PROJECT

PANOPTIS

Development of a Decision Support System for increasing the Resilience of Transportation Infrastructure based on combined use of terrestrial and airborne sensors and advanced modelling tools

Funding: European (Horizon 2020)

Duration: Jun 2018 - Nov 2021

Status: Ongoing

Total project cost: €5,138,925

EU contribution: €4,990,800

Call for proposal: H2020-MG-2017-Two-Stages

CORDIS RCN : 216000

Objectives:

PANOPTIS aims at increasing the resilience of the road infrastructures and ensuring reliable network availability under unfavourable conditions, such as extreme weather, landslides, and earthquakes. Our main target is to combine downscaled climate change scenarios (applied to road infrastructures) with simulation tools (structural/geotechnical) and actual data (from existing and novel sensors), so as to provide the operators with an integrated tool able to support more effective management of their infrastructures at planning, maintenance and operation level.

Towards this, PANOPTIS aims to:

- use high resolution modelling data for the determination and the assessment of the climatic risk of the selected transport infrastructures and associated expected damages;
- use existing SHM data (from accelerometers, strain gauges etc.) with new types of sensor-generated data (computer vision) to feed the structural/geotechnical simulator;
- utilize tailored weather forecasts (combining seamlessly all available data sources) for specific hot-spots, providing early warnings with corresponding impact assessment in real time;
- develop improved multi-temporal, multi-sensor UAV- and satellite-based observations with robust spectral analysis, computer vision and machine learning-based damage diagnostic for diverse transport infrastructures;
- design and implement a Holistic Resilience Assessment Platform environment as an innovative planning tool that will permit a quantitative resilience assessment through an end-to-end simulation environment, running “what-if” impact/risk/resilience assessment scenarios.
- The effects of adaptation measures can be investigated by changing the hazard, exposure and vulnerability input parameters;
- design and implement a Common Operational Picture, including an enhanced visualisation interface and an Incident Management System.

The PANOPTIS integrated platform (and its sub-modules) will be validated in two real case studies in Spain and in Greece.

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)

Other programmes: MG-7-1-2017 Resilience to extreme (natural and man-made) events

Lead Organisation:

Airbus Defence And Space Sas

Address:
51-61 Route De Verneuil
78130 Les Mureaux
France

EU Contribution: €730,875

Partner Organisations:

Egnatia Odos Ae

Address:
Chlm Thessalonikis-Thermis
57001 Thessaloniki
Greece

Organisation Website:
http://www.egnatia.gr/

EU Contribution: €225,625

Aristotelio Panepistimio Thessalonikis

Address:
KEDEA BUILDING, TRITIS SEPTEMVRIOU, ARISTOTLE UNIV CAMPUS
54636 THESSALONIKI
Greece

Organisation Website:
http://www.auth.gr

EU Contribution: €379,375

National Technical University Of Athens

Address:
Heroon Polytechniou 9 (polytechnic campus)
15780 ZOGRAFOS
Greece

Organisation Website:
http://www.martrans.org

EU Contribution: €697,188

Universiteit Twente

Address:
Drienerlolaan 5
7522 NB Enschede
Netherlands

EU Contribution: €422,425

Future Intelligence Ltd

Address:
REGENT STREET 207 3RD FLOOR
LONDON
W1B 3HH
United Kingdom

Organisation Website:
http://www.f-in.co.uk

EU Contribution: €372,813

C4Controls Ltd

Address:
7 WICKWOOD COURT WOODSTOCK ROAD NORTH HERTFORDSHIRE
ST ALBANS
AL1 4QE
United Kingdom

EU Contribution: €540,000

Hydrometeorological Innovative Solutions

Address:
CALLE JORDI GIRONA 1-3, Edif ParcUC K2M S204B
08034 Barcelona
Spain

Organisation Website:
http://www.hyds.es

EU Contribution: €266,625

Ilmatieteen Laitos

Address:
Erik Palmenin aukio 1
00560 HELSINKI
Finland

Organisation Website:
http://www.fmi.fi

EU Contribution: €227,813

Institut Francais Des Sciences Et Technologies Des Transports, De L'amenagement Et Des Reseaux

Address:
2, Avenue Du General Malleret-Joinville
94114 Arcueil
France

EU Contribution: €375,813

Acciona Construccion Sa

Address:
Avenida De Europa 18
28108 Alcobendas
Spain

Organisation Website:
http://www.acciona-infraestructuras.es

EU Contribution: €321,250

Confederation Of Organisations In Road Transport Enforcement Aisbl

Address:
Avenue Eugene Plasky 22
1030 Bruxelles
Belgium

Organisation Website:
http://www.corte.be

EU Contribution: €141,875

Sofistik Hellas Ae

Address:
ODOS 3 SEPTEMBRIOU 56
10433 ATHINA
Greece

Organisation Website:
http://www.sofistik.gr

EU Contribution: €289,125

Technologies:

Infrastructure management
Operational analysis framework that identifies infrastructure impacted by extreme weather events

Development phase: Validation

STRIA Roadmaps: Infrastructure

Transport mode: Road transport

Transport sectors: Passenger transport, Freight transport

Transport policies: Environmental/Emissions aspects

Geo-spatial type: Infrastructure Node