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CENTRAL AIR TRAFFIC FLOW MANAGEMENT (C-ATFM) – INDIA

ATFM

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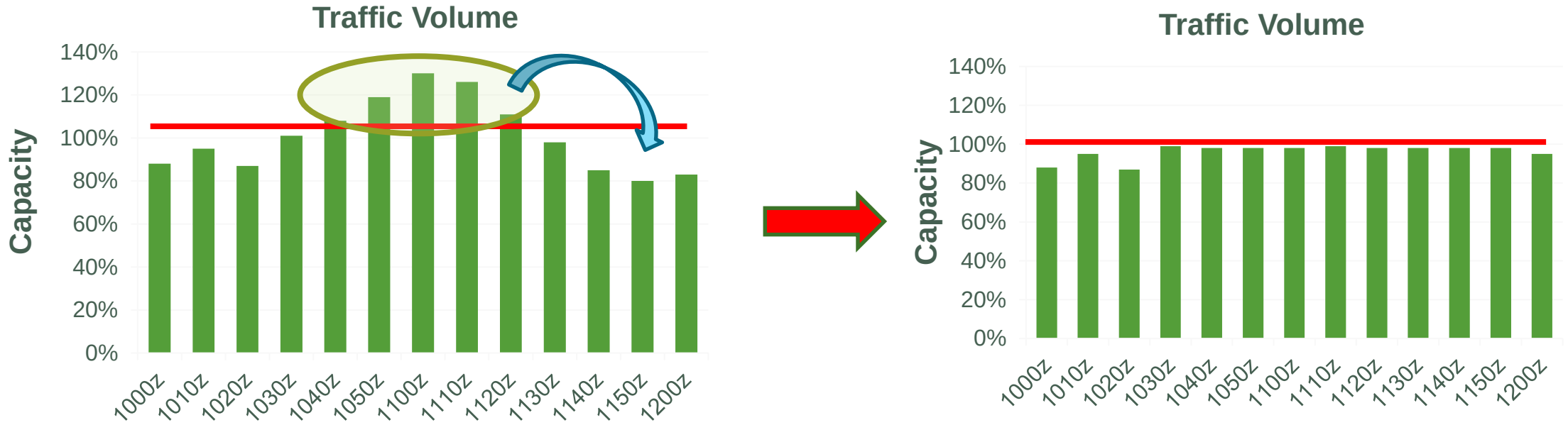
A service established with the following objectives:

- Contribute to a safe, orderly and expeditious flow of air traffic.
- Ensure that Air Traffic Control (ATC) capacity is utilized to the maximum extent possible.
- Ensure that the traffic volume is compatible with the capacities declared by the appropriate air navigation service provider (ANSP).



What is ATFM

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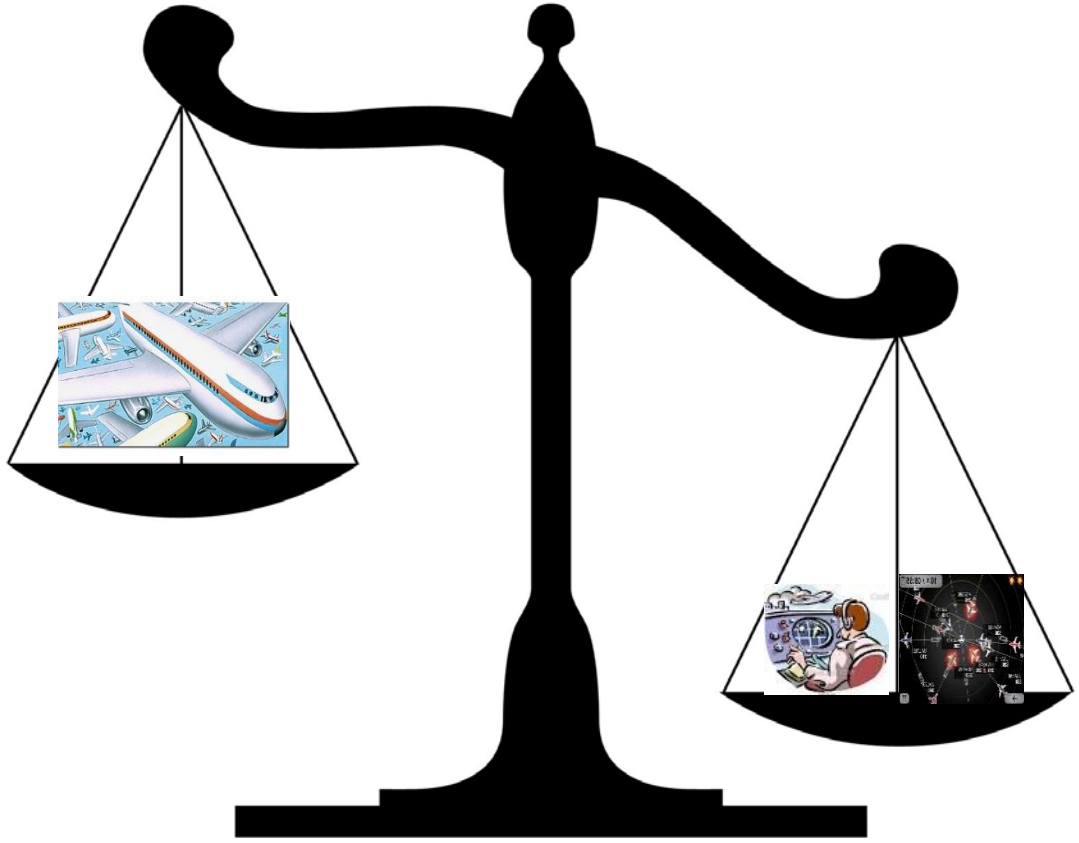
ATFM is Demand/Capacity balancing (DCB)

Demand



Capacity

Why ATFM

Major aviation capacity constraints are:

- Over demand
- Bad Weather
- Staff shortage
- Closures
- Technical problems
- Outages

CASE STUDY

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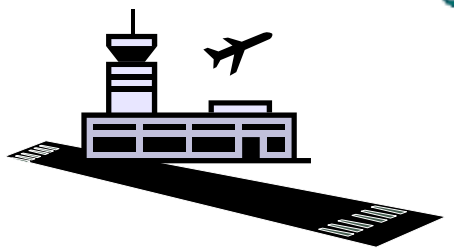
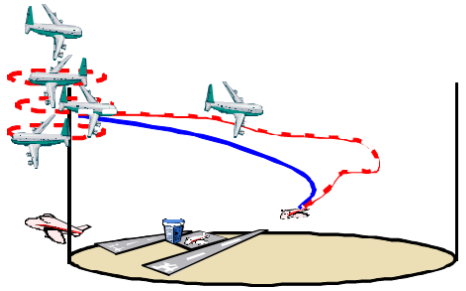
EOBT 1000z
Take off 1015z
ETA (Dest) 1300z



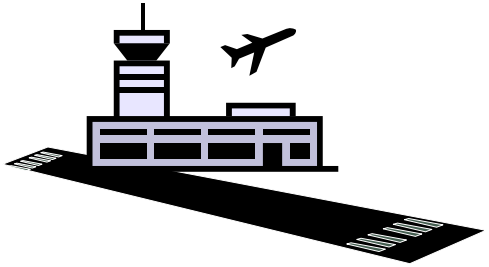
Airborne
Holding
For
30min

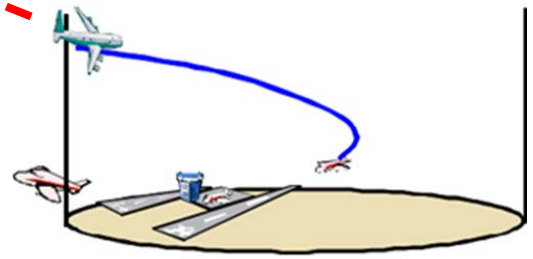


Push back 1000z
Take off 1015z

Landing 1330z

EOBT 1000z
Take off 1015z
ETA (Dest) 1300z

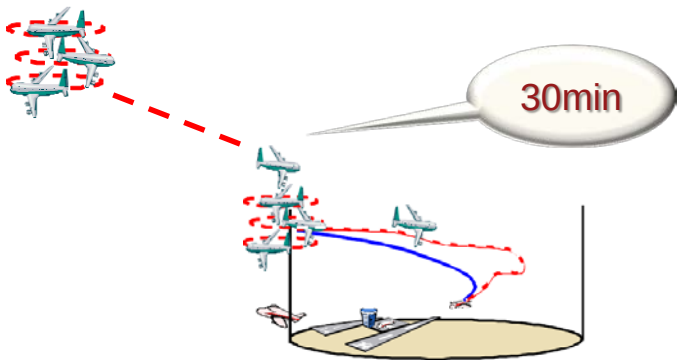




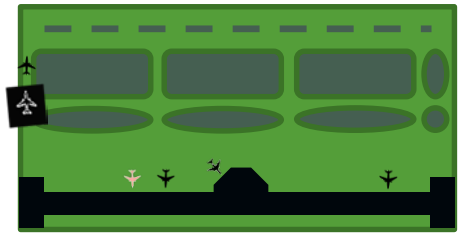
Push back 1000z - 1030z
Take off 1015z - 1045z

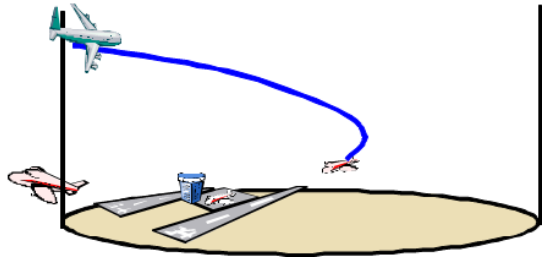
Landing 1330z

Case 1
EOBT 1000z
Push back **1000z**
Take off **1015z**
Airborne holding **30min**
Landing 1330z

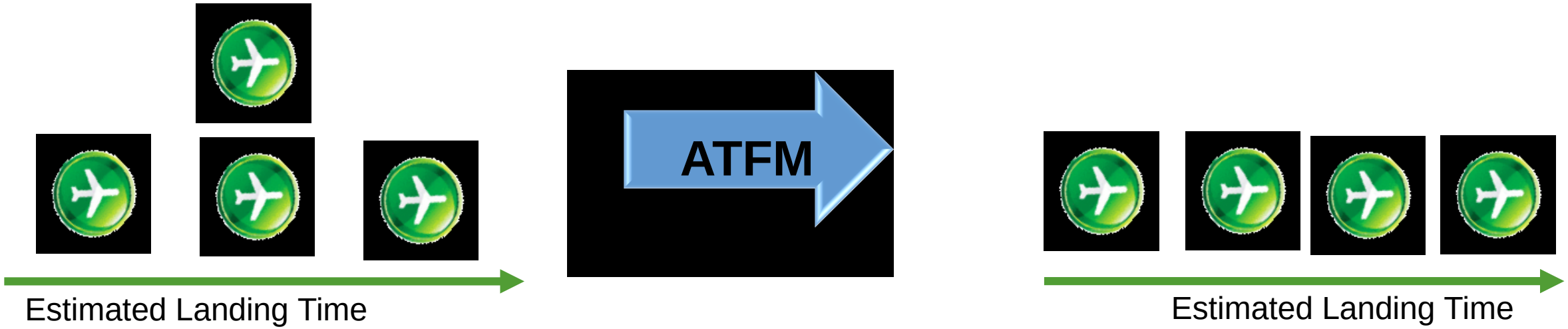


Case 2
EOBT 1000z
Push back **1030z**
Take off **1045z**
Airborne holding **0min**
Landing 1330z





Airlines : Save FUEL, Cut CO2 emission
ATC : Reduce workload
Overall : Enhance safety and efficiency



ATFM ENABLES DEMAND / CAPACITY BALANCING ON A WIDE TIME RANGE

CDM - COLLABORATIVE DECISION MAKING

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ATFM is CDM – CDM is ATFM…….

CDM - COLLABORATIVE DECISION MAKING

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CDM partners must be willing to share:

- Responsibility
- Information
- Accountability
- Mutual goals

As a result, participants can generally expect to realize:

- More effective and timely communications
- Increased information exchange
- Common situational Awareness
- More effective decision-making
- Better and more predictable ATFM solutions

C-ATFM SYSTEM IN INDIA

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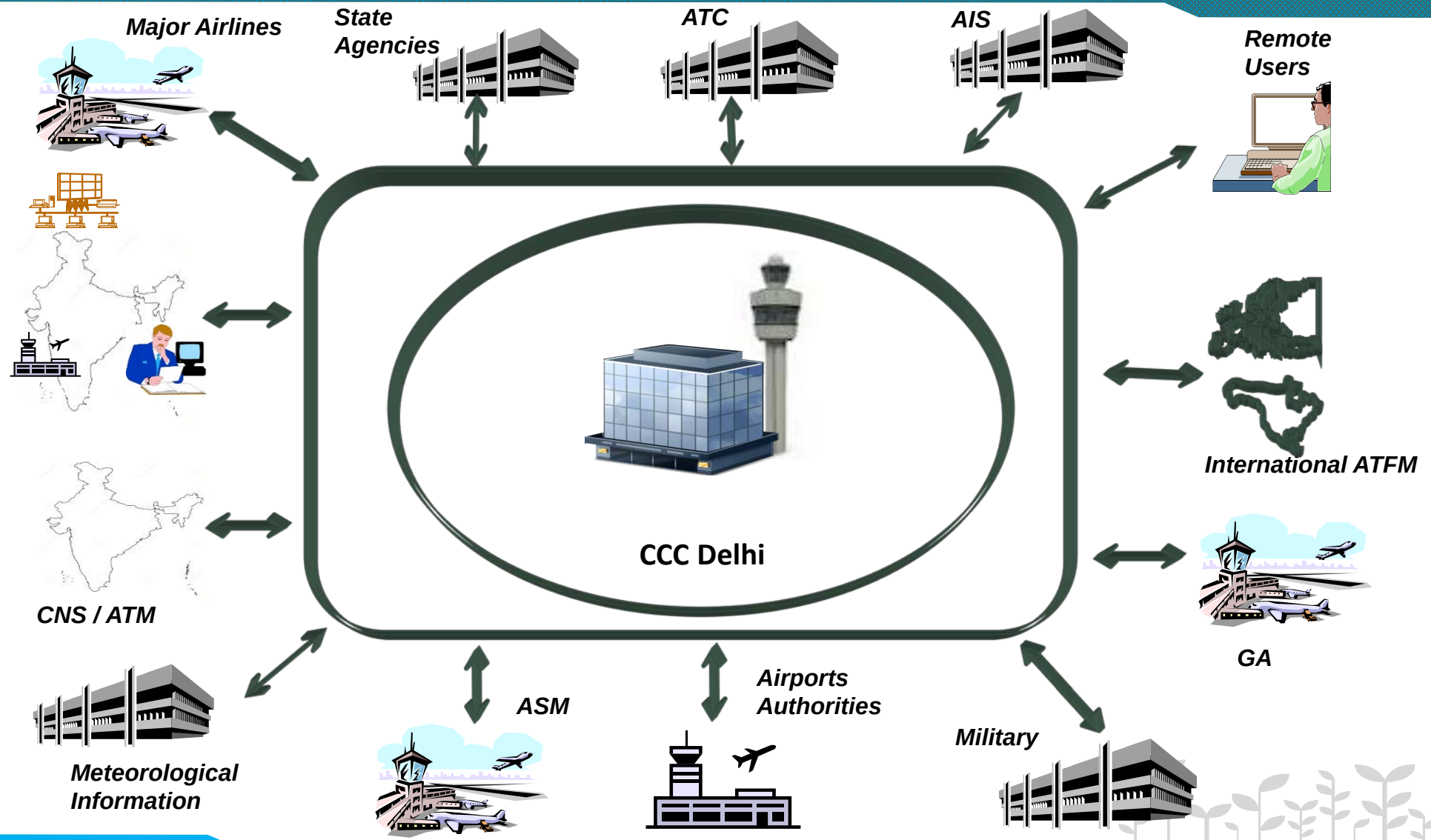

C-ATFM PROJECT- Background

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- AAI entered into an agreement with FAA in 2009 for consultancy services.
- FAA – VOLPE submitted four reports for system architecture, specifications, concept of operations to AAI in 2011.
- AAI ATFM core group adopted and modified the FAA-VOLPE system spec to meet the INDIAN context.
- AAI awarded SITC contract for C-ATFM system in India to M/S ATech , Brazil in June 2014.
- C-ATFM system “SKY FLOW” installed at Central Command Center (CCC) at Delhi and Flow Management Positions (FMP) at six airports in 2015-16.
- Operational Trials commenced in January 2017.

Process of Implementation

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Phase I
2015-17

- Ground Delay Program/Ground Stop Program
- Addressing constraints of Six Major Airports

Phase II
2017-19

- Ground Delay Program and Airspace Flow programs supporting Airspace Congestion & DCB at most airports across Country
- Interconnectivity among ATFM –ACDM systems
- Availability of WEB Services for all stakeholders

Phase III
2019 onwards

- Ability to exchange information with adjacent ATFM Systems
- Cross border ATFM
- Integration with SWIM and 4D-Trajectory Management

ATFM Measures

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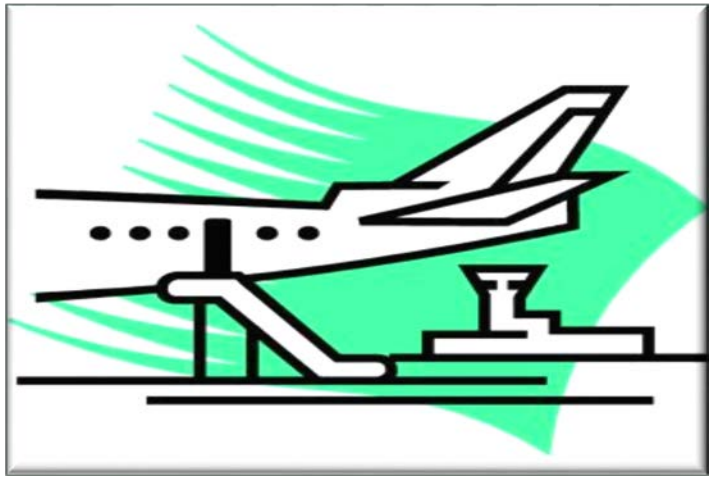
Pre-Flight

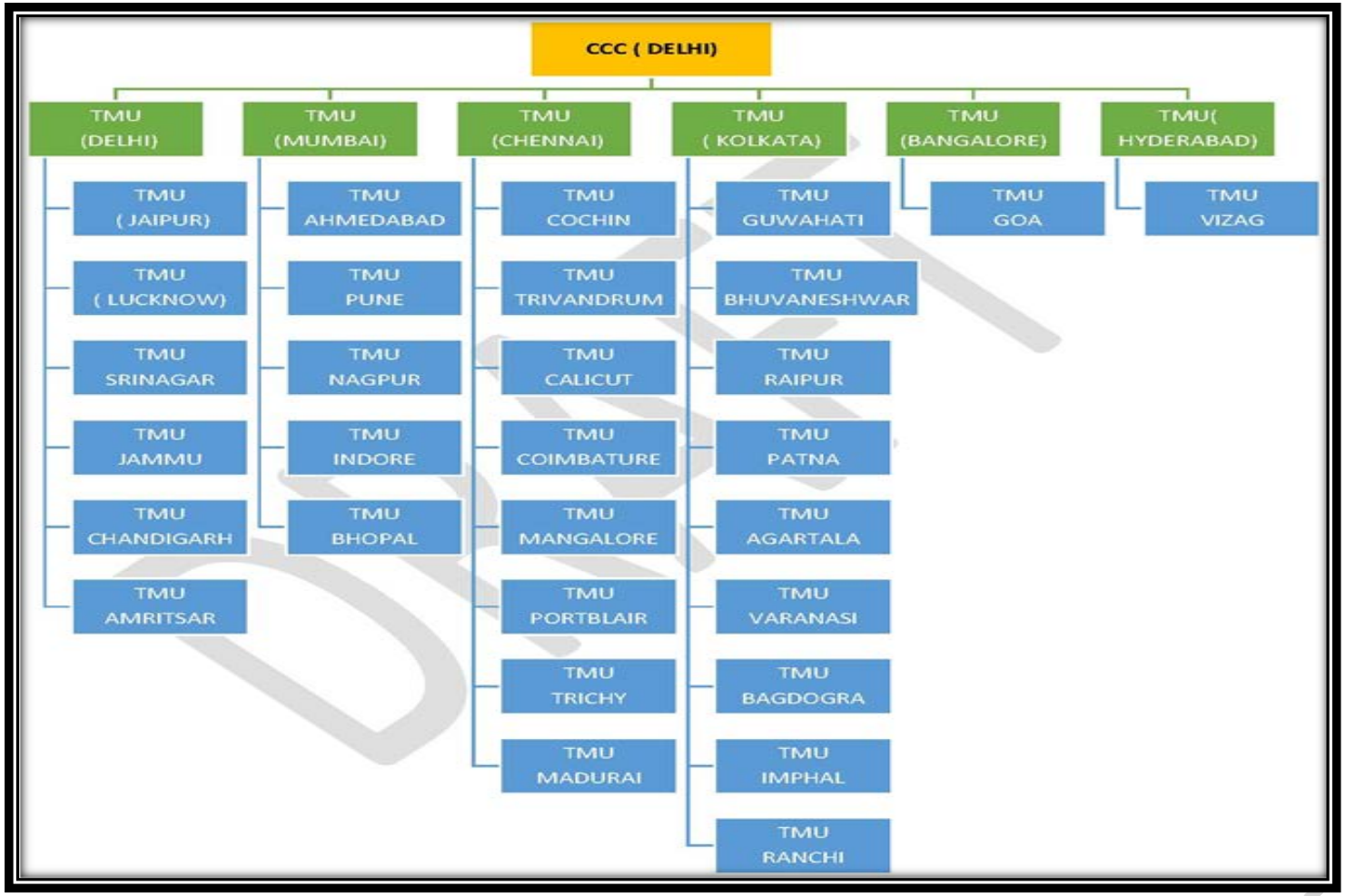
- Rerouting
- **Ground Delay Program(GDP)**
- **Airport Stop Program (ASP)**
- Minutes in Trail



In-Flight

- Rerouting
- Miles in Trail
- Fix Balancing
- Airborne Holding
- Level capping

C-ATFM INDIA


CCC (DELHI)
TMU (DELHI)
TMU (JAIPUR)
TMU (LUCKNOW)
TMU SRINAGAR
TMU JAMMU
TMU CHANDIGARH
TMU AMRITSAR
TMU (MUMBAI)
TMU AHMEDABAD
TMU PUNE
TMU NAGPUR
TMU INDORE
TMU BHOPAL
TMU (CHENNAI)
TMU COCHIN
TMU TRIVANDRUM
TMU CALICUT
TMU COIMBATURE
TMU MANGALORE
TMU PORTBLAIR
TMU TRICHY
TMU MADURAI
TMU (KOLKATA)
TMU GUWAHATI
TMU BHUVANESHWAR
TMU RAIPUR
TMU PATNA
TMU AGARTALA
TMU VARANASI
TMU BAGDOGRA
TMU IMPHAL
TMU RANCHI
TMU (BANGALORE)
TMU GOA
TMU(HYDERABAD)
TMU VIZAG

JOURNEY SO FAR …..

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- Training of CCC officers ,FMP officers & other stakeholder in July 2016/January 2017
- Two trial operation conducted successfully in the month of January 2017 & February 2017
- AIP supplement 25/2017 issued on 16/03/2017 for implementation of ATFM India w. e . f. 27th April 2017
- First standardized monthly post analysis report- 05/2017.Issue of ADP & dissemination of the same
- ATFM phase II training for CATFM core group , Airline operators & Airport operators by M/s ATECH – October 2017 to 10th December 2017 .
- Continuous monitoring of applied ATFM measures (w.r.t. compliance rate, CDM prediction accuracy & traffic flow).
- Manual Slot Allocator' introduced for allocating revised CTOTs.
- A total of 694 ATCOs, 30 Airline personnel, 22 AOCC personnel & 197 Defense officers were trained in the last two years.

ROUTINE OPERATIONAL WORK at CCC

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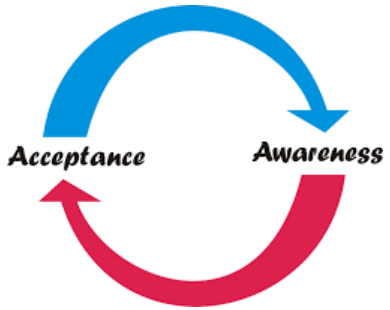
- RPL updating and uploading every fortnight.
- Publication & dissemination of Monthly Post Operational analysis report to all stakeholders.
- Instant monitoring & analysis of the applied CDM by shift
- Monitoring & managing system issues with Vendor .
- Periodic update of the airspace in SKYFLOW, by incorporating latest changes of air-routes, Nav.-aids, Fixes etc. as per AIRAC and monitoring of G-series NOTAM.

Challenges

- Initial Flight plan data & timely update of the same
- Raising awareness about ATFM among stakeholder
- Effective CDM (CDM Partners have access to C-ATFM system through secure login).
- Defining Airspace capacity for implementation of Phase II
- Ensuring compliance of CTOT
- Ensuring tangible benefit to CTOT complied aircraft.
- Reliable Met forecast.
- Automated tools for Post operation analysis.



LESSONS LEARNED

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- Senior Management support is critical
- Ensure ATFM staff is qualified & experienced enough to gain credibility.
- FMP should have dedicated staff.
- Stakeholder must be included in development, training & implementation steps to achieve a common objective
- Post operational analysis should be performed to improve performance, needs to be transparent & shared with stakeholders
- Evolution of decision support tool to reach best solutions.
- Ensure training of ATFM personnel & all stakeholder.
- Continuous update of Standard operating procedure, guidelines etc.

Way forward

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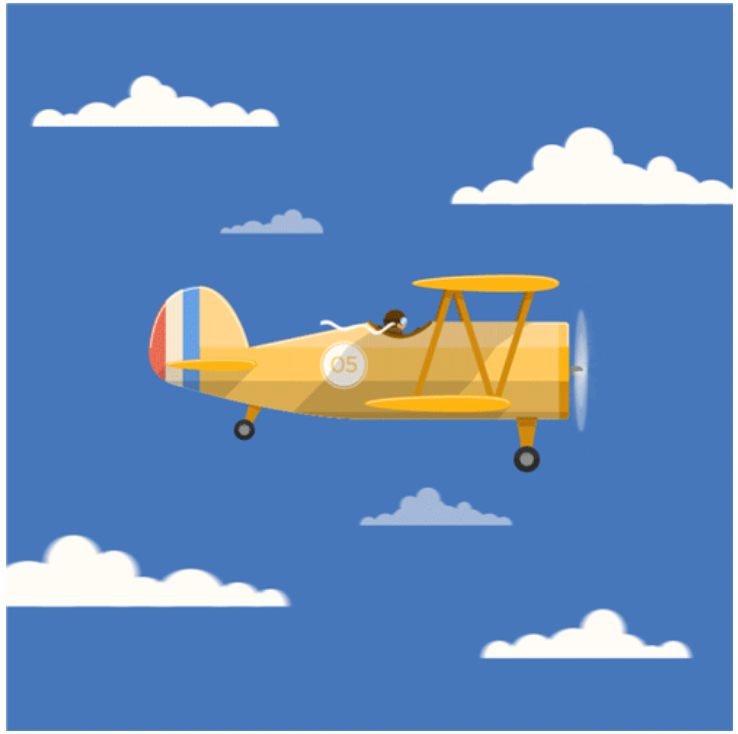
- IFPS
- C-ATFM & ACDM integration
- Activation/Availability of Web Portal to all stakeholder
- Continuous evolution of ATFM system. Dynamic ATFM measures, determine Airspace capacity
- CBR/LOA with Airline operator
- Training program (CCC & stakeholders) to develop skills & knowledge about ATFM
- Strengthening CDM Process which is evolving with more participation and contribution from all stakeholders
- Cross border ATFM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THANK YOU