SHIFT²RAIL – the future Rail JTI

Philippe Citroën
UNIFE Director General

Meeting with Polish stakeholders
Warsaw, 9 April 2013

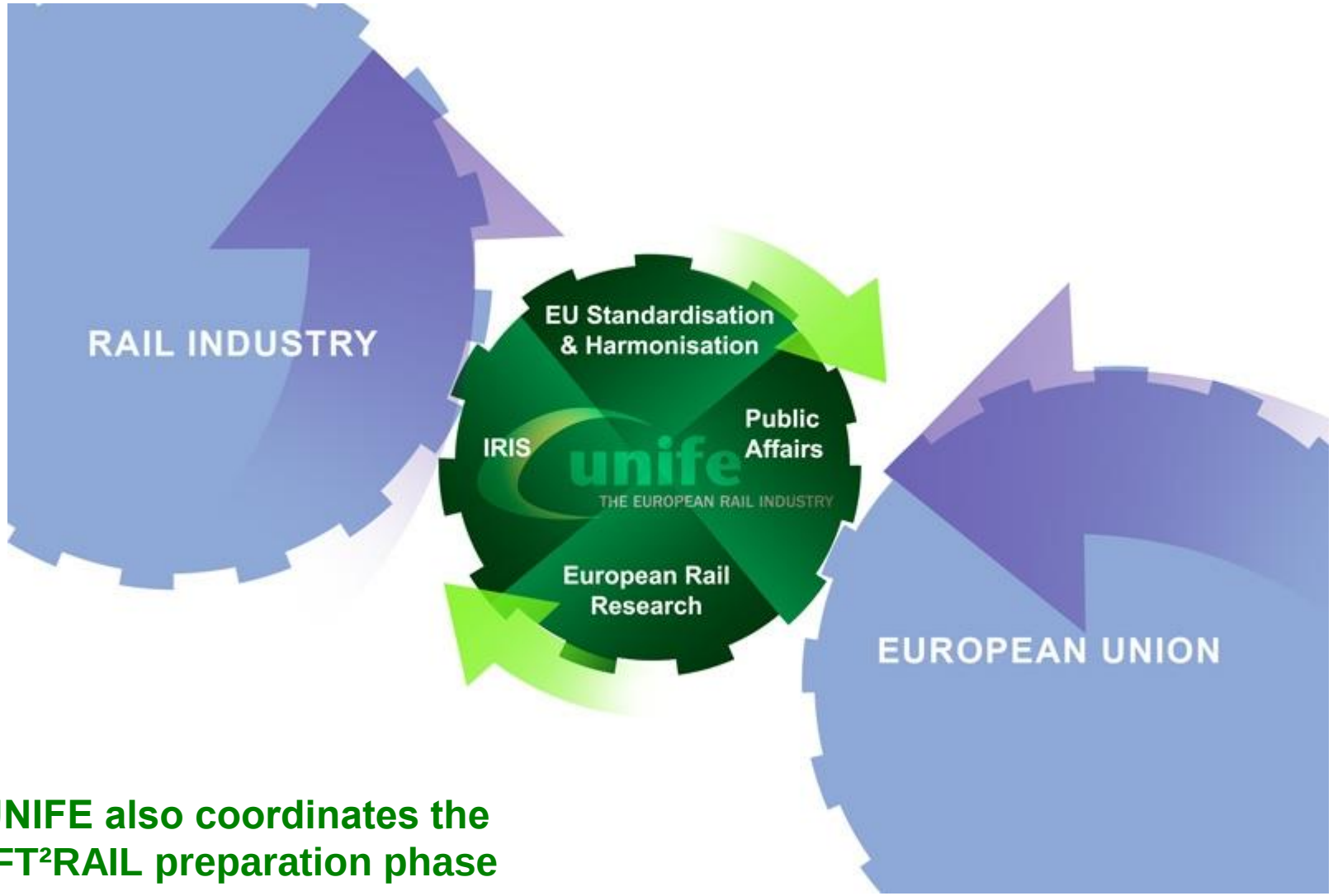
The European Rail Industry Association

- **UNIFE represents the European Rail Supply Industry**
- **Based in Brussels since 1992**
- **A trusted partner of European and International institutions in all matters related to rail transport**
- **Full members:**
  Over 80 of the largest and medium-sized companies in the rail supply sector
- **Associated members:**
  15 National Associations, representing almost 1000 suppliers of railway equipment
- **UNIFE members have an 80% market share in Europe and supply more than 50% of the worldwide production of rail equipment and services.**

UNIFE: Members

- **82 Full Members**
- **17 Associate members, incl. 15 National Associations**

UNIFE: Key activities



→ UNIFE also coordinates the SHIFT²RAIL preparation phase

"Work is continuing on a joint Industry-Commission research platform SHIFT²RAIL, which will be a key element in driving innovation in the years to come"

Commissioner Siim Kallas, European Railway Award,
26 February 2013

" The SHIFT²RAIL initiative would contribute to developing rail as a transport mode by promoting step-change innovations for passenger rolling stock, freight transport, traffic management systems and rail infrastructure"

European Commission, Communication on the Fourth Railway Package,
30 January 2013

SHIFT²RAIL in a nutshell

- A proposal for an ambitious **large-scale, industrially-driven and multiannual research programme** that aims at helping EU rail industry to retain world leadership
- A **public-private Joint Undertaking** under Horizon 2020
- Estimated budget between **800 million and 1 billion Euros** over a **six to seven year period**
- **Official proposal** submitted to the European Commission **in July 2012** & **Addendum** sent in **January 2013**
- Consortium **ready** to establish the Joint Undertaking and start operations **as soon as 2014!**
- Need to convince the **European Commission** to put money aside in Horizon 2020 and launch after the summer the work to set up the Joint Undertaking

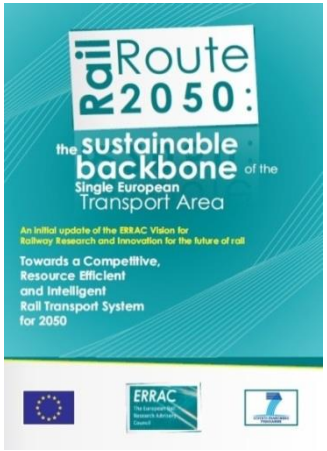
Implementing Europe 2020 objectives

for a smart, sustainable and inclusive growth

Modal Shift & Attractiveness

Competitiveness

Growth & Jobs

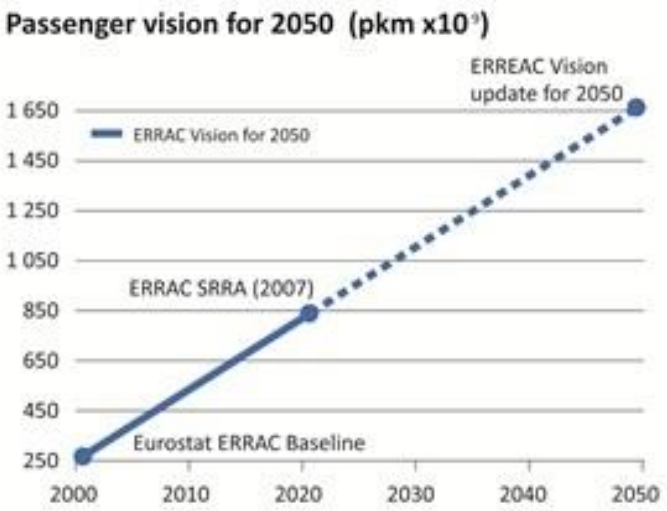


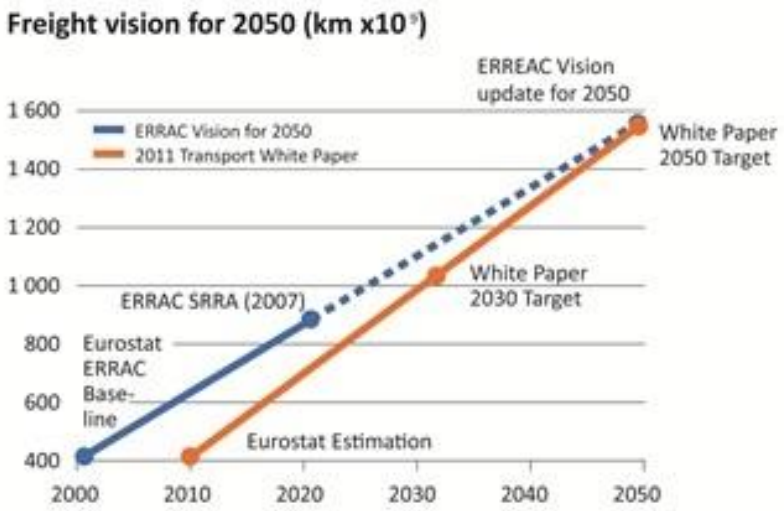
Enhancing Rail transport: a priority for the European Union

- ***Transport 2050*: Rail transport at the heart of the European Commission's White Paper on Transport**

- **Towards a competitive and resource-efficient transport system**
  - Decarbonisation of the transport sector
  - Single European transport area

- **Ambitious modal shift targets**
  - 50% of road freight over 300km should shift to rail or waterways by 2050
  - By 2050 the majority of medium-distance passenger transport should go by rail





No Sustainable Development without Rail investment!

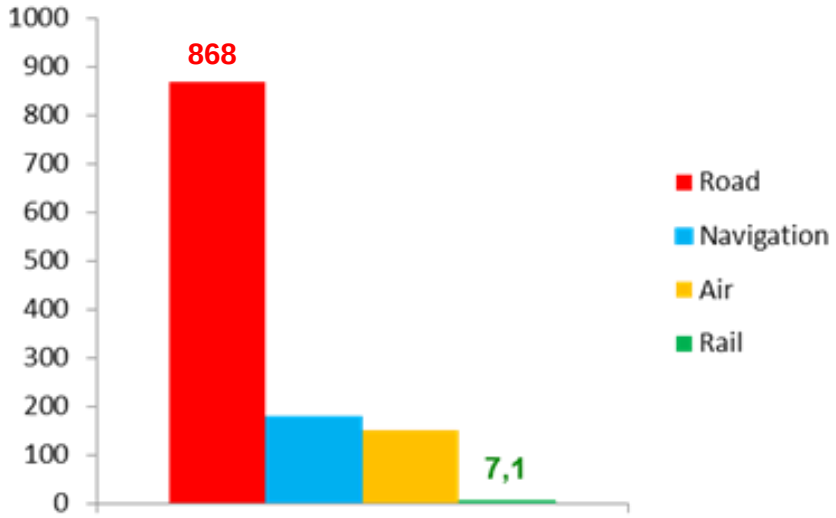
- **Challenge:**

CO_2 emissions are a contributing factor to global warming

- **Solution:**

Rail has the least CO_2 emissions of all modes of transport!

CO_2 emissions from transport in the EU in 2009 (in Million tonnes)



Source: EU Transport in figures – Statistical pocketbook 2012, European Commission, 2012

The European Rail Industry: A key economic sector for Europe

- **A wide range of rail manufacturers**
  - Rolling stock & System integrators
  - Signalling
  - Railway Infrastructure
  - Sub-systems

- **Present in almost all EU Member States**
  - Large geographical coverage (industrial production plants, clusters, SMEs, specialised Universities and Research institutes)

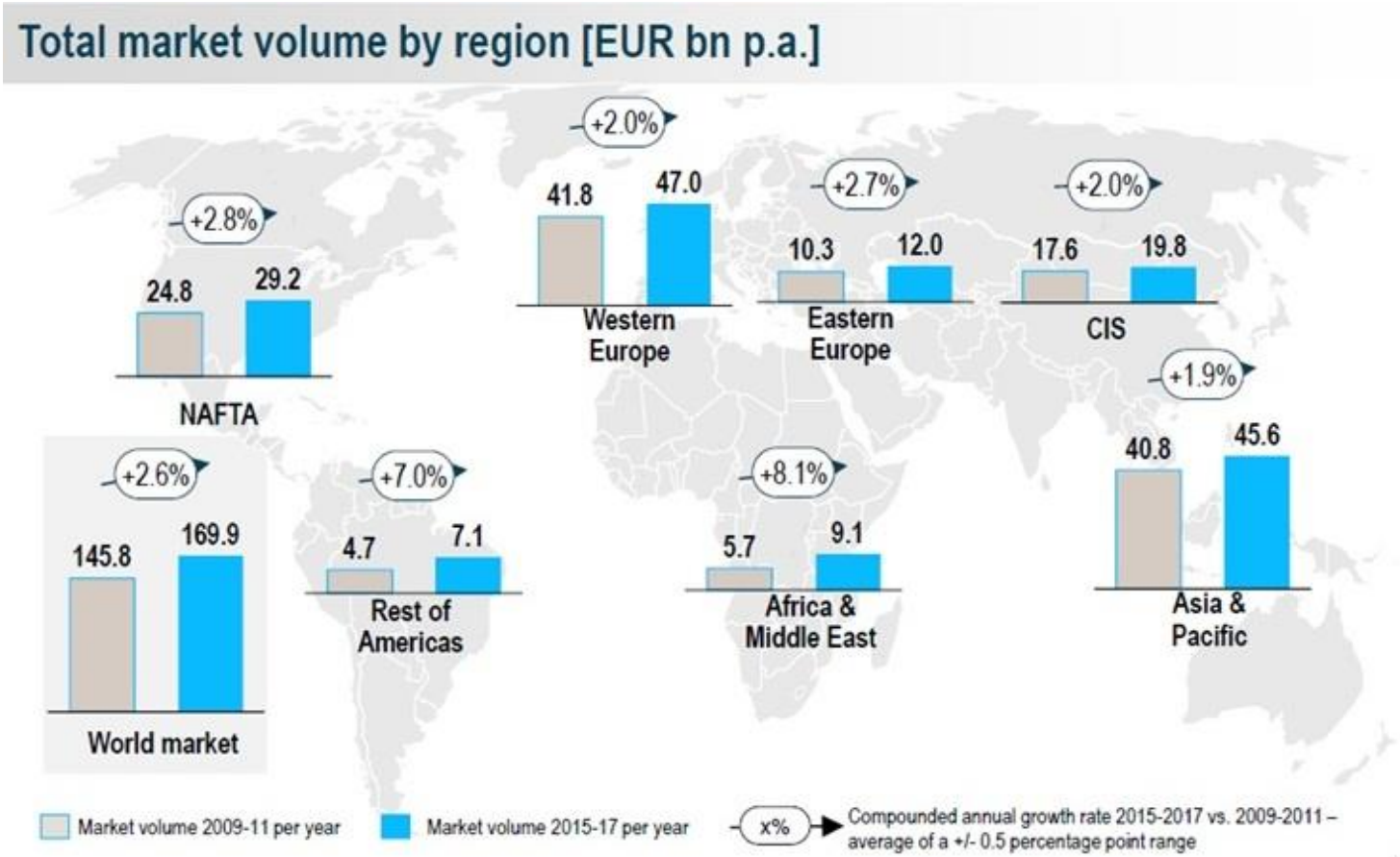
- **Job creating**
  - 400 000 direct and indirect jobs in the EU

- **World leader**
  - Supplying more than 50% of the world market

Global competition: Opportunities…

- **Major market opportunities for European companies**

  Rail supply markets are forecast to grow at a rate of 2.6% in the world in the next 6 years



…and threats!

- **An ever-fiercer competition with Asian companies**
  (Hitachi, Japan Transport Engineering Company, Hyundai Rotem, China CNR, China CSR…)

- **Asian countries are investing massively in R&D for their national rail industries!**

Hence the European paradox!

- **The EU rightly considers rail as a strategic sector for Europe…**
  - Rail is an essential part of the solution for how to achieve **sustainable development** and how to combat the increasing impacts of **climate change**
    → Ambitious modal shift objectives of the EC 2011 White Paper on Transport
  - Rail is a key sector for **growth**, **competitiveness** and **jobs** in Europe (400 000 jobs in the EU; one of the few industrial sectors in which Europe still leads the world, supplying more than 50% of the world market!)

- **But there is not enough EU investment in rail Research & Innovation!**
  - The European Commission has spent less than € 150 million for rail research since 2007 out of a total budget of € 53 billion for the whole FP7!
  - Threat: at the same time Asian countries are investing massively in R&D for their national rail industries

From collaborative experience within FP6/FP7 to a much more ambitious instrument

- **The good results achieved in FP7 normal R&D collaborative projects need to be taken at a further step to significantly contribute to the Railway overall competitiveness**

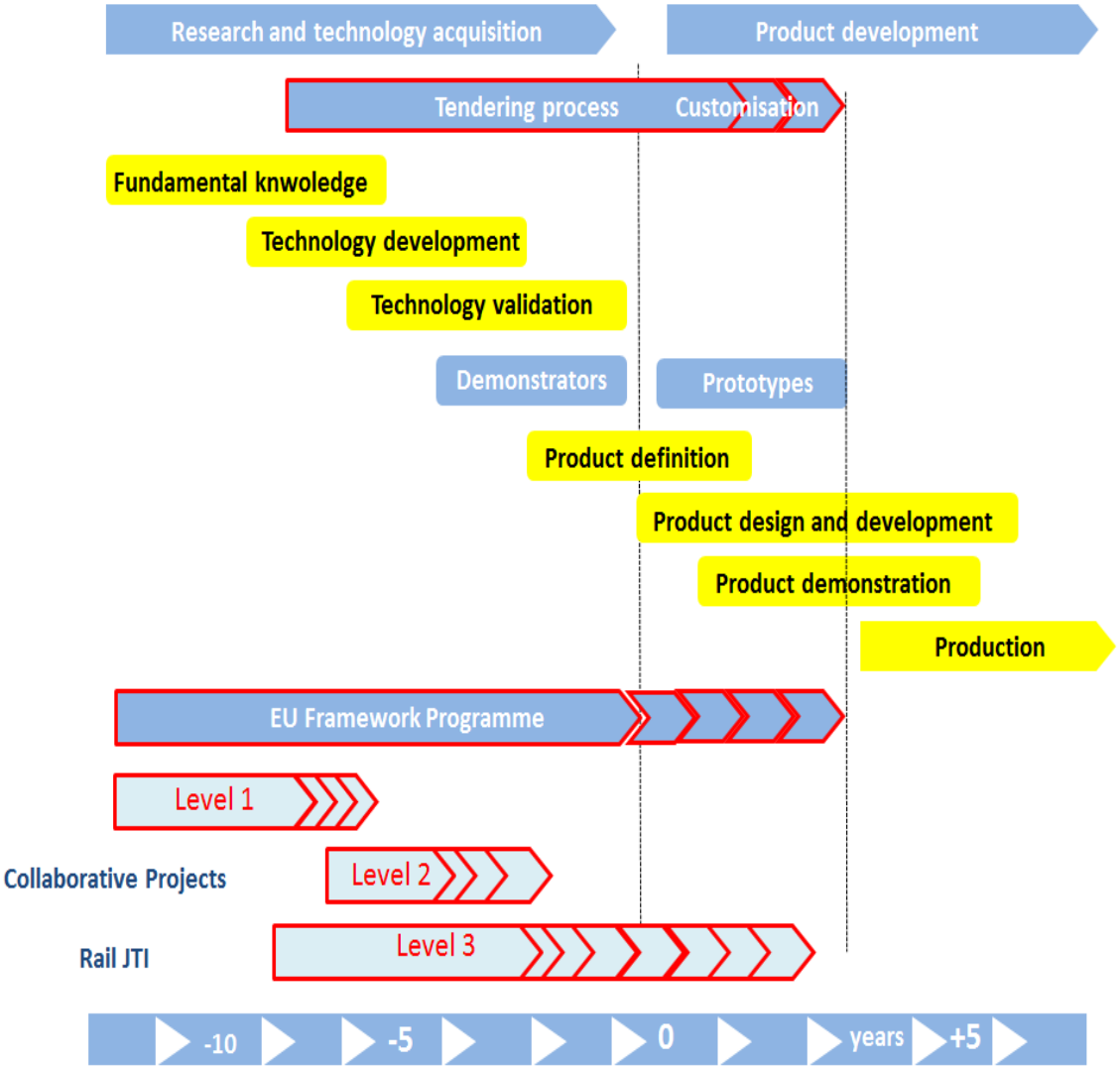
  → New collaborative R&D closer to the market needs is required in Horizon 2020 (from TRL 4 – limits of normal FP7 – to TRL 6/7)

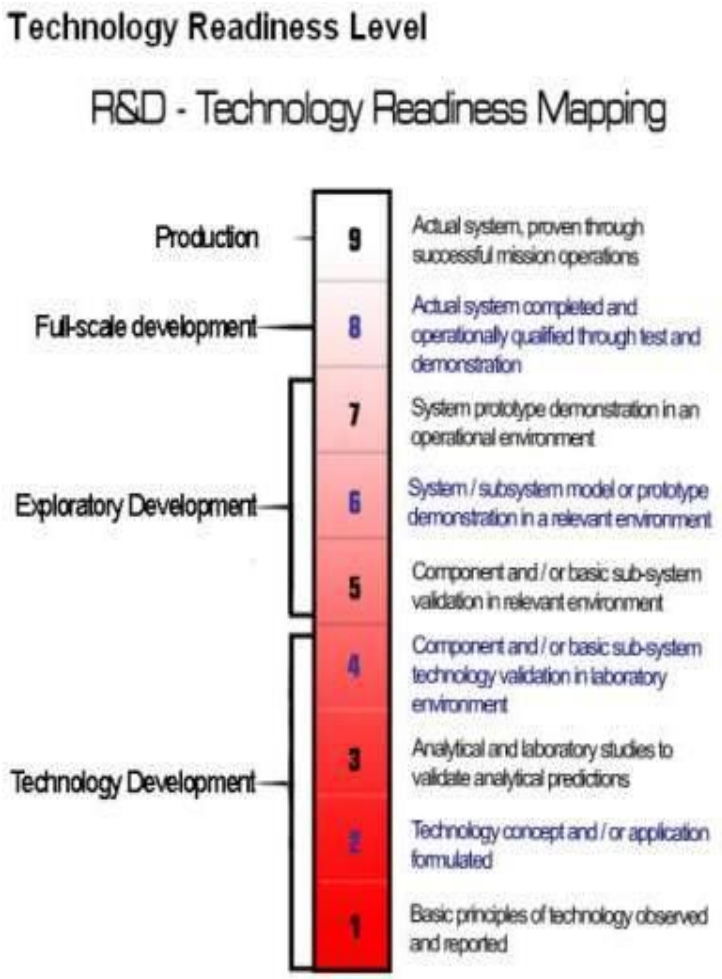
- **After more than 10 years of cooperation in EU R&D, the promoters of this initiative investigated an instrument that could provide a step-change for the European rail system**

- **Challenge:**

  How to allow a faster implementation of innovative technologies into final products on the market?

Getting closer to the market than under the usual EU Research Framework Programmes





Why launching SHIFT²RAIL as a large-scale EU research initiative?

- To keep the European industrial leadership through innovation
- To manage research projects where industry creates the necessary critical mass and commitment for implementation
- To ramp up the R&I investment and to strengthen the confidence of potential investors, due to clarity of funding (*named beneficiaries*), budgeting and time horizons
- To streamline the innovation process from research to demonstration and to shorten the time-to-market for key innovations
- To help fighting against the fragmentation of the industrial R&I efforts and to align the entire industrial supply chain including SMEs, transport research and academic institutions
- To enable greater transfer of knowledge from other sectors
- To capitalise the rail sector's previous success in EU-funded collaborative research projects undertaken since the mid-1990s

The instrument: a Joint Technology Initiative (JTI)

- In the field of Research the Member States can decide, on a proposal from the European Commission, to set up **long-term public-private partnerships** in the form of "Joint Technology Initiatives" (JTIs) = new co-governance system

- Through the creation of legal "Joint Undertakings", these JTIs are a way of implementing ambitious **large-scale applied and industrially-driven research activities** that aim at helping EU industry to retain world leadership.

- There are already **5 existing JTIs** launched in 2008:
  - CleanSky for Aeronautics
  - ARTEMIS for Embedded Computing Systems
  - ENIAC for Nanoelectronics
  - IMI for Innovative Medicines
  - FCH for Fuel Cells and Hydrogen

- **SHIFT²RAIL would therefore be a research instrument managed by a "Joint Undertaking" within Horizon 2020, in association with RU and IM, aiming at effectively addressing the EU Transport societal challenges and at reinforcing the global competitiveness of European rail industries.**

A great ambition for the rail sector: More, Better, Cheaper!

- **3 major challenges**
  - ✓ **CAPACITY** (*to face increasing user demand*)
    Up to 100% increase in capacity
  - ✓ **RELIABILITY** (*to better satisfy the users*)
    Up to 50% increase of reliability
  - ✓ **LIFE CYCLE COSTS** (*for more competitiveness*)
    Up to 50% of reduction of Life Cycle Costs

- **Impacting all segments of the rail market!**




- **Making daily life easier for millions of European passengers and rail freight users!**

SHIFT²RAIL research priorities

IP1: Energy & Mass Efficient Technologies for High Capacity Trains

IP2: Advanced Traffic Management & Control Systems

IP3: Cost Efficient High Capacity Infrastructure

IP4: IT Solutions for a Seamless Attractive Railway

IP5: Technologies for Sustainable & Attractive European Freight

MARKET:

Addresses a € 35.2bn worldwide market for High Speed, Conventional Mainline, Exclusively Freight, Metro and Light Rail Rolling Stock.

CHALLENGE:

Develop the future generation of trains that will be lighter, more energy efficient while being able to reduce today's travelling times, causing less track damage and less impact on the environment, thereby delivering a lower whole life cost.

CONTEXT:

Maintain a competitive European rolling stock supply industry in the worldwide market across rail segments.

MARKET:

Addresses a € 10.9bn worldwide market for Rail Control Systems for Mainline and Urban Transit applications and enhancing the interoperability of the two modes.

CHALLENGE:

Develop a new generation of signalling and control systems, building on current ERTMS, to enable intelligent traffic management with automatically driven trains and optimise capacity, reliability and minimise Life Cycle Costs. This will pave the way for driverless operations of trains made of virtually coupled rail vehicles – defined in IP1 – able to couple and decouple on the move.

CONTEXT:

Maintaining the dominance of ERTMS as a solution for railway signalling and control systems across the world, while extending synergies and interoperability with the urban and mass transit railway sectors and speeding up the time to market.

Innovation Programme 3
COST EFFICIENT HIGH CAPACITY INFRASTRUCTURE

- **MARKET:**

  Addresses the € 27.2bn worldwide market for High Speed, Conventional Mainline, Exclusively Freight, Metro and Light Rail Infrastructure.

- **CHALLENGE:**

  Deliver a new railway infrastructure system (including both infrastructure and energy subsystems) that provides a breakthrough which will radically improve capacity and performance and reduce costs.

- **CONTEXT:**

  Europe has a large and aging rail infrastructure, which results in high expenditure on maintenance. Change will be necessary to achieve the performance required at a reasonable cost, in order to achieve the modal shift to rail

→ We know the interest of Polish authorities on these key topics

MARKET:

Seeks to encourage growth in the 493.7bn Passenger Kilometres registered each year on the EU27 Mainline Passenger and Urban Transit Networks through modal shift and overall growth in mobility.

CHALLENGE:

Realise one of the key goals from the White Paper: **“**By 2020, establish the framework for a European multimodal transport information, management and payment system.”

CONTEXT:

Currently, the pan-European transport landscape is very fragmented, with many tickets in different formats and different payment means. At every stage of the journey cycle, end users can face difficulties caused by disruption or access to information.

MARKET:

Seeks to encourage major growth in the 361.6bn Tonne Kilometres registered within the EU27 Rail Freight sector by competitive modal shift and as well addresses the € 8.7bn worldwide market for Freight Wagons

CHALLENGE:

Define all technological and process breakthroughs necessary to contribute to the realisation of one of the key goals from the White Paper: 30% of road traffic switching to rail and inland waterways by 2030 and 50% by 2050.

CONTEXT:

Currently freight generally takes second place to passenger traffic within Europe.

SHIFT²RAIL added-value

- **Faster implementation** of **innovative technologies** into final products

- **Much closer to the market** than usual EU research instruments:

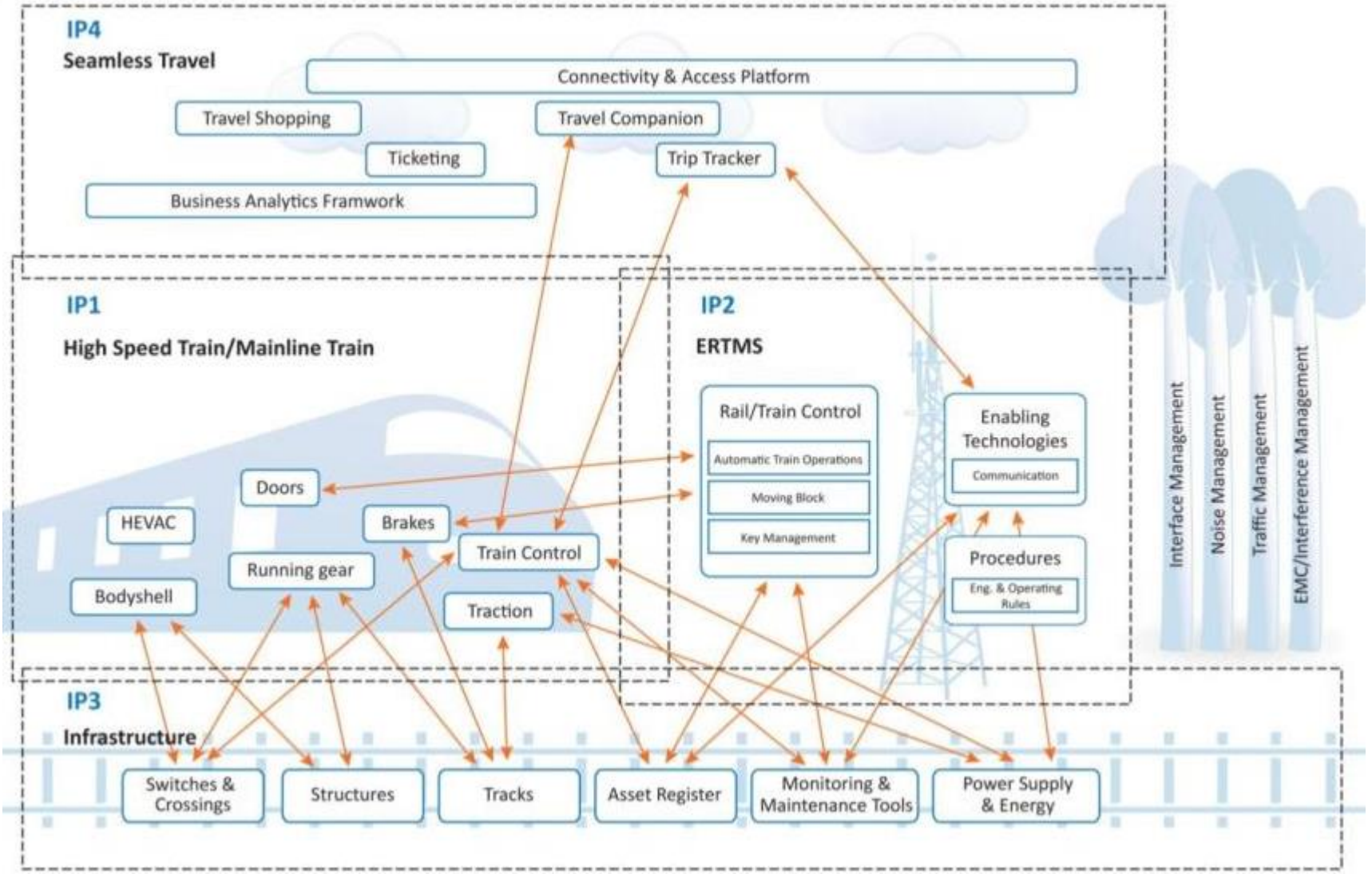
1. Development of **prototypes in labs** (called "technology demonstrators")
   E.g. innovative braking system, doors, tracks, power supply and energy, etc…

2. Validation, integration and **demonstration** in **real** railway **environment**

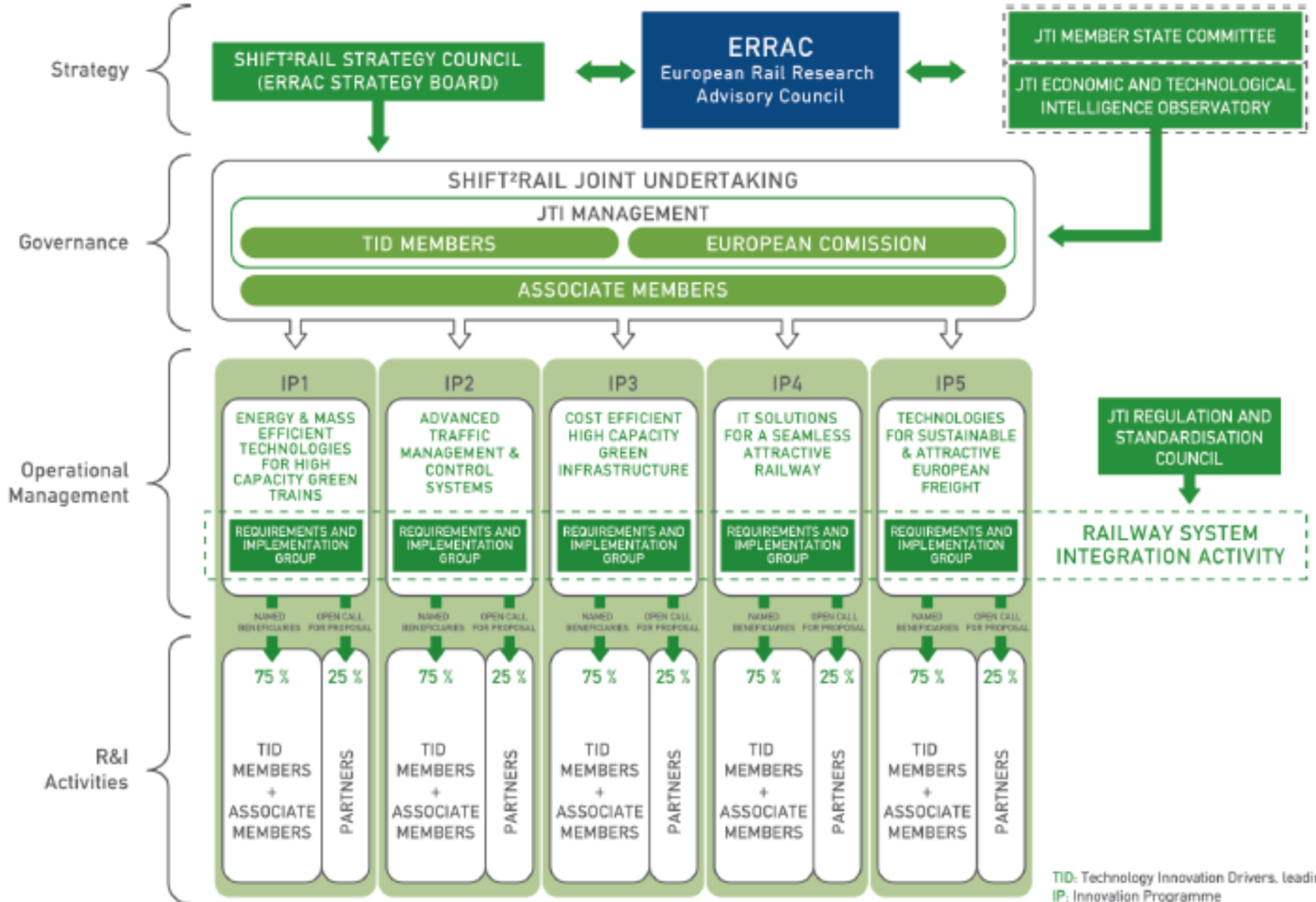
   → through "System Platform Demonstrations" developed for each market segment:

   - High Speed/Mainline
   - Regional
   - Urban/Metro & Suburban
   - Freight

A concrete illustration of the System approach : the High Speed/Mainline Platform

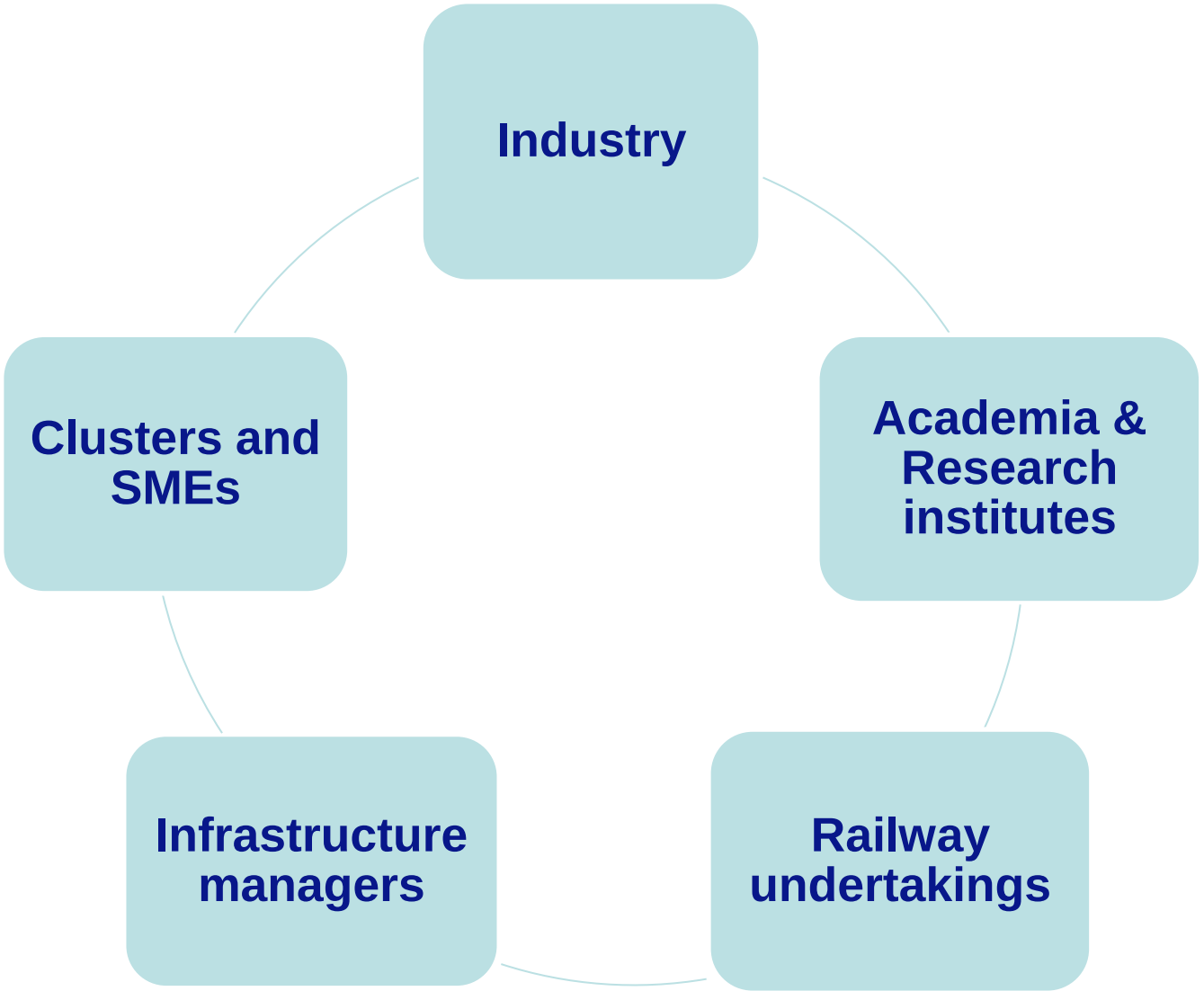


The structure



TID: Technology Innovation Drivers, leading IPs
IP: Innovation Programme

The future beneficiaries



Participation in future R&I activities

Named beneficiaries

- Members which will commit themselves to bring resources (financial resources, human resources and/or technical means) for the full duration of the project
- Depending on their degree of involvement/contribution, these Members will be either:
  - **TID Members** (Technology Innovation Drivers)
  - or **Associate Members**

Open calls for proposals

- A significant part of the total budget will be devoted to open calls for proposals for each IP
- The objective is clearly to trigger the participation of **SMEs** and **Research Institutes** through better-targeted calls

Open calls for tenders

The future ways of participating (2)

Participation in the future governance structure

- **JTI Strategy Council and the key role of ERRAC**
- **JTI advisory committees**
  - Member States Committee
  - JTI Economic and Technological Intelligence Observatory *(Cf. opportunities for the IK Railway Institute)*
- **JTI Management** (SHIFT²RAIL Joint Undertaking)
- **Requirements and Implementation groups** (through ERRAC)

  → Specification of needs by European Railway Undertakings and Infrastructure Managers

  → PKP is invited to the launch of these groups on 23 April

Focus on the key role Clusters, SMEs and Research Institutes will play

- The Innovation Programmes will provide **a platform for SMEs and research institutes** to bring their products to the market and put their expertise at work.
- The critical mass and the long-term commitment of the JU members will **trigger the participation of a greater number of SMEs** – especially the most innovative – and **research institutes** in EU rail research.
- The benefits of this mechanism on SMEs and Research Institutes have already been demonstrated in existing JTIs (Cf. CleanSky)
- A substantial part of the **JTI budget (at least 25%) will be allocated to that scope** and managed through open calls for proposals.
- The ones wishing to contribute to SHIFT²RAIL technological innovations will be able to respond individually, or in partnerships, to such JTI specialised calls, **becoming JTI partners.**
- Memorandum of Understanding signed in December 2012 between the IK Railway Institute, SIRTS and UNIFE to highlight the importance of the participation of Polish SMEs and research institutes
- Ongoing exchanges with EURNEX and European Clusters of SMEs including the Southern Railway Cluster in Poland (Południowy Klaster Kolejowy)

SHIFT²RAIL's preparation phase: the promoters

- **Already 15 major rail stakeholders** including Infrastructure Managers (Network Rail & Trafikverket) committed to provide significant resources on the long-term

- Many UNIFE members have **subsidiaries in Poland** which can be involved in the JTI.

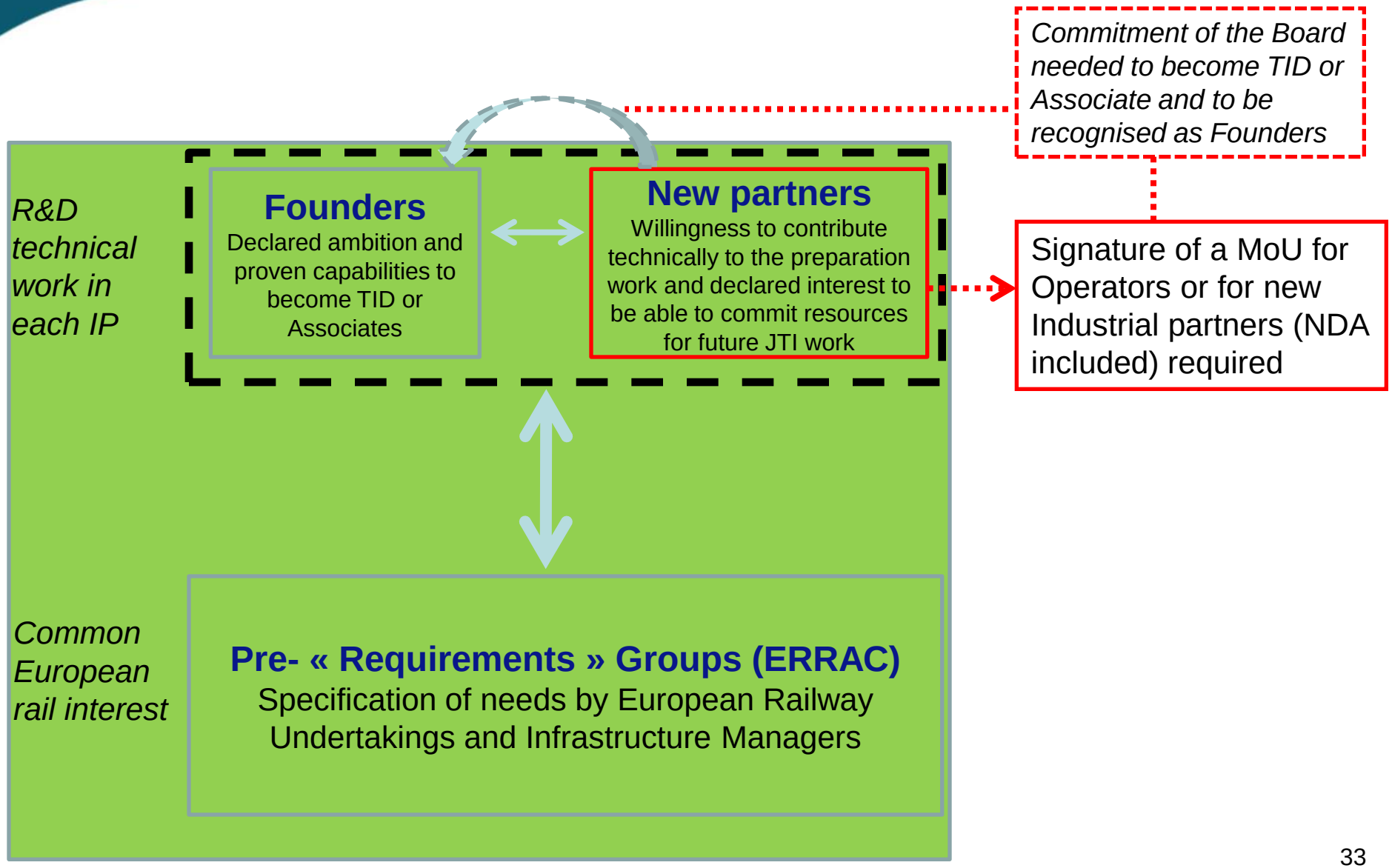
- **Additional stakeholders are joining!**

→ Infrastructure Managers (ADIF will join soon), leading Railway Undertakings and industrial partners!

→ Polish companies are invited to join the JTI

→ PKP involvement would be important for the project

Potential involvement of other interested partners in this preparation phase



SHIFT²RAIL: The decision-making process at EU level

- **Stage 1**
  → The European Commission accepts to launch an Assessment phase to prepare its official legislative proposal

- **Stage 2**
  → The European Commission publishes an official "Proposal for a Council Regulation setting up the Shift²Rail Joint Undertaking"

- **Stage 3**
  → The European Parliament gives an Opinion in the framework of the Consultation procedure

- **Stage 4**
  → The Competitiveness Council of the EU (Research Ministers) officially gives its approval

SHIFT²RAIL: Time to convince the European Commission!

- **Official proposal** submitted to the European Commission **in July 2012** & **Addendum** sent in **January 2013**

- Continuous work to improve the proposal – with the precious input of new promoters – but the **consortium is ready to establish the Joint Undertaking and start operations as soon as 2014!**

- **Need to convince the European Commission to put money aside in Horizon 2020 and launch after the summer the work to set up the Joint Undertaking**

No time to lose: Why we need to mobilise to convince the European Commission NOW!

- **Unique momentum NOW where European rail manufacturers, despite being fierce competitors, are readier and more committed than ever to work together and share knowledge and skills**

- **European rail industry's world leadership has already started eroding!**

- **What will remain then from the EU Transport Research budget since other sectors are massively mobilised today to secure dedicated instruments? (Clean Sky, Green Cars)**

- **New College of Commissioners and new Members of European Parliament already in 2014**
  → Our JTI has to be approved before the end of the term of this Commission

The crucial support of Polish Authorities

- We thank the **Polish Government** for its important support to SHIFT²RAIL
  - Strong support of Deputy State Secretary MASSEL
  - Deputy State Secretary JANKOWSKI officially expressed the support of Poland to the initiative at the last Transport EU Council (11 March)

- We thank Member of the European Parliament **Bogusław LIBERADZKI** (Member of the Transport Committee) for his strong support

- The **active support of important Polish Officials within the European Institutions** would also be key to make SHIFT²RAIL succeed
  - Mr Janusz LEWANDOWSKI, EU Commissioner for Financial Programming and Budget
  - Polish Members of the Research and Transport Committees of the European Parliament (Adam GIEREK, Lena KOLARSKA-BOBIŃSKA, Bogdan Kazimierz MARCINKIEWICZ, Artur ZASADA)

Thank you for your active support