PARTNER

Path Allocation Re-engineering of Timetable Network for European Railways

Funding: European (5th RTD Framework Programme)
Duration: Jan 2003 - Dec 2004
Status: Complete with results

Background & policy context:
Allocation of rail capacity and charging on international routes, specifically freight corridors, are of strategic significance for preserving the European railway business (and its survival) in the marketplace. Moreover, access to infrastructure and pricing require to be strongly efficient and transparent, following EU policy directives and inevitable economic principles. This contrasts with traditional ways followed by railways in their current planning, where more standard, automated processes are needed, and best opportunities from IT and telematics are to be exploited.

Objectives:
The objectives of PARTNER were:

- to build a Demonstrator to show how slot allocation and charging can be implemented, overcoming the traditional difficulties in harmonised capacity management and access charging;
- to focus on international rail corridors as case studies;
- to benefit from previous EU-RDT projects in related fields, utilising their results for a new, industrial oriented system.

Methodology:
The activities and the research methods employed in each Work Package were:

WP0 - MANAGEMENT AND EXPLOITATION: This includes the overall co-ordination of the project, dissemination activities, as well as commercial exploitation.

WP1 - STATE-OF-THE-ART AND USER NEEDS: This task determines the current status and user needs for slot allocation and charging in European railways, taking into account UIC literature, interviews and EC Directives (i.e. Rail Package).

WP2 - SYSTEM REQUIREMENTS: This task specifies both functional and technical requirements, targeting European rail corridors.

WP3 - CAPACITY METHOD: This task develops the scheduling algorithms for implementing the slot allocation (path finding) method on European corridors.

WP4 - CHARGING METHOD: This task develops the access fee charging of slots, in close co-ordination with previous work packages.

WP5 - SYSTEM DEVELOPMENT: This task develops and implements the Demonstrator.

WP6 - DEMONSTRATION: This task provides demonstration and evaluation of the PARTNER prototype.

Parent Programmes:
FP5-GROWTH KA2 - Sustainable Mobility and Intermodality

Institute type: Public institution
Institute name: European Commission, Directorate-General for Energy and Transport (DG TREN)
**Funding type:** Public (EU)

**Partners:**

Austria:
Siemens AG Österreich

Germany:
Deutsches Zentrum für Luft- und Raumfahrt E. V.

Italy:
Dipartimento di Electronica, Informatica e Sistemistica, Universita di Bologna, Futura Sistemi SRL; Rete Ferroviara Italiana SPA; Siemens informatica SPA;

The Netherlands:
Center, Tulburg University

**Organisation:** DEUTSCHES ZENTRUM FUER LUFT- UND RAUMFAHRT E.V.

**Address:** Rutherfordstrasse 2

**Zipcode:** 12489

**City:** Berlin

**Telephone:** (+49) 306 70 55 101

**Fax Number:** (+49) 306 70 55 102

**Key Results:**

The main results of the PARTNER project are:

1. An assessment of the state-of-the-art of European timetable planning by means of conducting an extensive literature review and expert interviews;
2. An overview of user requirements and the technical PARTNER system specifications;
3. The PARTNER Demonstrator, which, as main project outcome, was practically evaluated, addressing both infrastructure manager (IM) and railway undertakings (RU). While IM need a system (1) to speed up the allocation process and (2) to co-ordinate international routes, which is (3) linked to legacy systems of timetable design, RU require flexible and transparent means to place their requests and to receive immediate response.
4. Demonstration and evaluation of the PARTNER prototype, which has shown that it is possible to achieve:
   - Better support in IM-to-IM cooperative planning;
   - Data standardisation by RailML open formats;
   - Utilisation of more advanced methods for capacity allocation;
   - Reformulation of track access fees, based on standardised European methods;
   - Improved support for “border/ delivery” time negotiations;
     - More close integration between Timetable Domestic Systems (TDS);
   - Increased performance of the overall timetable process on international rail corridors, supporting the current national timetable systems and RNE system by more performing architecture.

The evaluated product does not substitute any of the current timetable design systems already used throughout Europe, but aims to create an interface and shared working area based on commercial software utilities as well as new data exchange standards based on XML formats. Finally, it is easy to implement an export/ import utility according to PATHFINDER format as add-on. In this case the problem of interfacing the domestic timetable systems and achieving better integration would also be automatically solved.

**Technical Implications**

The project partner SIEMENS PSE will adopt the achieved results and include the Demonstrator in its railway product line ROMAN. The Demonstrator will be further developed under the name ROMAN Cross Border, and a pilot test installation between RFI and OeBB is aimed at for the next future.

The main development tasks will include a conflict detection module, which will identify conflicts along the corridor as well as inside of stations, furthermore an optional conflict solving part, a deeper integration of the existing capacity allocation module as well as an alternative capacity allocation module and an improved user interface.
Policy implications

The results of the PARTNER project have the following benefits to:

(1) The Rail industry:

- Increased market share and competitiveness of rail transport;
- More flexible responsive and accurate slot allocation;
- Transparent charging;
- Builds towards meeting UIC initiatives in timetable planning;
- Delivers an one-stop-shop for short term requests for paths;
- Introduces bid standardisation across EU railways.

(2) Customers:

- Increases and maximizes capacity on the rail network;
- Eases access to infrastructure;
- Reduces costs for transport.

STRIA Roadmaps:
- Infrastructure

Transport mode:
- Rail transport

Transport sectors:
- Passenger transport, Freight transport

Transport policies:
- Digitalisation, Societal/Economic issues

Geo-spatial type:
- Network corridors