Overcoming Challenges and Shaping the Future of Innovative Air Mobility

Dr. Bianca I. Schuchardt
Institute of Flight Guidance
German Aerospace Center (DLR)
bianca.schuchardt@dlr.de

Innovative Air Mobility (IAM) is “the safe, secure and sustainable air mobility of passengers and cargo enabled by new-generation technologies integrated into a multimodal transportation system”, as defined by the European Aviation Safety Agency (EASA) [1]. As such IAM is more than urban air mobility (UAM) or air taxi services. It extends into regional and multimodal use cases including cargo operations or emergency medical services. The concept of IAM is also known under the name advanced air mobility (AAM) established by NASA and widely used internationally. For example, the term AAM was adopted by the International Civil Aviation Organization (ICAO) for its AAM Study Group [2] as well as by the German Ministry for Digital and Transport (BMDV) in their national AAM strategy [3].

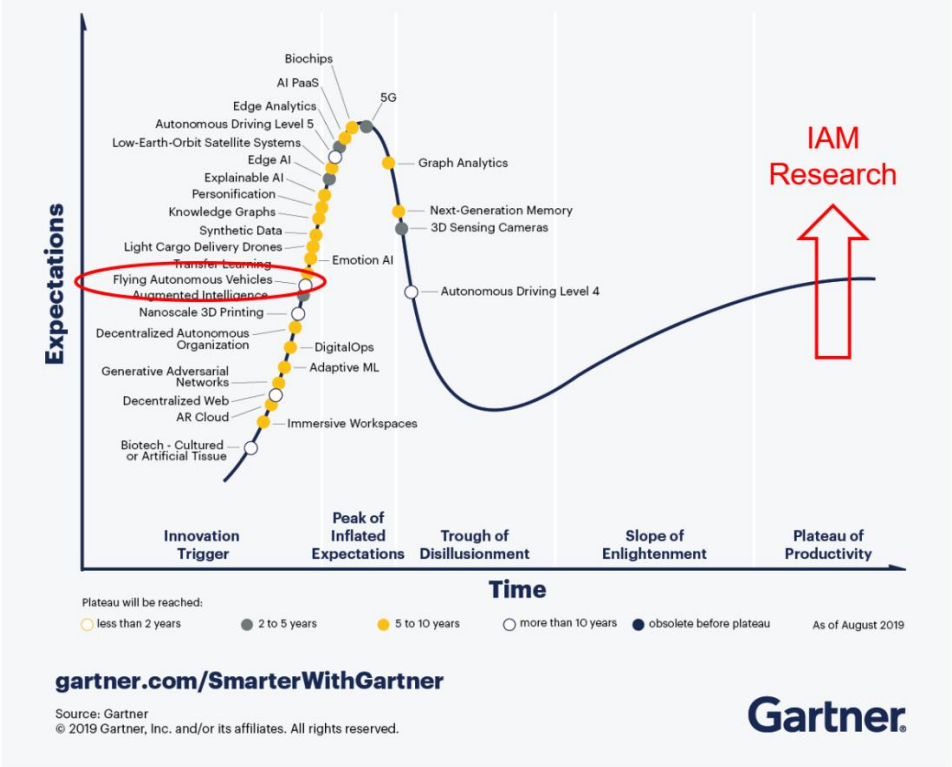

Figure 1: Hype cycle for emerging technologies, adapted from [4].

The recent hype about new air mobility concepts with autonomously flying aircraft was captured in Gartner’s hype cycle from 2019 [4], see figure 1. Since then the hype moved constantly onwards towards its peak. Today in 2025, we seem to have reached the point

beyond the ‘peak of inflated expectations’ at least for Europe. IAM news earlier this year reveled several IAM start-ups being in financial crisis. However, according to Gartner, it is only a question of a few more years to overcome the ‘trough of disillusionment’ and to finally reach the ‘plateau of productivity’. The overarching question is, how can we overcome remaining challenges and shape the future of IAM together?

This presentation will set the scene for the 5th IAM Symposium, organized jointly by German Aerospace Center (DLR) and German Society for Aeronautics and Astronautics (DGLR). The annual symposium originally started as DLR’s UAM symposium in 2021 focusing on urban use cases, see also [5]. The 2025 event features presentations and posters on the following topics:

- How to overcome current challenges of IAM concepts?
- How can air mobility concepts be extended to smart inter-modal systems? Who are the stakeholders in IAM and what are their interests?
- How to take the next steps towards the safe introduction of air taxis or cargo drones and the necessary infrastructure in urban and regional areas?
- How does U-space play a role in IAM air traffic management?
- How to develop, construct and validate emerging new vertiport concepts?
- How can the gaps in the existing transportation system be identified and can IAM help?
- How can societal concerns such as safety, security, privacy, noise, and sustainability be addressed?
- What are recent advances in the simulation capabilities for IAM noise? How can the noise effect be assessed and what is the impact on humans?
- How can advances in autonomy and artificial intelligence be leveraged to enable IAM operations?

The aim of the symposium is to share research results and discuss recent developments and questions on current research activities and industrial developments in the field of IAM. It provides an opportunity for scientists and engineers from industry, research institutions and universities to exchange knowledge and findings of current studies, and to discuss directions for future research and development.

[1] EASA, IAM Hub, Drones & Air Mobility Basics Explained, https://www.easa.europa.eu/en/domains/drones-air-mobility/drones-air-mobility-landscape/basics-explained, accessed 29.06.2025
[2] ICAO, Advanced Air Mobility Study Group (AAM SG), Fifth Meeting, Summary of Discussion, Montréal, Canada, 26-30 May 2025
[3] BMDV, Advanced-Air-Mobility-Strategie des BMDV, 2024.
[4] Gartner, Hype Cycle for Emerging Technologies, 2019.
[5] Pak, H., Asmer, L., Kokus, P. et al. Can Urban Air Mobility become reality? Opportunities and challenges of UAM as innovative mode of transport and DLR contribution to ongoing research. CEAS Aeronaut J (2024). https://doi.org/10.1007/s13272-024-00733-x

Biography

Dr. Bianca I. Schuchardt

Dr. Bianca Schuchardt works as aeronautical research engineer at the DLR Institute of Flight Guidance in Braunschweig, Germany, and leads the research group on ‘Innovative Air Mobility Integration’. The group’s research focus is the safe and efficient integration of cargo drones and air taxis into the airspace.