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**The Fourth Meeting of System Wide Information Management Task Force (SWIM TF/4)**

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**Agenda Item 5:** Updates on the assigned tasks by task leads/contributors including progress Report and issues

- c) Task 4: Technical Architecture-Development and Maintenance of Regional Information Exchange Models

**EXTENSION DEVELOPMENT OF FIXM TO SUPPORT NATIONAL ATFM OPERATIONS AND ATFM/A-CDM INTEGRATION IN CHINA**

(Presented by China)

**SUMMARY**

This paper presents the extension development of FIXM to support national ATFM operations and ATFM/A-CDM integration in China. It also gives the overview of the effort to develop the new information exchange model to support ATFM/A-CDM information exchange.

**1. INTRODUCTION**

1.1 In order to implement data sharing among Air Traffic Flow Management (ATFM) stakeholders and facilitate a seamless and agile exchange of ATFM data exchange, in 2019, the development of Flight Information Exchange Model (FIXM) Extension has been start by Air Traffic Management Bureau(ATMB) of Civil Aviation Administration of China (CAAC), to support information exchange between ATFM systems and Airport Collaborative Decision Making(A-CDM) systems.

1.2 With the release of FIXM APAC FLOW Extension version 1.0 in July 2019, it was found that a set of ATFM data attributes were included in the FIXM Extension, such as the Calculated Take-Off Time (CTOT) and Calculated Landing Time (CLDT) fields, which are necessary to support the cross-border ATFM operations.

1.3 However, it was still found that the FIXM APAC FLOW Extension version 1.0 does not fully match the operational requirement for ATFM data exchange in China. Consequently, based on the operational scenarios and requirements, additional data attributes required to be exchanged among stakeholders involving in ATFM operations and to support the integration between ATFM and A-CDM were identified, and the FIXM APAC FLOW Extension version 1.0 was further developed by ATMB of CAAC to include these data attributes.

**2. DISCUSSION**

2.1 The ATFM is divided into three levels in China: national-regional-airport, supported by different systems such as national ATFM (NTFM), regional ATFM, A-CDM, etc. The information

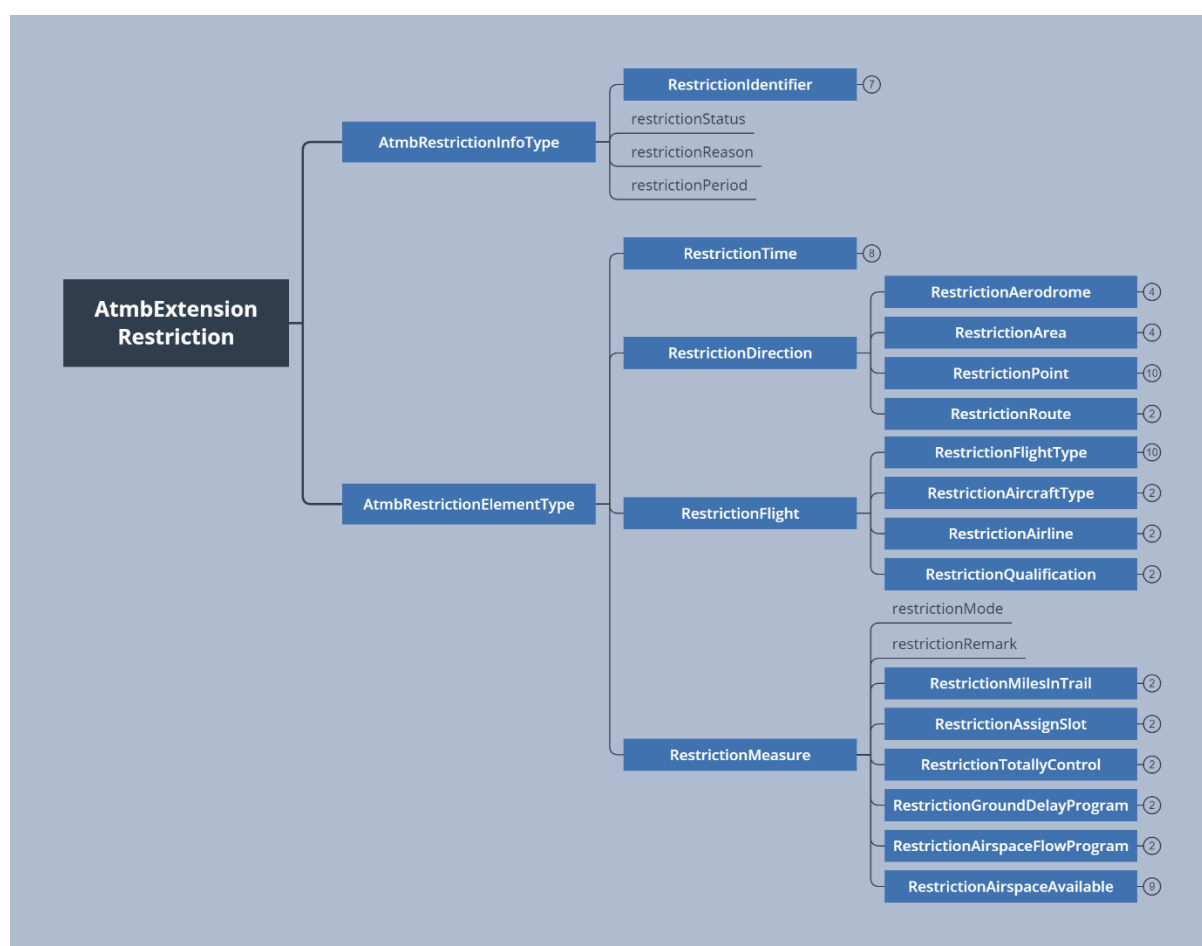
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that needs to be exchanged between these ATFM systems, including ATFM restriction information, flight information from ATFM systems and A-CDM systems. The FIXM ATMB ATFM Extension version 0.1 with these data attributes aforementioned included was therefore developed.

2.2 The ATFM restriction information is the core information of national ATFM and regional ATFM of Civil Aviation of China, it is produced and published by national ATFM system and regional ATFM systems, with many different kinds of content and data formats.

2.3 Based on the operational scenarios developed for the ATFM in China, combined with actual historical restriction data, a set of ATFM restriction data attributes was derived. **Figure 1** shows the structure of ATFM restriction data attributes, it contains 2 extension classes, including 19 subclasses, and 75 data fields. The Restriction data attributes of FIXM ATMB ATFM Extension version 0.1 is detailed in Appendix A.



**Figure 1: The structure of Restriction Data Attributes of FIXM ATMB ATFM Extension version 0.1**

2.4 In the end of 2019, 37 A-CDM systems were in operation in China, and the national ATFM system is being established by ATMB of CAAC. In order to enhance information interoperability between ATFM systems and A-CDM systems, and improving the efficiency of ATFM/A-CDM integrated operations, based on FIXM APAC FLOW Extension version 1.0, the FIXM ATMB ATFM Extension version 0.1 was further developed, with reference to ATFM and A-CDM relevant standards in China, a set of additional data attributes such as the ones for A-CDM purposes has been included in the FIXM Extension.

2.5 According to ATFM/A-CDM standards in China, including “*Technical Standard of Airport Collaborative Decision Making(A-CDM)*” and “*Flight Collaborative Decision Making Guidance Manual*”, additional data attributes require to be exchanged among stakeholders involving in ATFM/A-CDM operations and support the integration between ATFM and A-CDM were identified, as shown in **Table 1**. The data attributes that is already included in FIXM ATMB ATFM Extension version 0.1, marked with green background color in the table, with a total of 26 data fields. The FlightData data attributes of FIXM ATMB ATFM Extension version 0.1 is detailed in Appendix B.

Collaborative Decision Making Time	Scheduled	Estimated	Calculated	Target	Actual
Landing Time	SLDT	ELDT		TLDT	ALDT
In-Block Time	SIBT	EIBT			AIBT
Commence of Ground Handling Time					ACGT
Bridge Interface Point					ABIP
Arriving Ready for Landing Stairs					ARLS
Time of Door Opening		ETDO			ATDO
Start Boarding Time					ASBT
End Boarding Time					AEBT
Time of Door Closing		ETDC			ATDC
Time of Freight Door Opening					ATFO
Time of Freight Door Closing					ATFC
Aircraft Detaching Time					AADT
End of Ground handling Time					AEGT
Ready Time					ARDT
Start Up Request Time					ASRT
Start Up Approval Time				TSAT	ASAT
Off-Block Time	SOBT	EOBT	COBT	TOBT	AOBT
Ready for De-icing Time		ERZT			ARZT
Commencement of De-icing Time		ECZT			ACZT
End of De-icing Time		EEZT			AEZT
Take Off Time	STOT	ETOT	CTOT	TTOT	ATOT

*Note*  
 Data Attributes with a green background, indicating that it has been included in the FIXM ATMB ATFM Extension version 0.1.

**Table 1: The FlightData Attributes of FIXM ATMB ATFM Extension version 0.1**

2.6 Currently, the development of conceptual model, logical model and physical model of FIXM extension has been completed, and the documentation of FIXM ATMB ATFM Extension version 0.1 is in progress. The validation and demonstration of developed FIXM Extension will be carried out at a later date, in one Regional Air Traffic Management Bureau as experimental unit.

**3. ACTION BY THE MEETING**

3.1 The meeting is invited to:

- a) note the information contained in this paper; and
- b) discuss any relevant matter as appropriate

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## Appendix A to IP/03

### FIXM ATMB ATFM Extension version 0.1 AtmbRestriction XSD Description

Namespace	Description
AtmbRestriction	FIXM Extension containing restriction data attributes to support Air Traffic Flow Management operations in accordance with National ATFM and Airport-Collaborative Decision Making operations in China.

Class	Definition	Reference/Remark
AtmbRestrictionInfoType	Class containing ATFM Restriction data related to basic information.	This class is a new extension type by ATMB of CAAC.
Data Attribute	Definition	Reference/Remark
restrictionStatus	Status of restriction.	enumeration <ul style="list-style-type: none"> <li>• FUTURE</li> <li>• RUNNING</li> <li>• FINISHED</li> <li>• TERMINATED_MANUAL</li> <li>• TERMINATED_AUTO</li> </ul>
restrictionReason	Reason of restriction.	enumeration <ul style="list-style-type: none"> <li>• AIRPORT</li> <li>• MILITARY</li> <li>• CONTROL</li> <li>• WEATHER</li> <li>• SCHEDULE</li> <li>• JOINT_INSPECTON</li> <li>• OIL</li> <li>• DEPART_SYSTEM</li> <li>• PASSENGER</li> <li>• PUBLIC_SECURITY</li> <li>• MAJOR_SECURITY_ACTIVITIES</li> <li>• AIRLINE</li> <li>• OTHER</li> </ul>
restrictionPeriod	Duration of restriction.	enumeration <ul style="list-style-type: none"> <li>• TODAY</li> <li>• CROSSDAYS</li> <li>• LONGTERM</li> <li>• CONVENTION</li> </ul>
SubClass	Definition	Reference/Remark
RestrictionIdentifier	Subclass containing ATFM Restriction data related to identifier.	This class is to be included in extension field under AtmbRestrictionInfoType class.

SubClass	Definition	Reference/Remark
RestrictionIdentifier	Subclass containing ATFM Restriction data related to identifier.	This class is to be included in extension field under AtmbRestrictionInfoType class.
Data Attribute	Definition	Reference/Remark
restrictionFormerGufi	A reference that uniquely identifies a forwarding restriction, inherited from the original restriction GUFi.	
restrictionGufi	A reference that uniquely identifies an original restriction and is independent of any particular system.	
restrictionName	Name of restriction.	

restrictionOriginalSource	Restriction originator: if the restriction is a forwarding, the initial release unit that records the restriction of the originator remains the same.	
restrictionPublishType	The publish type of restriction.	enumeration • ORIGINAL • FORWARDING
restrictionPublishUnit	The publish unit of restriction, both the forwarding and the original restriction are updated in real time according to the least publishing unit.	
restrictionPublishUser	The publish username of restriction.	

Class	Definition	Reference/Remark
AtmbRestrictionElementType	Class containing ATFM Restriction data related to necessary element, such as restriction time, direction, flight, measure.	This class is a new extension type by ATMB of CAAC.
SubClass	Definition	Reference/Remark
RestrictionTime	Subclass containing ATFM Restriction data related to time.	This class is to be included in extension field under AtmbRestrictionElementType class.
RestrictionDirection • RestrictionAerodrome • RestrictionArea • RestrictionPoint • RestrictionRoute	Subclass containing ATFM Restriction data related to Direction, such as aerodrome, area, point, route.	This class is to be included in extension field under AtmbRestrictionElementType class.
RestrictionFlight • RestrictionFlightType • RestrictionAircraftType • RestrictionAirline • RestrictionQualification	Subclass containing ATFM Restriction data related to Flight, such as flight type, aircraft type, airline, qualification.	This class is to be included in extension field under AtmbRestrictionElementType class.
RestrictionMeasure • RestrictionAirspaceAvailable • RestrictionAssignSlot • RestrictionAirspaceFlowProgram • RestrictionGroundDelayProgram • RestrictionMilesInTrail • RestrictionTotalControl	Subclass containing ATFM Restriction data related to Restriction Measure, such as MIT, AS, TC, GDP, AFP, AA.	This class is to be included in extension field under AtmbRestrictionElementType class.

SubClass	Definition	Reference/Remark
RestrictionTime	Subclass containing ATFM Restriction data related to time.	This class is to be included in extension field under AtmbRestrictionElementType class.
Data Attribute	Definition	Reference/Remark
restrictionCreateTime	The time when the restriction was created, but has not yet been published.	
restrictionPublishTime	The time when the restriction was released to the public.	
restrictionUpdateTime	The time when the restriction was modified.	

restrictionStartTime	Start time of restriction period.	
restrictionEndTime	End time of restriction period.	
restrictionStartCalculateTime	The time of that restriction began to be calculated.	
restrictionEndCalculateTime	The time of that restriction end to be calculated.	
restrictionReserveSlot	Reserved Time Slot of restriction.	

SubClass	Definition	Reference/Remark
RestrictionDirection	Subclass containing ATFM Restriction data related to Direction, such as aerodrome, area, point, route.	This class is to be included in extension field under AtmbRestrictionElementType class.
<b>SubClass of RestrictionDirection</b>	<b>Definition</b>	<b>Reference/Remark</b>
RestrictionAerodrome	Subclass of RestrictionDirection containing ATFM Restriction data related to aerodrome.	This class is to be included in extension field under RestrictionDirection class.
<b>Data Attribute</b>	<b>Definition</b>	<b>Reference/Remark</b>
restrictionDepartureAerodrome	Restricted departure aerodrome by restriction.	
exemptDepartureAerodrome	Exempted departure aerodrome by restriction.	
restrictionDestinationAerodrome	Restricted destination aerodrome by restriction.	
exemptDestinationAerodrome	Exempted destination aerodrome by restriction.	
<b>SubClass of RestrictionDirection</b>	<b>Definition</b>	<b>Reference/Remark</b>
RestrictionArea	Subclass of RestrictionDirection containing ATFM Restriction data related to airspace area.	This class is to be included in extension field under RestrictionDirection class.
<b>Data Attribute</b>	<b>Definition</b>	<b>Reference/Remark</b>
restrictionEnterArea	Restricted area to be entered.	
restrictionEnterSector	Restricted sector to be entered.	
restrictionOverflyArea	Restricted area to be overflow.	
restrictionOverflySector	Restricted sector to be overflow.	
<b>SubClass of RestrictionDirection</b>	<b>Definition</b>	<b>Reference/Remark</b>
RestrictionPoint	Subclass of RestrictionDirection containing ATFM Restriction data related to enroute point.	This class is to be included in extension field under RestrictionDirection class.
<b>Data Attribute</b>	<b>Definition</b>	<b>Reference/Remark</b>
restrictionInPoint	Restricted inbound point.	
restrictionInPointStartTime	Start time of restrictionInPoint.	
restrictionInPointEndTime	End time of restrictionInPoint.	
restrictionOutPoint	Restricted outbound point.	
restrictionOutPointStartTime	Start time of restrictionOutPoint.	
restrictionOutPointEndTime	End time of restrictionOutPoint.	
restrictionPrePoint	The point before the restricted point.	
exemptPrePoint	The point before the exempted point.	
restrictionFollowPoint	The point after the restricted point.	
exemptFollowPoint	The point after the exempted point.	
<b>SubClass of RestrictionDirection</b>	<b>Definition</b>	<b>Reference/Remark</b>

RestrictionRoute	Subclass of RestrictionDirection containing ATFM Restriction data related to route.	This class is to be included in extension field under RestrictionDirection class.
Data Attribute	Definition	Reference/Remark
restrictionRoute	Restricted Route.	
exemptRoute	Exempted Route.	

SubClass	Definition	Reference/Remark
RestrictionFlight	Subclass containing ATFM Restriction data related to Flight, such as flight type, aircraft type, airline, qualification.	This class is to be included in extension field under AtmbRestrictionElementType class.
SubClass of RestrictionFlight	Definition	Reference/Remark
RestrictionFlightType	Subclass of RestrictionFlight containing ATFM Restriction data related to flight type.	This class is to be included in extension field under RestrictionFlight class.
Data Attribute	Definition	Reference/Remark
restrictionPassengerCargo	The types of restricted flights are distinguished by passenger or cargo.	enumeration • PASSENGER • CARGO
exemptPassengerCargo	The types of exempted flights are distinguished by passenger or cargo.	enumeration • PASSENGER • CARGO
restrictionTask	The types of restricted flights are distinguished by task.	enumeration • REGULAR • PATCH
exemptTask	The types of exempted flights are distinguished by task.	enumeration • REGULAR • PATCH
restrictionMission	The types of restricted flights are distinguished by airway types.	enumeration • DOMESTIC • INTERNATIONAL • HONGKONG • LONGAO • OVERFLY
exemptMission	The types of exempted flights are distinguished by airway types.	enumeration • DOMESTIC • INTERNATIONAL • HONGKONG • LONGAO • OVERFLY
restrictionMilitaryCivil	The types of restricted flights are distinguished by civil or military.	enumeration • CIVIL • MILITARY
exemptMilitaryCivil	The types of exempted flights are distinguished by civil or military.	enumeration • CIVIL • MILITARY
restrictionOperation	The types of restricted flights are distinguished by airlines types.	enumeration • NATIONAL • FOREIGNAL • TAIWAN • HONGKONG
exemptOperation	The types of exempted flights are distinguished by airlines types.	enumeration • NATIONAL • FOREIGNAL • TAIWAN

		• HONGKONG
SubClass of RestrictionFlight	Definition	Reference/Remark
RestrictionAircraftType	Subclass of RestrictionFlight containing ATFM Restriction data related to aircraft type.	This class is to be included in extension field under RestrictionFlight class.
Data Attribute	Definition	Reference/Remark
restrictionAircraftType	Restricted aircraft type by restriction.	
exemptAircraftType	Exempted aircraft type by restriction.	
SubClass of RestrictionFlight	Definition	Reference/Remark
RestrictionAirline	Subclass of RestrictionFlight containing ATFM Restriction data related to airlines.	This class is to be included in extension field under RestrictionFlight class.
Data Attribute	Definition	Reference/Remark
restrictionAirline	Restricted Airlines by restriction.	
exemptAirline	Exempted Airlines by restriction.	
SubClass of RestrictionFlight	Definition	Reference/Remark
RestrictionQualification	Subclass of RestrictionFlight containing ATFM Restriction data related to qualification.	This class is to be included in extension field under RestrictionFlight class.
Data Attribute	Definition	Reference/Remark
restrictionQualification	Restricted pilot qualification by restriction.	
exemptQualification	Exempted pilot qualification by restriction.	

SubClass	Definition	Reference/Remark
RestrictionMeasure	Subclass containing ATFM Restriction data related to Restriction Measure, such as MIT, AS, TC, GDP, AFP, AA.	This class is to be included in extension field under AtmbRestrictionElementType class.
Data Attribute	Definition	Reference/Remark
restrictionMode	The specific mode of restriction.	enumeration <ul style="list-style-type: none"> <li>• AA(Airspace Available)</li> <li>• AS(Assign Slot)</li> <li>• AFP(Airspace Flow Program)</li> <li>• BREQ(Boarding Request)</li> <li>• CT(Change Track)</li> <li>• GDP(Ground Delay Program)</li> <li>• GS(Ground Stop)</li> <li>• MIT(Miles In Trail)</li> <li>• REQ(Request)</li> <li>• TC(Total Control)</li> <li>• WI(Wait Inspace)</li> </ul>
restrictionRemark	Remark of restriction.	
SubClass of RestrictionMeasure	Definition	Reference/Remark
RestrictionAirspaceAvailable	Subclass of RestrictionMeasure containing ATFM Restriction data related to AirspaceAvailable restriction.	This class is to be included in extension field under RestrictionMeasure class.
Data Attribute	Definition	Reference/Remark
restrictionArea	Restricted airspace area by restriction.	

restrictionMinHeight	Restricted minimum flight height limit by restriction.	
restrictionMinHeightIncluded	Include or exclude the minimum height by restrictionMinHeight.	
restrictionMaxHeight	Restricted maximum flight height limit by restriction.	
restrictionMaxHeightIncluded	Include or exclude the maximum height by restrictionMinHeight.	
exemptMinHeight	Exempted minimum flight height limit by restriction.	
exemptMinHeightIncluded	Include or exclude the minimum height by exemptMinHeight.	
exemptMaxHeight	Exempted maximum flight height limit by restriction.	
exemptMaxHeightIncluded	Include or exclude the maximum height by exemptMinHeight.	
<b>SubClass of RestrictionMeasure</b>	<b>Definition</b>	<b>Reference/Remark</b>
RestrictionAssignSlot	Subclass of RestrictionMeasure containing ATFM Restriction data related to AssignSlot restriction.	This class is to be included in extension field under RestrictionMeasure class.
<b>Data Attribute</b>	<b>Definition</b>	<b>Reference/Remark</b>
restrictionValue	A specific assignment time slot, such as 10min, 20min.	
restrictionValueUnit	The unit of a specific assignment time slot.	
<b>SubClass of RestrictionMeasure</b>	<b>Definition</b>	<b>Reference/Remark</b>
RestrictionAirspaceFlowProgram	Subclass of RestrictionMeasure containing ATFM Restriction data related to AirspaceFlowProgram restriction.	This class is to be included in extension field under RestrictionMeasure class.
<b>Data Attribute</b>	<b>Definition</b>	<b>Reference/Remark</b>
restrictionTimeSequence	The start time of each period of GDP to be limited is 1 hour, in ascending order, e.g. 0100,0200	
restrictionValueSequence	The limit count of flight for each GDP time sequence, such as 10,20.	
<b>SubClass of RestrictionMeasure</b>	<b>Definition</b>	<b>Reference/Remark</b>
RestrictionGroundDelayProgram	Subclass of RestrictionMeasure containing ATFM Restriction data related to GroundDelayProgram restriction.	This class is to be included in extension field under RestrictionMeasure class.
<b>Data Attribute</b>	<b>Definition</b>	<b>Reference/Remark</b>
restrictionTimeSequence	The start time of each period of AFP to be limited is 1 hour, in ascending order, e.g. 0100,0200	
restrictionValueSequence	The limit count of flight for each AFP time sequence, such as 10,20.	
<b>SubClass of RestrictionMeasure</b>	<b>Definition</b>	<b>Reference/Remark</b>
RestrictionMilesInTrail	Subclass of RestrictionMeasure containing ATFM Restriction data related to Miles-in-Trail restriction.	This class is to be included in extension field under RestrictionMeasure class.
<b>Data Attribute</b>	<b>Definition</b>	<b>Reference/Remark</b>
restrictionValue	The length of the time interval.	
restrictionValueUnit	The unit of a time interval.	
<b>SubClass of RestrictionMeasure</b>	<b>Definition</b>	<b>Reference/Remark</b>

RestrictionTotalControl	Subclass of RestrictionMeasure containing ATFM Restriction data related to TotalControl restriction.	This class is to be included in extension field under RestrictionMeasure class.
Data Attribute	Definition	Reference/Remark
restrictionPeriodValue	The count of flights under total control restriction.	
restrictionPeriodDuration	Duration of total control restriction.	

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## Appendix B to IP/03

### FIXM ATMB ATFM Extension version 0.1 FlightData XSD Description

Namespace	Description
AtmbFlightData	FIXM Extension containing flight data attributes to support Air Traffic Flow Management operations in accordance with National ATFM and Airport-Collaborative Decision Making operations in China.

Class	Definition	Reference/Remark
AtmbFlightDataType	Class containing ATFM data related to departure aerodrome.	This class is a new extension type by ATMB of CAAC.
SubClass	Definition	Reference/Remark
AtmbDepartureType • BoardingAndClosedDoorsTime • OffBlockTime • TakeoffTime	Subclass containing ATFM data related to departure aerodrome.	This class is to be included in extension field under DepartureType class.
AtmbArrivalType • OpenTime • InBlockTime • LandingTime	Subclass containing ATFM data related to destination aerodrome.	This class is to be included in extension field under ArrivalType class.

SubClass	Definition	Reference/Remark
AtmbDepartureType	Subclass containing ATFM data related to departure aerodrome.	This class is to be included in extension field under DepartureType class.
SubClass of AtmbDepartureType	Definition	Reference/Remark
BoardingAndClosedDoorsTime	Subclass containing boarding and door-closed time related to flight.	This class is to be included in extension field under AtmbDepartureType class.
Data Attribute	Definition	Reference/Remark
actualClosedDoorsTime	The time when passenger door or freight door closed least time.	CHINA Technical standard of airport collaborative decision making, 2020
actualEndBoardingTime	The time when passengers boarding end.	CHINA Technical standard of airport collaborative decision making, 2020
actualEndDeicingTime	The time when de-icing operations on an aircraft end.	EUROCONTROL A-CDM Implementation Manual, Version 5.0, March 2017
actualStartBoardingTime	Time passengers are entering the bridge or bus to the aircraft.	EUROCONTROL A-CDM Implementation Manual, Version 5.0, March 2017
actualStartDeicingTime	The time when de-icing operations on an aircraft starts.	EUROCONTROL A-CDM Implementation Manual, Version 5.0, March 2017
estimatedClosedDoorsTime	The estimated time when passenger door or freight door closed least time.	None, operational requirements.
SubClass of AtmbDepartureType	Definition	Reference/Remark
OffBlockTime	Subclass containing off-block time related to flight.	This class is to be included in extension field under AtmbDepartureType class.
Data Attribute	Definition	Reference/Remark

actualOffBlockTime	The time the aircraft pushes back/vacates its parking position (equivalent to airline/handlers ATD - actual time of departure and ACARS = OUT).	ICAO Doc 9971 Manual on Collaborative ATFM, 3rd Edition, 2018
calculatedOffBlockTime	A time calculated and issued by an ATFM unit, as a result of tactical slot allocation, at which a flight is expected to push back/vacate its parking position so as to meet a CTOT, taking into account start and taxi time.	ICAO Doc 9971 Manual on Collaborative ATFM, 3rd Edition, 2018
estimatedOffBlockTime	The estimated time that an aircraft will start movement associated with its departure.	ICAO Doc 9971 Manual on Collaborative ATFM, 3rd Edition, 2018
scheduledOffBlockTime	The time that an aircraft is scheduled to depart from the parking position.	ICAO Doc 9971 Manual on Collaborative ATFM, 3rd Edition, 2018
targetOffBlockTime	A time that an Aircraft Operator or Ground handler estimates that an aircraft will be ready to startup/be pushed back immediately upon reception of clearance from the control tower.	ICAO Asia/Pacific Framework for Collaborative ATFM, Version 3, August 2017
<b>SubClass of AtmbDepartureType</b>	<b>Definition</b>	<b>Reference/Remark</b>
TakeOffTime	Subclass containing take-off time related to flight.	This class is to be included in extension field under AtmbDepartureType class.
<b>Data Attribute</b>	<b>Definition</b>	<b>Reference/Remark</b>
actualReadyTime	The time when all doors are closed, boarding bridge removed, push back vehicle connected, ready to taxi immediately upon reception of TWR instructions.	EUROCONTROL A-CDM Implementation Manual, Version 5.0, March 2017
actualStartUpApprovalTime	Actual start up Approval Time. This is the time that an aircraft receives its startup approval.	EUROCONTROL A-CDM Implementation Manual, Version 5.0, March 2017
actualStartUpResquestTime	The time that start up is requested.	EUROCONTROL A-CDM Implementation Manual, Version 5.0, March 2017
actualTakeOffTime	The time that an aircraft takes off from the runway (equivalent to the air traffic control ATD - actual time of departure).	ICAO Doc 9971 Manual on Collaborative ATFM, 3rd Edition, 2018
calculatedTakeOffTime	A time calculated and issued by an ATFM unit, as a result of tactical slot allocation, at which a flight is expected to become airborne.	ICAO Doc 9971 Manual on Collaborative ATFM, 3rd Edition, 2018
scheduledTakeOffTime	<b>The time that an aircraft is scheduled to takes off from the runway.</b>	<b>None, operational requirements.</b>
targetTakeOffTime	A time that an aircraft is targeted to be airborne, taking into account TOBT, TSAT, and other factors such as EXOT, wake turbulence, SID, etc.	ICAO Asia/Pacific Framework for Collaborative ATFM, Version 3, August 2017

SubClass	Definition	Reference/Remark
AtmbArrivalType	Subclass containing ATFM data related to destination aerodrome.	This class is to be included in extension field under ArrivalType class.
<b>SubClass of AtmbArrivalType</b>	<b>Definition</b>	<b>Reference/Remark</b>
LandingTime	Subclass containing landing time related to flight.	This class is to be included in extension field under AtmbArrivalType class.
<b>Data Attribute</b>	<b>Definition</b>	<b>Reference/Remark</b>
actualLandingTime	Actual time an aircraft lands on a runway (equivalent to ATC ATA - actual time of arrival = landing, ACARS = ON).	ICAO Doc 9971 Manual on Collaborative ATFM, 3rd Edition, 2018
estimatedLandingTime	The estimated time that an aircraft will touch down on the runway (equivalent to ETA).	ICAO Doc 9971 Manual on Collaborative ATFM, 3rd Edition, 2018
scheduledLandingTime	The time that an aircraft is scheduled to touch down on the runway.	None, operational requirements.
<b>SubClass of AtmbArrivalType</b>	<b>Definition</b>	<b>Reference/Remark</b>
InBlockTime	Subclass containing in-block time related to flight.	This class is to be included in extension field under AtmbArrivalType class.
<b>Data Attribute</b>	<b>Definition</b>	<b>Reference/Remark</b>
estimatedInBlockTime	The estimated time that an aircraft will arrive in-blocks. (Equivalent to Airline/Handler ETA - Estimated Time of Arrival).	EUROCONTROL A-CDM Implementation Manual, Version 5.0, March 2017
scheduledInBlockTime	The time that an aircraft is scheduled to arrive at its first parking position.	EUROCONTROL A-CDM Implementation Manual, Version 5.0, March 2017
<b>SubClass of AtmbArrivalType</b>	<b>Definition</b>	<b>Reference/Remark</b>
OpenDoorsTime	Subclass containing door-opened time related to flight.	This class is to be included in extension field under AtmbArrivalType class.
<b>Data Attribute</b>	<b>Definition</b>	<b>Reference/Remark</b>
actualOpenDoorTime	The time when passenger door or freight door opened first time.	CHINA Technical standard of airport collaborative decision making, 2020
estimatedOpenDoorTime	The estimated time when passenger door or freight door opened first time.	None, operational requirements.

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