An EU coordinated approach to R&I in the rail sector under H2020

EC DG MOVE

Open Stakeholder Hearing
Brussels, 12 September 2013
Agenda

- State of play
- General context
- Objectives of the initiative
- General approach
- Presentation of the Impact Assessment
- Preliminary findings of the public consultation
- Open discussion
- Next steps
State of play

Where do we stand?

July 2012: Official presentation of UNIFE-led Shift²Rail proposal

2013: Development of EC initiative to improve R&I in the rail sector

Public consultations
Online consultation open until 19/09/2013

Impact assessment
Submission to IAB end September 2013

Legislative proposal
Commission proposal for adoption end December 2013
Key challenges of the rail sector and industry

• Rail markets in decline in much of Europe (particularly EU-10):
  • Modal share of freight dropped from 19.7% in 2000 to 17.1% in 2010
  • Passenger modal share static at 6%

• Consumer satisfaction poor (rail services ranked 27th of 30 service industries) despite heavy investments (high speed rail)

• Reliance on public subsidies in a context of government spending cuts:
  • Public infrastructure investment ➔ 25 billion Euro in 2009
  • Public subsidy for PSO ➔ 21 billion Euro in 2009
General context

Key challenges of the rail sector and industry

• Internal market fragmented along national lines, with diversity of national standards and operating frameworks, resulting in high product customisation

• Complexity of interfaces between railway sub-systems (rolling stock, control and command and infrastructure supply industry, railway undertakings, infrastructure managers)

• Increasing global competition in the rail industry (Asia, US investing massively in R&I)

• Low profitability due to product customisation, capital-intensity of investments, long product lifecycles, and long and costly authorisation procedures

• Limited private investment in research and limited market uptake of innovations due to low operational margins

• Technical know-how in decline (30% of sector workforce to retire in next 10 years)
General context

EU Policy context

• **Transport White Paper**: promotes shift to sustainable transport modes such as rail through creation of an interoperable Single European Railway Area (SERA)

• **Fourth Railway Package**: seeks improved efficiency and attractiveness of rail by removing technical and administrative barriers and introducing unified procedures and rules

• **Horizon 2020**: New programme for research and innovation aimed at stimulating R&I investment, namely through use of PPPs
General context

EU White Paper – A vision for rail transport 2050

Objectives for rail freight in the White Paper

• **Greater use of more energy-efficient modes** – 30% of road freight over 300 km should shift to other modes by 2030, and more than 50% by 2050

• **Rail freight almost doubled** – +360 billion ton-km (+87%) compared to 2005

• **Deployment of ERTMS**

• By 2050, **connect all seaports to the rail freight system**

• **Rail Freight Corridors** as the backbone of the EU freight transport system
Objectives for rail passenger in the White Paper

• **Triple the length of the existing high-speed rail network:** By 2050 the majority of medium-distance passenger transport should go by rail

• **High-speed rail outpacing the increase in aviation for journeys up to 1000 km:** +176 billion pass-km (rail) versus +67 billion pass km (aviation) compared to 2005

• **By 2050, connect all core network airports to the rail network**
Fourth Railway Package

Objectives:

• Improve competitiveness of rail with other modes in order to increase the market share of the most environment-friendly mode of transport

• Spend public money more efficiently on public rail transport services

Means:

• Encourage market entry by reducing administrative and technical barriers

• Open domestic rail passenger transport to competition

• Ensure better governance of rail infrastructure

• Support innovation leading to improved service and cost-efficiency
Objectives of the initiative

Rail needs innovation and research that responds to market needs and contributes to completing the SERA:

• To reduce the costs of public service obligations
• To optimise traffic management
• To reduce the costs of infrastructure maintenance & renewal
• To increase demand for rail passenger services
• To increase demand for rail freight services
• To ensure provision of adequate competence and skilled human resources
Objectives of the initiative

Technological pillar of the Single European Railway Area

- **Stimulate technological innovations** necessary to achieve an integrated, efficient and attractive EU railway market;
- Facilitate **joint vision development** and strategic agenda setting, ensuring synchronicity of innovations in different parts of the rail value chain;
- **Build critical mass**, involving a broad set of partners, to ensure the scale and scope of investment required for a step change in the EU rail system;
- **Mitigate risks** linked to innovation, through improved risk-sharing, IPR protection and closer-to-market activities.
Key R&I priority areas for completing the SERA and ensuring competitiveness of the rail sector:

- **Innovation Area I** – **New generation of rolling stock**: High energy- and cost-efficiency, increased capacity, reduced weight, generating increased revenue potential for operators, fit for new services and better comfort for passengers ...

- **Innovation Area II** – **New infrastructure concepts**: reduced life-cycle costs, smart interoperable systems and components, infrastructure condition monitoring and predictive maintenance

- **Innovation Area III** – **Intelligent traffic management and control systems**: Smart traffic dispatching, GNSS, CBTC, full compatibility with the European Rail Traffic Management System (ERTMS)
Key R&I priority areas for completing the SERA and ensuring competitiveness of the rail sector:

• **Innovation Area IV** – Seamless travel: Pan-European passenger information, ticketing, new services for passengers

• **Innovation Area V** – Innovative solutions for rail freight logistics: Efficiency, reliability, integration of rail in logistic concepts, new service quality features, cargo tracking and tracing, access of new partners to the rail supply chain

• **Innovation Area VI** – Talent Management Systems: Development of skills and on-the-job training, access to expert competence
General approach

Horizon 2020

• Focus on **societal challenges** facing EU society
• Closing the gap between research and innovation, with more funding for **close-to-market activities, including technical demonstrators**
• **Simplified access for all:**
  • **Single set of** simpler and more coherent participation **rules**
  • Moving from several **funding rates** for different beneficiaries and activities to just two and replacing the four methods to calculate overhead or «indirect costs» with a **single flat rate**
  • More flexible budgetary and procurement procedures
  • Reduction of average **time to grant** to around 250 days
  • New **balance between trust and control**
General approach

Horizon 2020 – The partnering approach

**Public-Private Partnerships** (Joint Undertakings (Art. 187) or contractual agreements):

- Solve **EU societal challenges** together with industry
- Facilitate **joint vision development** and strategic agenda setting
- Prioritise R&I in line with **EU objectives and industry needs**
- Increase **leverage** of EU R&I efforts
- Strongly **commit industry** to long-term joint objectives
- Clearly **define roles** and drive process with **key performance indicators**
Horizon 2020 – The partnering approach

Proposed PPPs ("first wave"):  

<table>
<thead>
<tr>
<th>Institutional PPPs</th>
<th>Contractual PPPs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extension of SESAR</td>
<td>Factory of the Future (FoF)</td>
</tr>
<tr>
<td>Clean Sky 2</td>
<td>Energy-efficient Buildings (EeB)</td>
</tr>
<tr>
<td>Innovative Medicines 2 (IMI2)</td>
<td>Green Cars (GC)</td>
</tr>
<tr>
<td>Fuel Cells and Hydrogen 2 (FCH2)</td>
<td>Future internet (FI-PPP)</td>
</tr>
<tr>
<td>Bio-based Industries (BBI)</td>
<td>Sustainable Process Industry;</td>
</tr>
<tr>
<td>Electronics (ECSEL)</td>
<td>Robotics;</td>
</tr>
<tr>
<td></td>
<td>Photonics;</td>
</tr>
<tr>
<td></td>
<td>High Performance Computing</td>
</tr>
</tbody>
</table>

+ Creation of a Joint Undertaking in the rail sector due to scale of R&I efforts required to consolidate EU leadership in rail technologies and the policy need to complete the SERA
What the initiative should not be:

- It’s not a funding source for deployment
- It’s not a demonstration platform for ready-to-deploy products
- It’s not a support for pure customising of products
- It’s not an initiative for smaller incremental R&I-projects
- It’s not an initiative for individual non-collaborative R&I-activities of the stakeholders/partners
Presentation of the Impact Assessment

Impact Assessment

• Based on extensive stakeholder consultations (online consultation, open hearing, individual meetings, etc.)
• Focusing on implementing structure only, not technical content
• Four policy options under investigation, including:
  • Baseline (continued collaborative research under H2020)
  • Set up of contractual PPP
  • Establishment of institutional PPP
  • Integration of rail R&I activities within ERA
**Policy options**

<table>
<thead>
<tr>
<th>Collaborative Research (CR)</th>
<th>Contractual PPP (cPPP)</th>
<th>Institutional PPP (iPPP)</th>
<th>Integration within ERA</th>
</tr>
</thead>
</table>
| • Continuation of FP7-CR model, integrating H2020 improvements, such as simplified monitoring arrangements or more emphasis on demonstration  
• Ad hoc calls coordinated in bi-annual work programmes  
• Industry input coordinated through ERRAC technology platform | • Implementation of a joint EC-industry programme under the Framework Programme  
• Industry input in the form of multi-annual roadmap  
• Ad hoc calls coordinated in annual or multi-annual work programme  
• Project commitments from private partners defined in contracts with EC | • Creation of a dedicated administrative structure for coordinating rail R&I  
• Specific rail R&I programme developed jointly by industry & EC  
• Dedicated multi-annual budget funded jointly by EC and private partners  
• Funding through direct grants and calls for tender | • Creation of a dedicated administrative structure for coordinating rail R&I within the Agency  
• Specific rail R&I programme developed jointly by Member States & EC  
• Advisory role of industry  
• Annual operational planning for ad hoc calls set by ERA |

**Presentation of the Impact Assessment**
Presentation of the Impact Assessment

Framework for comparing the options

• **Focus and coordination of research efforts.** Capacity to reduce fragmentation of R&I efforts and focus them on areas with **high EU added value**, namely completing the SERA and ensuring the long-term **competitiveness and growth** of the sector.

• **Leverage of EU rail R&I funding.** Capacity to ensure **long-term commitment** from all partners and to leverage **additional resources** for R&I.

• **Broad stakeholder participation and sustained networks.** Capacity to gather all the key players across Europe in partnerships to eventually better integrate infrastructure, rolling stock, signalling and other subsystems of the rail system.
Presentation of the Impact Assessment

Framework for comparing the options

• **Mitigation of innovation risks.** Capacity to implement appropriate risk-sharing mechanisms allowing for validating complex systems at large scale and high technology readiness levels.

• **Operational performance and cost-effectiveness.** Capacity to provide a simple, efficient and cost-effective framework for granting R&I
Preliminary findings of the public consultation

Level of participation in the online consultation

• 260+ respondents to date of which:
  • 47% private companies, 12% SMEs, 10% industry associations
  • 14% research organisations and universities, 7% public authorities & international organisations
  • 32% rolling stock & vehicle component manufacturers, 8% tiered suppliers, 6% construction, 6% broader rail industry, 5% signalling & controls
  • 10% consultancies, 9% rail research, 5% services to the rail sector, 5% ICT
  • 4% infrastructure managers, < 2% railway undertakings
  • Main nations represented: France, Spain, Italy, Germany, Poland, Belgium
Preliminary findings of the public consultation

What are the key problems of rail R&I that need to be addressed?

Core problems of rail R&I

- Insufficient focus on interoperability
- Insufficient standardisation within SERA
- Insufficient focus on market take up

[Bar chart showing percentage of opinions for each problem]
Preliminary findings of the public consultation
Preliminary findings of the public consultation

Which stages of the rail innovation life cycle should be more stimulated?

- Basic research: 70
- Feasibility evaluation: 80
- Development activities: 280
- Prototyping: 300
- Large scale demonstrations: 300
Preliminary findings of the public consultation

What governance structure for future rail R&I?

What are the most important objectives for coordination of EU rail R&I?
Preliminary findings of the public consultation

What governance structure for future rail R&I?

Preferred institutional option

- Option 1 - CR
- Option 2 - cPPP
- Option 3 - IPPP
- Option 4 - ERA
Preliminary findings of the public consultation

What governance structure for future rail R&I?

H2020 collaborative research would help to...

- Improve interoperability
- Promote standardisation
- Ensure continuity and long-term vision
- Ensure synchronicity of innovations along rail value chain
- Maximise return on investment
- Opt stabilise coordination & create sustained networks
- Allow equal access for all stakeholders
- Mitigate innovation risks
- Accelerate market take up

No opinion  Very ineffective  Ineffective  Neutral  Effective  Very effective
What governance structure for future rail R&I?

A cPPP would help to...

- Improve interoperability
- Promote standardisation
- Ensure continuity and long-term vision
- Ensure synchronicity of innovations along rail value chain
- Maximise return on investment
- Optimise coordination & create sustained networks
- Allow equal access for all stakeholders
- Mitigate innovation risks
- Accelerate market take up

Legend:
- No opinion
- Very ineffective
- Ineffective
- Neutral
- Effective
- Very effective
Preliminary findings of the public consultation

What governance structure for future rail R&I?

An IPPP in the form of a JU would help to...

- Improve interoperability
- Promote standardisation
- Ensure continuity and long-term vision
- Ensure synchronicity of innovations along rail value chain
- Maximise return on investment
- Optimise coordination & create sustained networks
- Allow equal access for all stakeholders
- Mitigate innovation risks
- Accelerate market take up

Legend:
- No opinion
- Very ineffective
- Ineffective
- Neutral
- Effective
- Very effective
Preliminary findings of the public consultation

What governance structure for future rail R&I?

R&I coordination within ERA would help to...

- Improve interoperability
- Promote standardisation
- Ensure continuity and long-term vision
- Ensure synchronicity of innovations along rail value chain
- Maximise return on investment
- Optimise coordination & create sustained networks
- Allow equal access for all stakeholders
- Mitigate innovation risks
- Accelerate market take up

Legend:
- No opinion
- Very ineffective
- Ineffective
- Neutral
- Effective
- Very effective
Preliminary findings of the public consultation

Key priority areas for future rail R&I?

What are the priority rail R&I areas?

- Rolling stock
- Infrastructure
- Intelligent traffic management and control systems
- Customer experience support systems
- Innovative supply-chain concepts
- Talent management systems
Next steps

Progress ideal timeline

- 19 September 2013: End of consultation period
- Mid-October 2013: Finalisation of Impact Assessment
- December 2013: Adoption of Commission proposal
Thank you for your enthusiasm and attention!