



European Rail Research Advisory Council

ROLE OF THE EUROPEAN RAILWAY RESEARCH ADVISORY COUNCIL IN FP7



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7th FRAMEWORK PROGRAMME FOR RTD

Madrid, Spain



European Rail Research Advisory Council

European Rail Research Council

a unique body bringing together:

- ❑ Railway undertakings
- ❑ Infrastructure companies
- ❑ Urban and regional transport operators
- ❑ Manufacturing industry
- ❑ Representatives of the EU Member States
- ❑ European Commission
- ❑ Customer groups
- ❑ Consultants and academic institutions

With the aim of achieving consensus on priorities for railway research and guiding research efforts towards common strategy



ERRAC – rationale and objectives

- ❑ Give a new impetus to research and innovation in railways
- ❑ Identify priorities for research and direct the available resources towards these commonly agreed priorities
- ❑ Encourage the co-ordination of research projects and programmes to ensure synergies and cross-fertilisation and avoid duplication of efforts
- ❑ Evaluate the results of the on-going and completed projects from the point of view of effectiveness and contribution to the overall objectives
- ❑ Work with the European Commission on streamlining the process of research proposal preparation, evaluation
- ❑ Explore opportunities for supporting the implementation of research results





Main activities of ERRAC

GENERAL TASKS

- ❑ Ensuring the best alignment of the research programmes with the identified ERRAC research priorities
- ❑ Identifying synergies among various corporate, national and EU research programmes and promoting better co-ordination
- ❑ Nurturing and endorsing new research initiatives
- ❑ Evaluating on-going and completed projects

SPECIFIC TASKS

Acting as an advisor on future rail research needs to the European Commission for the 7th Framework Programme (2007-2013) and beyond:

- Steering brainstorming discussions about research priorities among different stakeholders
- Drawing up “Rail 21” and the second Strategic Rail Research Agenda
- Promoting ERRAC activities and implementing an efficient communications strategy

Rail sector input into FP7

- ❑ **Original ERRAC Strategic Rail Research Agenda (SRRA 2020)** published in 2002
- ❑ **'Rail 21' Brochure** (presented to Commissioner for Research, Janez Potocnik at UNIFE Annual Reception in Brussels on the 8th of March 2006 March 2006)



- ❑ **SRRA update** currently being finalised
- ❑ **Review by the Transport Advisory Group**, which includes representatives of rail sector stakeholders

ERRAC « Rail 21 » Vision

- ❑ Promote **excellence in railway operations** to encourage modal shift and decongest international transport corridors;
- ❑ Develop **attractive urban transport** solutions that ensure sustainable urban mobility;
- ❑ Assure **personal security** to encourage increased use of public transport;
- ❑ Consolidate **environmental gains** based on the greening of rail surface transport to meet legislative and societal imperatives;
- ❑ Strengthen the **worldwide competitiveness** of the rail industry sector and its ability to supply cost effective products and services.

Steering brainstorming discussions on research priorities

Example of industry (UNIFE) brainstorming on FP7 priorities that took place in Brussels on Nov 15-16, 2006

- **40 participants from 23 UNIFE members**
- **2-day meeting: individual workshops per area (rolling stock and sub-systems, infrastructure and signalling)**
- **At the end of the meeting common agreement has been reached on the roadmap for FP7:**
 - ✓ **ideas for projects for the first calls (*including scope, objectives, budget and duration*)**
 - ✓ **leadership for proposal preparation**
 - ✓ **initial consortium suggestions**

Rail Research in Europe

- ❑ Improve the railways in all respects for the benefit of its citizen and wider society, **placing Rail in the core of transportation system**
- ❑ Research plays a vital role
 - ✓ Railways have to be greener, smarter and safer.
 - ✓ Improving the competitiveness of the European railway supply industry in the global market.
- ❑ The first SRRA focused on ways to achieve
 - ✓ **interoperability across Europe**
- ❑ This second SRRA concentrates on improving the user (passenger/customer) experience through:
 - ✓ **Solving mobility problems**
 - ✓ **Improving performance**
 - ✓ **Increasing the cost effectiveness of rail.**

SRRA-II Outline

- ☐ **A Vision for the future**
- ☐ **Europe 2020 – The business environment**
- ☐ **Strategic Research Priorities**
- ☐ **Realizing the Vision**

A Vision for the future

Europe 2020
The business
environment

Strategic Research
Priorities

Realizing the
Vision

SRRA – Vision for the future

- ❑ **Stress the railways' role in the European transport system by providing:**
 - ✓ seamless and integrated high speed passenger services
 - ✓ door-to-door freight services
 - ✓ efficient metropolitan and urban mass-transport.
- ❑ **Impact on climatic changes**
 - ✓ prevented irreparable damage to the environment
 - ✓ broad recovery of modal equilibrium for freight traffic.
 - ✓ Develop strategies for dealing with global warming

A Vision for the
future

**Europe 2020
The business
environment**

Strategic Research
Priorities

Realizing the
Vision

Europe 2020 – The business environment

☐ **Railway Business Scenario**

- ✓ Transport demand, modal split and volume
- ✓ Rail doubling its share of both the freight and passenger markets share
- ✓ Rail tripling the freight and passenger market volume compared with 2000

☐ **Market demands**

- ✓ Security, Energy efficiency, Freight, Complementarities between modes, Comfort, Ageing population, regionalisation

☐ **Rail System Research Needs**

- ✓ Interoperability, liberalization, ...

☐ **Value for money**

- ✓ Quality of journey
- ✓ Infrastructure maintenance

A Vision for the
future

Europe 2020
The business
environment

**Strategic Research
Priorities**

Realizing the
Vision

Strategic Research Priorities

❑ Strategic vision

- ✓ Competitiveness, attractiveness & performance of rail system

❑ Research & innovation

- ✓ rolling stock, infrastructures, operations and services

❑ Results to be achieved on

- ✓ Enhanced environmental advantages
- ✓ Improved performance of rolling stock
- ✓ Improved performance of infrastructure
- ✓ Enhanced competitiveness
- ✓ Long term strategic direction for rail

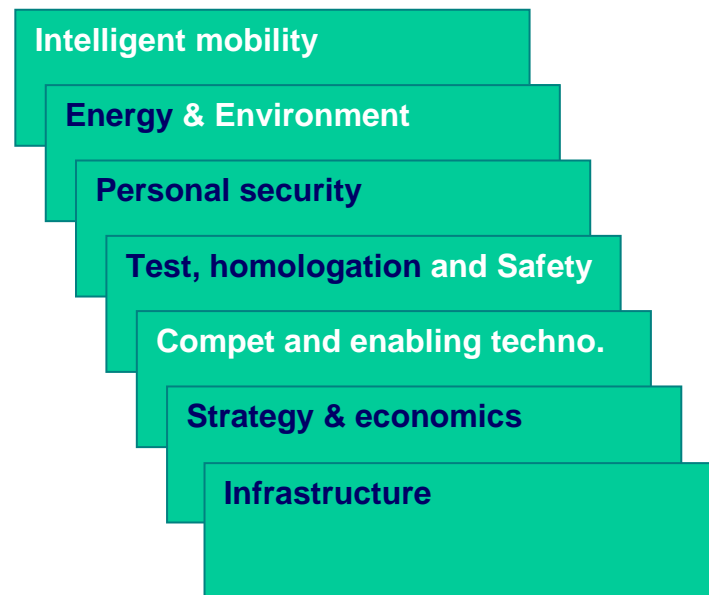


(cont.)

❑ Organization

- ✓ Main Targets
- ✓ Present situation
- ✓ Expected deliverables
- ✓ Road maps
- ✓ Impacts on 2020 targets

❑ Research areas, key technologies & road maps



~~Interoperability~~



High level targets (1)

1. Intelligent Mobility

- ✓ support customer information systems offering a
- ✓ higher quality of service through seamless transport technologies between member states and across transport modes.

2. Energy & Environment

- ✓ Increase the level of environmental protection
- ✓ safeguard the commercial competitiveness of the mode while:
 - ✓ Reducing dependence on fossil fuels, Control of exhaust emissions, Design for the Environment, A System Approach to the Noise and Vibration Performance of the rail mode

3. Personal Security

- ✓ New concepts and tool kits to maximise personal security for customers and operating staff in terms of acts of aggression, terrorist attack and wanton vandalism which could lead to on-board fires.

4. Test, Homologation and Safety

- ✓ Increased acceptance of European Homologation and Acceptance procedures that increases the speed of product approvals while squeezing out risk via improved safety management philosophies.



High level targets (2)

5. Competitiveness & enabling technologies

- Improving product attractiveness for customers and reducing life cycle costs of:
 - ✓ New concepts for Rolling stock and their Subsystems based on Improved Commercial Models,.
 - ✓ Innovative Maintenance Technologies, Capacity Optimisation and Major Investments in Intelligent Mobility and Interface Harmonisation.
 - ✓ Public Transport Competitiveness will improve as a result of Improved Sub-System Certification Processes, Capacity Optimisation, New Ticketing Systems that Remove Barriers to Passenger Access while Protecting Revenues, Major Investments in Intelligent Mobility and Interface Harmonisation with a much stronger emphasis on Human Factors.

6. Strategy & Economics

- ✓ New accounting and planning models will provide a better understanding of the costs of operating and maintaining rail infrastructure and
- ✓ how these costs change with changes to the frequency and types of train service operated.

7. Infrastructure

- ✓ Cost efficient maintenance, and maintenance-free, interoperable infrastructure systems will be developed that yield increases in traffic capacity, loading and track stability.

A Vision for the
future

Europe 2020
The business
environment

Strategic Research
Priorities, Road
maps

**Realizing the
Vision**

Realizing the Vision

❑ Introducing key technologies

- ✓ Intelligent mobility, energy & environment, personal security, test, homologation and safety, competitiveness and enabling technologies, strategy and economics, infrastructure and benchmarking

❑ Innovation & cooperation

- ✓ improve the speed of application of innovations within in Europe
- ✓ Better coordination between activities in rail research, standardisation and TSI
- ✓ cooperation between leading system stakeholders
- ✓ cooperation and sharing of technology between transport modes

**Projects under preparation in the rail sector for
the 1st call of 7th Framework Programme
*communicated at the last ERRAC Plenary 15/02/07***

Virtual Homologation

☐ Name and general scope

Virtual Homologation – transfer a majority of homologation work for new vehicles and sub-systems away from testing to simulation.

☐ Overall objectives and deliverables

Increase the speed and reduce the cost of acceptance procedures (facilitating cross-acceptance for new vehicles and sub-systems by commonly accepted modelling and simulation in accordance with the published standards and TSIs relating to interoperability).

☐ Project duration

36 or 48 months

☐ Topic(s) addressed within the FP7 SST Work Program 2007

SST.2007.4.1.1 – Safety and Security by Design

☐ Leader of the bid preparation

Alstom / UNIFE with the support from ALMA Consulting

☐ Potential partners

Suppliers: Alstom, BT, ASB, Siemens, Knorr, Faiveley?, Vossloh?, Voith? CAF?

RUs: UIC, CER and EIM main operators (already interested SNCF, DB, Network Rail, CD)

Universities and research centres: INRETS, DLR, EURNEX Pole 3

Test centres: preferred are AEF, Brunel, DB, Interfleet

Notified bodies: depending on WP, preferred are NB Rail, EBC, Certifer

Low Impact Vehicle Dynamics

- ❑ **Name and general scope**

Dynamic Stability of Low Mass/Low Impact Trains.

- ❑ **Overall objectives and deliverables**

- ✓ Evaluate energy cost savings, lightweight train technologies, relevant track and environmental damage issues
- ✓ Identify major infrastructure cost benefits and provide an open and transparent framework for setting track access charges linked to train characteristics and their impact on infrastructure that is relevant to all EU countries.

- ❑ **Project duration**

48 months

- ❑ **Topic(s) addressed within the FP7 SST Work Program 2007**

SST.2007.5.2.2 – Dynamic stability of Lightweight Trains

- ❑ **Leader of the bid preparation**

RSSB, UK standard body

- ❑ **Potential partners**

UK: DfT, RSSB, Network Rail, ATOC, rolling stock owners, supply industry, VTSIC
Major EU rolling stock manufacturers, key suppliers

REEFER Containers on train

- ❑ **Name and general scope**

Reefer containers on train

- ❑ **Overall objectives and deliverables**

- ✓ Enable transportation of refrigerated containers on freight trains
- ✓ Establish a standard for reefer transport on rail

- ❑ **Project duration**

36 months

- ❑ **Topic(s) addressed within the FP7 SST Work Program 2007**

SST.2007.2.1.1. Vehicle/vessels and infrastructure concepts for intermodal freight transport

- ❑ **Leader of the bid preparation**

Faiveley Transport (France) with the coordination support of UNIFE and with organizational support of d'Appolonia

- ❑ **Potential partners**

These are potential partners (no confirmation of their interest yet)

Microelettrica (IT), Sogemar (IT), Bombardier, Transfesa (ES), REEFER Terminal Savona (IT), HUPAC, University of Rome (IT), TABOR (PL), VUZ (CD), PKP Cargo (PL), Russian operator?, New Opera, Ferrmed, AAE (CH), SBB Cargo (CH), Politecnico di Torino, d'Appolonia

Standard for safe communication in freight trains

- ❑ **Name and general scope**

Innovative communication technologies enabling improved diagnostics, monitoring and performance in interoperable freight trains

- ❑ **Overall objectives and deliverables**

Develop a standard for safe communication along freight trains and thus enabling intelligent monitoring and diagnostic for cargo and rolling stock

- ❑ **Project duration**

36 months

- ❑ **Topic(s) addressed within the FP7 SST Work Program 2007**

SST.2007.2.5.1. Interoperable rolling stock

- ❑ **Leader of the bid preparation**

Knorr-Bremse supported by UNIFE, d'Appolonia for organizational support

- ❑ **Potential partners**

These are potential partners (no confirmation of their interest yet)

Frensisemi (IT), Faiveley (IT), Bombardier?, Vossloh (ES), TUB (DE), University of Florence, University of Naples, University of Lemgo (DE), VUZ (CD), Trenitalia, TeleSistemiFerroviari (IT), New Opera?, LKAB (SE)?, MAV Cargo (Hungary), SBB Cargo (CH), UIC?, Politecnico di Torino, University of Rome

FuturEX (working name)

- ❑ **Name and general scope**

FuturEx - Meeting Customer Expectations for Rail Travel

- ❑ **Overall objectives and deliverables**

Identify the factors influencing the choice of rail by passengers and how to increase the use of rail within the intermodal transport chain.

- ❑ **Project duration**

36 months

- ❑ **Topics addressed within the FP7 SST Work Program 2007**

SST.2007.5.2.1

- ❑ **Leader of the bid preparation**

UIC

- ❑ **Potential partners**

Rail operators, system integrators, academia, customer organizations

ERTMS Interlocking systems

INESS project “Integrated European Signalling System”

- ❑ **Name and general scope**
Delivering ERTMS-compliant interlocking systems
- ❑ **Overall objectives and deliverables**
Define and develop specifications and hardware for a new generation of interlocking systems in line with relevant EU norms to facilitate ERTMS introduction
- ❑ **Project duration**
36 months (not yet decided, however likely to be)
- ❑ **Topic(s) addressed within the FP7 SST Work Program 2007**
SST.2007.2.5.2
- ❑ **Leader of the bid preparation**
UIC is project co-ordinator
- ❑ **Potential partners**
UIC, UNIFE, NetworkRail, DB Netz, Banverket, ProRail, RFI, Bombardier, Vossloh, Braunschweig University, DLR

MODSAFE

- ❑ **Name and general scope**
MODSAFE–“Safety and Security in Urban Rail” .
- ❑ **Overall objectives and deliverables**
The objective is to build a Safety Analysis and Model Reference for the future for Urban Guided Transport projects.
- ❑ **Project duration**
36 or 48 months
- ❑ **Identify where it within the Work Programme**
SST.2007.4.1.6: Integrated safety and security for urban rail
- ❑ **Leader of the bid preparation**
No leader at this stage only a writing team in place based on MODURBAN partners
- ❑ **Potential partners**
MODURBAN partners notably operators, UIC, RATP, LUL , BVG , ML,...; Suppliers notably Alstom, Bombardier, Siemens ,Csee ,Alcatel ...; Universities, TUD, Valenciennes, Budapest...; Research laboratory, INRETS, JRC,...; and associations, UNIFE, UITP

Other projects under preparation

- ❑ **SYMPASS** – System Modelling Process for Auxiliary Supply Systems
- ❑ **ProWEEL** – wheelset protection systems to avoid corrosion and damage that meets design/calculation method, product requirements and environmental legislation.
- ❑ **ERRAC CSA** – Rail Transport Technology Platform
- ❑ **GET^{RAIL}** Gender equality_Education_Training for RAILWAYS
- ❑ Corporate Network Services for EURNEX Business Development