OPTIRAILS

Optimisation of Traffic through the European Rail Traffic Management System

**Funding:** European (4th RTD Framework Programme)

**Duration:** Jan 1999 - Feb 2000

**Status:** Complete with results

**Background & policy context:**

Past development of railway transport systems has often been conditioned by strict national requirements. These have created a myriad of technical and operational practices that hamper the development of the railways from a trans-European perspective. ERTMS is an umbrella programme that is addressing some of these technical shortcomings. It brings together three main streams of harmonisation/standardisation activities in the areas of signalling and command/control (ERTMS/ETCS), telecommunications (GSM-R) and traffic management (ERTMS/ETML). The programme has a three-fold rationale:

- improved interoperability of the trans-European rail network - not only inside the EU borders, but also foreseeing the longer term integration of Central and Eastern European networks;
- the creation of a single market for procurement, leading to a significant reduction in equipment costs and an improvement in the competitive position of the railway supply industry on world markets;
- the optimisation of rail operations on a European-wide scale, conducive to enhanced profitability and customer service, as well as contributing to overall environmental, safety and energy efficiency objectives.

In the recent past, the programme has focused primarily on the safety and technology-oriented aspects relating to signalling and telecommunications, without an in-depth coverage of the functional and technical aspects that would underpin pan-European rail traffic management.

**Objectives:**

Building on the previous results of ERTMS/ETCS and GSM-R, the OPTIRAILS project aimed at providing an assessment of the conceptual feasibility of a pan-European traffic management system. Such a facility is expected to provide a spectrum of functionality - including real-time train dispatching and route planning, efficient management of nodes, and customer and operating staff information. The management of rail traffic on major rail corridors was selected as the main target application area.

The assessment process aimed to follow a three-tier approach:

- the elaboration of the functional requirements of the system, building on the existing ERTMS-related on-board and track side facilities as well as the available national train management technologies;
- the analysis of the technical aspects underpinning traffic management in a trans-national context, notably regarding field implementation strategies;
- the elaboration of a cost-benefit analysis determining the soundness of the approach from an economic and financial perspective.
Key Results:

The key results of OPTIRAILS can be summarised as follows:

- A rail traffic management philosophy based on a six-tier operational approach. This ranges from a lower level exchange of information between national traffic management centres, up to the integrated management of a complete rail corridor. Such a philosophy allows for a progressive implementation of the ERTMS/ETML concept, minimising disruption to, whilst maximising the synergies of, the existing national operational systems and procedures.
- A conceptual baseline for rail traffic management. This identifies the key functional elements such as real-time data collection of current operations on a traffic corridor, data processing and dissemination of crucial information. It also defines the range of tools necessary to solve operational problems and enable the integration of the external links needed to support intermodality.
- A business model incorporating the six-tier management philosophy cited above.
- An overview of the perceived barriers for the technical implementation of a pan-European rail traffic management system in a corridor-wide scenario.
- A high-level process model of railway operations, highlighting the role of the train operator, path and track management.
- A definition of the generic interface requirements between the OPTIRAILS concept and national or regional traffic management systems.
- A preliminary cost/benefit analysis for the implementation of the system in a representative trans-national scenario.

Policy implications

The project's achievements are an important contribution to the implementation of ERTMS as a whole, supporting the interoperability of the European high-speed and conventional rail networks from both a legislative and an operational point of view.

Moreover, the creation of trans-European traffic management facilities constitutes a crucial element towards the achievement of a real integrated rail network within the Community. This is a major stepping stone for the competitiveness of international rail services, enabling railways to profit from the favourable market conditions created by the implementation of the Single Market, the gradual integration of Eastern and Central European countries, and the growing congestion affecting road and air traffic. This opportunity is at the core of the Commission's strategy for revitalising the Community's railways.

Documents:

optirails.pdf (Final report)
STRIA Roadmaps: Network and traffic management systems
Transport mode: Rail transport
Transport policies: Decarbonisation, Societal/Economic issues