



Communication

ICOM – Intelligent Communication Framework

Integration of information is key for further growth of railway transport volume. Decision makers will be able to make better decisions once they have the right information at hand about their own processes and about the processes of their partners in business. InteGRail is the project that developed an enabling technology to allow universal access to existing information systems, e.g. databases, monitoring systems or existing user applications. For this purpose InteGRail defined a standard approach for architecture and communication. Using this standard approach a number of exemplary applications were developed. In InteGRail, one of the main challenges was to define an advanced communication for such integrated system involving multiple railway operators over several countries and bridging between rolling stock, infrastructure, operation and traffic management domains. The subproject ICOM has specified the intelligent communication system for InteGRail (IGR) and developed a demonstrator allowing integration of current and future communication technologies.



What is ICOM?

ICOM is defined as a **communication framework** for railway integrated systems with:

- Physical Breakdown Structure, modelling of railway distribution in nodes and networks;
- **Functional Breakdown Structure** (detailed specification with more than 300 requirements) and definition of ICOM Functional Interfaces;
- Identification of key **Logical Entities** (clear allocation of FBS functions) and standard patterns (services and protocol interfaces independent of implementation technology);
- Guidelines for deployment and interfacing of actual components.

This framework, to cover the very large scope of IGR (all European railways), harnesses complexity through multiple model views, functional abstraction and selective blindness. It marks a general shift from technology driven to application driven approach.

Who can benefit?

Integration of heterogeneous railway networks thus becomes a key **technical challenge** but will also offer new **business opportunities** to those who will tackle it efficiently.

The main difficulty lies in the fact that ICOM has to bridge the gaps between different communities focused on specific networking technologies:

- On board, train to ground & core networks;
- Computer data, multimedia streams and process variables exchanges;
- Railway versus Internet technologies.

Indeed, the companies that will develop corresponding know-how will benefit from a crucial competitive advantage (cost, capitalisation, performance...) in this new railway context, especially in the context of the Corridors.

How is the benefit realised?

This framework, represented by a set of hardware and software products, is mapped on a set of products installed either onboard or in the infrastructure. By the structuring, scalability in the services deployed according to the needs is possible.

Present status, availability and future possibilities

ICOM framework is specified as a model, this specification specifies ICOM framework with more than 300 requirements. This specification was developed with the participation of all the partners of the sub-project. The demonstrator today implements a majority of the ICOM services, these services are currently proposed off the Shelf. Opportunities regarding further development (for example improving Quality of Service) will be possible.

The major output from ICOM is the system specification that is currently proposed to standardisation working groups (IEC and CENELEC).

Other results of InteGRail

Architecture definition of integrated information systems: IGRIS

Semantic data structure of the railway domain, the InteGRail ontology

Example user applications: ODSS for on-line operational decision support, IAC for on-line infrastructure availability, IDT for on-line vehicle maintenance information

Description of interdependence of performance of railway processes: the railway KPI tree, and a tool to assess and visualise performance

InteGRail - Facts and Figures

InteGRail started on 1/1/2005 and ends on 31/12/2008

Total project budget:
20 million Euros

EC funding : 11 million Euros

Total effort over 125 person-years

39 partners from 11 countries

Partners of InteGRail:

UNIFE • Alstom Transport • AnsaldoBreda • Bombardier Transportation • Siemens Mobility • UIC • Trenitalia • D'Appolonia • TSB-FAV • DeltaRail • ATSF • CAF • Nortel Networks • Laboratori Guglielmo Marconi • FAR Systems • MER MEC • Italcertifer • ATOC • České dráhy • MAV • UNICONTROLS • Strukton Railinfra • Deuta-Werke • Heriot-Watt University • IMEC • OFFIS • Televic • Seebyte • Kontron • University of Chile • INRETS • Wireless Future • University of Birmingham • ADiF • RFF • ARGE Corridor X • Network Rail • ProRail • SNCF

More information:

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