



Integrated System Architecture

A web service based integrating platform based on a three-layer Flexible Communication Adapter pattern

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, be it 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 example applications were developed. The definition of an appropriate integration platform based on Web Services information transport is the cornerstone of the system structure and the foundation for other applications.



What is the Integrated Information System Architecture

Integrated information system architecture defines the platform for implementation of large scale integrated systems. Its key components are:

- InteGRail Service Grid (ISG) – a Web Service based communication backbone which provides a transparent information transport among the building blocks of distributed applications
- Flexible Communication Adapter (FCA) – a three layered architectural pattern which facilitates the interconnection of legacy systems operating on different platforms and using different types of communication links

The problems solved by the proposed architecture are linked with the need of integration of information at the system level where the sources of information are legacy components producing various and, by nature, incompatible data. These data are incompatible in terms of presentation format, of access method and of variation over time.

Who can benefit?

System architects and designers in charge of development of railway applications requiring a large scale integration of distributed and heterogeneous legacy systems.

Which benefit?

In an integrated application which puts together many heterogeneous legacy sub-systems the produced information items are extremely different, yet should contribute to the same process.

The platform architecture proposes a compromise solution which makes combination of data possible and relatively easy to realise.

There are two key notions in terms of architecture which contribute to provide the solution:

- Service Oriented Architecture
- Executable Workflow Processes built on SOA

The key building block is the Flexible Communication Adapter – a three layer structure which separates three groups of problems to overcome: connection to the backbone, adaptation of data model and connection to the legacy data source.

Present status, availability and future possibilities

The specification of the system architecture has been completed. The description of fundamental building blocks is available. The architecture has been used as the common basis for all application prototypes, which constitute the demonstration scenarios produced by the project.

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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