

FIXM version 4.3 Core Data Attributes to Support Cross-Border ATFM Information Exchange

Data Attribute	FIXM version 4.3 Core
EOBT (Estimated Off-Block Time)	FlightType.departure.estimatedOffBlockTime = (EOBT)
ETO (Estimated Time Over)	FlightType.routeTrajectoryGroup.desired.element.point4D.time = (ETO) FlightType.routeTrajectoryGroup.desired.element.elementStartPoint = (point at which ETO is specified)
ELDT (Estimated Landing Time)	FlightType.routeTrajectoryGroup.desired.element.point4D.time = (ELDT) FlightType.routeTrajectoryGroup.desired.element.point4D.pointProperty.propertyType = WHEELS_ON FlightType.routeTrajectoryGroup.desired.element.elementStartPoint.aerodromReferencePoint.locationIndicator = FlightType.arrival.destinationAerodrome.locationIndicator
EIBT (Estimated In-Block Time)	FlightType.routeTrajectoryGroup.desired.element.point4D.time = (EIBT) FlightType.routeTrajectoryGroup.desired.element.point4D.pointProperty.propertyType = IN_BLOCKS FlightType.routeTrajectoryGroup.desired.element.elementStartPoint.aerodromReferencePoint.locationIndicator = FlightType.arrival.destinationAerodrome.locationIndicator
CTOT (Calculated Take-Off Time)	FlightType.routeTrajectoryGroup.negotiating.element.constraint.time.timeSpecification.timeValue = (CTOT) FlightType.routeTrajectoryGroup.negotiating.element.point4D.pointProperty.propertyType = WHEELS_OFF FlightType.routeTrajectoryGroup.negotiating.element.elementStartPoint.aerodromReferencePoint.locationIndicator = FlightType.departure.aerodrome.locationIndicator
CTO (Calculated Time Over)	FlightType.routeTrajectoryGroup.negotiating.element.constraint.time.timeSpecification.timeValue = (CTO) FlightType.routeTrajectoryGroup.negotiating.element.elementStartPoint = (point at which CTO is specified)
CLDT (Calculated Landing Time)	FlightType.routeTrajectoryGroup.negotiating.element.constraint.time.timeSpecification.timeValue = (CLDT) FlightType.routeTrajectoryGroup.negotiating.element.point4D.pointProperty.propertyType = WHEELS_ON FlightType.routeTrajectoryGroup.negotiating.element.elementStartPoint.aerodromReferencePoint.locationIndicator = FlightType.arrival.destinationAerodrome.locationIndicator

Appendix B

FIXM version 4.3 Extension Data Attributes

Data Attribute	FIXM version 4.3
EOBT (Estimated Off-Block Time)	Core
ETO (Estimated Time Over)	Core
ELDT (Estimated Landing Time)	Core
EIBT (Estimated In-Block Time)	Core
CTOT (Calculated Take-Off Time)	Core
CTO (Calculated Time Over)	Core
CLDT (Calculated Landing Time)	Core
TOBT (Target Off-Block Time)	Extension
TSAT (Target Start-up Approval Time)	Extension
TTOT (Target Take-Off Time)	Extension
TTO (Target Time Over)	Extension
TIBT (Target In-Block Time)	Extension
AOBT (Actual Off-Block Time)	Extension
ATO (Actual Time Over)	Extension
AIBT (Actual In-Block Time)	Extension
Taxi time*	Extension
REGUL* (designation of the ATFM measure affecting the flight)	Extension
REGCAUSE* (reason for the ATFM measure)	Extension
REASON* (reason to explain an action by ATFM personnel, e.g. rejection, cancellation)	Extension
COMMENT* (additional information for ATFM purpose)	Extension

**For more information, refer to Asia/Pacific Regional AFTN/AMHS-based Interface Control Documents for Air Traffic Flow Management, version 3.0*

Appendix C

APAC XSD Description

Namespace	Description
Apac	FIXM Extension containing data attributes to support cross-border Air Traffic Flow Management (ATFM) operations, the integration between ATFM and Airport-Collaborative Decision Making (A-CDM), and traffic synchronization in accordance with Distributed Multi-Nodal ATFM Network concept and the Airport-Collaborative Decision Making operations in the Asia/Pacific region.

Class	Definition	Reference/Remark
ApacDepartureType	Class containing flight data related to departure aerodrome	This class is to be included in extension field under DepartureType class.
Data Attribute	Definition	Reference/Remark
actualOffBlockTime	A time the aircraft is pushed back / vacates parking position (equivalent to airline/handlers ATD – Actual Time of Departure and ACARS=OUT)	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 receive start-up approval/push-back clearance	ICAO Asia/Pacific Regional Framework for Collaborative ATFM, Version 4, October 2022
targetStartupApprovalTime	A time provided by ATC taking into account TOBT, CTOT, and/or the traffic situation that an aircraft can expect start-up/push back approval	ICAO Asia/Pacific Regional Framework for Collaborative ATFM, Version 4, October 2022
targetedTakeOffTime	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 Regional Framework for Collaborative ATFM, Version 4, October 2022 - EUROCONTROL A-CDM Implementation Manual, Version 5.0, March 2017
taxiTime	The difference in time between the ‘off blocks time’ and the ‘take-off time’. The times referred to could be actual or estimated depending upon the context.	Asia/Pacific Regional AFTN/AMHS-based Interface Control Documents for Air Traffic Flow Management, version 3.0

Class	Definition	Reference/Remark
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ApacArrivalType	Class containing flight data related to destination aerodrome	This class is to be included in extension field under ArrivalType class.
Data Attribute	Definition	Reference/Remark
actualInBlockTime	The time that an aircraft arrives in-blocks (equivalent to airline/handler ATA – actual time of arrival, ACARS = IN)	ICAO Doc 9971 Manual on Collaborative ATFM, 3rd Edition, 2018
targetInBlockTime	A time, calculated by an automation system, that an aircraft is expected to be at its first parking position	This time value is not EIBT (Estimated In-Block Time) – The estimated time that an aircraft will arrive in blocks (Ref. EUROCONTROL A-CDM Implementation Manual, Version 5.0, March 2017)

Class	Definition	Reference/Remark
ApacRouteTrajectoryElementType	Class containing flight data related to specific element	
Data Attribute	Definition	Reference/Remark
actualTimeOver	An actual time of the aircraft over a fix, waypoint, or particular location	
targetTimeOver	A time, calculated and issued by an ATS unit, that an aircraft is requested to be over a fix, waypoint, or particular location	Use case: a time progressively calculated and issued by arrival management (AMAN) system

Class	Definition	Reference/Remark
ApacRouteTrajectoryGroupContainerType	Class contains actual trajectory information	
Data Attribute	Definition	Reference/Remark
actual	A list of actual trajectory	

Class	Definition	Reference/Remark
ApacAtfmMeasureCodeType	Indication of the cause of the ATFM measure	Asia/Pacific Regional AFTN/AMHS-based Interface Control Documents for Air Traffic Flow Management, version 3.0, section 3.2.1.15(a)

Class	Definition	Reference/Remark
ApacAtfmMeasureLocationType	Indication of the constraint location for which the ATFM measure is implemented	Asia/Pacific Regional AFTN/AMHS-based Interface Control Documents for Air Traffic Flow Management, version 3.0, section 3.2.1.15(b)
Class	Definition	Reference/Remark
ApacDelayCodeType	Indication of IATA numeric delay code	Asia/Pacific Regional AFTN/AMHS-based Interface Control Documents for Air

		Traffic Flow Management, version 3.0, section 3.2.1.15(d)
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Class	Definition	Reference/Remark
ApacRegulationConstraintAreaType	Area of constraint. Format: [A-Z]{4}	Asia/Pacific Regional AFTN/AMHS-based Interface Control Documents for Air Traffic Flow Management, version 3.0

Class	Definition	Reference/Remark
ApacRegulationConstraintLocationType	Location of constraint. Format: [A-Z0-9]{1,5}	Asia/Pacific Regional AFTN/AMHS-based Interface Control Documents for Air Traffic Flow Management, version 3.0

Class	Definition	Reference/Remark
ApacRegulationCauseType	Class contains the cause of the ATFM measure	This is equivalent to REGCAUSE field in the Slot Allocation Message (SAM) as per Asia/Pacific Regional AFTN/AMHS-based Interface Control Documents for Air Traffic Flow Management, version 3.0
Data Attribute	Definition	Reference/Remark
atfmMeasureCode	Indication of the cause of the ATFM measure	Asia/Pacific Regional AFTN/AMHS-based Interface Control Documents for Air Traffic Flow Management, version 3.0, section 3.2.1.15(a)
atfmMeasureLocation	Indication of the constraint location for which the ATFM measure is implemented	Asia/Pacific Regional AFTN/AMHS-based Interface Control Documents for Air Traffic Flow Management, version 3.0, section 3.2.1.15(b)
iataDelayCode	Indication of IATA numeric delay code	Asia/Pacific Regional AFTN/AMHS-based Interface Control Documents for Air Traffic Flow Management, version 3.0, section 3.2.1.15(d)

Class	Definition	Reference/Remark
ApacRegulationIdType	Class contains the designation of the ATFM measure	This is equivalent to REGUL field in the Slot Allocation Message (SAM) as per Asia/Pacific Regional

		AFTN/AMHS-based Interface Control Documents for Air Traffic Flow Management, version 3.0
Data Attribute	Definition	Reference/Remark
effectiveDate	The date and month when the ATFM measure is effective	Asia/Pacific Regional AFTN/AMHS-based Interface Control Documents for Air Traffic Flow Management, version 3.0
version	The version of the designation of the ATFM measure	Asia/Pacific Regional AFTN/AMHS-based Interface Control Documents for Air Traffic Flow Management, version 3.0
constraintArea	A constrained area	Asia/Pacific Regional AFTN/AMHS-based Interface Control Documents for Air Traffic Flow Management, version 3.0
constraintLocation	A specific constrained location	Asia/Pacific Regional AFTN/AMHS-based Interface Control Documents for Air Traffic Flow Management, version 3.0

Class	Definition	Reference/Remark
ApacRouteTrajectoryConstraintType	Class contains the ATFM measure information	
Data Attribute	Definition	Reference/Remark
comment	Additional ATFM measure information	Asia/Pacific Regional AFTN/AMHS-based Interface Control Documents for Air Traffic Flow Management, version 3.0
reason	Reason to explain an action by the FMP (e.g. rejection, cancellation, etc.).	Asia/Pacific Regional AFTN/AMHS-based Interface Control Documents for Air Traffic Flow Management, version 3.0
regulationCause	The information indicates the reason for the ATFM measure to assist in post-operations analysis.	Asia/Pacific Regional AFTN/AMHS-based Interface Control Documents for Air Traffic Flow Management, version 3.0
regulationId	The information indicates the designation of the ATFM measure, including the specific location of the constraint, affecting the flight.	Asia/Pacific Regional AFTN/AMHS-based Interface Control Documents for Air Traffic Flow Management, version 3.0


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<?xml version="1.0" encoding="utf-8"?>
<xs:schema targetNamespace="http://www.fixm.aero/ext/apac/4.3"
xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns:apac="http://www.fixm.aero/ext/apac/4.3"
xmlns:fx="http://www.fixm.aero/flight/4.3" xmlns:fb="http://www.fixm.aero/base/4.3"
elementFormDefault="qualified" version="4.3.0">
  <xs:annotation>
    <xs:documentation>The Apac package contains information used in Asia Pacific
region.</xs:documentation>
  </xs:annotation>
  <xs:import namespace="http://www.fixm.aero/flight/4.3"
schemaLocation="../../core/flight/Flight.xsd"/>
  <xs:import namespace="http://www.fixm.aero/base/4.3"
schemaLocation="../../core/base/Base.xsd"/>
  <xs:import namespace="http://www.fixm.aero/base/4.3"
schemaLocation="../../core/base/Types.xsd"/>
  <xs:import namespace="http://www.fixm.aero/base/4.3"
schemaLocation="../../core/base/Extension.xsd"/>
  <xs:import namespace="http://www.fixm.aero/flight/4.3"
schemaLocation="../../core/flight/flightroutetrajectory/RouteTrajectory.xsd"/>
  <xs:simpleType name="ApacAtfmMeasureCodeType">
    <xs:annotation>
      <xs:documentation>Indication of the cause of the ATFM measure, based on
APAC AFTN/AMHS-Based ICD for ATFM v3.0, section 3.2.1.15(a).</xs:documentation>
    </xs:annotation>
    <xs:restriction base="xs:string">
      <xs:enumeration value="A"/>
      <xs:enumeration value="C"/>
      <xs:enumeration value="E"/>
      <xs:enumeration value="G"/>
      <xs:enumeration value="I"/>
      <xs:enumeration value="M"/>
      <xs:enumeration value="N"/>
      <xs:enumeration value="O"/>
      <xs:enumeration value="P"/>
      <xs:enumeration value="R"/>
      <xs:enumeration value="S"/>
      <xs:enumeration value="T"/>
      <xs:enumeration value="V"/>
      <xs:enumeration value="W"/>
    </xs:restriction>
  </xs:simpleType>
  <xs:simpleType name="ApacAtfmMeasureLocationType">
    <xs:annotation>
      <xs:documentation>Indication of the constraint location for which the ATFM
measure is implemented, based on APAC AFTN/AMHS-Based ICD for ATFM v3.0, section
3.2.1.15(b)</xs:documentation>
    </xs:annotation>
    <xs:restriction base="xs:string">
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      <xs:enumeration value="D"/>
      <xs:enumeration value="E"/>
    </xs:restriction>
  </xs:simpleType>
  <xs:simpleType name="ApacDelayCodeType">
    <xs:annotation>
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        <xs:documentation>Indication of IATA numeric delay code, based on APAC
AFTN/AMHS-Based ICD for ATFM v3.0, section 3.2.1.15(d)</xs:documentation>
    </xs:annotation>
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        <xs:enumeration value="98"/>
        <xs:enumeration value="99"/>
    </xs:restriction>
</xs:simpleType>
<xs:simpleType name="ApacRegulationConstraintAreaType">
    <xs:restriction base="fb:CharacterStringType">
        <xs:pattern value="[A-Z]{4}"/>
    </xs:restriction>
</xs:simpleType>
<xs:simpleType name="ApacRegulationConstraintLocationType">
    <xs:restriction base="fb:CharacterStringType">
        <xs:pattern value="[A-Z0-9]{1,5}"/>
    </xs:restriction>
</xs:simpleType>
<xs:complexType name="ApacRegulationCauseType">
    <xs:annotation>
        <xs:documentation>Class contains the cause of the ATFM measure. This is
equivalent to REGCAUSE field in the Slot Allocation Message (SAM) as per the APAC
AFTN/AMHS-Based ICD for ATFM v3.0</xs:documentation>
    </xs:annotation>
    <xs:sequence>
        <xs:element name="atfmMeasureCode"
type="apac:ApacAtfmMeasureCodeType" minOccurs="1" maxOccurs="1"/>
        <xs:element name="atfmMeasureLocation"
type="apac:ApacAtfmMeasureLocationType" minOccurs="1" maxOccurs="1"/>
        <xs:element name="iataDelayCode" type="apac:ApacDelayCodeType"
minOccurs="1" maxOccurs="1"/>
    </xs:sequence>
</xs:complexType>
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    <xs:annotation>
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This is equivalent to REGUL field in the Slot Allocation Message (SAM) as per the APAC
AFTN/AMHS-Based ICD for ATFM v3.0</xs:documentation>
    </xs:annotation>
    <xs:sequence>
        <xs:element name="effectiveDate" type="fb:DateUtcType" minOccurs="1"
maxOccurs="1"/>
        <xs:element name="version" type="xs:int" minOccurs="1"
maxOccurs="1"/>
        <xs:element name="constraintArea"
type="apac:ApacRegulationConstraintAreaType" minOccurs="1" maxOccurs="1"/>

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        <xs:element name="constraintLocation"
type="apac:ApacRegulationConstraintLocationType" minOccurs="0" maxOccurs="1"/>
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</xs:complexType>
<xs:complexType name="ApacRouteTrajectoryConstraintType">
    <xs:annotation>
        <xs:documentation>Class contains the ATFM measure
information</xs:documentation>
    </xs:annotation>
    <xs:complexContent>
        <xs:extension base="fb:RouteTrajectoryConstraintExtensionType">
            <xs:sequence>
                <xs:element name="comment"
type="fb:CharacterStringType" minOccurs="0" maxOccurs="1"/>
                <xs:element name="reason" type="fb:CharacterStringType"
minOccurs="0" maxOccurs="1"/>
                <xs:element name="regulationCause"
type="apac:ApacRegulationCauseType" minOccurs="1" maxOccurs="1"/>
                <xs:element name="regulationId"
type="apac:ApacRegulationIdType" minOccurs="0" maxOccurs="2000"/>
            </xs:sequence>
        </xs:extension>
    </xs:complexContent>
</xs:complexType>
<xs:complexType name="ApacArrivalType">
    <xs:annotation>
        <xs:documentation>Class containing flight data related to destination
aerodrome. This class is to be included in extension field under ArrivalType
class.</xs:documentation>
    </xs:annotation>
    <xs:complexContent>
        <xs:extension base="fb:ArrivalExtensionType">
            <xs:sequence>
                <xs:element name="actualInBlockTime"
type="fb:DateTimeUtcType" minOccurs="0" maxOccurs="1" nillable="true"/>
                <xs:element name="targetInBlockTime"
type="fb:DateTimeUtcType" minOccurs="0" maxOccurs="1" nillable="true"/>
            </xs:sequence>
        </xs:extension>
    </xs:complexContent>
</xs:complexType>
<xs:complexType name="ApacRouteTrajectoryElementType">
    <xs:complexContent>
        <xs:extension base="fb:RouteTrajectoryElementExtensionType">
            <xs:sequence>
                <xs:element name="actualTimeOver"
type="fb:DateTimeUtcType" minOccurs="0" maxOccurs="1" nillable="true"/>
                <xs:element name="targetTimeOver"
type="fb:DateTimeUtcType" minOccurs="0" maxOccurs="1" nillable="true"/>
            </xs:sequence>
        </xs:extension>
    </xs:complexContent>
</xs:complexType>
<xs:complexType name="ApacRouteTrajectoryGroupContainerType">
    <xs:annotation>

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        <xs:documentation>Class contains actual trajectory
information</xs:documentation>
    </xs:annotation>
    <xs:complexContent>
        <xs:extension base="fb:RouteTrajectoryGroupContainerExtensionType">
            <xs:sequence>
                <xs:element name="actual"
type="fx:RouteTrajectoryGroupType" minOccurs="1" maxOccurs="1"/>
            </xs:sequence>
        </xs:extension>
    </xs:complexContent>
</xs:complexType>
<xs:complexType name="ApacDepartureType">
    <xs:annotation>
        <xs:documentation>Class containing flight data related to departure
aerodrome. This class is to be included in extension field under DepartureType
class</xs:documentation>
    </xs:annotation>
    <xs:complexContent>
        <xs:extension base="fb:DepartureExtensionType">
            <xs:sequence>
                <xs:element name="actualOffBlockTime"
type="fb:DateTimeUtcType" minOccurs="0" maxOccurs="1" nillable="true"/>
                <xs:element name="targetOffBlockTime"
type="fb:DateTimeUtcType" minOccurs="0" maxOccurs="1" nillable="true"/>
                <xs:element name="targetStartupApprovalTime"
type="fb:DateTimeUtcType" minOccurs="0" maxOccurs="1" nillable="true"/>
                <xs:element name="targetTakeOffTime"
type="fb:DateTimeUtcType" minOccurs="0" maxOccurs="1" nillable="true"/>
                <xs:element name="taxiTime" type="fb:DurationType"
minOccurs="0" maxOccurs="1"/>
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        </xs:extension>
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</xs:schema>

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