Shift2Rail Joint Undertaking

4th meeting of the User Requirements/Implementation and Deployment Working Group

Agenda

1. **INTRODUCTION**
- Adoption of the Agenda and the MoM from previous meeting

2. **SHIFT2RAIL JU – STATE OF PLAY**

3. **FOLLOW UP OF THE INTERIM EVALUATION OF THE SHIFT2RAIL UNDERTAKING**
   - UR-ID WG members participation in S2R projects' advisory groups

4. **MEMBERS' PRIORITIES FOR 2019-2020 (in the context of preparation of the S2R JU Annual Work Plan 2019)**
   - Presentation from Members' and open discussion

5. **MEMBERS' INPUT IN THE CONTEXT OF THE PREPARATION THE FUTURE RAIL RESEARCH AND INNOVATION ACTIVITIES (next Multiannual Financial Framework)**
   - Presentation from Members' and open discussion

6. **AOB, NEXT STEPS, CLOSING**
   - Date of next meeting
   - Other

Introduction

- Adoption of the Agenda

- Approval of the minutes of the previous meeting (11/07/2017)

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State of Play – General

- **17 Projects (Call 2017)**
  - Launched from September 2017

- **Governing Board (27/10/2017)**
  - Approval AWP 2018
  - Approval MAAP Part A:

Comments received from S2R UR-ID WG members: ERA, EURNEX, UITP, UIC, CEN/CENELEC

- **S2R 2018 Open Call info day**
  - 12 December 2017, the Egg, Brussels
  - Matchmaking event + meet the coordinators

- **Other ongoing activities**
  - Evaluation Associated Members Call (realignment of activities)
  - Preparation of Annual Work Plan 2019
  - Quick-wins for TRA and InnoTrans 2018
  - KPIs

State of Play - AWP 2018

Activity	Type of call (*) indicative figures in EUR	Value of the actions (*)	Maximum S2R co-funding (*)	In-kind contribution (*)	Indicative publication date
Call for Proposals and/or Call for tenders	JU members eligible only	134.1	59.6	74.5	Q4 2017
Call for Proposals	Open, JU Members excluded	21.1	19.1	2.0	Q4 2017
Call for Tenders	Open	2.3	2.3	N/A	Q4 2017
Operational Experts	Open, including through REA	0.3	0.3		
Total		**157.8**	**81.3**	**76.5**	

AWP 2018 – CFM

Topic number - IP	Topic name *(*) indicative figures in EUR*	Type of action and expected Technical Readiness Level (TRL)	Value of the actions (*)	Maximum S2R co-funding (*)	In-kind contribution (*)
S2R-CFM-IP1-01-2018	Development of technology demonstrators for the next generation of traction systems and adhesion management systems	RIA , TRL 5 to 6	28,534,203	12,680,600	15,853,603
S2R-CFM-IP1-02-2018	Implementing new technologies for the TCMS	RIA, TRL 5	10,576,058	4,700,000	5,876,058
S2R-CFM-IP2-01-2018	Advanced Signalling, Automation and Communication System (IP2 and IP5)	IA, TRL6	38,900,540	17,287,400	21,613,140

Topic number - IP	Topic name *(*) indicative figures in EUR*	Type of action and expected Technical Readiness Level (TRL)	Value of the actions (*)	Maximum S2R co-funding (*)	In-kind contribution (*)
S2R-CFM-IP3-01-2018	Research into optimized and future railway infrastructure	IA, TRL 6	30,153,015	13,400,000	16,753,015
S2R-CFM-IP4-01-2018	Passenger service platform specifications for an enhanced multi-modal transport eco-system including Mobility as a Service (MaaS)	IA, TRL 6	11,701,170	5,200,000	6,501,170

#Shift2Rail

Topic number - IP	Topic name (*) indicative figures in EUR	Type of action and expected Technical Readiness Level (TRL)	Value of the actions (*)	Maximum S2R co-funding (*)	In-kind contribution (*)
S2R-CFM-IP5-01-2018	Technology demonstrators for competitive, intelligent rail freight operation	IA, TRL 6	12,376,238	5,500,000	6,876,238
S2R-CFM-CCA-01-2018	Virtual certification & smart planning	RIA TRL 3	1,894,689	842,000	1,052,689
TOTAL			134,135,914	59,610,000	74,525,914

Topic number – IP	Topic name *(*) indicative figures in EUR*	Type of action and expected Technical Readiness Level (TRL)	Value of the actions (*)	Maximum S2R co-funding (*)	In-kind contribution (*)
S2R-OC-IPX-01-2018	Paradigm shifts for railway	RIA, up to TRL 2	2,200,000	2,200,000	n.a
S2R-OC-IPX-02-2018	Transversal exploratory research activities and knowledge transfer	CSA	500,000	500,000	n.a
S2R-OC-IPX-03-2018	Innovative/breakthrough mobility concepts (with rail as backbone)	CSA	500,000	500,000	n.a

#Shift2Rail

Topic number – IP	Topic name *(*) indicative figures in EUR*	Type of action and expected Technical Readiness Level (TRL)	Value of the actions (*)	Maximum S2R co-funding (*)	In-kind contribution (*)
S2R-OC-IP1-01-2018	Technical solutions for the next generation of TCMS	RIA, up to TRL 4/5	4,000,000	4,000,000	n.a
S2R-OC-IP2-01-2018	Analysis for Moving Block and implementation of Virtual Coupling concept	RIA, up to TRL 3	1,300,000	1,300,000	n.a
S2R-OC-IP2-02-2018	Modern methodologies and verifications for GNSS in Railways and virtual test environment.	RIA, up to TRL 3	1,020,000	1,020,000	n.a

Topic number – IP	Topic name (*) indicative figures in EUR	Type of action and expected Technical Readiness Level (TRL)	Value of the actions (*)	Maximum S2R co-funding (*)	In-kind contribution (*)
S2R-OC-IP2-03-2018	Communication environment assessment and validation	RIA, up to TRL 5/6	750,000	750,000	n.a
S2R-OC-IP3-01-2018	Measuring and monitoring devices for railway assets	IA up to TRL 6	6,785,714	4,750,000	2,035,714
S2R-OC-IP4-01-2018	Semantic framework for multimodal transport services	RIA up to TRL4	2,000,000	2,000,000	n.a

Topic number – IP	Topic name *(*) indicative figures in EUR*	Type of action and expected Technical Readiness Level (TRL)	Value of the actions (*)	Maximum S2R co-funding (*)	In-kind contribution (*)
S2R-OC-IP4-02-2018	Supporting the implementation of the IP4 multi-modal transport ecosystem	RIA up to TRL4	1,500,000	1,500,000	n.a
S2R-OC-IP5-01-2018	Radio communication and simulation of train dynamics for Distributed Power within long trains	RIA up to TRL5	600,000	600,000	n.a
TOTAL			21,155,714	19,120,000	2,035,714

Number	Subject of tender	Indicative scope	Maximum budget
1 - contract	Study on alternative communication bearers in the railway environment	The activity shall assess the railway environment and identify new alternative bearer beyond established cellular technologies (UMTS/HSPA, LTE, LTE-A, etc.) or other access technologies (WiFi/802.11, SatCom, etc.), which are or expected to become available for on-board to trackside communication needs. The availability of the alternative bearers might be restricted to certain areas (for example train stations, shunting yards, high-speed lines, different terrains, etc.). The alternative bearers could rely on or leverage already available infrastructure or equipment alongside the railway tracks. Some potential candidates include but are not limited to data over power lines, free space optical communications, etc. The results of the study are expected to enrich the set of access network options for infrastructure managers, when they deploy their new adaptable communication system and leverage the benefits of alternative bearers to address specific needs of their planned rollout of advanced services and applications.	€ 150,000

Number	Subject of tender	Indicative scope	Maximum budget
2 - contract	Study on railway bridge dynamics and the interface with rolling stock	Under supervision of the JU, in collaboration with the ERA, the study should collect bridge and train data, as well as calculation and validation methods, including: • calculation methods to describe the dynamic interface vehicle – bridge; • vehicle design assessment method; • validation of calculation methods; • load models and vehicle design limits; • proposal and suggestions for standardisation and regulation.	€ 250,000

Number	Subject of tender	Indicative scope	Maximum budget
3 - contract	Support to ERTMS European Action Plan to pave the way for the deployment of the future S2R Innovative Solutions	This activity aims at supporting the implementation of the ERTMS European Action Plan, published by the European Commission in June 2017. Under the supervision of the JU and together with Commission Services (DG Move), inter alia, the contractor will perform tasks such as support the ERA Change Control Management process' and related update of specification documentation (including test specifications); Identification of the existing sets of engineering rules regarding transitions between systems; Contribution to the technical review of trackside deployment of ERTMS in cross-border sections; Contribution to the drafting/updating of technical specifications for upcoming ERTMS communication system set to replace GSM-R and to the appraisal of the impact on interoperability of its roll-out.	€ 1,600,000

Number	Subject of tender	Indicative scope	Maximum budget
4 - contract	Study on use of fuel cell hydrogen in railway environment	This activity aims at analysing the business case of hydrogen and fuel cell usage in the rail environment, both in passenger train and freight. The investigation could for example include analyses on the CO_2 performance (through Life Cycle Analysis techniques) of current rail powertrain solutions and demonstrate the specific emissions saving that can be achieved by replacing conventional technologies.	€ 270,000
TOTAL			€ 2,270,000

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FOLLOW UP OF THE INTERIM EVALUATION OF THE SHIFT2RAIL UNDERTAKING

https://ec.europa.eu/research/evaluations/pdf/s2r.pdf

Shift2rail URID – what is it and how can we help?

22nd November 2017

Firstly some helpful background

at the service of constituent companies and in international cooperation

- **1922** Intergovernmental conference in Genoa, Italy

- **October 1922** Constitutive Assembly of UIC (Paris): UIC Statutes adopted by 51 Railway administrations from 29 countries (Europe, Asia)

- **2017** 200 constituent stakeholders (115 in Europe) from 95 **countries**

- **3,000 billion passenger kilometres**
- **10,000 billion tonnes kilometres**
- **1 million kilometres of lines**
- **7 million rail personnel**
- **Cooperation with over 100 institutions**
- **500 UIC Leaflets - becoming International Railway Solutions** *IRS*
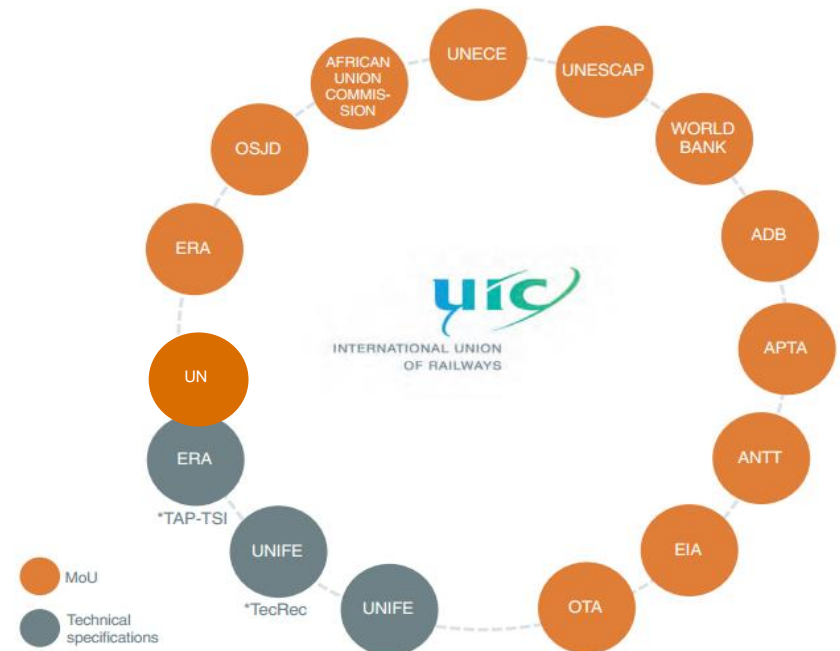
UIC's main objectives are :

- **Creating a framework for innovation and anticipation of future challenges**

- **Supporting constituent companies in the delivery of an efficient and attractive railway system**

- **Facilitating the development of rail as a competitive mode of transport**

- **Develop and publish a range of documents – is recognised as an SSO**

The European R&I galaxy: How do we collaborate?

Standardisation in the rail environment…

Process Standards (RU / IM business needs) and related services

- **Operation**
- **Maintenance**
- **Integration**
- **High speed**
- **Freight**
- **Asset Management**
- **Safety/Security**
- **Organisation**
- ....

L A W

TSI, Directives, OTIF, OSJD states…

Binding

IRS

ROC driven
How?
Not Binding

ISO

IEC

cen CENELEC

Rail sector driven
Why? What?
Not binding

"Operator" responsible for the SYSTEM and the SERVICES to the end user

"Producer" responsible for the PRODUCTS and service to the client

Product standards and related services

- **Products**
- **Sub-System**
- **Industrialisation**

Working together

Organisations producing different types of deliverables shall work together, in mutual respect and consistency for the benefit of the whole railway sector

> **References from UIC documents are contained in some TSIs**

> **UIC-IEC cooperation agreement signed in 2015**

> **UIC-ISO cooperation agreement signed in December 2016**

> **UIC-CEN_CLC revised cooperation agreement should be signed in a couple of weeks**

The **requirements** end of the spectrum

Capabilities for the Future European railway system

07. Low-Cost Railways

08. Guaranteed asset health and availability

03. Logistics on demand

06. Service Operations Timed to the Second

05. Optimum Energy Use

12. Rapid and reliable R&D delivery

04. More Value from Data

09. Intelligent Trains

01. ATO

02. Mobility as a service

11. Sustainability

10. Stations and 'smart' cities mobility
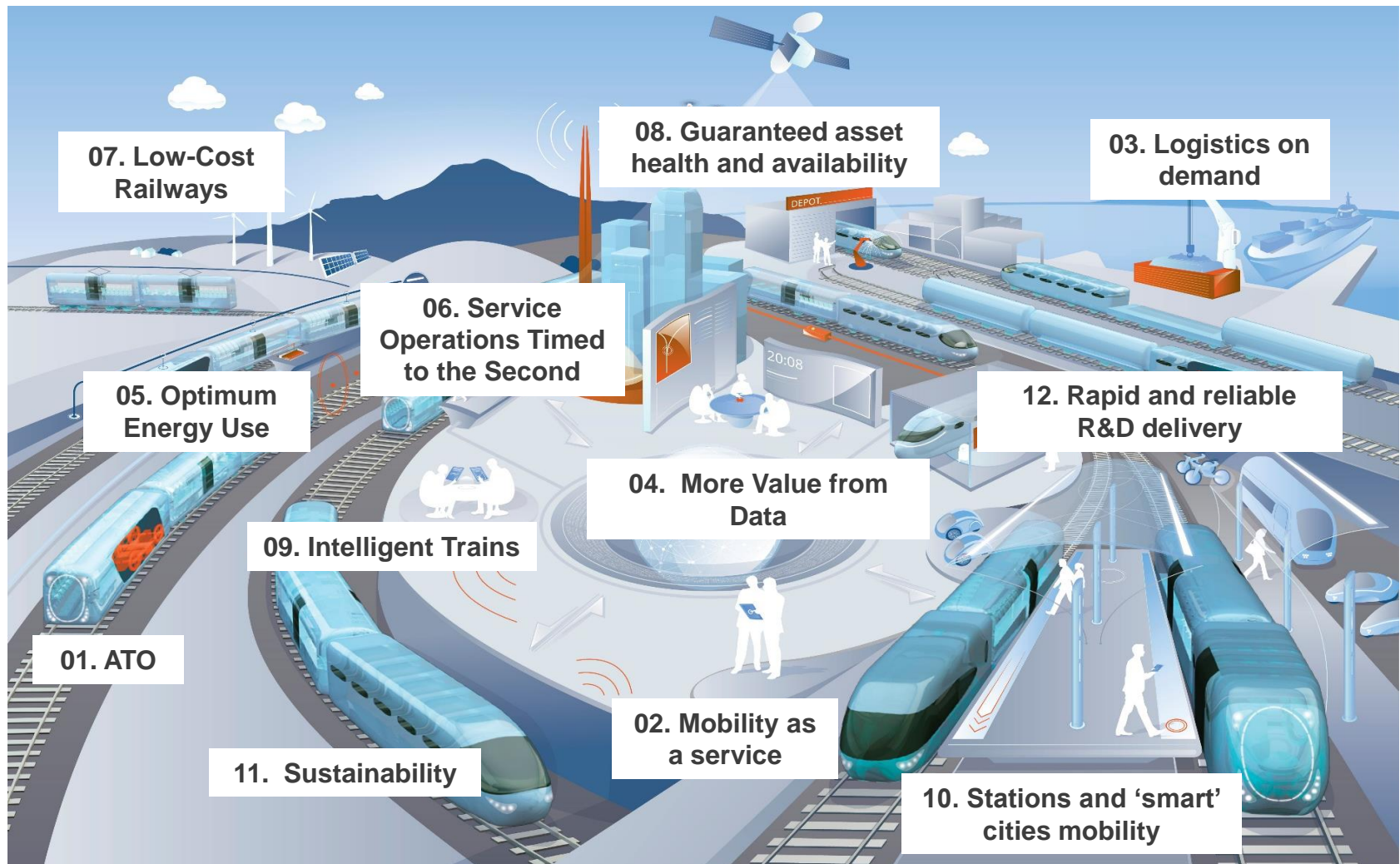
Picture courtesy of RSSB

The 3 R&I Strategic Clusters

The clusters highlight where within the system the capabilities will have an impact:

- **Customers and Markets**: achieve customer satisfaction with the railway services / develop existing markets and to evolve new opportunities

Customers and Markets

- **Society and Economy**: fostering social and economic integration thanks to the ability of rail to transport people and goods from A to B. economically sustainable in their operations

Society and Economy

- **Environment and Energy**: support environmental sustainability / encourage the procurement and use of clean energy

Environment and Energy

The 3 R&I Strategic Clusters

The clusters highlight where within the system the capabilities will have an impact:

Customers and Markets	Society and Economy	Environment and Energy
1. Automated Train Operations		
2. Mobility as a service		
3. Logistics on demand		
4. More value from data		
	5. Optimum energy use	
6. Service timed to the second		
7. Low-cost railways		
8. Guaranteed asset health and availability		
9. Intelligent trains		
10. Stations and 'smart' city mobility		
	11. Environmental and social sustainability	
12. Rapid and reliable R&D delivery		
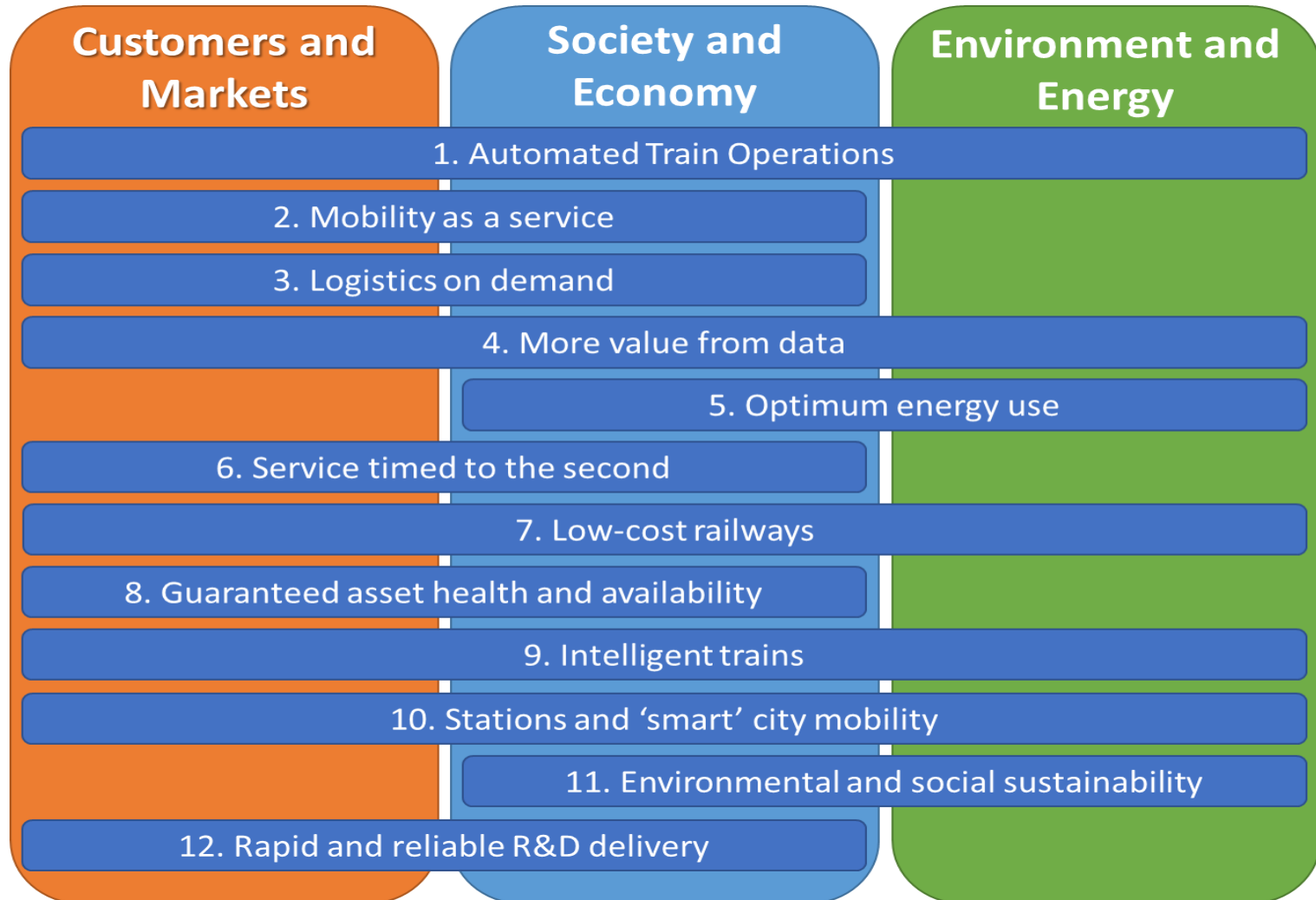
- **Much of this has been integrated into the recent S2R MAAP**

- **Can also be found, alongside the Key Enablers developed by UNIFE and the requirements identified by UITP in the ERRAC 2050 Vision that is planned for approval tomorrow and publication soon**

Here to help, in a number of ways…

> **Bringing a wide range of stakeholders together:**

- **specifying requirements (such as the recent development of the 'capabilities')**

- **managing some possible joint tests, demonstrators, and/or assessment surveys**

- **engaging in the dissemination/implementation of deliverables by developing and publishing 'standards' on behalf of the sector**

> **UIC should be considered as a key partner**

Consider UIC as a S2R partner...

> We can focus on the operations, services, rail system design and maintenance aspects

> Harmonisation and transparency with CEN_CENELEC and ETSI are highly considered thanks to agreements in force and regular cooperation meetings

> No one organisation can do it all. There needs to be joined up thinking with CCA WA 3.2 and JPCR – it will need a consistent and efficient programme

> We can ensure that there is a nominated key contact for all standardisation topics

Where does UR-ID fit in?

> UR-ID has a key role to play

> There must be discussion, the flow of information must be 2-way and everyone a chance to say what they want to achieve

> Much in the same way that CEN_CENELEC have JPCR, then perhaps UR-ID needs to become the programming or at least a prioritising group for S2R?

> The S2R progamme needs to fit the needs of the stakeholders that will be using the deliverables

> Let's build the end-user interface here

■ ■ ■ **Thank you for your kind attention**

UR-ID WG Meeting

User Requirements/ Implementation Deployment Working Group

Brussels

22 November 2017

Paolo Umiliacchi

CENELEC Consultant for Rail Interoperability
JU Shift2Rail reporting expert for TC9X

Cliff Cork

CEN/TC 256 Chairman
JU Shift2Rail reporting expert for TC256

Summary

✧ CEN-CENELEC – SHIFT2RAIL collaboration

  ♦ Structure and interesting topics

✧ On-going or possible collaboration

  ♦ Some key topics

CEN-CENELEC Structure

European Commission

National Committees

Presidential Committee

CCMC

CEN	CENELEC
Technical Committees	Technical Committees
TC256	Railway sector	TC9X

Subcommittees

Subcommittees

Working Groups

Working Groups
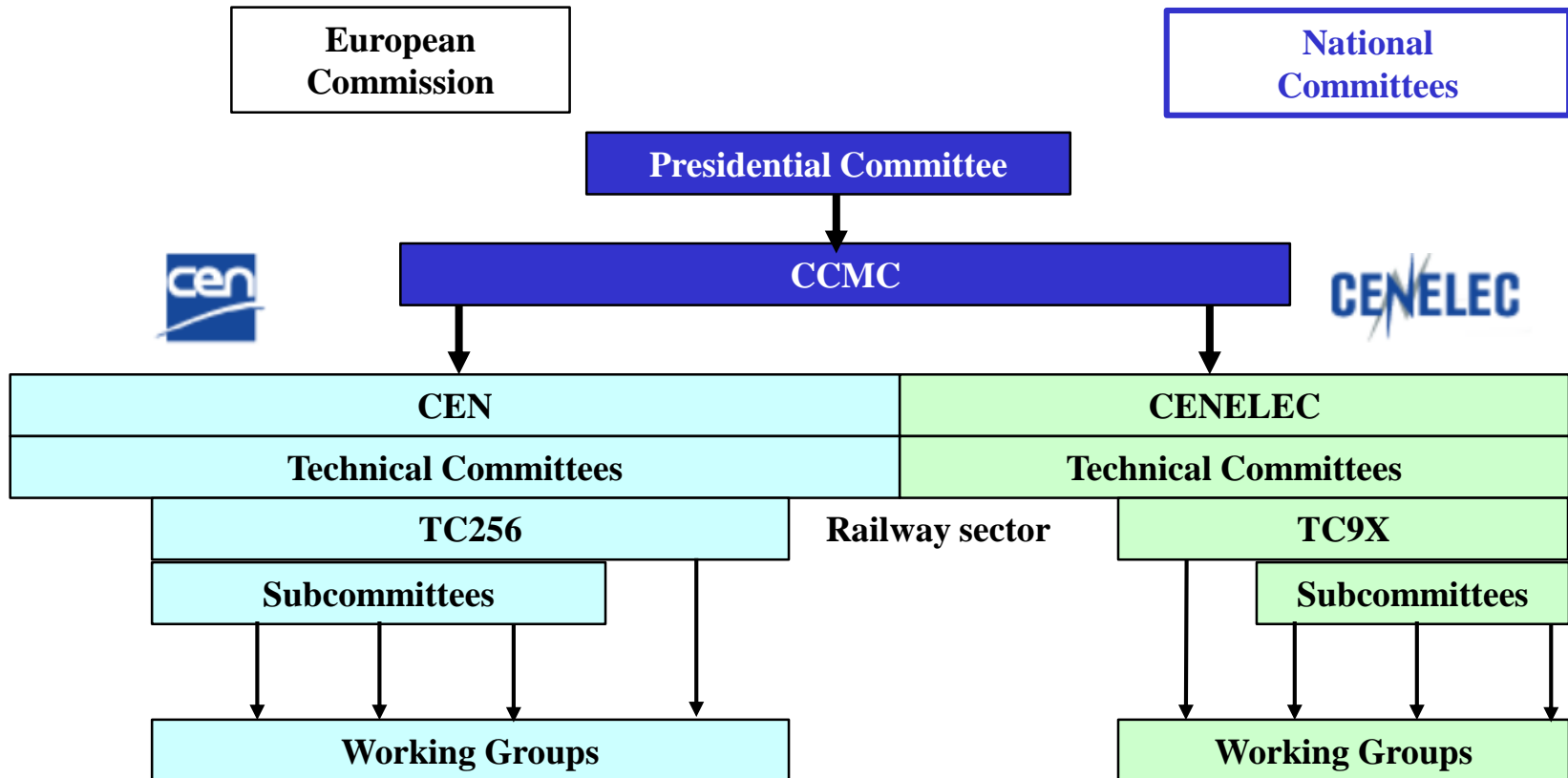
Topics in the scope of TC9X

S2R	Topic	Project	TC9X
IP1	Innovative TCMS	Roll2Rail, Connecta, Safe4Rail	TC9X/WG15
	Innovative Communication	Roll2Rail, Connecta, (X2Rail-1, Mistral)	SC9XB
	Driver desk (display controller)	Connecta	TC9X/WG12
IP2	Formal methods, formal specifications	X2RAIL2, ASTRail	TC9X – SC9XA
	IT Security	X2Rail-1, Cyrail	TC9X, TC9X/SG24
IP3	Total Energy Management	Roll2Rail, In2Rail, Fine1, OPEUS	TC9X/SG23 SC9XC
IP4	Ontology for requirements management and passenger services	IT2Rail, GoF4R, Attraktive, Co-active, ST4RT	TC9X
IP5	DAS-ATO	ARCC	SC9XB
CCA	Standardisation Energy	IMPACT-2 FINE1, OPEUS	TC9X

Topics in the scope of TC256

- ✧ Development of new technological concepts towards the next generation of rolling stock, applied to major subsystems such as Car-body, Running Gear, Brakes, Doors and Modular interiors

- ✧ Composite body structures ('Refresco') Joining techniques, fatigue and fire performance properties
  - ♦ Note: Refresco is not a Shift2Rail project.

- ✧ Proposal of reduced and harmonized requirements for braking systems ('Refresco')

- ✧ Rolling noise separation for TSI noise testing ('Refresco')

- ✧ Dynamic impact on structures (bridge loading, new train combinations, formations

- ✧ Future stations and accessibility

Collaboration scheme

DRAFT
Not approved

Request →

← Feedback

PROJECTS

Shift2Rail

JU

Coordination meetings

Experts Exchange

CCMC + Liasons

TC/SC/WG

cen *CENELEC*

Possible MoU
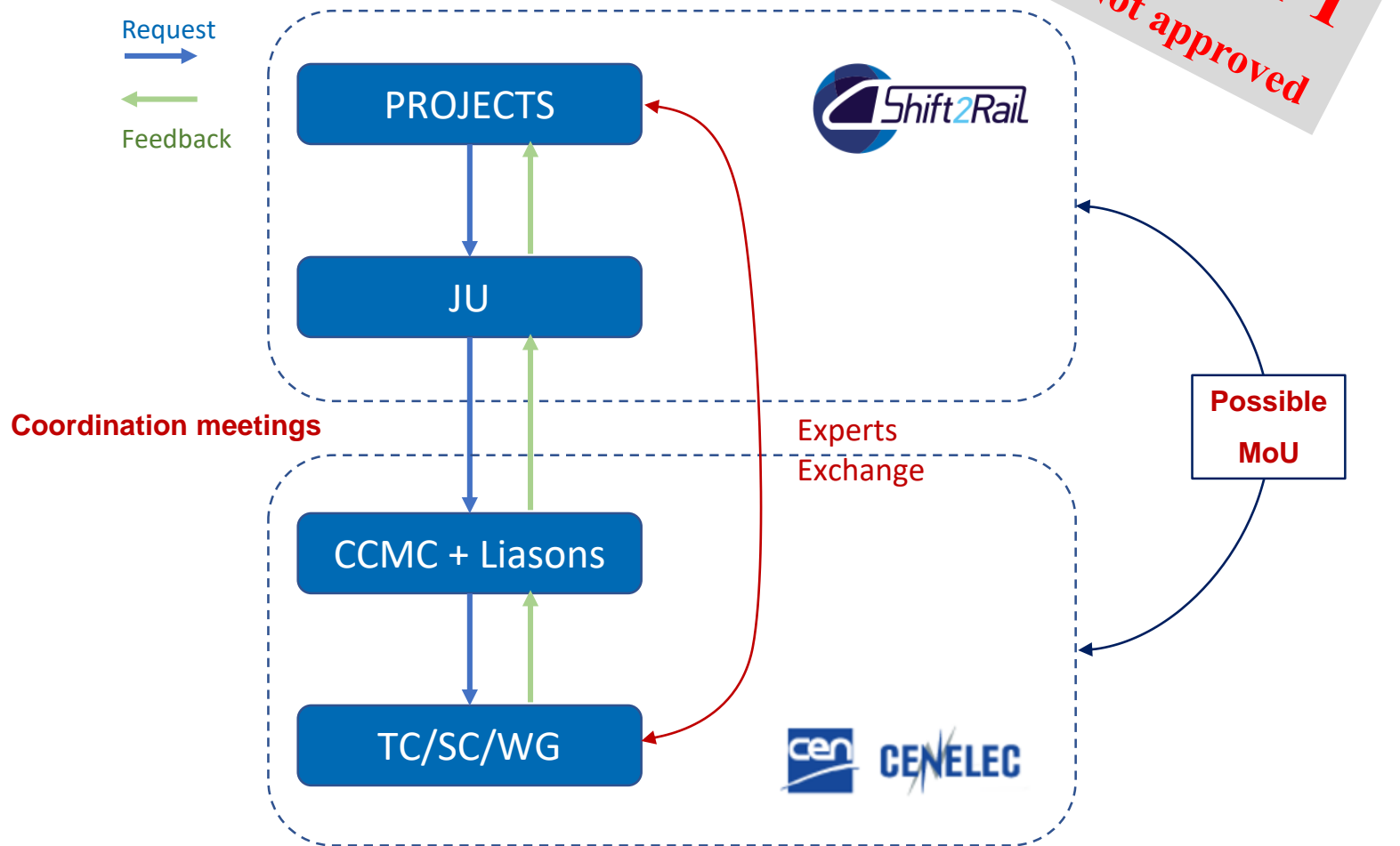
Standardisation in Shift2Rail

WHAT'S GOING ON

Around 50 PROJECTS ONGOING

MAAP STRATEGIC REVIEW

S2R MID TERM EVALUATION

R&I 2018 AND BEYOND

DEMOS PLANS

STANDARDS' ROADMAP

First version expected beginning of 2018

R&I BEYOND 2020
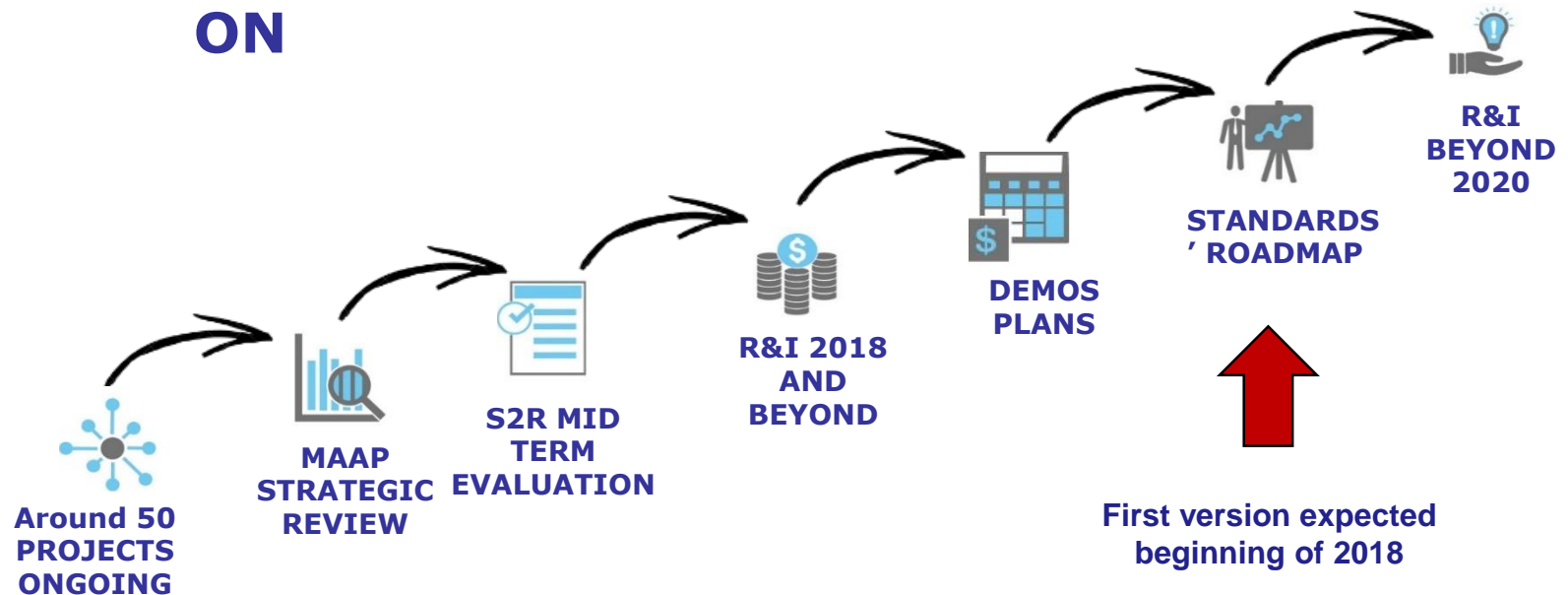
S2R R&I results and process leading to standards and regulation

Work in progress

Stakeholders e.g. ERRAC

RASCOP Platform (chaired by EC)

Advisory task proposing guidelines for R&D leading to **technical standards for interoperability and safety, after stakeholders consultation**

S2R R&I results

input

S2R CCA WA 3.2

Develop
Maintain

S2R Rolling Innovation Plan

S2R

ERA

European Commission

Recommendation for TSI

Requests for TSI

Request for standards

Shift2Rail internal process

Assisting the S2R projects/TDs:
- Overview of standardisation activities, ongoing and planned
- Monitoring of progress
- Assistance in the timely development of appropriate standars
- Close cooperation with relevant partners and organisations

Bring its input into the regulatory framework and standardization plan

R&I to reg / stds formal process

Detailed Guidance

mandate

CEN/CLC/ETSI

JPC-R, Others, SSO

Feed   into

ISO / IEC / ITU

#Shift2Rail

Key topics for collaboration

✧ Proposal

♦ Focus on key topics where a good possibility of collaboration and synergy has been identified

♦ Organise topical meetings where it is possible to go more in details

Key Topic: Energy – Research in progress

Work Area 5.1
Energy: 1,8M€

(FINE1, OPEUS projects)

Energy and sustainability (CCA)

Smart energy (IP3 Infra)

Energy – (IP1 rolling stock)

TD1.1 Traction: 70M€
TD1.2 TCMS: 44M€
TD1.3 Carbodyshell: 26M€
TD1.6 Doors: 10M€

(PINTA, Connecta, Pivot, Safe4Rail, Mat4Rail, RUN2Rail, Roll2Rail projects)

TD3.9 Smart Power Supply: 7,1M€
TD3.0 Smart Metering: 7.4M€

(In2Stempo, In2Dreams, In2Rail projects)
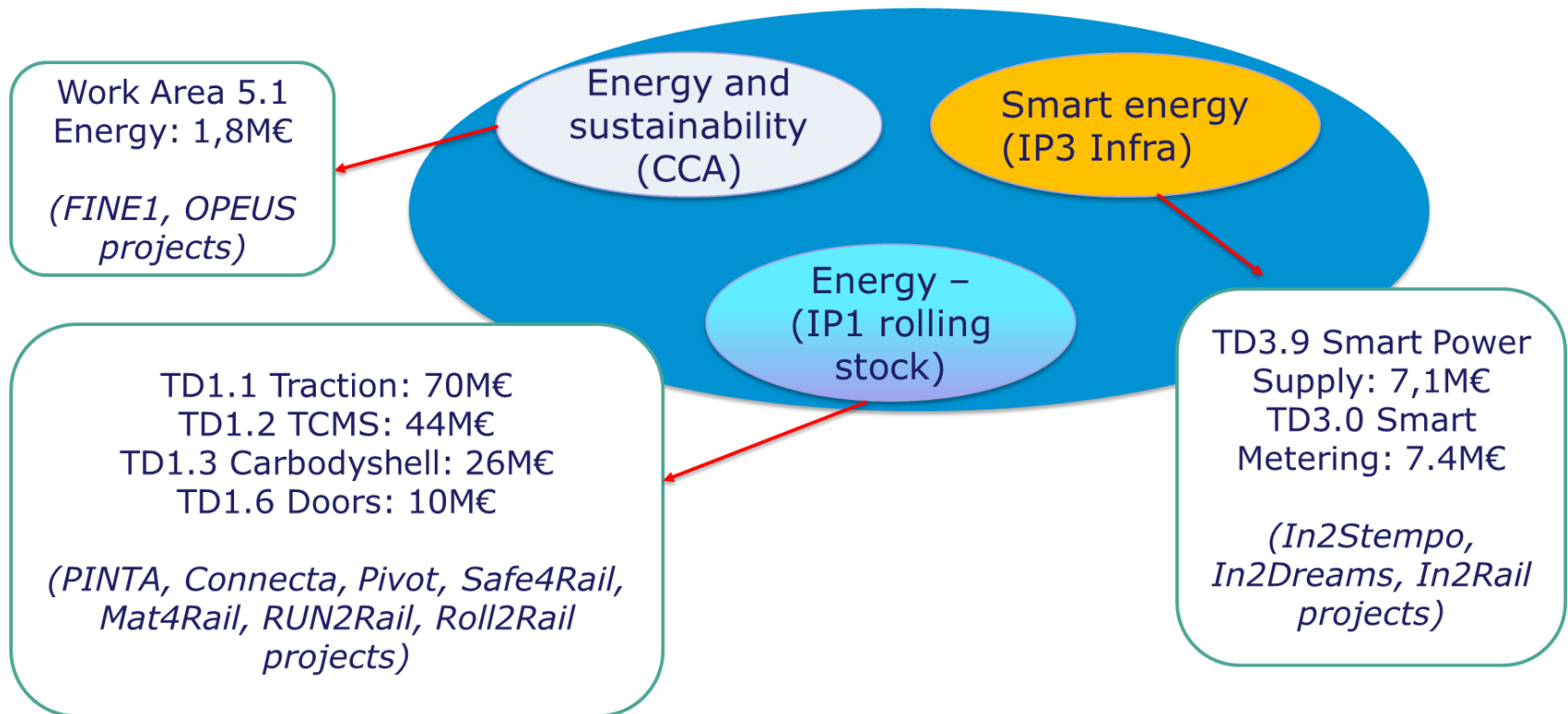
Key Topic: Energy – Existing standards

✧ EN 16001:2009 - Energy Management Systems

✧ EN 15900:2010 - Energy Efficiency Services

✧ EN 16258:2012 - Methodology for calculation and declaration of energy consumption and GHG emissions of transport services (freight and passengers).

✧ EN 50463:2017 - Railway applications - Energy measurement on board trains - Part 1, 2,3,4,5

✧ TS 50591:2013 - Specification and verification of energy consumption for railway rolling stock

Key Topic: Cybersecurity – Current projects: X2RAIL-1 and CYRAIL

- ✧ No meetings held so far

- ✧ Documents sent:
  - ◆ TC9X_Sec0932_MTG (SG 24 report) – This is a kind of introductory summary
  - ◆ Annex A to TC9X_Sec0932_MTG - SG24 Survey Report to TC9X
  - ◆ SC9XA_Sec1043_DC_Attachment1 – Report of the Convenor of SGA16 to SC9XA
  - ◆ IEC ACSEC Guide 120, produced by the Advisory Committee on Security of IEC

- ✧ Additional requested document:
  - ◆ Identified as IEC TC65 TR 63069 (document 65_687e_CD)
    - • Industrial-process measurement, control and automation - Framework for functional safety and security

- ✧ Other relevant document from TC 65: IEC 62443 (several parts)

Key Topic: Cybersecurity – Standardisation activities
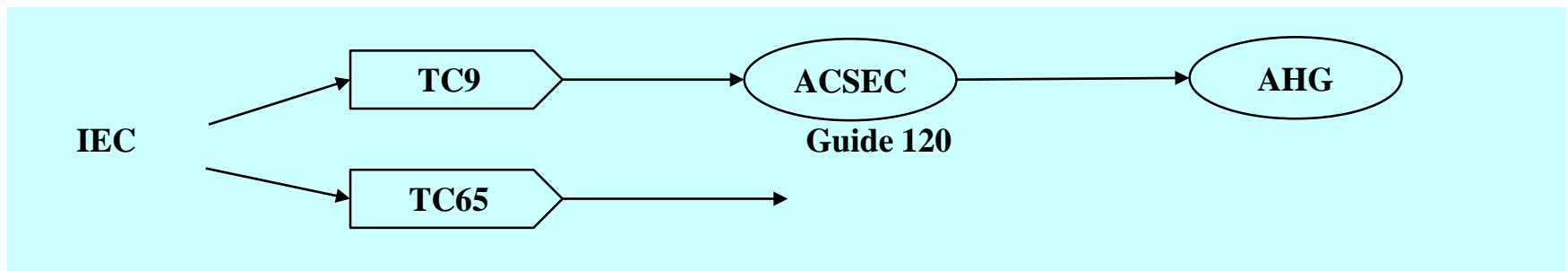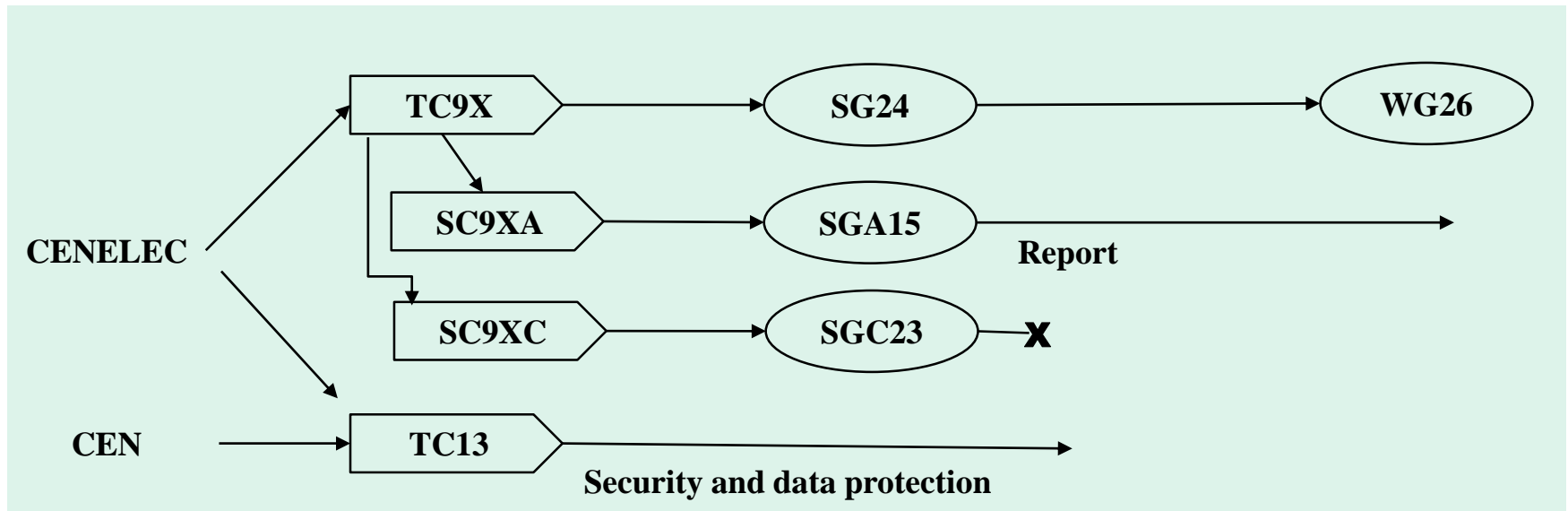
ICT on TRAINS Workshop 4th Edition - 2017

4th Edition
Brussels - Infrabel, 27/28 September 2017

Final programme, presentations, photos and videos are available at: http://www.ict-on-trains.org

**7 keynote speakers
27 technical presentations
More than 110 attendees**
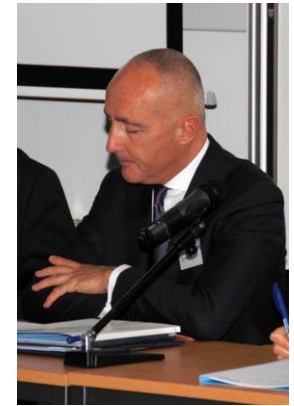
Next edition

ICT for RAILWAYS
September 2019

Focus on:
Internet of Transportation Things
Big Data, Artificial Intelligence

Railways of the future - "Minutes" of Workshop
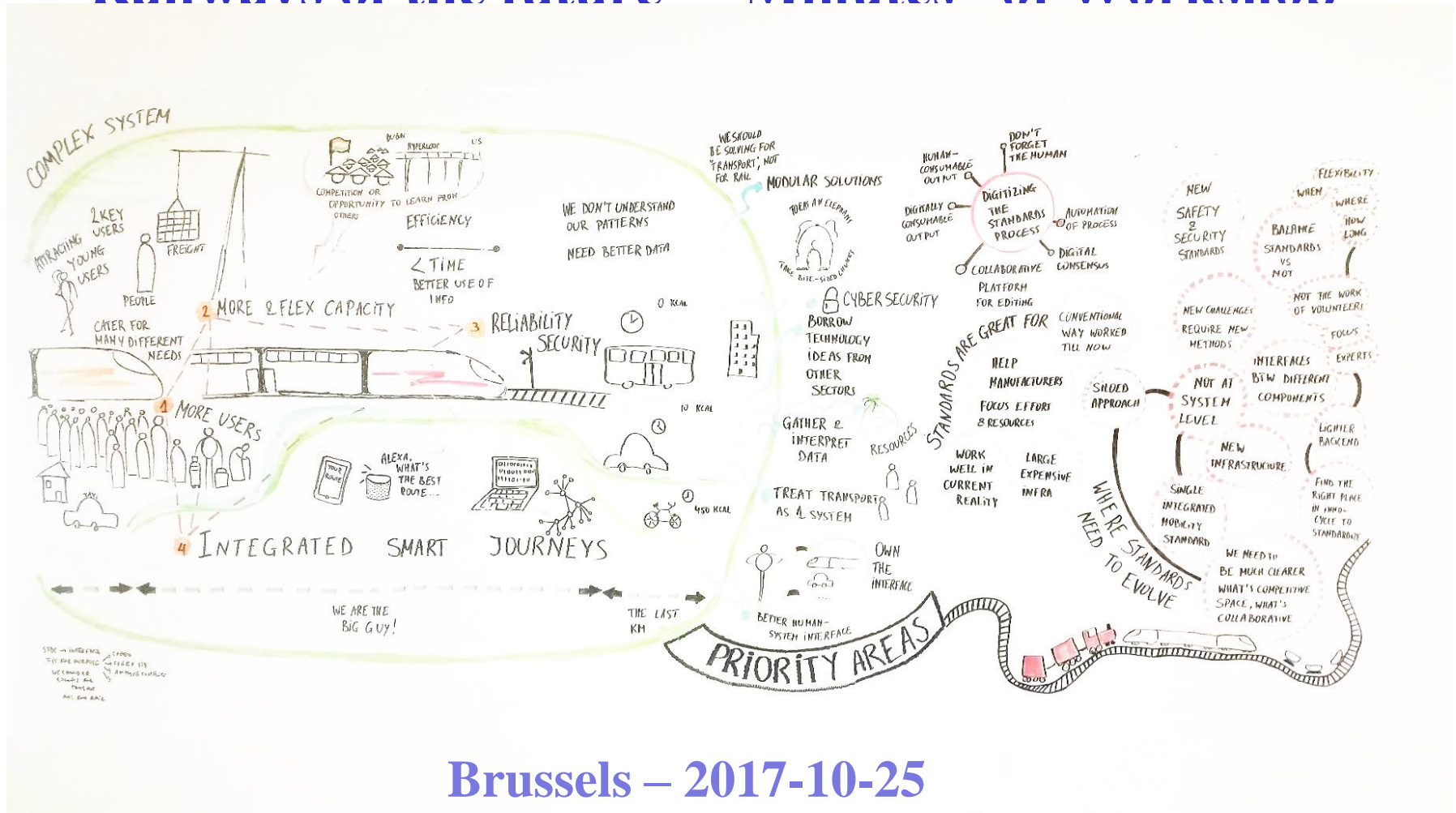
Brussels – 2017-10-25

See also: www.shift2rail.org

THANK YOU for YOUR KIND ATTENTION

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Paolo Umiliacchi

PaoloU@CNC.IT

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TD1.1 Traction Systems demonstrator

2015	2016	2017	2018	2019	2020	2021	...

Finished Activities: Roll2Rail

ongoing activities: PINTA

planned activities

TD1.2 Train Control and Monitoring System Demonstrator

2015	2016	2017	2018	2019	2020	2021	...

Roll2Rail

ongoing: CONNECTA, SAFE4RAIL

planned activities

TD1.3 Carbody Shell Demonstrator

2015	2016	2017	2018	2019	2020	2021	...

Roll2Rail

AWP2017: PIVOT, Mat4Rail

planned activities

TD1.4 Running Gear Demonstrator

2015	2016	2017	2018	2019	2020	2021	...

Roll2Rail

AWP2017: PIVOT, Run2Rail

planned activities

TD1.5 Brake Systems Demonstrator

2015	2016	2017	2018	2019	2020	2021	...

Roll2Rail

ongoing: CONNECTA, PINTA, SAFE4RAIL

AWP2017: PIVOT

planned activities

TD1.6: Doors and Access Systems Demonstrator

2015	2016	2017	2018	2019	2020	2021	...

AWP2017: PIVOT, Run2Rail

planned activities

TD1.7: Train Modularity In Use (TMIU)

2015	2016	2017	2018	2019	2020	2021	...

Roll2Rail

AWP2017: PIVOT, Mat4Rail

planned activities

TD2.1: Adaptable communications for all railways (quality of service, interfaces

2015	2016	2017	2018	2019	2020	2021	...
	Ongoing act.: X2Rail1, Mistral						
			AWP 2018: CFM, OC				
						planned activities	

TD2.2: Railway network capacity increase (ATO up to GoA4 – UTO)

2015	2016	2017	2018	2019	2020	2021	...
	Ongoing act.: X2Rail1, ASTRail						
				planned activities			

TD2.3 Moving Block

2015	2016	2017	2018	2019	2020	2021	...
	Ongoing act.: X2Rail1, ASTRail						
			AWP2018: CFM, OC				
					planned activities		

TD2.4: Fail-Safe Train Positioning (including satellite technology)

2015	2016	2017	2018	2019	2020	2021	...
			Ongoing act: X2RAIL-2; ASTRail				
			AWP2018: OC				
					planned activities		

TD2.5: On-board Train Integrity

2015	2016	2017	2018	2019	2020	2021	...

Ongoing act.: X2RAIL-2; ETALON

planned activities

TD2.6: Zero on-site testing (control command in lab demonstrators)

2015	2016	2017	2018	2019	2020	2021	...

Ongoing act.: X2Rail1, Vite

AWP 2018: CFM, OC

planned activities

TD2.7: Formal methods and standardisation for smart signalling

2015	2016	2017	2018	2019	2020	2021	...

Ongoing act.: X2RAIL-2; ASTRail

planned activities

TD2.8: Virtually – Coupled Train Sets (VCTS)

2015	2016	2017	2018	2019	2020	2021	...

AWP2018: CFM, OC

TD2.9: Traffic management evolution

2015	2016	2017	2018	2019	2020	2021	...

Ongoing act.: X2RAIL-2

planned activities

TD2.10: Smart radio-connected all-in-all wayside objects

2015	2016	2017	2018	2019	2020	2021	...

Ongoing act.: X2Rail1, ETALON

planned activities

TD2.11: Cyber Security

2015	2016	2017	2018	2019	2020	2021	...

Ongoing act.: X2Rail1, Cyrail

AWP2018: CFM, OC

planned activities

TD3.1 Enhanced Switch & Crossing System

2015	2016	2017	2018	2019	2020	2021	...

ongoing activities: In2Rail, In2Track

AWP 2018: CFM

planned activities

TD3.2 Next Generation Switch & Crossing System

2015	2016	2017	2018	2019	2020	2021	...

ongoing activities: In2Rail, S-CODE

AWP 2018: CFM

planned activities

TD3.3 Optimised Track System

2015	2016	2017	2018	2019	2020	2021	...

ongoing activities: In2Rail, In2Track

AWP 2018: CFM

planned activities

TD3.4 Next Generation Track System

2015	2016	2017	2018	2019	2020	2021	...

ongoing activities: In2Rail

AWP 2018: CFM

planned activities

TD3.5 Proactive Bridge and Tunnel Assessment, Repair and Upgrade

2015	2016	2017	2018	2019	2020	2021	...

ongoing activities: In2Rail, In2Track

AWP 2018: OC & CFM

planned activities

TD3.6 Dynamic Railway Information Management System (DRIMS)

2015	2016	2017	2018	2019	2020	2021	...

ongoing activities: In2Smart, IN2DREAMS

planned activities

TD3.7 Railway Integrated Measuring and Monitoring System

2015	2016	2017	2018	2019	2020	2021	...

ongoing activities: In2Rail, In2Smart, MOMIT

AWP 2018: OC

planned activities

TD3.8 Intelligent Asset Management Strategies (IAMS)

2015	2016	2017	2018	2019	2020	2021	...

ongoing activities: In2Rail, In2Smart

planned activities

TD3.9 Smart Power Supply

2015	2016	2017	2018	2019	2020	2021	...

ongoing activities: In2Rail, In2Stempo

planned activities

TD3.10 Smart Metering for Railway Distributed Energy Resource Management System

2015	2016	2017	2018	2019	2020	2021	...

ongoing activities: In2Rail, In2Stempo, In2Dreams

TD3.11 Future Stations

2015	2016	2017	2018	2019	2020	2021	...

AWP 2017: IN2STEMPO, FAIR STATIONS

TD 4.1 Interoperability Framework

2015	2016	2017	2018	2019	2020	2021	2022

Ongoing act. IT2RAIL, GOF4R, ST4RT, CONNECTIVE

AWP 2018 Open Call 1

Planned activities

TD4.2 Travel Shopping

2015	2016	2017	2018	2019	2020	2021	2022

Ongoing act. IT2RAIL, Co-Active, COHESIVE

AWP 2018 Call For Members

Planned activities

TD4.3 Booking and Ticketing

2015	2016	2017	2018	2019	2020	2021	2022

Ongoing act. IT2RAIL, Co-Active, COHESIVE

AWP 2018 Call For Members

Planned activities

TD4.4 Trip Tracker

2015	2016	2017	2018	2019	2020	2021	2022

Ongoing act. IT2RAIL, Attracktive, My-TRAC

AWP 2018 Call For Members

Planned activities

TD4.5 Travel Companion

2015	2016	2017	2018	2019	2020	2021	2022

Ongoing act. IT2RAIL, Attracktive, My-TRAC

AWP 2018 Call For Members

Planned activities

TD4.6 Business Analytics

2015	2016	2017	2018	2019	2020	2021	2022

Ongoing act. IT2RAIL, GOF4R, ST4RT, CONNECTIVE

Planned activities

ITD4.7 Integrated Technical Demonstrator

2015	2016	2017	2018	2019	2020	2021	2022

Ongoing act. IT2RAIL, COHESIVE

AWP 2018 Open Call 2

TD 5.0 – Business analytics and implementation strategies

2015	2016	2017	2018	2019	2020	2021	...
ongoing projects: SMART-RAIL, FR8RAIL, INNOWAG, FR8HUB							

TD5.1 Freight electrification, brakes and telematics

2015	2016	2017	2018	2019	2020	2021	...
	ongoing projects: FR8RAIL, INNOWAG						
			AWP2018: CFM				
				planned activities			

TD5.2 Access and Operation

2015	2016	2017	2018	2019	2020	2021	...
	ongoing projects: ARCC, SMART, OPTIYARD						
			AWP2018: CFM				
				planned activities			

TD5.3 Wagon design

2015	2016	2017	2018	2019	2020	2021	...
	ongoing projects: FR8RAIL, INNOWAG, FR8HUB						
			AWP2018: CFM				
				planned activities			

TD 5.4 Novel Terminal, Hubs, Marshalling Yards, Sidings

2015	2016	2017	2018	2019	2020	2021	...

ongoing projects: FR8HUB

planned activities

TD 5.5 New Freight Propulsion Concepts

2015	2016	2017	2018	2019	2020	2021	...

ongoing projects: FFL4E, DYNAFREIGHT, FR8HUB

AWP2018: CFM & OC

planned activities

TD 5.6 Autonomous train operation

2015	2016	2017	2018	2019	2020	2021	...

ongoing projects: ARCC, SMART

AWP2018: CFM

planned activities

WA1 Long-term needs and socio-economic research & SPD's

2015	2016	2017	2018	2019	2020	2021	2022	...
ongoing act.: ROLL2RAIL, IMPACT1, NEAR2050, IMPACT2								
				planned activities				

WA2 KPI method and integrated assessment

2015	2016	2017	2018	2019	2020	2021	2022	...
ongoing act.: ROLL2RAIL, IMPACT1, tender KPIs, IMPACT2								

WA3 Safety, Standardisation, Maintanance, Materials, Virtual Certification

2015	2016	2017	2018	2019	2020	2021	2022	...
	ongoing act.: PLASA, GoSAFE RAIL, IMPACT2, SMaRTE							
			AWP 2018: CFM					
				planned activities				

WA4 Smart Planning, I2M

2015	2016	2017	2018	2019	2020	2021	2022	...

ongoing act.: IN2RAIL, PLASA, GoSAFE RAIL, IMPACT2

AWP 2018: CFM

planned activities

WA5 Energy and sustainability

2015	2016	2017	2018	2019	2020	2021	2022	...

ongoing act.: FINE1, OPEUS, DESTINATE

planned activities

WA6 Human Capital

2015	2016	2017	2018	2019	2020	2021	2022	...

ongoing act.: IMPACT2, SMaRTE, tender HC

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3. **FOLLOW UP OF THE INTERIM EVALUATION OF THE SHIFT2RAIL UNDERTAKING**
    - UR-ID WG members participation in S2R projects' advisory groups

4. **MEMBERS' PRIORITIES FOR 2019-2020 (in the context of preparation of the S2R JU Annual Work Plan 2019)**
- Presentation from Members' and open discussion

5. **MEMBERS' INPUT IN THE CONTEXT OF THE PREPARATION THE FUTURE RAIL RESEARCH AND INNOVATION ACTIVITIES (next Multiannual Financial Framework)**
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- Date of next meeting
- Other

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    - Other

- **Communication/Dissemination**:

  - Most relevant events in 2018

- **Next meeting**:

  - 05 March 2018