



PRoPART

Precise and Robust Positioning
for Automated Road Transports

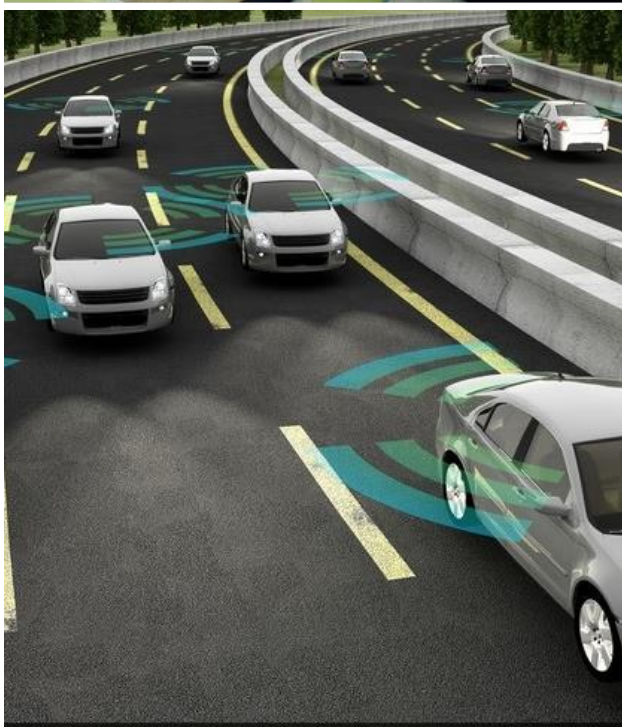
PROPART PROJECT PRESENTATION

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RISE/Safety and Transport



Presentation Outline

- Project Data
- Consortium
- Objectives
- Partner contributions

Project data

- **Call:** Applications in satellite navigation – Galileo
- **Topic:** GALILEO-1-2017: EGNSS Transport applications
- **Budget:** ~3.5 M€
- **EU Grant:** ~3.0 M€
- **Project start:** 2017-12-01
- **Project End:** 2019-11-30

Project acronym:	PRoPART
Project title:	Precise and Robust Positioning for Automated Road Transports
Grant Agreement Number:	776307
Programme:	H2020-GALILEO-GSA-2017 (H2020-GALILEO-GSA-2017-1)
Contract type:	Innovation Action
Start date of project:	2017-12-01
Duration:	24 months



HORIZON 2020

Project Consortium

- Large Scale Enterprise:
 - SCANIA (Sweden)
- Small and Medium Enterprise
 - Waysure (Sweden)
 - Baselabs (Germany)
 - Commsignia (Hungary)
- Research and Development Centres
 - RISE Research Institutes of Sweden
 - Fraunhofer IIS (Germany)
 - Ceit-IK4 (Spain)



Objectives

- The main objective of the PRoPART is to **develop and demonstrate a high availability positioning solution for connected automated driving applications.**
- PRoPART aims to develop and enhance an existing RTK (Real Time Kinematic) software solution developed by Waysure, by **exploiting the distinguished features of Galileo signals(*) as well as combining it with other positioning and sensor technologies.**



- (*) Utilise Galileo specific features in combination with other GNSS systems. Particularly:
- Higher multipath mitigation because of Binary Offset Coding.
 - Substantial improvement of the reliability of the carrier phase ambiguity resolution using E5AltBOC

Objectives

- PRoPART will also use a **low-cost Ultra Wideband (UWB) ranging solution for redundancy and robustness** in areas where the coverage of GNSS is poor e.g. in tunnels or in urban canyons.

ETSI EN 302 065-3 V2.1.1 (2016-11) Short Range Devices (SRD) using Ultra Wide Band technology (UWB); Harmonised Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU; Part 3: Requirements for UWB devices for ground based vehicular applications

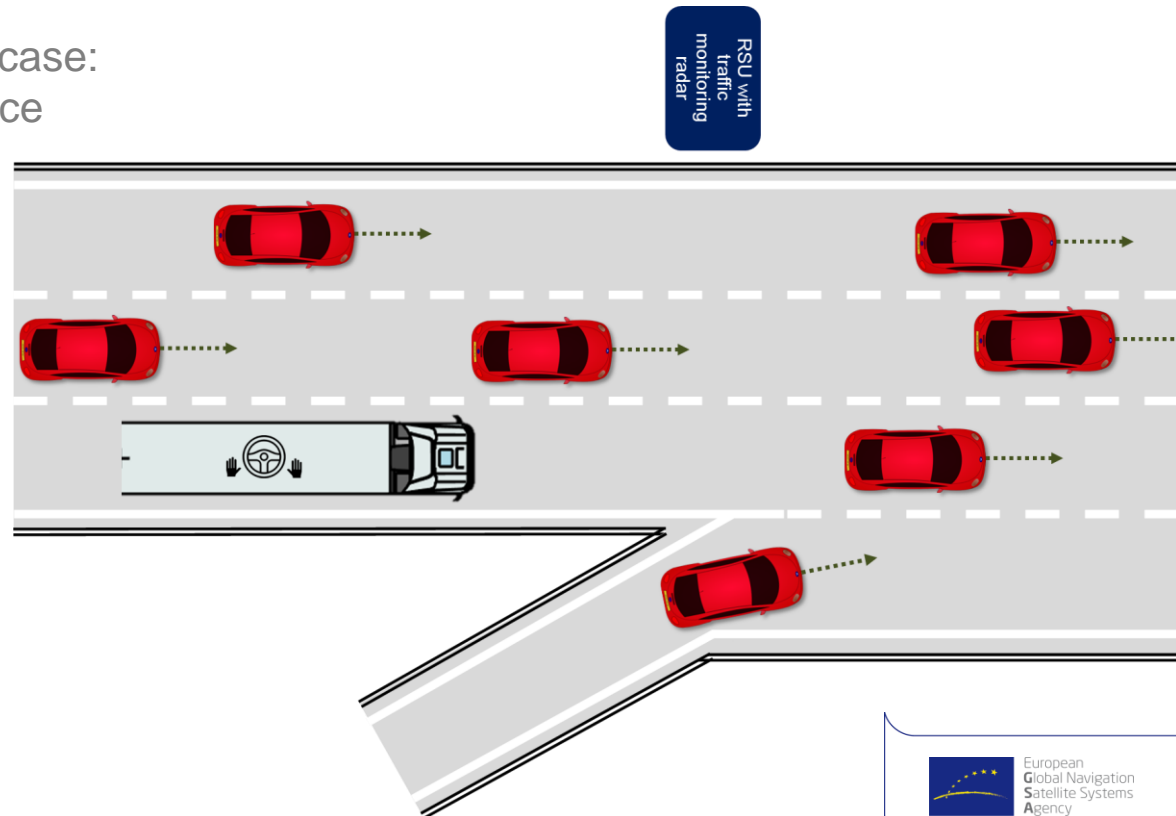
ETSI EN 303 883 V1.1.0 (2016-02) Short Range Devices (SRD) using Ultra Wide Band (UWB); Measurement Techniques

ISO/IEC 18305:2016 Information technology -- Real time locating systems -- Test and evaluation of localization and tracking systems

Objectives

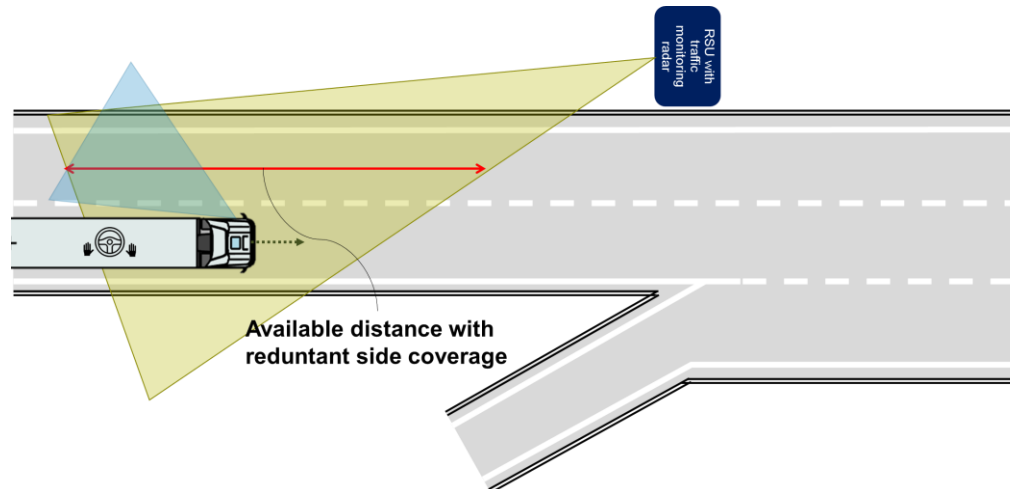
- **A cooperative automated vehicle application will be defined and developed** to define the correct requirements for the PRoPART combined positioning solution.
 - The vehicle application will rely on the high availability positioning solution and use it to couple its **ADAS system with V2X and aggregate information received from other connected vehicles and Road Side Units (RSU).**

Autonomous driving use case:
Crowded highway entrance



Objectives

- As there will be a transition period where a lot of vehicles are neither connected nor automated, solutions having high impact during low penetration are in focus.
- **Therefore P_{Ro}PART will implement an RSU (Road Side unit) with high precision positioning and use both UWB as well as a traffic monitoring sensor to supply ranging, object perception and EGNSS RTK correction data via ETSI ITS-G5 to the connected automated vehicle** so it can make safe decisions based on robust data.
 - This means that P_{Ro}PART **also will implement perception layer sensor fusion** that uses information collected in the LDM (Local Dynamic Map) as well as information from both the on board vehicle sensors and the high availability positioning solution.



Distance with redundant side coverage from on-board and off-board sensors. Sensor ranges and angles are not to scale.

Partner Contributions





European
Global Navigation
Satellite Systems
Agency



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THANK YOU

Presenter

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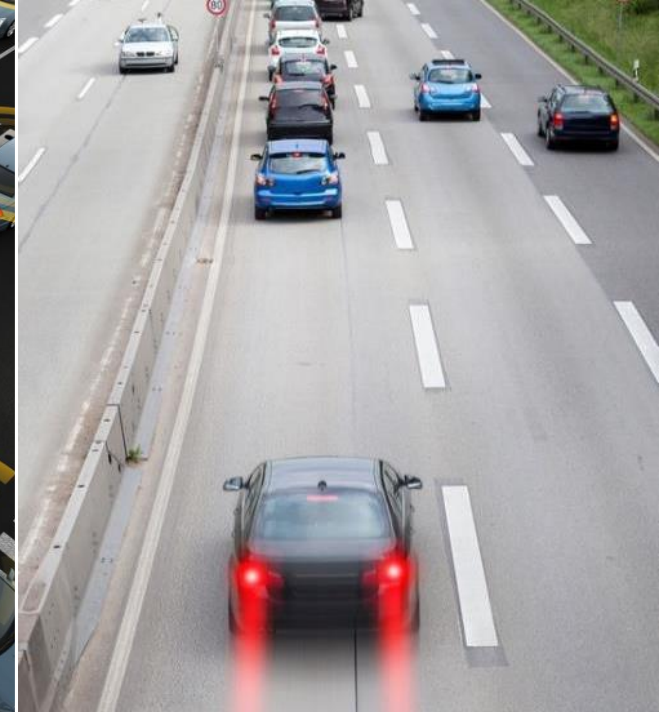


European
Global Navigation
Satellite Systems
Agency

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Company/Institution

www.propart-project.eu





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