



# FIFA World Cup 2022 Air Traffic Flow Management Training

*Pre-requisite Training : ATFM Basics*

*(Virtual, 23 March 2022)*

*ICAO MID Office*





## Outline

- What is ATFM and why to implement it?**
- ATFM Phases**
- ATFM Solutions to Capacity Shortfalls**
- What can be done to improve capacity**
- Roles and Responsibilities of Stakeholders**
- What can stakeholders expect from Flow Management Operations?**
- ATFM what's new?**





## What is ATFM

A service established with the objective of :

contributing to a safe, orderly and expeditious flow of air traffic by ensuring that **ATC capacity** is utilized to **the maximum extent possible**, and

that the **traffic volume** is compatible with the **capacities declared** by the appropriate **ATS** authority. (Doc 4444)





ATFM is an **enabler** of air traffic management **efficiency** and **effectiveness** in a way that **minimizes delays** and **maximizes/optimizes** the use of the available airspace.

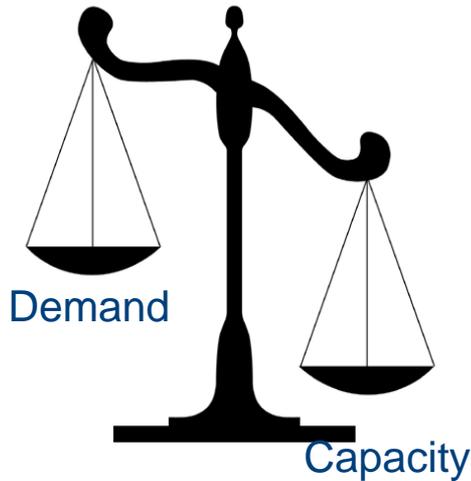
It contributes to the **safety** and **environmental** sustainability of an ATM system.

**Managing** traffic flows means **more than** simply applying ATFM measures. **ATFM solution** is the **combination** of capacity optimization and ATFM measures.



## Why Do We Need ATFM?

ATFM is demand/capacity  
balancing

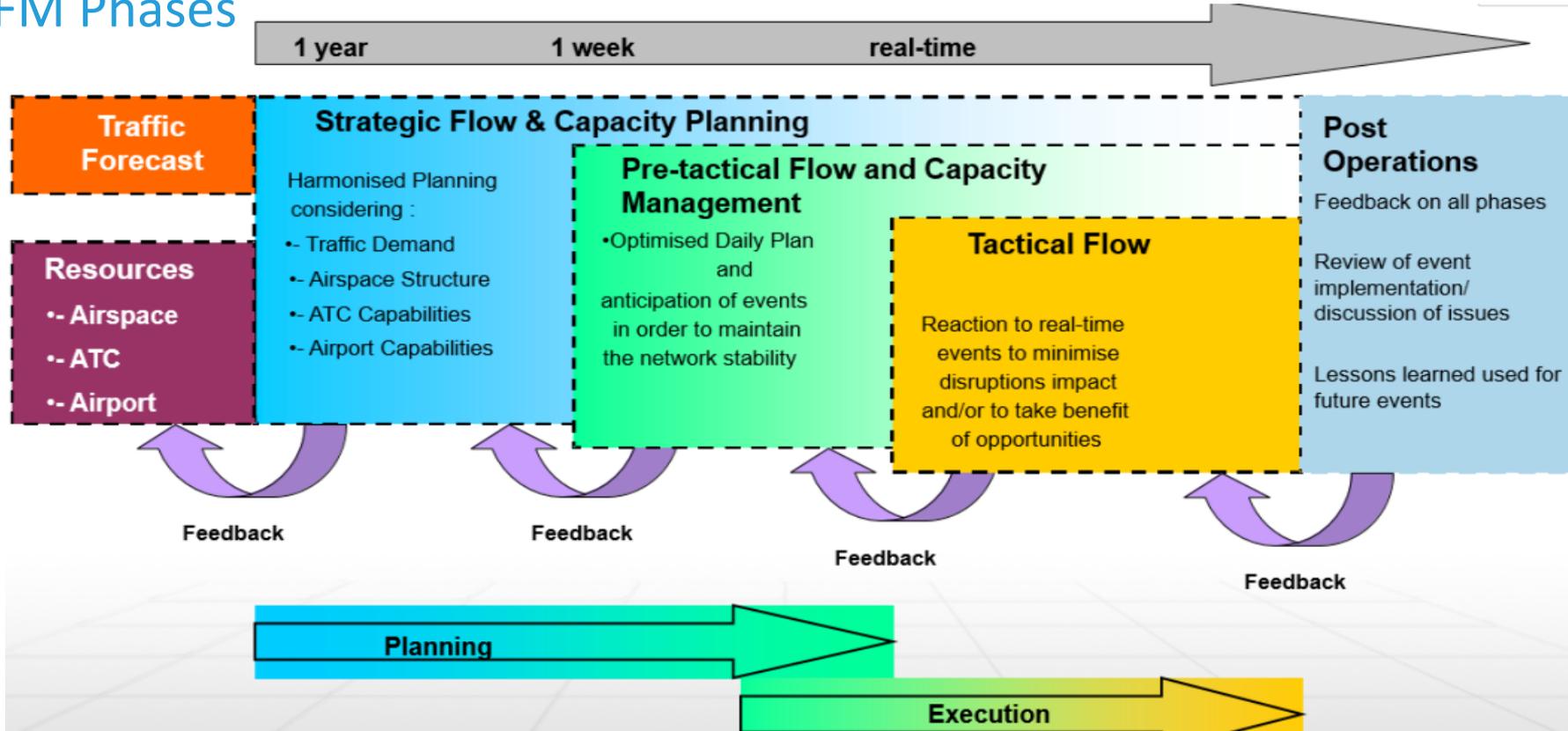


If demand exceeds the capacity,  
“flow” management is required





# ATFM Phases



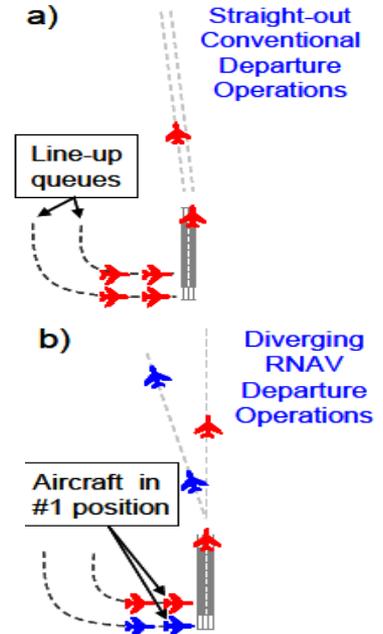


## ATFM Solutions to Capacity Shortfalls

- Sector Management, which may include:
  - Changing the Sector Configuration
  - Changing the number of Sectors, or
  - Collapsing or splitting the sectors
- By Balancing the Arrival and Departure Capacity for an aerodrome
- By Assessing the Flight list for flights with minor workload.
- Negotiating extra capacity, by
  - Reviewing the Monitoring values of the sectors or aerodromes and analysing the Occupancy counts.
  - Co-ordinating with the military for airspace usage
  - Reducing the traffic complexity.
  - or Implementing Holding procedures.

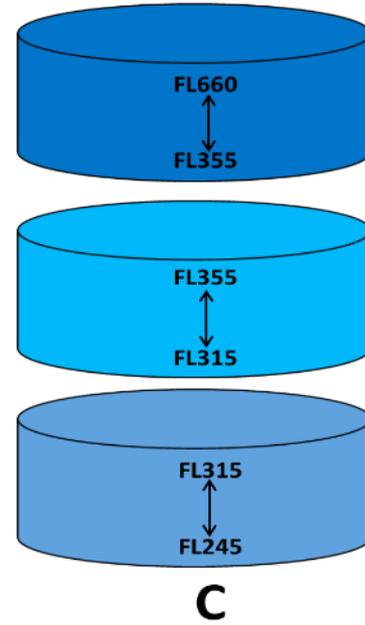
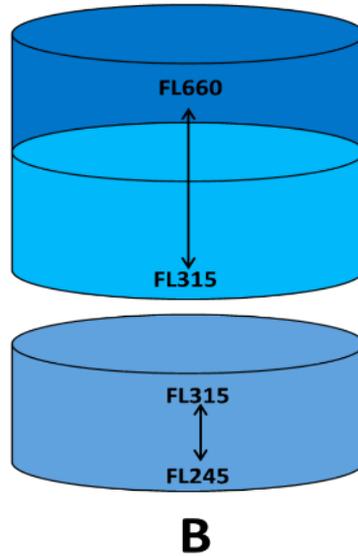
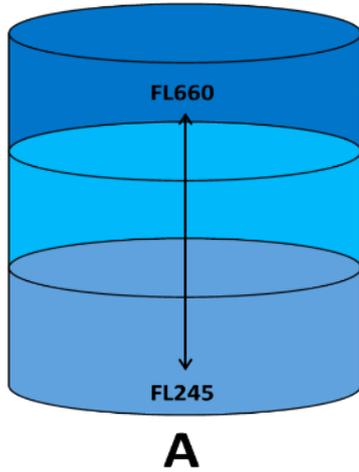
# What can be done to improve capacity:

- Utilising PBN Diverging Departures
- Reduces Departure Separation Intervals
- Improve Runway Capacity



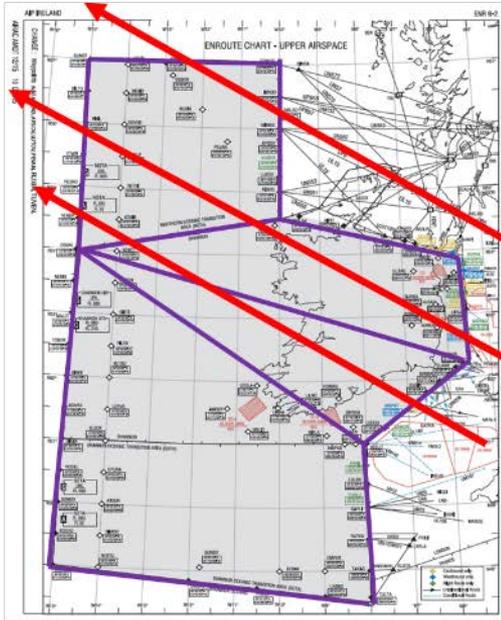


# Vertical Sectorization

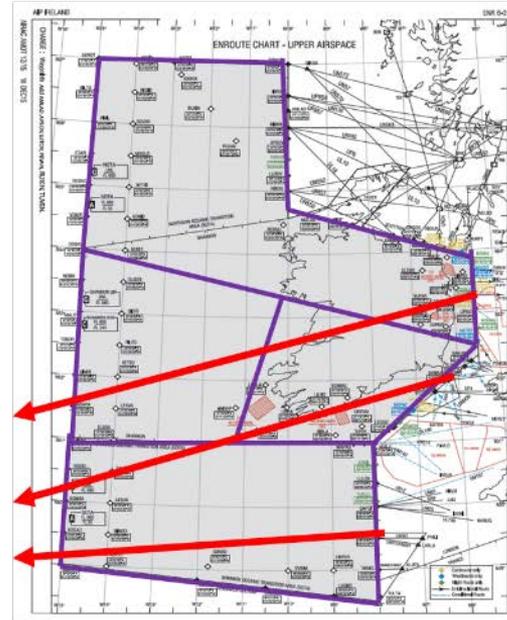




# Dynamic Sectorization



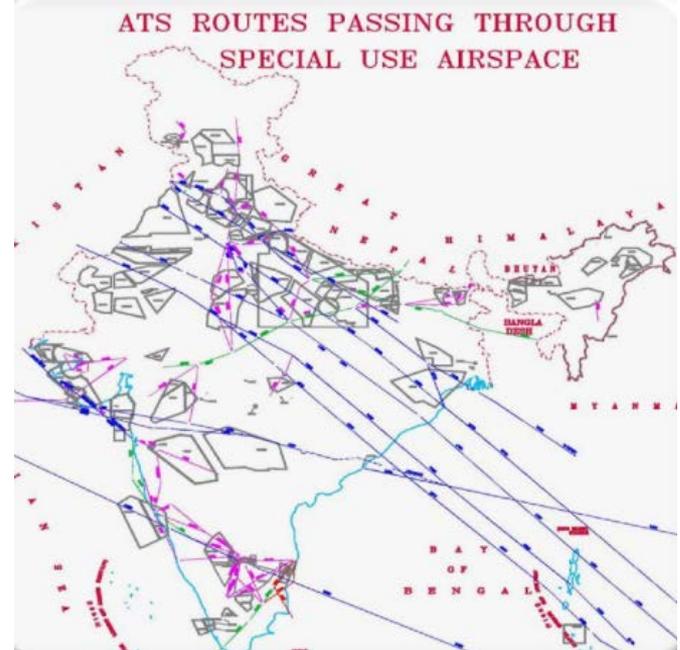
Example Northern Flow



Example Southern Flow



## Flexible Usage of Airspace





# Roles and Responsibilities of Stakeholders



Gathering Information	ATFM Daily Plan	Demand and Capacity Balancing
<ul style="list-style-type: none"><li>• ATC Providers – domestic and regional</li><li>• Airspace users</li><li>• Weather</li><li>• Military</li><li>• Airport authorities</li></ul>	<ul style="list-style-type: none"><li>• Create</li><li>• Distribute</li><li>• Execute</li><li>• Amend</li></ul>	<ul style="list-style-type: none"><li>• Monitor demand and capacity</li><li>• Implement ATFM measures</li><li>• Conduct teleconferences</li><li>• Conduct post operational analysis</li></ul>



Airline	Military	Business	Sport
<ul style="list-style-type: none"><li>• Participate in CDM</li><li>• Airport slot</li><li>• Aircraft utilisation</li><li>• Update schedule</li><li>• File RPLs</li><li>• File FPLs</li><li>• Update changes to flights</li><li>• Participate in teleconferences</li><li>• Communicate ATFM measures to relevant operational units, e.g. flight crews and flight operations</li></ul>	<ul style="list-style-type: none"><li>• Military exercises</li><li>• FUA CDM</li><li>• VIP flight coordination</li></ul>	<ul style="list-style-type: none"><li>• Participate in CDM</li><li>• File FPLs</li><li>• Update changes to flights</li><li>• Participate in teleconferences</li><li>• Communicate ATFM measures to relevant operational units, e.g. flight crews and flight operations</li></ul>	<ul style="list-style-type: none"><li>• Air show coordination</li><li>• FUA CDM</li></ul>



**ATC**

- Participate in teleconferences
- Capacity declarations
  - o Nominal
  - o Dynamic
- Monitor resources
- Compliance with ATFM Measures
- Participate in post event analysis



### Airport Authority

- Participate in CDM
- Participate in teleconferences
- Capacity declarations
  - o Nominal
  - o Dynamic
- Schedules
- Maintenance / runway inspections
- Snow removal – de/anti icing
- Participate in post event analysis



### Weather Services

- Participate in CDM
- Participate in teleconferences
- Create and disseminate
  - Terminal area forecasts
  - METARs
  - Long range forecasts
- Volcanic ash advisories
- Participate in post event analysis



## What can customers expect from Flow Management Operations?

- An equitable use of the available capacity.
- ATC Capacity optimized to avoid or minimize the need for ATFM Regulations.
- Where Regulations are unavoidable, to ensure equitable delay and a flexible system in order to accommodate dynamic changes on both the AO side and ATC side.
- To publish an optimised ATFM plan before the day of operation, and, on the day of operation to constantly update that ATFM plan with information on the current situation.
- To inform AOs of the location of problems and possible alternatives.



## What can FMU expect from FMPs?

- Information on sector configurations and capacities.
- Live updates of sector configurations, capacities, runways in use, taxi times and Traffic Volume.
- Information on special events and/or situations which may impact on the capacity/demand.



## What can FMU expect from ATC?

- Compliance with CTOTs brings benefits to all users:
  - Confidence of ATC that the Regulations will deliver the demand as required.
  - Possible increase in capacity currently suppressed because of non-compliance with CTOTs and subsequent over-delivery.
- Provide support and information to AOs in order to assist in managing the CTOT in the period prior to departure when problems may arise.
- Provide information to FMPs on operational problems which may affect CTOT compliance or aerodrome capacity.



## What can FMU expect from AOs?

- Timely filing and updating of Flight Plans:
  - Effective capacity management relies on having as accurate demand data as possible.
  - Confidence in the accuracy of the demand data may minimise, or avoid altogether, ATFM Regulations.
  - Cancelling of FPLs/RPLs may release capacity for use by others or further decrease the likelihood of requiring Regulations.
- Adherence to CTOTs to improve Network efficiency



## ATFM what's new

ATFM is demand/capacity  
**balancing**



**PANS-ATM: ATFM service shall be implemented for airspace where traffic demand at times exceeds the defined ATC capacity.**



New Standard: In order to support the ATFM service, the appropriate ATS authority shall **determine, disseminate and periodically review** the **declared** capacity for control areas, control sectors within a control area, and for controlled international aerodromes as determined by the State.

**Operational** Capacity, which is an update to the declared capacity based on prevailing circumstances will be covered in PANS-ATM



## Doc 9971: Manual on...

Doc 9971 was published in 2012 (3<sup>rd</sup> Edition in 2018)

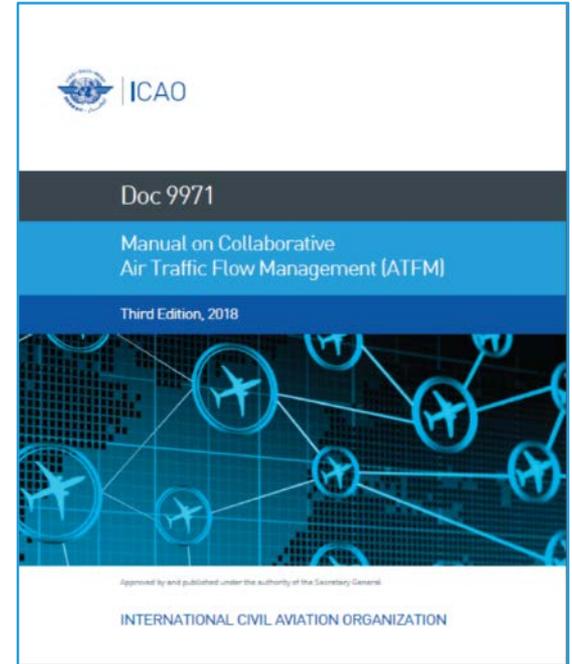
Part 1 – Collaborative Decision Making (CDM)

Part 2 – Air Traffic Flow Management (ATFM)

Part 3 – Airport CDM (A-CDM)

**New Part 4: Operational Handbook**

- The ICAO 11<sup>th</sup> Global ATFM Symposium is planned for Q3/Q4 2023 (Venue and dates TBD)





THANK YOU!