Day 3 (Thursday, 27 October) 9:30 - 11:00, Hall A
Technical Session 10　Urban Air Mobility / Human Factor

T10-1-A

Automatic speech recognition in noise polluted cockpit environments for monitoring the approach briefing in commercial aviation

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The approach briefing is of major importance in commercial aviation. Conducted by the flight crew, it ensures a thorough and mutual understanding of the upcoming descent and approach phase. With regard to a future implementation of reduced crew operations (RCO), an AI-based system is currently being developed that is able to follow the spoken approach briefing, check for its completeness and inform the pilot about possibly missing items. This paper describes the language processing part of the overall system. A commercially available automatic speech recognition system is trained on aviation specific vocabulary and strategies for dealing with cockpit noise are discussed. Steps towards a possible certification of the system according to the EASA Artificial Intelligence Roadmap are outlined.

T10-2-I

UAM Vision Towards the 2030s in Japan

Yuki Horie (ANA HOLDINGS INC.), Daisuke Fujihara (Ministry of Land, Infrastructure, Transport and Tourism), Eri Itoh (The University of Tokyo)

There is an increasing demand for Urban Air Mobility (UAM) in Japan. Two major requirements are the realization of high in-service rate and high frequency operation over the next decade. To meet these, it is necessary to develop eVTOL technologies and infrastructures, to advance cooperation among organizations, and to establish flight and airspace operational rules in accordance with high-density operations. With this back-ground, the first and second authors led a UAM tabletop discussion session with academia, industry, and government stakeholders. This paper presents a summary of the discussion and clarifies the actions to be taken for the realization of UAM in Japan.

T10-3-I

NASA Sky For All Vision for Mid-Century National Airspace Transformation

Akbar Sultan (National Aerconautics and Space Administration)

Future of aviation is changing drastically and at high speed. By mid-century, there will be a large diversity of vehicle types and missions with introduction of Uncrewed Aerial Systems, Advanced Air Mobility, Autonomy, electric, supersonic, hypersonic, and space access vehicles. In addition, lower altitude airspace in large urban areas will be at much higher density. This in turn will make the airspace more complex, given the wide variety of missions and performance of the vehicles. Furthermore, the volume of operations will increase several orders of magnitude with introduction of emergent vehicles, from the current tens of thousands to millions of operations. The diversity, density, complexity, and volume mega drivers of the future airspace requires a transformation of the national airspace. Humans alone will not have the required bandwidth, nor reaction time to maintain current or better levels of safety. Higher levels of automation and increasing levels of autonomy are required to assist humans to assure safety. Operations will need to be managed by auto-negotiation of trajectories, in a highly automated, federated, user- and service-oriented architecture. In-time system wide safety will need to be assured through automated monitor, alert, and mitigation of risks. Furthermore, the future aviation operations and safety will need to provide assurance of autonomy and validation of verification of highly complex and autonomous systems. NASA is developing the mid-century Sky For All vision to further the transition to a digital service-oriented architecture that is prognostic, collaborative, scalable, and dynamically adaptive for all future users.