

Abstracts of Presentations

Regulatory Concerns of UTM – Professor Liu Hao – BUAA

The presentation will review the Unmanned Aviation regulatory structure at global, regional, and some selected national level, which will set the tunes of UTM regulation. Based on the framework or CONOPS documents from UAS-AG, EU, and the U.S.A, the speaker will analyze the regulatory challenges for the UTM developer, service operator, and value-added service providers. If the time permits, the speaker may provide some regulatory compliance suggestions to the UTM developer and service providers.

Introduction of K-UAM road map – Mr Oh Kyung-ryoon - KARI

On June 4, 2020, the Korean government announced the 'Korea Urban Air Mobility (K-UAM) Roadmap'. It aims to launch commercial services of UAM in 2025, a three-dimensional transportation characterized by eco-friendly and low-noise, and aims to create a new paradigm of time and space by gradually realizing safe and convenient transportation services, through the K-UAM Grand Challenge (2022-2024) which is a large-scale demonstration project jointly conducted by the public and private sectors. This plan is the first road map of the Korean government on the UAM field and is a follow-up to the roadmap for preemptive regulatory innovation in the drone sector (October 17, 2019).

Reflection on the operation of Urban Logistical UAV – Prof Zhao Yifei - CAUC

With the rapid development of UAV technology, large logistics companies have used drones to deliver small deliveries. Large-scale logistical UAV operation has bring new air traffic control problems. Based on the field investigation of a few UAV logistical sites and collected relevant literatures, the basic assumptions of UAV airline network, UAV airport and UAV air traffic control system are put forward. The current researches on UAV operation safety risk assessment conducted by school of Air Traffic Control, Civil Aviation University of China are introduced. These works will lay the foundation for further research.

R&D project of UTM system in Japan – Dr Kenya Harada – JAXA

Current status of the R&D project of UTM system will be presented, along with some related efforts toward the realization of BVLOS operations over-populated areas.

Solution of civil unmanned aircraft systems traffic management and its application with UTMISSE pilot – Mr Xie Genhuai & Dr Zhang Jianping - CAACSRI

We reviewed the civil unmanned aircraft systems(UAS) traffic management (UTM) strategies of main countries and organizations. Then we presented our solution of the civil unmanned aircraft systems traffic management. The solution focused on the general requirements, operational stakeholders and relationships, management mechanism, regulatory strategy, classified air traffic management responsibilities, UTM data flow architecture, key UTM technologies, and development roadmap. Finally we introduced the pilot project of Unmanned Aircraft Traffic Management Information Service System of Civil Aviation Administration of China (UTMISS) as an applied example, including UTMISSE architecture, characteristics, operation, social impact and future plan.

Highlights of Research Conducted under ATMRI UAS Programme – Dr John Wang – ATMRI, NTU

The UAS Programme under ATMRI, NTU was formally established in 2017 after merging UAS related research topics formerly covered under the Aviation System Block Upgrade (ASBU) and Traffic Management - UAS (TM-UAS) research projects. The programme covers topics including the investigation of UAS weight threshold for pedestrian safety, the development of AirMatrix airspace management system, the prediction and mapping of aerodrome collision risk posed by intruding non-cooperative UAS, and many more. This presentation will give an overview of results from past and current projects under the UAS Programme.

Low-altitude logistics network over megacities – Dr Mao Yinian – Meituan

As cities struggle with increasing congestion as well as the demand to provide mobility services for a growing population, policymakers and city governors are beginning to consider how aerial dimension can be used and be part of the solution. Innovative pioneers like Meituan-Dianping are seeking technological capabilities to realize automatous drone delivery in populous areas, where city dwellers like many of us can be directly benefited from. We design, manufacture and test our aerial vehicles with sufficient safety and security redundancy, and develop a reliable and smart management system to master our daily aerial operations. We believe through a holistic approach from the overarching design to the specific ground work we can provide autonomous drone delivery in a safe, efficient and sustainable way.

Preliminary UTM Test in Taiwan – Prof Lin Chin-E - CJC

This paper presents the recent accomplishment on UTM Development in Taiwan. According to CAA UAS Regulation, small UAVs can legally operate below 400 feet under local government management; while those larger UAVs can fly above 400 feet under CAA surveillance. The proposed UTM tries to construct a system infrastructure of Regional UTM (RUTM) for local government, and National UTM (NUTM) for CAA. The UTM system adopts ADS-B Like communication device as on-board unit (OBU) to uplink UAV surveillance data and flight control data to UTM Cloud. A UTM server system organizes UAV surveillance data into orderly flight management for UAVs in the airspace. The first Tainan RUTM is deployed with 5 LoRa and one APRS Ground Transceiver Stations (GTS) for trial runs. The trial tests verify the RUTM surveillance data reliability and overall system performance.

Drone delivery operation in a 10 million population city – Mr Leon Zhao – Antwork Technology

This presentation introduces Antwork's technologies, experiences and risk mitigation in its city-scale drone delivery operations.

Progress and Challenges in K-UTM Development and Demonstration – Dr Kim Songju - KIAST

The Korean UTM research has been under way since 2017, sponsored by Ministry of Land, Infrastructure, and Transport in Korea. The research is proceeding in two stages (the 1st ~2018, 2ndstage ~2022). In the first stage, a centralized monolithic UTM system was developed and tested; while the UTM system for the national authority and the service oriented UTM has been developed separately in the second stage. Through the presentation the experiences of KUTM developments and demonstrations results in both stages will be shared. Also the future challenges in technology, business and regulation will be discussed.

Achievement & opportunity in implementation of UAM – Mr Edward Xu - EHang

In light of the increasingly congested urban traffic, air mobility, with its advantages such as low cost, high efficiency and emissions-free, has become an alternative transportation option. Given the promising future of air mobility, EHang is focusing on creating not only the autonomous aerial vehicles, but an UAM ecosystem including hardware, software, services and operation. So far, EHang has been implementing its UAM Pilot Initiative in four cities especially in Guangzhou City by developing in-city flight routes and exploring commercial use cases including but not limited to aerial sightseeing, intelligent logistics, emergency response. During the epidemic of COVID-19, with the advantage of autopilot and contactless, UAM solution opened up a new opportunity for medical emergency transport, which currently largely relies on ambulance cars or helicopters.