



TRACK

“The TRACK demonstrator helped Televic secure a contract win with Eurostar”

Trains are being operated in a very complex environment, with tons of data (control, diagnosis and passenger information) to be transferred from trains to the wayside and vice versa.

Today, this information is mainly passed on manually – whenever trains stop at a railway station. Replacing this manual hand-over with automatic, real-time updates over a wireless network has largely been unsuccessful, since trains move at very high speeds and are powered by a high-voltage power grid – circumstances that are hostile to stable, wireless connections.

The TRACK (Train Applications over an Advanced Communication Network) research team therefore investigated how larger (multimedia) files can reliably be transferred between trains and the ground; in real-time, over a wireless access network, and making maximum use of the available bandwidth.

THE OUTCOMES

1. Networking

TRACK investigated the development of a heterogeneous wireless access network (using a mix of technologies such as WiFi, 3G, LTE or WiMAX)

for seamless connectivity between train and wayside. Development of the network layer resulted in:

- Strategies to optimize the use of the network
- Detailed analysis of the dynamic behaviour of wireless access technologies (satellite, WiMAX, WiFi, 3G, LTE)
- Ways to improve the data processing capacity in a wireless environment – using IPv6

2. Application Management

The TRACK project also studied the creation of an application management platform that supports the efficient deployment and management of applications on a railway fleet. Robust versioning and update management were of particular importance.

Project results:

- Strategies for advanced version management
- Ways to make optimal use of limited resources, e.g. sending deltas only, instead of complete data sets, or sending updates only to trains in a specific region or with specific priority and time constraints

3. Televic Rail iSync product and Eurostar project win

The technology developed in this project has been integrated in Televic Rail's iSync product, which handles applications and data communication between dispatching (ground) and trains. The TRACK technology demonstrator helped Televic secure an important contract win with Eurostar (equipping their trains with screens that can be updated from the ground).

WHY ICON?



Dirk Van Den Wouwer,
Televic Rail,
talks about TRACK

For Televic, innovation is of utmost importance – enabling us to offer products and services that really create added value. Being part of this iMinds ICON project enabled us to gain new insights from other partners in the TRACK consortium, and translate our drive for innovation in new, concrete technologies.

Thanks to TRACK, we have not only been able to speed up the development of our iSync product; we have also reinforced our image as an innovative company, and even got an important contract win with Eurostar out of it.

THE TRACK PROJECT: PAST, PRESENT & FUTURE

TRACK has not been a stand-alone project. It was partly based upon experiences from an earlier ICON project – TR@INS (2006 – 2008) – and is being continued in RAILS, another ICON project (ending in December 2013).

While TRACK included tests in a lab setting, the RAILS project allows the technology to be tested in a live environment.

Furthermore, Televic is currently developing a FED4FIRE proposal in which they will pilot the demonstrator in a very large number of trains simultaneously, using the iMinds technical test bed.

TRACK project partners:



iMinds vzw

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FACTS

NAME	Train Applications over an Advanced Communication Network (TRACK)
OBJECTIVE	The TRACK research team investigated how larger (multimedia) files can reliably be transferred between trains and the ground; in real-time, over a wireless access network, and making maximum use of the available bandwidth.
TECHNOLOGIES USED	Satellite, 2G, 3G, WiMAX, LTE, WiFi, IPv6, OSGi
TYPE	ICON project
DURATION	October 2009 - September 2012
PROJECT LEAD	Dirk Van Den Wouwer Televic Rail
RESEARCH LEAD	Bruno Volckaert iMinds - IBCN - Ghent University
BUDGET	€ 2,935,557
PROJECT PARTNERS	Televic Rail Bombardier France Nokia Siemens Networks GMBH Newtec
IMINDS RESEARCH GROUPS	iMinds - iLab.t iMinds - ETRO - VUB iMinds - IBCN - Ghent University iMinds - MMLAB - Ghent University iMinds - PATS - University of Antwerp iMinds - WICA - Ghent University



WHAT IS AN ICON PROJECT?

iMinds is the digital research center and business incubator for Flanders, Belgium. Its ICON research projects are agile and demand-driven, combining academia and industry partners. ICON projects typically have a duration of two years, yet quickly adapt to the rapidly-evolving digital landscape. ICON partners intend to use the project results in their products or services.



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