



# ATFM – ENABLER FOR SEAMLESS ATM

ATFM SEMINAR – SEPTEMBER 2013



PRESENTED BY INDIA

# UNDERSTANDING ATFM

- Air Traffic Flow management – is an enabler of Seamless ATM

With the Strategic and tactical management of air traffic in order to

1. to smoothen the imbalance between demand and capacity and
2. efficiently ( optimally ) managing traffic flows through

Pre-defined management techniques

Achieved through robust coordination among aviation stake holders

# NEED FOR ATFM

## WHY DO WE NEED ATFM ?

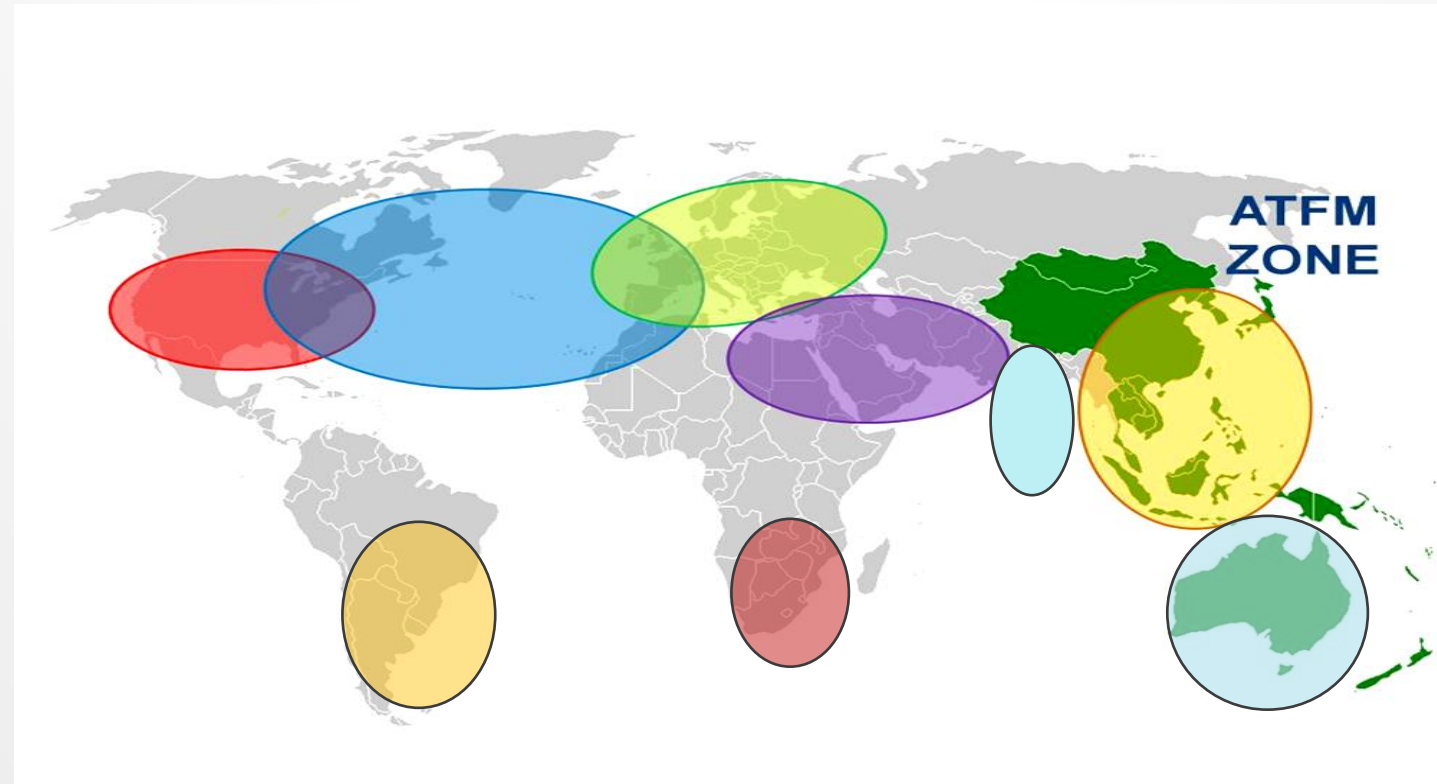
- Finite Resources – Airport, Airspace
- Ever increasing growth – Increasing Demand for access by all airspace users
- Contingencies – Unexpected decrease in capacity
- Saturation of Capacity
- Reduce fuel burn ,operating costs and carbon foot print
- Need for balancing Demand and Capacity for “ PLANNED” optimum utilization of resources

# ATFM OBJECTIVES

- Enhances the safety of the ATM system through delivery of safe traffic densities
- Enhance airspace usage, airport capacity, sector productivity
- Optimize system preferred and user preferred flight trajectories.
- Optimize flight profiles and routes during adverse weather conditions
- Optimize recovery solutions during and after disruptive events.
- Balance demand vs capacity and thereby reduce fuel burnt engine emission environmental impact and delays

# ATFM EXPERIENCES / EXAMPLES

- USA
- Russia
- China
- Europe
- Australia
- Japan
- Brazil
- India
- South Africa
- South East Asia – Singapore-Thailand-Hong Kong



# STAGES OF EVOLUTION OF ATFM

- STRATEGIC ( STATIC )
  - Airport Slot Allocation
  - Airspace Restrictions – Access Restrictions
- TACTICAL ( DYNAMIC )
  - Air Borne Holdings
  - Ground Delays
  - Time Restrictions
- PROGRESSING TO  
Wider Network Perspective of ATFM with CDM



# ICAO GUIDELINES/PROVISIONS

Doc 9426

Doc 4444

Global Plan Initiative(GPI)-6

Doc 9971: Manual on Collaborative ATFM

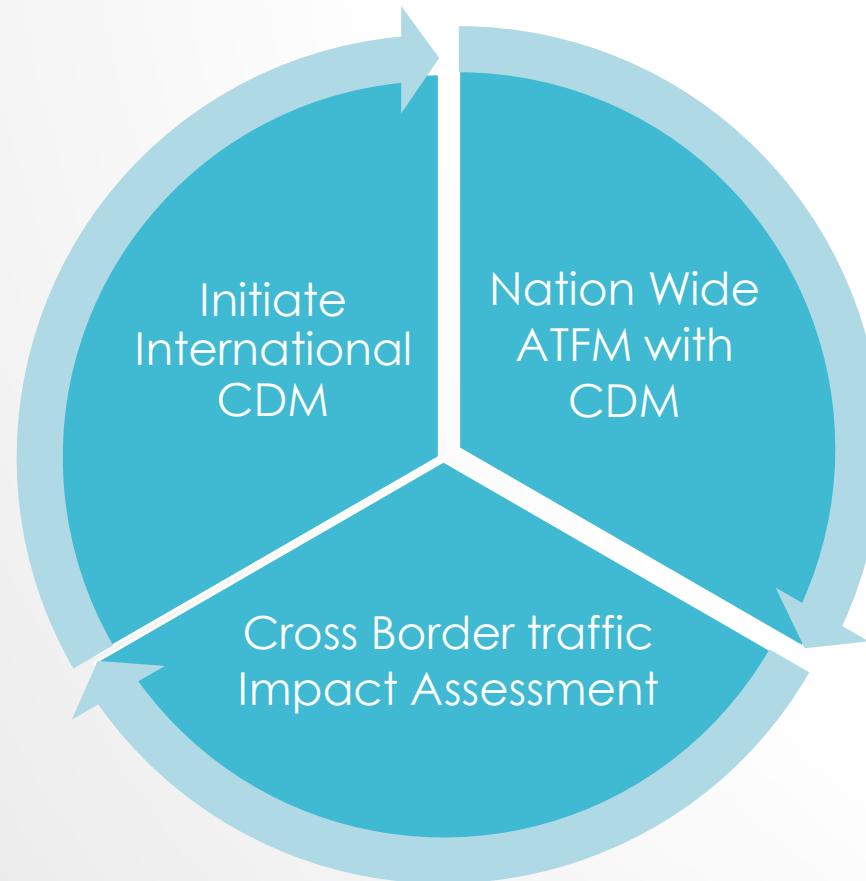
- Part 1: CDM
- Part 2: ATFM

# LIMITATIONS OF NATIONAL ATFM

- Restricted by political/geographic/institutional boundaries
- Airspace coordination – Civil/Military Airspace restrictions.
- Lack of pre-tactical and tactical capacity determination and management
- Accurate predictions of demand
- ATFM Control authority to apply Traffic Management Initiatives efficiently and equitably to all flights. (Domestic flights only)
- But local ATFM implementations are the stepping stones for shaping the Global ATFM



# TOWARDS A REGIONAL ATFM



# ATFM WITH CDM

- Collaboration with all Stakeholders is key to a successful ATFM.
- Each Partner has a holistic system wide view.
- A Sensitivity to each others' needs and
- A recognition of relative benefits of system decision vis-à-vis local decision
- Objective to create more efficient and responsive Airspace System with equal or improved safety parameters.
- Ensures the decisions are taken transparently, based on the timely and accurate information provided by all the stake holders
- CDM is now an integral part of ATFM

# DEVELOPING A NETWORK PERSPECTIVE



# IMPLEMENTATION CHALLENGES

## **Change Management**

*Lack of system understanding and how individual actions impact the whole -*

*Prioritizing airspace / airports – Which is more critical?*

*Begin with “First Planned First Served” and progress to “First Come First Served”*

## **Technological Challenges**

*Connectivity / Interoperability/ Lack of Uniform standards*

- *Infrastructure*
- *Data Protection/ Confidentiality issues / Cyber Security*

## **Buy-in**

- *Demonstrating a clear cut Business Case for investment and wider participation of the stakeholders*

# INDIA'S VISION

- Integrated ATFM/CDM (connectivity and data exchange between all participating systems)
- Strategic to Tactical ATFM by focusing on
  - Airspace management
  - En-route constraints
  - Weather
  - Terminal Airspace constraints (CCO and CDO)
  - Airport constraints – departure and arrival airport
  - Airline operational requirements
- Demand and Capacity Balancing (Traffic Management Initiatives at departure and arrival airport and En-route airspace )
- Robust Post Operation Analysis

# ROAD AHEAD.....

- Create functional airspace blocks irrespective of political / geographic / institutional boundaries
- Begin with Tactical Data Exchange with adjacent Centers for “FLOW CONTROL”
- Progress to STRATEGIC DATA EXCHANGE AGREEMENTS
- Develop System Connectivity for Better dynamic capacity determination
- Develop System Capability for Better predictions of demand
- Integrate all ATFM systems within and across ANSP's – Global Standards for data sharing and CDM (SWIM)

**Collaboration with adjacent  
states/ANSPs  
to enable Regional/Global ATFM**

