



SAFE SKIES.
**SUSTAINABLE
FUTURE.**



ICAO APAC/MID ATFM-FF-ICE Seminar 2025

Dubai, UAE, 23 – 26 February 2025

Vision and Evolution of ICAO Policy

Mr. Henk Hof

Head of the ICAO and Concept Unit, EUROCONTROL

Chair of the ICAO Air Traffic Management Requirements and Performance
Panel (ATMRPP)

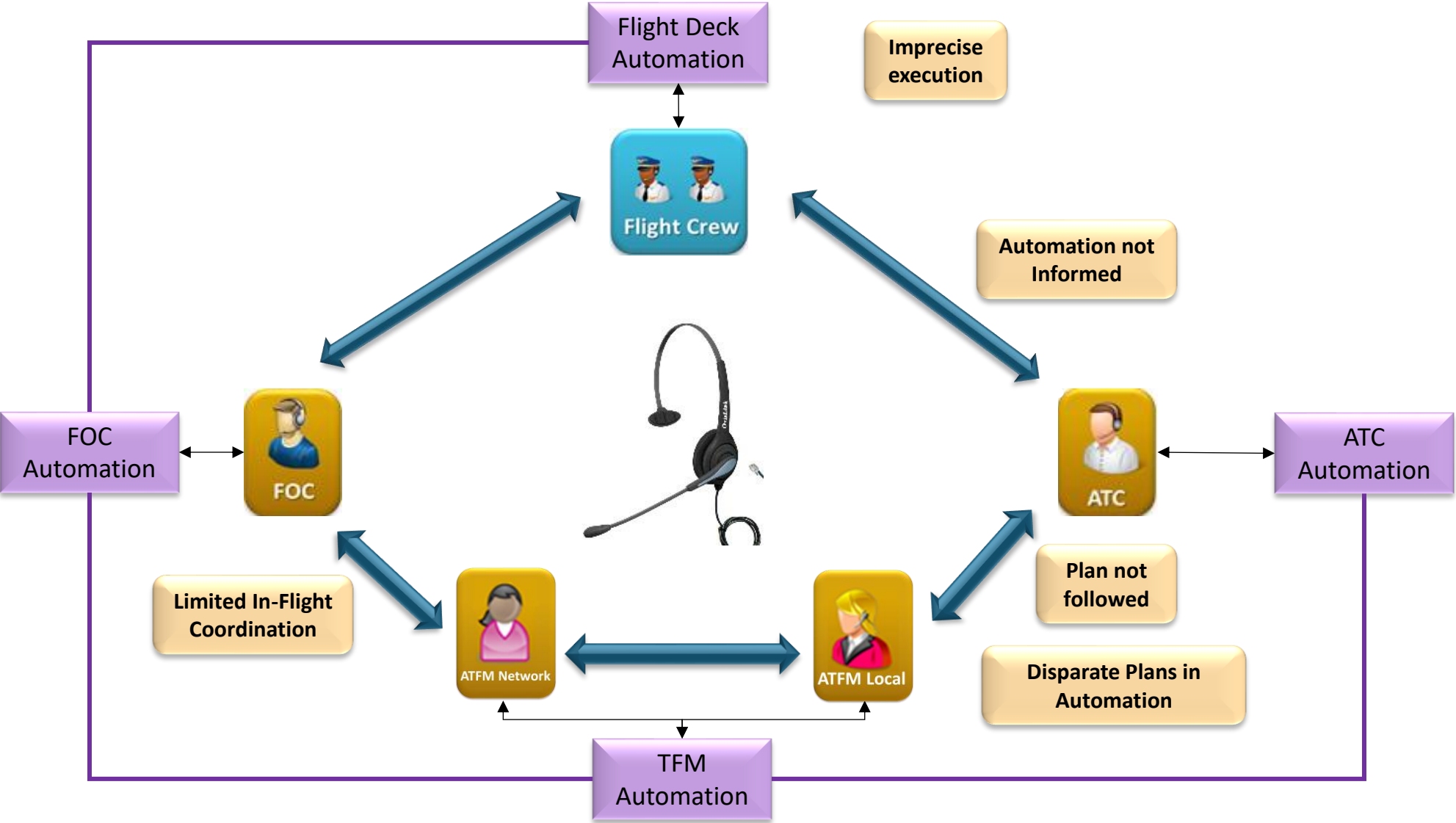
Trajectory optimization initiative due to Weather conditions changes

Flight efficiency through Flight Planning

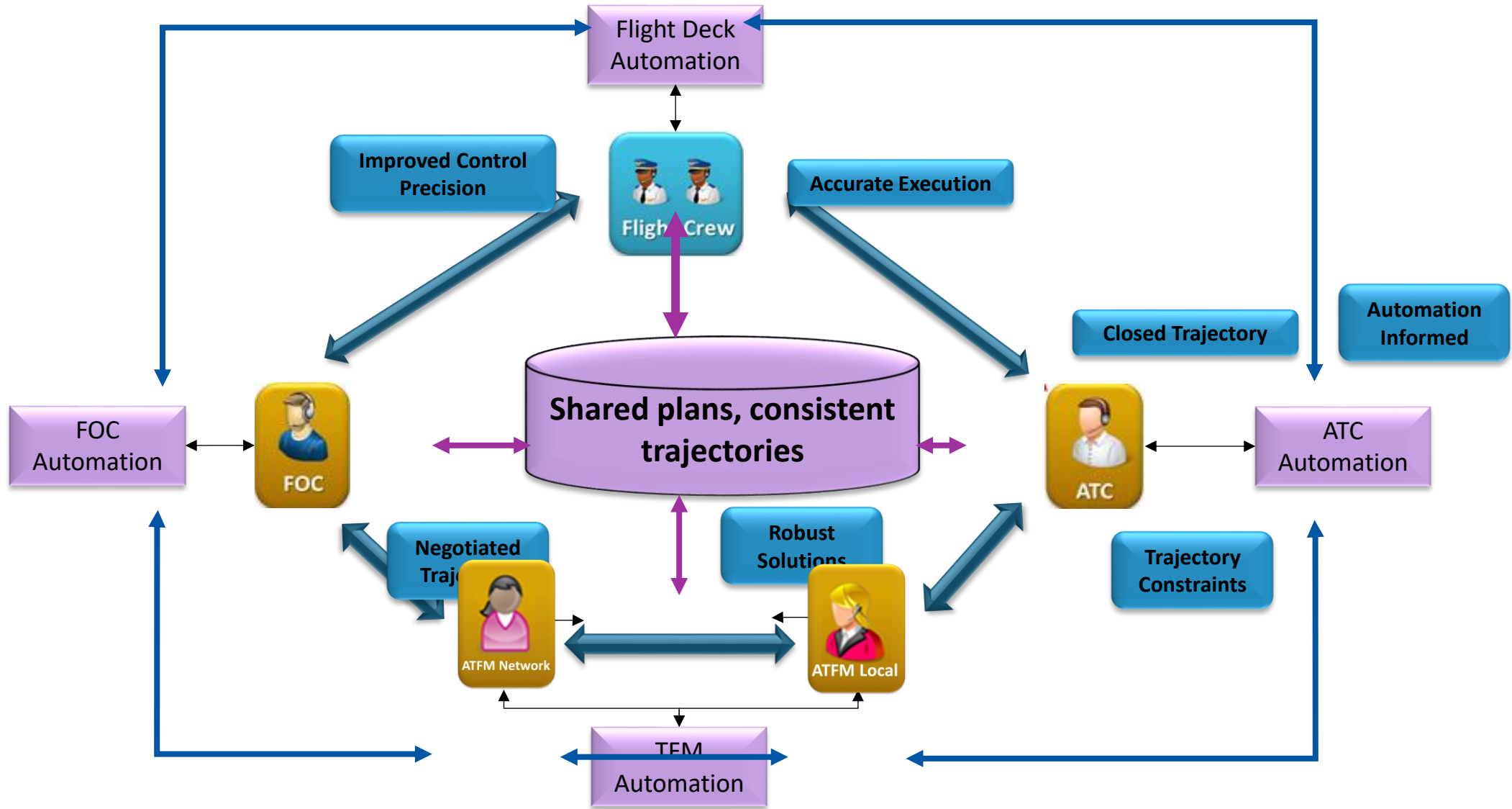


1. Original agreed Trajectory: **Blue.**
2. New Optimized Trajectory calculated by AU: **Black**
3. Revised deviation proposed by NM: **Green**

Collaboration – Today

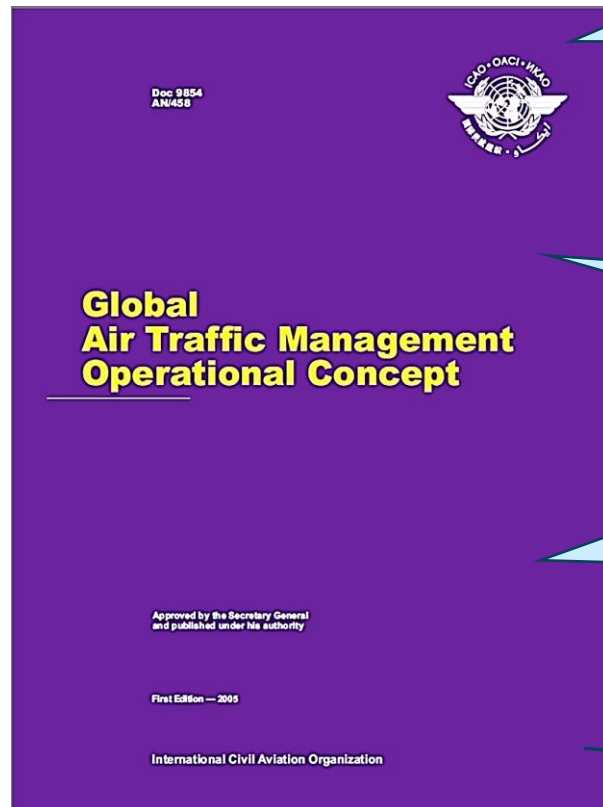


Collaboration – Full TBO Environment



The Foundation for TBO

Global Air Traffic Management Operational Concept (Doc 9854)



considers the trajectory of a manned or unmanned vehicle during all phases of flight ...

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.

individual aircraft performance, flight conditions, and available ATM resources **will allow dynamically optimized 4-D trajectory planning.**

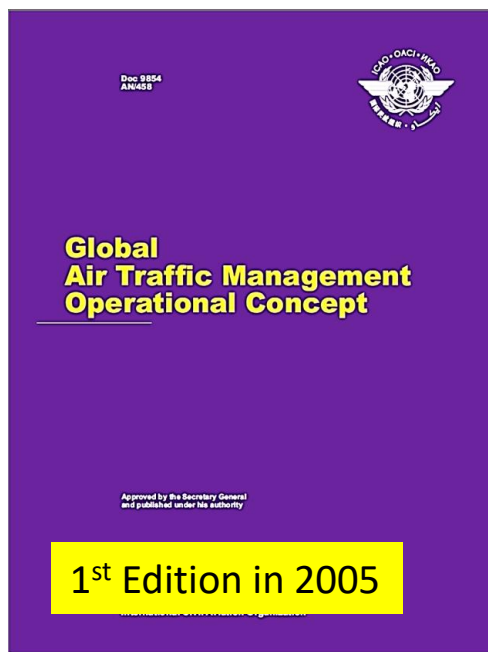
Management by trajectory does not mean that every aspect of a flight, including arrival profile, runway, taxi path and gate needs to be predetermined and captured in detail in the agreement at the time of departure. **The agreement and the management of that agreement will have the details required by the traffic management phases that the flight is subject to at the time the initial agreement and subsequent updates are made.**

And many more....

The Foundation

The Global ATM Operational Concept (Doc 9854)

01



02

Detailed concepts & performance framework

- CDM/ATFM (Doc 9971)
- FF-ICE (Doc 9965)
- SWIM (Doc 10039)
- **TBO (Doc 10130)**
- Connected Aircraft (TBD)

- ATM System Requirements (Doc 9882)
- Global Air Navigation System Performance (Doc 9883)

03



04



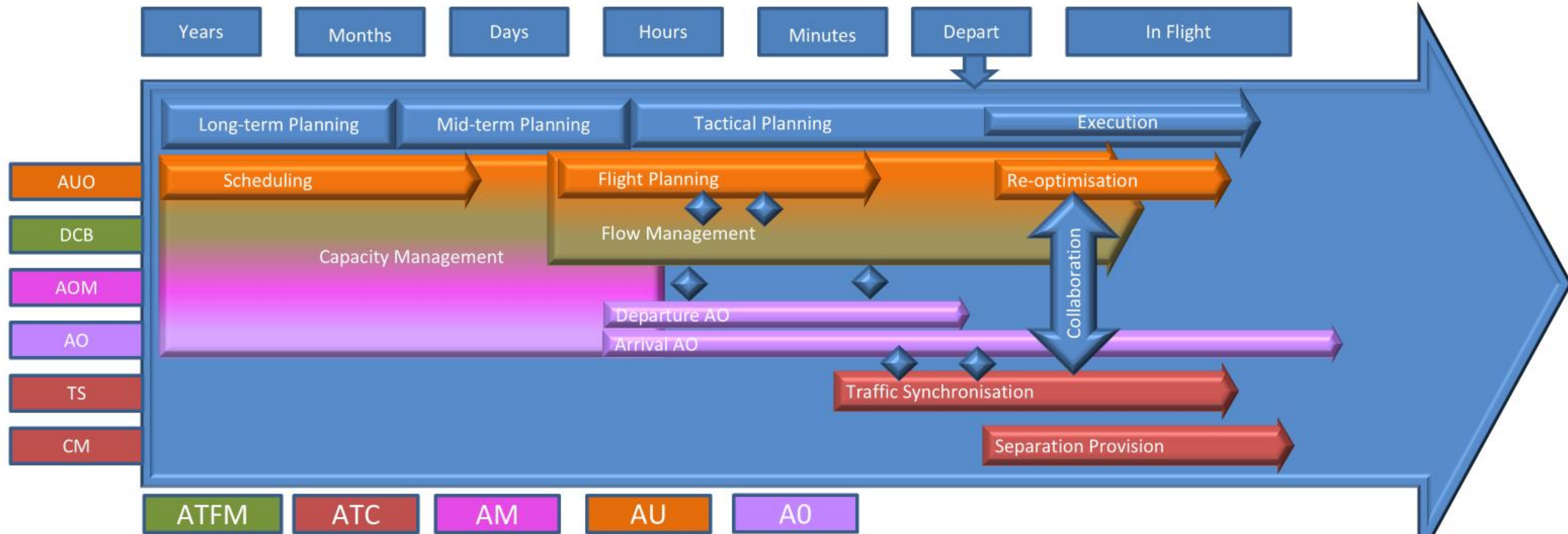


Global TBO Concept

- Broad support from the 13th Air Navigation Conference (Montréal, 9-19 October 2018)
- Integrated in the Global Air Navigation Plan and Aviation System Block Upgrade Framework



TBO-Bring it together



- AM Airspace Management
- ATFM Air Traffic Flow Management
- AU Airspace User
- ATC Air Traffic Control
- AO Aerodrome Operator

Flight and Flow Information for a *Collaborative* Environment (FF-ICE)

Address limitations and constraints of the current flight planning mechanism



Long Term

Short Term

Enable transitioning to a fully collaborative environment where a flight trajectory is shared and optimized during all phases of a flight

Form Approved OMB No. 2150-0046
5010-108-0000

International Flight Plan

1. PRIORITY **<=FF** ADDRESS/REGS **<=**

2. FILING TIME ORIGINATOR **<=**

3. SPECIFIC IDENTIFICATION OF ADDRESSEES AND/OR ORIGINATOR **<=**

4. MESSAGE TYPE **<=FPL** 7. AIRCRAFT IDENTIFICATION 8. FLIGHT RULES 9. TYPE OF FLIGHT **<=**

10. NUMBER TYPE OF AIRCRAFT WAKE TURBULENCE CAT. 10. EQUIPMENT **<=**

11. DEPARTURE AERODROME TIME **<=**

12. CRUISING SPEED LEVEL ROUTE **<=**

13. DESTINATION AERODROME TOTAL EET **<=**

14. DESTINATION AERODROME HR. MIN ALTN AERODROME 2ND ALTN AERODROME **<=**

15. OTHER INFORMATION **<=**

16. SUPPLEMENTARY INFORMATION (NOT TO BE TRANSMITTED IN FPL MESSAGES) **<=**

17. ENDURANCE HR. MIN PERSONS ON BOARD PI EMERGENCY RADIO E/ **<=**

18. SURVIVAL EQUIPMENT POLAR DESERT MOUNTAIN JACKET R/ LIFE VIF **<=**

19. DRINKS NUMBER CAPACITY COVER COLOR **<=**

20. AIRCRAFT COLOR AND MARKINGS **<=**

21. TEAMS **<=**

22. PILOT IN COMMAND **<=**

23. FILED BY ACCEPTED BY ADDITIONAL INFORMATION **<=**

FAA Form 7254-4 (7-85)

Needs of Airspace Users

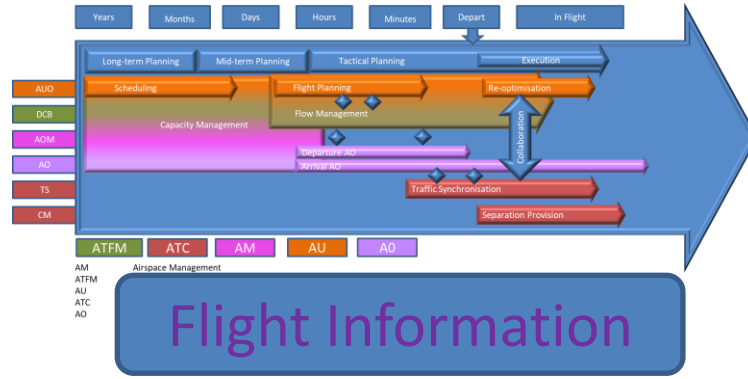
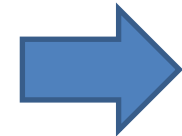
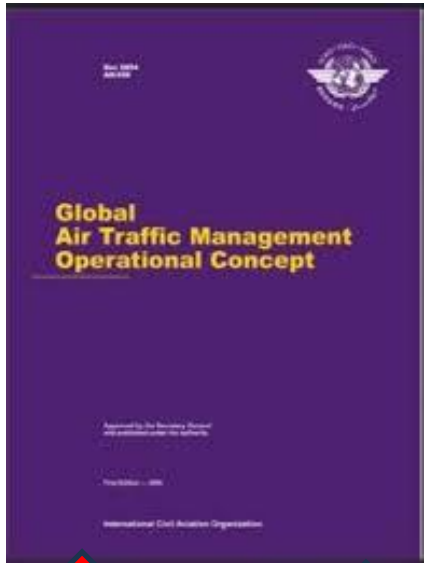


Keep your head
in the clouds

and your feet
on the ground...

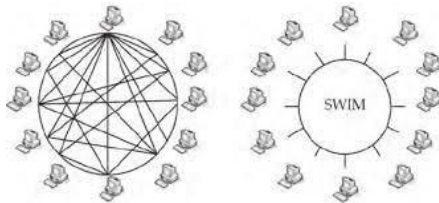


New developments



Address limitations and constraints of the current flight planning mechanism

Enable transitioning to a fully collaborative environment where a flight trajectory is shared and optimized during all phases of a flight



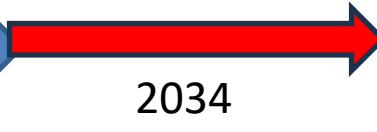
SWIM Concept

TBO Concept



TBO Guidance

R1



2034

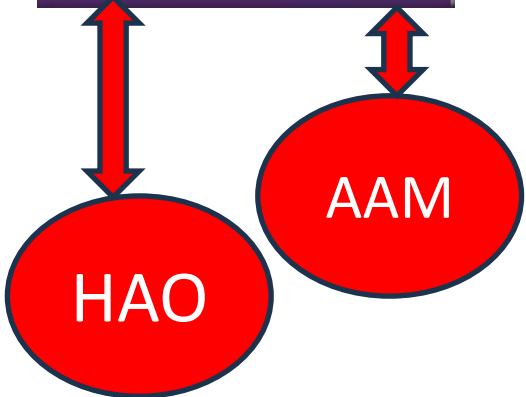
FF-ICE Concept



R2



Connected a/c Concept



FPL2012

2034

eFPL

Form Approved OMB No. 2105-0006 09/30/2006

U.S. Department of Transportation Federal Aviation Administration

International Flight Plan

1. PRIORITY: <=FF ADDRESS(S):

2. FILING TIME: IDENTIFICATION: <= FLIGHT NUMBER: <=

3. MESSAGE TYPE: <=FPL IDENTIFICATION: # FLIGHT: # OF FLIGHT: <=

9. NUMBER: WAKE TURBULENCE CATEGORY: EQUIPMENT: <=

13. DEPARTURE AERODROME: <=

15. CRUISING SPEED: LEVEL: <=

16. DESTINATION AERODROME: TOTAL: AERODROME: 2ND ALTN. AERODROME: <=

18. OTHER INFORMATION: <=

19. SUPPLEMENTARY INFORMATION TRANSMITTED: EMERGENCY RADIO: <=

20. SURVIVAL EQUIPMENT: JACKET: LIGHT: VHF: <=

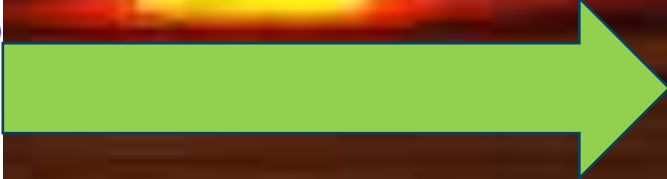
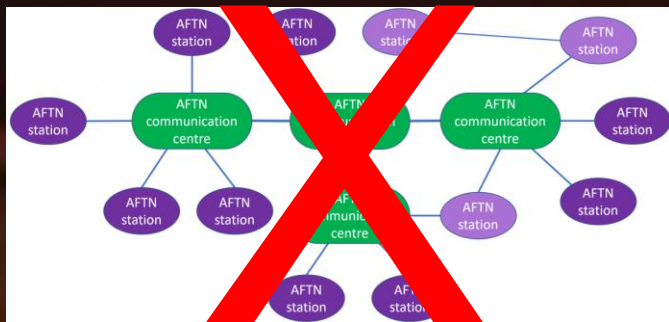
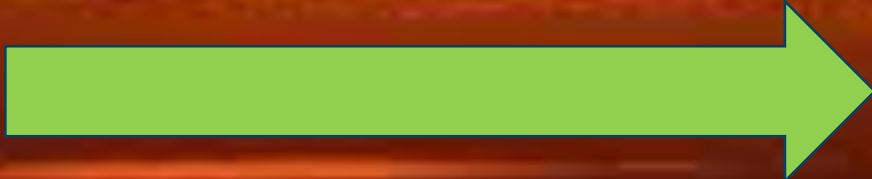
21. MARKINGS: <=

22. PILOT-IN-COMMAND: <=

23. FILED BY: ACCEPTED BY: ADDITIONAL INFORMATION: <=

FAA Form 7203-4 (7-85)

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Trajectory Based Operations, FF-ICE: the Paradigm Change *Transformation*



Thank you

A black pen is shown writing the words "Thank you" in a cursive script. The pen is positioned at the bottom right of the text, with the nib pointing towards the end of the word "you".