FACTSHEET
Multi Regional Trajectory Based Operations

ICN INFO-CENTRIC NATIONAL AIRSPACE SYSTEM

As the National Airspace System (NAS) and global Air Traffic Management (ATM) continue to evolve to Trajectory Based Operations (TBO), precise trajectory predictions will require enhancement and the expansion of current capabilities. These capabilities preserve or increase available airspace capacity and efficiency while also maintaining safety standards. The Federal Aviation Administration (FAA) is modernizing the NAS through the Next Generation Air Transportation System (NextGen), which will increase safety, efficiency, and predictability. To realize the NextGen vision, many advanced technologies are being developed, tested, and deployed through research, innovation, and collaboration.

TBO Overview:

TBO is an air traffic management concept that enhances strategic planning under changing conditions providing the information and capabilities to help expedite aircraft movement between origin and destination airports.

TBO will shift from a voice-based set of exchanges between participants to an environment primarily involving data sharing and exchange across interoperable systems supported by global data standards.

TBO Operational Values

TBO uses a shared, collaboratively developed trajectory that more closely meets airspace user (AU) objectives and serves as the basis for decision-making across the ATM system. Through TBO, the operational value realized by the AU includes:

- **Enhanced Predictability:** A common plan sharedamong stakeholders, supported by the same trajectory information to mitigate confusion.
- **Increased, Reliable Flexibility:** TBO provides flexibility in accommodating trajectory changes while maintaining business objectives as conditions evolve and change over time. This supports individual airspace user decisions, such as reducing the amount of contingency fuel carried and knowing capabilities are in place for adjustments when more information is available -- thus reducing fuel burn and emissions.

- **Improved Strategic Planning:** By incorporating out-of-zonetraffic, this mitigates deterministic delay factors, improves network performance, and provides more equitably distributed delays.
- **Decreased Uncertainty:** Improving trajectory accuracy decreases uncertainty in the system.
- **Alignment of Strategic Plans and Tactical Actions:** Accomplished through sharing, management, and using the trajectory as a common framework.

MR TBO Project:

Project Overview.

Building on Mini Global, SWIM in ASEAN, IIH&V, FF-ICE/X, and 4DT validation activities, the FAA and global partners have undertaken the MR TBO project to collaborate and demonstrate TBO concepts. Together, we have developed operational scenarios that align with the TBO concept and highlight operational value across the Regions.

Participating Regions are North America and Asia-Pacific, with individual participants including the Federal Aviation Administration (FAA), Nav Canada, AEROTHAI, Civil Aviation Authority of Singapore (CAAS), and Japan Civil Aviation Bureau (JCAB), as well as Industry members including the Boeing Company and the General Civil Aviation Authority (GCAA-UAE) as an observer.

**10 Airports
9 Flights
5 eASPs
4 eAUs**

A list of capabilities, interactions, and information needs were decomposed from a TBO operating concept into specific, detailed scenarios and use cases reflecting operations transiting multiple FIRs and Regions. Across the scenarios and use cases, the selected areas of focus included validation of ICAO's FF-ICE draft Implementation Guidance, global exchange models, application of the International Aviation Trust Framework (IATF), and analysis of Air Traffic Flow Management (ATFM) procedures and information needs.

TBO Implementation Needs.

Fulfilling the operational vision for the future ATM System is crucially dependent on a robust, advanced information-sharing environment for authorized stakeholders. This environment requires flexible global standards and agile communication capabilities to support operational innovations, agility, and performance improvements.

The MR TBO Demonstrations, through large-scale, multi-FIR simulations and the live flight have begun to identify information, procedural, and technological needs in preparation for the implementation of TBO.

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