



# *openETCS* itea2 Review

## WP7 – Toolchain Development

supported by:



Federal Ministry  
of Education  
and Research



Région de  
Bruxelles-  
Capitale



GOBIERNO  
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E INNOVACIÓN

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openETCS@ITEA2 Project

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Michael Jastram

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Paris, July 3rd 2013

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# The Big Picture



**WP7  
Toolchain**

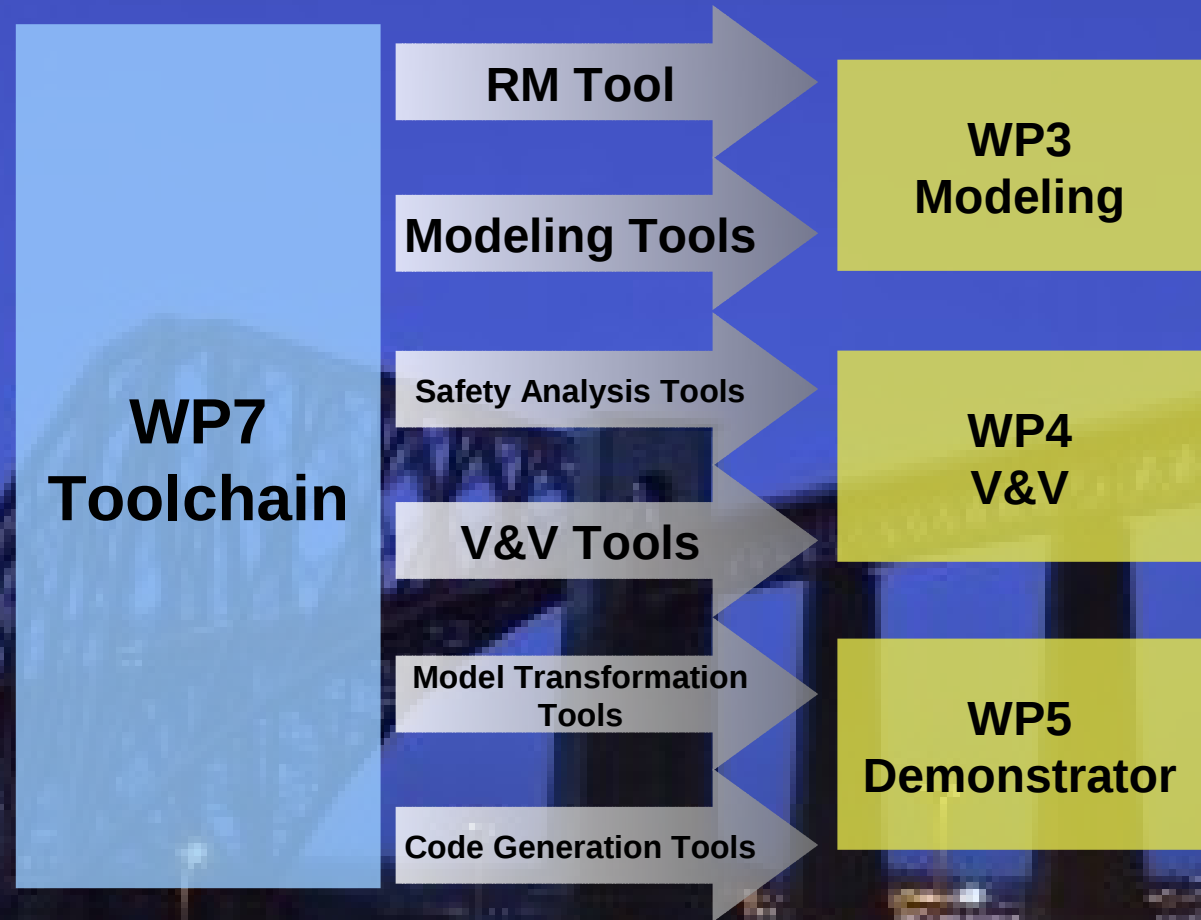
# The Big Picture

**WP7  
Toolchain**

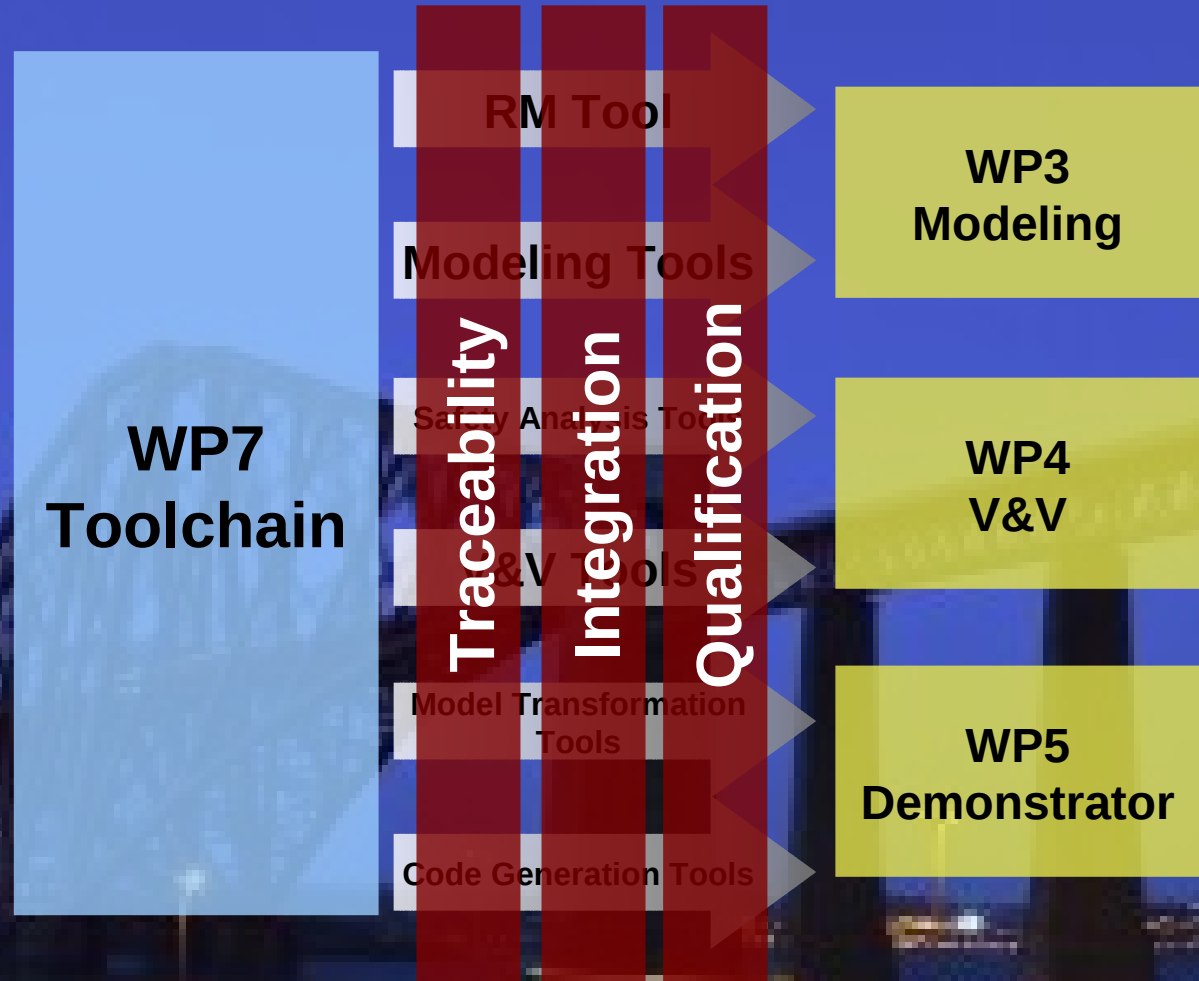
**Modeling Tools**

**WP3  
Modeling**

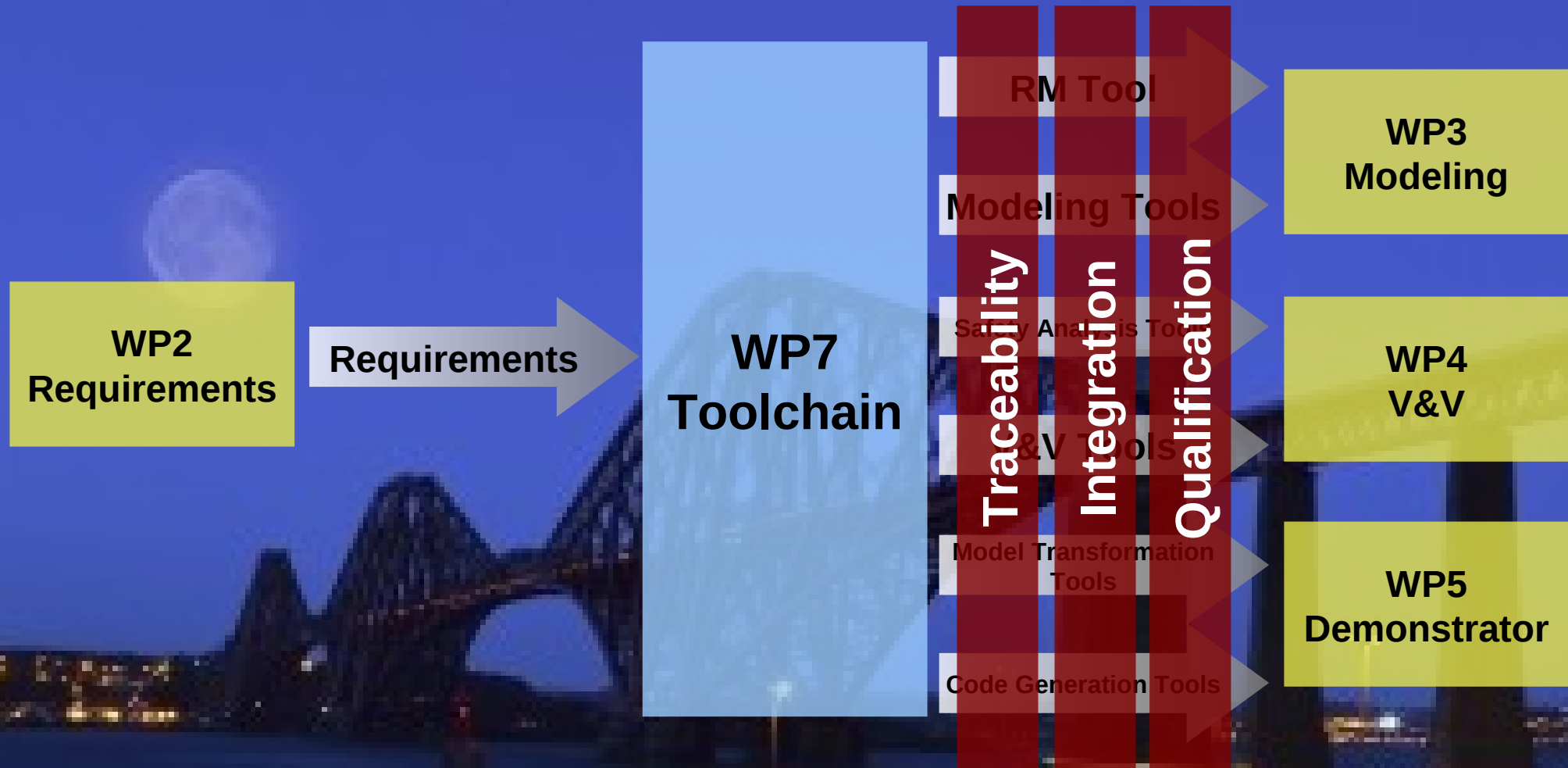
# The Big Picture



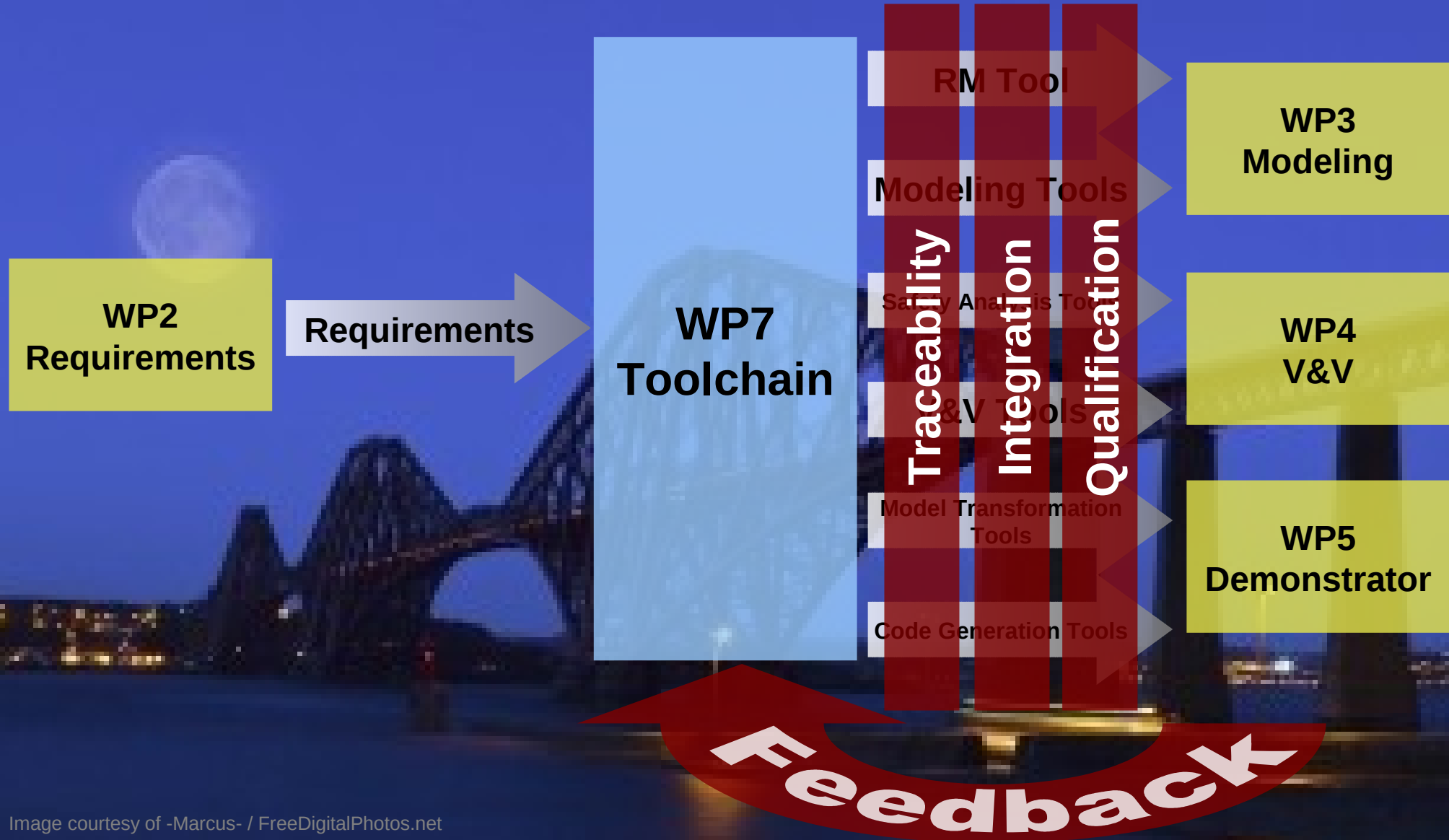
# The Big Picture



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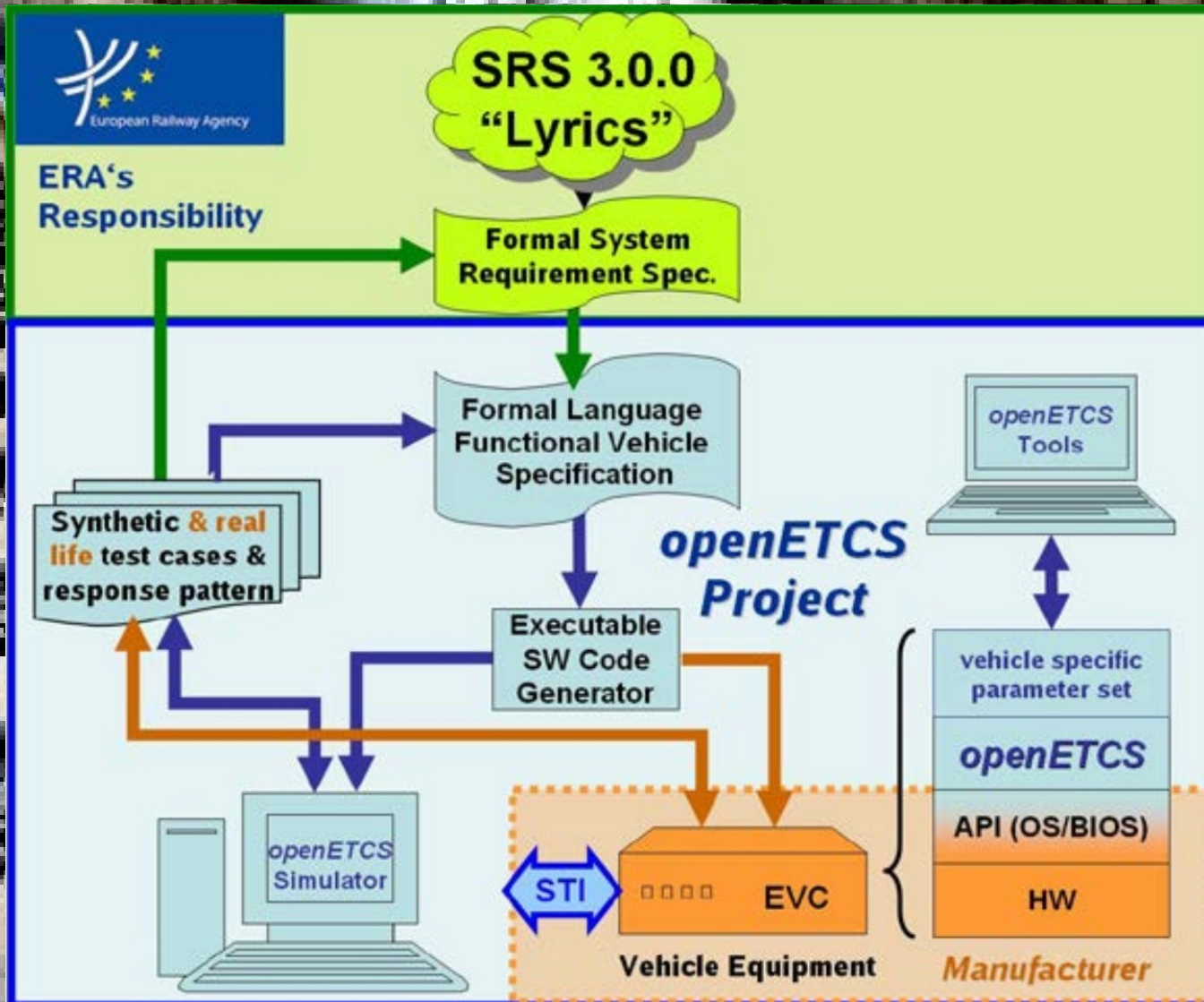


# The Big Picture





# An Integrated Tool Chain





# Workpackage Structure



## 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

## 7.4 Ecosystem

Jonas Helming / EclipseSource

# Timeline

Today

2012

2013

2014

Q3

Q4

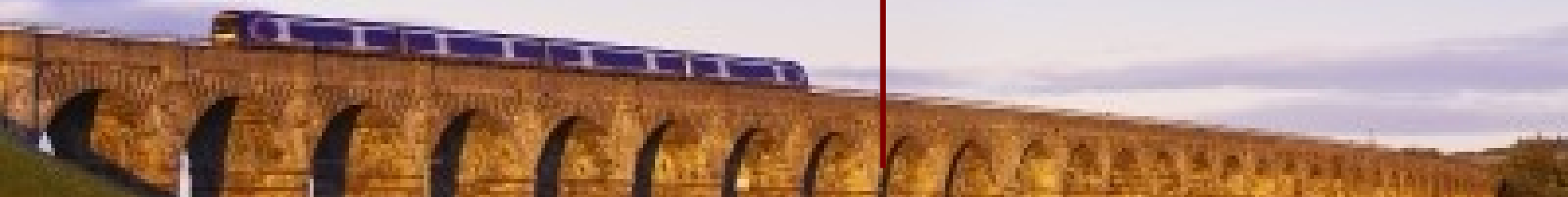
Q1

Q2

Q3

Q4

Q1



# Timeline

OpenETCS  
Kick-Off

WP7: Tooling

WP3: Modeling

Split of WP3

**Today**

**2012**

**2013**

**2014**

**Q3**

**Q4**

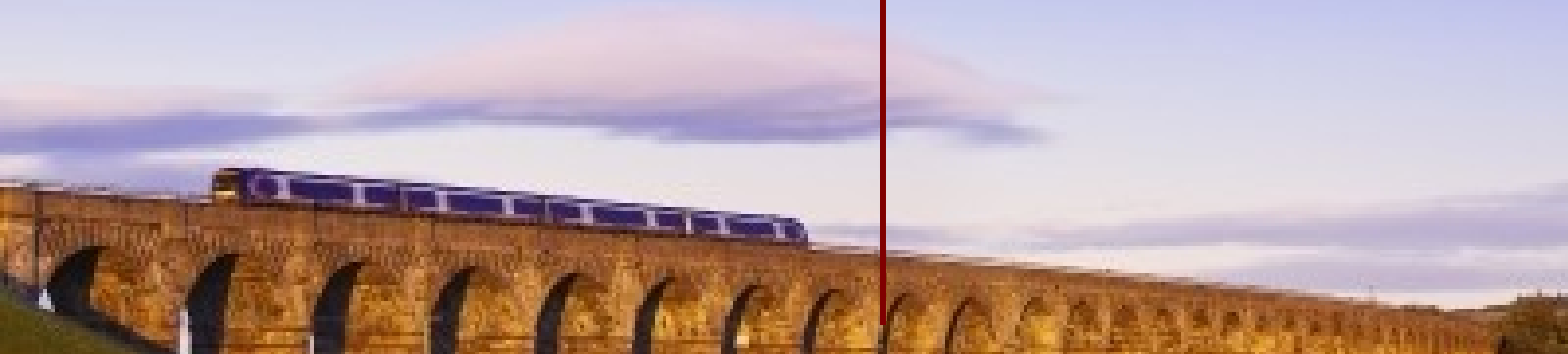
**Q1**

**Q2**

**Q3**

**Q4**

**Q1**



# Timeline

OpenETCS  
Kick-Off

WP7: Tooling

WP3: Modeling

Split of WP3

**Today**

**2012**

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**Q4**

**Q1**

**Q2**

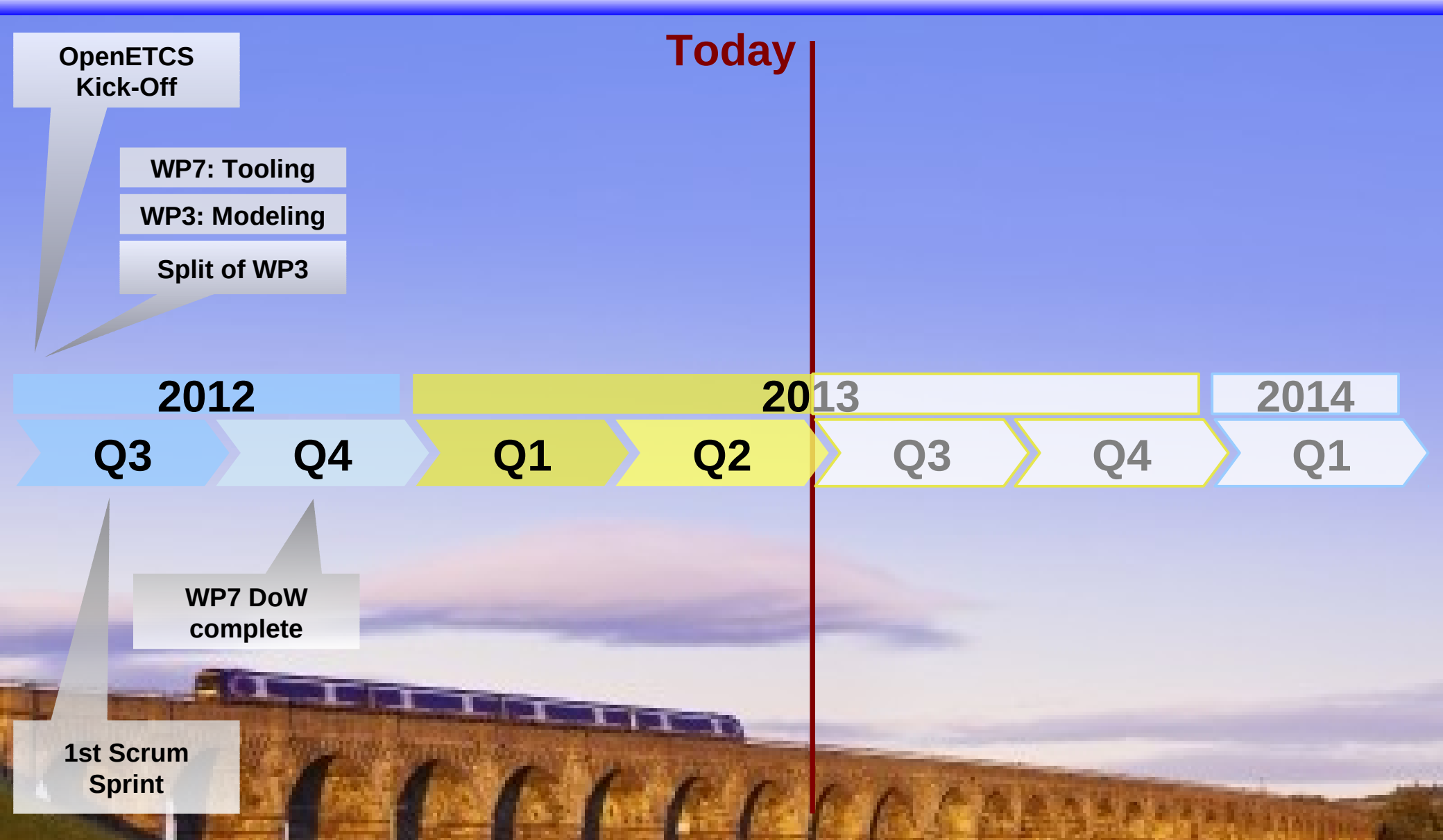
**Q3**

**Q4**

**Q1**

WP7 DoW  
complete

1st Scrum  
Sprint



# Timeline

OpenETCS  
Kick-Off

WP7: Tooling

WP3: Modeling

Split of WP3

First benchmark  
started

11 benchmarks  
underway

**Today**

**2012**

**2013**

**2014**

**Q3**

**Q4**

**Q1**

**Q2**

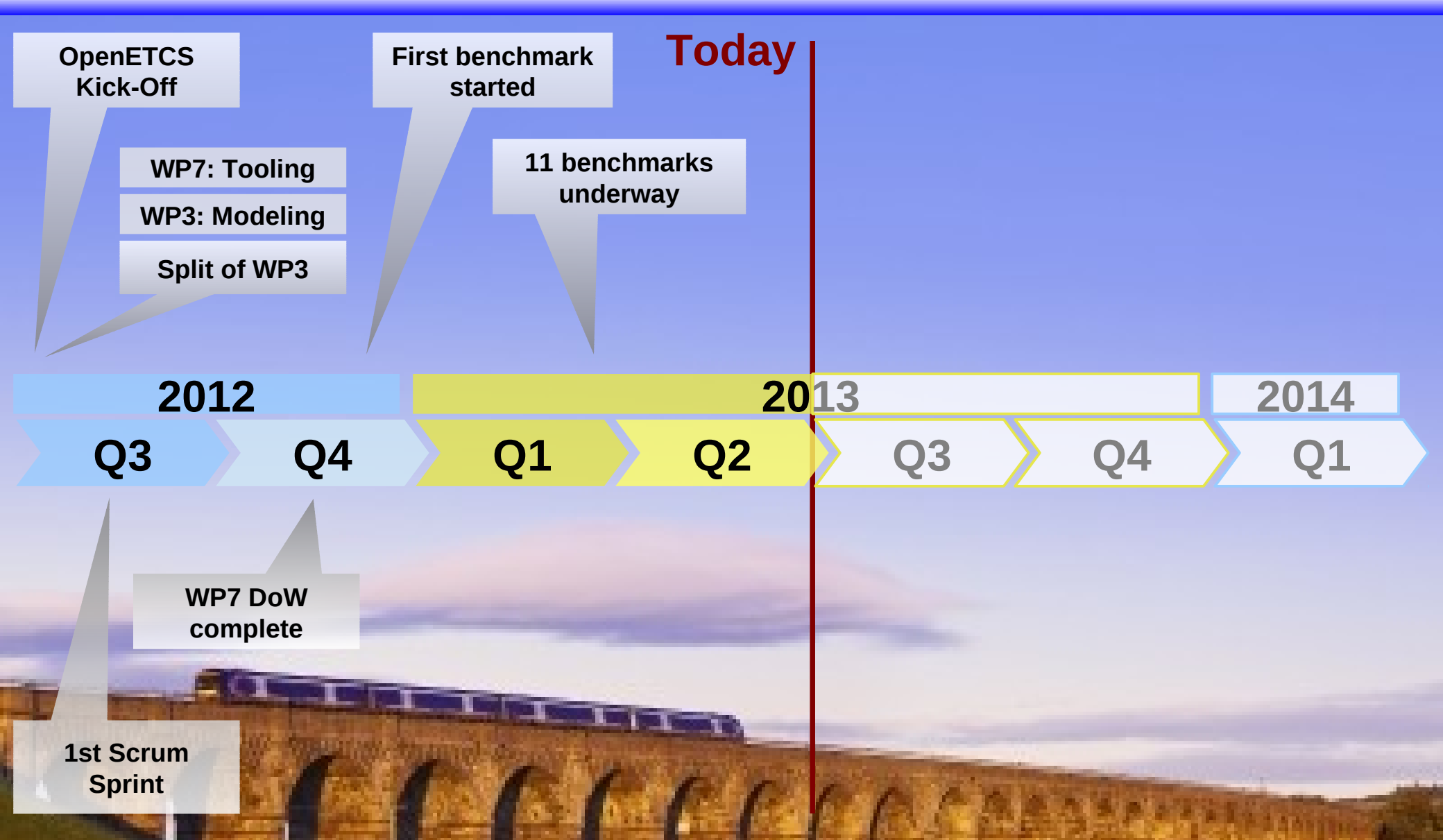
**Q3**

**Q4**

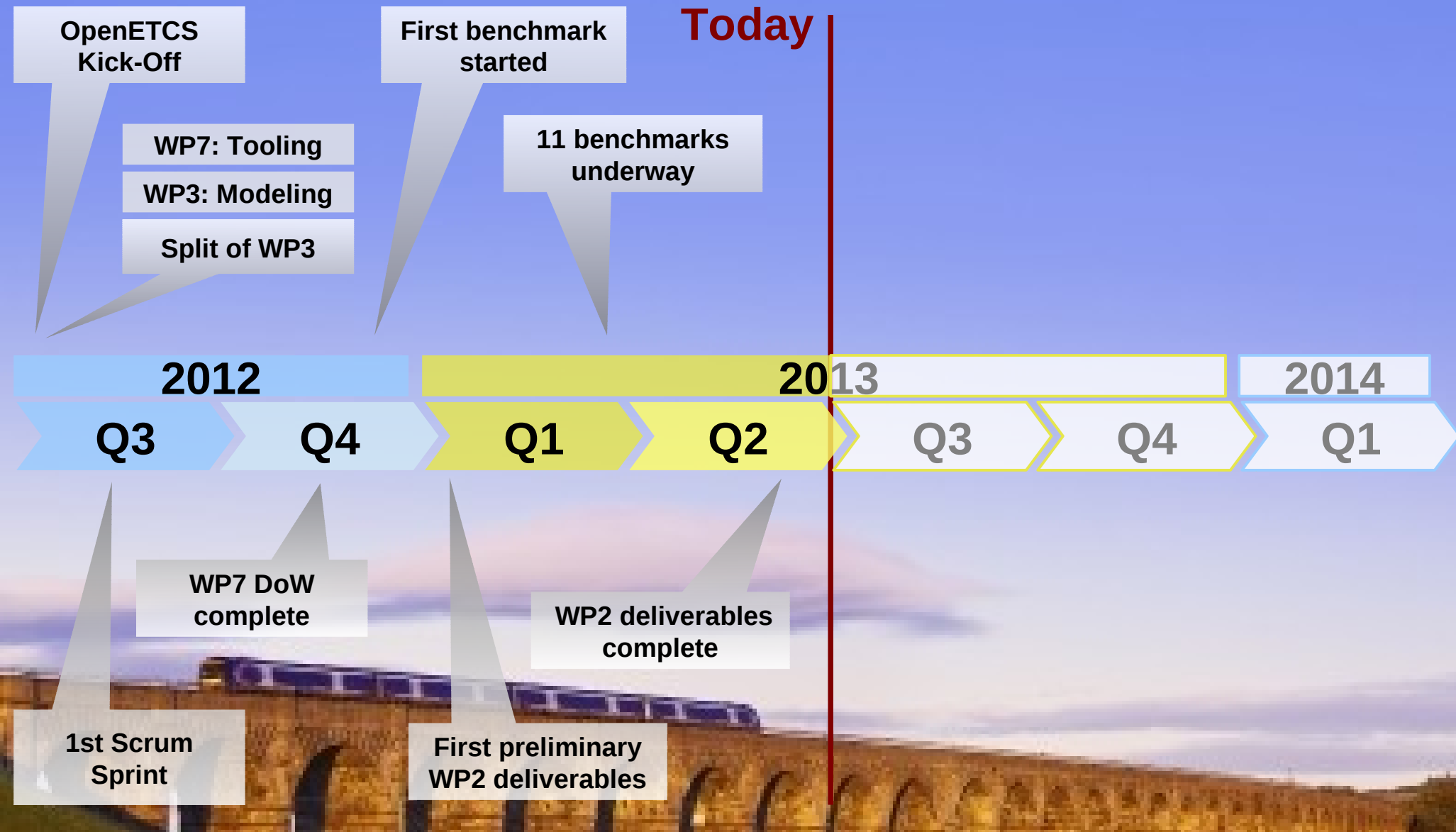
**Q1**

WP7 DoW  
complete

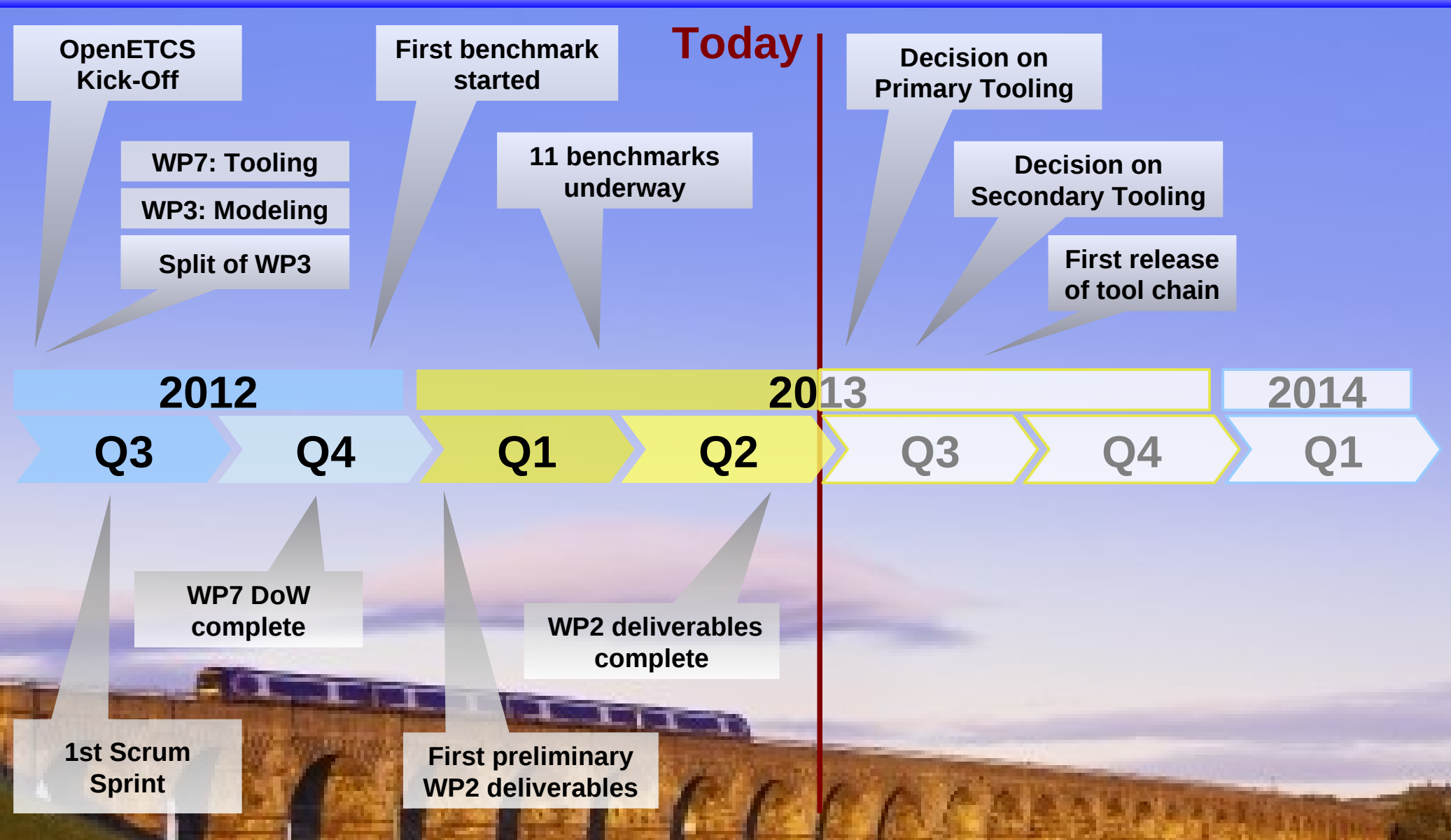
1st Scrum  
Sprint



# Timeline

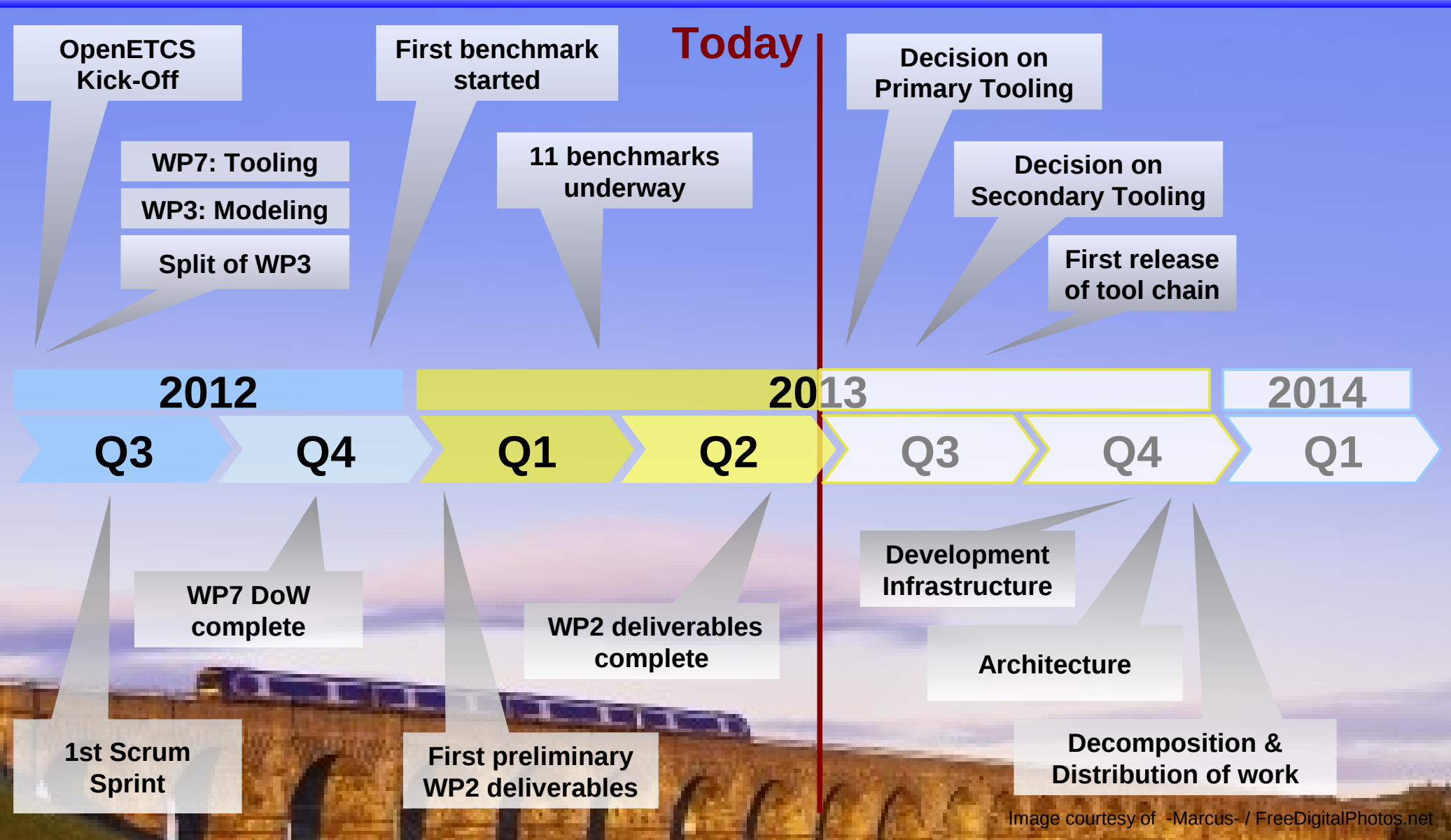


# Timeline

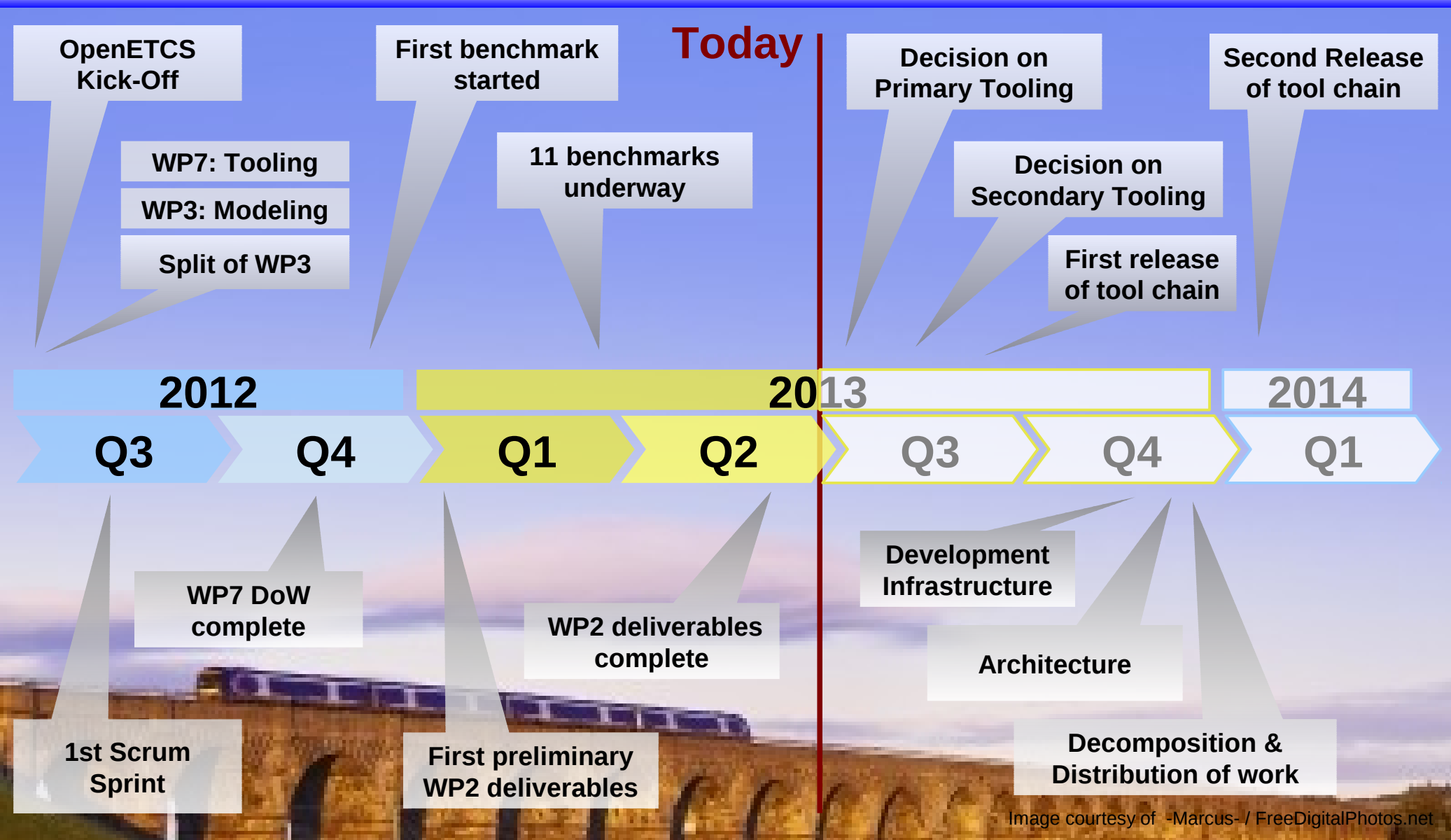




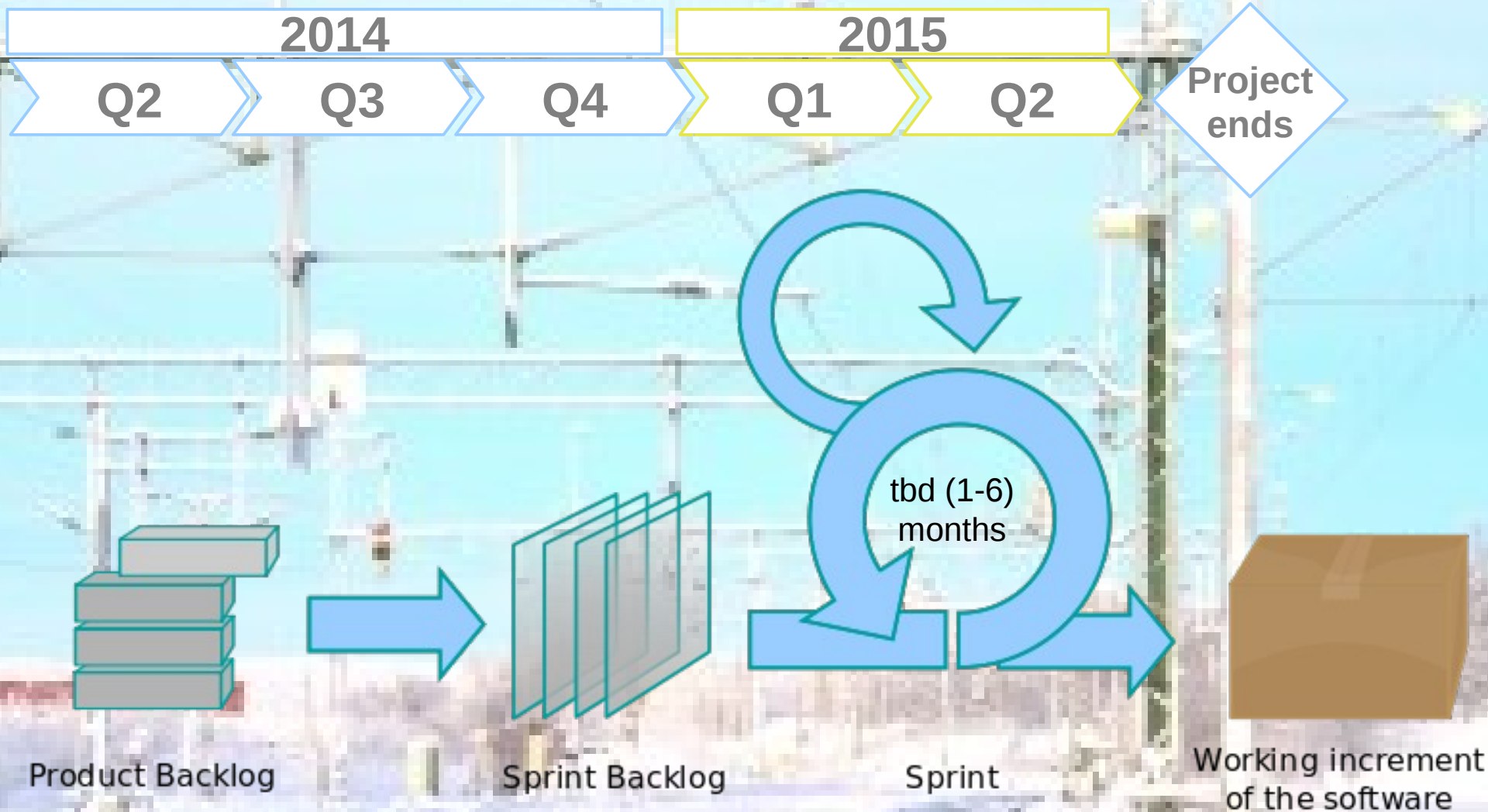
# Timeline



# Timeline



# 2014 – 2015: Regular releases



# No deliverables yet, but...

## WP7 openETCS Tool Chain

no.	title	due (FPP 2.2)	due (FPP 3.0)	state	actual/planned delivery
D7.1	Report on the final choice(s) for the primary tool chain (means of description, tool and platform)	-	T0+13		
D7.2	Report on all aspects of secondary tooling (results of T7.2)	-	T0+15		
D7.3	Tool chain qualification process description	-	T0+19		
D7.4	Tool chain first release	-	T0+20		
D7.5	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	-	T0+36		

# ... but concrete results (primary tools)

Formallism / Tool	Assessor 1	Assessor 2	Started?	Notes
SCADE 6.3.1	David Mentré (MERCE)	Cecile Braunstein/Uni Bremen	Yes	
<a href="#">ERTMSFormalSpecs</a>	Renaud De Landtsheer / ALSTOM BE	Marielle Petit-Doche / Systerel	Yes	
<a href="#">CORE Workstation 5.1</a>	Marielle Petit-Doche / Systerel			<b>Removed</b>
Event-B / Rodin 2.7 with ProR, ProB or AnimB and toolkit of provers (AtelierB, SMT,...)	David Mentré (MERCE)	ERTMS Solutions	Yes	
ClassicalB / AtelierB 4.0.2	Peter Mahlmann (DB)	Jan Welte (TU-BS)	Yes	
<a href="#">GNATprove</a>	Matthias Güdemann / Systerel			<b>Assessor missing</b>
SysML/EA, <a href="#">RT-Tester</a>	Uwe Steinke / Siemens	Roberto Kretschmer / TWT	Yes	I (David Mentré) would also be interested in evaluating this approach
GOPRR (GOPRR) meta meta model / MetaEdit+	Alexandre Ginisty (All4Tec)	Matthias Güdemann / Systerel		
SysML / Papyrus	Renaud De Landtsheer / ALSTOM BE	(Marielle Petit-Doche / Systerel if no volunteer)	Yes	
SystemC	Cecile Braunstein (Uni. Bremen)	Silvano DalZilio / LAAS	Yes	
UPPAAL	Cecile Braunstein (Uni. Bremen)	Silvano DalZilio / LAAS		<b>Secondary toolchain benchmark</b>
Petri Nets / Design/CPN	Marc Antoni (SNCF)	Cyril Cornu / All4tec	Yes	

# ... but concrete results (secondary tools)

Contact	Formalism / Tool	<a href="#">Link with primary means or tools</a>	Model transformation	Requirement management	Validation	Verification	Safety Analyses
Marielle Petit-Doche (Systerel)	AtelierB	Classical B			X	X	
Uwe Steinke (SIEMENS)	SCADE Suite	SCADE	X	X	X	X	
Stefan Rieger (TWT)	UPPAAL	system C			X	X	
Matthias Gudemann (Systerel)	Rodin + pluggins (ProR, ProB, SMT solvers, IUML,...)	Event B	X	X	X	X	X
Jan Welte (TU-BS)	CPN-Tools & SPENAT	Coloured PN			X	X	X
Jan Welte (TU-BS)	Goal Structuring Notation (GSN)	Assurance Case Editor (ACEdit)		X			X
Alexandre Ginisty (All4tec)	MaTeLo (Model Based Testing tool based on Markov Chains)	UML/SysML (Papyrus)		X	X		
Cyril Cornu (All4tec)	Safety Architect (System Safety Analysis tool)	UML/SysML (Papyrus)					X
Cécile Braunstein (Uni. Bremen)	<a href="#">RT-tester</a>	<a href="#">EA-SysML/SCADE</a>			X	X	
Michael Jastram (Formal Mind)	<a href="#">Eclipse ProR</a>	any <a href="#">EMF</a> based: Papyrus, Event-B, ERTMS FormalSpecs, EA-Bridge exists		X			
Silvano Dal Zilio (LAAS-CNRS)	<a href="#">Fiacre</a> and <a href="#">Tina</a> , model-checking toolbox for Time Petri Nets	UML/SysML (Papyrus)				X	

# Thanks to the team

## WP 7 Leadership

Michael Jastram / Formal Mind GmbH

## 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

