European Commission

DRONES and SUSTAINABLE URBAN AIR MOBILITY (UAM)

Contributions of Horizon 2020 projects managed by CINEA

European Climate, Infrastructure and Environment Executive Agency

CONTENTS

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GLOSSARY OF ACRONYMS

A
AI ≡ Artificial Intelligence
ATC ≡ Air Traffic Control
ATM ≡ Air Traffic Management

B
BVLOS ≡ Beyond Visual Line of Sight

C
CCC ≡ Communication, Command and Control
CONOPS ≡ Concept of Operations

E
EASA ≡ European Union Aviation Safety Agency
ELOS ≡ Equal Level Of Safety
EMS ≡ Emergency Medical Service(s)
ERS / ERC ≡ Emergency Response Service / Center

F
FAA ≡ Federal Aviation Administration (USA)
FOD ≡ Foreign Object Debris

H
HEMS ≡ Helicopter Emergency Medical Service(s)

I
ICAO ≡ International Civil Aviation Organisation
ICT ≡ Information and Communication Technology

L
LLM ≡ Low-level Traffic Management

R
RPAS ≡ Remotely Piloted Aircraft Systems

S
SESAR ≡ Single European Sky ATM Research
SORA ≡ Specific Operations Risk Assessment
SUMP ≡ Sustainable Urban Mobility Plan

T
TRL ≡ Technology Readiness Level

U
UAM ≡ Urban Air Mobility
UAV ≡ Unmanned Aerial Vehicle
Urban area ≡ Cities with a centre with min. 50000 inhabitants subject to Urban audit
U-Space ≡ Set of new services and specific procedures designed to support safe, efficient and secure access to airspace for large numbers of drones
UTM ≡ Unmanned Traffic Management

V
VLL ≡ Very Low Level (airspace <500 feet / 150 m)
VTOL ≡ Vertical Take-Off and Landing [eVTOL ≡ electric VTOL, air taxi]

FOREWORD

I am delighted to introduce this brochure on drones and sustainable Urban Air Mobility (UAM). It showcases a cluster of projects managed by the European Climate, Infrastructure and Environment Executive Agency's (CINEA) under the EU Research and Innovation programme Horizon 2020.

A growing number of collaborative research and innovation projects are addressing drones for transport applications and Urban Air Mobility, two disruptive fields of innovation. The projects featured in this publication are advancing the state of the art in multidisciplinary areas such as autonomous flights for transport monitoring, aerial means for search and rescue, and automated electric mobility. They are developing new know-how and are testing innovative solutions that help to make transport safer, more resilient and more environmentally friendly.

Public concerns about drones and urban air mobility are also addressed. Research and Innovation help drones and UAM not only to become more safe and secure, quiet and green but also more accessible, affordable and acceptable by the public.

The projects presented in this brochure combine several aeronautical disciplines together with cross-cutting areas to test and advance the pre-deployment of drones and new urban air vehicles in very different environments. This comprehensive approach includes the efficient integration with urban infrastructures, with energy and communication networks and with other transport modes.

In fact, drones and UAM are opening a new chapter not only in aviation but also in the inspection of infrastructures and in urban networks and services. For example, periodic checks of transport facilities with drones improve preventive maintenance while decreasing the human exposure in dangerous contexts. Similarly, point-to-point air connections can help to optimise the efficiency of surface transport, streamline and complement logistic chains, while saving time and reducing pressure on urban infrastructures.

This publication presents an overview of ongoing and completed research and innovation transport projects that were selected through competitive calls for proposals under the Horizon 2020 Societal Challenge "Smart, green and integrated transport".

I hope that you will enjoy your reading and appreciate the contributions of CINEA's work for a more competitive, safer and greener European Union.

DIRK BECKERS,
Director, CINEA

"The projects presented there combine several aeronautical disciplines together with cross-cutting areas to test and advance the pre-deployment of drones and new urban air vehicles in very different environments."

5D-AEROSAFE

The 5D-Aerosafe project is developing new drone-based services to manage airports and ports infrastructure, in particular:

- Infrastructure monitoring for flight safety (inspection of runways/taxiways and their equipment). This service can be performed for daily operations by detecting Foreign Object Debris (FOD) or for maintenance purposes (detection of defects and evolution).
- Calibration of navigation aids, using a miniaturized sensor installed on a drone.
- Monitoring the infrastructure and vicinity to detect suspicious or forbidden activities.

The main objective of the project is to reduce the time needed for these activities and minimise the staff needed for such tasks.

The project is adapting existing drones (fixed wings and VTOLs) for this purpose and is developing the miniaturised calibration sensor to be installed on the fixed-wing drone. The different drones and their ground control stations will be managed by a Generic Ground Control Station interfaced with the 5D-AeroSafe platform.

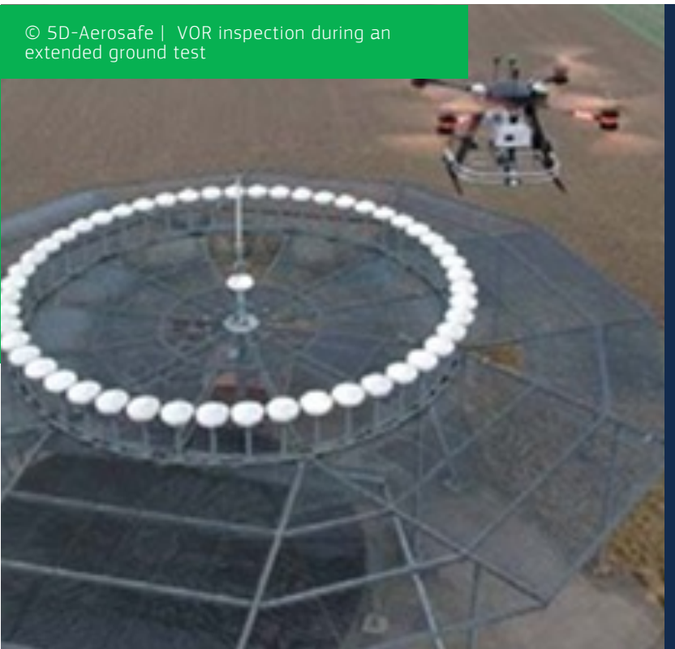
The project is developing this 5D-AeroSafe platform which has two functions:

1. Define the UAV missions as per the request of the ATM (control tower) and process the data for the mission reports
2. De-conflict the UTM (drone missions) with the airport traffic to avoid any issue or accident.

The overall system which is developed incrementally and structured in two different versions (a first applications development and further refinement including improvements) will be tested to gather the end-user feedback.

The first test will use a simulation platform that enables the preparation and performance of UAV missions provided by ENAC (Ecole Nationale de l'Aviation Civile, France).

© 5D-Aerosafe | VOR inspection during an extended ground test



PROJECT

5 services of Drones for increased airports and waterways safety and security

COORDINATOR

Airbus Defence and Space (France)

PROJECT DURATION

1 June 2020 - 31 May 2023

EU FUNDING

EUR 3 497 475

WEBSITE

5d-aerosafe.eu

AW-DRONES

AW-Drones (Airworthiness of mass-market drones) supports the ongoing EU regulatory process for the definition of technical rules, standards and procedures for civilian drones to enable safe, environmentally sound and reliable operations. This objective is met through four strands of activity:

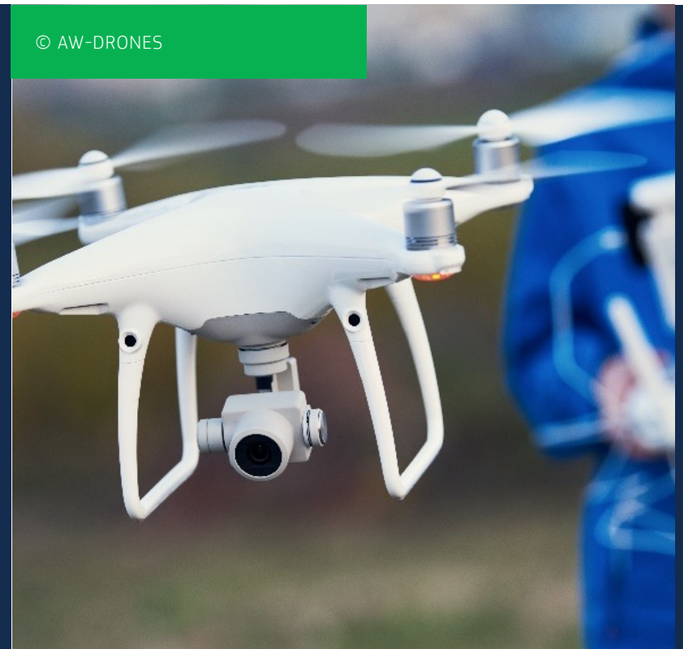
- **Collect and categorise** information on the technical rules, procedures and standards developed for mass-market drones worldwide;
- Carry out a critical **assessment/benchmarking** of all collected data to identify **best practices**, **gaps and bottlenecks**;
- **Propose and validate a set of technical standards** for each category of drone operations;
- **Engage with key stakeholders and end-users**, i.e. representatives of the whole drone value chain.

At the start of the project, the European Commission and the European Union Aviation Safety Agency (EASA), together with the consortium, considered the current regulatory needs in the EU and decided to give priority to the following areas:

- Year 1: Analysis of standards required to support the Specific Operations Risk Assessment (SORA) methodology.
- Year 2: Analysis of standard supporting the development of U-Space in Europe.
- Year 3: Focus on airworthiness standards supporting highly automated drone operations, to ensure that they can be operated safely.

The information produced by the project is gathered and fed into an online knowledge platform, the AW-Drones Open Repository.

© AW-DRONES



PROJECT

Contributing to a well-reasoned set of Airworthiness Standards for mass-market drones

COORDINATOR

Deep Blue SRL (Italy)

PROJECT DURATION

1 January 2019 - 31 December 2021

EU FUNDING

EUR 2 628 153.75

WEBSITE

aw-drones.eu

DRONES4SAFETY

The Drones4Safety project increases the safety of the European civil transport system by building a cooperative, autonomous, and continuously operating drone system that will be offered to railway and bridge operators to inspect their transportation infrastructure accurately, frequently, and autonomously.

The project main objectives are:

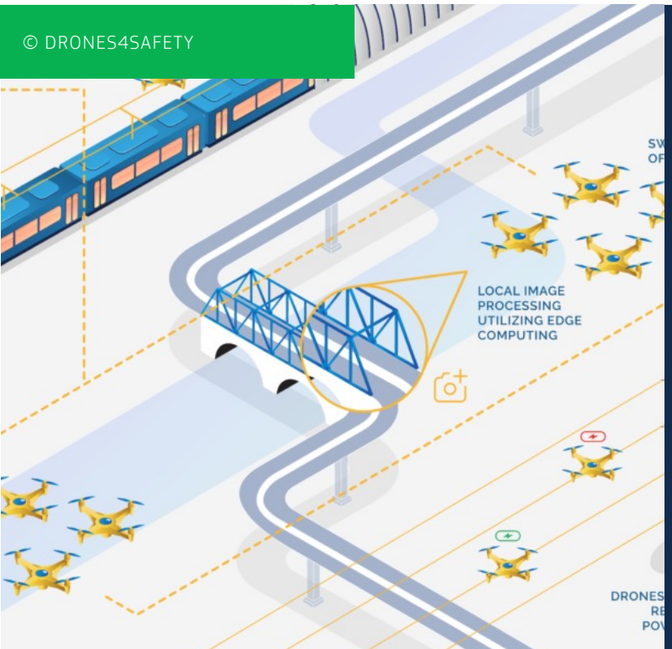
- To develop a solution for harvesting energy to allow continuous drone inspection operations;
- To increase inspection efficiency by developing artificial intelligence (AI) algorithms;
- To provide a platform for collaborative drone inspections' operations;
- To develop a failsafe inspection drone;
- To build a cloud-based AI system for autonomous navigation.

The Drones4Safety project brings together world-leading expertise on energy harvesting, drone technology, artificial intelligence, and bridges and railway inspections into a single focused project. This allows the consortium to enhance the state-of-the-art drone technologies with new tools to harvest energy and autonomously find defaults in the infrastructures inspected.

By using the Drones4Safety charging, collaborating and inspection development approach, it is possible to inspect a vast portion of the European transport infrastructure autonomously, frequently, and at least in a way ten times cheaper than the current inspection solutions carried out by helicopters. The Drones4Safety system provides a time and cost-saving methodology, allowing a big increase in inspection efficiency, measurable on several parameters:

- time needed to collect and send enough information to allow assessment by an expert group;
- feasibility of inspections compared to situations in which today it is not possible to visually inspect the structure (inaccessibility due to lack of physical access and excessive risk to inspectors);
- costs of deploying expert personnel versus costs of deploying a swarm of autonomous drones;
- coverage area and time needed to evaluate a large number of structures;
- higher accuracy during inspections.

© DRONES4SAFETY



PROJECT

Inspection Drones for Ensuring Safety in Transport Infrastructures

COORDINATOR

Syddansk Universitet (Denmark)

PROJECT DURATION

1 June 2020 - 31 May 2023

EU FUNDING

EUR 3 533 192.50

WEBSITE

drones4safety.eu

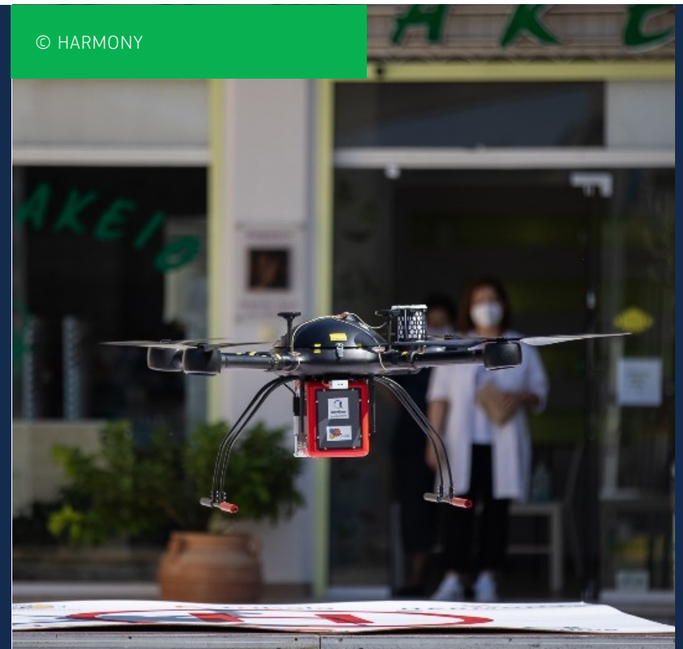
HARMONY

HARMONY develops a new generation of harmonised spatial and multimodal transport planning tools, which comprehensively model the dynamics of the changing transport sector and spatial organisation, enabling metropolitan authorities to lead the transition to a low carbon era in a sustainable manner. To make sure that the modelling conditions of new mobility services are accurately specified in the tool, real life demonstrations of autonomous vehicles and drones are carried out.

In addition to the development of the HARMONY Model Suite (the integrated spatial and transport planning tool), the project has:

- co-designed UAM use cases together with a wide range of stakeholders;
- launched the "Drone Delivery Game" survey to explore public acceptance for the co-designed UAM use cases;
- launched a drone demonstration in Trikala, Greece, where drones deliver medicines from the city to the surrounding villages where mainly elderly citizens with accessibility problems live;
- prepared a demonstration in Oxfordshire where an autonomous van is equipped with drones doing last mile deliveries. The demonstration will take place in summer 2022;
- the technology has been developed and it is now tested in real life conditions to understand the regulatory and social barriers and opportunities.

© HARMONY



PROJECT

Holistic Approach for Providing Spatial & Transport Planning Tools and Evidence to Metropolitan and Regional Authorities to Lead a Sustainable Transition to a New Mobility Era

COORDINATOR

University College London (United Kingdom)

PROJECT DURATION

1 June 2019 - 30 November 2022

EU FUNDING

EUR 7 430 894.50

WEBSITE

harmony-h2020.eu

LABYRINTH

The Labyrinth project will **create and validate new drone swarm applications** to enhance safety, security and efficiency in the civil transport system. The project eliminates, in controlled environments, the need for drone pilots to fly swarms of up to ten drones. This is done through a new auto-piloted technology and the validation of drone swarm pilot services in different transport related environments: seaport, surveillance operations for road traffic transport, airport scenario, and emergency assistance operations in urban areas. The project will also accelerate the EU's regulatory adaptation and public acceptance of drone services.

The objectives involve research on 4D path planning and path control algorithms; development of new U-SPACE services supporting drone swarms auto-guidance system, 5G communications for real-time transmission of data among the drones and the control station and developing cybersecurity technologies to assure the complete solution integrity and protection against external attacks.

Different missions can be requested from a UAV fleet in individual or in coordinated operations. A set of basic missions has been designed. Once the missions are assigned by the UAV Ground Control Station supervisor to the drones, 4D paths are planned for them and the mission's execution is monitored to guarantee the safety of the operation. Different path planning strategies have been developed according to the missions and the UAV type (go-to-point, linear coverage and area coverage path planning). For path planning, Fast Marching algorithms are used to provide 4D paths free of conflicts.

The project work on communications is focused on the interconnection of the different Labyrinth elements providing a multi technology integrated communications ecosystem, including latest 5G communications, satellite communications, WiFi communications or UAV proprietary radio mechanisms. Different protocols and interfaces will be provided with the corresponding security mechanisms to guarantee the security and integrity of the U-SPACE operation and the privacy of collected data in the different scenarios.

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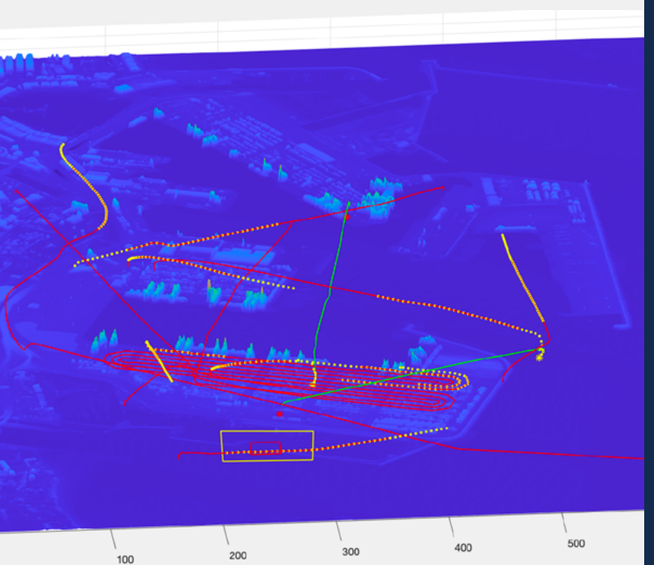


PROJECT

Unmanned traffic management 4D path planning technologies for drone swarm to enhance safety and security in transport

COORDINATOR

Universidad Carlos III de Madrid (Spain)

PROJECT DURATION

1 June 2020 - 31 May 2023

EU FUNDING

EUR 4 957 076.25

WEBSITE

labyrinth2020.eu

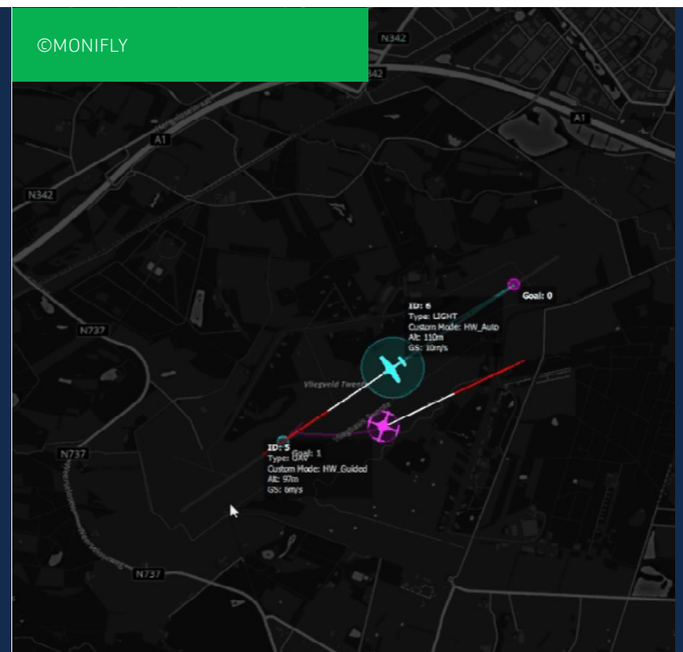
MONIFLY

Drones have been introduced into everyday life in recent years. Photographers, geographers, architects and several other professions are using UAVs regularly. Other uses are being developed and introduced such as fire fighters who are using drones in larger emergency scenarios. Even parcel delivery options are being explored with the use of drones in urban environments. That leads to more potential conflicts between person-carrying air traffic and UAVs as well as between UAVs themselves. The lack of reliable air surveillance in urban areas makes it necessary to investigate new options for surveillance and control tasks in the low altitude airspace.

MoNIfly investigated the use of the mobile network infrastructure and developed a system that can take control of drones in the airspace, for example when a conflict with an aircraft is imminent, steering the drone out of the conflict situation. In order to implement this solution, a regulation on the equipment of drones is necessary, however, this will require UAVs to carry a communication device to send and receive data from the mobile network.

The project performed an in-field validation of the system at the airport of Twente (Netherlands) and a second validation near Mlada Boleslav (Czech Republic). The approach satisfactorily enabled UAVs to separate from person-carrying air traffic by the required distances (between 300 and 700 meters). Small violations of the required minimal distance were recorded, but never exceeded five metres for a few seconds, and corrective actions were put in place swiftly.

©MONIFLY



PROJECT

Mobile-Network Infrastructure for Cooperative Surveillance of low flying drones

COORDINATOR

Technische Universitaet Braunschweig (Germany)

PROJECT DURATION

1 June 2017 - 31 May 2020

EU FUNDING

EUR 2 021 250

WEBSITE

www.monifly.eu

PANOPTIS

The PANOPTIS project develops an integrated system to support all the aspects of Road Infrastructure (RI) management in short, mid- and long terms. The system will integrate various services and components:

- natural risk prediction for short term (day-to-day) operation and for longer term (including climate change) planning;
- vulnerability models for the RI components (bridges, tunnel, roads and associated equipment, shoulders, etc.).;
- fixed and mobile sensors (UAVs and satellites) to monitor the environment and events that can cause problems for the RI and the associated traffic;
- an Integrating Management System (IMS) dealing with incidents, accidents, natural risks to support day-to-day management of the RI (operation centres) and the management (maintenance centres).

The system development is supported by two major end-users: ACCIONA (Spain) and Egnatia Odos (Greece) defining the use cases in which the tests will be performed. The two segments of motorways that are considered for tests combine weather risks (snow, ice, strong wings, floods) and other environmental risks, such as earthquakes and landslides.

The system can be used in three configurations:

1. day-to-day operations: IMS and fixed sensors;
2. incident/accidents with the activation of mobile sensors (UAVs) to perform a quick damage assessment and support the response phase and
3. inspection of RI components with UAVs.

The system can be re-configured seamlessly from one mode to another and several modes can co-exist at the same time.

The UAVs combine a hybrid UAV that can reach the hot stops quickly in fixed wing configuration and VTOLs that can take more precise pictures for inspection purpose.

© PANOPTIS

PROJECT

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

COORDINATOR

Airbus Defence and Space (France)

PROJECT DURATION

1 June 2018 - 30 November 2021

EU FUNDING

EUR 4 990 800

WEBSITE

panoptis.eu

RAPID

The RAPID project addresses the maritime sector and combines and extends drone technology to deliver an autonomous maintenance inspection service, emission testing, and ship hull surveys. By integrating self-sailing uncrewed surface vehicles with autonomous uncrewed aerial systems, the project will reduce the time and cost of structural condition monitoring of maritime transport infrastructures such as material-handling equipment, cargo and passenger ships, and bridges.

The project targets four use cases for real-world applications:

1. emission monitoring from the air within a complex port environment;
2. bridge inspection that targets the detection of cracks and tracking of crack propagation;
3. ship hull inspections, where cameras fitted to drones can give a fast detailed analysis of areas of interest defined by the customer;
4. collision accident response for which an aerial overview of the situation is provided to support towage operations, firefighting, or oil spill containment.

The project will increase safety and security of the overall civil transport system by improving remote UAS inspection survey productivity. It will ensure appropriate legal frameworks, advance safety systems certification, and set standards with the potential to become a global reference. RAPID will contribute to enhance safe and seamless mobility of cargo and passengers and build knowledge and society acceptance for UAS services.

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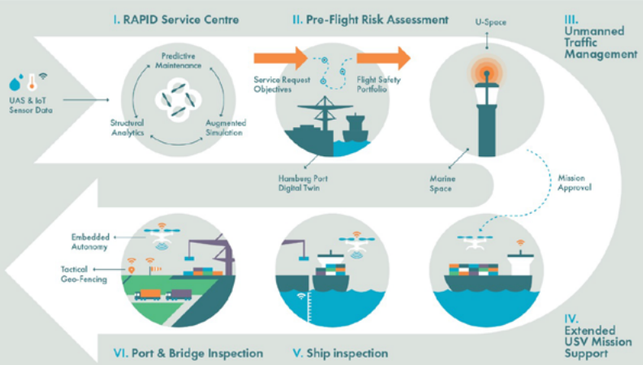

PROJECT

Risk-aware Automated Port Inspection Drone(s)

COORDINATOR

University of the West of Scotland (United Kingdom)

PROJECT DURATION

1 June 2020 - 31 May 2023

EU FUNDING

EUR 4 997 133.75

WEBSITE

rapid2020.eu

RESIST

The RESIST project aims at increasing the resilience of seamless transport operations to natural and man-made extreme events, protect the users of the European transport infrastructure as well as provide optimal information to the operators of the transport infrastructure.

The project contributes to seamless mobility of both people and goods even in the case of serious disruptions, benefiting the full transport sector. Moreover, it provides high-level resilience of the transport infrastructure, establishing safer transportation in the EU and reduces the transport infrastructure's maintenance needs and the structural vulnerability assessment costs, ensuring safer conditions for first responders, inspectors and road crews.

The RESIST project is developing an integrated platform including:

- Aerial robots for the inspection and mounting of sensors on bridges and tunnels
- Inspection sensor suite for the RPAS
- Computer vision systems suitable for the RPAS
- Secure and resilient communications
- Cross layer cyber security solutions
- Mobility continuity for passenger and freight
- Risk assessment and management of extreme events

Finally, the project will help road users interact with the road managers through the mobility continuity module and the mobile app. This will help to optimise infrastructure maintenance.

© pixone3d - stock.adobe.com

PROJECT

RESilient transport InfraSTructure to extreme events

COORDINATOR

Institute of Communication and Computer Systems (Greece)

PROJECT DURATION

1 September 2018 - 30 June 2022

EU FUNDING

EUR 4 956 810

WEBSITE

resistproject.eu

AiRMOUR

The AiRMOUR project focuses on the research and validation of novel concepts and solutions to make Urban Air Mobility (UAM) safe, secure, quiet, green, more accessible, affordable and publicly accepted. As the airspace opens up for new transport systems, new forms of UAM, such as passenger drones, are gaining attention.

The project addresses the needs of cities need to integrate air mobility into their urban planning processes and provide them with suitable tools. AiRMOUR will support and increase the understanding of near-future actions – not only by urban communities, but also by operators, regulators, academia and businesses.

AiRMOUR tackles one of the most critical real-life applications of UAM, namely Emergency Medical Services (EMS). To this end, personal air vehicles for doctors and medical supplies are tested and validated in real-life demonstrations in Stavanger (Norway), Helsinki (Finland), North Hesse region (Germany), and through simulation in Luxemburg.

Main outputs of the AiRMOUR project are the UAM Guidebook for cities, operators and other stakeholders, UAM GIS Tool for urban planners, and UAM Training Programme and Masterclasses. With the help of these tools, European local clusters of aviation and urban actors are able to support their own UAM implementation.

© AIRMOUR

PROJECT

Enabling sustainable AiR MObility in URrban contexts via emergency and medical services

COORDINATOR

Teknologian Tutkimuskeskus VTT OY (Finland)

PROJECT DURATION

January 2021 - 31 December 2023

EU FUNDING

EUR 5 646 150

WEBSITE

airmour.eu

AURORA

Focusing on emergency-related applications, where UAM brings added value on top of current mobility solutions, the AURORA project develops key technologies to foster the adoption of safe and secure UAM operations.

The AURORA project will develop and implement safety-critical technologies and vertically integrate them with both U-Space services and urban mobility ground elements to support autonomous flight UAM operations, focusing on emergency-related applications.

The project works on the development of autonomous flight solution for UAVs and self-piloting, passenger-carrying VTOL aircraft. It includes the autonomous selection of emergency landing sites and landing capability, detect-and-avoid capability. It also integrates UAM with the set of U-Space services, developing elements of the foreseen Very Low Level airspace ATM functions, and experimentally utilising the Galileo High Accuracy Service for UAM navigation applications. The digital-twin methods are used during development processes for test simulations as well as for the use-case demonstrations. Three real-world use-case demonstrations are planned: urgent logistics, chemical incident response, and fire-fighting support.

The outcomes of the AURORA project will greatly impact the adoption of the UAM operations through demonstration of autonomous flight functions as well as U-Space and mobility integrations in urban environment.

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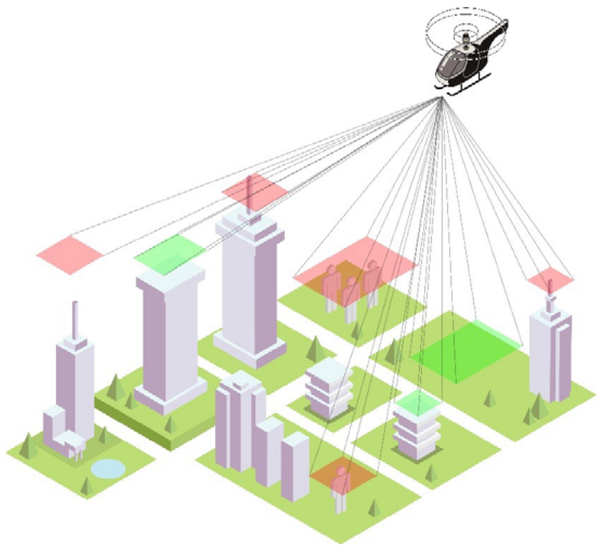

PROJECT

sAfe Urban aiR mObility for euRopeAn citizens

COORDINATOR

Seal Aeronautica SL (Spain)

PROJECT DURATION

1 December 2020 - 30 November 2023

EU FUNDING

EUR 5 678 512.50

WEBSITE

aurora-uam.eu

FF2020

The Flying Forward 2020 (FF2020) project is a three-year collaborative research project that focuses on developing a new Urban Air Mobility (UAM) ecosystem by incorporating UAM within the geospatial data infrastructure of cities.

The FF2020 project will address current UAM challenges by collaborating with different players globally. The solutions developed during the project will be tested in five living labs in the cities of Eindhoven (the Netherlands), Zaragoza (Spain), Oulu (Finland), Milan (Italy) and Tartu (Estonia) – enabling an open dialogue with end-users and citizens. Ultimately, the goal is to have a positive and lasting impact on the quality of life of European citizens and creating sustainable cities.

FF2020 is creating an entire state of the art geospatial UAM ecosystem, which includes a governance model and framework, a regulatory framework, a geospatial digital infrastructure, a digital toolbox, an Identity of Things (IDoT) scheme and an interoperability framework.

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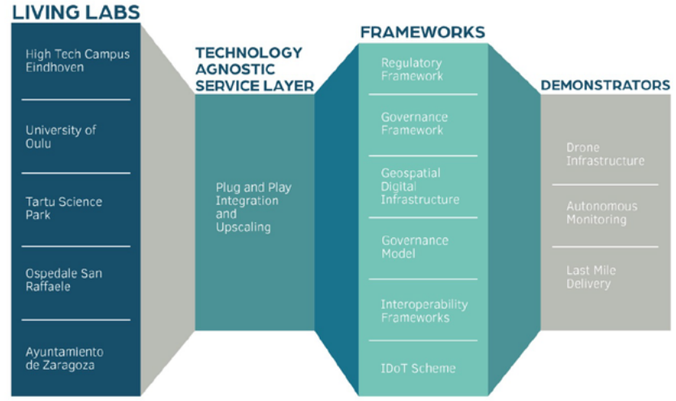

PROJECT

Creating the 21st century spatial ecosystem

COORDINATOR

Brainport Development NV (The Netherlands)

PROJECT DURATION

1 December 2020 - 30 November 2023

EU FUNDING

EUR 5 999 575

WEBSITE

ff2020.eu

ASSURED-UAM

The ASSURED-UAM project will produce recommendations to enhance the safety, sustainability and acceptability of UAM. The project considers scenarios for ten use cases within 5, 10 and 15-year timeframe such as direct last-mile delivery, point-to-point public services, advanced last mile delivery, point-to-everywhere public services, direct medical transport of people or automatic personal aerial transportation. ASSURED-UAM will also recommend standards for products and processes as well as tools for exchange and learning of UAM.

ASSURED-UAM project will provide support and technically assist the implementation of UAM transport in three large cities: Górnoslasko-Zaglebiowska Metropolis-GZM (Poland), Bari (Italy) and the city of Porto (Portugal). The main objectives are:

1. to become a powerful contributor for climate-neutral urban transport in 2050, providing recommendations for integration of surface modes into the U-Space;
2. to provide broad and comprehensive organisational and policy definition support for authorities, policy makers and urban industry organizations.

The ASSURED-UAM project includes the involvement of an Extended Advisory Board of sixty-two members in order to allow a wide consultation involving transport authorities and operators, governments, financial and research institutions, businesses, community organisations, and individual experts. This board is defining the regulatory requirements to rule the UAM operations; assessing their impact on the UAM industry and providing an overview of the safety risk assessment's tools. The most relevant strategies for seamless smart urban and peri-urban mobility service integration including UAM, will be developed based on the Initial Concept of Operations (ConOps) and six use cases (UAM operational models).

© Assured-UAM

PROJECT

Acceptance, Safety and Sustainability Recommendations for Efficient Deployment of UAM

COORDINATOR

SIEC Badawcza Lukasiewicz-Instytutlotnictwa (Poland)

PROJECT DURATION

1 January 2021 - 30 April 2023

EU FUNDING

EUR 1 458 990

WEBSITE

assured-uam.eu

Additional EU funding opportunities

In addition to the Horizon 2020 and Horizon Europe programmes, CINEA also implements other key EU programmes such as the Connecting Europe Facility (CEF) for deployment of infrastructures, including for transport at large and air traffic management (ATM). In close cooperation with the SESAR Joint Undertaking, a call for proposals was launched under CEF in 2021, containing provisions for a series of Digital European Sky Demonstrators. The future demonstrators are a key tool to support the vision of delivering the Digital European Sky. A total budget of EUR 60 million is earmarked for the future demonstrators, which are expected to be launched in 2022 and to run until 2025.

One of the CEF Digital European Sky topics is "U-space and urban air mobility". To unlock the potential of the drone economy and enable urban air mobility (UAM) on a wide scale, a new air traffic management framework for low-altitude operations needs to be put in place. Known as U-space, the framework foresees a set of new services relying on a high level of digitalisation and automation of functions and specific procedures designed to support safe, efficient and secure access to airspace for large numbers of drones. As such, U-space is an enabling framework designed to facilitate any kind of routine mission, in all classes of airspace and all types of environment - even the most congested.

The Digital Sky Demonstrators on U-space and urban air mobility, supported by the new regulatory framework and a set of new standards, will support the implementation of services across Europe ensuring safety and interoperability. U-space will have to integrate seamlessly with the ATM system to ensure safe and fair access to airspace for all airspace users.

ARE YOU AN EXPERT?

The European Climate, Infrastructure and Environment Executive Agency (CINEA) is regularly looking for independent experts to act as external evaluators of project proposals or reviewers of projects in implementation.

If you fit the expert profile, and would like to be considered as a proposal evaluator or project reviewer, you can register in the Funding & Tender portal:

https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/work-as-an-expert

CINEA IN BRIEF

The European Climate, Infrastructure and Environment Executive Agency has been established by the European Commission to implement parts of EU funding programmes for transport, energy, climate action, environment and maritime fisheries and aquaculture.

CINEA has a multinational team, organised in four departments.

Seven European Commission's Directorates-General oversee CINEA's activities:

- DG Mobility & Transport (MOVE)
- DG Energy (ENER)
- DG Research & Innovation (RTD)
- DG Climate Action (CLIMA)
- DG Environment (ENV)
- DG Maritime Affairs and Fisheries (MARE
- DG Regional and Urban Policy (REGIO)

Providing added value to beneficiaries

CINEA's long-standing experience in programme management provides the beneficiaries with:

- Simplified access to EU funding opportunities
- Promotion of project results and achievements for increased visibility of EU actions and promotion of the programmes
- Guidance and technical support in project management, financial engineering, public procurement, and environmental legislation in close collaboration with beneficiaries
- Streamlined and harmonised procedures for a better use of EU funds and maximised programme efficiency, such as shorter payment times and faster response rate
- Efficient evaluation procedures, user friendly and transparent call documentation, and customised IT tools to support applicants.

Support to policy making and deployment

The Agency is also supporting the policy makers and the European Commission with:

- Relevant feedback on programme implementation as input to policymaking
- Developing synergies between programmes to bridge the gap between R&I results and infrastructure development
- Bringing innovative ideas, concepts and products to implementation
- Building significant economies of scale

BY 2027 **+500 STAFF**

BUDGET 2021 - 2027 **EUR 58 BILLION**

CURRENTLY MANAGING **2800 PROJECTS**

DRONES AND UAM

List of beneficiaries

AARHUS UNIVERSITET	Denmark
ACADEMISCH ZIEKENHUIS GRONINGEN	Netherlands
ACCIONA CONSTRUCCION SA	Spain
AERIAL GROUP BV	Netherlands
AIMSUN SLU	Spain
AIRBUS DEFENCE AND SPACE GMBH	Germany
AIRBUS DEFENCE AND SPACE SA	Spain
AIRBUS DEFENCE AND SPACE SAS	France
AIRMAP DEUTSCHLAND GMBH	Germany
AIT AUSTRIAN INSTITUTE OF TECHNOLOGY GMBH	Austria
ANAPTYXIAKI ETAIREIA DIMOU TRIKKAION ANAPTYXIAKI ANONYMI ETAIREIA OTA	Greece
ARISTOTELIO PANEPISTIMIO THESSALONIKIS	Greece
ARQUIMEA AEROSPACE DEFENCE AND SECURITY SL	Spain
ARRIVAL LTD	United Kingdom
ASSOCIAZIONE URBAN LAB	Italy
AUTOMOTIVE & RAIL INNOVATION CENTERGMBH	Germany
AUTORITA DI SISTEMA PORTUALE DEL MAR LIGURE ORIENTALE	Italy
AYUNTAMIENTO DE MADRID	Spain
AYUNTAMIENTO DE ZARAGOZA	Spain
BEN-GURION UNIVERSITY OF THE NEGEV	Israel
BLYENBURGH & CO SARL	France
BRAINPORT DEVELOPMENT NV	Netherlands
C.I.R.A. CENTRO ITALIANO RICERCHE AEROSPAZIALI SCPA	Italy
C4CONTROLS LTD	United Kingdom
CEIIA - CENTRO DE ENGENHARIA E DESENVOLVIMENTO (ASSOCIACAO)	Portugal
CENTRO DE INNOVACION DE INFRAESTRUCTURAS INTELIGENTES	Spain
CENTRO EUROPEO DI FORMAZIONE E RICERCA IN INGEGNERIA SISMICA	Italy
COMUNE DI TORINO	Italy
CONFEDERATION OF ORGANISATIONS IN ROAD TRANSPORT ENFORCEMENT AISBL	Belgium
CONSIGLIO NAZIONALE DELLE RICERCHE	Italy
D. MPAIRAKTARIS KAI SYNERGATES-GRAFEION TECHNIKON MELETON ETAIREIA PERIORISMENIS EFTHYNIS	Greece
DEEP BLUE SRL	Italy
DELAIR	France
DEUTSCHES ZENTRUM FUR LUFT - UND RAUMFAHRT EV	Germany
DIGIE	Belgium
DIN DEUTSCHES INSTITUT FUER NORMUNG EV	Germany
DISTRETTO TECNOLOGICO AEROSPAZIALE S.C. A R.L.	Italy
DJI EUROPE BV	Netherlands
ECOLE NATIONALE DE L AVIATION CIVILE	France
ECOLE ROYALE MILITAIRE - KONINKLIJKE MILITAIRE SCHOOL	Belgium
EGNATIA ODOS AE	Greece
EHANG SKANDINAVIA AS	Norway
ELLINIKA YDATODROMIA IKE	Greece
ELLINIKO MESOGEIAKO PANEPISTIMIO	Greece
ENIDE SOLUTIONS .S.L	Spain
ENVIRONMENTAL RELIABILITY AND RISK ANALYSIS	Greece
ETHNICON METSOVION POLYTECHNION	Greece
ETHNIKO KENTRO EREVNAS KAI TECHNOLOGIKIS ANAPTYXIS	Greece
EUROCONTROL - EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION	Belgium
EUROPEAN DYNAMICS LUXEMBOURG SA	Luxembourg
EUROPEAN PASSENGERS' FEDERATION IVZW	Belgium
EUROUSC ITALIA SRL	Italy
FERROVIAL CORPORACION SA	Spain
FLIGHT SAFETY FOUNDATION- SE EUROPE	Cyprus
FORUM DES LABORATOIRES NATIONAUX EUROPEENS DE RECHERCHE ROUTIERE FEHRLAISBL	Belgium
FORUM VIRIUM HELSINKI OY	Finland
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FUNDACION ANDALUZA PARA EL DESARROLLO AEROESPACIAL	Spain
FUNDACION CENTRO DE TECNOLOGIAS DE INTERACCION VISUAL Y COMUNICACIONES VICOMTECH	Spain
FUTURE INTELLIGENCE EREVNA TILEPIKINONIAKON KE PLIROFORIAKON SYSTIMATON EPE	Greece
FUTURE INTELLIGENCE LTD	United Kingdom
GEMEENTE ROTTERDAM	Netherlands
GORNOSLASKO-ZAGLEBIOWSKA METROPOLIA	Poland
GRIFF AVIATION AS	Norway
HAMBURG PORT AUTHORITY	Germany
HOCHSCHULE FUR ANGEWANDTE WISSENSCHAFTEN KEMPTEN	Germany
HONEYWELL INTERNATIONAL SRO	Czechia
HTCE SITE MANAGEMENT BV	Netherlands
HYDROMETEOROLOGICAL INNOVATIVE SOLUTIONS	Spain
IDRYMA TECHNOLOGIAS KAI EREVNAS	Greece
ILMATIETEEN LAITOS	Finland
INGENIERIA ESPECIALIZADA OBRA CIVIL E INDUSTRIAL SA	Spain
INSTITUTE FOR SUSTAINABLE SOCIETY AND INNOVATION	Italy
INSTITUTE OF COMMUNICATION AND COMPUTER SYSTEMS	Greece
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LUFTFARTSVERKET	Sweden
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MOBY X SOFTWARE LIMITED	Cyprus
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NEAT SRL	Italy
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NOKIA SOLUTIONS AND NETWORKS GMBH &CO KG	Germany
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PONS SEGURIDAD VIAL SL	Spain
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REGIONALE AMBULANCEVOORZIENING UMCG BV	Netherlands
REVOLVE WATER	Belgium
RISA SICHERHEITSANALYSEN GMBH	Germany
ROBODRONE INDUSTRIES SRO	Czechia
ROBOR ELECTRONICS BV	Netherlands
ROBOTS EXPERT FINLAND OY	Finland
SEAL AERONAUTICA SL	Spain
SERENDIPITY BV	Netherlands
SIEC BADAWCZA LUKASIEWICZ-INSTYTUTLOTNICTWA	Poland
SIEMENS INDUSTRY SOFTWARE NETHERLANDS BV	Netherlands
SIEMENS INDUSTRY SOFTWARE SAS	France
SIGNIFICANCE BV	Netherlands
SINTEF AS	Norway
SOFISTIK HELLAS AE	Greece
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TECHNISCHE UNIVERSITAET GRAZ	Austria
TECHNISCHE UNIVERSITEIT DELFT	Netherlands
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European Climate, Infrastructure and Environment Executive Agency

European Commission
W910
B-1049 Brussels, Belgium
+32 (0)2 299 5252

https://cinea.ec.europa.eu

cinea@ec.europa.eu

@cinea_eu

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