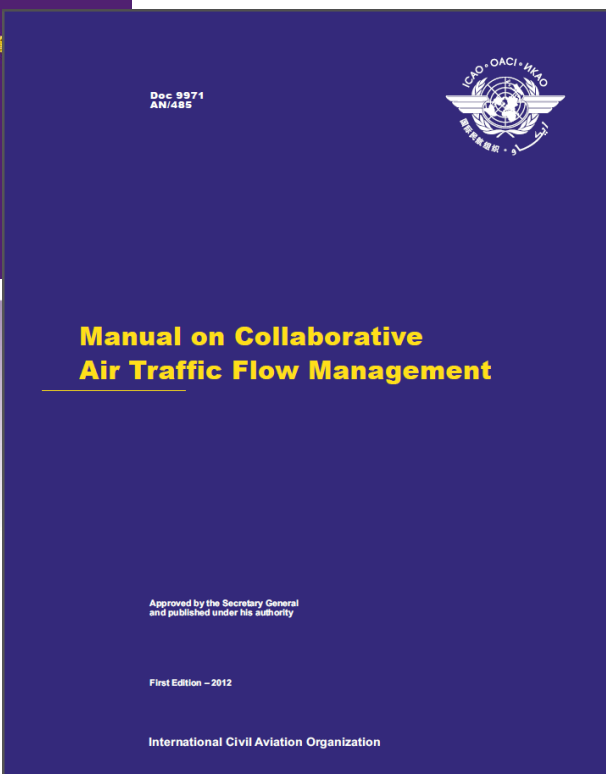




INTERNATIONAL CIVIL AVIATION ORGANIZATION

A United Nations Specialized Agency



ATFM Walk through Doc 9971

Nicolas Hinchliffe,
ICAO

Summary



- ATFM and ASBUs
- Why an ATFM Manual ?
- Why Doc 9971 ?
- From page 1 to page 88



ASBU and A-CDM



Airport Operations

B0-ACDM

Improved
Airport
Operations
through
Airport-CDM

Available Now

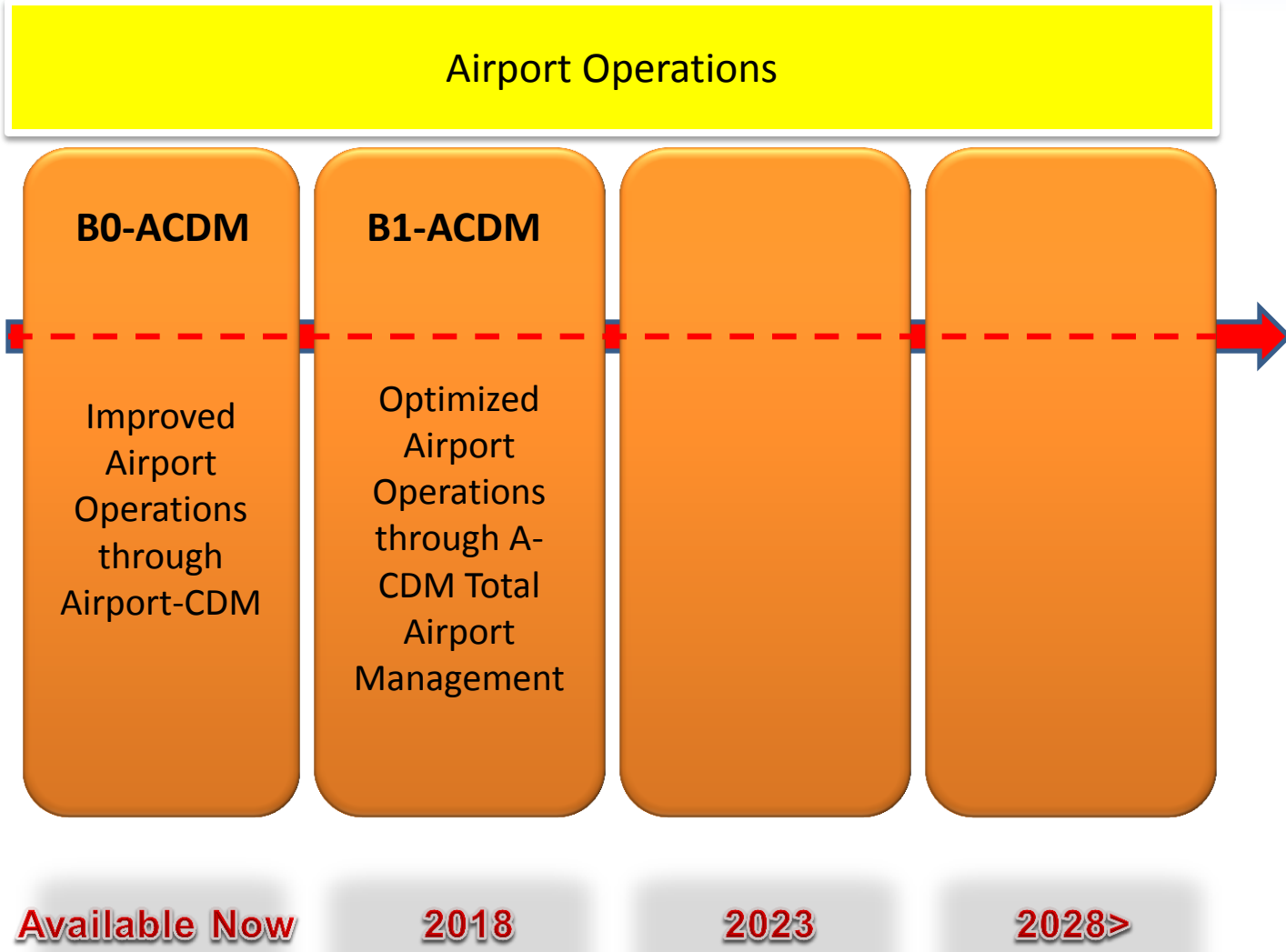
B1-ACDM

Optimized
Airport
Operations
through A-
CDM Total
Airport
Management

2018

2023

2028>



ASBU and ATFM



Optimum Capacity and Flexible Flights

BO-FRTO

B1-FRTO

Improved Operations through Enhanced En-route trajectories

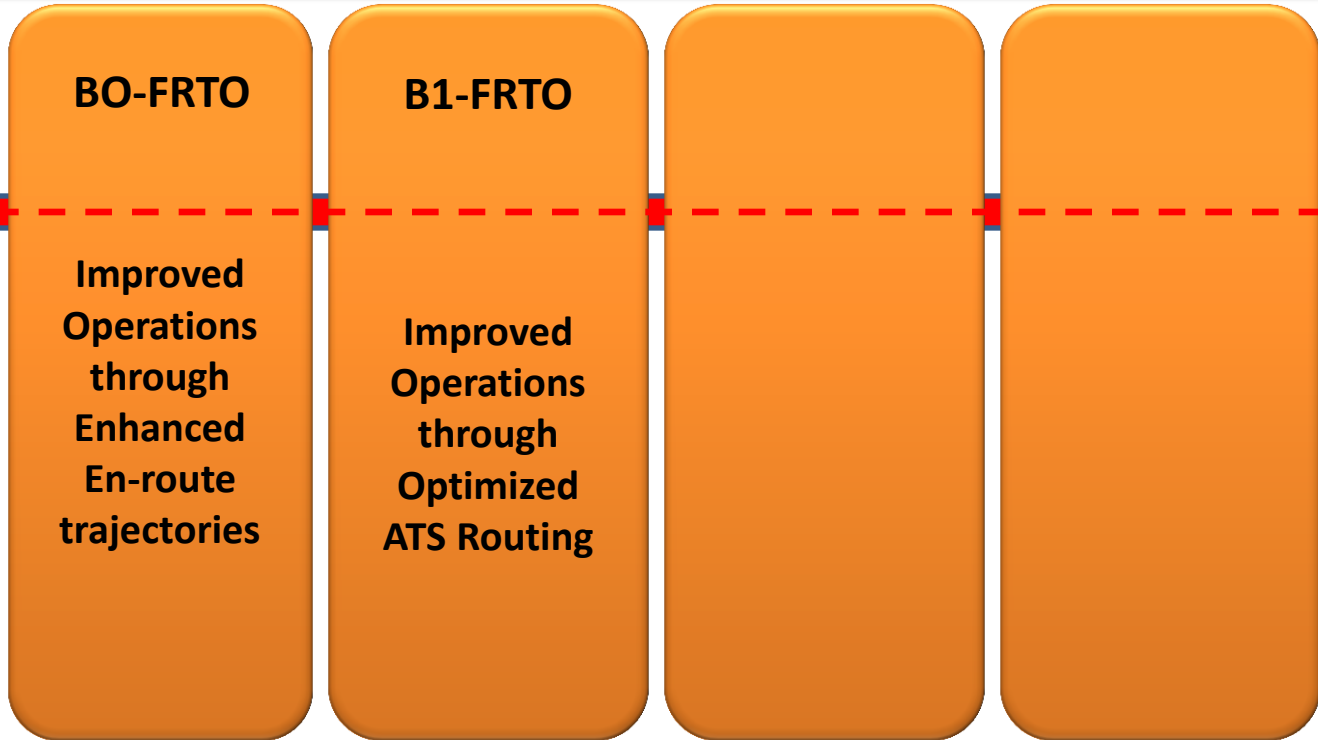
Improved Operations through Optimized ATS Routing

Available Now

2018

2023

2028>



ASBU and ATFM



Optimum Capacity and Flexible Flights

B0-NOPS

Improved Flow Performance through Planning based on a Network Wide view

Available Now

B1-NOPS

Enhanced Flow Performance through Network Operational Planning

2018

B2-NOPS

Increased User Involvement in the Dynamic Utilization of the Network

2023

B3-NOPS

Traffic Complexity Management

2028>



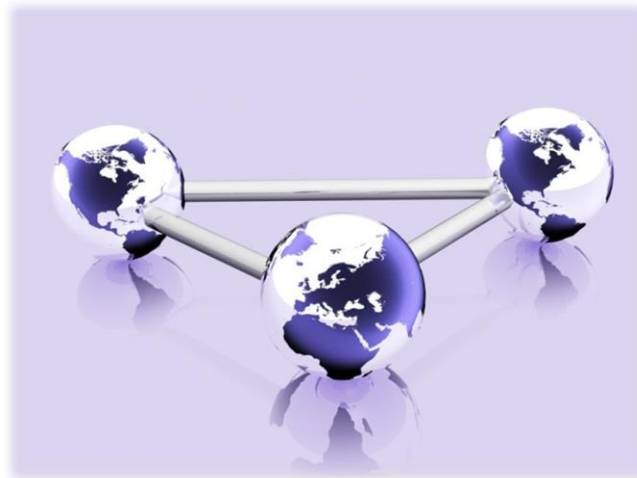
Drivers for the ATFM Guidance material



Traffic pressure



Hub operations



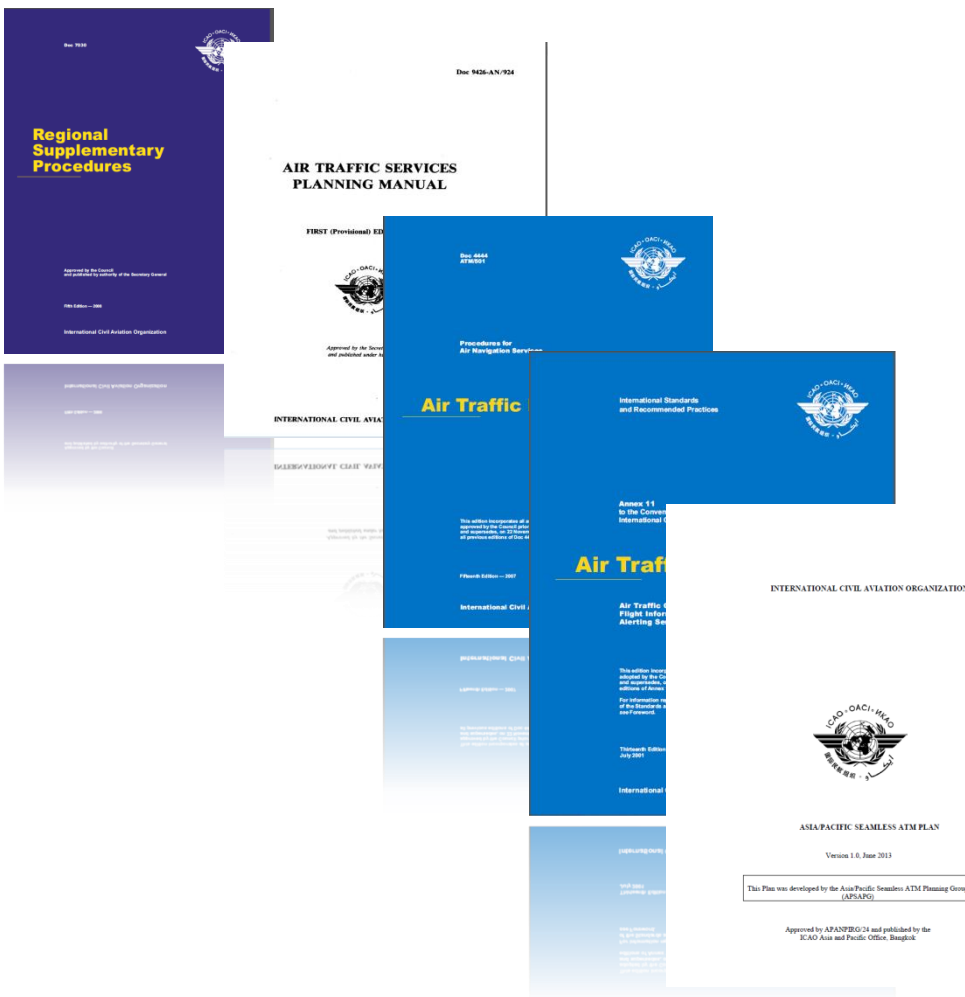
ATFM systems Interdependencies

Drivers for the ATFM Manual

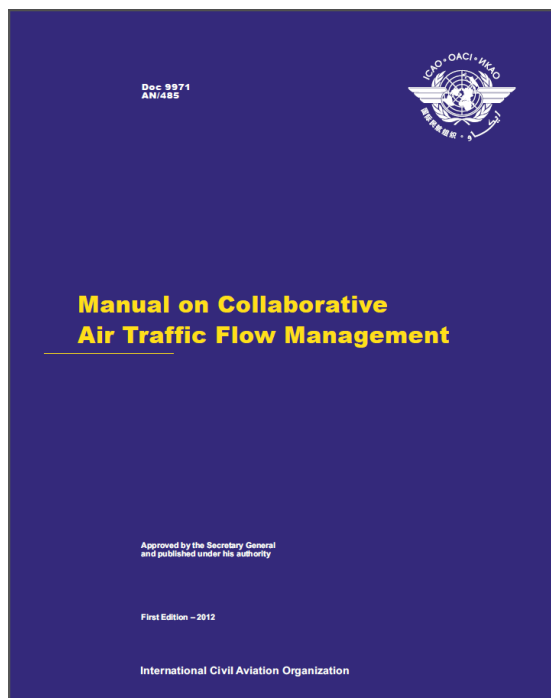


Existing ATFM provisions

- Generic
- High Level
- Regional



Doc 9971: Manual on...



- Pool of expertise
- Worldwide perspective
- Operational focus

Publication :Nov 2012

New edition

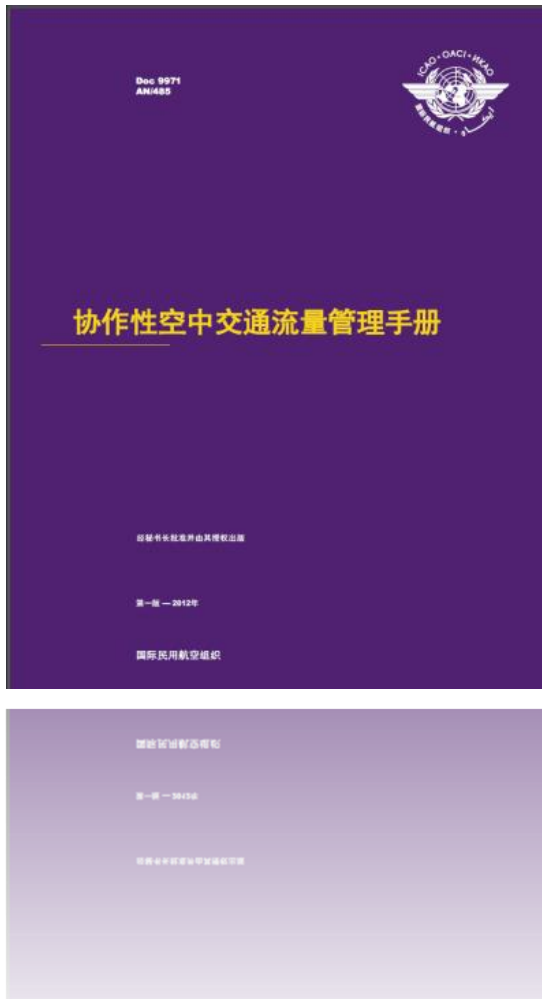
Dec 2013

Collaborative Air Traffic Flow Manag.



CDM and ATFM :

- Two parts
- One manual



Chap 1 – General direction



- Objectives
- High level principles
- Benefits



Chap 2 – ATFM in ATM



- Airspace availability
- Weather forecast
- Civil military information



Chap 2 – ATFM in ATM

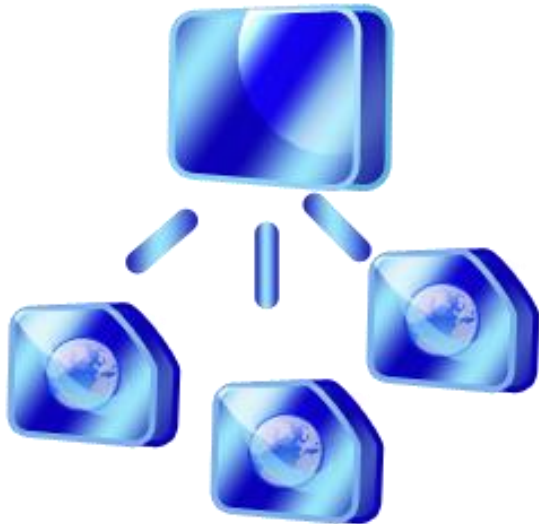


Combining the best of both worlds

Chap 3 - Structure and organization



ATFM Organization

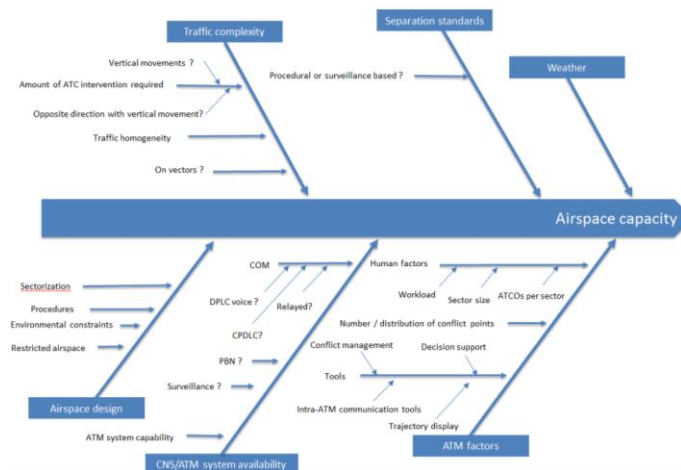


- Information exchange
- Operational organizations
- Letters of Agreement
- Training requirements

Chap 4 –DCB

Capacity definitions

- Principles
- Formulas : annexes



Factors affecting capacity

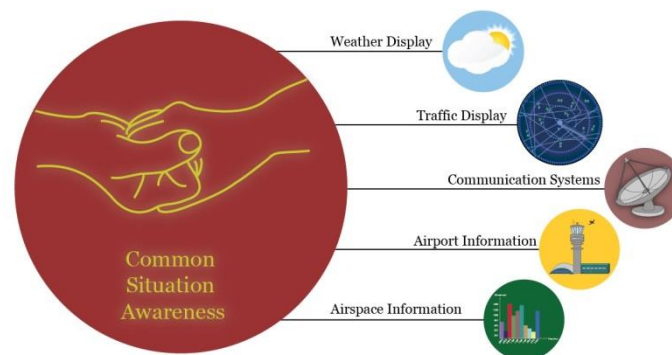
- Balancing demand / managing capacity
 - Forecasting traffic
 - Identify imbalances
 - Demand
 - Capacity
 - Mitigating actions
 - Implementation



Chap 5 - Implementation



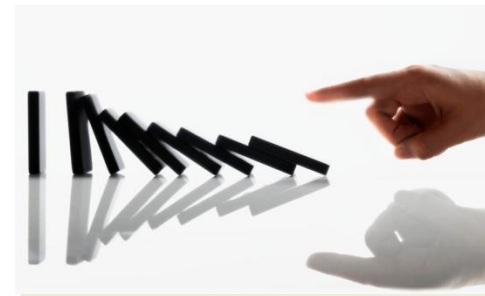
- Objectives
- CDM Processes
 - Stakeholders
 - Communication tools
 - Elements of common situation awareness
- Measures
- Training
- Timing



Chap 5 - Implementation



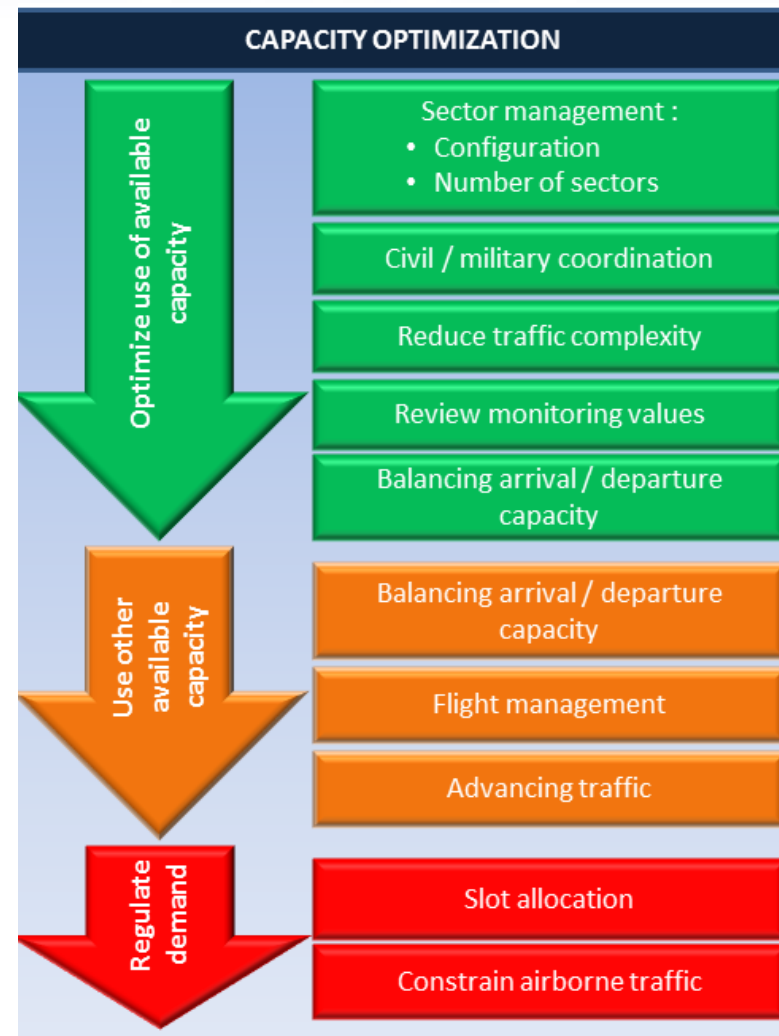
- Application to multinational environment
 - Data / information exchange
 - Decision making mechanisms
 - Interdependency



Chap 6 - Optimizing capacity



- Delay analysis
 - Attribution
 - Accountability
 - Regular reports
- Optimizing capacity
 - Phased process



Chap 6 - ATFM Measures

Time Related

- Miles in trail
- Minutes in trail
- Fix balancing
- Ground delay program
- Slot swapping
- Minimum Dep Intervals

Area related

- Rerouting
- Mandatory routing scenarios
- Advisory routing scenarios
- Level capping
- Collaborative trajectory options
- Airborne holding



From	Time	Status
Chicago	7:35 PM	On Time
Washington-IAO	7:40 PM	On Time
San Jose	7:42 PM	On Time
San Antonio	7:45 PM	On Time
San Diego	7:50 PM	On Time
San Francisco	8:20 PM	On Time
San Jose	8:30 PM	On Time
San Francisco	8:40 PM	On Time
San Jose	9:15 PM	On Time
San Francisco	9:55 PM	On Time
San Jose	10:15 PM	On Time
San Francisco	5:55 PM	On Time



Chap 7 - Data Exchange and tools



- Type of data



- Use of data



- Data exchange policy

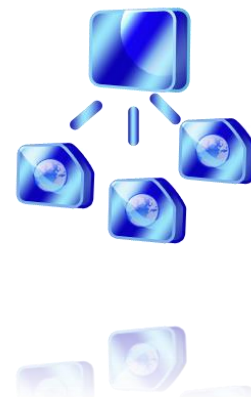


Chap 8 - Communication



- Communication
- Phraseology
- Terminology

Doc 9971 - Part 2 at a glance



ATFM Measures		
	Strategic	Tactical
Strategic		<ul style="list-style-type: none"> Resolving Demand Capacity Imbalance Flow Management Resolving (Re-routing) Scenarios Resolving (Re-routing) Scenarios Playbook Routes Playbook Routes
Operational	<ul style="list-style-type: none"> Playbook Routes Playbook Routes 	<ul style="list-style-type: none"> Playbook Routes Playbook Routes Playbook Routes Playbook Routes
Tactical	<ul style="list-style-type: none"> Ground Delay Programs Ground Delay Programs 	<ul style="list-style-type: none"> Ground Delay Programs Ground Delay Programs Ground Delay Programs Ground Delay Programs
Other	<ul style="list-style-type: none"> Arrival Holding 	<ul style="list-style-type: none"> Arrival Holding

Rolling out

A banner for the "Advanced ATM Training Workshop" with a green digital background. It features a stylized world map with white dashed lines representing flight paths and several white airplane icons. The text is in white and black on a dark grey background at the bottom.

 **Advanced ATM Training Workshop**
Today's Opportunities for Saving Fuel and Reducing Emissions
4 – 6 November 2013, ICAO Headquarters, Montréal



North American
Central American
and Caribbean
(NACC) Office
Mexico City

South American
(SAM) Office
Lima

ICAO
Headquarters
Montreal

Western and
Central African
(WACAF) Office
Dakar

European and
North Atlantic
(EUR/NAT) Office
Paris

Middle East
(MID) Office
Cairo

Eastern and
Southern African
(ESAF) Office
Nairobi

Asia and Pacific
(APAC) Office
Bangkok



Thank You



Separation standards

Traffic complexity

Weather

Vertical movements ?

Procedural or surveillance based ?

Amount of ATC intervention required

Opposite direction with vertical movement?

Traffic homogeneity

On vectors ?

Airspace capacity

Sectorization

Procedures

Environmental constraints

Restricted airspace

Airspace design

ATM system capability

CNS/ATM system availability

COM

DPLC voice ?

Relayed?

CPDLC?

PBN ?

Surveillance ?

Human factors

Workload

Sector size

ATCOs per sector

Number / distribution of conflict points

Conflict management

Decision support

Tools

Intra-ATM communication tools

Trajectory display

ATM factors

