Capacity for Rail

Towards an affordable, resilient, innovative and high-capacity European Railway System for 2030/2050

Sites for migration

Submission date: 19/06/2015

Deliverable 53.1

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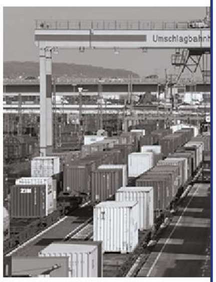

Collaborative project SCP3-GA-2013-60560
Increased Capacity 4 Rail networks through enhanced infrastructure and optimised operations
FP7-SST-2013-RTD-1

Lead contractor for this deliverable:

- IK

Project coordinator

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Executive Summary

This Deliverable presents the results of work done in Task 5.3.1. of the Capacity4Rail European Project. This document presents the objectives of the work which has been performed and also gives conclusions on how to choose real sites or corridors for presenting migration to the new railway system – infrastructure and operation, which is adaptable, automated, resilient and high-capacity.

The steps for migration to the future system have been considered in close relation to the European Strategy for transport “Roadmap to a single Transport Area – towards a competitive and resource efficient transport system”. The first step foreseen in the project is a presentation of corridors and sights around whole Europe, which can be chosen for testing solutions for the future railway system in Europe.

Different corridors and important points of the European Railway network are presented in this document. Some corridors overlap, which provides more information on how a particular region of Europe is expected to develop in the future.

This document is an introduction to the process of migration to the future railway system in Europe.

Table of contents

Abbreviations and acronyms

Abbreviation / Accronym	Description
AGC	EUROPEAN AGREEMENT ON MAIN INTERNATIONAL RAILWAY LINES
AGTC	EUROPEAN AGREEMENT ON IMPORTANT INTERNATIONAL COMBINED TRANSPORT LINES AND RELATED INSTALLATIONS
ETCS	European Train Control System
ERTMS	European Railway Traffic Management System
GSM-R	Global System for Mobile Communications - Railway
UIC	International Union of Railways

1. Background

The work done in Task 5.3.1 has been performed in order to locate real sites, test tracks and corridors in Europe for the preparation of the migration to the future rail system assessment. The sites and corridors have been looked at from the point of view of the Railway System as a whole as well as particular points in the national systems which may influence only parts of the European network. At the same time corridors developed under various European Projects have been looked at in order to find the key features of the corridors necessary to determine the migration of newly developed railway solutions to the future rail system.

For each of the real sites and corridors the following details have been analysed in order to describe them:

- location (country/countries and regions),
- local conditions (climate, natural environment, etc.),
- site characteristics,
- infrastructure,
- operations,
- capacity,
- hazards and safety issues,
- boundaries.

After analysis real sites and corridors have been chosen in order to give basis for validation and assessment in other Tasks of this FP7 Project.

The scope of the work has been determined by the European Strategy (White Paper 2011) for transport called "Roadmap to a single Transport Area – towards a competitive and resource efficient transport system". The presented corridors often overlap, which provides more detailed description of the problems and needs for further development of particular regions of Europe. The presented corridors have been presented in the European Union Legislation.

2. Objectives

The objectives of this deliverables are to determine real sites/corridors in order to prepare the assessment of migration to the future rail system. The chosen sites/corridors will be described in available detail. Due to the vast amount of information regarding each of the sites some information has been presented for a whole group of sites or corridors. This has been especially presented for the corridors developed under the EU Directives.

After the preliminary information gathering an analysis of the sites and corridors has been made. The description of the selection process is shown in a separate chapter of this deliverable. The selected sites/corridors will give basis for validation and assessment in Task 5.3.3 and some demonstrations in WP5.5.

The migration of the current railways to the new railway system of the future is a costly and necessary process to support an environmental friendly transport system for the future generations. The migration will take place over the next 45 years and some technologies and developments are not able to be foreseen, thus the strategy should be to implement the innovative measures on existing corridors and locations supporting the corridors, like ports marshalling yards, etc.

The objective of this deliverable was to present he whole current railway system as a network of railway corridors and supporting points (real sites), from which the other WP's of the Capacity4Rail EU Project could choose the most comprehensive information of locations for future visualisation of the migration to the new system.

3. Corridors from the European Directives

The European Union requires in it's documents interoperable systems across it's boundaries. The EU Directives describe the requirements to be fulfilled for different aspects, including railways, and implemented through national legislation. All of the EU documents require interoperable systems and components making it easier for all EU countries and companies to use the European wide network. For the railway systems several Directives have been developed and revised, some of which describe EU Railway Corridors and basic requirements for those corridors.

3.1 ERTMS Corridors

The ERTMS Corridors have been set in place by the European Decision 2006/679/EC and changed by the 2009/561/EC Decision. The legal document is the Technical Standard for Interoperability of the Railway System. It ensures an interrupted flow of passengers and cargo on the railway network, in this case a common European Traffic Management System for the Railways – ERTMS. The Document describes in Annex I sex corridors which should be equipped with the SERTMS system. The Corridors are given letters. Depending on the description in the document the lines should be equipped with the ERTMS by 2015 or 2020.

Corridor A – Rotterdam – Genova.

Corridor B – Stockholm – Napoli

Corridor C – Antwerpen – Sibellin/Amberieu en Bugey/Swiss Border (Basil)

Corridor D – Budapest – Valencia

Corridor E – Dresden – Constanta

Corridor F – Aachen – Terespol

Additionally to the ERTMS Corridors the Appendix II to the EC Decision places the main European ports, marshalling yards, freight terminals and freight transport areas which support the corridors.

The ERTMS/ETCS system is to ensure the automation of railway processes related to traffic and train control. The system should manage the train driver, grantee control command interoperability, increase safety and also increase the railway network capacity and reliability. The ERTMS/GSM-R system is to ensure communications for trains, marshalling and as a means for the ETCS transmission.

The requirements for the ERTMS system are not part of this document.

3.2 TEN-T Corridors

The TEN-T Core network has been developed by the European Commission in order to help the flow of passenger and cargo traffic across the EU countries. The EC supports, also financially, the developments made on this core network. In many cases the Core network is a subject of many EU funded projects to increase capacity, traffic flow and reduce bottlenecks and other constraints to the network. The Core TENT corridors are aligned North – South and East – West, like most European corridors.

Comprehensive – additional in case of emergency

The TEN-T Core network Corridors (colours for identification on maps):

- Baltic – Adriatic (dark blue)
- North Sea – Baltic (red)
- Mediterranean (green)
- Orient – East Med (brown)
- Scandinavian – Mediterranean (pink)
- Rhine – Alpine (orange)
- Atlantic (yellow)
- North Sea – Mediterranean (purple)
- Rhine – Danube (light blue)

The core TEN-T network has been described in the European guidelines, issued in the Regulation (EU) No 1315/2013 & 1316/2013.

Each of the mentioned above corridor is crucial to a particular region of Europe and it's Economy. Crossing many borders and climates the idea of the corridors is to make sure the railway network on the continent is effective and efficient.

For the Capacity4Rail Project it is suggested to choose corridors from the TEN-T network, which are under the management of the Project Partners, such as DeutcheBahn, Trafikverket, Network Rail or ADIF.

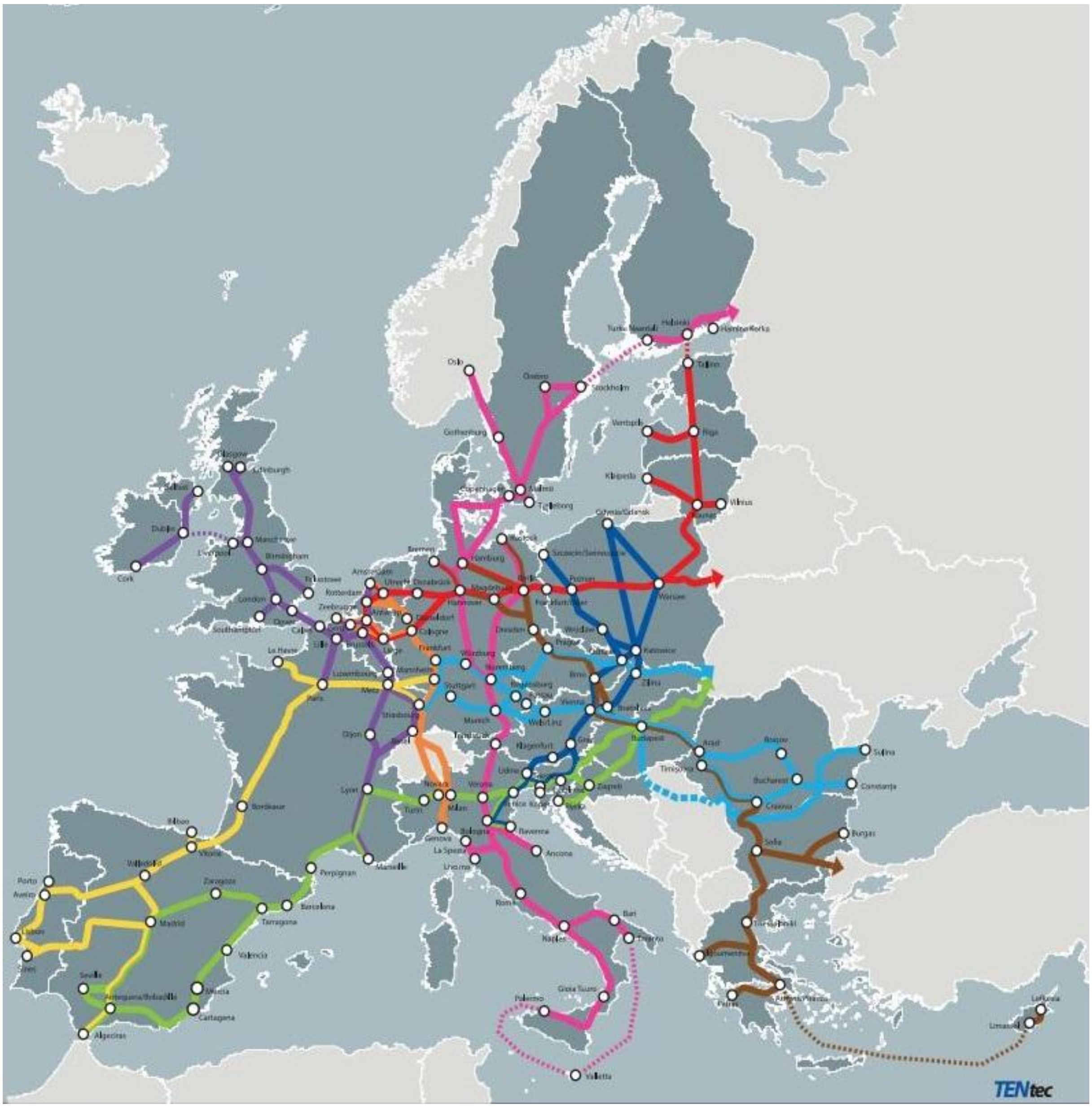

Fig.1 TEN-T corridor network from

ec.europa.eu/transport/infrastructure/tantec/tantec-portal/site/en/maps.html

4. AGC and AGTC railway lines

The two European Railway Agreements AGC and AGTC determine railway lines which are most important for the rail network in Europe, both for passenger and cargo traffic. They have been chosen in order to allow interoperable movement of passengers and loads between countries in Europe. Because of the structure of the Agreement particular railway lines with their national numbers have not been described in the documents. Only major cities along the lines have been presented. This approach allows to prepare a corridor of supplementing railway lines which together create a railway corridor. The details of the AGC and AGTC Agreements have been described in the following sub-chapters.

4.1 AGC Agreement

The AGC Agreement has been officially signed on 31 May 1985 in Geneva. The AGC Railway network consists of a system of railway lines – main lines and supplementary lines, described with the letter "E" in front of each line. These lines already carry very heavy international traffic and are expected to carry even more heavy traffic in the future. The basic requirements of the lines have been described in the document.

The numbering system of the rail lines gives the basis for their location and characteristics, i.e. the principle lines have a two-digit number while supplementary lines have a three-digit number. The orientation of the lines can also be determined in the number, i.e. North-South oriented lines have odd numbers while West-East oriented lines have even numbers.

The lines have been divided in the following categories:

- Numbering at the European level North-South and West-East
- Numbering of lines at the national level

The network comprises of 42 national networks of lines, including all former Russian and Yugoslavian countries. A single railway line ("E number" line) can run through several countries thus can be also called an international railway corridor.

In order to reach an interoperable European network the technical characteristics of these railway lines has been described in the document. The characteristics have been divided into two groups – existing lines and new lines to be built. This division allows technical progress to be made and also gives the basis for renewal and modernisation of the railway AGC system. Some of the Parameters have been based on the requirements of the UIC Leaflets.

The basic parameters are:

a) Number of Tracks
b) Vehicle loading gauge
c) Minimum distance between track centres
d) Nominal minimum speed
e) Authorized mass per axle

   a. Locomotives (≤200 km/h)
   b. Rail cars and rail motor sets (≤300 km/h)
   c. Carriages
   d. Wagons ≤ 100 km/h, 120 km/h, 140 km/h

f) Authorized mass per linear metre
g) Test train (bridge design)
h) Maximum gradient
i) Minimum platform length in principal stations
j) Minimum useful siding length
k) Level crossings

4.2 AGTC Agreement

The AGTC Agreement has been officially signed on 1 February 1991. The AGTC Agreement has incorporated combined – intermodal transport. The basis for the document was movement of goods in one and the same transport unit using more than one mode.

Similarly to the AGC Agreement the AGTC documents gives technical requirements for the combined transport lines, their numbering on the identical to AGC format but starting with the letters "C-E", set in 44 national networks, not exclusive to Europe.

The AGTC network includes installations important for the international combined transport such as:

- Terminals of importance for international combined transport
- Border crossing points of importance for international combined transport
- Gauge interchange stations of importance for international combined transport
- Ferry links/ports forming part of the international combined transport network

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d) Nominal minimum speed
e) Authorized mass per axle
   a. Wagons ≤ 100 km/h,
   b. Wagons ≤ 120 km/h
f) Maximum gradient
g) Minimum useful siding length

4.3 Revision of the AGC Agreement

In 2000 a revision of the AGC Agreement has been made. In addition to the basic railway line network Marshalling Yards have been added to the structure of the system. Each country has presented the most important Marshalling Yards to the European network. The yards are presented in country alphabetical order as follows:

AUSTRIA

- Wien
- Linz
- Wels
- Salzburg
- Hall im Tirol (Innsbruck)
- Villach
- Graz

BELARUS

- Brest-Eastern
- Baranovichi-Central
- Minsk-Marshalling
- Orsha

BELGIUM

- Antwerpen Noord
- Merelbeke (Gent)
- Kinkempois (Liège)
- Monceau

BOSNIA AND HERZEGOVINA

- Doboj

BULGARIA

- Sofia
- Dimitrovgrad
- Ruse
- Gornja Orjahovitza

CROATIA

- Zagreb-Ranzirni Kolodvor

CZECH REPUBLIC

- Breclav

- Ceská Trebová
- Decin
- Nymburk
- Praha Liben

DENMARK

- Padborg
- Copenhagen (goods terminal)

FINLAND

There are no marshalling yards on the AGC Network in Finland.

FRANCE

- Lille Délivrance
- Somain
- Sotteville
- Woippy
- Paris (Le Bourget, Achères, Villeneuve)
- Hausbergen
- Mulhouse
- Gevrey
- St-Pierre-des-corps
- Sibelin
- Hourcade
- St Jory
- Miramas

GERMANY

- Maschen (near Hamburg)
- Bremen
- Rostock Seehafen
- Seddin (near Berlin)
- Seelze (near Hanover)
- Hagen-Vorhalle
- Engelsdorf (near Leipzig)
- Dresden-Friedrichstadt
- Gremberg (near Cologne)
- Bebra
- Nürnberg
- München Nord
- Kornwestheim (near Stuttgart)
- Mannheim

GREECE

- Thessaloniki
- Athinai

HUNGARY

- Budapest-Ferencváros
- Szolnok

IRELAND

There is no marshalling yard for international railway traffic in Ireland.

ITALY

With a hump in a gravity yard	Without a hump in a gravity yard
	1. Domodossila Domo 2
2. Torino Orbassano	
3. Alessandria	
	4. Ventimiglia Parco Roja
5. Milano Smistamento	
	6. Pontebba
7. Venezia Mestre	
	8. Trieste C.M.
9. Bologna San Donato	
10. Roma Smistamento	
11. Macianise	
	12. Bari Lamasinata
	13. Villa S. Giovanni
	14. Messina Contessa

LUXEMBOURG

- Bettembourg-Dudelange

NETHERLANDS

- Rotterdam-Kijfhoek

NORWAY

There is no major marshalling yard for the international railway traffic in Norway.

POLAND

- Szczecin Port Centralny
- Wroclaw Brochów
- Warszawa Praga
- Poznan Franowo
- Tarnowskie Góry

PORTUGAL

- Entroncamento
- Lisboa-Beirolas

REPUBLIC OF MOLDOVA

For the time being there is no marshalling yard on the network of railways belonging to the AGC.

ROMANIA

- Bucuresti
- Curtici
- Constanta
- Craiova
- Arad
- Ronat (Timisoara)

RUSSIAN FEDERATION

- St. Petersburg-Sortirovonchny Moskovsky
- Khovrino
- Bekasovo

SLOVAKIA

- Zilina
- Kosice
- Cierna nad Tisou
- Bratislava
- Stúrovo
- Komárno

SLOVENIA

- Ljubljana Zalog

SPAIN

- Barcelona Can Tunis
- Zaragoza la Almozara
- Miranda
- León
- Vicálvaro
- Valencia Fuente San Luis
- Córdoba (mercancías)
- Tarragona

SWEDEN

There is no marshalling yard for international railway traffic in Sweden.

SWITZERLAND

- Basel SBB
- Buchs SG
- Chiasso
- Genève
- Limmattal (Zürich)
- Lausanne

THE FORMER YUGOSLAV REPUBLIC OF MACEDONIA

- Trubarevo

TURKEY

- Eskisehir
- Malatya
- UKRAINE
- Batevo
- Darnitsa
- Razdelnaya
- Kazatin

UNITED KINGDOM

The few marshalling points remaining for international traffic in the United Kingdom do not qualify for inclusion in the list of marshalling yards on the AGC network.

YUGOSLAVIA

- Beograd Ranzirna
- Popovac-Nis
- Subotica

The Marshalling Yards under the AGC revised Agreement must fulfil the basic requirements described in the Annex 2 of the Revision. The basic parameters, described in detail in the document, are as follows:

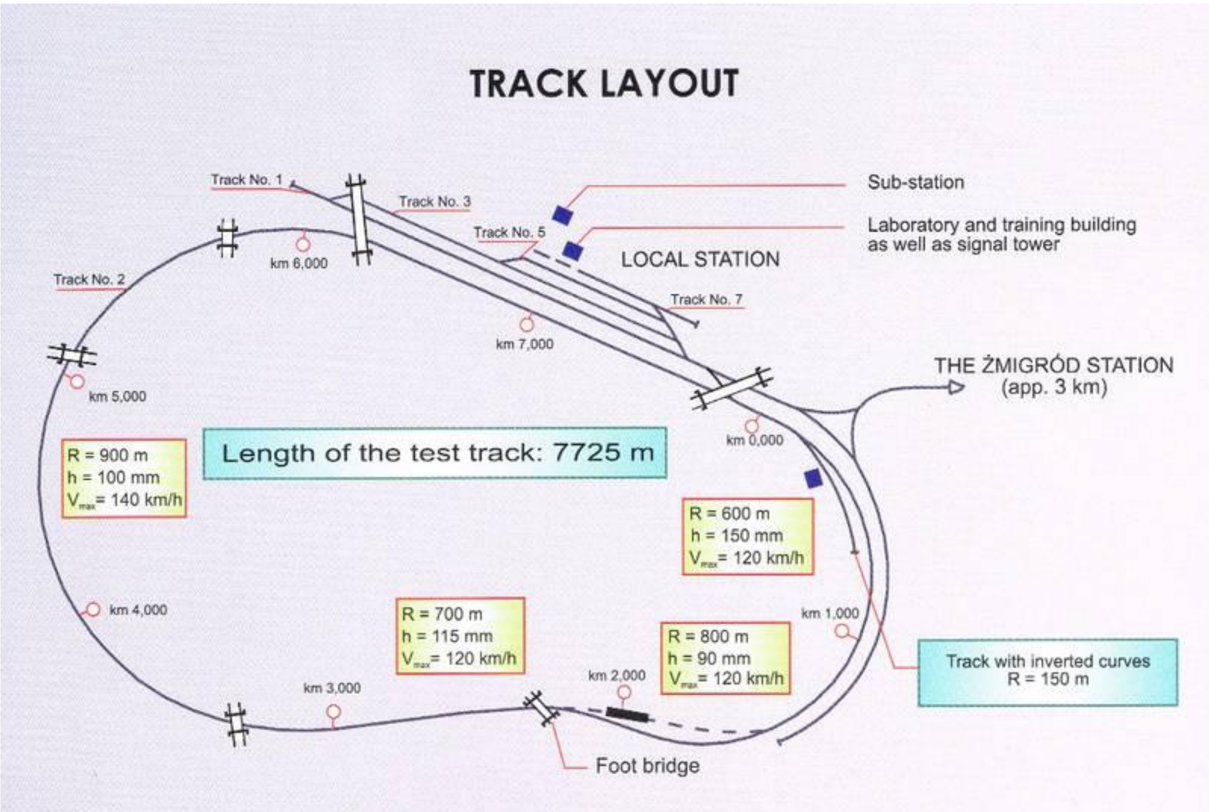
a) “Minimum number of bays in one marshalling system
b) Minimum working length of track in the bays
c) Mechanization and automation equipment in the marshalling hump
d) Mechanization and automation in marshalling-yard bays
e) Automated control system for yard operations”

5. Test Track Loops

In different countries Test Track Loops have been developed in order to test the newly developed railway elements, both infrastructure and rolling stock. The loops are also used for certification processes under the Interoperability Directives. The Test Track Loops give the opportunity to test infrastructure and rolling stock elements during EU funded projects, to check their interactions with existing equipment and rolling stock, before they are built in to an operated railway line .The Test Track Loops have been described in the sub-chapters below.

5.1 Poland

There is test track loop belonging to the Instytut Kolejnictwa. The loop has been developed as part of the former PKP (Polish State Railways) network. To this day the test track in Węglewo, Żmigród, near Wrocław in the southern part of Poland is being used for testing of new railway technologies, equipment, rolling stock and for certification processes.

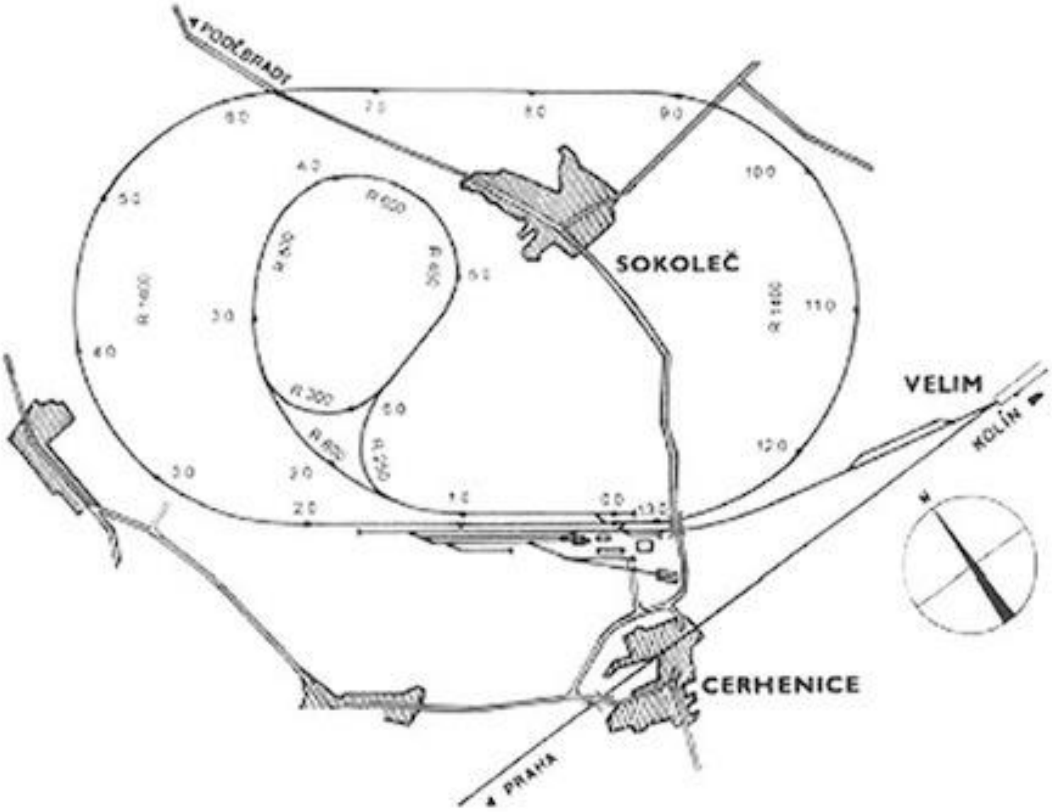


More information regarding the Test Track can be found at Instytut Kolejnictwa website:

http://www.ikolej.pl/en/units/test-track-centre-near-zmigrod/

5.2 Czech Republic

The test track Loop belongs to The Railway Research Institue, j.s.c. (VUZ). The loop is used for testing new technologies and certification of railway equipment.



More information can be found at the VUZ website:

http://www.cdvuz.cz/en/vuz-test-centre-velim/

5.3 GERMANY

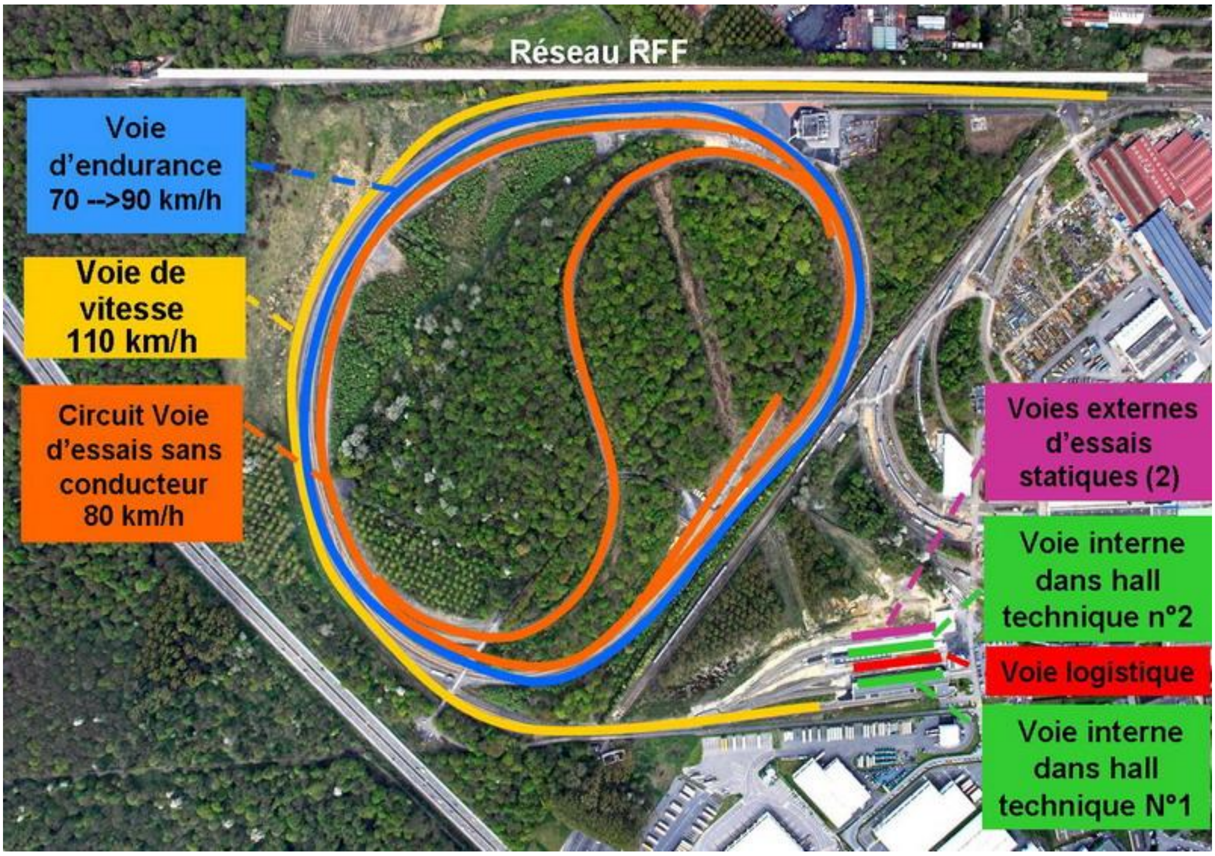
The Wegberg-Wildenrath Test and Validation center (PCW) belongs to Siemens Worldwide. The loop is used for testing new railway equipment and rolling stock.

More information can be found at:

http://www.mobility.siemens.com/mobility/global/en/services/qualification-services/test-center-for-rail-systems/test-and-validationcenter/pages/test-and-validationcenter.aspx

5.4 France

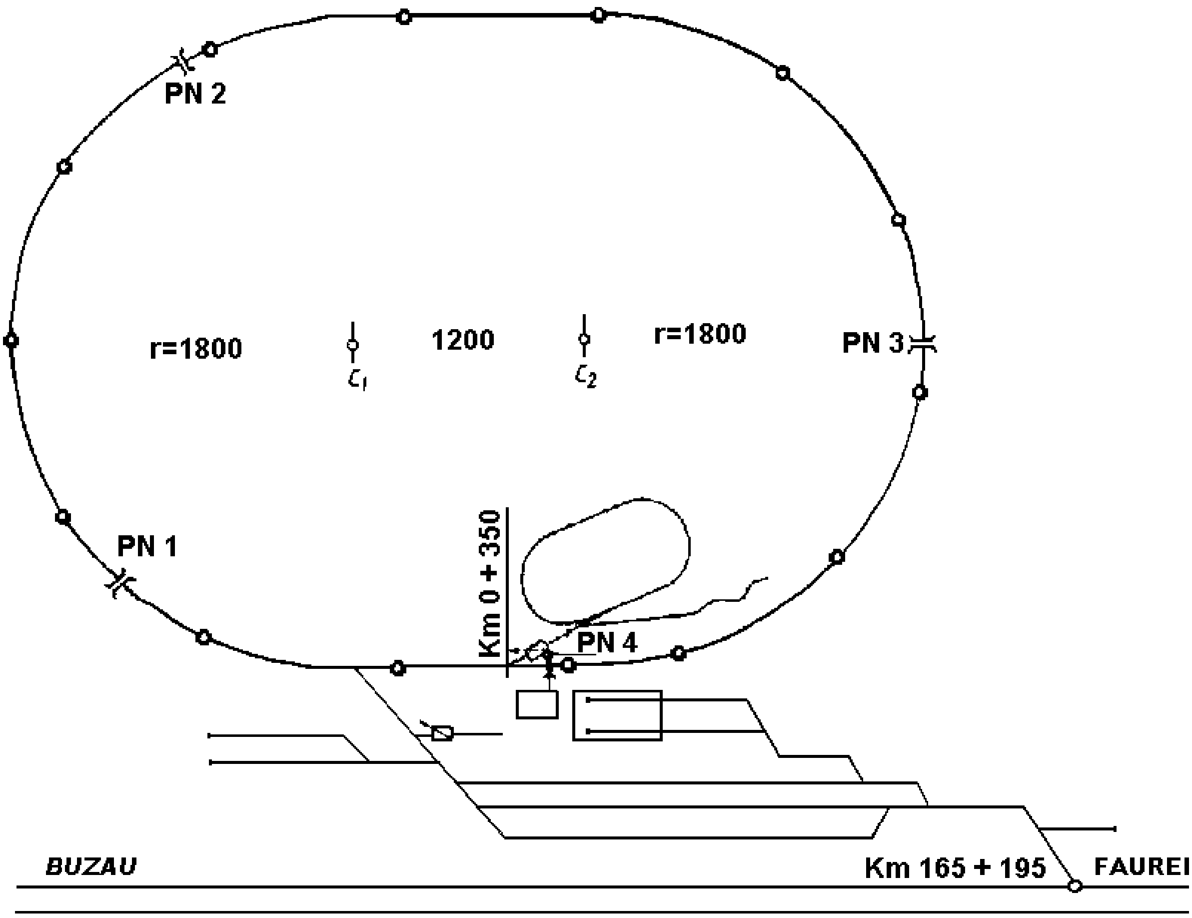
The Resau RFF Test Loop belongs to Centre d'Essais Ferroviaire.



More information can be found at: http://www.c-e-f.fr/index.php?option=com_content&view=article&id=50&Itemid=58&lang=en

5.5 Romania

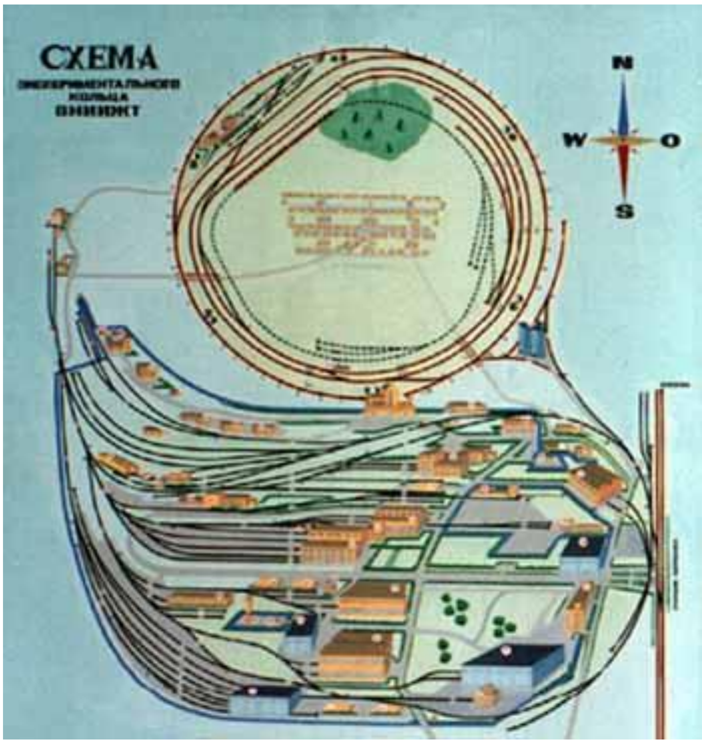
Railway Testing Centre from Faurei it is placed on main line Bucuresti-Galati near Faurei.



More information can be found at the Autorităţii Feroviare Române (AFER) website: http://www.afer.ro/eng/faurei.htm

5.6 Russia

In the city of Scherbinka (Moscow) lays the Experimental Ring of JSC Russian Railway Research Institute (VNIIZhT). The test loop is probably used like the previous but no information can be found.



6. European Projects

Several European funded projects have been looked at in the work done by Task5.3.1 of the Capacity4Rail Project. The dissemination of railway solutions developed in those projects in some cases requires international railway corridors to be determined. The corridors have been described in the following sub-chapters.

6.1 CREAM

CREAM - "Customer-driven Rail-freight Services on a European Mega-corridor based on Advanced business and Operating Models"

Project reference: 38634

Funded under: FP6-SUSTDEV

The CREAM Project has been designed to respond to the increasing demand for rail-based logistic systems, and the implementation of change in the European railway area, which has been initiated by the European legislation. Against the benchmarking business models of logistic service providers CREAM will design and validate advanced customer-driven business models for railway undertakings and intermodal operators.

CREAM will analyze the operational and logistic prerequisites for developing, setting up and demonstrating seamless rail freight and intermodal rail/road and rail/short sea/road services on the Trans-European mega-corridor between the Benelux countries and Turkey, including field validation.

CREAM is committed to develop business cases, which will be integrated into an innovative corridor-related freight service concept, with respect to:

- Innovative rail-based supply chains including intelligent rail and multimodal operation models

- Quality management system

The CREAM Project aimed at improving rail freight between West and South East Europe. The Cream Corridor connected the Rotterdam and Antwerp sea ports through the Netherlands, Belgium, Italy, Slovenia, Germany, Austria, Hungary, Romania, Croatia, Serbia, Bulgaria, Greece, Finally reaching Istanbul in Turkey. One of the objectives of the project was to improve border crossing of goods transported by trains. A Quality Management System also been developed for the project. This project which was operation and traffic oriented, but gave requirements also for improvement of services by reducing number of traction changes.

6.2 REORIENT - Implementing Change in the European Railway System

Project reference: 513567

Funded under: FP6-SUSTDEV

The REORIENT project will assess progress in transferring European railways to an internationally integrated and standardized system through implementation by Member and Accession Countries of EU interoperability legislation. It will thus support the EU policy of shifting international freight transport from road to rail. The project is divided in three parts. In Part A, REORIENT will identify the target countries' political and administrative bodies responsible for interoperability implementation and identify barriers encountered in this process. It will capture progress in interoperability between country blocks to define their ability to remove interstate inter-rail discrepancies. Since interoperability requires significant investments, REORIENT will define the tolerance margins national politicians enjoy to channel scarce economic resources to the rail sector in competition with other social needs..

6.3 BRAVO

BRAVO – Brenner Rail Freight Action Strategy Aimed At Achieving A Sustainable Increase Of Intermodal Transport Volume By Enhancing Quality, Efficiency, And System Technologies

Project reference: 506391

Funded under: FP6-SUSTDEV

Increasing rail freight efficiency

A European project looked at how to increase the efficiency of logistics systems in the Brenner Corridor – one of Europe's most loaded transit paths. The BRAVO consortium developed an information system for combined transport that is now on the market.

In 2002, representatives of the rail and transport sector adopted a plan to improve international rail freight in the Brenner Corridor between Munich and Verona.

Like many other major transport routes, the corridor faces a number of challenges – rising demand, railway liberalisation, lack of efficiency in modal transport and increasing congestion. And although only 448\;km long, the corridor crosses the Alps and three different national railway systems, further adding to technical complexities and infrastructural bottlenecks.

The EU-funded BRAVO project looked at innovations that could address the problems facing intermodal transport on the route, in particular the increased volume of freight traffic.

Unaccompanied combined transport on the corridor increased by over 50\;% during BRAVO's three-year lifespan from 2003-2007. Meanwhile, an information system for combined transport developed by the project has already begun commercial operation (see www.kombiverkehr.de).

In addition, Bravo demonstrated the viability of new technologies in a number of areas: sustainable and open corridor management; train path availability and allocation, interoperable rail traction, quality management systems, advanced customer information systems and unaccompanied combined transport services.

Specific applications developed and demonstrated during the project included a radio-remote control pushing engine to help haul heavy trains up steep inclines; a trailer/wagon for suitable for combined transport with maximised volume for transporting road vehicles; an online train monitoring application; and an internet timetable for combined transport operations.

The project can serve as a blueprint for other European transport corridors in their optimisation efforts and it also produced a quality manual which can provide further guidance.

6.4 MELYSSA CORRIDOR - MEDITERRANEAN-LYON-STUTTGART SITE FOR ATT

Project reference: V2040

Funded under: FP3-DRIVE 2

The main objectives of the MELYSSA project are to improve significantly road transport efficiency, safety and environment by enhancing traffic information and its provision to all road users; and to provide a mechanism for testing a variety of ATT applications developed in part DRIVE I in pilot projects.

Technical approach

The test site for the MELYSSA project is the motorway corridor between Stuttgart (German test site), Lyon (French test site) with its extension to Spain. Thus, this corridor plays an important role in the major motorway links between Northern and Southern Europe. Both the city of Stuttgart and the city of Lyon are involved in the POLIS initiative so that the corridor between these cities offers an excellent field test for an extension of urban traffic management to inter-urban traffic management.

The first phase of the project consisted of a comprehensive common feasibility study carried out as a joint project of mostly German and French partners. The core of this feasibility study comprised the examination of the potential to realise an exchange of traffic data and information concerning the corridor between Lyon and Stuttgart.

The feasibility study defined the most viable applications for the subsequent phases taking into consideration the assessment criteria of efficiency, safety, driver assistance and environment.

During the feasibility phase this project investigated and assessed the following applications (1) and technologies (2):

(1) Inter-connection of European traffic control centres, inter-connection of urban and inter-urban traffic control centres, pre-trip/at-stop and on-trip information, dual mode route guidance, establishment of an integrated network management system including operational links with urban traffic, transport applications developed by the POLIS projects, and freight and fleet management.

(2) Construction of a static and dynamic data base, traffic modelling, forecasting, video image processing, electronic data interchange, traffic control and information centres, traffic control via VMS, dynamic traffic management, RDS/TMC for driver information and route guidance, cellular radio systems, videotex, radio telephone, and public information terminals.

The second phase of the project will include the detailed system design and full scale implementation to test the performance of RTI systems within field trials. The evaluation and recommendation phase will be the final work of the project. However, the evaluation tasks will start at the beginning of the design phase.

The project deals with three areas of major interest: a) Integrated inter-urban traffic management, b) Travel and traffic information and c) Freight and fleet management. These work-areas provide an extensive scope of cooperation and collaboration for the different partners of the three countries. The project work emphasises strong correlation to preceding DRIVE I projects and consequently, the results of them - if available - have been incorporated or applied to the MELYSSA feasibility study and pilot projects. Moreover, links with recent DRIVE II/ATT projects have already been or will be set up in a few months.

Key issues

The key issues will be identification and assessment of ATT applications suitable for implementation on inter-urban sites, recommendations for future development and implementation of RTI systems, contribution to the establishment of standards for new technologies and applications between France, Germany and Spain, and by this the provision of guidelines for future European cross-border transport.

Expected achievements

The expected achievements vary, depending upon each workpackage.

For example, an improvement of data exchange between the Traffic Control Centres and the Traffic Information Centres in three countries is expected in order to better manage traffic.

Another expectation is a comparison between various automatic incident detection techniques, in order to improve safety and traffic efficiency.

Other technical workpackages will permit a better knowledge of driver behaviour; thus, infrastructure owners will invest in devices which are both more efficient and more efficiently utilised.

Two workpackages deal with in car information/guidance systems: full-scale implementation will provide a lot of technical as well as organisational results.

N.B. The examples above do not cover the entire scope of the project.

Expected impact

The first stage, the feasibility study, showed the possibilities for the introduction of several RTI systems and the enhancement of an international data exchange. This constitutes the basis for the implementation of the defined systems for the further process of the project to contribute to more transport efficiency, traffic safety and less environmental pollution.

Contribution to Standardisation

With the presence, in the Melyssa project consortium, of well-known industrial partners and with attendance at DRIVE Concertation Meetings, this project will substantially contribute to standardisation.

6.5 RETRACK - Reorganisation of transport networks by advanced rail freight concepts

Project reference: 38552

Funded under: FP6-SUSTDEV

In the RETRACK Consortium, new and upcoming European rail freight operators, experienced IT and training specialists and leading European research and development organisations have taken the initiative to design, develop and implement a new and innovative trans-European rail freight service concept, starting with the rail corridor Rotterdam to Constanza (Romania) and on to the Black Sea area and Turkey.

The chosen trans-European corridor for RETRACK is an ambitious one, with a high potential for a modal shift of cargo from road to rail, creating a effective and scalable freight corridor between high growth areas in Western and Eastern Europe. With this new rail freight service concept, the RETRACK partners want to demonstrate that rail freight services on trans-European corridors can be successfully offered as a genuine competitive alternative to road haulage.

6.6 RRTC - Regional railway transport research and training centre foundation

Project reference: 15992

Funded under: FP6-SUSTDEV

The aim of the project is to found an international research and training centre in the field of railway transport, which will integrate the efforts for developing modern, competitive, safe and comfortable railways on the Balkans. The Center will be based at the Todor Kableshkov University of Transport in Sofia. The participants in the project will elaborate its statute, structure, organization and strategy oriented to enlarge the scope, of integrated research and training activities in the field of surface transport. The Center will be open for membership to all research and educational institutions in the region. The RRCT will provide the necessary human and information resources; will organize conferences and seminars on topical issues connected with the Trans-European transport corridors passing through the region; will enable the exchange of scientific information and staff; will develop new university courses in compliance with the requirements of ECTS (European Credit Transfer

System) and courses for long life training; will create working and expert groups and coordinate the research and technical activities for achieving sustainable railway transport on the Balkans.

6.7 TRANSPORTNET-EST

Project reference: 20686

Funded under: FP6-MOBILITY

TRANSPORTNET is a network of eight European leading universities involved in transport research and education. One of its major targets is the training of young researchers specialised in different fields of transport and a thorough knowledge of the requirements for implementing successfully transport policies. As part of this target, the network wants to start with a training programme for young researchers in four major fields for which wider research experience has to be built up: - analysing and understanding the business decisions and strategies of shippers, transporters and logistics suppliers, in order to stimulate inter- and multimodal transport; - setting up tools for a dynamic analysis and monitoring of transportation policies, enabling analysing and understanding the main direct and indirect impacts caused by policy measures; - setting up tools supporting the management of growth of Trans-European transport networks, railway corridors in particular, to allow the harmonisation of asset extension s or renewal policies and to ensure the durability of the infrastructure; - analysing and understanding all the issues involved in urban transport of people and goods as it causes intense congestion, a rising frequency of accidents and environmental problems. It is the purpose of this project to provide training to young researchers in these four areas by setting up a number of specific courses, seminars, summer schools and master classes. Part of it will be concentrated along four thematic streams: International Trade and Transport; Urban Mobility; Infrastructure Development and Management; Transport Businesses and Markets. The aim is to get out of this research training area not only well trained researchers to enforce the research community, but also a number of high quality PhD¿s, journal papers, books in scientific series and policy papers. One of the final targets is to come to a multidisciplinary European PhD programme in transportation research.

6.8 SUPERGREEN - SUPPORTING EU'S FREIGHT TRANSPORT LOGISTICS ACTION PLAN ON GREEN CORRIDORS ISSUES

Project reference: 233573

Funded under: FP7-TRANSPORT

The purpose of "SuperGreen" is to promote the development of European freight logistics in an environmentally friendly manner. Environmental factors play an increasing role in all transport modes, and holistic approaches are needed to identify 'win-win' solutions. "SuperGreen" will evaluate a series of "green corridors" covering some representative regions and main transport routes throughout Europe.

• The selected corridors will be benchmarked based on parameters and key performance indicators covering all aspects related to transport operations and infrastructure. Environmental issues and emissions, external-, infrastructure- and internal costs will be covered to get an overall and realistic picture. Based on this benchmarking, areas and candidates for improvement will be identified (i.e. bottlenecks).

• The next step will be to evaluate how “green technologies” may support improving the identified bottlenecks. Among the green technologies considered may be novel propulsion systems, alternative fuels, cargo handling technologies, new terminal technologies or novel concepts relevant for the multimodal “green corridors”. The benchmarking issue is an iterative process.

• Next, a similar process needs to be accomplished taking into consideration “smarter” utilisation of available information in the multimodal chain (ICT-flows). An analysis will be made on how this information can be utilised to achieve “greener” logistics along the “green corridors” (e.g. e-freight, Supply Chain Management (SCM), smarter planning, scheduling and tracking & tracing).

• Based on these iterative benchmarks and evaluations, new R&D within specific topics may be needed to improve the identified bottlenecks. Recommendations for future calls for R&D proposals will be made.

• Last but not least, the project will review and assess the implications of alternative policy measures for green corridors, both at the local and the European level..

6.9 OPTIRAIL - DEVELOPMENT OF A SMART FRAMEWORK BASED ON KNOWLEDGE TO SUPPORT INFRASTRUCTURE MAINTENANCE DECISIONS IN RAILWAY CORRIDORS

Project reference: 314031

Funded under: FP7-TRANSPORT

In a context of wide use of transport, it is necessary to increase efficiency of the different transport modes as well as their interaction. To that effect, rail transport will play an important role in the future by increasing its capacity. Thus, it would be necessary to strength the competitiveness of railway ensuring a sustainable, efficient and safe service.

In that sense, it is essential to improve the interoperability and safety of national networks in order to promote a single European Rail Market. Nevertheless, there are still several barriers to overcome as a consequence of the lack of a common definition of standards at European level.

Within this framework, the main objective targeted by the OPTIRAIL project aims at developing a new tool, based on Fuzzy and Computational Intelligence techniques and validated through two case studies, that will enable the better cross-border coordination for decision making of railway infrastructure maintenance across the European railway corridors.

In order to be able to achieve the exposed objective, the project Consortium is comprised of a well-balanced group of 9 partners from 6 European countries with complementary skills and expertise, including all the necessary profiles to deal with the scheduled project work plan. Furthermore, non-participant railway administrators have shown their interest and commitment to the project.

This interdisciplinary group of the railway managers, railway suppliers, software & embedded systems developers, and technological R&D centres are strongly committed to efficiently coordinate their resources over the 36 months duration of the project in order to be able to reach all expected project outcomes. The estimated overall budget of the project is 3.916.343,40 ..

6.10 HERMES - High Efficient and Reliable arrangeMEnts for CroSsmodal Transport

Project reference: 234083

Funded under: FP7-TRANSPORT

HERMES project will provide development and analysis of new mobility schemes and associated organisational patterns at the interface and interconnection between long distance transport networks and local/regional transport network. Although these are conceptually simple operations, requiring only some real-time telecommunication, there are organizational and contractual difficulties in its realisation.

The first part should concentrate on identification of the key requirements of the travellers, the corresponding services and necessary underlying company agreements to provide them, followed by a business plan for the operation. The second part of the project would have demonstrations in the selected corridors for a period of at least 6 months of field experience. The final product of the project should be a handbook of recommendations based on the analytical part and on the demonstration part of the project.

Prototypes for the business model of the innovative services will be developed and further tested in case studies for validation of its functional, economic and organizational aspects aiming to provide recommendations regarding enhanced co-ordination between decision-making levels on issues related to the interconnection of transport networks of different scales and modes, addressing institutional, legal, design, planning, technical and deployment aspects..

6.11 BESTFACT - Best Practice Factory for Freight Transport

Project reference: 265710

Funded under: FP7-TRANSPORT

The BESTFACT objective is to develop, disseminate and enhance the utilisation of best practices and innovations in freight logistics that contribute to meeting European transport policy objectives with regard to competitiveness and environmental impact.

BESTFACT builds up on the work of BESTUFS, PROMIT and BESTLOG and integrates four interrelated areas of the key freight logistics challenges the European Union is confronted with and creates coherence with the key actions of the Freight Logistics Action Plan: urban freight, green corridors and co-modality, transport related environmental issues and eFreight.

BESTFACT will establish a robust and replicable methodology for collecting and processing best practices. Best practice is understood as the combination of three dimensions: (1) the identification, evaluation and prioritising of relevant business cases. (2) the credible knowledge management of best practices and (3), the utilisation and implementation within existing or new industrial realities.

The BESTFACT best practice methodology comprises a three-level approach that includes the set up of a comprehensive best practice inventory for which 160 cases will be analysed providing a general description. 60 in depth surveys will be made including a detailed analysis of the best practice cases. The development of best practices will be addressed in 5 best practice implementation actions stimulating modal shift on company or regional level, co-operation among stakeholders or the introduction of best practices into administrative procedures. Practical best practice handbooks as well as research and policy recommendations addressing new and additional policy tools will be provided. BESTFACT will organise 12 cluster workshops and 3 conferences. Furthermore, a comprehensive knowledge management will be established to enlarge the knowledge basis and simplifying access to best practice. BESTFACT will be a neutral and open platform for any interested party.

6.12 TIGER - Transit via Innovative Gateway concepts solving European-Intermodal Rail needs

Project reference: 234065

Funded under: FP7-TRANSPORT

The recent EU Commission paper on the establishment of a “Primary European Rail Freight Network” is the confirmation that Europe wants to develop a long term freight sustainable mobility.

Infrastructure investments are costly and take long time to come to fruition. Hence force the need to adopt a realistic mid term strategy for developing the use of freight trains to bridge the gap up to when the new infrastructure investments will be completed delivering the much needed capacity.

These goals can be achieved by removing over time the conflict on the same rail tracks between freight and passengers by developing corridors oriented to freight and extracting the best productivity from each available modality or from the combination of them. The TIGER project Rationale is driven by the European need of achieving a greater degree of effectiveness, efficiency and competitiveness on the Rail Freight Network. This is now perceived as being key for a more sustainable freight mobility. The reduction of road congestion, accidents, emission on the atmosphere and the negative effects on climate changes are leading to a safer and better environment for improving the quality of life of European citizens. In particular the recent breaks in trends in global trades brought about by EU enlargement and by the enormous traffic flows with the

Far- East and South East Asia, handled by giant container vessels, have highlighted the impossibility of road modality of sustaining by its own the future European need of freight mobility. Port congestion has become a common feature both in the North and South of Europe to the extent that only a new distribution system to/from ports to inland destinations based on industrial intermodal shuttle trains represents the solution of this problem. The challenge in TIGER is therefore to provide a solution to EU ports and road congestion reaching inland European destinations in an industrial and effective way leading to sustainable mobility

7. Conclusions

As is presented in the chapters above. The general corridors in the EU stay the same, but the detailed description of the requirements change according to the particular needs or systems. The railway corridors in general are divided into 3 directions: North-South, East-West and North West – South East.

For the Capacity4Rail Project it is suggested to choose corridors from the TEN-T network, which are under the management of the Project Partners, such as DeutcheBahn, Trafikverket, Network Rail, TCDD or ADIF.

For testing particular solutions of the future rolling stock or infrastructure elements it is suggested to use a virtual model before implementation on site. The computer model simulations can provide outcomes in shorter time and provide information on what is expected to happen in real life.

8. References

[1] "Roadmap to a single Transport Area – towards a competitive and resource efficient transport system" European Strategy – White Paper 2011

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[2]

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