



# PROLONG

**P**ortable **R**eceiver to improve **O**lder adults' safety through gait ana**L**ysis using **O**ppportunistic **N**etworking and very high accuracy **G**alileo-based location

## Key facts

### Full name

Portable **R**eceiver to improve **O**lder adults' safety through gait ana**L**ysis using **O**ppportunistic **N**etworking and very high accuracy **G**alileo-based location

### Project call number

GSA/GRANT/08/2017

### Project call

Development of GNSS receiver technologies for Premium and General mass market

### Funding

938 329,80 EUR

### EU contribution

499 704,80 EUR

### Topic

Mass Market

### Market segment

Location Based Services

### Project start/end

01/02/2020 – 05/08/2022

## Context and motivation

Europe has one of the fastest ageing population worldwide. Today, one-eleventh of the world's population (809 million) is over the age of 60 and this number is expected to grow to one-fifth (2 billion) by 2050.

Such a profound change in demographics calls for development of technologies to help elderly people remain independent, ensuring their safety and security.

The technology market tries to respond to such needs but there are still market gaps between the rapidly growing demand for Active and Healthy Aging (AHA) products and services.

In this context, the Global Navigation Satellite System (**GNSS**) **user technology** is of help as it is widely available in mass market devices including personal devices, connected vehicles, Internet of Things (IoT) objects, etc. With Galileo, wearable GNSS location devices are more accurate and reliable, particularly in urban environments.

In this context, PROLONG - "**Portable Receiver to improve Older adults' safety through gait analysis using Opportunistic Networking and very high accuracy Galileo-based location**" is an innovative project that aims **to improve the safety of active and healthy elderly users**.



### Targeted GNSS innovation

PPP, PNT, GNSS security and authentication

### Scope

The PROLONG project achieved to design and manufacture a prototype of a **portable device that can be carried in a pocket as a key-chain or worn as a belt, bracelet or necklace attachment**. The resulting device, **by performing gait analysis** (i.e., analysis of locomotion) **based** on very accurate Positioning, Navigation and Timing (**PNT**) **data, enables to improve the safety of elderly users** by detecting conditions of possible danger (e.g., unstable walking pattern, wandering, fall) and then generating an alert (e.g., playing a loud beeping sound and sending an alert to caregivers).



### Targeted Product

Portable GNSS-IoT tracker

### Challenge & technical solution

Six innovations are combined in the PROLONG portable device:

- use of **authentication and security** mechanisms to secure users' privacy
- use of GNSS/Galileo with **IoT networking**
- optimized "**plug & play**" **algorithms** to ensure real-time detection and high accuracy
- specialised algorithms for the **gait analysis to detect conditions of risk** related to gait patterns of older adults when outside their homes
- seamless **indoor/outdoor monitoring** of elderly people
- ubiquitous prevention of risks related to analysis of locomotion of users, ready to be integrated in a **close-to-market device**.

