

Korea-EU Horizon Europe Researchers Networking Forum on Energy & Advanced Mobility

Hae-In Lee

**Lecturer in
Autonomous
Systems**

**Cranfield
University**

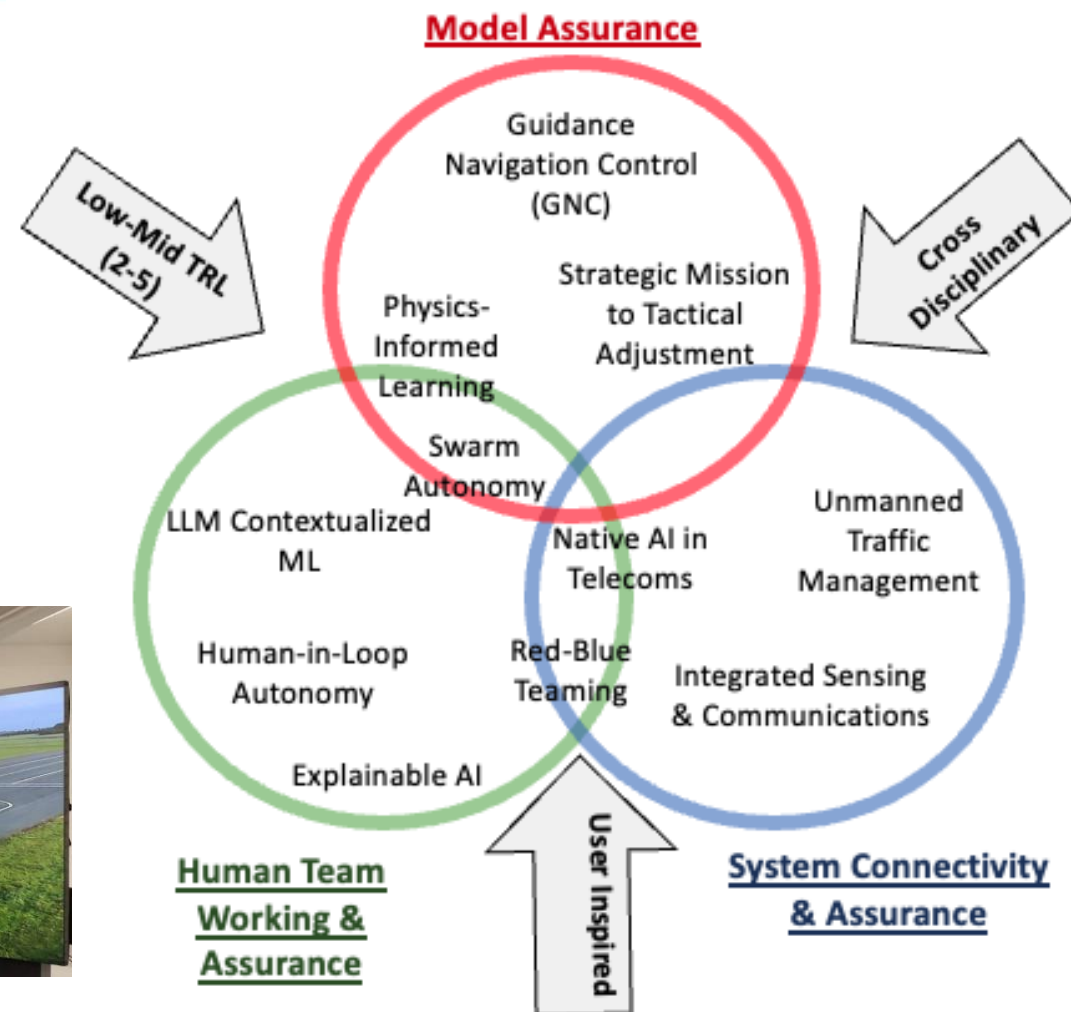
**Advanced
Air Mobility**



1. Our Research Group

Centre for Assured and Connected Autonomy

- Model-based/data-driven assurance for connected autonomous systems
- Flight arena for swarm operations
- Unmanned traffic management lab – **digital twin**
- Human-machine edge co-pilot & C2 lab



2. Expertise

Theory

- Networked control systems
- Risk-aware decision making
- Human swarm teaming



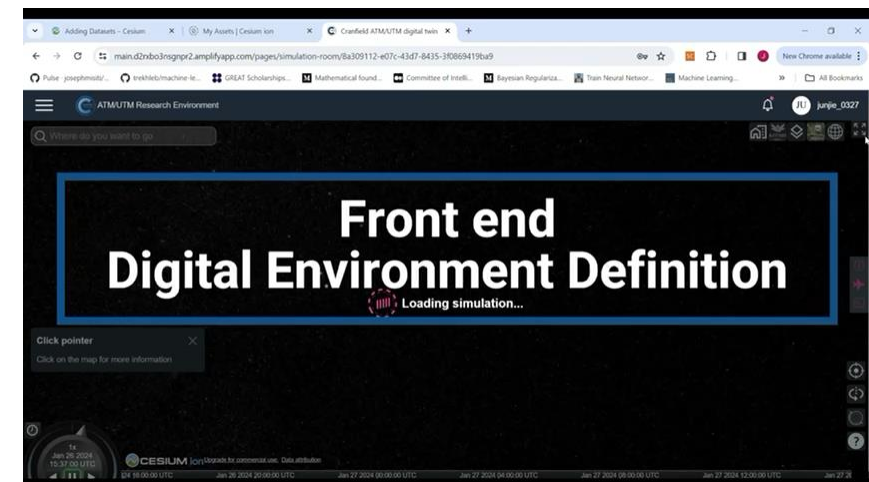
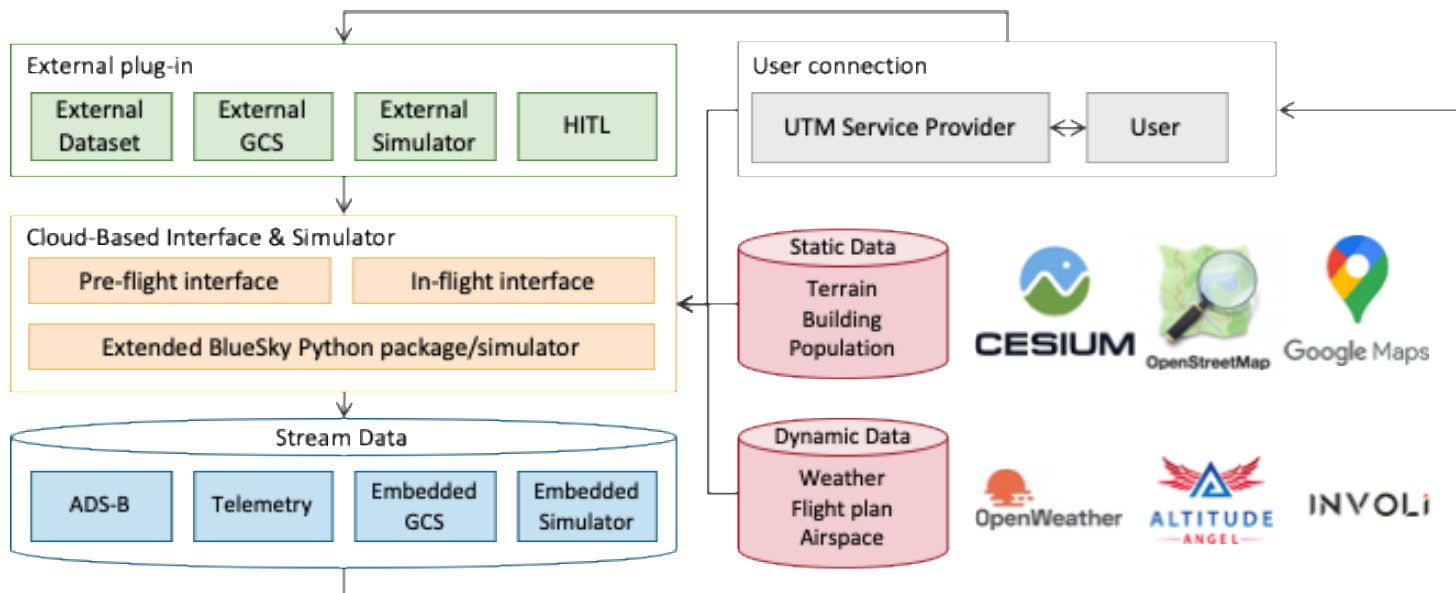
Practice

- Advanced air mobility systems
- Unmanned air traffic management
- Digital twin development



Potential Contribution

- Strong capability in algorithm design and digital twin validation
- Synergy with multi-model testing and demonstration





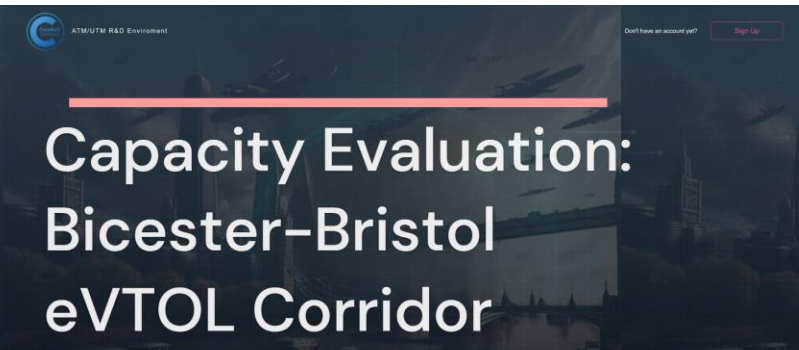
2. Expertise

Key Relevant Projects



U-AGREE: U-space Air and Ground Risk modElS
Enhancement, SESAR, 2025-2027

UK Simulating Enhanced Vertiport Management
in a Multimodal Transportation Ecosystem, 2024



Airspace Digital Twin,
Department for Transport, 2025-2026



EuroDRONE: A European Unmanned Traffic
Management (UTM) Testbed for U-Space

A U-Space UTM Demonstration Project

U-space

SESAR

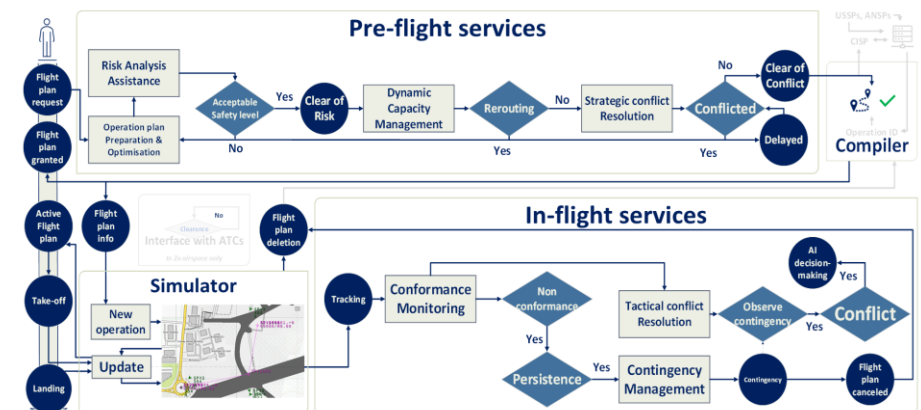
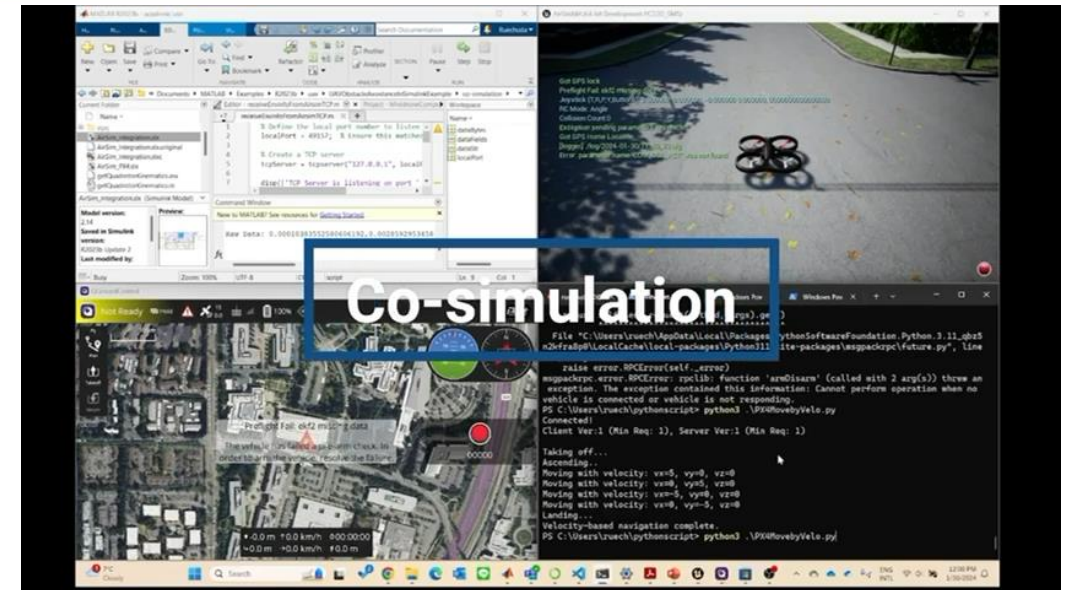
Funded by the Single European Sky ATM Research Joint Undertaking



2. Expertise

Key Relevant Papers

- Cranfield University, Demonstrating Advanced U-Space Services for Urban Air Mobility in a **Co-Simulation Environment**, SESAR Innovation Days, 2023
- Y. Tang et al. An Integrated Approach for On-Demand **Dynamic Capacity Management** Service in U-space. IEEE Transactions on Aerospace and Electronic Systems 2022.
- Y. Tang et al. Incorporating Optimisation in **Strategic Conflict Resolution** Service in U-space. SIDs2021: 11th SESAR Innovation Days.
- P. Bhundoo and Y. Xu, Developing a 4D **Conformance Monitoring** service based on trajectory prediction modelling for UTM applications, Msc Thesis, Cranfield University, 2022
- A. T. Altun et al, **Contingency management** concept generation for u-space system, 2022 Integrated Communication, Navigation and Surveillance Conference (ICNS).

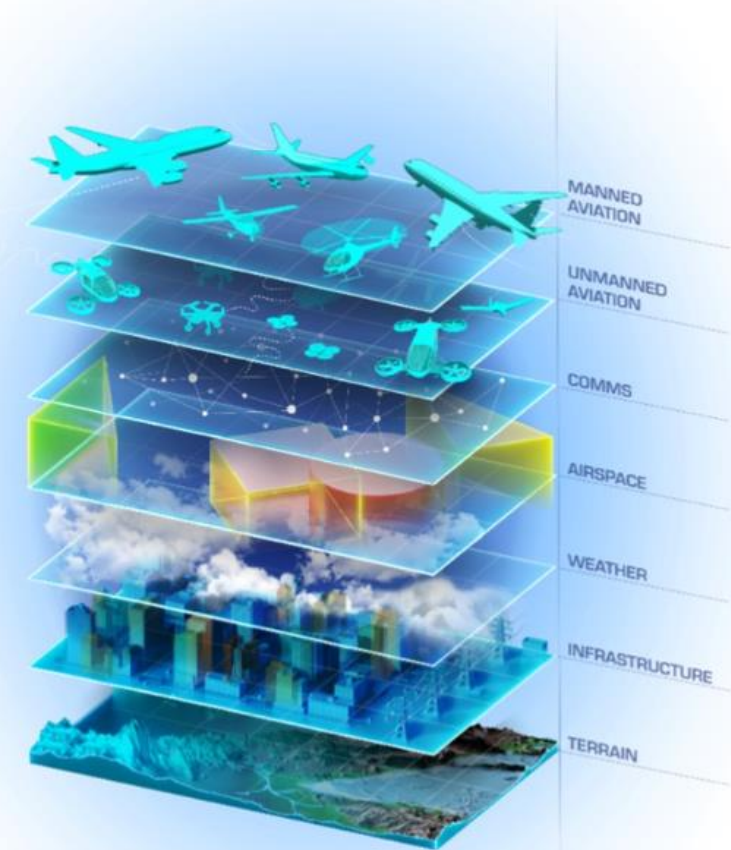




3. Project Idea

HORIZON-CL5-2026-10-D6-10

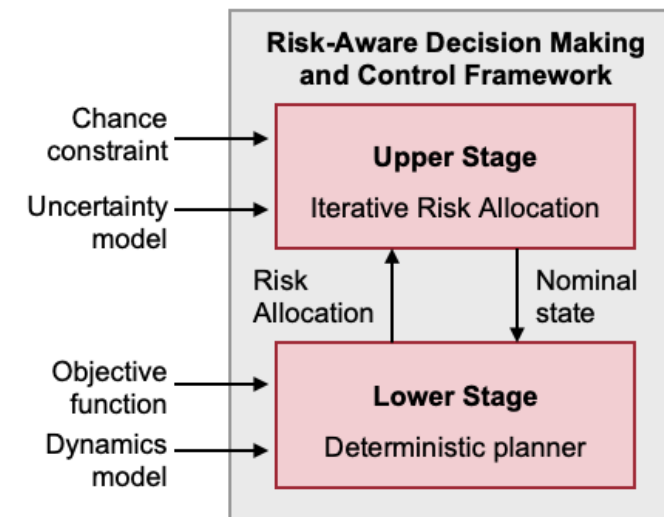
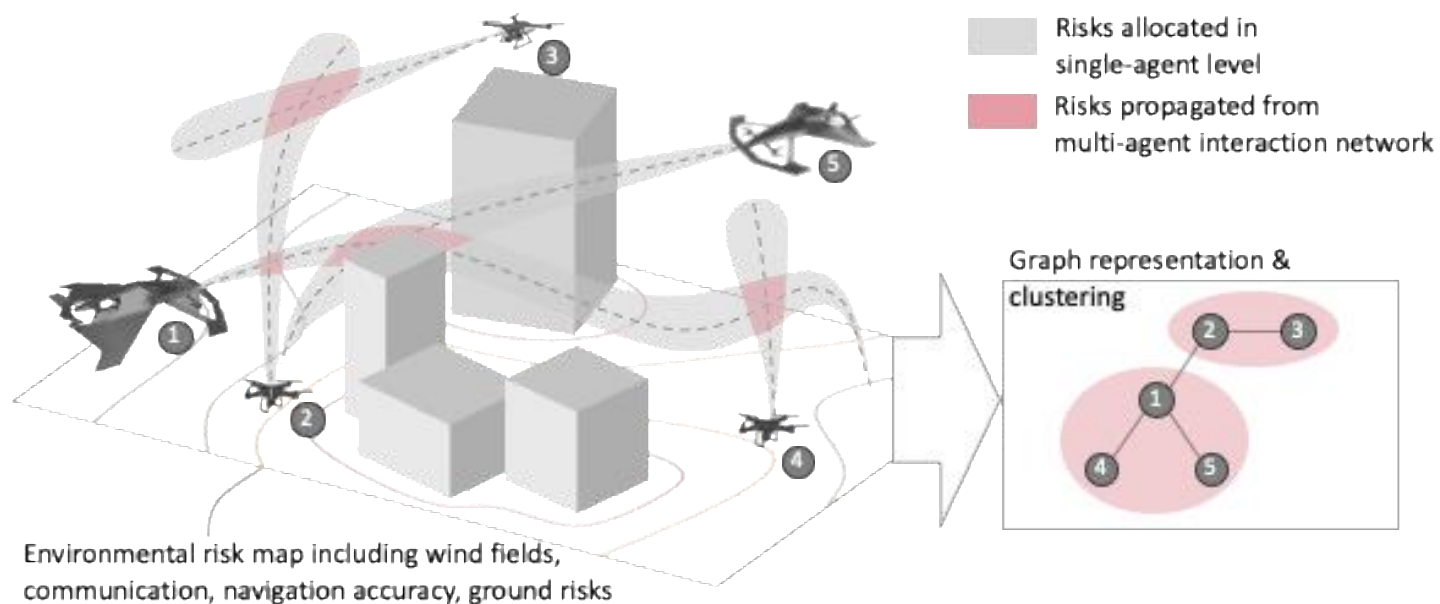
- **Call:** Enhanced resilience in multimodal passenger transport through digital technologies and generative and discriminative AI
- **Aim:** To develop and validate a next-generation resilience framework for multimodal passenger transport
 - Develop AI risk-aware decision-making algorithm to anticipate disruptions, optimise responses in real time, and reduce delays.
 - Develop digital twin enabling mixed-reality simulation
 - Demonstrate in real-life use cases within urban, sub-urban, and long-distance passenger transport



3. Project Idea

HORIZON-CL5-2026-10-D6-10

- Ideas:
 - Graph theory + learning-based + risk allocation

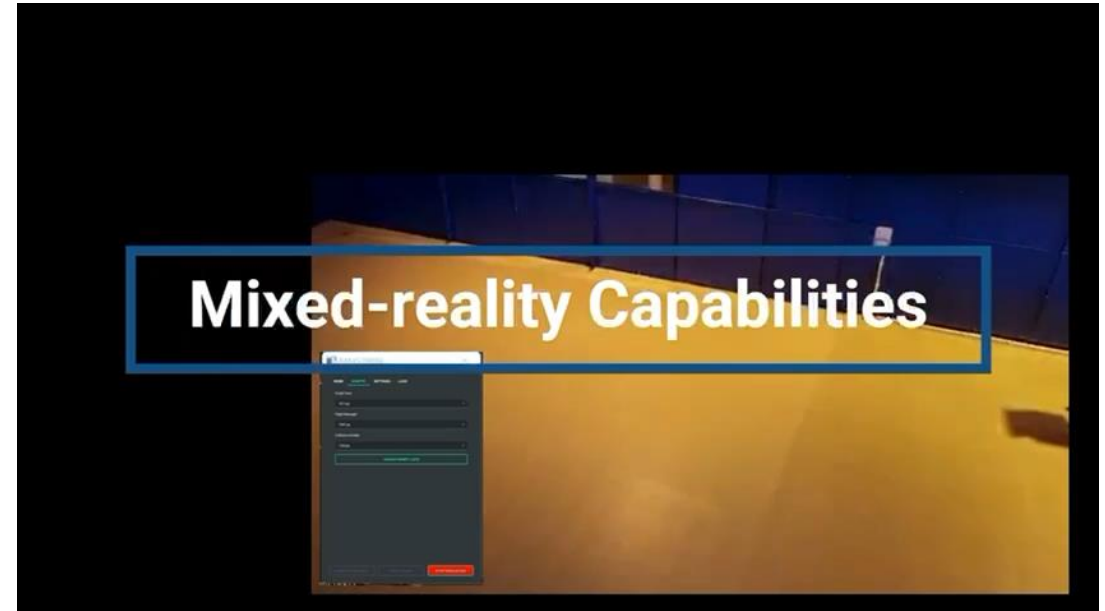
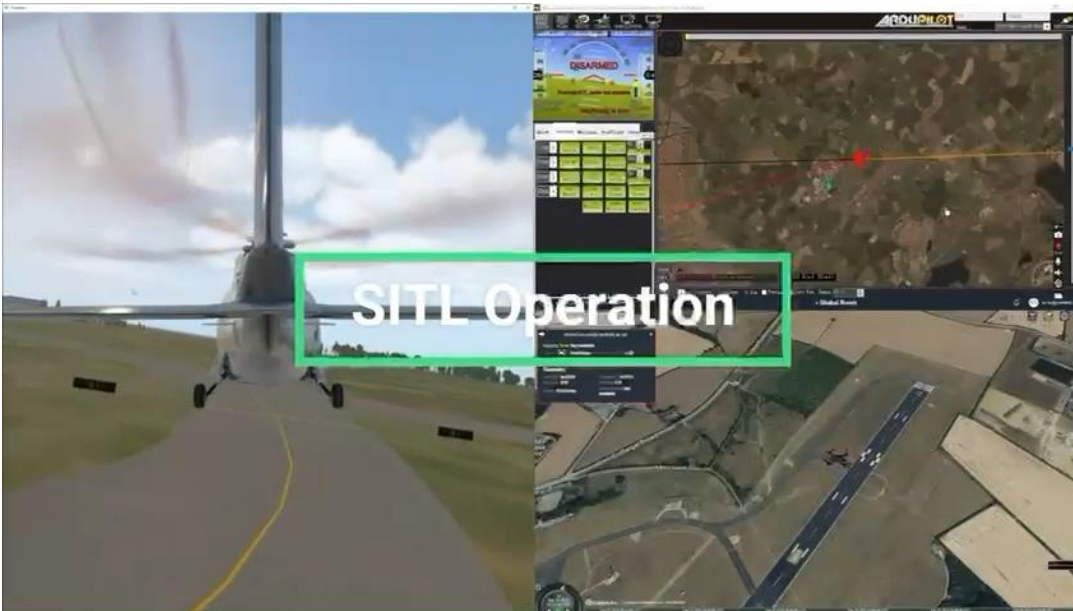




3. Project Idea

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- Ideas:
 - Building upon Cranfield's digital twin development experience
 - Mixed-reality traffic simulations to gradually enhance



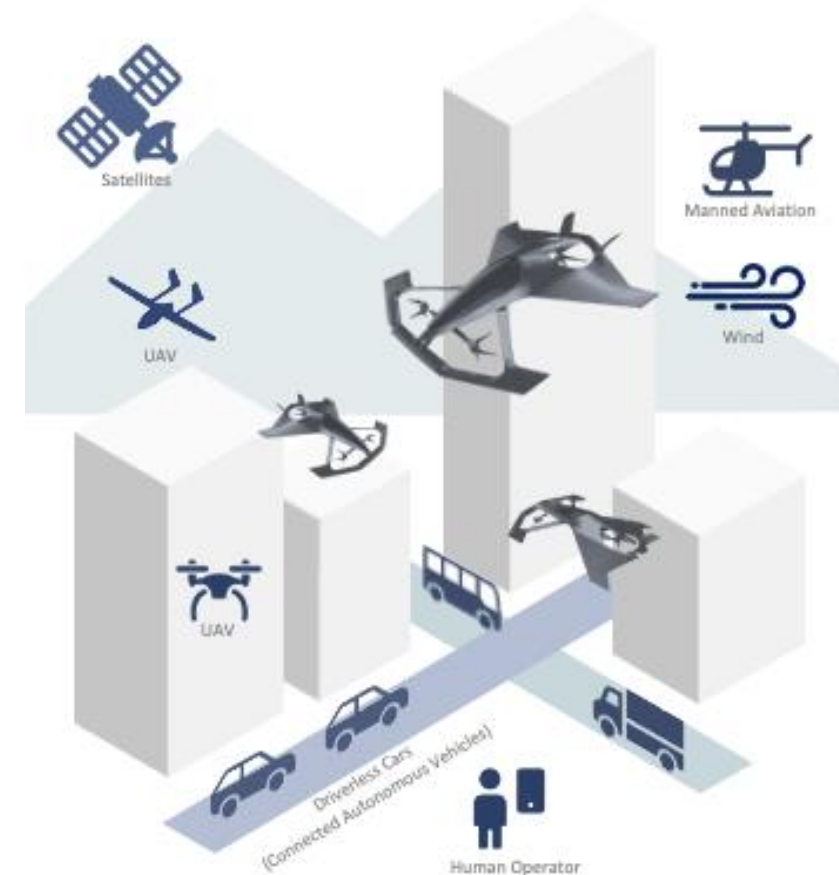
4. Profile We are Seeking and Why

Partners for HORIZON-CL5-2026-10-D6-10

- Diverse transport modes
- Who has close relationship with transport operators, infrastructure managements, and city authorities
- **Why:** Requires demonstration in three pilot sites in different Member States, with minimum three transport modes

Partners for other calls of interest

- HORIZON-CL5-2027-06-D6-08: Enhancing Mobility for All: affordable, reliable, and accessible multimodal transport for inclusive rural and urban connectivity – Societal Readiness pilot
- HORIZON-CL5-2027-06-D6-11: Enhancing Resilience and Accuracy in Positioning, Navigation, and Timing (PNT) Systems and e-conspicuity solutions





5. Contact Details

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