



European Rail Research Network of Excellence Council

**Facts and Trends for EURNEX
Strategy definition**

Secretary General
Assist. Prof. Wolfgang H. Steinicke

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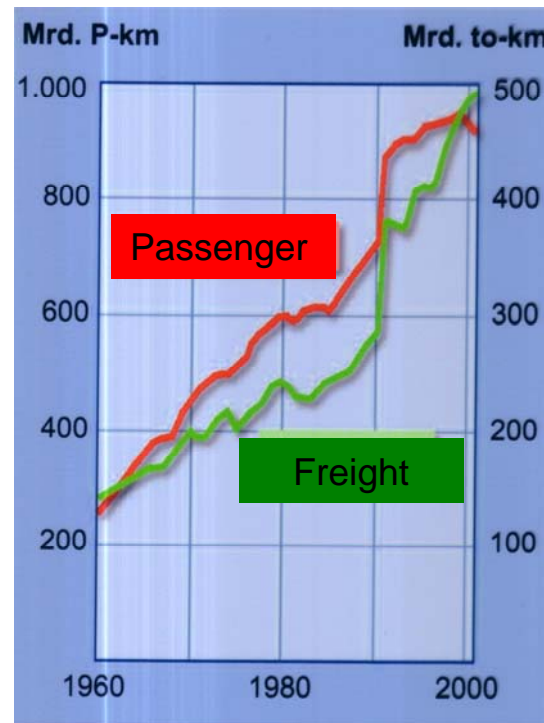
Economic Growth & Welfare challenging Transport and Mobility



Gross Domestic Product



Passenger&Freight Transport



**Expectations of
development p.a.
2000 - 2015**

GDP: + 1.6 %

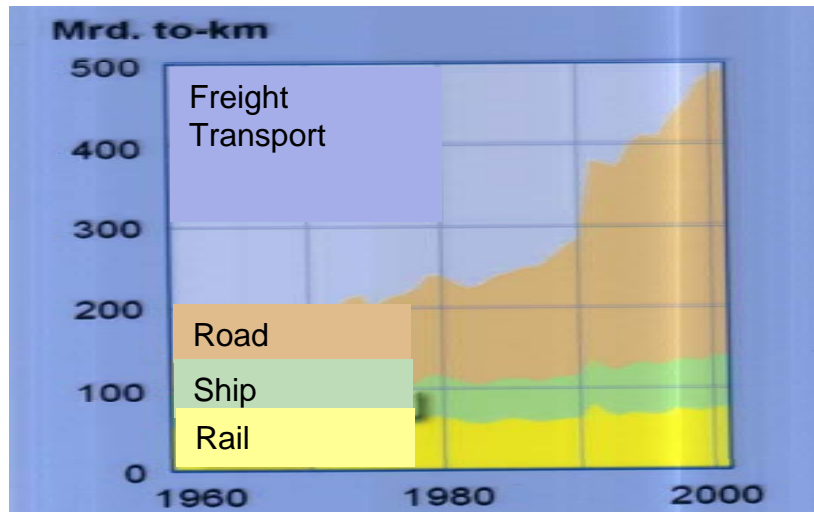
**Freight
Transport: + 2.6 %**

**Pax
Transport: + 1.3 %**

**1,0 % increasing GDP corresponds to
1,6 % increasing freight transport capacity**

Transport Capacity vs. limited Resources

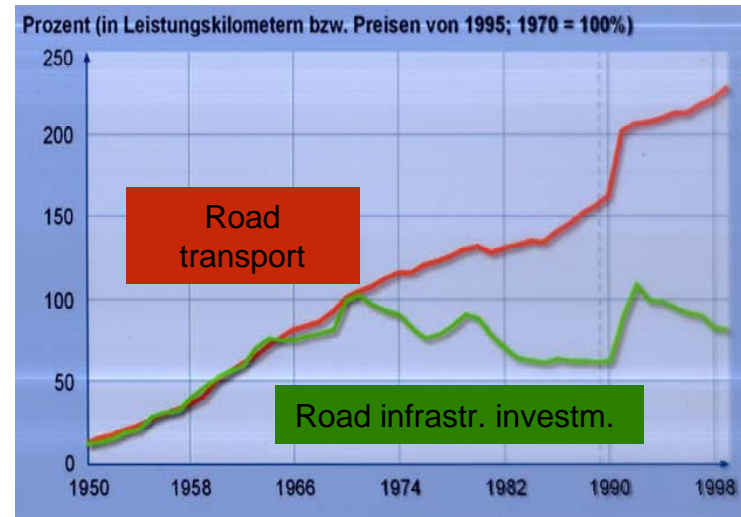
Freight transport by mode



Projected modal split 2020 (in %, EU25)

Freight	Road	Rail	Inland Waterway	Short Sea Shipping	Pipeline
Total	42	14	3	39	2

Gap between infrastructure investments and transport volume



Passenger	Road	Rail (incl. Metro/L	Air	Bus
Total	42	14	3	39

Source: ERRAC, May 2007

Due to limited resources building of infrastructure is restricted.

Intelligent and efficient solutions including safety and security improvements help to close the gap.

Market Requirements for Managing the Future



The European Transport System is facing a challenging situation

The Future Market by 2020

- Freight transport to grow by ~50%, pax transport to grow by 35% (vs. 2000*)
- the amount of cross border freight transport is equalising to inland transport (D 50%, 2004)
- economic-ecological & political needs to foster rail transportation & co-modality

This strategic disconnect endangers future competitiveness of the rail system and questions achievements of ambitious goals (e.g. ERRAC SRR 2020)

The Strategic Way Ahead

- ERRAC's Rail 21 – Sustainable Rail Systems for a connected Europe expresses the focus on:
 - Defining and implementing a **joint European rail research strategy** for the next 20 years to overcome strategic disconnect
 - Enhancing **collaborative European rail research incl. cross-mode actions**

Market Requirements demand for a more competitive future European Rail System with contribution of integrated rail research in a co-modal environment

Partnership's triangle

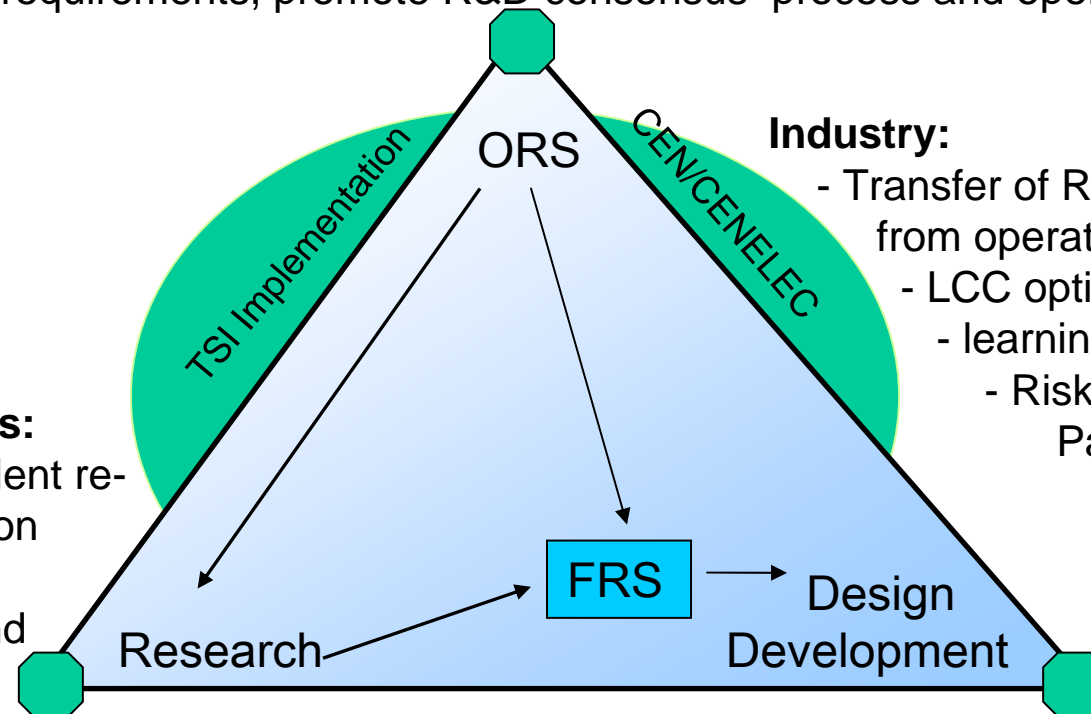
to improve Rail System's competitiveness needs clear task assignment and trusting cooperation

Operators:

- concentration on customer relations
- Integrated logistics provider
- Intermodal, seamless passenger transport
- „Define operational requirements, promote R&D consensus process and operate the system“

EURNEX / Scientists:

- Integration of excellent research, specialisation
- Customer oriented
- improved quality and „time to results“
- „from generic to applied research“



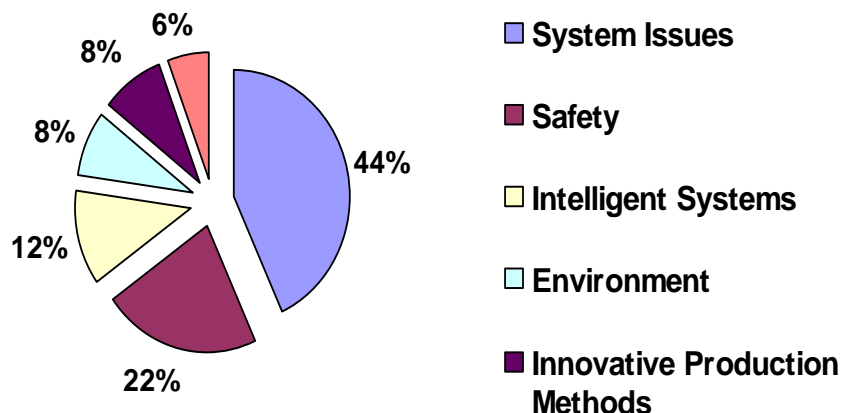
Industry:

- Transfer of R&D responsibility from operators to industry
- LCC optimisation
- learning from other sectors
- Risk & revenue Partnership
- „Develop the rail products“

EURNEX achievements to date to promote the future European Rail system

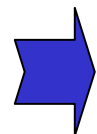
In the EURNEX Knowledge Management System registered capabilities

- ➔ **561** registered projects
- ➔ **63** member institutions
- ➔ Total MM: 18.147 MM
- ➔ Total project volume: ca. 187 Mio €



Sustainable EURNEX corporate services:

- Knowledge Management (KMS) at competitive edge
- Training and Education (EURNEX EUR) for the rail professionals of the future
- Product Qualification Methods support for rail system harmonisation
- Gender equality promoting activities to skill women for leading positions
- Corporate Network Services for Business Development



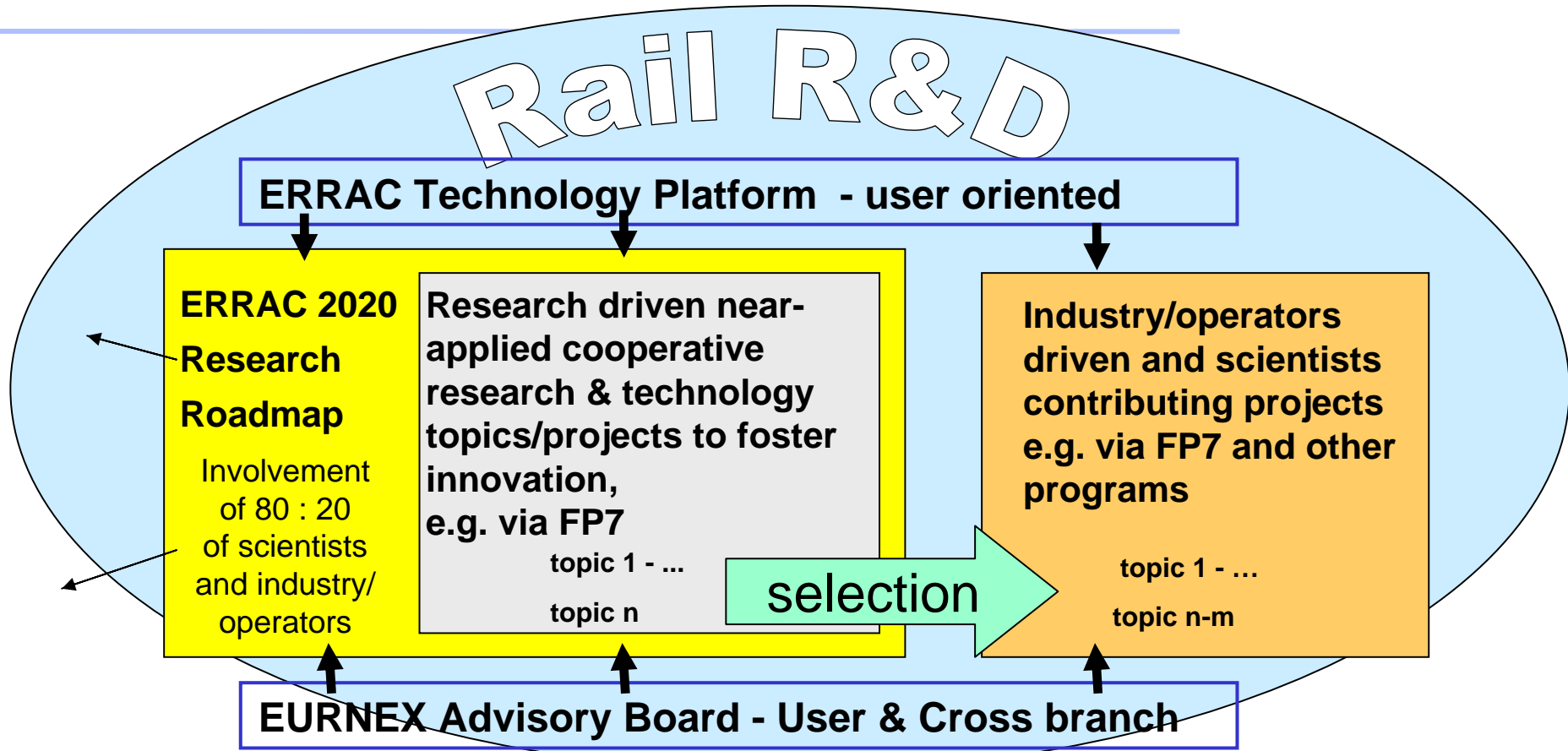
EURNEX provides services to meet customer's requirements to increase quality, capacity and efficiency and to reduce environmental impact

Rail System Research Needs



- **Interoperability** throughout EUROPE 27 by
 - Technical Specifications (TSI), Harmonisation, Standardisation, Modularisation (High Speed & Conventional Rail)
 - Optimisation of individual subsystems as part of an overall integrated rail system
 - Match operational, technical and customer needs in supply chain management, 3rd party logistics, real time management of customer information, and emergence of new technologies
- **Liberalisation** and access to the railway infrastructure is opening up with many different vehicle types to use the infrastructure
- **Strengthening competitiveness** of the rail sector in a co-modal environment with
 - Enhanced environmental advantages
 - Improved performance of rolling stock & infrastructure
 - Reducing life cycle costs while improving high quality services and economic attractiveness of the rail transport mode

EURNEX Encouraging Stepchange Innovation in Rail System



- Operators & Industries setting requirements and road maps and monitoring, selecting & disseminating innovative solutions according to their needs
- EURNEX poles providing innovative & multidisciplinary research making best value for stakeholder money spent

Strategic objectives of sustainable EURNEX



- EURNEX to organise the platform for its members for better visibility, quality and projects
- improving shared use of knowledge and equipment
- establish world class player in transport and mobility focussing in rail research
- monitor quality and excellence by internal peer-review and external competition
- user and cross-branch ERRAC / Advisory Board utilisation for initiation, definition and implementation of step-change innovation

Research Priority Areas in a multidisciplinary approach

- **Intelligent mobility** concentrating on customer focus and improved levels of service flexibility
- **Energy and environmental** research on energy efficiency, environmental impact and no fossil fuel future
- **Safety, Security and homologation** in cost-benefit and cross border optimisation
- **Infrastructure Research** to match growth in traffic density at a price to be competitive
- **Strategies and economics** to analyse and promote serviceability, efficiency, socio-economic changes and long term directions
- **Competitiveness and enabling technologies**, operational improvements and innovative train concepts

ERRAC, EURNEX activities

- Secretary Generals had open and supportive discussions with the EC
- EC honours efforts made by the EURNEX coalition of willingness to improve integration, motivation and research contribution were very much honoured.
- For EURNEX as a legal entity , transferred from a EC NoE Project ,a direct line to the EC will be maintained including neutral & objective recommendations.
- Nevertheless consensus on an equal footing in ERRAC is as important.

- As a subject of lessons learned and conclusions also from a study “Future of NoE s” specific supportive measures in the next calls to balance NoE s effort to support ERA process have been agreed:
 - Bonus for deepening ERA
 - Keep traditional funding schemes CSA for continuation of useful activities initiated by NoE s
 - New concept and appreciation for innovative research in line with step change projects with high applied preparatory scientific research content based on industry/ operator requirements
 - Coherent line EC/EURNEX for full partnership of EURNEX in ERRAC
 - EURNEX to be a full project partner within CSA ERRAC roadmap project to be organized in project negotiation phase with the EC
 - Pole leaders to be involved and budget to be shifted to EURNEX participation (150K €)
 - EURNEX’s Knowledge Management System (KMS) as established with EC money by UIC and, provided of being able to be applied shall be used instead of new system.

This approach for future work programmes and calls as well as the preparedness of our EURNEX colleagues to fully support ERRAC will help both

- Make EURNEX a sustainable selfstanding association to better integrate and make use of resources
- Support ERRAC’s standing as a competent Research Advisory Council.

Pole Actions

- Pole action plan for further step change project development in 2009/2010 call FP7
 - Interaction with UIC, UNIFE etc. and focus on industry / operator cooperation with stakeholders
 - Also to identify practical solutions for public transport in Metropolitan areas (UITP member, PT operators)
- 1. Strategy and economics:**

Roadmap: A) Main drivers of costs and demand for the rail system
B) Potentials and limitations of quality of service rendered by railways to the various market segments
C) Rail regulations and policy issues; new investment models (e.g. ppp)

 - Topics to improve Quality, capacity and efficiency
 - 2. Operation and Systems Performance:**

Interoperability, Functional analysis, designing system architecture,
Operations – planning and managing, Capacity management and optimisation = system performance
 - 3. Rolling Stock**

Bogies and wheel sets, Power systems, supply and energy efficiency

Pole Actions

4. **Product qualification methods**

Rail legislation and legal aspects, Assessment methods, Test procedures and facilities, Process of acceptance of railway products (e.g. cross acceptance procedures)

5. **Intelligent mobility**

Telematics (Galileo), Intermodality, Customer information systems, Web based information systems
Future thematic issues for break through technologies, project ideas / abstract
Some "Topics Examples" which are still research subjects

- how can we share same communication resources
- How we can reconfigure communication resource in order to comply with new environment resulting of mobility
- How be "optimal" in the use of the information we manage

6. **Safety and security**

Safety/Security management, Active and Passive safety, Multi-modal risk analysis/measures, Terrorism

7. **Environment and Energy Efficiency**

External vibration and noise, EMC, Energy consumption, Water and air pollution

Pole Actions

8. Infrastructure (and signalling)

Track including sub-grade and rail, “Switches, crossings”, Level crossings, Wheel/rail interface, Signalling and control systems, Line-side equipment

- Track Design
- Wheel Rail Interface
- Condition Monitoring
- Maintenance
- Asset Management
- Topic for Stepchanges: Semi-rigid track structures

9. Human factors

Human-machine-interaction and Human-computer-interaction, Anthropometry, Functional division between the person and the machine/computer and automatization,

- Regarding the 3rd call of the 7th FP the following subjects could be of importance
- (Remote) control of shunting locomotives
- Innovative Driver
- Safety Culture and Climate in the Railway and Airline Industries

10. Training and Education

Staff training, Education, Training and exchange of researchers

Lyon declaration, contents

Lyon declaration shall be followed by steps taken in charge by other EU Presidencies CZ, SE, ES, BE, HU shall do the same type of event following the French EU Presidency event

- The Vision
- The ERA Governance
- Education and Training
- Research Infrastructures
- Evaluation and Joint Programming
- International cooperation
- Content side

Lyon declaration EURNEX comments

Council definition and assembly approval EURNEX for commitment to future strategies needed

Lyon declaration

- commitment to further implement the ideas of integrated European research to overcome fragmentation is open but needs better explanation of results achieved e.g. EURNEX legal entities.
- With respect to section like Education & Training, Research Infrastructure, Evaluation joint programmes EURNEX achievements and requests must be considered in the declaration with consensus of EURNEX bodies:
 - EURNEX knowledge management system available
 - EURNEX EU Rail University
 - EURNEX Gender equality programme
- Existing Research Associations like EURNEX representing Joint Research Initiative will be the instruments to support this type of networking endeavor
- Expression of certain requirements needed to make the EURNEX vision real with Sustainable NOE / Associations such as mandate to support FP work programme definition (consensus with technological platform)
- Revisit of Evaluation criteria to promote political road maps (Bonus for European wide entities)
- Traditional funding schemes to be better streamlined to support European Research NOE entities, see also report on NOE Experience Study