Shift2Rail Joint Undertaking

4th meeting of the User Requirements/Implementation and Deployment Working Group
# Shift2Rail

## 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

   - Presentation from Members’ and open discussion

   - 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)
## 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
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### 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
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

<table>
<thead>
<tr>
<th>Activity</th>
<th>Type of call (* indicative figures in EUR)</th>
<th>Value of the actions (*)</th>
<th>Maximum S2R co-funding (*)</th>
<th>In-kind contribution (*)</th>
<th>Indicative publication date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Call for Proposals and/or Call for tenders</td>
<td>JU members eligible only</td>
<td>134.1</td>
<td>59.6</td>
<td>74.5</td>
<td>Q4 2017</td>
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<tr>
<td>Call for Proposals</td>
<td>Open, JU Members excluded</td>
<td>21.1</td>
<td>19.1</td>
<td>2.0</td>
<td>Q4 2017</td>
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<tr>
<td>Call for Tenders</td>
<td>Open</td>
<td>2.3</td>
<td>2.3</td>
<td>N/A</td>
<td>Q4 2017</td>
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<tr>
<td>Operational Experts</td>
<td>Open, including through REA</td>
<td>0.3</td>
<td>0.3</td>
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<td><strong>Total</strong></td>
<td><strong>157.8</strong></td>
<td><strong>81.3</strong></td>
<td><strong>76.5</strong></td>
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<tr>
<td>Topic number - IP</td>
<td>Topic name</td>
<td>Type of action and expected Technical Readiness Level (TRL)</td>
<td>Value of the actions (*)</td>
<td>Maximum S2R co-funding (*)</td>
<td>In-kind contribution (*)</td>
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<tr>
<td>S2R-CFM-IP1-01-2018</td>
<td>Development of technology demonstrators for the next generation of traction systems and adhesion management systems</td>
<td>RIA, TRL 5 to 6</td>
<td>28,534,203</td>
<td>12,680,600</td>
<td>15,853,603</td>
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<tr>
<td>S2R-CFM-IP1-02-2018</td>
<td>Implementing new technologies for the TCMS</td>
<td>RIA, TRL 5</td>
<td>10,576,058</td>
<td>4,700,000</td>
<td>5,876,058</td>
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<td>S2R-CFM-IP2-01-2018</td>
<td>Advanced Signalling, Automation and Communication System (IP2 and IP5)</td>
<td>IA, TRL6</td>
<td>38,900,540</td>
<td>17,287,400</td>
<td>21,613,140</td>
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<tr>
<td>Topic number - IP</td>
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<tr>
<td>S2R-CFM-IP3-01-2018</td>
<td>Research into optimized and future railway infrastructure</td>
<td>IA, TRL 6</td>
<td>30,153,015</td>
<td>13,400,000</td>
<td>16,753,015</td>
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<td>S2R-CFM-IP4-01-2018</td>
<td>Passenger service platform specifications for an enhanced multi-modal transport ecosystem including Mobility as a Service (MaaS)</td>
<td>IA, TRL 6</td>
<td>11,701,170</td>
<td>5,200,000</td>
<td>6,501,170</td>
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<tr>
<td>S2R-CFM-IP5-01-2018</td>
<td>Technology demonstrators for competitive, intelligent rail freight operation</td>
<td>IA, TRL 6</td>
<td>12,376,238</td>
<td>5,500,000</td>
<td>6,876,238</td>
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<tr>
<td>S2R-CFM-CCA-01-2018</td>
<td>Virtual certification &amp; smart planning</td>
<td>RIA TRL 3</td>
<td>1,894,689</td>
<td>842,000</td>
<td>1,052,689</td>
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<td><strong>TOTAL</strong></td>
<td></td>
<td></td>
<td><strong>134,135,914</strong></td>
<td><strong>59,610,000</strong></td>
<td><strong>74,525,914</strong></td>
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<tr>
<td>S2R-OC-IPX-01-2018</td>
<td>Paradigm shifts for railway</td>
<td>RIA, up to TRL 2</td>
<td>2,200,000</td>
<td>2,200,000</td>
<td>n.a</td>
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<td>S2R-OC-IPX-02-2018</td>
<td>Transversal exploratory research activities and knowledge transfer</td>
<td>CSA</td>
<td>500,000</td>
<td>500,000</td>
<td>n.a</td>
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<tr>
<td>S2R-OC-IPX-03-2018</td>
<td>Innovative/breakthrough mobility concepts (with rail as backbone)</td>
<td>CSA</td>
<td>500,000</td>
<td>500,000</td>
<td>n.a</td>
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<tr>
<td>S2R-OC-IP1-01-2018</td>
<td>Technical solutions for the next generation of TCMS</td>
<td>RIA, up to TRL 4/5</td>
<td>4,000,000</td>
<td>4,000,000</td>
<td>n.a</td>
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<td>S2R-OC-IP2-01-2018</td>
<td>Analysis for Moving Block and implementation of Virtual Coupling concept</td>
<td>RIA, up to TRL 3</td>
<td>1,300,000</td>
<td>1,300,000</td>
<td>n.a</td>
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<tr>
<td>S2R-OC-IP2-02-2018</td>
<td>Modern methodologies and verifications for GNSS in Railways and virtual test environment.</td>
<td>RIA, up to TRL 3</td>
<td>1,020,000</td>
<td>1,020,000</td>
<td>n.a</td>
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<tr>
<td>S2R-OC-IP2-03-2018</td>
<td>Communication environment assessment and validation</td>
<td>RIA, up to TRL 5/6</td>
<td>750,000</td>
<td>750,000</td>
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<tr>
<td>S2R-OC-IP3-01-2018</td>
<td>Measuring and monitoring devices for railway assets</td>
<td>IA up to TRL 6</td>
<td>6,785,714</td>
<td>4,750,000</td>
<td>2,035,714</td>
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<tr>
<td>S2R-OC-IP4-01-2018</td>
<td>Semantic framework for multimodal transport services</td>
<td>RIA up to TRL 4</td>
<td>2,000,000</td>
<td>2,000,000</td>
<td>n.a</td>
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<tr>
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<tr>
<td>S2R-OC-IP4-02-2018</td>
<td>Supporting the implementation of the IP4 multi-modal transport ecosystem</td>
<td>RIA up to TRL4</td>
<td>1,500,000</td>
<td>1,500,000</td>
<td>n.a</td>
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<tr>
<td>S2R-OC-IP5-01-2018</td>
<td>Radio communication and simulation of train dynamics for Distributed Power within long trains</td>
<td>RIA up to TRL5</td>
<td>600,000</td>
<td>600,000</td>
<td>n.a</td>
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<tr>
<td>TOTAL</td>
<td></td>
<td></td>
<td><strong>21,155,714</strong></td>
<td><strong>19,120,000</strong></td>
<td><strong>2,035,714</strong></td>
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</table>
### Subject of tender

1. **Study on alternative communication bearers in the railway environment**

#### Indicative scope

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.

#### Maximum budget

€150,000
## AWP 2018 - Tenders

<table>
<thead>
<tr>
<th>Number</th>
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<th>Indicative scope</th>
<th>Maximum budget</th>
</tr>
</thead>
</table>
| 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 |
<table>
<thead>
<tr>
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<th>Subject of tender</th>
<th>Indicative scope</th>
<th>Maximum budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-contract</td>
<td>Support to ERTMS European Action Plan to pave the way for the deployment of the future S2R Innovative Solutions</td>
<td>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.</td>
<td>€ 1,600,000</td>
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</table>
# AWP 2018 - Tenders

<table>
<thead>
<tr>
<th>Number</th>
<th>Subject of tender</th>
<th>Indicative scope</th>
<th>Maximum budget</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Study on use of fuel cell hydrogen in railway environment</td>
<td>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 CO2 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.</td>
<td>€ 270,000</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
<td>€ 2,270,000</td>
</tr>
</tbody>
</table>
## Agenda

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

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### 6. AOB, NEXT STEPS, CLOSING
- Date of next meeting
- Other
FOLLOW UP OF THE INTERIM EVALUATION OF THE SHIFT2RAIL UNDERTAKING

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?

R&I Worldwide

EUROPE

R&I Europe

ROC (S2R)

Other Modes

National

National

National

UR-ID 22 Nov 2017
Standardisation in the rail environment...

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

TSI, Directives, OTIF, OSJD states...

L A W

Product standards and related services

- Products
- Sub-System
- Industrialisation

ROC driven
How? Not Binding

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

UR-ID 22 Nov 2017
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

01. ATO

02. Mobility as a service

03. Logistics on demand

04. More Value from Data

05. Optimum Energy Use

06. Service Operations Timed to the Second

07. Low-Cost Railways

08. Guaranteed asset health and availability

09. Intelligent Trains

10. Stations and ‘smart’ cities mobility

11. Sustainability

12. Rapid and reliable R&D delivery

Picture courtesy of RSSB
The 3 R&I Strategic Clusters

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

- **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

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

The clusters highlight where within the system the capabilities will have an impact:
The 3 R&I Strategic Clusters

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

- **Customers and Markets**
  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

- **Society and Economy**

- **Environment and Energy**
• 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 programme 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

Presidential Committee

CCMC

CEN

Technical Committees

TC256

Subcommittees

Working Groups

CENELEC

Technical Committees

Railway sector

TC9X

Subcommittees

Working Groups

National Committees
# Topics in the scope of TC9X

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

Request
Feedback

Coordination meetings

Experts Exchange
Possible MoU

PROJECTS
JU
CCMC + Liaisons
TC/SC/WG

Shift2Rail
CEN-CENELEC
DRAFT
Not approved

22/11/2017
Paolo Umiliacchi - Reporting expert for Shift2Rail
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

R&I BEYOND 2020

First version expected beginning of 2018
S2R R&I results and process leading to standards and regulation

Shift2Rail internal process:

- **S2R R&I results**
  - Input
  - Assist the S2R projects/TDs:
    - Overview of standardisation activities, ongoing and planned
    - Monitoring of progress
    - Assistance in the timely development of appropriate standards
    - Close cooperation with relevant partners and organisations

- **S2R CCA WA 3.2**
  - Develop
  - S2R Rolling Innovation Plan
  - Maintain

- **S2R**
  - Bring its input into the regulatory framework and standardisation plan

Stakeholders e.g. ERRAC

RASCOP Platform (chaired by EC)

European Commission

- **ERA**
  - Detailed Guidance

- **CEN/CLC/ETSI**
  - Feed into

- **ISO / IEC / ITU**
  - mandate

JPC-R, Others, SSO

Work in progress
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

CENELEC

TC9X

SC9XA

SC9XC

SGA15

SGC23

Report

WG26

Security and data protection

CEN

TC13

CENEC

IEC

TC9

TC65

ACSEC

Guide 120

AHG

22/11/2017
Paolo Umiliacchi - Reporting expert for Shift2Rail

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

Cliff Cork
Cliff.Cork@RSSB.CO.UK

Paolo Umiliacchi
PaoloU@CNC.IT
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

   • 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
## Finished Activities: Roll2Rail
ongoing: CONNECTA, SAFE4RAIL

### AW2017:
PIVOT, Mat4Rail

### AW2017:
PIVOT, Run2Rail

### Planned activities

### TD1.1 Traction Systems demonstrator

| Year | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | ...
|------|------|------|------|------|------|------|------|------|

*Finished Activities: Roll2Rail*

*ongoing activities: PINTA*

### TD1.2 Train Control and Monitoring System Demonstrator

| Year | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | ...
|------|------|------|------|------|------|------|------|------|

*Roll2Rail*

*ongoing: CONNECTA, SAFE4RAIL*

### TD1.3 Carbody Shell Demonstrator

| Year | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | ...
|------|------|------|------|------|------|------|------|------|

*Roll2Rail*

*AWP2017: PIVOT, Mat4Rail*

### TD1.4 Running Gear Demonstrator

| Year | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | ...
|------|------|------|------|------|------|------|------|------|

*Roll2Rail*

*AWP2017: PIVOT, Run2Rail*

### Planned activities
### TD1.5 Brake Systems Demonstrator

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### TD1.6: Doors and Access Systems Demonstrator

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### TD1.7: Train Modularity In Use (TMIU)

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

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

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### TD2.3 Moving Block

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

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planned activities
### TD2.5: On-board Train Integrity

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

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### TD2.7: Formal methods and standardisation for smart signalling

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

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### TD2.9: Traffic management evolution

| Year | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | ...
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Planned activities

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

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Planned activities

### TD2.11: Cyber Security

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AWP2018: CFM, OC

Planned activities
**TD3.1 Enhanced Switch & Crossing System**

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**TD3.2 Next Generation Switch & Crossing System**

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**TD3.3 Optimised Track System**

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**TD3.4 Next Generation Track System**

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

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TD3.6 Dynamic Railway Information Management System (DRIMS)

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TD3.7 Railway Integrated Measuring and Monitoring System

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TD3.8 Intelligent Asset Management Strategies (IAMS)

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### TD3.9 Smart Power Supply

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**ongoing activities:** In2Rail, In2Stempo

**planned activities**

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

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**ongoing activities:** In2Rail, In2Stempo, In2Dreams

### TD3.11 Future Stations

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**AWP 2017:** IN2STEMPO, FAIR STATIONS
## TD 4.1 Interoperability Framework

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## TD 4.2 Travel Shopping

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## TD 4.3 Booking and Ticketing

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## TD 4.4 Trip Tracker

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**TD4.5 Travel Companion**

**TD4.6 Business Analytics**

**ITD4.7 Integrated Technical Demonstrator**
## TD 5.0 – Business analytics and implementation strategies

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*ongoing projects: SMART-RAIL, FR8RAIL, INNOWAG, FR8HUB*

## TD5.1 Freight electrification, brakes and telematics

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*ongoing projects: FR8RAIL, INNOWAG*

AWP2018: CFM

planned activities

## TD5.2 Access and Operation

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*ongoing projects: ARCC, SMART, OPTIYARD*

AWP2018: CFM

planned activities

## TD5.3 Wagon design

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*ongoing projects: FR8RAIL, INNOWAG, FR8HUB*

AWP2018: CFM

planned activities
### TD 5.4 Novel Terminal, Hubs, Marshalling Yards, Sidings

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### TD 5.5 New Freight Propulsion Concepts

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### TD 5.6 Autonomous train operation

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

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## WA2 KPI method and integrated assessment

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## WA3 Safety, Standardisation, Maintenance, Materials, Virtual Certification

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### WA4 Smart Planning, I2M

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

**AWP 2018: CFM**

**planned activities**

### WA5 Energy and sustainability

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**ongoing act.:** FINE1, OPEUS, DESTINATE

**planned activities**

### WA6 Human Capital

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**ongoing act.:** IMPACT2, SMaRTE, tender HC
## 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

   - Presentation from Members’ and open discussion

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

- Communication/Dissemination:
  - Most relevant events in 2018

- Next meeting:
  - 05 March 2018