
ICAO
INTERNATIONAL CIVIL AVIATION ORGANIZATION
A UN SPECIALIZED AGENCY
RECONNECTING THE WORLD

Introduction to TBO and ICAO resources

ICAO Secretariat

ICAO

Overview

1 What is TBO?
What is TBO?

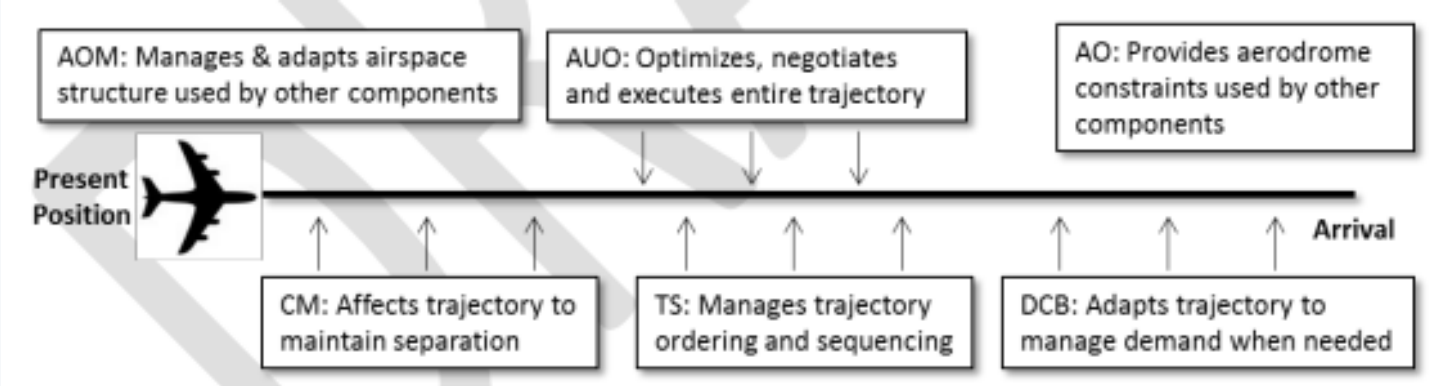
2 Why TBO?
Benefits

3 How to achieve TBO?
ICAO ASBU
ICAO GATMOC
Global TBO concept

4 Conclusion

ICAO

What is TBO?

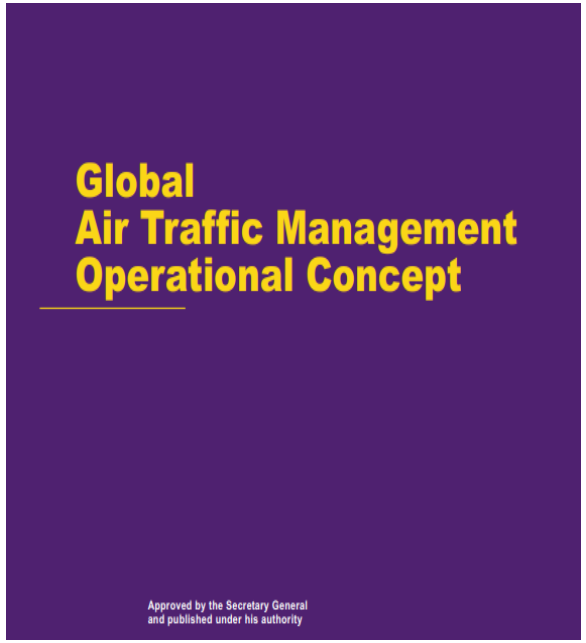


ICAO

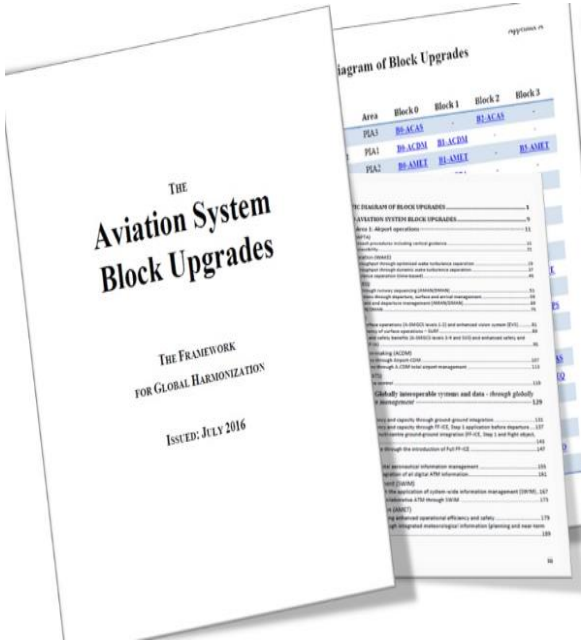
What is TBO

- TBO is an ATM concept that aims to optimize the use of airspace and airport resources by enabling more accurate and predictable flight operations.
- A 4D trajectory consists of three spatial dimensions (latitude, longitude, and altitude) and one temporal dimension (time). It represents the planned and actual path of an aircraft from departure to arrival, including any changes or updates along the way.
- In TBO, the 4D trajectory is collaboratively developed, managed, and shared by all stakeholders, such as airspace users, air navigation service providers (ANSPs), airports, and regulators. It serves as a common reference for planning, executing, monitoring, and adjusting flight operations.
- TBO also relies on advanced automation and decision support systems to facilitate the exchange and processing of trajectory information, as well as to provide guidance and alerts to human operators.

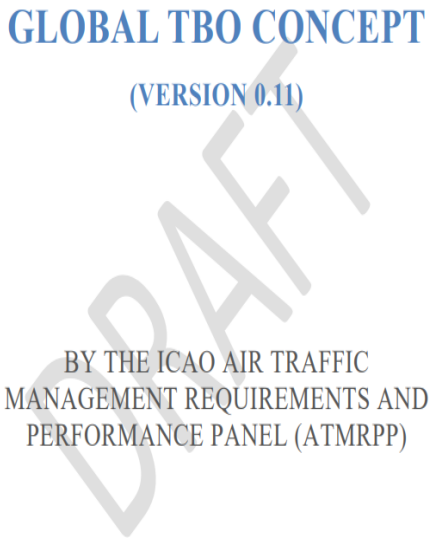
How to achieve TBO?



ICAO GATMOC



ICAO ASBU



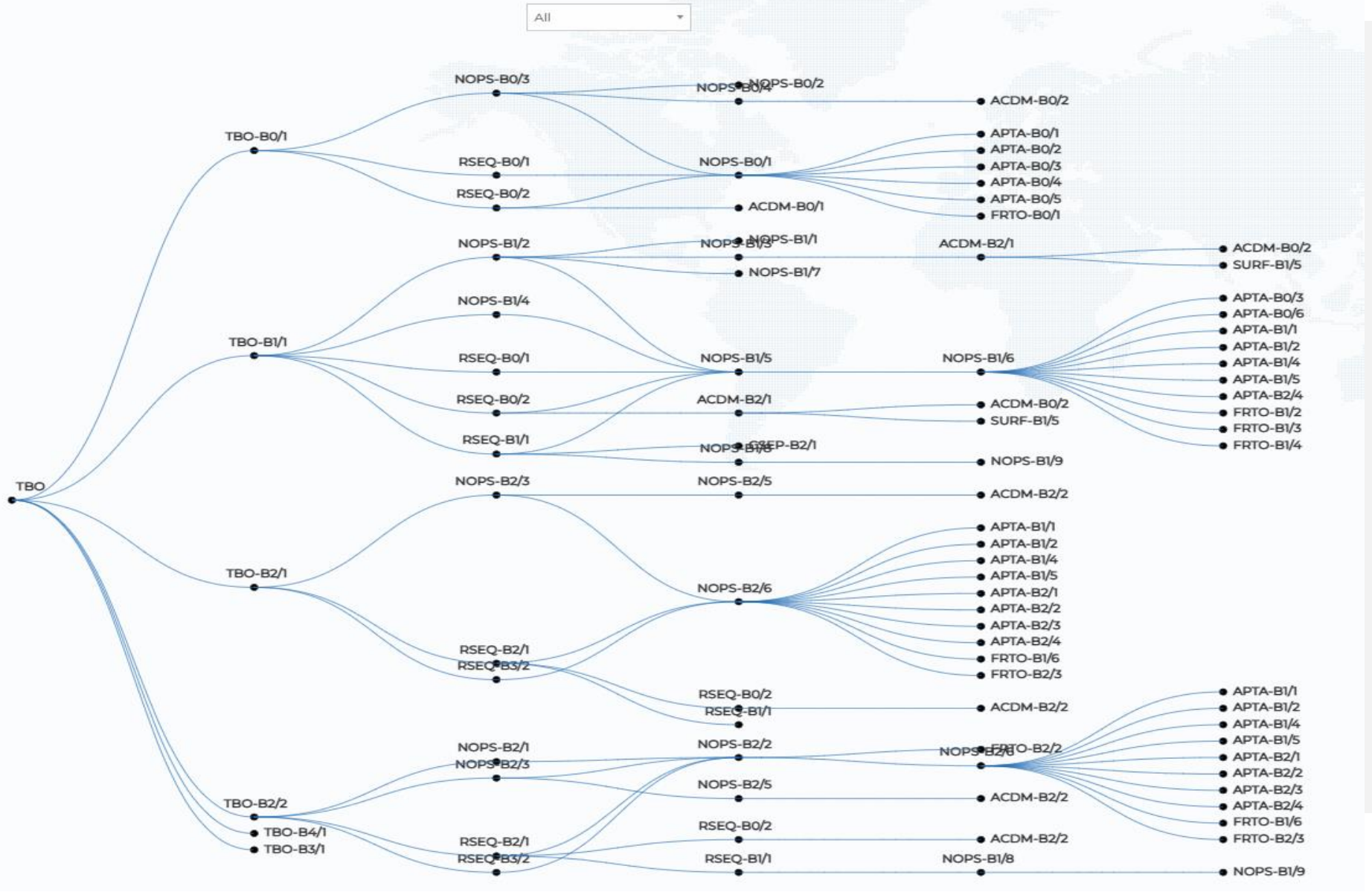
Global TBO Concept

ICAO

ASBU

TBO-B0/1	Introduction of time-based management within a flow centric approach.
TBO-B1/1	Initial Integration of time-based decision making processes
TBO-B2/1	Pre-departure trajectory synchronization within a flight centric and network performance approach
TBO-B2/2	Extended time-based management across multiple FIRs for active flight synchronization
TBO-B3/1	Network based on-demand synchronization of trajectory based operations
TBO-B4/1	Total airspace management performance system

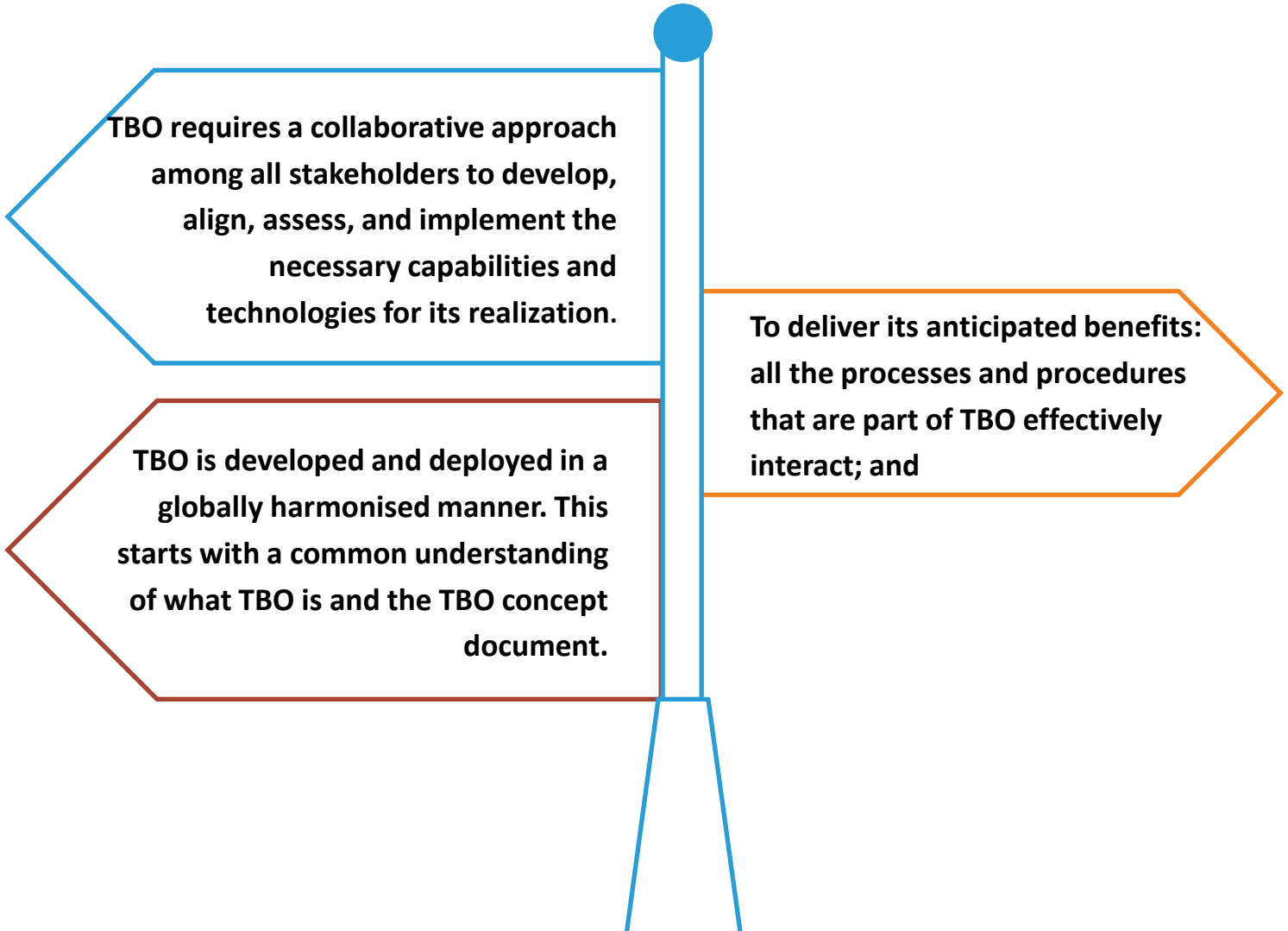
TRAJECTORY-BASED OPERATIONS (TBO) TREE



Global TBO concept

- Concept in practice
  - Concept components
  - Multi-Asp considerations
  - Unconventional operations
- Considerations for transition and mixed environment
  - Mixture of TBO & non-TBO airspace users, ASPs
  - Transition considerations
- Technical environment
  - Ground systems and airborne systems

Conclusion


TBO requires a collaborative approach among all stakeholders to develop, align, assess, and implement the necessary capabilities and technologies for its realization.
To deliver its anticipated benefits: all the processes and procedures that are part of TBO effectively interact; and
TBO is developed and deployed in a globally harmonised manner. This starts with a common understanding of what TBO is and the TBO concept document.

Thank You

ICAO