



Opportunities and Obstacles in UAM: First findings from Hands-On Practical Experience with Use Cases

Towards sustainable Urban Air Mobility

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CINEA: The European Climate, Infrastructure and Environment Executive Agency



- Builds on the predecessor agency INEA
- Under the new MFF, CINEA manages a large portfolio of programmes including:
 - Horizon Europe (Cluster 5 Climate, Energy and Mobility)
 - Connecting Europe Facility (CEF) 2
 - Innovation Fund
 - LIFE
- and legacy programmes including:
 - Horizon 2020
 - Connecting Europe Facility (CEF)
- CINEA implements all EU programmes that contribute to the European Green Deal

Urban Air Mobility (UAM)

Topic MG.3.6.2020 – Main challenges

- **UAM is a field of disruptive innovation**, not only for aviation but also for mobility systems and urban planning at large. At urban / suburban level, point-to-point air connection can help **overcome the congestion of surface transport, complement logistic chains whilst saving time and infrastructure costs.**
- The companies enabling urban air mobility and the cities and regions embracing it may develop **competitive advantages**, both in terms of manned/unmanned aircraft systems' business and in terms of mobility services for people, emergency services and freight.
- **Innovation is key to make UAM safe, secure, faster, affordable, inclusive and publicly accepted.** Research is not only aeronautical but also cross-disciplinary to enable aerial traffic in the urban environment. This encompass more autonomous systems and efficient integration with urban infrastructure, with energy and communication networks and with other transport modes.

UAM main challenges

- **Regulatory/legislation aspects:** Most of the legislation produced in the drones/UAM sector in Europe in the last years has been now implemented, giving the development of advanced air mobility a new impulse. **The role of EASA is key to reduce the time to market** of the new drones' solutions.
- **Collaboration between cities and regions: the role of the cities/regions in the drones/UAM activities is of a paramount importance.** An active involvement of mobility stakeholders is required to speed-up the technology implementation and improve the current public acceptance.
- **Improving integrated airspace capabilities:** significant steps are taking to **improve the connection between ATM and UTM.** However, a simple adaptation of the current ATM systems is not enough; accommodating these new air vehicles in the new ecosystem requires a new approach.
- **Public acceptance:** measures **to increase the public acceptance** linked to the drones activities in the urban domain are essential. With the growth of the sector, the acceptance of the new form of mobility is also increasing. Aspects such as **safety, (cyber)security, privacy and noise** avoidance/reduction are very important as well.

Release of the European Drone Strategy 2.0

- Last 29th November 2022, **the EC adopted the "European Drone Strategy 2.0"**. The strategy aims to foster the development of new sustainable drone services and transport solutions. This strategy also sets out how Europe can take drones into large-scale commercial operation, while offering new opportunities for the sector, for example through the use of drones in emergency services.
- "Today's Strategy not only widens Europe's capacity to pursue large-scale commercial drone operations but also offers new opportunities, in particular to small and medium-sized enterprises. With the right framework in place, **the drone services market in Europe could be worth EUR 14.5 billion, and create 145,000 jobs, by 2030,**" Adina Vălean, Commissioner for Transport.
- "**By 2030 drones will be part of our everyday lives**, offering EU citizens and businesses a wide range of commercial and public services. The digital solutions stemming from SESAR 3 JU's programme are concrete building blocks for the U-space and will help us achieve this ambitious vision." Henrik Hololei, DG MOVE.

UAM uses cases – lessons learned (1/3)

- Before starting... What is the **added value** of the project? How the UCs contribute to this unique expertise that the project can provide to the drone community?
- **Benefits** in terms of time/costs/energy savings? Improvements in terms of **TRLs**?
- The UCs should show the **readiness of the drone services** to manage a broad range of drone operations and their interaction with manned aviation. Huge expectations are placed in these demonstrations activities.
- The UCs are strategic to **validate mature solutions**: for instance, the parcel deliveries between urban areas, EMS, police interventions, as well as air taxi trials in controlled airspace.
- Setting validation scenarios in **different locations** around Europe. Involvement of cities is key!
- If possible, to implement **large scale demos** involving relevant end-users in different locations.
- **Agile methodology** to detect early mistakes and avoid repeating them recurrently.
- Proactive **risk management** identifying probability/impact and realistic mitigation measures.

UAM uses cases – lessons learned (2/3)

- **Weather conditions** (e.g. wind speed) are crucial, better to wait for a suitable day?
- **Time as a limiting factor** (e.g. in EMS every second counts)
- **Noise** assessment including noise exposure and visual annoyance
- To **coordinate with police/military** authorities the use of restricted zones
- Prepare all the paper work/certifications/authorisations well in advance. There are always **unforeseen and unexpected issues**.
- **Security/safety come first:** external pressure to make sure that drones are safely and securely integrated into an already busy airspace.
- **E-VTOL operations** still to be matured and validated, in particular ground infrastructure.

UAM uses cases – lessons learned (3/3)

- Looking for **synergies/interaction with other projects**. There is always something to learn.
- **Always communicate** the main results (project website, social media, drone events, specialised audience, etc.) and sell the benefits/opportunities of the validated UCs.
- Possible **publications** in targeted international conferences/journals?
- Looking for potential “buyers” of these UCS and raise expectations → **Create business opportunities**, increase societal demand for drone services

Aspects to be avoided:

- To define a wrong scope and/or wrong target audience
- Repeat similar UCs already validated in another CINEA/SESAR JU drones project
- Underestimate the scope/time/budget linked to your UCs
- No business oriented or CBA clearly negative – The buyer needs to be convinced of the solution
- Price of the future services extremely expensive: Price has to be competitive and attractive.

Release of the [CINEA drones/UAM brochure](#)



Publication of new [“Climate, Energy and Mobility working programme 2023/2024”](#) including several Aviation topics. First calls opened yesterday!
Call deadline April 2023.

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Thank you!



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