



Introduction of TBO within OptiFrame

LANCASTER UNIVERSITY

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Founding Members



Introduction to TBO within the scope of OptiFrame



1. Assumptions on the use of Priorities within AU operations
2. Definition of AU Preferences and assumptions on their use

*Air traffic management (ATM) considers the trajectory of a manned or unmanned vehicle during all phases of flight and manages the interaction of that trajectory with other trajectories or hazards **to achieve the optimum system outcome, with minimal deviation from the user-requested flight trajectory, whenever possible.** (ICAO Doc. 9854, §1.9.2)*

TBO objectives



- The TBO concept aims at further changing ATM towards a more **collaborative** and **performance** oriented operations.
- The TBO concept will provide to Air Space Users and the Network Manager the **capability to plan and fly a specific route** profile to accommodate the needs of the air-space users.
- **Synchronization** of trajectories' prediction and **consistency** between the trajectory and constraints that originate from the various ATM components, ATM exogenous factors - e.g., constraints of geographic nature that shape the trajectory - or both.

OptiFrame main objectives



OptiFrame solution at **planning** level “up to 24 hours in advance”.

1. to examine the trade-off between user and system optimum trajectories
2. to facilitate the definition of **commonly** accepted trajectories by all stakeholders.
 - a. Commonly accepted attributes: deviation from “optimum” ... delay, route distance, flight level.
 - b. Is the deviation from the FIFO rule acceptable?

How?

For all stakeholders (AUs and NM), we should first identify

- expectations,
- needs,
- objectives,
- constraints.



1. Priorities
2. Preferences

Expectations



AUs	NM
Environment / Fuel Efficiency Predictability Punctuality Cost Effectiveness Safety indirectly Capacity	Environment / Fuel Efficiency Capacity (both TMA and en-route) Predictability Cost Effectiveness Safety

What are the expected “operational” benefits?

Any recommendation to improve TBO from your point of view?

Requirements (operational needs) in relation to the proposed “TBO” concept.

- How does TBO affect (AUs and NM) current operations?
E.g., time of filing a Flight Plan
- What are the major barriers to implementing TBO?
- Which are the activities affected by TBO?
- What is the relevance of each of these activities?

Objectives

When designing a trajectory what would you like to achieve?

Delay, fuel burnt, route charges, CO2 cap

Is there a “common” rank?

	ACTIVITIES (operations)							
IMPACT (measures)								
			POSITIVE					
			NEGATIVE					

Constraints (internal & external)



Do you foresee any **barrier** for the implementation of TBO?
E.g., any operational/regulatory barrier.

Note: for instance regulatory barriers related to the provision of the service level!

Priorities: “flight” priorities



How are priorities expressed?

How long in advance can priorities be disclosed?

....

Preferences

“User Preferred Routing is the ability for an airspace user to plan a flight plan with at least a significant part of the intended route which is not defined according to published route segments but specified by the airspace users.” SESAR (P7)

Alternative routes (options).

Is it possible to define a rank of the available alternatives?

What are the KPIs involved?

Does any barrier exist to disclose such type of information?

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