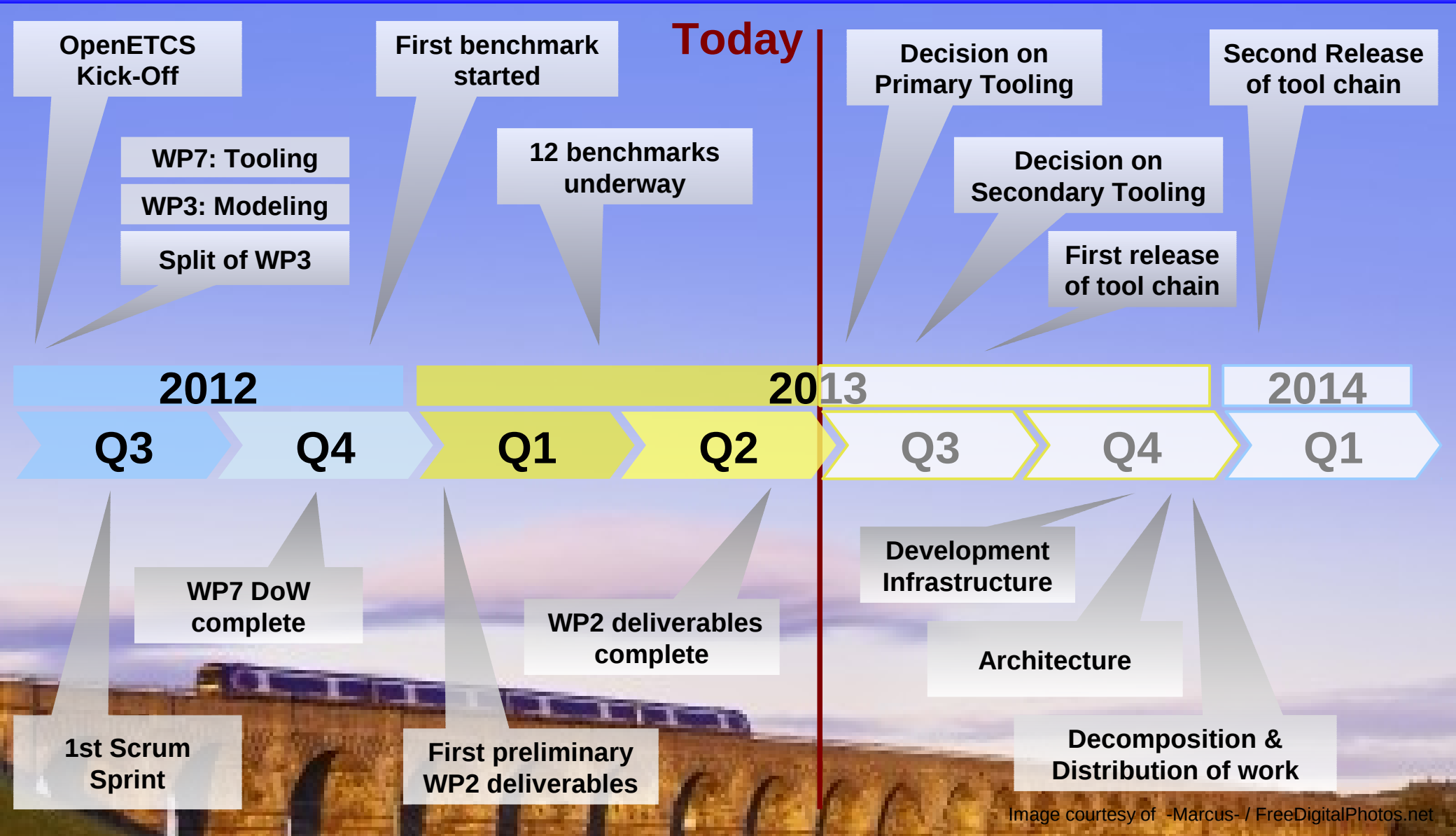


Image courtesy of -Marcus- / FreeDigitalPhotos.net

2014 – 2015: Regular releases

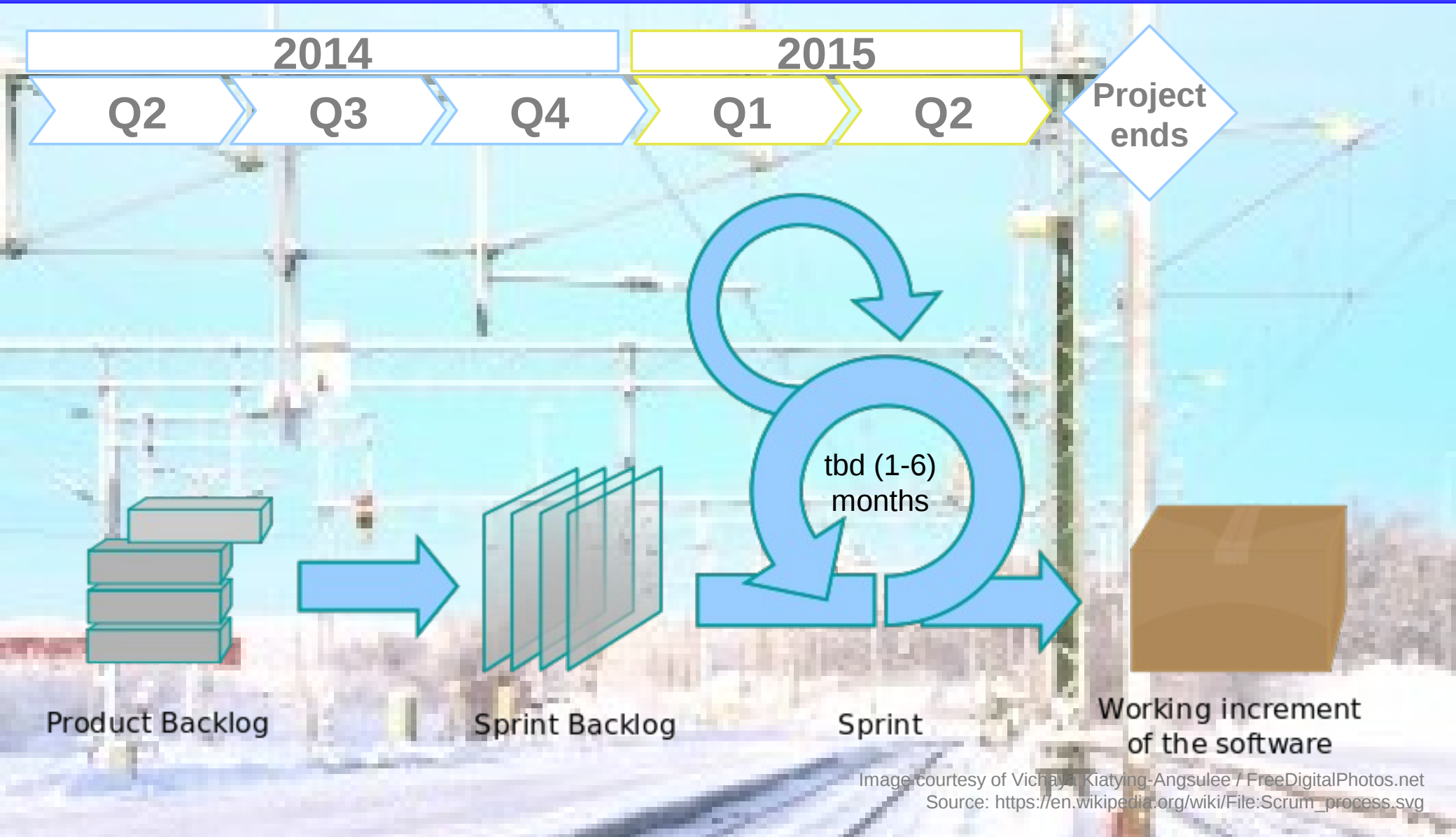


Image courtesy of Vichaya Kiatying-Angsulee / FreeDigitalPhotos.net
Source: https://en.wikipedia.org/wiki/File:Scrum_process.svg

No deliverables yet, but...

WP7 Objectives		
Date	**Type of stone[5]/deliverable**	**Description**
T0+13	*D7.1 (Systerel)*	Report on the final choice(s) for the primary tool chain (means of description, tool and platform)
T0+15	*D7.2 (Systerel)*	Report on all aspects of secondary tooling (results of T7.2)
T0+16	*D7.4 (Uni-Bremen)*	Tool chain first release
T0+19	*D7.3 (Uni Bremen)*	Tool chain qualification process description
T0+26		Regular releases according to Scrum Process
T0+36	*D7.5 (Eclipse Source)*	Ecosystem Artefacts: Proposed Terms of use, Proposed Committer Agreements, Proposed IP Policy, Proposed Development Process Description, Development Process Guidelines, Infrastructure Documentation, Infrastructure Template, Evolution Report of previous Deliverables

Source: https://github.com/openETCS/management/blob/master/FPP/11025_openETCS_FPP_Annex_v301.pdf

Image: ddpavumba / FreeDigitalPhotos.net

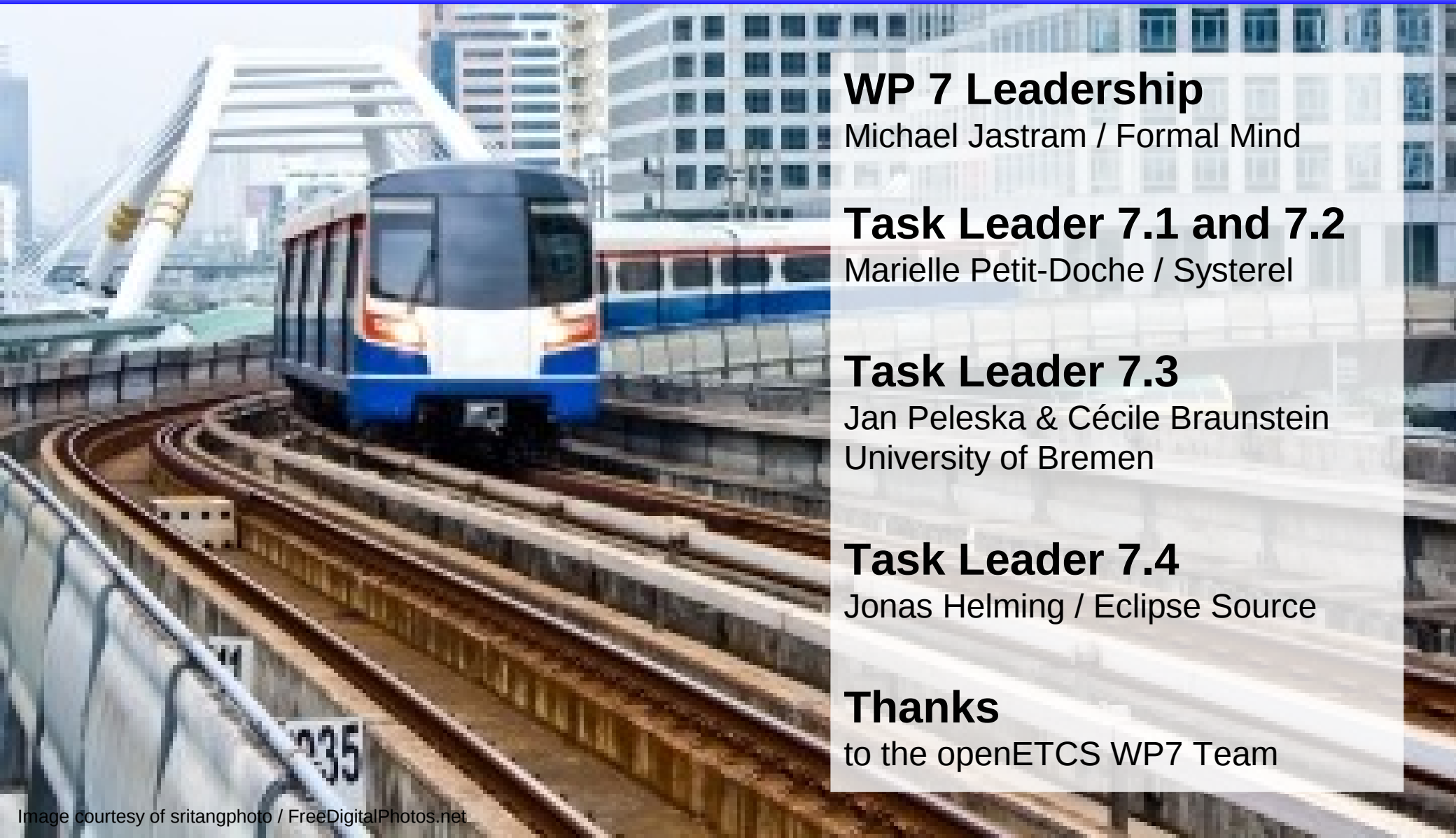
… but concrete results (primary tools)

Formalism / Tool	Status
SCADE 6.3.1	Done
ERTMSFormalSpecs	Done
CORE Workstation 5.1	**Stopped**
Event-B / Rodin 2.7 with ProR, ProB or AnimB and toolkit of provers (AtelierB, SMT,...)	Done
ClassicalB / AtelierB 4.0.2	Done
Why3 0.80	**Stopped**
GNATprove	Done
SysML/EA, RT-Tester	Done
GOPRR (GOPPRR) meta meta model / MetaEdit+	Done
SysML / Papyrus	Done
SystemC	Done
UPPAAL	**Moved**
Petri Nets / Design/CPN	Done

… but concrete results (secondary tools)

Formalism / Tool	Link with primary means or tools	Model transfor mation	Requi- rement mana- gement	Valida- tion	Verifi- cation	Safety Analy- ses
AtelierB	Classical B			X	X	
SCADE Suite	SCADE	X	X	X	X	
UPPAAL	system C			X	X	
Rodin + pluggins (ProR, ProB, SMT solvers, IUML,...)	Event B	X	X	X	X	X
CPN-Tools & SPENAT	Coloured PN			X	X	X
Goal Structuring Notation (GSN)	Assurance Case Editor (ACEdit)		X			X
MaTeLo (Model Based Testing tool based on Markov Chains)	UML/SysML (Papyrus)		X	X		
Safety Architect (System Safety Analysis tool)	UML/SysML (Papyrus)					X
RT-tester	EA-SysML/SCADE			X	X	
Eclipse ProR	any EMF based: Papyrus, Event-B, ERTMSFormalSpecs, EA-Bridge exists		X			
Fiacre and Tina, model-checking toolbox for Time Petri Nets	UML/SysML (Papyrus)				X	

Thanks to the team



WP 7 Leadership
Michael Jastram / Formal Mind

Task Leader 7.1 and 7.2
Marielle Petit-Doche / Systerel

Task Leader 7.3
Jan Peleska & Cécile Braunstein
University of Bremen

Task Leader 7.4
Jonas Helming / Eclipse Source

Thanks
to the openETCS WP7 Team

Image courtesy of sritangphoto / FreeDigitalPhotos.net