

CSIR-NAL and CSIR-NPL Jointly Organised a Two-Day Workshop on Unified Airspace Management & Allied Technologies

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A two-day workshop on “Unified Airspace Management and Allied Technologies” was jointly inaugurated by CSIR-National Aerospace Laboratories (CSIR-NAL) and CSIR-National Physical Laboratory (CSIR-NPL) on 17th July 2025. The workshop aims to serve as a strategic platform for bringing together technologists, industry leaders, academia, regulators, operators, and policy-makers to deliberate on the challenges and opportunities in developing a robust ecosystem for Urban Air Mobility (UAM) in India.

The key objectives through this workshop are:

- To initiate collaboration amongst policy makers, R&D organizations, academia and industry.
- Exploring the areas for applied research relevant to urban air mobility technologies such as guidance and control systems, geo-fencing algorithms, GPS denied navigation, communication technologies, sense and avoid systems, anti-drone systems.
- Identify policy, R&D initiatives, ecosystem, technology development and technology validation gaps for UAM and integration of drones in Indian airspace
- Formulation of a roadmap for UAM/ AAM operations and air space integration in India.
- Establish National Centre of Excellence on Urban and Advanced Air Mobility (U/AAM) and Integration of drones in Indian airspace.

CSIR-NAL is proposing to work on different aspects of Urban Air Mobility such as design and development of a two-seater urban air taxi and evolving technologies for Urban Air Traffic Management and the Unified Airspace Management.

Dr Abhay A Pashilkar, Director, NAL welcomed all the dignitaries for their participation and set the pace for the first day of workshop.

Dr. Hanumanth Rao, DG, SAMEER complimented the team for organizing the workshop as it is the need of the hour. He gave a brief overview of the existing communication technologies like 4 G and 5G which are currently used by the various eco-systems. However, for the present context, he emphasised on exploratory research on non-terrestrial communication technologies. Keeping in mind the complex interactions, that are anticipated between the aircrafts, rotor crafts, swarm of unmanned drones and the futuristic air taxies, he gave a call to the research and academic community to jointly carry out translational research on the various research verticals associated with the non-terrestrial communications.

Dr. Kalaiselvi, Secretary DSIR & DG-CSIR, highlighted the challenges in air mobility involving aircraft, helicopters, and a large number of drones. She stressed the need to synergize urban airspace through research in sustainable mobility using AI, blockchain, virtual control rooms, and intelligent agents. She noted that the workshop would help identify hidden challenges in customizing these technologies for unified airspace management. Emphasizing collaboration, she said CSIR works jointly with ministries, research bodies, and academia.

Dr. Somanath, Former Secretary, DoS, appreciated the timely organization of the workshop, stating it would drive research initiatives for India-centric unified airspace management and allied technologies, with future global applicability. He highlighted the need for regulatory frameworks, identification of viable technologies, and solutions for BVLOS challenges. He stressed combining communication systems, image-based object tracking, and multi-sensor data fusion for a safe, seamless architecture. He cautioned that this would require

multiple test facilities and simulators. Dr. Somanath urged CSIR-NAL to lead in design, policy support, infrastructure creation, HR training, indigenization of tech, and stakeholder coordination. He termed the workshop a first step, calling for sustained efforts with committed funding.

Shri Samir Kumar Sinha, Secretary, Ministry of Civil Aviation, outlined the rapid growth of India's aviation market and highlighted MoCA's key initiatives such as Drone Rules 2021, PLI schemes, national airspace mapping, UTM integration, and civil-military coordination. He emphasized the challenges posed by increasing drone operations and the upcoming use of manned air taxis, calling for robust safety policies and certification frameworks. Stressing Mission Mode collaboration, he urged MoCA, CSIR, DGCA, start-ups, defence services, academia, and UTM providers to work together toward the vision of Viksit Bharat 2047. He said the workshop must produce an actionable roadmap and assured MoCA's full support for collaborative efforts like those by CSIR-NAL.



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