

PROJECT

## GRADE

# GNSS Solutions for Increased GA and Rotorcraft Airport Accessibility Demonstration

**Funding:** European (Horizon 2020)

**Duration:** Jan 2018 - Dec 2019

**Status:** Complete

**Total project cost:** €1,241,924

**EU contribution:** €1,156,015



**Call for proposal:** H2020-SESAR-2016-2

[CORDIS RCN : 213194](#)

### Objectives:

The main objective of the project is the demonstration of General Aviation and Rotorcraft capability to benefit from the concepts developed in the SESAR programme, in order to facilitate their integration into airspace and airports where the SESAR concepts and technologies are implemented. This objective will be achieved through live flight trials and a preparatory Real-Time Simulation campaign, with hardware and humans in the loop, which will be focused on both procedural issues and technological aspects related to Global Navigation Satellite System technologies and simultaneous non-interfering operations. Specifically, the GRADE project will demonstrate in flight (using GA aircraft and Rotorcraft equipped with non-certified or specific on-board equipment) the following existing SESAR Solutions:

- Solution #51 – “Enhanced terminal operations with LPV procedures”,
- Solution #55 – “Precision approaches using GBAS CAT II/III”,
- Solution #103 – “Approach Procedure with vertical guidance”,
- Solution #113 – “Optimised Low Level IFR routes for rotorcraft”.

The project will also focus on technological aspects, testing in flight the following products, which are already available within the consortium and suitably customized to fit the above listed SESAR Solutions:

- GNSS EGNOS and GBAS navigation algorithms able to guarantee the applicable RNP;
- Portable non-certified Primary Flight Display to support pilot decisions and operations.

The live flight trials will be conducted at two different sites using three different aircraft (two fixed-wing and one rotary aircraft). Flight test data and information will be collected and analysed by taking into account relevant applicable SESAR Key Performance Areas and suitable performance indices. Performance evaluation and lessons learnt will represent the outcome of the project and will be made available to support regulation, standardisation and certification activities, as well as the integration of GA and rotorcraft with commercial aviation.

### Parent Programmes:

[H2020-EU.3.4. - Horizon 2020: Smart, Green and Integrated Transport](#)

**Institute type:** Public institution

**Institute name:** European Commission

**Funding type:** Public (EU)

### Lead Organisation:

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**Centro Italiano Ricerche Aerospaziali Scpa****Address:**

Via Maiorise s/n  
81043 CAPUA (CE)  
Italy

**Organisation Website:**

<http://www.cira.it>

**EU Contribution:** €386,375

**Partner Organisations:****Malta Air Traffic Services Limited****Address:**

MALTA INTERNATIONAL AIRPORT  
LUQA LQA 5000  
Malta

**EU Contribution:** €67,109

**Universita Degli Studi Di Napoli Parthenope****Address:**

Via Ammiraglio Acton, 38  
80133 Napoli  
Italy

**Organisation Website:**

<http://www.uniparthenope.it>

**EU Contribution:** €118,750

**Nextant Applications & Innovative Solution Srl****Address:**

Via Albenga 33  
183 Roma  
Italy

**EU Contribution:** €77,044

**Technische Universitaet Braunschweig****Address:**

Pockelsstrasse  
38106 Braunschweig  
Germany

**Organisation Website:**

<http://www.tu-braunschweig.de>

**EU Contribution:** €195,625

**Deutsches Zentrum Fr Luft Und Raumfahrt E.v****Address:**

Linder Hoehe  
51147 KOELN  
Germany

**Organisation Website:**

<http://www.dlr.de>

**EU Contribution:** €254,813

**Darjavno Predpriyatie Rakovodstvo Na Vazdushnoto Dvijenie Tpp**

**Address:**

BRUSSELS BOULEVARD 1  
1540 SOFIA  
Bulgaria

**Organisation Website:**

<http://www.atsa.bg>

**EU Contribution:** €56,300

**Technologies:**

Aircraft design and manufacturing  
Guidance, Navigation & Control  
technologies

**Development phase:** Demonstration/prototyping/Pilot Production

**STRIA Roadmaps:**

Cooperative, connected and automated transport, Network and traffic management systems

**Transport mode:** Air transport

**Transport sectors:** Passenger transport, Freight transport

**Transport policies:** Environmental/Emissions aspects, Safety/Security

**Geo-spatial type:** Infrastructure Node