



CLUG

Demonstration of Readiness for Rail

www.clug2.eu

PROJECT OVERVIEW

GNSS and SBAS (EGNOS) is amongst the “game-changing” technologies for future digital and automated rail operations, as acknowledged on the longer-term perspective for the evolution of the European Rail Traffic Management System (ERTMS) and in the adopted report on railway safety and signalling.

CLUG 2.0, continues the activity of the CLUG project with the same main objective of demonstrating an on-board GNSS+EGNOS-based multi-sensor fusion architecture enabling absolute safe train positioning and navigation whilst also transforming the way of train localisation is done today.

The project focuses on:

- Improving the safe functional architecture (Localisation On-Board LOC-OB System), notably with the development of Data Fault Detection and Exclusion, and the integrity module.
- Complementing the requirements and solution prototyping with Track Selectivity and Start of Mission
- Testing and demonstrating the performance of the solution through post-processing and live demonstrations.

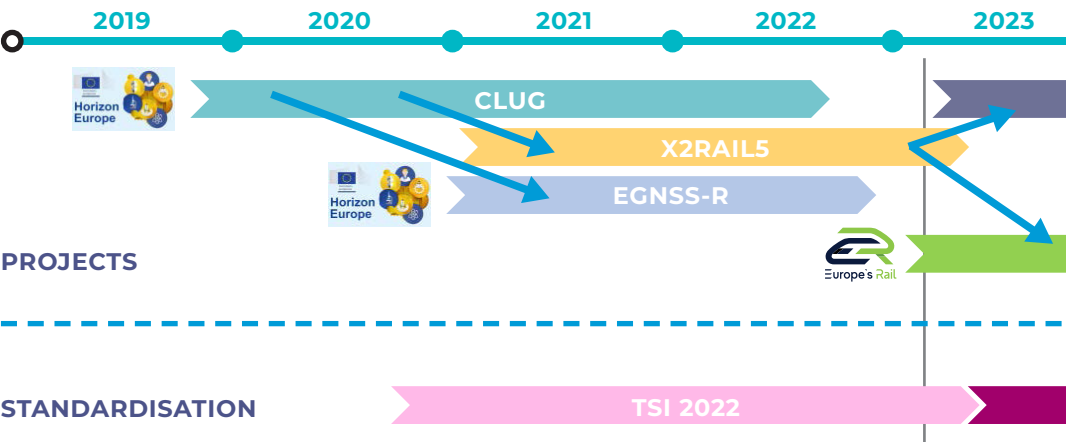
AMBITION & LINKS

The final objective of the CLUG 2.0 LOC-OB is to provide the safe train front-end localization data to the standardized interface of the European Vital Computer (EVC) of the ERTMS/ETCS system to safely control and navigate the train, based on the experience gained in previous projects such as CLUG, GREET, X2RAIL5 and EGNSS-R.

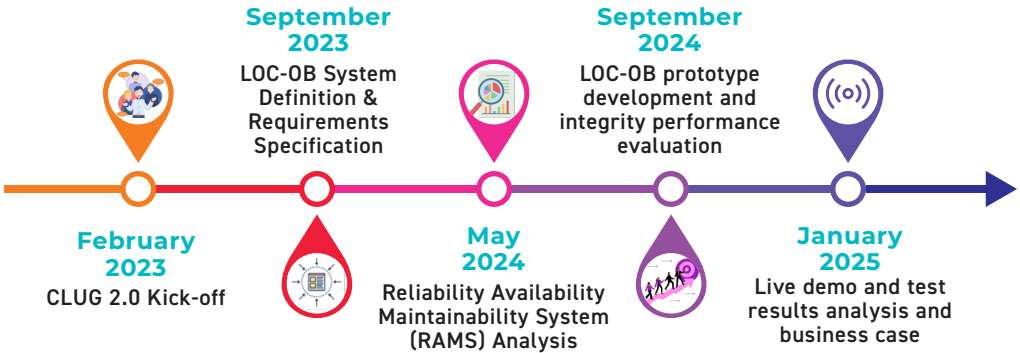
CLUG 2.0 will showcase a robust demonstrator to the rail community, developed by major players. The project targets a maximum TRL of 7 for part of the prototyped functions. Some, like the track selectivity, will be studied in lower TLR.

The CLUG 2.0 activity will continue in Europe’s Rail Joint Undertaking with a main goal of capitalizing the work performed in CLUG 2.0 to demonstrate a complete CLUG LOC-OB prototype demonstration in the frame of the Innovation Pillar of the ERJU program.

Additionally, the project’s outcomes could greatly influence Change Requests for the safe implementation of GNSS (GPS & Galileo) and SBAS (EGNOS) in the railway sector, depending on the results achieved in the frame of the ERJU Innovation pillar.



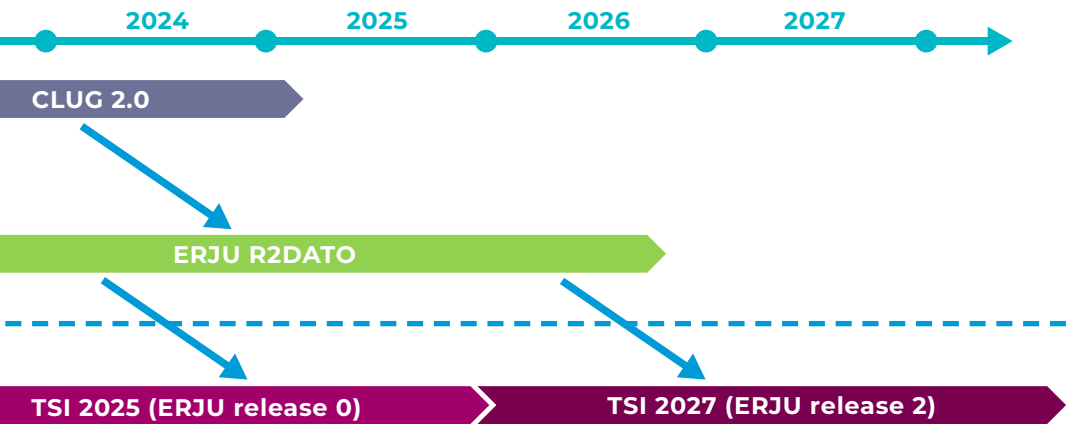
ROADMAP



IMPACT

The primary objective of the LOC-OB System is to diminish reliance on trackside equipment for train localization, such as Eurobalises and other prevalent devices currently used in the railway industry for train tracking. Acting as a catalyst, the LOC-OB system facilitates a transition towards moving block operations (ERTMS/ETCS Level 3). When paired with onboard train integrity devices, it paves the way for a future railway system devoid of track circuits and axle counting systems, significantly contributing to waste reduction.

Following this, CLUG 2.0 fosters an interoperable, sustainable, and eco-friendly mobility system, significantly reducing the transportation sector's environmental impact. Its integration with advanced traffic management and automated train control allows for notable energy savings, thereby aiding in climate change mitigation and greenhouse gas reduction.



TOTAL PROJECT
VALUE

4.17 M€
(2.87 EU)

PARTNERS

10

DURATION

24
Months

PROJECT MEMBERS

COORDINATOR



TECHNICAL LEADERS



PARTNERS

AIRBUS



CFF FFS

SIEMENS



SYNTONY
gnss

CONTACT US

UNIFE - The European Rail Industry
Avenue Louise 221
B-1050 Brussels, Belgium

PROJECT COORDINATOR

Jose Bertolin
jose.bertolin@unife.org
+32 2 642 23 24



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PROJECT WEBSITE
www.clug2.eu