ECONOMIC COMMISSION FOR EUROPE

INLAND TRANSPORT COMMITTEE

<u>Working Party on Rail Transport</u>
(Fifty-fifth session, 16-18 October 2001,
agenda item 12)

RESEARCH ACTIVITIES IN THE FIELD OF RAILWAY TRANSPORT

<u>Rail transport projects funded under the European Commission's Growth Research Programme</u>

<u>Addendum 2</u>

<u>Transmitted by the European Commission (EC)</u>

Rail projects selected for financing from the First Call for Proposals (March 1999) of the EC's Growth Research Programme are briefly described below. Further details may be found at the Growth Research Programme web site (http://www.europa.eu.int/comm/transport/extra/modes/rail.html). It must be noted that contract negotiations may not have finished yet for some projects.

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Title :
ERTMS: Test Preparations
European Rail Traffic Management System

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Abstract :

The project will address the full range of preparations leading to full-scale trials of the system in a number of pilot sites located in France, Germany and Italy. It will complete the user requirement specifications of the ERTMS-ETCS kernel, including functional system and sub-system requirements and the overall safety concept.

Background:
The European Commission supported by the International Union of Railways (UIC), initiated the development of a new European Rail Traffic Management System (ERTMS) and a European Train Control System (ETCS) as its kernel. This work is now ready to lead to product developments, tests and practical implementations.
The new train control system is adaptable to different application requirements and is designed to be interoperable with the existing national rail systems, to allow for a smooth transition to the future standard signalling system in all European countries.

Objectives:
The project will address a range of preparations leading to full-scale trials of the system in a number of pilot sites located in France, Germany and Italy. The work will allow compliance with the interoperability objections for the trans-European rail network.

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Title :

EUFRANET: Improving the Competitiveness of Rail Freight Services
European Freight Railway Network

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Abstract :

The EUFRANET Project identified and evaluated strategic options for the development of a Trans-European rail network mainly dedicated to freight transport. The project analysed the current situation and propose concepts and solutions to decrease freight transport costs whilst improving quality of distribution and the services provided.

Background:
In order to improve the rail freight transport and interoperability, in terms of quality and reducing cost, improving safety and addressing environmental issues, the implementation of an efficient and strong European freight railway network has been identified as of crucial importance.

Objectives:
The main objective was to identify and evaluate strategic options for the development of a Trans-European rail network, mainly dedicated to freight transport. The work involved:
- proposing concepts and solutions to decrease freight transport cost whilst improving the quality of rail and intermodal freight transportation;
- improvement of the freight transport and interoperability;
- identification and evaluation of new rail technologies for freight;
- establishment of a global strategy for the implementation of a freight network and its operating systems;
- development of measures to rationalise existing national networks and integrate them in a European network, fully interfaced with other Trans European Networks.

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Title :

EUROPE-TRIP: Planning for European Railways
Integrated Planning and Cost Evaluation for European Railways

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Background:

EUROPE-TRIP is part of the wider initiative referred to as EUROPE (European Railways Optimisation Planning Environment) and implements the specific transportation facets of this programme.

Objectives:

The main objectives are:

- Providing a comprehensive model to represent the short, medium and long term planning of the railway system taking into consideration the evolution of the European market and transport policies.
- Definition of a business planning model of the rail system, particularly focused on the management of infrastructure.
- Development of mechanisms on how the infrastructure analysis must co-ordinate with the transport companies in terms of access to infrastructure and slot allocation.
- Determination of the cost of using the infrastructure by an auction mechanism.
- Evaluation of methods for assessing the capacity of rail lines, with particular reference to European corridors.
- Proposal for a standard cost model for the EU railways in order to address track pricing and investment.

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Title :

FIRE: Rail Freight Information
Information for Rail-Based Freight Transportation Market

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Abstract :

The FIRE Project will build a prototype information service for rail based international freight transportation. The service will be designed to respond to the needs of users of the European rail-based transport system – the Transportation/Logistic Service Providers (TSP/LSP) using the rail infrastructure through the Rail Operators for transporting goods from one place to another throughout Europe.

Background:

The FIRE project started from an analysis of needs carried out in the rail-based freight transportation market, it concluded that the TSP/LSP, (providing transportation and logistic services to industrial customers across Europe), needed more information on rail services for their freight transportation tasks, especially timing information required for just-in-time deliveries and alarms for perishable, hazardous and valuable goods.

Objectives:

FIRE will provide the European freight transportation market with improved rail-related information on a European basis, for the set-up and management of rail-based freight transportation tasks in a way increasingly compliant with the transportation market requirements, driven by just-in-time industry schemes.

FIRE will set up a prototype "FIRE Service", an information service on rail-based freight transportation, to be provided by a FIRE Service Provider to the Rail Cargo Companies (RCC), with the view of helping them deliver an improved service to their customers (the TSP/LSP). Owing to the fact that the market is made up by many different RCC - operating in different ways and expressing different needs - the FIRE Service will be designed in a modular way, so that it will be able to respond to the different information needs expressed by each specific RCC; that is:

- the FIRE Service Provider will act as a global solution provider for the RCC in the areas of acquiring, managing and distributing freight-related information
- the FIRE Full Service will be provided on a scaleable basis, i.e. by providing service options tailored to the needs of each specific RCC

The measurable objectives of the FIRE project are:

- to carry out a 6-month on-field testing of a prototype, pilot version of the FIRE Service. The testing activities will focus on both operational aspects and customer satisfaction issues
- to define the guidelines for the future implementation of a fully functional, commercial information service on rail-based freight transportation provided by one or more IRE Service Providers to interested European RCC.

The guidelines will focus on such issues as operations, customer satisfaction, legal aspects, security, marketing, and other issues

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Title :

**HEROE: The European Rail Traffic Management System
Harmonisation of the European Rail Operating Rules**

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Abstract :

The HEROE Project will harmonise the rules and regulations for the new European Rail Traffic Management System (ERTMS) control-command system and determine its safety problems. It will also facilitate the transition period between existing control-command systems and ERTMS and identify legal obstacles to harmonisation.

Background:

The European rail traffic management system has become increasingly important in transport research both at a national level as well as for compliance with the trans-European rail network as greater emphasis is placed on rail use.

Objectives:

The main objectives are:
- harmonising rules and regulations for the new ERTMS control-command system
- determining the safety problems related to the rules and regulations
- establishing fair competition by fixing a common level of regulation
- facilitating the transition period between existing control-command systems and ERTMS and identification of legal obstacles to harmonisation disseminating the results of the project to all European railways involved in ERTMS by preparing a pre-standardised set of rules and regulations

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Title :

**HISPEEDMIX: High-Speed Freight
The Assessment of High-Speed Freight Trains**

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Abstract :

The HISPEEDMIX Project will make an assessment of the market requirements for high-speed freight traffic and the capability of the existing high-speed lines to cope with such traffic. It will also study the utilisation of the high-speed network for traditional freight traffic in mixed traffic conditions.

Background:

High-speed trains are one important component of the transport policy to improve the European traffic situation. HISPEEDMIX will contribute to the assessment on how and to what extent this concept is applicable to freight transport.

Objectives:

The main objectives of HISPEEDMIX are:
- Assessment of the market requirements for high-speed freight traffic and the capability of the existing high-speed lines to cope with such traffic.
- Studying the utilisation of the high-speed network for traditional freight traffic in mixed traffic conditions.
- Market analysis for two scenarios (high-speed freight and conventional freight) and identification of the customer needs for high-speed market segments.
- Evaluation of the impact of the freight train traffic on the RAMS performances on the European High-Speed Rail Network.
- Analysis of operational and technological constraints on the mixed traffic.
- Definition of a maintenance model and plan for both scenarios.
- Providing specifications and showing under what conditions the use of the European high-speed rail network is feasible and cost effective for high-speed and conventional freight and passenger traffic.

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Title :

**INTELFRET: Intelligent Freight Train
Innovation Rail Freight Transport Concept**

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Abstract :
The INTELFRET Project created a functional specification basis for an innovative rail freight transport concept able to efficiently meet the customers' and operators' needs. The project focused on 'Intelligent' telematic tools on-board rail freight wagon and train, and on the exchange of data from the ground to the train and from the train to the ground by use of GSM-R, satellite or short range communication (on train-ground data exchange).

Background:
The INTELFRET project was conceived to propose an innovative rail freight transport concept able to efficiently comply with customers' and operators' needs. It studied the operational problems in the field of railway freight transport where technology could be used for automation and intelligent rail freight systems.

Objectives:
The project focused on intelligent telematic tools on-board rail freight wagon and train, and on train-ground data exchange which could provide a cost effective and competitive approach to the transport system. It was based upon an operational concept enabling efficient use of advanced technology, complying with operators' and customers' requirements.
The project directly addressed the following items:
- functional specifications and architecture of the operational system
- functional requirements for sub-systems and system components
- assessment and proof of technical and economic feasibility
- recommendations for use of technology in the organisational framework aiming at supporting the free access to infrastructure and the improved management of freight transport on rail
- recommendations and validation of technical solutions, economic use and standardisation

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Title :

**OPTIRAILS: Rail Traffic Management Systems
Optimisation of Traffic through the European Rail Traffic Management System (ERTMS)**

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Abstract :
The OPTIRAIL Project will specify a prospective rail traffic management system, which will be applicable to international railway corridors. It will be simple to install, enable optimum train path allocation and be capable of operating as a stand-alone system or under the ERTMS.

Background:
A considerable portion of travel time for trans-European trains, especially freight, is spent at low speed or waiting for clearance to proceed. It is not always possible to have dedicated routes for international corridors but it is important to avoid the waiting times and delays. The existing ERTMS project is mainly security and technology oriented and lacks a "traffic management" layer, which is needed to make the ERTMS project a complete European rail traffic management system.

Objectives:
The main aim of OPTIRAIL is to specify a prospective rail traffic management system within the ERTMS framework, which will be applicable to international railway corridors. This objective includes:
- Considering ERTMS as a rational market able to increase the quality of services and flexibility for the benefit of passengers and freight customers and thus improve travelling times and reduce costs.
- Developing a collaborative framework facilitating the technical harmonisation of traffic management systems.
- Promoting the potential of new technologies able to bring relevant solutions to the traffic management field.

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Title :

REMAIN: Reliability in Railway Systems
Modular System for Reliability and Maintainability Management in Rail Transport
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Abstract :
The REMAIN Project has developed practical and realistic methods and tools for the evaluation of Reliability, Availability and Maintainability (RAM) in railway systems and produced a crucial component life-cycle database, for condition monitoring.

Background:
A general target for all railway companies and operators in Europe is to reduce costs in all fields. Maintenance is among the largest expenditures in railway operations, and faces pressure to streamline and optimise procedures without negatively affecting safety levels. Cost reduction schemes for maintenance have to take into account life-cycle costs of the whole system, and should allow for the assessment of efficiency benefits, feasibility and safety implications.

Objectives:
The main objectives were:
- To define the requirements for railway components crucial for the safety and efficiency of rail transport on a European basis, thereby focusing on infrastructure aspects of maintenance costs.
- To develop a framework, for the collection and retrieval of status-indicative information on those components, in a comprehensive modular database.
- To specify and develop modules for railway-specific communication and diagnostic methods, with the aim of gathering top-level status information on crucial components.
- To use up-to-date information in combination with historical data for the strategic planning of maintenance operations.
- To design a modular and open system architecture in a user-friendly adjustment of the maintenance system for particular European railway systems.
- To provide a demonstrator incorporating diagnostic features for infrastructure and to use it as a test bed for validation of the applicability of the specified methods.
- To establish application groups, drawn from international organisations and industry, with the aim of exploiting the study's results.

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