International Civil Aviation Organization

The Fifth Meeting of ICAO Asia/Pacific Air Traffic Flow Management Steering Group (ATFM/SG/5)

Bangkok, Thailand, 30 March – 3 April 2015

Agenda Item 5: Development of Regional ATFM Framework

ATFM TERMINOLOGY AND COMMUNICATIONS

(Presented by the Secretariat)

SUMMARY

This paper presents ATFM Terminology and Communications for inclusion in the Regional Framework for ATFM.

1. INTRODUCTION

1.1 Recognizing the lack of a current, globally standardized ATFM terminology, ATFM/SG considered the terminologies used by States and organizations advanced in ATFM implementation, both within and external to the Asia/Pacific Region. This WP provides the relevant section of the Draft Framework, along with a suite of terminologies and phraseologies.

2. DISCUSSION

2.1 **Attachment A** to this paper provides relevant parts of the Background Information section of the Draft Framework, which includes general information on ATFM terminologies, system communications, information distribution and the use of the Aeronautical Fixed Service (AFS) where necessary.

2.2 **Attachment B** is the proposed Appendix to the Framework, providing the details of ATFM general and phase-of-flight terminology, an ATFM terminology map, and ATFM phrases for use by ATC.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) note the information contained in this paper;

b) discuss and amend where necessary the proposed Framework section and associated terminology and communications appendix;

c) agree to the inclusion of this information in the Framework; and

d) discuss any relevant matters as appropriate.

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ATFM Terminology

5.41 Recognizing the lack of a current, globally standardized ATFM terminology, ATFM/SG considered the terminologies used by States and organizations advanced in ATFM implementation, both within and external to the Asia/Pacific Region.

5.42 The Global development of ATFM has largely been undertaken in isolation by individual ANSPs, EUROCONTROL, ICAO Sub-Regions or other informal groups of States, or by ATFM system vendors. This has resulted in differences in concept development and in the technical terms used for operational and technical coordination of ATFM information.

5.43 ATFM/SG developed a standardized ATFM terminology for the Asia/Pacific Region to promote harmonization and interoperability of CDM/ATFM systems and procedures.

5.44 The terms and definitions were drawn from those used by Australia, Canada, EUROCONTROL, Japan, South Africa and USA, and those in the *Flight Information Exchange Model* (FIXM) data dictionary.

5.45 The Asia/Pacific Region ATFM terminology for use in ATFM communications is provided at **Appendix X**.

ATFM System Communications

5.46 Regional and Global interoperability of communications is critical to the implementation of effective, network-based cross-border ATFM.

5.47 The Flight Information Exchange Model (FIXM) is part of a suite of data exchange formats, including Aeronautical Information Exchange Model (AIXM) and Meteorological Information Exchange Model (WXXM), intended to provide a global standard for information exchange. FIXM is a data interchange format for sharing information about flights throughout their lifecycle.

5.48 **Figure X** illustrates the data-level interoperability among domains achieved by FIXM.

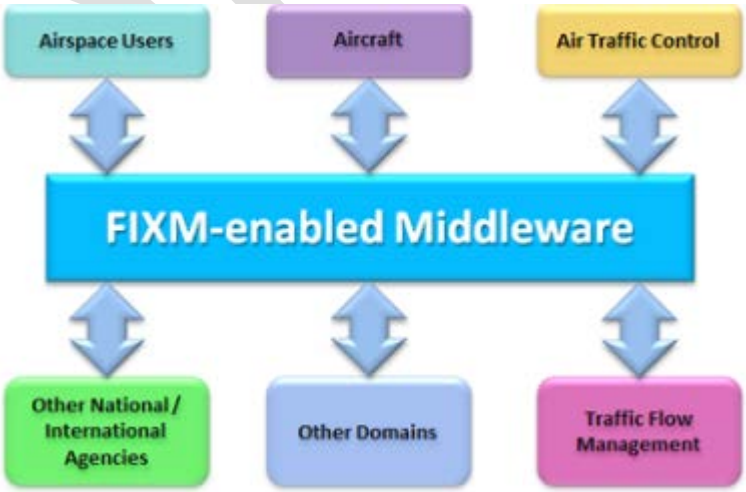

Figure X: FIXM Interoperability among Domains

5.49 FIXM is referenced in Global Air Navigation Plan ASBU modules and roadmap:

- **ASBU B1-FICE –** Increased Interoperability, Efficiency and Capacity through

Flight and Flow Information for a Collaborative Environment Step-1 (FF-ICE/1)[1] application before Departure;

- Introduces FF-ICE, Step 1 providing ground-ground exchanges using a common flight information reference model (FIXM) and extensible markup language (XML) standard formats before departure.

- **ASBU B1-DATM** – Service Improvement through Integration of all digital ATM Information Implements the ATM information reference model, integrating all ATM information, using common

  - Implements the ATM information reference model, integrating all ATM information, using common formats (UML/XML and WXXM) for meteorological information, FIXM for flight and flow information and Internet protocols.

- **Roadmap 2** – in the Blocks 1 and 2 time frame:

  - FIXM will be introduced as the global standard for exchanging flight data.

- **Roadmap 8** – in the Blocks 1 and 2 time frame:

  - FIXM will propose a global standard for exchanging flight information.

5.50 FIXM version 3.0 (or later), extended where necessary to accommodate additional regional requirements, is the agreed ATFM information exchange model for exchanging ATFM data between ATFM systems in the Asia/Pacific Region.

5.51 More information on FIXM is available at www.fixm.aero.

ATFM Information Distribution

5.52 ATFM Daily Plans and ATFM Measures for individual aircraft may be distributed between ATFM units, ATS units and airspace users by the following means:

- Networked, web-based interface at ATFMU, ATSU and Airspace User locations, each forming a node of a distributed multi-nodal ATFM platform;

- Web-based interface at ATFMU, ATSU and Airspace User locations, providing access directly to ATFM information provided by the ATFMU responsible for the initiation of ATFM measures for the destination airport or constrained airspace; or

- Aeronautical Fixed Service (AFS) messages distributed to individual ATSUs;

- Email distribution (ATFM Daily Plan); or

- Voice Coordination

[1] ICAO Doc 9965 – Manual on Flight and Flow – Information for a Collaborative Environment (FF-ICE) describes the FF-ICE concept.

5.53 Considering the scope and performance objectives of this version of the Framework, and the stage of development of the multi-nodal ATFM concept, **Table X** outlines the minimum items of ATFM information that ATFM systems and processes should share.

The Multi Nodal Concept of Operations is detailed in paragraphs XX to XX.

Estimated	Calculated	Actual	Applicable
EOBT		AOBT	Terminal Gate
	CTOT	ATOT	Departure Runway
ETO	CTO	ATO	RFIX or AFIX
ELDT	CLDT	ALDT	Arrival Runway
Other			
ADP			

Table 1: Minimum ATFM Information for Distribution and Sharing

ATFM Communications by AFS

5.54 Recognizing that States' needs for ATFM may vary, where necessary ATSUs may participate in collaborative ATFM without having the need for dedicated ATFM systems or terminals. AFS may provide a suitable method for distribution of ADP and ATFM measure information to such ATSUs.

5.55 The *EUROCONTROL Specification for ATS Data Exchange Presentation* (ADEXP) provides a format for use in on-line, computer to computer message exchange and for message exchange over switched messaging networks. It is used in current generation ATM automation and supporting systems, and was used in the development of FIXM.

5.56 The ADEXP model provides machine-readable information that is also human-readable, rendering it useable for the distribution of ATFM information on computer-based displays and in text form via AFS.

5.57 ADEXP version 3.1 is the agreed format for ATFM message exchange in the Asia/Pacific Region in cases where an ATFM network interface has not been established, and ATFM information is distributed by AFS. More information is available on the EUROCONTROL website[2].

ATFM Phrases

ATFM phrases for use in ATFM coordination, and in air-ground communications, are also included in **Appendix X.**

[2] https://www.eurocontrol.int/publications/ats-data-exchange-presentation-adexp-specification

APPENDIX X: ATFM Terminology and Communications

ATFM Terminology - General

Acronym	Term	Definition
AAR	Airport Acceptance Rate	Arrival capacity of an airport normally expressed in movements per hour
ADR	Airport Departure Rate	Departure Capacity of an airport normally expressed in movements per hour
ASD	Aircraft Situation Display	ATC Aircraft/Traffic Situation Display
AFIX	Arrival Fix	A waypoint during the arrival phase of a flight. In the context of ATFM it could a waypoint where an ATFM Measure may be applied
CDM	Collaborative Decision-Making	Process which allows decisions to be taken by amalgamating all pertinent and accurate sources of information, ensuring that the data best reflects the situation as known, and ensuring that all concerned stakeholders are given the opportunity to influence the decision. This in turn enables decisions to best meet the operational requirements of all concerned.
CDR	Conditional Route	ATS route that is available for flight planning and use under specific conditions
DFIX	Departure Fix	The first published fix/waypoint used after departure of a flight.
DMAN	Departure Manager	A planning system to improve the departure flows at an airport by calculating the Target Take-Off Time (TTOT) and Target Startup Approval Time (TSAT) for each flight, taking multiple constraints and preferences into account
FCA	Flow Constrained Area	An sector of airspace where normal flows of traffic are constrained, which could be caused by weather, military exercise etc.
FMP	Flow Management Position	A position in any ATCC that monitors traffic flows and implements or requests ATFM measures to be implemented"

Acronym	Term	Definition
GDP	Ground Delay Program	ATFM process where aircraft are held on the ground in order to manage capacity and demand in a specific volume of airspace or at a specific airport. In the process departure times are assigned and correspond to available entry slots into the constrained airspace or arrival slots into the constrained airport
GS	Ground Stop	A tactical ATFM measure where some selected aircraft remain on the ground
MINIT	Minutes in Trail	A tactical ATFM measure expressed as the number of minutes required between successive aircraft. It is normally used in airspace without air traffic surveillance or when transitioning from surveillance to non-surveillance airspace, or even when the spacing interval is such that it would be difficult for a sector controller to measure it in terms of miles
MIT	Miles in Trail	A tactical ATFM measure expressed as the number of miles required between aircraft (in addition to the minimum longitudinal requirements) to meet a specific criterion which may be separation, airport, fix, altitude, sector or route specific. MIT is used to organize traffic into manageable flows as well as to provide space to accommodate additional traffic (merging or departing) in the existing traffic flows. It will never be less than the separation minima.
RFIX	En-route Fix	A waypoint during the en-route phase of a flight. In the context of ATFM it could a waypoint where an ATFM Measure may be applied
SUB	Slot Swapping	The ability to swap departure slots gives AUs the possibility to change the order of flight departures that should fly in a constrained area
-	ATFM Measure	ATFM Measure which will balance demand against capacity or assist in the safe expeditious flow of traffic

ATFM Terminology – Phase of Flight

Acronym	Term	Definition
SOBT	Scheduled off Block Time	The time that an aircraft is scheduled to depart from the parking position
EOBT	Estimated Off Block Time	The estimated time that an aircraft will start movement associated with departure
TOBT	Target Off - Block Time	The time that an aircraft Operator or Ground handler estimates that an aircraft will be ready to startup/pushback immediately upon reception of clearance from the tower.
TSAT	Target Start Up Approval Time	The time provided by ATC taking into account TOBT, CTOT and/or the traffic situation that an aircraft can expect start up/push back approval
COBT	Calculated Off Block Time	A time calculated and issued by ATFM Unit, as a result of tactical slot allocation, at which a flight is expected to pushes back / vacates parking position so as to meet a CTOT taking into account start and taxi time.
AOBT	Actual Off Block Time	The time the aircraft pushes back / vacates parking position (Equivalent to Airline / Handlers ATD – Actual Time of Departure & ACARS=OUT)
STOT	Scheduled Take Off Time	The estimated take off time derived from an aircraft operators schedule, typically based on a standard taxi-out time
PTOT	Planned Take Off Time	Time aircraft is expected to take off derived from the flight plan.
TTOT	Target Take Off Time	The Target Take off Time taking into account the TOBT/TSAT plus Estimated Taxi-Out Time
CTOT	Calculated Take off Time	A time calculated and issued by ATFM Unit, as a result of tactical slot allocation, at which a flight is expected become airborne
ETOT	Estimated Take Off Time	The Estimated take off time taking into account EOBT plus Estimated Taxi-Out Time
ATOT	Actual Take Off time	The time that an aircraft takes off from the runway (Equivalent to ATC ATD–Actual Time of Departure, ACARS = OFF)
SEET	Scheduled Estimated En-route Time	The estimated elapsed time of a flight derived from the aircraft operators schedule

Acronym	Term	Definition
ETO	Estimated Time Over	Estimated time at which an aircraft would be over a fix, waypoint or particular location typically where air traffic congestion is expected
CTO	Calculated Time Over	Time calculated and issued by ATFM Unit, as a result of tactical slot allocation, at which flight is expected to be over a fix, waypoint or particular location typically where air traffic congestion is expected (referred to in FIXM 2.0 as "Airspace Entry Time - Controlled")
PLDT	Planned Landing Time	The expected landing time of a flight derived from the flight plan
SLDT	Scheduled Landing Time	Scheduled time aircraft is expected to land on a runway, typically based on Scheduled In-Block Time (SIBT) and a standard taxi-in time
TLDT	Target Landing Time	Targeted Time from the Arrival Management process at the Threshold, taking runway sequence and constraints into account; Progressively refined planning time used to coordinate between arrival and departure management processes
CLDT	Calculated Landing Time	A landing time calculated and issued by ATFM unit, as a result of tactical slot allocation at which a flight is expected to land on a runway
ELDT	Estimated Landing Time	The estimated time that an aircraft will touch-down on the runway (equivalent to ETA)
ALDT	Actual Landing Time	Actual time an aircraft lands on a runway (Equivalent to ATC ATA –Actual Time of Arrival = landing, ACARS=ON)
SIBT	Scheduled In Block Time	The Time that an aircraft is scheduled to arrive at its first parking position.
CIBT	Calculated In Block Time	An in block time calculated and issued by ATFM unit, as a result of tactical slot allocation at which a flight is expected to be at its first parking position.
AIBT	Actual in block time	The time that an aircraft arrives in-blocks (Equivalent to Airline/Handler ATA –Actual Time of Arrival, ACARS = IN)

ATFM Terminology Map

Phase of Flight	Scheduled	Flight Plan	Target (Airline)	Target (ANSP)	ATFM Measure	Estimated	Actual
Off-Block Time (OBT)	SOBT	EOBT	TOBT	TSAT	COBT		AOBT
Take-Off Time (TOT)	STOT			TTOT	CTOT	ETOT	ATOT
Time Over (TO)					CTO	ETO	ATO
Landing Time (LDT)	SLDT			TLDT	CLDT	ELDT	ALDT
In-Block Time (IBT)	SIBT				CIBT		AIBT

ATFM Phraseology

Circumstance	Phraseology
Calculated take-off time (CTOT) delivery resulting from a slot allocation message (SAM). The CTOT shall be communicated to the pilot at the first contact with ATC.	SLOT (*time*)
Change to CTOT resulting from a Slot Revision Message (SRM).	REVISED SLOT (*time*)
CTOT cancellation resulting from a Slot Cancellation Message (SLC)	SLOT CANCELLED, REPORT READY
Flight suspension until further notice resulting from Flight Suspension Message (FLS).	FLIGHT SUSPENDED UNTIL FURTHER NOTICE, DUE (*reason*)
Flight de-suspension resulting from a De-suspension Message (DES).	SUSPENSION CANCELLED, REPORT READY
Denial of start-up when requested too late to comply with the given CTOT.	UNABLE TO APPROVE START-UP CLEARANCE DUE SLOT EXPIRED, REQUEST A NEW SLOT
Denial of start-up when requested too early to comply with the given CTOT.	UNABLE TO APPROVE START-UP CLEARANCE DUE SLOT (*time*), REQUEST START-UP AT (*time*)

Source: ICAO Doc 7030 Regional Supplementary Procedures – EUR 10-3