7th International Railway Symposium

Research & Innovation at the UIC

Dennis Schut – Research Manager UIC

Zagreb - 4 October 2016
Content

My organisation – the UIC

The UIC and Research & Innovation

The UIC internal projects

The SEESARI Initiative
UIC - A long history

at the service of member railways
and international railway cooperation

1921 Intergovernmental (diplomatic) conference in Portoroz, Slovenia

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)

2015 240 Member railways on 5 continents
The UIC today

- **240** Members in 95 countries
- **3,000** billion passenger kilometers
- **10,000** billion ton-kilometers
- **1** million kilometers of lines
- **7** million rail personnel
- Cooperation with over **100** institutions
- **700** UIC Leaflets (IRS - International Railway Standards)
- **85** congresses, conferences, workshops
The UIC mission

Promoting the development of rail transport at world level, in order to meet challenges of mobility and sustainable Development

Key Challenges in terms of

- Innovation
- Standardisation
- Transmission
- Dissemination
- Strategic Advice
A strategic vision for the rail development in every region of the world
Synergies developed by UIC with leading institutions

UIC
Consultative status to UN, ECOSOC

UIC DG Member of HL- Adv Group to UN SG on Sustainable Transport
The UIC Global Rail Research Portal

Linked to RSSB SPARK Research data base

www.railway-research.org

UIC Global Rail Research & Innovation Awards

http://uic-innovation-awards.org

Deadline for submission 1 September 2016

Awards Ceremony 30 November 2016 St-Petersburg

www.uic.org
Content

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The RICG

- Exchange platform to coordinate a common approach for the ROC in terms of R&D&I
  - Defining « headlines » - focus on business and operation
    - Political content is a side track which should support activities
  - Optimizing resources (who is doing what)

- « The » place where the railways describe the future
  - Looking for potential partners
  - Looking for funds (EU and National)
  - Looking for a link which underline the importance/necessity of railways in the future
  - Agreement on a specific platform where we exchange ideas
INFORMATION TASK: DIGITALISATION
Lead: Christophe Chéron, SNCF
- Content
- Structure
- Planning ahead

Developed by RICG SG members;
Lead: Johan Jonsson, Trafikverket

Exchange of general info.
Coordination & preparation of project proposals
Identify common project ideas

Developed by RICG SG members;
Lead: Ulrich Meuser, Deutsche Bahn

• liaison w. CER, EIM, ERRAC & IRRB
• influence EC calls, S2R2 incl.

Developed by RICG SG members;
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- identify needs, via UIC Technical groups
- formulate vision / strategy

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a. Coordinating R&I priorities
b. Supporting ROC-led consortia for calls

Others

a. Providing common needs and vision
b. Feedback on evolutions

a. Feeding RICG priorities into UIC European work programme
b. Feedback on progress and outcomes of UIC projects

National

a. Feeding national programmes
b. Identifying interesting issues for Europeans

tics

a. Monitoring developments
b. Coordination of research needs and priorities
c. Supporting initiatives

a. Interfacing on worldwide R&I issues to ensure a cooperation with key research bodies from outside Europe

a. Collecting feedback from developments
b. Coordinating ROC reaction to them
c. Act as a vehicle for (counter) proposals
South-East Europe Strategic Alliance for Rail Innovation (SEESARI)

• Research and innovation alliance for Southeast Europe born in January 2016

• Activities currently in development

• Focusses on regional development of railways

• Broad participation of the sector (operators, suppliers, etc.) and of third parties (public authorities, investors, banks, etc.)
## UIC internal projects

<table>
<thead>
<tr>
<th>Project Manager</th>
<th>Project Number</th>
<th>Forum Platform</th>
<th>Acronym</th>
<th>Total amount (K€)</th>
<th>Duration</th>
<th>Requested 2017 (K€)</th>
<th>Real 2017 (K€)</th>
<th>Participant Member</th>
<th>Non-Participant</th>
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<tbody>
<tr>
<td>T.Gradinaru</td>
<td>2017/RSF/543</td>
<td>RSF/CCS/Infra</td>
<td>SATLOC+ (follow-up SATLOC)</td>
<td>130</td>
<td>2 Years</td>
<td>65</td>
<td>62</td>
<td>ADIF/CP/CRSF/SA/I/INFRA/LEG/ASB/SNCF</td>
<td>NSPROMOIL</td>
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<tr>
<td>F.Petrucelli</td>
<td>2017/RSF/545</td>
<td>RSF/CCS/Infra</td>
<td>TESTACODA</td>
<td>90</td>
<td>2 Years</td>
<td>45</td>
<td>22</td>
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<td>NSPROMOIL/SNCF</td>
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<td>G.Cau</td>
<td>2017/RSF/533</td>
<td>RSF/Infra/Energy</td>
<td>IEOCL</td>
<td>200</td>
<td>2 Years</td>
<td>100</td>
<td>100</td>
<td>ADIF/CP/CF/SA/I/INFRA/LEG/ASB/SNCF</td>
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<tr>
<td>G.Cau</td>
<td>2017/RSF/535</td>
<td>RSF/RSF/Rolling Stock/Tech</td>
<td>CBB SET 6</td>
<td>70</td>
<td>1 Year</td>
<td>70</td>
<td>47</td>
<td>FS/SNCF/B/SCB</td>
<td>CDF/FR/CAI/NS/OEB</td>
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<td>G.Cau</td>
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<td>RSF/RSF/Rolling Stock/Tech</td>
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<td>2 Years</td>
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<td>H.Paukert</td>
<td>2017/RSF/537</td>
<td>RSF/RSF/Rolling Stock/Tech</td>
<td>DEB</td>
<td>210</td>
<td>1.5 Years</td>
<td>105</td>
<td>96</td>
<td>FSNS/SNCF/B/SCB</td>
<td>CDF/FR/CAI/NS/OEB</td>
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<tr>
<td>L.Schmitt</td>
<td>2017/RSF/547</td>
<td>RSF/Infra/Energy</td>
<td>EOLE</td>
<td>144</td>
<td>2 Years</td>
<td>72</td>
<td>69</td>
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<td>72</td>
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<td>2017/RSF/544</td>
<td>RSF/CCS/Infra</td>
<td>MILA</td>
<td>100</td>
<td>2 Years</td>
<td>50</td>
<td>43</td>
<td>SNCF</td>
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<tr>
<td>T.Gradinaru</td>
<td>2017/RSF/544</td>
<td>RSF/CCS/Infra</td>
<td>REVSUB</td>
<td>75</td>
<td>1 Year</td>
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<td>INFRA/NS/PROMOIL</td>
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<tr>
<td>T.Gradinaru</td>
<td>2017/RSF/544</td>
<td>RSF/CCS/Infra</td>
<td>UPM / Unified Procurement Methods</td>
<td>100</td>
<td>1 Year</td>
<td>100</td>
<td>74</td>
<td>ADIF/CP/SA/I/INFRA/LEG/ASB/SNCF</td>
<td>SNCF</td>
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<tr>
<td>T.Gradinaru</td>
<td>2017/RSF/544</td>
<td>RSF/CCS/Infra</td>
<td>TPO / Track Possession Optimisation</td>
<td>160</td>
<td>2 Years</td>
<td>80</td>
<td>47</td>
<td>TFA</td>
<td>ADIF/INFRA/LEG/ASB/SNCF</td>
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<tr>
<td>T.Gradinaru</td>
<td>2017/RSF/544</td>
<td>RSF/CCS/Infra</td>
<td>OSCL / Overall Safety at Level Crossings</td>
<td>104</td>
<td>2 Years</td>
<td>52</td>
<td>41</td>
<td>SNCF</td>
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Total funds requested to the European members for the 13 Rail System projects: 1 733€, 964€, 773€, 74%
# UIC internal projects

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<td>T. Grudinariu</td>
<td>RSF/CCS/Infra</td>
<td>OSCL/Overall Safety at Level Crossings</td>
<td>Improving overall safety at level crossings using new technologies and operating modes</td>
<td>104</td>
<td>2 Years</td>
<td>52</td>
<td>41 ADIF/TF/INRAE LDUVDSFB/KP</td>
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<td></td>
<td>2017/ENV/542</td>
<td></td>
<td></td>
<td></td>
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<td>SUSTAINABLE DEVELOPMENT PLATFORM</td>
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</table>
|                 | 2017/ENV/547   | Sustainable Development | HERBIE Vegetation Control and Use of Herbicides | 100 | 2 Years | 50 | 50 ADIF/TF/INRAE LDUVDSFB/KP/CSB/SNCF/TF/INRAE TRAFIK
|                 | 2017/ENV/548   | Sustainable Development | SFERA Smart communications for efficient rail activities | 225 | 3 Years | 75 | 75 DB/INFRAE/ER/VS/DB/RSB/SNCF/TF/INRAE TRAFIK

## Total funds requested to the European members for the 13 Rail System projects

| Total amount | 1 733K€ | 964K€ | 713K€ | 74% |

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| A. Braschi      | 2017/ENV/547   | Sustainable Development | HERBIE Vegetation Control and Use of Herbicides | 100 | 2 Years | 50 | 50 ADIF/TF/INRAE LDUVDSFB/KP/CSB/SNCF/TF/INRAE TRAFIK
|                 |                |              |         |              |          |                    | SUSTAINABLE DEVELOPMENT PLATFORM |
|                 | 2017/ENV/548   | Sustainable Development | SFERA Smart communications for efficient rail activities | 225 | 3 Years | 75 | 75 DB/INFRAE/ER/VS/DB/RSB/SNCF/TF/INRAE TRAFIK

## Total funds requested to the European members for the 2 Environment, Sustainable Development Projects

| Total amount | 325K€ | 125K€ | 125K€ | 100% |

<table>
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<tr>
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<tr>
<td>B. Schmitt</td>
<td>2017/FR/549</td>
<td>Freight</td>
<td>e-WAG e-WAG</td>
<td>140</td>
<td>2 Years</td>
<td>70</td>
<td>65 DB/ORB/RSB/SNCF</td>
</tr>
<tr>
<td>F. Mantell</td>
<td>2017/FR/548</td>
<td>Freight</td>
<td>eRAIL FREIGHT 2</td>
<td>140</td>
<td>2 Years</td>
<td>70</td>
<td>48 BL/DO/CLG/SD/SNCF</td>
</tr>
<tr>
<td>B. Schmitt</td>
<td>2017/FR/551</td>
<td>Freight</td>
<td>MoCo</td>
<td>140</td>
<td>1 Year</td>
<td>140</td>
<td>30 DB/GRB/SDB/SNCF</td>
</tr>
</tbody>
</table>

## Total funds requested to the European members for the 3 Freight Projects

| Total amount | 420K€ | 280K€ | 200K€ | 76% |

<table>
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<tr>
<th>Project Manager</th>
<th>Project Number</th>
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<th>Duration</th>
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<tr>
<td>J. Collard</td>
<td>2017/FV/550</td>
<td>Fundamental Value SECURITY</td>
<td>REFLOWS Management of Refugee Flows - their presence on railway transport area and the consequences</td>
<td>50</td>
<td>1 Year</td>
<td>50</td>
<td>DGODB/SNCF</td>
</tr>
<tr>
<td>J. Collard</td>
<td>2017/FV/554</td>
<td>Fundamental Value SECURITY</td>
<td>SNCS Security Navigation and Control System</td>
<td>100</td>
<td>2 Years</td>
<td>50</td>
<td>SNCF</td>
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## Total funds requested to the European members for the 2 Security Projects

| Total amount | 150K€ | 100K€ | 50K€ | 0% |

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<tbody>
<tr>
<td>M. Guigone</td>
<td>2017/PAS/519</td>
<td>Passengers</td>
<td>TOPRAIL (x) Tourism Potential of Railway Services (x)</td>
<td>90</td>
<td>3 Years</td>
<td>30</td>
<td>14 CP/MAU/SB/G/IZ</td>
</tr>
<tr>
<td>L. Casado</td>
<td>2017/PAS/553</td>
<td>Passengers</td>
<td>DPO and NPP Digital Observatory &amp; New Projects Platform</td>
<td>95</td>
<td>3 Years</td>
<td>31.5</td>
<td>20 RENFE/SZ</td>
</tr>
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## Total funds requested to the European members for the 2 Passenger Projects

| Total amount | 185K€ | 62K€ | 34K€ | 66% |

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<td>DPO and NPP Digital Observatory &amp; New Projects Platform</td>
<td>95</td>
<td>3 Years</td>
<td>31.5</td>
<td>20 RENFE/SZ</td>
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## Total funds requested to the European members for the 22 Projects Proposals

| Total amount | 2 813K€ | 1 531K€ | 1 081K€ | 74% |
Vision and targets (2050)
- the rail share of both the freight and passenger markets will double
- the rail freight and passenger market volumes will more than triple as compared with 2000

Guiding rail research and innovation efforts for Horizon 2020 and beyond

Based on a sound Rail Business Scenario
Among the many drivers for technical innovation, the **customer experience** becomes one of the **major strategic aims**.

**CUSTOMERS**

The concept encompassing all the major challenges the railway sector is facing is summarised as follows:

- **C** Capacity
- **U** User
- **S** Safe and Secure
- **T** Technological breakthrough & competitiveness of the rail sector
- **O** Optimised design and operations/connectivity/interoperability
- **M** Maximised value for money leading to modal shift
- **E** Efficient & environmentally sustainable
- **R** Reliable & resilient
- **S** Skills
The SRRIA sets out research and innovation priorities structured around 10 themes, divided over 3 areas:

- The **first area** addresses the **attractiveness of rail** and public transports and the future demand that the rail sector aims to offer + strategy & economic issues.

- The **second area** includes **three critical themes** within a sector-wide framework
  - The **third area** refers to well established **asset related themes**

The new ERRAC Roadmap will closely follow this structure

*Note: The SRRIA is broader than S2R which covers mainly the third area*
The 3 areas in detail

- **Attractiveness of rail and public transport**
  - Customer experience
  - Strategy and economics

- **A whole system approach**
  - Capacity, performance and competitiveness
  - Energy and environment
  - Safety (including certification) and security

- **Assets**
  - Control, command, communication and signalling
  - **Infrastructure**
  - Rolling stock
  - IT and other enabling technologies
  - Training and education
Content

- My organisation – the UIC
- The UIC Research & Innovation
- The UIC internal projects
- The SEESARI initiative
Huge Rail Investments in SEE Countries needed → One single “Future European Railway System”

EC map of the TEN – T Corridors

NB: South Eastern Europe – Blank!
1. The idea to set up the **Innovation Alliance South East Europe for Railways** was presented in Belgrade in October 2014 at SEE conference – the audience showed strong support.

2. The concept was developed to update, link and innovate the transportation networks in South Eastern Europe (SEE) with a specific focus on rail, cooperate with and involving all stakeholders.

3. The SEESARI PPP project was initiated in order to **identify the needs and priorities and to develop and implement the innovative solutions for the South East European Railway System** as part of the Future European Railway System.

4. This development would most possibly lead to provision of **increased financing conditions** for research, **innovation and implementation** that will help to develop the SEEA.

5. The official kick-off meeting – **involving 70 stakeholders from 14 countries** – was hosted by the Serbian Railways in Belgrade on 27 January 2016. An MOU was signed by the DG of the Serbian Railways, the DG of the UIC and the Director of the Slovenian railways transport research institute, Dr. Peter Verlic (SEESARI Chairman).
Strong railway net - work & potential.
Strategic North-South link between Europe, Middle East and Asia through Turkey
Available knowledge

Weaknesses
- Neglected infrastructure maintenance
- Outdated rolling stock
- Lack of funding
- No cross-border cooperation & planning

Opportunities
- Will to cooperate
- To develop Rail into the transport system back-bone
- Connect harbors & airports
- Common planning
- Common procurement
→ Lower costs
→ Stronger economy
→ Potential CEF funds

Isolation in Europe
Weaker economy
Role of rail down
Role of road up
Unemployment
Congestion
High costs

SWOT Analysis

Helpful
Helpful
Harmful
Harmful
to achieving the objective
to achieving the objective
The SEESARI PPP Project for South East Europe

Website under development – www.seesari.org

For more information please contact:

Dr. Peter verlic – chairman - peter.verlic@prometni-institut.si
Dennis Schut – secretariat – schut@uic.org
Thank you for your attention

Information

Dennis Schut - schut@uic.org