

Day 3 (Thursday, 27 October) 9:30 - 11:00, Hall B

Special Session SWIM Introductory Talk and Panel Discussion

T14-1-A

SWIM Based Trajectory Coordination to Achieve Strategic Planning and Collaborative Decision Making

Xiaodong Lu, Naoki Kanada, Navinda Wickramasinghe, Hiroko Hirabayashi, Mark Brown (Electric Navigation Research Institute, MPAT)

The current Air Traffic Control (ATC) system is heavily reliant on voice communication that is not sufficient to fulfil the requirements of Global Air Traffic Management Operational Concept (GATMOC). To improve the safety, operating economics, and environmental sustainability, the concept of Trajectory-Based Operation (TBO) has been proposed to coalesce the ATM components during tactical, planning and flight operations by coordinating the view of the trajectory between different actors in a collaborative environment. In order to validate the concept and promote the shift from current voice-based operation to TBO, the Multi-Regional TBO Demonstration (MR TBO) project has been conducted by the Federal Aviation Administration (FAA). As a technical supporter of the Japan Civil Aviation Bureau (JCAB), the Electronic Navigation Research Institute (ENRI) developed a test facility environment that provides simulation capabilities for demonstrations. In this paper, the observations and analysis of demonstration consisting of scenario discussion and function development for TBO implementation is reported. Moreover, the coordination method and information exchange between SWIM-based services in post-departure phase for how to use managed trajectories is discussed. Finally, the lessons learned and challenges for trajectory sharing, management, and utilization are analyzed.

T14-2-I

Multi-Regional Trajectory Based Operations (MR TBO) Demonstrations-Selected Lessons Learned

Richard Jehlen (LS Technologies, LLC, United States), Diana Liang, Nabil Sandhu (Federal Aviation Administration)

Foundational to the future global vision of an integrated, harmonized and globally interoperable Air Traffic Management system is a flight's trajectory as the basis for achieving an "optimum system outcome". The Multi-Regional Trajectory Based Operations demonstrations explore real-world operational, informational, and system implications ahead of plans for Trajectory Based Operations implementation.

T14-3-I

Validating Trajectory-Based Operations (TBO) Operational Values and Capabilities

Daphne Cheong (Civil Aviation Authority of Singapore), Amornrat Jirattigalachote (Aeronautical Radio of Thailand)

This paper presents AEROTHAI's and CAAS' experience in validating key Trajectory-Based Operations (TBO) operational values and required capabilities through our participation in the Multi-Regional Trajectory-Based Operations (MR TBO) Lab Demonstration project. The MR TBO project is a collaborative effort among Aeronautical Radio of Thailand Ltd. (AEROTHAI), Civil Aviation Authority of Singapore (CAAS), Japan Civil Aviation Bureau (JCAB), NAV CANADA and the Federal Aviation Administration (FAA), targeted at maturing TBO concept elements and envisioned technical capabilities. The partners collaborated to first design and develop operational scenarios, and thereafter built the corresponding prototype systems to simulate these identified TBO capabilities. The multi-regional nature of the operational scenarios enabled a better appreciation of the workings of TBO not only within but also across regions. Such scenarios also highlighted the significance of technical systems, including inter-organization/inter-country connectivity, message exchange mechanisms, automated tools, etc., which allowed the formulation of initial capabilities needed to support TBO. The demonstration provided a good opportunity to understand the roles that critical enablers such as System-Wide Information Management (SWIM), Flight and Flow Information for a Collaborative Environment (FF-ICE) and Connected Aircraft, played in a TBO environment. Importantly, valuable lessons learnt from the demonstration helped further mature the TBO concept and required capabilities.