First AMASS External Advisory Board (EAB) Workshop

ECSEL Joint Undertaking

AMASS

European Commission

Architecture-driven, Multi-concern and Seamless Assurance and Certification of Cyber-Physical Systems

Trento, September 11-12, 2017

Agenda (1/3)

The EAB meeting will be held on two different premises:

- **Day 1, EAB workshop:** Monday, September 11 at FBK:
  FBK Scientific and Technological
  Hub Via Sommarive, 18 I – 38123 Povo Trento Italy
  Phone: (+39) 0461 314 444

- **Day 2, SASSUR workshop:** Tuesday, September 12 at the SafeComp venue:
  Grand Hotel Trento
  Piazza Dante, 20 - 38122 Trento Italy
  Phone: (+39) 0461 271000

Agenda (2/3): Monday, September 11 (FBK premises)

Start	End	Description	Speaker
9:00	9:30	Project Outline	Huáscar Espinoza
9:30	10:00	Technical Overview	Barbara Gallina
10:00	10:30	Selected Case Studies	Benito Caracuel, Helmut Martin and Thierry Lecomte
10:30	11:00	Coffee break	
11:00	11:50	Project Outreach and Community Building	Ran Bi and Gaël Blondelle
11:50	12:20	Intra and Cross-Domain Reuse	Barbara Gallina
12:30	13:30	Lunch	
13:30	14:00	Architecture-Driven Assurance	Stefano Puri
14:00	14:30	Multi-concern Assurance	Thomas Gruber
14:30	15:00	Seamless Interoperability	José de la Vara
15.00	16:30	EAB Feedback Brainstorming	Moderated by Gaël Blondelle, Huáscar Espinoza and Barbara Gallina.
16.30	17:00	Coffee break	
17:00	17.30	Wrap-up	Moderated by Gaël Blondelle, Huáscar Espinoza and Barbara Gallina

Agenda (3/3): Tuesday, Sept 12 (SASSUR workshop)

Start	End	Description	Authors
8:00	9:00	Registration	
9:00	9:05	Welcome	Alejandra Ruiz / Jose Luis de la Vara/ Tim Kelly
9:05	9:55	Keynote: Developing metrics for compliance using the RTCA DO-178C at Embraer.	Johnny Marques - Embraer
9:55	10:25	Representation of Safety Standards with Semantic Technologies Used in Industrial Environments	Jose Luis de La Vara, Álvaro Gómez, Elena Gallego, Gonzalo Génova and Anabel Fraga
10:25	11:00	Coffee break	
11:00	11:30	Automotive SPICE, Safety and Cybersecurity Integration	Georg Macher, Alexander Much, Andreas Riel, Richard Messnarz and Christian Kreiner
11:30	12:00	Safety and Security Co-Engineering and Argumentation Framework	Helmut Martin, Robert Bramberger, Christoph Schmittner, Zhendong Ma, Thomas Gruber, Alejandra Ruiz and Georg Macher
12:00	12:30	Process Assessment in Supplier Selection for Safety-Critical Systems in Nuclear Domain	Timo Varkoi and Risto Nevalainen
12:30	13:30	Lunch	
13:30	14:00	A Runtime Risk Assessment Concept for Safe Reconfiguration in Open Adaptive Systems	Nikita Bhardwaj and Peter Liggesmeyer
14:00	14:30	Assuring Degradation Cascades of Car Platoons via Contracts	Irfan Sljivo, Barbara Gallina and Bernhard Kaiser
14:30	15:30	Industrial panel	

AMASS

Architecture-driven, Multi-concern and Seamless Assurance and Certification of Cyber-Physical Systems

Project Overview

First EAB Workshop
Trento, Sept 11, 2017

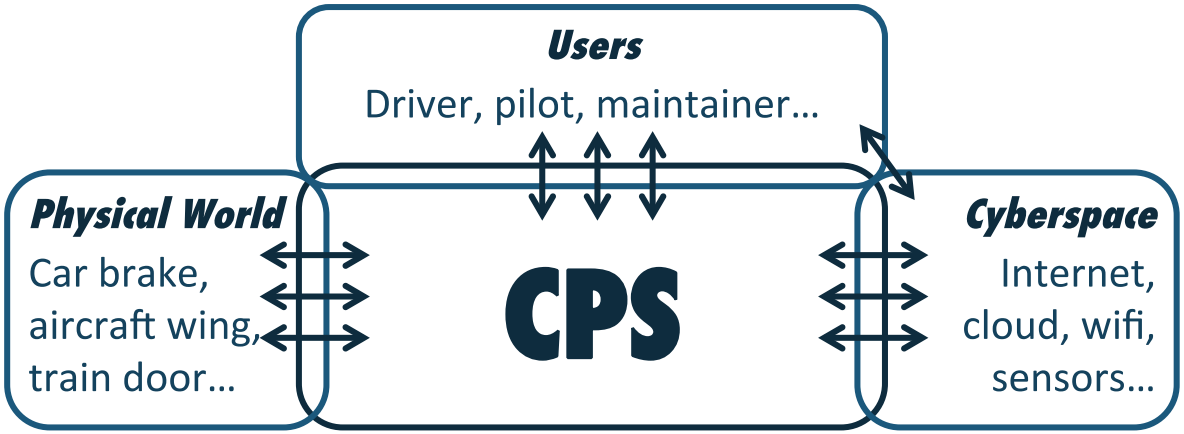
Huáscar Espinoza, Ph.D.
AMASS Project Manager

AMASS in a Nutshell

- **20,5** Million € Total budget
- **2500** Person-Months Effort
- **36** Months Duration (04/16-03/19)
- **29** Partners
- **8** Countries
- **16** Advisory Board Members

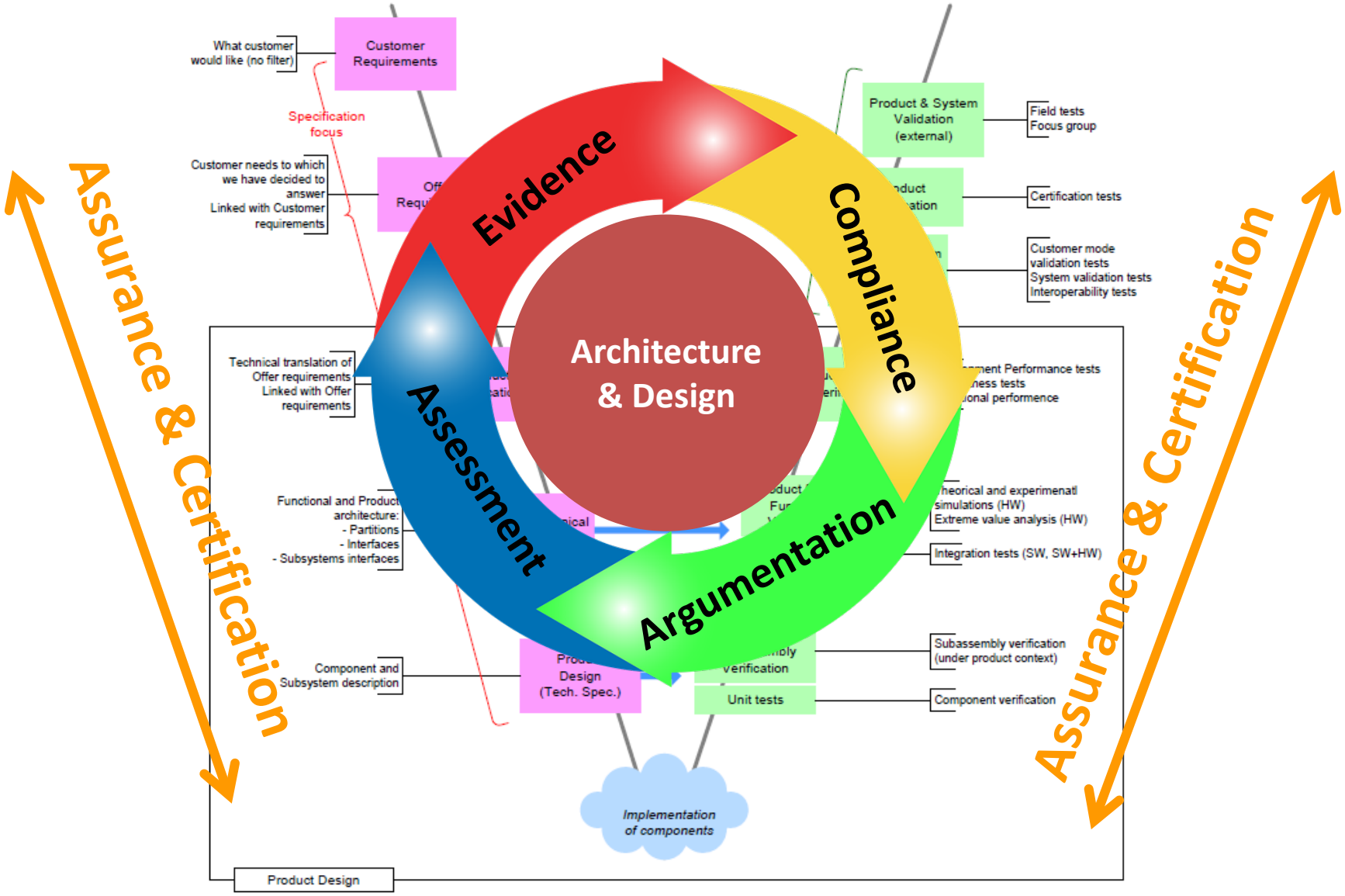
No	Participant organisation name	Short	Country
1	Tecnalia Research & Innovation	TEC	ES
2	Honeywell Internacional	HON	CZ
3	Schneider Electric Spain	TLV	ES
4	ANSYS medini Technologies AG	KMT	DE
5	Mälardalen University	MDH	SE
6	Eclipse Foundation Europe	ECL	DE
7	Infineon Technologies	IFX	DE
8	AIT Austrian Institute of Technology GmbH	AIT	AT
9	Fondazione Bruno Kessler	FBK	IT
10	Intecs	INT	IT
11	Assystem Germany GmbH	B&M	DE
12	GMV Aerospace and Defence, S.A.U.	GMV	ES
13	RINA Services	RIN	IT
14	Thales Alenia Space España	TAS	ES
15	Universidad Carlos III de Madrid	UC3	ES
16	Rapita Systems	RPT	UK
17	Knowledge Centric Solutions	TRC	ES
18	OHB Sweden AB	OHB	SE
19	Masaryk University	UOM	CZ
20	Alstom Transport	ALS	FR
21	Kompetenzzentrum – Das virtuelle Fahrzeug Forschungsgesellschaft mbH	VIF	AT
22	Alliance pour les technologies de l' Informatique	A4T	FR
23	COMMISARIAT A LENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES	CEA	FR
24	CLEARSY SAS	CLS	FR
25	ALTEN SVERIGE AKTIEBOLAG	ALT	SE
26	Lange Research Aircraft GmbH	LAN	DE
27	Thales Italia SpA	THI	IT
28	RISE Research Institutes of Sweden	SPS	SE
29	Comentor AB	COM	SE

AMASS Motivation: The Problem



- ***Increase in product complexity***
- ***Very high costs & effort***
- ***Lack of standardized & harmonized practices***
- ***New assurance & certification risks***
- ***Architecture-specific assurance needs***
- ***Need for addressing multiple dependability concerns***
- ***Wider variety of tools and stakeholders***
- ***Insufficient reuse support***

Scope of Assurance & Certification in AMASS



AMASS Motivation: The Target Solution

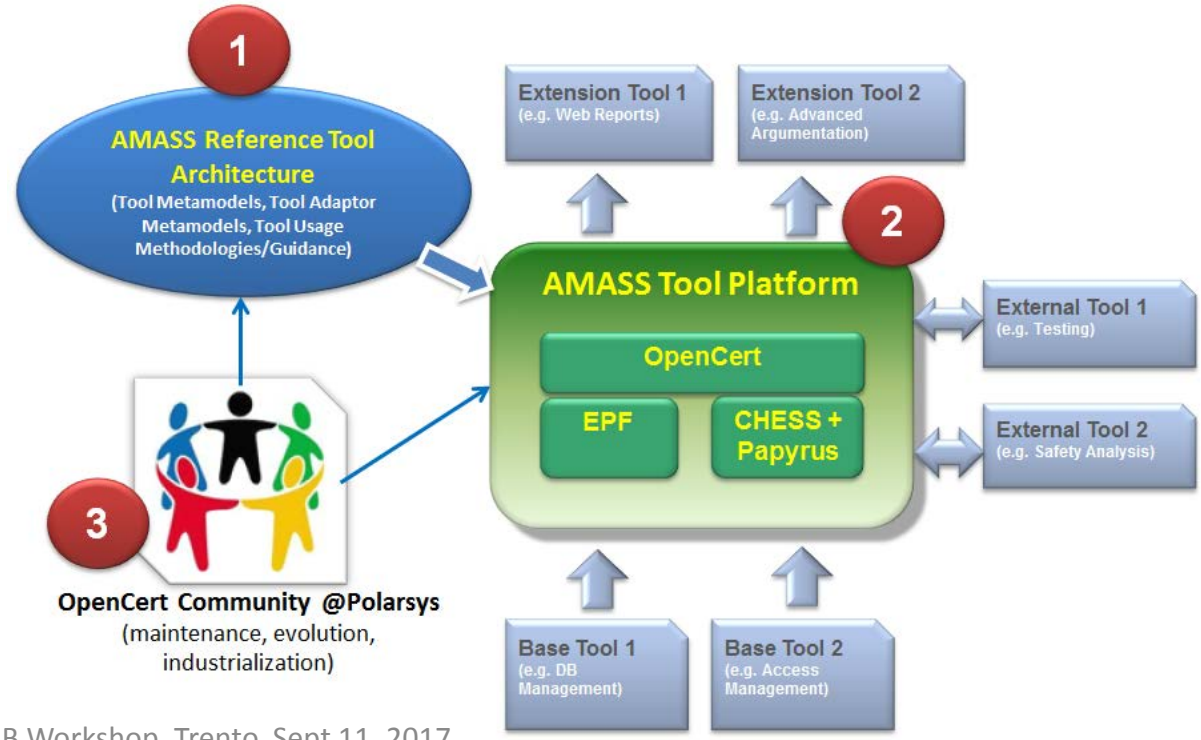
Project Goals

Tangible Results

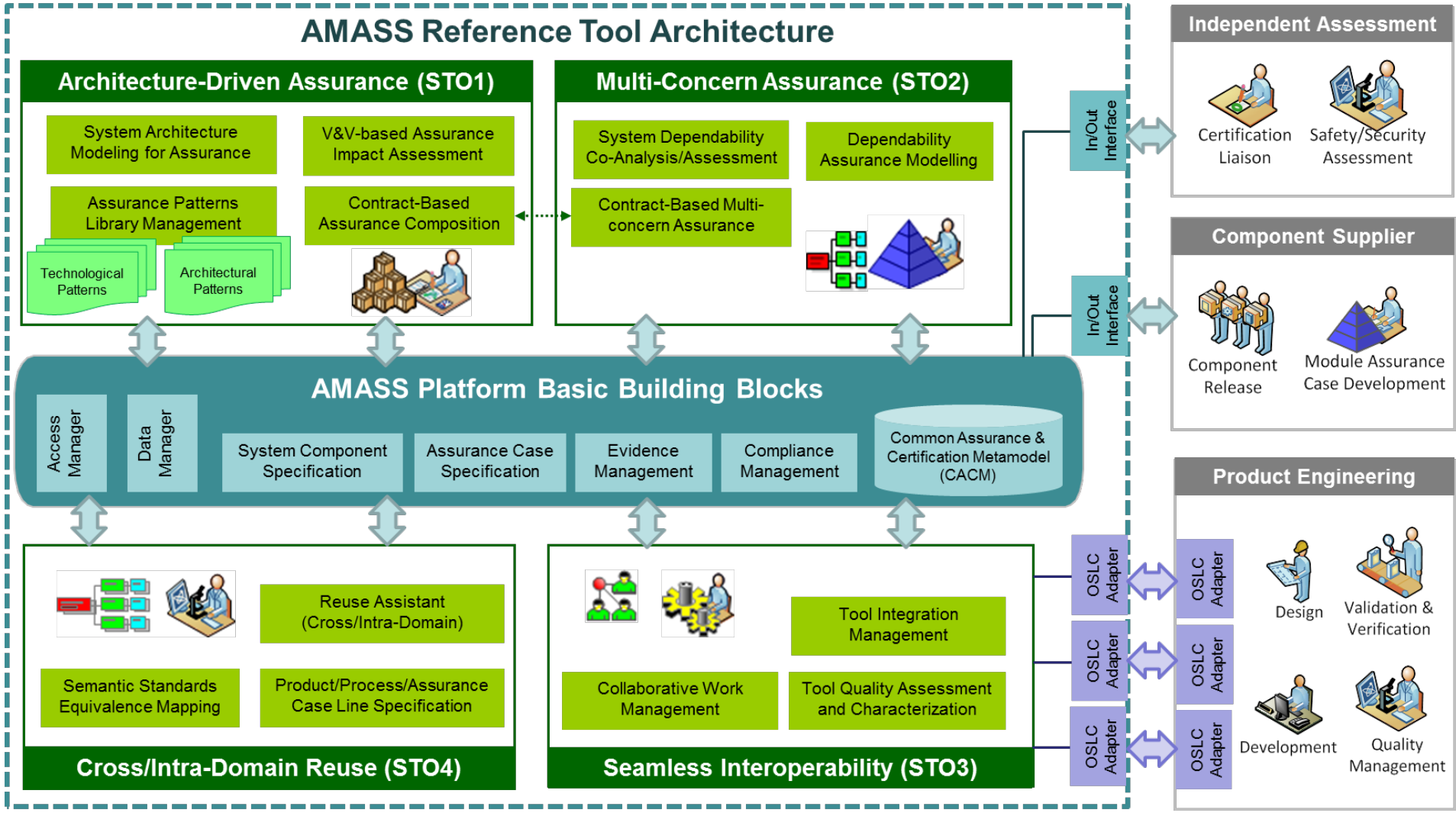
Holistic approach and tool support for

Architecture-driven, Multi-concern, Seamless, Reuse-Oriented Assurance & Certification

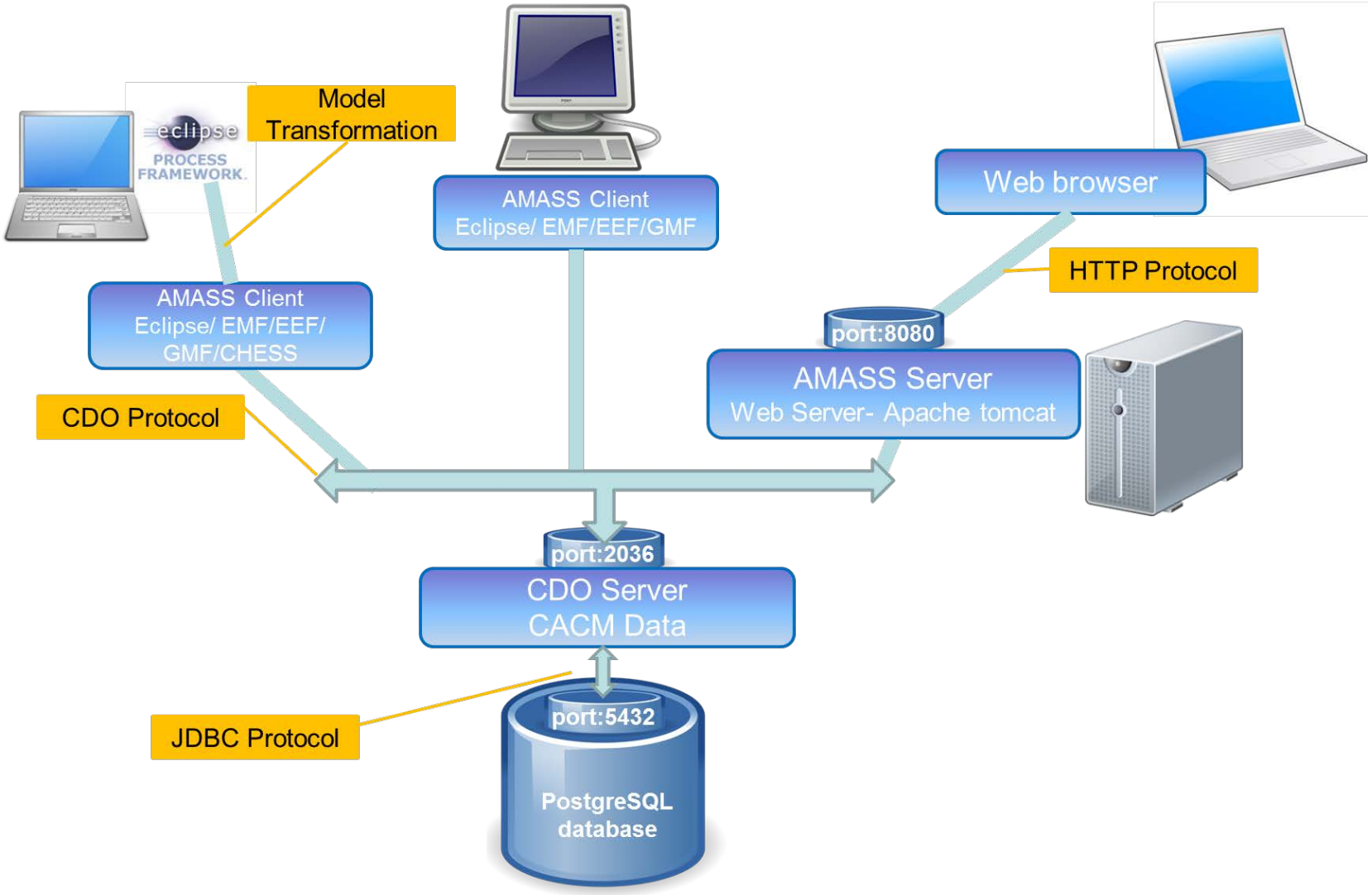
Effort reduction → Higher design efficiency
Reuse cost reduction → Lower recurring costs
Assurance risks reduction → Easier innovation
Harmonization increase → Openness & interoperability



AMASS Reference Tool Architecture

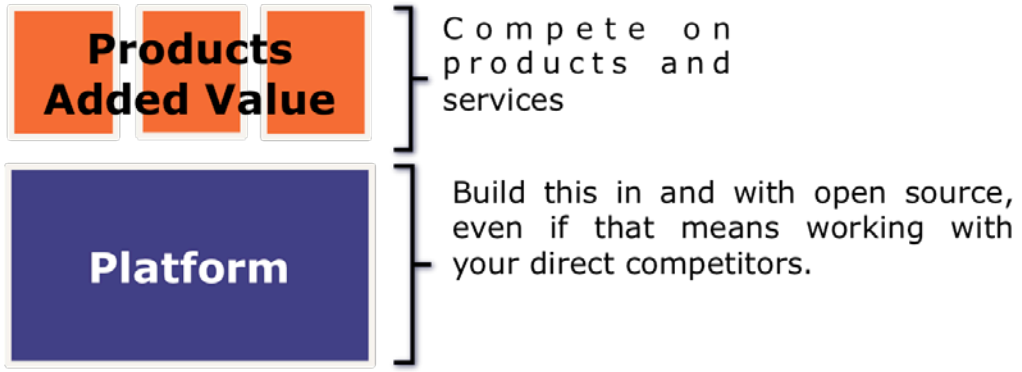


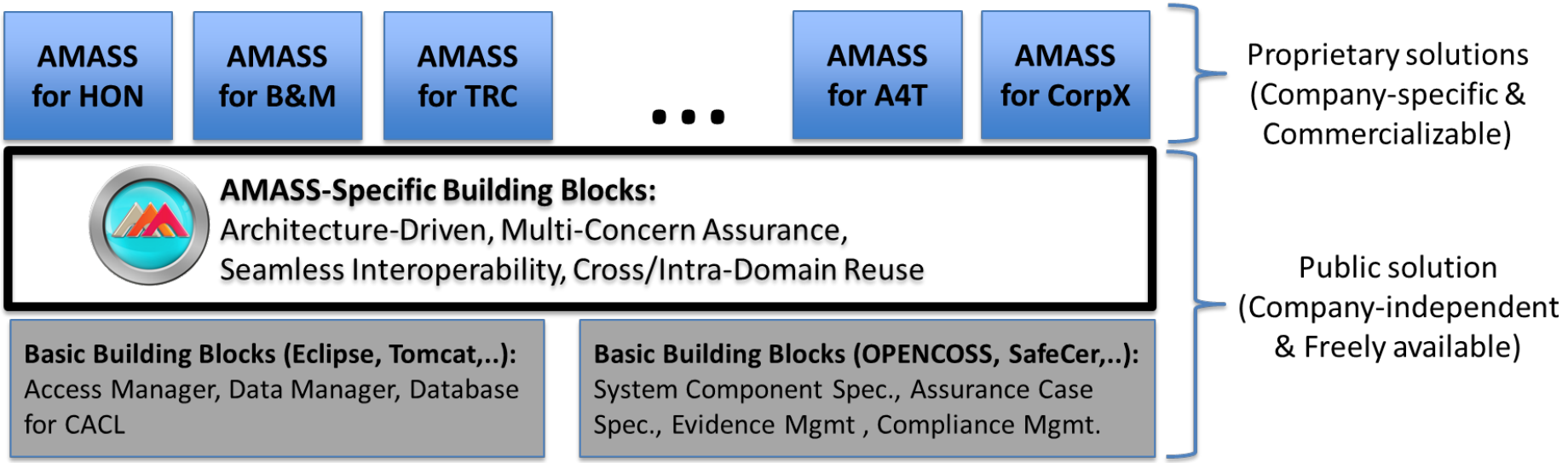
AMASS Tool Platform



AMASS Open Community

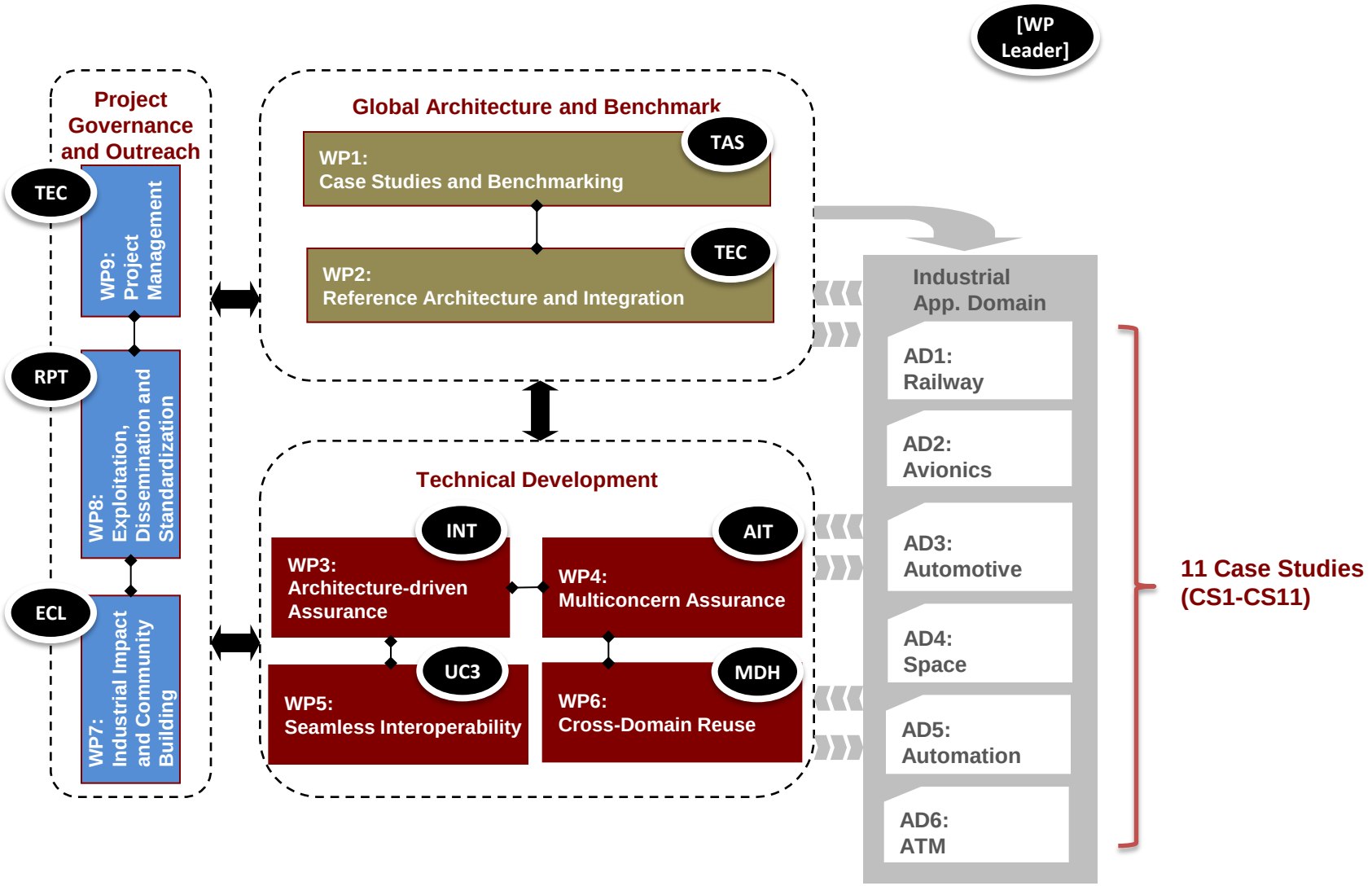
Eclipse Open-Source Model





AMASS Overall Strategy

Project Work Package (WP) Structure

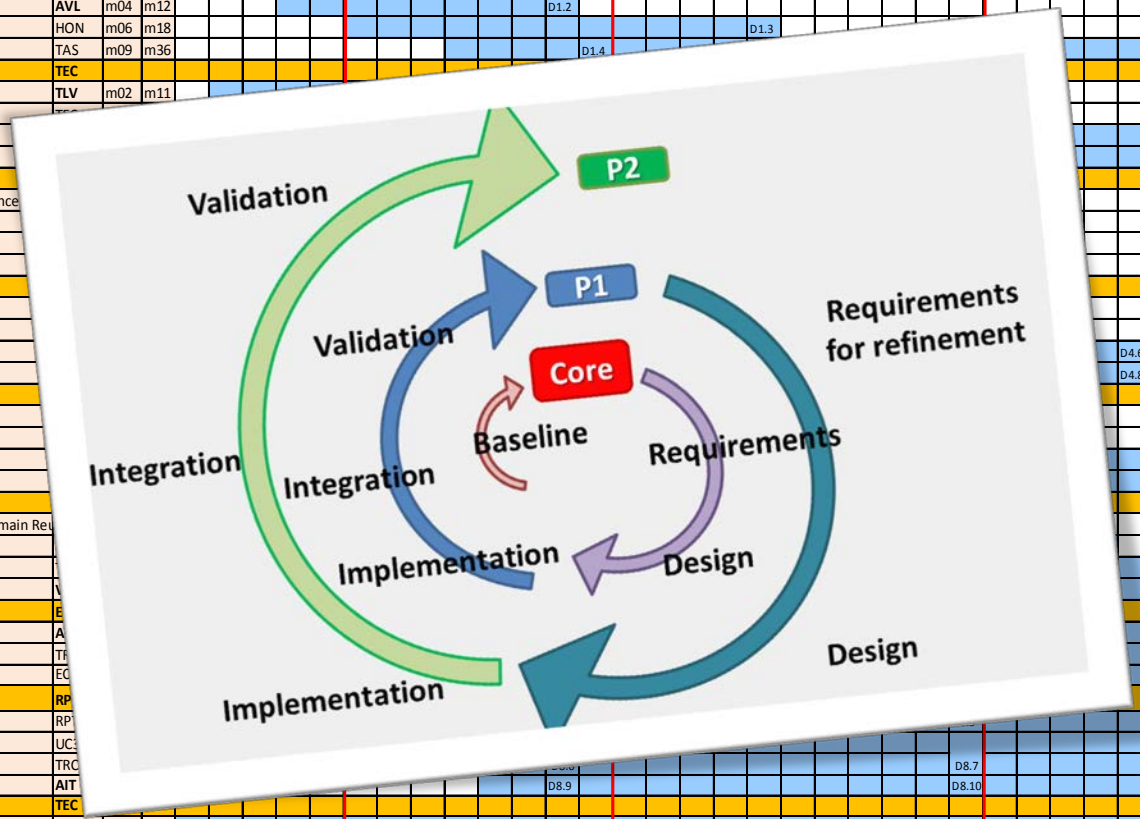


AMASS Industrial Case Studies

CS1: Industrial Automation domain	Industrial and Automation Control Systems (IACS)
CS2: Automotive domain	Advanced driver assistance function with electric vehicle sub-system
CS3: Automotive domain	Collaborative automated fleet of vehicles
CS4: Space domain	Design and safety assessment of on-board software applications in Space Systems
CS5: Railway domain	Platform Screen Doors Controller
CS6: Railway domain	Automatic Train Control Formal Verification
CS7: Avionics domain	Safety assessment of multi-modal interactions in cockpits
CS8: Automotive domain	Telematics function
CS9: Air Traffic Management domain	Safety-Critical SW Lifecycle of a Monitoring Syst. for NavAid
CS10: Space domain	Certification basis to boost the usage of MPSoC architectures in the Space Market
CS11: Space domain	Design and efficiency assessment of model based Attitude and Orbit Control software development

Project Schedule

WP	WP/Task Title	Leader	Start	End	m01	m02	m03	m04	m05	m06	m07	m08	m09	m10	m11	m12	m13	m14	m15	m16	m17	m18	m19	m20	m21	m22	m23	m24	m25	m26	m27	m28	m29	m30	m31	m32	m33	m34	m35	m36
WP1	**Case Studies and Benchmarking**	**TAS**																																						
T1.1	Case Study Specification	**VIF**	m01	m08								D1.1																													
T1.2	Case Study Data Collection	**AVL**	m04	m12												D1.2																								
T1.3	Benchmarking Framework	HON	m06	m18																		D1.3																		
T1.4	Case Study Implementation and Benchmarking	TAS	m09	m36													D1.4																						D1.6		D1.7
WP2	**Reference Architecture and Integration**	**TEC**																																						
T2.1	Specification of Business Cases and High-level Requirements	**TLV**	m02	m11																																				
T2.2	AMASS Reference Tool Architecture and Integration																																							
T2.3	AMASS User Guidance and Methodological Framework																																		D2.5					
T2.4	AMASS Platform Validation																																			D2.8		D2.9		
WP3	**Architecture-driven Assurance**																																							
T3.1	Consolidation of Current Approaches for Architecture-driven Assurance																																							
T3.2	Conceptual Approach for Architecture-driven Assurance																																							
T3.3	Implementation for Architecture-driven Assurance																																							
T3.4	Methodological Guidance for Architecture-driven Assurance																																							
WP4	**Multiconcern Assurance**																																							
T4.1	Consolidation of Current Approaches for Multi-Concern Assurance																																							
T4.2	Conceptual Approach for Multi-Concern Assurance																																							
T4.3	Implementation for Multi-Concern Assurance																																D4.6							
T4.4	Methodological Guidance for Multi-Concern Assurance																																D4.8							
WP5	**Seamless Interoperability**																																							
T5.1	Consolidation of Current Approaches for Seamless Interoperability																																							
T5.2	Conceptual Approach for Seamless Interoperability																																							
T5.3	Implementation for Seamless Interoperability																																	D5.6						
T5.4	Methodological Guidance for Seamless Interoperability																																	D5.8						
WP6	**Cross-Domain and Intra-Domain Reuse**																																							
T6.1	Consolidation of Current Approaches for Cross-Domain and Intra-Domain Reu																																							
T6.2	Conceptual Approach for Cross-Domain and Intra-Domain Reuse																																							
T6.3	Implementation for Cross-Domain and Intra-Domain Reuse																																		D6.6					
T6.4	Methodological Guidance for Cross-Domain and Intra-Domain Reuse																																		D6.8					
WP7	**Industrial Impact and Community Building**																																							
T7.1	Networking and Coordination of External Advisory Board																																							
T7.2	Industrial Adoption Outreach Program																																						D7.2	
T7.3	Building and Coordination of AMASS Open-Source Community																																			D7.7				
WP8	**Exploitation, Dissemination and Standardization**																																							
T8.1	Exploitation																																				D8.4			
T8.2	Dissemination																																							
T8.3	Training																											D8.7												D8.8
T8.4	Standardization	**AIT**														D8.9												D8.10												D8.11
WP9	**Project Management**	**TEC**																																						
T9.1	Project Coordination	TEC	m01	m36						D9.2												D9.3												D9.4						
T9.2	Quality and Risk Management	TEC	m01	m36			D9.1																																	



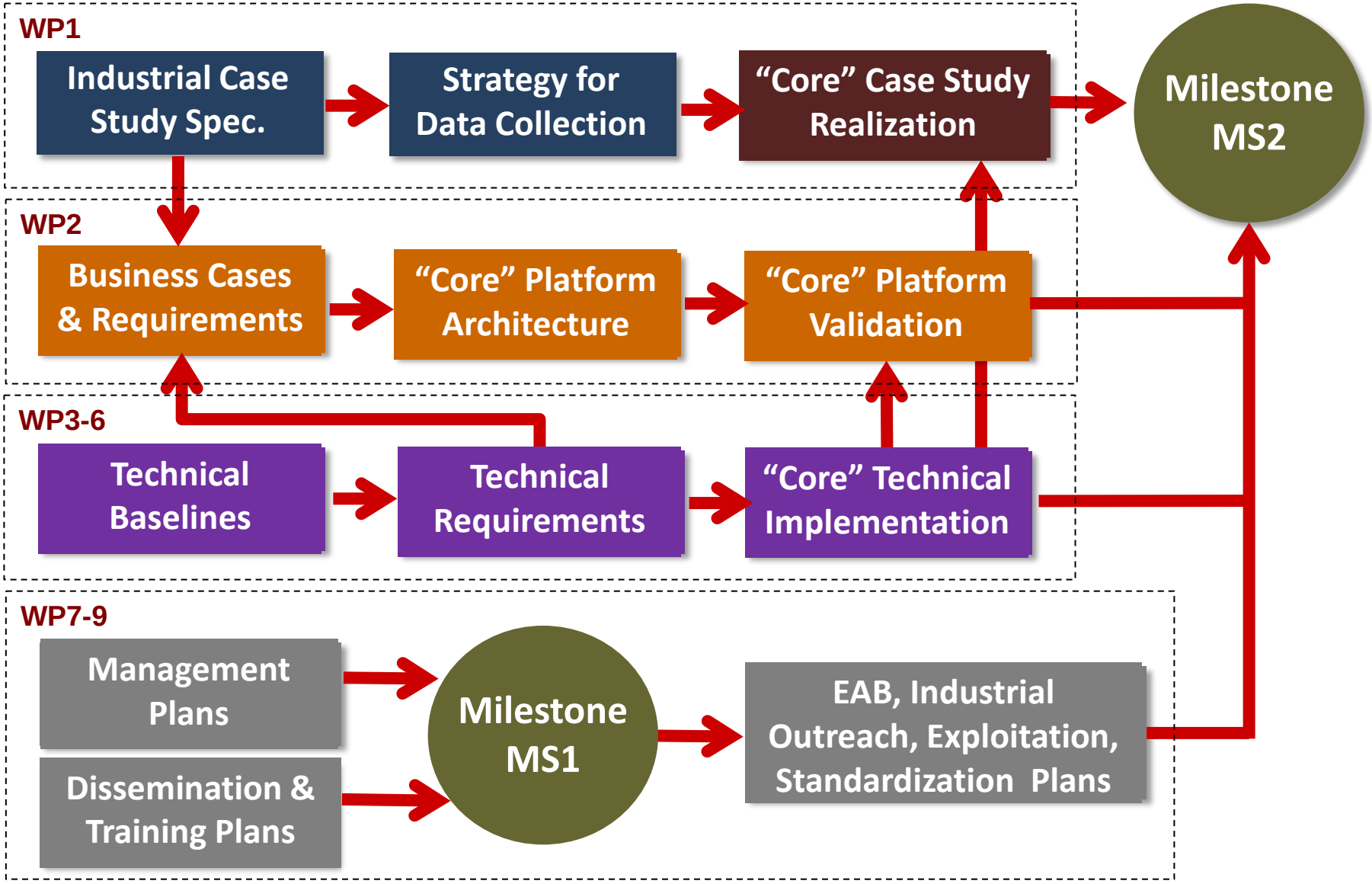
M1
Project Inception

M2
First Prototype:
Core AMASS Platform
Validated in Laboratory

M3
Second Prototype:
Full AMASS Platform
Validated in Laboratory

M4
Final Prototype:
Full AMASS Platform Validated
in Relevant Environment

Activities and Milestones during First Year



Results during First Year

- Open Deliverables available at:
  http://www.amass-ecsel.eu/content/deliverables
- First Prototype, Eclipse/Polarsys OpenCert website:
  https://polarsys.org/opencert/
- Dissemination Material:
  http://www.amass-ecsel.eu/content/dissemination
- Publications:
  http://www.amass-ecsel.eu/content/publications

EAB Management

Project Management Structure

ECSEL Joint Undertaking

Project Officer

National Funding Authorities

Country Coordinators (CC)

Quality Manager (QM)

PROJECT COORDINATOR (PC): TECNALIA
Project Manager (PM):
Dr. Huáscar Espinoza

GENERAL ASSEMBLY (GA)
Chair: Project Manager
Members: All partners

External Advisory Board (EAB)

STEERING COMMITTEE (SC)
Chair: Project Manager
Members: CCs

Innovation Manager (IM)

TECHNICAL COMMITTEE (TC)
Chair: Technical Manager
Members: WP Leaders

Exploitation Manager (EM)

WP1	WP2	WP3	WP4	WP5	WP6	WP7	WP8	WP9
Leader: TAS	Leader: TEC	Leader: INT	Leader: AIT	Leader: UC3	Leader: MDH	Leader: ECL	Leader: RPT	Leader: TEC

EAB Members Role

- Review the project outcomes and identify its strong/weak points with respect to the objectives of the project and the application of its results.
- Provide unbiased insights and feedback from a third party point-of-view, because they are not involved in the project execution and the day-to-day business in the project.
- Comment and guide on the consortium' skills and the relevance of their proposals and actions.
- Promote the exposure of AMASS activities in industry.

EAB Coordinator Role

EABC role assigned to Huáscar Espinoza (TEC) and Gaël Blondelle (ECL)

- Updating frequently the progress of work, keeping alive on-going discussion.
- Organization of the EAB events (meetings, workshops, forums, etc.), including logistics.
- Collection of advice, comments and recommendations from the EAB members.
- Dissemination of information to EAB members.
- Reporting of EAB discussions (summary and recommendation from the EAB).

EAB Members

Name	Surname	Potentional Partner	Country
George	Romanski	Pending (New job in FAA)	US
Antonio	Priore	Ultra Electronics CONTROLS	UK
Javier	Ibanez-Guzman	Renault	France
Miren	Illarramendi	University of Mondragon	Spain
Tim	Kelly	U. York	UK
Mattias	Nyberg	Scania	Sweden
Johnny	Marques	Embraer	Brasil
Anders	Sandin	LFV	Sweden
Laurent	Fabre	Critical System Labs (CSL)	Canada
Ganesh	Pai	NASA	USA
Markus	Wallmyr	CrossControl AB	Sweden
Timo	Varkoi	Spinet	Finland
Marion	Lepmets	SoftComply	Estonia
Kurt	Tschabuschnig	MAGNA STEYR Engineering AG & Co KG	Austria
Pascual Raquel	Breton Taratiel Arriba	CAF	Spain

Thank you for your attention!