Czech EMU series 471

Supervision of a passenger conventional train
Demonstration Scenario 3b of the InteGRail project

Integration of information is the key for further growth of railway transport volume. InteGRail has defined a standard approach for architecture and communication that allows easier information integration and sharing. Using this standard approach a number of example applications were developed. InteGRail has chosen three demonstration scenarios, where the developed functions get the chance to prove that they work, that the methodology proposed by InteGRail works, and that they are able to help to improve the performance of the railway processes.

What is Demonstration Scenario 3b?
In this Demonstration Scenario (DS), which complements the wider DS3a, the integrated information system IGRIS used at passenger rolling stock fleet in service deals with the expected and unexpected temporary situations at two selected monitored functionalities which are Doors and Active standby.
This DS also shows InteGRail applicability to international data exchange based on the same system model (door subsystem) used in two different environments (trains, countries, RS manufacturers).

DS3b demonstrates the integration of an existing legacy system into IGRIS. The legacy system, in our case the TeleRail system, which is the remote monitoring and diagnostic system of CD, serves as real-world data source for the IGRIS ontology based data models modelling the functionalities in question (Doors, Active standby). The data models together with the real-world data constitute a knowledge base, physically stored in repositories, containing complete information which is to be exposed about these functionalities to the outer world. The DS3b data models are part of the railway domain ontology which is one of project's outputs. The information maintained in the repositories is retrieved via a common interface by applications connected to the InteGRail Service Grid (ISG). The Supervision tool developed for DS3b, which is intended to be used in Rolling Stock Depot, is one of them.

DS3b demonstrates the train supervision by means of IGRIS online, on the fleet of trains in routine operation that are equipped with TeleRail system. These trains are EMUs of the series EMJ471. The monitoring of doors is extended to Trenitalia ES City train used in DS3a to show that owing to the use of the common data model the same information about doors of different trains can be retrieved by the same way, i.e. using the same queries.

Through the Supervision tool the subsystems on the trains can be remotely monitored both during operation and when waiting for a new mission with active but unattended driver cab (Active standby). Concerning doors the status of door mechanical and electronic control equipment as well as information on vehicle and train levels related to doors is visualised.

Who can benefit and which benefit?

The Supervision tool can extend the features of Intelligent Depot Tool (IDT), demonstrated in DS3-a, by the capability of monitoring various train functionalities. Using it, a Railway Undertaking as a train operator can inform more quickly a traffic manager and train staff, if needed, and more quickly decide on a solution of unexpected failure.

Present status, availability and future possibilities

- Only Active standby and Doors functionalities on the trains of the class 471 are monitored at present.
- Extension to other train subsystems and integration into Intelligent Depot Tool in future
- The use by the train operator ČD, a.s. for the improvement of a rolling stock maintenance

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

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