CONTACT

info@rokubun.cat

union-navigation.eu

@GsaUnion

www.linkedin.com/groups/12484229/

Partners

ROKUBUN
Innovative Navigation Solutions

www.rokubun.cat

ICGC
Institut Cartogràfic i Geològic de Catalunya

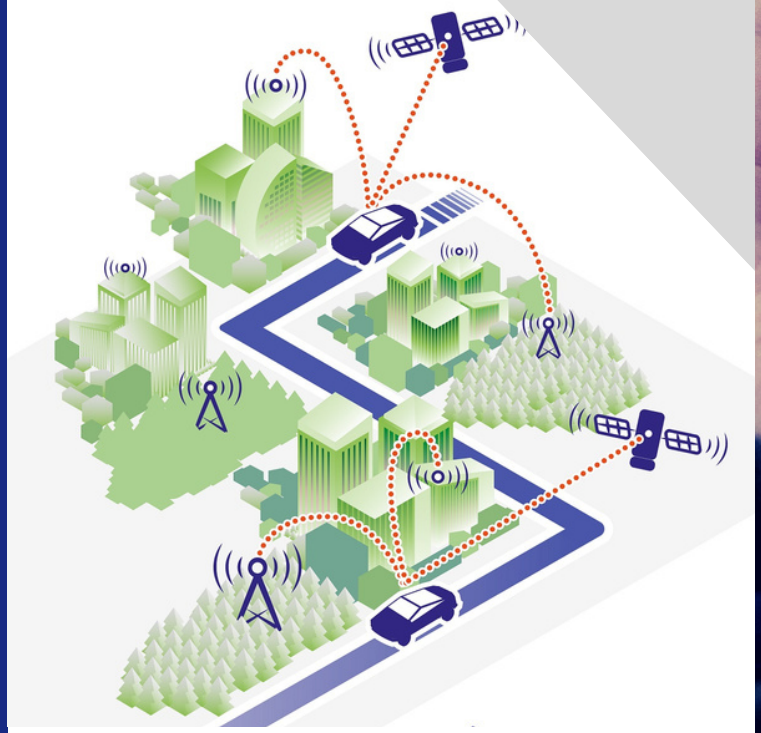
www.icgc.cat

EUSPA
European Union Agency for the Space Programme

This project has received funding from the European Union Agency for the Space Programme under grant agreement No GSA/GRANT/06/2019-UNION

"UNION project aims at democratizing precise navigation for mass-market applications with a platform-agnostic, accurate, and scalable navigation solution that overcomes the constraints of traditional precise GNSS technologies."

Xavier Banqué,
CEO of Rokubun



UNION

UNION

Undifferenced and UNcombIned PositiOning EngiNe

UNION is a satellite positioning engine for accurate and real-time navigation for mass-market devices such as smartphones and vehicles.

This technology is developed in the framework of a collaborative R&D European project funded by the European Union Agency for the Space Programme (EUSPA)

Key info

2 years
(2021-2022)

432.000 €

2 partners:
Rokubun (prime), ICGC

TECHNOLOGY

UNION leverage the strengths of **Real Time Kinematics (RTK)** and **Precise Point Positioning (PPP)** techniques, plus the future **Galileo High Accuracy Service (HAS)**. UNION aims at palliating some main limitations of those techniques, such as the poor scalability of RTK and the slow convergence time of PPP.

UNION generates the following new set of GNSS receiver technologies:

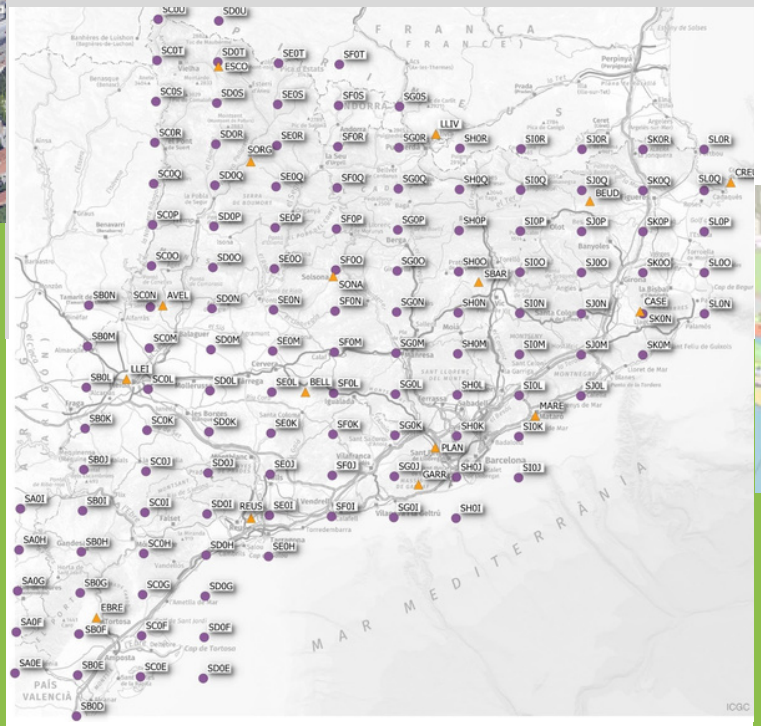
- A **Location Stack**: UNION is based on a new navigation filter for mass-market GNSS exploiting the concept of undifferentiated and uncombined processing of GNSS measurements and data sources, which allows going beyond a smart combination of PPP-RTK techniques.
- **Permanent VRS Network**: A new concept based on the creation and operation of a permanent network of Virtual Reference Stations (VRS) enables proper area coverage and one-way operation of GNSS CORS networks, thus ensuring service scalability
- **Galileo HAS corrections**: Rebroadcast the HAS messages found in Galileo E6 so that non-E6 receivers can benefit from it.

USE CASES

UNION technology has being validated and demonstrated for two relevant applications:

- **automotive**
- **Location Based Services, LBS** (smartphones),

although it can be used in other applications such as Aerial Unmanned Vehicles, AUV (**drones**).



Project outcomes:

- **UNION SDK** (Software Development Kit) libraries
- **Smartphone app** (that integrates UNION SDK), for the validation and demo of LBS use case.

BENEFITS

UNION, as a precise positioning solution, improves:

- **Continuity**, especially in navigation sessions spanning hundreds of kilometres.
- **Accuracy**. UNION represents a major breakthrough in mass-market-oriented navigation solutions, reaching meter-level accuracy in smartphones, and lane-level navigation in road applications.
- **Availability** of precise navigation any time in broad geographical areas.

- **Robustness.** UNION also provides an extra security layer against spoofing thanks to the Galileo Open Service Navigation Message Authentication (OS-NMA).
- **Platform agnosticism.** UNION is platform-independent and easily integrated into the user navigation device. Its implementation as a low-level SW library fosters portability, integration, and scalability. UNION is especially suited for mass-market navigation equipment, optimizing the performance and providing accurate navigation at an affordable cost