WP6 – Brussels Event

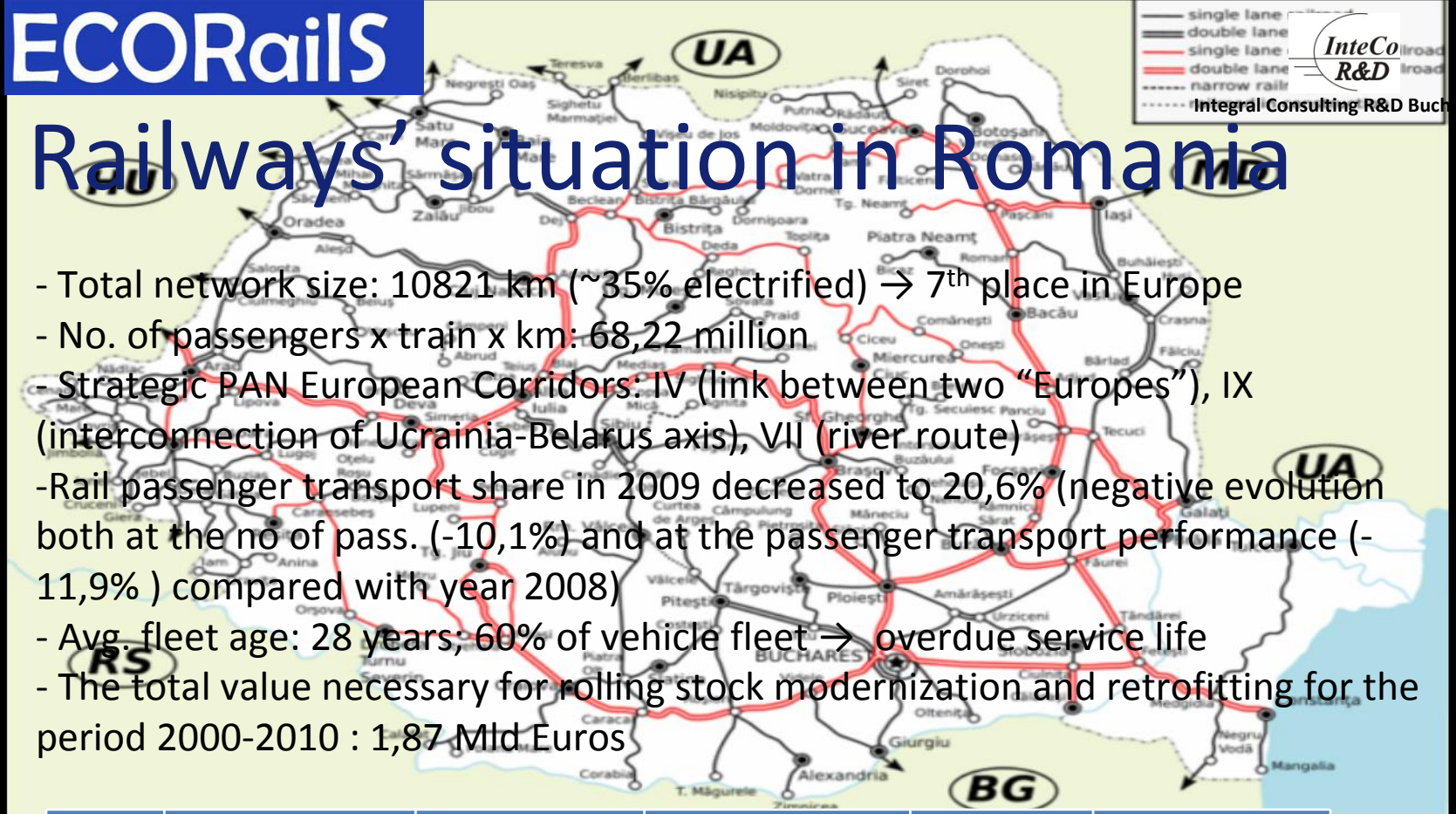
WP4 "Pilot applications"

Objectives, activities and first results at Timisoara site

INTEGRAL CONSULTING R&D
BUCHAREST

RTFC TIMISOARA

Railways' situation in Romania



- Total network size: 10821 km (~35% electrified) → 7th place in Europe
- No. of passengers x train x km: 68,22 million
- Strategic PAN European Corridors: IV (link between two "Europes"), IX (interconnection of Ucrainia-Belarus axis), VII (river route)
-Rail passenger transport share in 2009 decreased to 20,6% (negative evolution both at the no of pass. (-10,1%) and at the passenger transport performance (-11,9%) compared with year 2008)
- Avg. fleet age: 28 years; 60% of vehicle fleet → overdue service life
- The total value necessary for rolling stock modernization and retrofitting for the period 2000-2010 : 1,87 Mld Euros

2006 data	State spending per transport units	State spending per track.km	Growth of traffic units (2006 vs 2005)	State spending	Traffic Units
Units	in €	in €	(in%) based on p*km+t*km	(million €)	in billion p*km+t*km
Figures	0.00 €	147 €	-3%	3	23.9

Where are we heading?

Rail growth 2002-2007
Passenger: -12%
Freight: +4%

Rail Modal Share 2007
Passenger: -23%
Freight: -45%

% New Entrants 2007
Passenger: 1%
Freight: 34%

Financing 2002-2006
RO: 0.03k€/track-km/yr
EU25: 116k €/track-km/yr

Access Charges (Pass) 2007
RO: 4,49€/train-km
EU25: 2.09 €/train-km

Market opening for freight effectively started in 2004

Lowest investment level in infrastructure in Europe

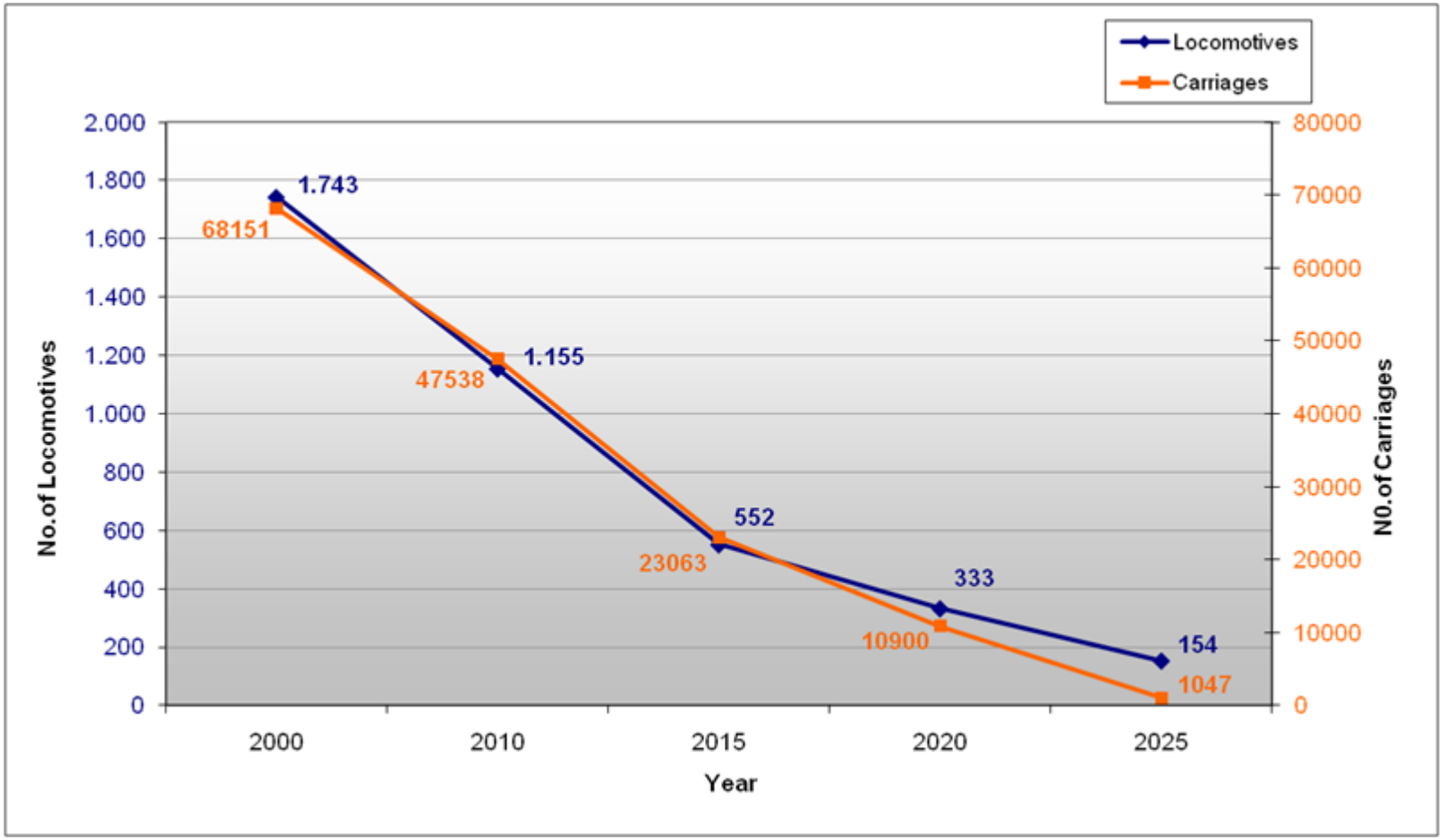
Access charges **above** EU average and **going up**!

With **high access charges** and **no financing for rail**, market opening was counterproductive, driving block train prices down and undermining the already limited ability of the rail system to finance itself. **Rail modal shares collapsed**!

Source: "Situation of Romanian Railways" by Dr. Johannes Ludwig (Executive Director of CER) from 24th of February 2010, at the meeting with the Romanian Ministry of Transport

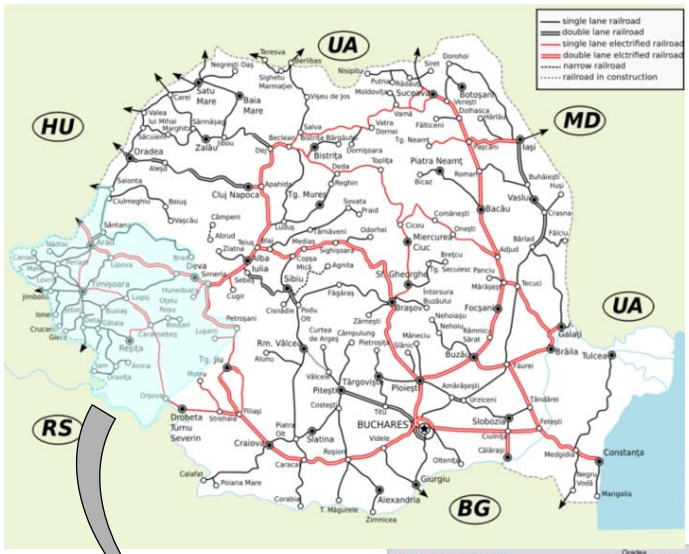
Actions needed!!!

The evolution of SNTF CFR' rolling stock fleet



Source: Romanian railway system development strategy for the period 2001-2010 approved through Government Order no. 1003/04.10.2001

General presentation of Timisoara region



This particular region was selected because:

- it contains some of the *most important Romanian cities* (Timisoara, Arad, Oradea, Deva)
- it includes one of the *most important national and international transport routes* (to Hungary, Serbia)
- it's connected to the *fourth Pan-European Corridor*, Berlin/ Nuremberg – Praga – Viena – Bratislava – Gyor – Budapesta – Arad – Bucharest – Constanta/Craiova- Sofia – Thessaloniki – Istanbul, divided in Romania in two ramifications:
  - Arad – Simeria – Braşov – Bucureşti – Constanța

    &

  - Arad – Timişoara – Craiova – Calafat / Vidin – Sofia – Thessaloniki

Technical and economical framework in Timisoara region

- Economic framework:
  - The public passenger transport services are operated by RTFC Tm (>90%), and also by other private transport operators (5)
  - No use of Energy Efficiency (EE)/Environmental (Env) criteria in current contracts
  - The current Public Service Contract specifies only the minimum compulsory conditions with regard to speed, comfort on board and traffic safety
  - RTFC Tm receives subventions equal to the difference between the income obtained by applying the tariffs set in accordance with the opinion of competent authorities and the real costs of transport quantified per train km.
- Technical framework:
  - Network size: 3153 km out of which 1369 km are electrified (~35%)
  - 69% of train km - electric, 31% of train km – diesel
  - 75% of passenger km – electric, 25% of passenger km –diesel
  - Fleet: - 223 locomotives (electric, diesel electric, diesel hydraulic) + railcars+ electric multiple units
    - 391 train wagons

Objective of Timisoara Pilot Application

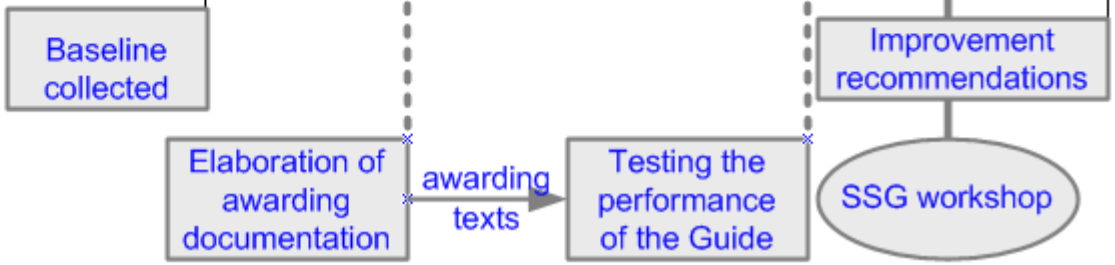
- Elaboration of an awarding documentation with the inclusion of EE and Env criteria with the view to procuring:
  - 10 DMU
  - 10 EMU

  → *This was considered as the minimum level of acquisitions needed in order to continue and to improve the rail passenger transportation*

- Testing the performance of the Guidelines and of the ECORailS project

Work flow of the pilot application

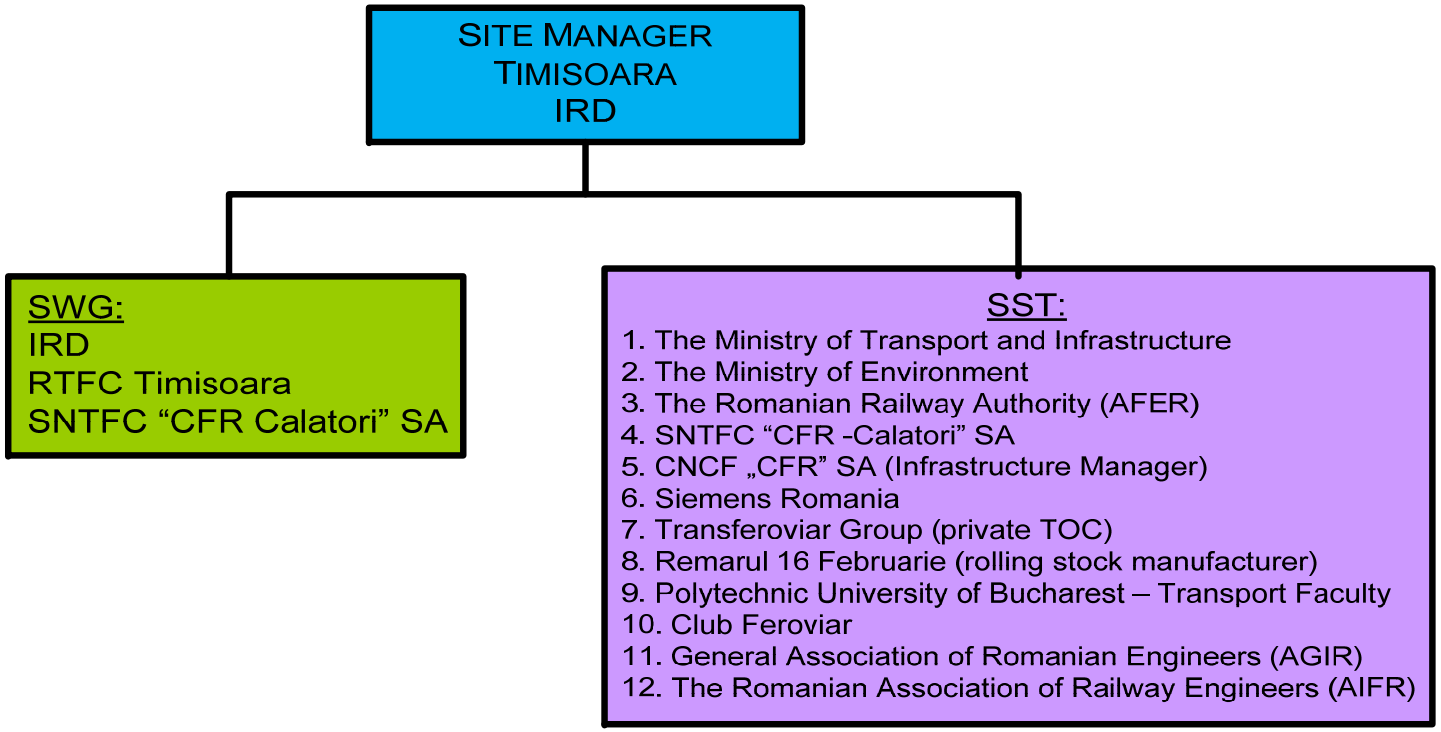
Step	Activity \ Timeframe	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Febr
I	Test site preparation	■	■									
II	Definition of scenarios			■	■							
III	Execution of tests					■	■	■	■			
IV	Analysis of results									■	■	■



Step 1 – Preparation of pilot application
Activities realized

1. Organization:
   - Establishment of Site Working Group (SWG) & Site Stakeholder Group (SSG)
   - Foreseen site workshop → "*execution of the tests* and *analysis of results*"
2. Definition of pilot in terms of:
   - Object of the awarding
   - Scope of the test (area, lines, kind of vehicles, traction, etc.)
   - Kind of procedure (competitive tendering) and legal documents (call and tender specifications)
3. Collection of information (baseline):
   - the technical characteristics of vehicles (traction and haulage) and of their equipment
   - infrastructure characteristics (length, profile, distance between stops, restrictions, etc.)
   - mode and conditions for operation and maintenance (vehicles, infrastructure, driving style, etc.)
   - transport service conditions (number of trains, train forming, frequency, number of passengers, costs (fuel, energy, labor), infrastructure, competition conditions, legislation, norms, etc.)
   - current values with regard to noise and emissions

Step 1
Stakeholder involvement



Step 1 - Main Results

Baseline collected

- Operated rolling stock:
  - Diesel line: Timisoara – Jimbolia, length: 39 km, maximum speed: 80 km/h, operated by 13 double decked slow trains (diesel locomotives and railcars)
  - Electrified line: Timisoara - Caransebes, length: 98 km, maximum speed: 120km/h, operated by:
    - 6 pairs of slow trains (a pair of double decked - modernized) – formed by EA and EC locomotives and different carriages series
    - 2 pairs of fast trains – one EMU
- Traffic on the two test lines: no. of runs/day, no. of passengers/train, average train occupancy level
- Running characteristics: maximum and average speed, speed restrictions, no. of stops, duration and running schedule
- Average energy/diesel consumption per train (energy/fuel meters)
- Average level of exhaust emissions per train (CORINAIR software)
- Noise emission levels for each train type
- Performance Indicators concerning:
  - energy/diesel consumption / tkm (KPI1)
  - energy/diesel consumption / seat km (KPI2)
  - energy/diesel consumption / passenger km (KPI4)
  - exhaust diesel emissions (g) / passenger km

Base for 10% comparison

Step 2 - Detailed design of the test site content (I)

Activity I: Elaboration of the Technical Specifications for the awarding documentation

- Identify the technologies which may be included (required / indicated) in the Specifications in keeping with the objectives of Timişoara test
- Adopt the Guidelines indicators, tools and procedures (criteria, indicators, application methodology etc.)
- Determine the awarding modality and requirements in keeping with the following basic principles:
  - ✓ The indicator values should be in keeping with the legal and technical provisions referring to the modality of defining and testing
  - ✓ Offers should be submitted in a standardized format (as stipulated in the award documentation), so that they can be compared, evaluated and checked
  - ✓ The Specifications shall indicate the modality and the form the tenderer should submit LCC in operation
  - ✓ The Specifications shall indicate the modality of checking and measuring / evaluating the indicators values.

Step 2 - Detailed design of the test site content (II)

Activity II: Elaboration of the award documentation

- Determine the offers' evaluation methodology, so that the final results of the simulated award may lead to ECORailS criteria promotion
- Draft the contract conditions which should assign the liabilities and responsibilities between the Supplier and the rolling stock user (TOCs – PTAs)
- Check the compliance of the legal regulations specified in WP3, as well as of other national and EU regulations
- Elaboration of the complete awarding documentation

Step 2 – First Results & Future actions

- First results:
  - ✓ Awarding documentation that would be used at present time for the awarding of 10 DMU and 10 EMU (without the inclusion of EE/Env criteria) - base for the 5% comparison
- Future actions:
  - ✓ Draw up of awarding documentation with the inclusion of the new ECORailS criteria & requirements

Step 3 – Execution of tests (I)

Award simulation

- Simulate the award procedure by drawing up offers, respectively by providing various presumptive answers referring to each of the indicators and new requirements in the award documentation. They will be based on the *good practice examples* and on other possible examples known from various award procedures and from the specialized literature

Step 3 – Execution of tests (IV)

Estimation of EE

LCC Calculation / Estimation

- According to the provisions of Annex I, Guidelines, UIC 345, RailEnergy, Prosper, etc.
- Reference standard: CEI/EN 60300-3-3:2005 (Part 3-3: Application guide - Life cycle costing)
  - LCC calculation method through analogy: past experience → effects of advanced technologies (4.5.3.3)
  - Different cost categories (kWh, fuel, manual labor) → costs (4.5.3.4)
  - LCC model – developed according to the subject under study (4.5.1)
  - System level LCC estimation = LCC estimation for each sub-component (4.5.2)
    - This method → quantification of effects/solution → comparison with necessary investment → demonstration of efficiency and EE

Step 4 – Analysis of results

- Evaluation of Guide's manageability through:
  - the activities carried out within WP4
  - consultations with other users as well (TOCs, PTAs, stakeholders)
  - recommendations referring to improvements / completions to the Guidelines
- Supply of WP4 Outputs (correlated and / or in collaboration with the other test areas and with the WP4 coordinator)
- Test report for Timişoara area and recommendations / standpoints referring to ECORailS applicability in further areas
- Collaboration with the other test areas for the final Report of WP4 (D14) and for recommendations
- Fill in of questionnaires and cooperation for the evaluation from WP5

Overall WP4 Outputs

- 4 presentations of the test results at international dissemination events (e.g. UIC, CER, UITP energy efficiency conferences)
- 4 Awarding texts serving as examples for energy efficiency and sustainable awarding in Europe
- *1 Workshop with the administrations on the methodology of the pilot applications*
- 1 workshop with the administrations on the common and site-related goals of the pilot application
- 1 User Platform workshop on the results of the pilot applications (administration level)

Conclusions

- The tests have to confirm the possibility of elaborating an awarding documentation with the ECORailS principles – based on the Guide
- Through the tests we want to convince the PTAs/TOCs that using the new procedure is necessary and useful →benefits in costs, EE & Env
- We intend to convince the suppliers of performance rolling stock with innovative technologies that using the new criteria will be in their advantage, since the awarding criteria "the lowest price" will be less and less used
- The ECORailS project needs the support of:
  - PTAs – in order to support the introduction of the new awarding procedure
  - Suppliers – in order to deliver examples of technologies/procedures that generate reductions of costs, energy & emissions, and in order to cooperate for clarifying/optimizing the elaboration of requirements
  - European Decision Makers – support in order to improve the energy and environmental performance of regional railways

Thank you for your attention!

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