PROJECT

INTELFRET

Intelligent Freight Train

Funding: European (4th RTD Framework Programme)
Duration: Aug 1997 - Jun 1999
Status: Complete with results

Background & policy context:

During the last 25 years, the share of rail in freight transport in Europe has continually been decreasing. This situation is mainly due to the improved competitiveness of road freight, even in long-distance transportation, due to reduced costs and improved quality. The successful restructuring of the American railroads and some European experiences show that the potential of rail freight transport can be improved, provided a long-term, market-oriented, technically strong and financially achievable strategy is defined and applied.

Objectives:

INTELFRET aimed to create the functional specification for an innovative freight transport concept enabling efficient use of advanced technology to comply with customers' and operators' needs.

Related Projects:

- EUFRANET - European rail freight network.
- HISPEEMIX - High-speed freight on the European high-speed railway network.

Parent Programmes:
FP4-TRANSPORT - Specific research, technological development and demonstration programme in the field of transport, 1994-1998

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

Partners:
NA

Foundation European Rail Research

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Key Results:

INTELFRET has realised a complete functional requirement specification of the system concept, functions and architecture, as well as of subsystems and system components. The INTELFRET functions include:
- automatic train identity configuration;
- automatic brake test, brake percentage computation, electronic brake control, brake monitoring and brake actuation during trip;
- train integrity check and train integrity monitoring during trip;
- traction control of the slave traction units.

The realisation of the INTELFRET functions is based on co-operation of the central (master locomotive) intelligence with the distributed data acquisition and processing (wagon and slave locomotive sub-systems).

Add-ons would provide information, automation, diagnosis and cargo monitoring functions, although subject to reconsideration of information platforms, within the freight transport market for enhanced accessibility and use of information.

The economic analysis carried out has estimated an extra direct cost for wagons and locomotives of about 10% and has confirmed the following major areas of benefits, in both the 'block train' option and the 'individual wagon' option:

- productivity improvement of material and staff;
- reduction of throughput time and hence increased end-to-end transport speed;
- transport quality increase in terms of reliability, flexibility and information.

**Policy implications**

A two-step implementation strategy has been recommended:

- a first phase aimed at implementing the base INTELFRET option and at providing practical responses on some technical (e.g. type of physical link for train internal communication), organisational (e.g. adaptation of operational rules) and economic (e.g. life-cycle considerations) problems;
- a second phase aimed at extending the use of the INTELFRET base system and at creating customer-tailored products with implementation of automation, information, diagnosis and monitoring functions.

The implementation of the INTELFRET trains would be mainly based on current technological achievements, and faces no constraints related to operational or organisational frameworks. The implementation of the base system has already been decided by the major industrial partners and railway operators, while that of the information add-ons will need European agreement to provide a sound basis for information accessibility at all levels of customers and operators. The results of INTELFRET are supporting the UIC project 'Modular Freight Train' and will be followed up in the Fifth Framework Programme.

The possibility of exploiting the results of the project depends on the co-ordination of the infrastructure managers and their willingness to participate in common ventures. The infrastructure managers should also be ready to identify themselves as one European network system.

Documents:
- [ERRAC_Project_Evaluation_INTELFRET](ERRAC_Project_Evaluation_INTELFRET) (Other relevant documents)

**STRIA Roadmaps:** Network and traffic management systems

**Transport mode:** Rail transport

**Transport policies:** Decarbonisation, Societal/Economic issues