

STARS CONTACTS

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STARS

SATELLITE TECHNOLOGY
FOR ADVANCED
RAILWAY SIGNALLING

PROJECT MEMBERS

PROJECT COORDINATOR



PROJECT PARTNERS



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PROJECT OVERVIEW

Applications of Global Navigation Satellite System (GNSS) in Railways are becoming more and more frequent. So far, the focus has mostly been on non-safety related applications, such as in passenger information systems and for freight logistics, which are typically not standardised. When moving GNSS application into the domain of safety, such as for train control systems, a much better understanding of GNSS behaviour is needed. This is especially true for the use of GNSS in standardised applications, such as the European Railway Traffic Management System (ERTMS), where performance of GNSS receivers has to be harmonised in order to achieve standardised, guaranteed performance and thus interoperability between on-board units of different suppliers. The ERTMS system has been developed over the last two decades to eventually replace all existing national train control and train radio systems which have significantly hampered cross border rail traffic in Europe, but also the opening of rail networks to open competition between operators.

The main objective of the STARS project is to fill the gap between ERTMS needs for safety critical applications and GNSS services, through a characterisation of the railway environment and of GNSS performances assessment in that environment.

PROJECT ACTIVITIES

In order to characterise the railway environment for the set of future GNSS rail applications, starting from ERTMS, the project will:

- Develop a universal approach to predict the achievable GNSS performance in a railway environment, especially for safety critical applications and to determine the necessary evolution of ERTMS to include GNSS services;
- Quantify the economic benefits through reduction of cost, which will increase a market appeal of ERTMS;

The study logic will be constituted mainly of 3 successive phases: the first one will lead to the elaboration of reference data and characterisation of the railway environment through a measurement campaign, the second one will assess the GNSS performances achievable in this environment as well as the possible evolutions of European GNSS services and ERTMS/ETCS functions. The third phase will analyse the economic benefits and possible implementation roadmap.

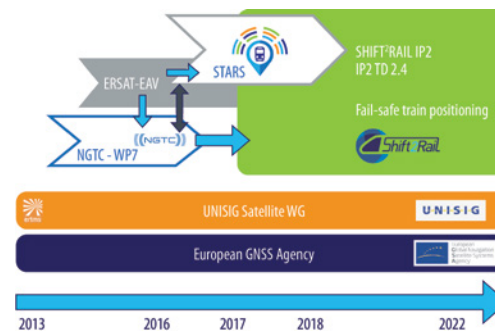
STARS PROJECT: AMBITION AND LINKS

The project will help to improve ERTMS through the application of GNSS, which shall lead to significant economic benefits through reduction of trackside equipment, reduction of maintenance, increase of availability and performance. The application of GNSS shall also make ERTMS more competitive in comparison with competing systems in the world market, leading to increased business opportunities for the European signalling and space industry.

The output of the project will be fed directly into the standardisation work of ERTMS, and shall become part of an upcoming release of the standard. The economic evaluation of

using European GNSS services in ERTMS will aim at demonstrating the significant benefits resulting from this, not only in regard to reduced investment and lowered maintenance cost for the system but also in regards to the opening of new markets.

The STARS project is based on (but not limited to) the theoretical work produced by previous research projects such as NGTC (www.ngtc.eu) or ERSAT-EAV. Its results will be effectively utilised by ongoing and future linked R&D projects, most significantly those foreseen in the frame of Shift2Rail JU (www.shift2rail.org).



STARS AT A GLANCE

€4,46 million
Total project Budget

€3,26 million
EU contribution

2-year
program

17
partners (rail manufacturers, space industry, research centres, others)

