

GALITS

Galileo Localization In Train Signalling

Key facts

Full name
Galileo Localization In Train Signalling

Project call number
GSA/GRANT/05/2019

Project call
Receiver for localization in train signalling

Funding
1 788 378,50 EUR

EU contribution
1 251 864,94 EUR

Topic
Rail

Market segment
Rail

Project start/end
01/06/2021 – 31/05/2023

Galileo differentiators
Galileo HAS
Galileo OSNMA

Context and motivation

The **GNSS rail market is a very promising market** which is expected to follow a trend similar to that of the aviation sector, **with every single train equipped with a GNSS receiver.**

In this framework, European GNSS serves the rail sector in various ways as GNSS enabled signalling applications provide increased safety and reduce costs of infrastructure management and operations compared to legacy signalling solutions.

Therefore, **GNSS plays a key role in the rail segment, in particular by offering multi-constellation services with increased robustness and accuracy.**

Manufacturers of GNSS receivers and antennas from different countries across the globe are (and will continue to) competing in the rail market. **Safety, security and rail certification will be fundamental enablers, playing a strong decision factor for the competition.**

Building on consolidated experience and expertise in this domain, **GALITS (Galileo Localization In Train Signalling) aims to innovate GNSS technologies, making them ready for standardisation and entering the market.**



Targeted GNSS innovation
GNSS for ERTM



Targeted Product
GNSS Receiver and antenna

Scope

The objective of GALITS is to **develop an innovative, flexible and customisable Dual-frequency Multi-constellation (DFMC) GNSS receiver and antenna suitable for safety-related railway applications.** This project – optimised to offer a high degree of flexibility for responding to global market needs – provides a cost-efficient solution for train control system integrators.

The built receiver and antenna were first tested in Italy, targeting the European market as an entry point. Currently, other business opportunities are being assessed given the rapidly evolving scenarios in Asian markets.

Challenge & technical solution

GALITS mission and operational analysis started with consolidated knowledge acquired in previous activities and evaluated the applicability of new Galileo services, including HAS and OSNMA. The solution involves:

- A **GNSS receiver**, developed considering applicable railway safety standards. It includes a navigation filter enabling Virtual Baseline Detection in European Rail Traffic Management System (ERTMS) powered by a PVT engine. At its core are innovative integrity approaches, able to detect and mitigate local faults, such as multipath and interferences occurring in challenging rail environments.
- A fully operational, DFMC-certified **GNSS antenna**.

