

Press release

**Ingolstadt/Dresden,
November 6, 2023**

The Digital World from a Bird's Eye View

Precise 3D navigation maps to enhance safety for autonomous flying

Urban Air Mobility is a forward-looking approach in the development of sustainable concepts for individual and freight transportation in highly congested metropolitan areas. Whether it's logistics drones, air taxis, or rescue and surveillance systems – regardless of the application, the requirements for flight safety are particularly high. The research project ADAM (“Advanced Air Space Mapping”) aims to improve lower airspace situational awareness using new mapping methods, thereby increasing safety for autonomous flying in the city. The project's kick-off event will take place on November 10, 2023.

With the increasing traffic in urban airspace, there is a growing need for safe environmental detection solutions for unmanned aerial systems (UAS). Especially during low-altitude missions as well as takeoff and landing of drones, it is essential to safely and automatically detect static obstacles such as power poles or high-rise buildings. Machine-readable, high-resolution 3D maps of flight corridors are indispensable to meet safety criteria for autonomous flight operations. The ADAM project explores methods to automate and reliably generate such highly accurate maps in the future. The research project is supported by the Federal Ministry of Digital and Transport (BMDV) with a total funding of €2.92 million over a duration of 36 months within the mFUND innovation initiative.

For mapping, the project relies on automated drone-based sensor data fusion. Using AI-assisted data analysis and precise georeferencing, so-called semantic voxel maps are created. These maps enable secure and reliable flight planning. Under the management of the Fraunhofer Institute for Transportation and Infrastructure Systems IVI with its application center “Connected Mobility and Infrastructure” in Ingolstadt, nine partners combine their expertise in ADAM. In addition to Fraunhofer IVI, the Fraunhofer Institute for Optronics, System Technologies, and Image Exploitation IOSB, and the Technical University of Munich are research partners. The participating industrial companies include AEF – Autonom Elektrisch Fliegen gGmbH, Airclip Service GmbH & Co KG, Droniq GmbH, BIT Technology Solutions GmbH, PKTEC Pauli & Kayser Ingenieurgesellschaft mbH, Sedenius Engineering GmbH, and Continental Automotive Technologies GmbH.

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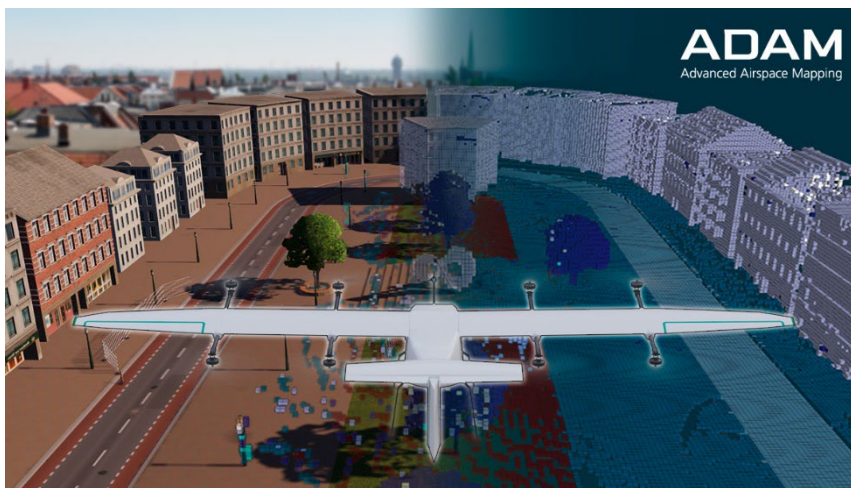
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“The ADAM project makes an important contribution to the development of lower airspace. We are pleased that our technology solutions have been selected to help create robust and highly precise 3D voxel maps,” Rolf Adomat says. He is responsible for innovations in vertical mobility at Continental.

The project's goal is to enhance the operational safety of UAS, simplify their certification, and significantly advance the development of autonomous flying. The project will also include a demonstration of the reliability of voxel maps during autonomous test flights.



Reliable environmental detection in lower airspace. © Fraunhofer IVI

About BMDV's mFUND Funding Program

With the mFUND program, the Federal Ministry of Digital and Transport (BMDV) has been supporting research and development projects related to data-based digital innovations for future mobility since 2016. Project funding is complemented by active professional networking among stakeholders from politics, business, administration, and research, as well as the provision of open data on the BMDV's data portals. For more information, please visit www.mfund.de.

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Contact

Fraunhofer Institute for Transportation and Infrastructure Systems IVI Application Center “Connected Mobility and Infrastructure”

Henri Meeß
Group manager
Highly Automated Flying

Phone +49 172 5169897
henri.meess@ivi.fraunhofer.de

www.ivi.fraunhofer.de

Elke Sähn
Group manager
Science Communication and Design

Phone +49 (0)351/ 46 40-612
elke.saehn@ivi.fraunhofer.de

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