

FIXM version 4.2 Extension Data Attributes

Data Attribute	FIXM version 4.2
<i>Originally included in the Asia/Pacific FIXM version 4.1 Extension</i>	
ETO (Estimated Time Over)	Core
ELDT (Estimated Landing 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
AOBT (Actual Off-Block Time)	Extension
ATO (Actual Time Over)	Extension
Trajectory • ATO • Flight level or Altitude • Position (Designator or Latitude/Longitude or Relative point)	Extension
Aircraft Track • Ground speed • Flight level or Altitude • Heading • Position (Designator or Latitude/Longitude or Relative point or NAVAID or Aerodrome) • Time over position (Report time)	Extension
<i>Newly identified</i>	
EIBT (Estimated In-Block Time)	Core
TIBT (Target In-Block Time)	Extension
TTO (Target Time Over)	Extension

APAC XSD Description

Namespace	Description
Apac	FIXM Extension containing data attributes to support cross-border Air Traffic Flow Management (ATFM) operations and the integration between ATFM and Airport-Collaborative Decision Making (A-CDM), 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 ATFM data related to departure aerodrome	This class is to be included in extension field under Departure Type 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

Class	Definition	Reference/Remark
ApacArrivalType	Class containing ATFM data related to destination aerodrome	This class is to be included in extension field under Arrival Type class.
Data Attribute	Definition	Reference/Remark
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
ApacAircraftTrackType	Class containing aircraft track data	This class is to be included in extension field under Flight Type class.
Data Attribute	Definition	Reference/Remark
speed	Current aircraft speed	speed can be in the following forms, • Ground speed; and/or • Indicated airspeed
level	Current flight level	level can be in the following forms, • Flight level; or • Altitude.
heading	Current aircraft heading	
position	Current aircraft position	position can be in the following forms, • Designator; • Latitude/Longitude; • Relative point; • NAVAID; or • Aerodrome.
time	Time when all data in this class is reported	

Class	Definition	Reference/Remark
ApacActualTrajectoryType	Class containing all trajectory elements of a flight	This class is to be included in extension field under Flight Type class.
Data Attribute	Definition	Reference/Remark
element	A list of trajectory elements	

Class	Definition	Reference/Remark
ApacActualTrajectoryElementType	Class containing composition of each trajectory element(s) specified in ApacTrajectoryType	
Data Attribute	Definition	Reference/Remark

level	An estimated flight level of the aircraft at this trajectory element	level can be in the following forms, • Flight level; or • Altitude.
point	A specified position of this trajectory element	point can be in the following forms, • Designator; • Latitude/Longitude; or • Relative point.
actualTimeOver	An actual time of the aircraft over routePoint	

Class	Definition	Reference/Remark
ApacRouteTrajectoryElementType	Class containing traffic synchronous information	
Data Attribute	Definition	Reference/Remark
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

FIXM version 4.2 Core Data Attributes to Support Cross-Border ATFM Information Exchange

Data Attribute	FIXM version 4.2 Core
ETO (Estimated Time Over)	FlightType.routeTrajectoryGroup.filed.element.point4D.time = (ETO) FlightType.routeTrajectoryGroup.filed.element.elementStartPoint = (point at which ETO is specified)
ELDT (Estimated Landing Time)	FlightType.routeTrajectoryGroup.filed.element.point4D.time = (ELDT) FlightType.routeTrajectoryGroup.filed.element.point4D.pointProperty.propertyType = WHEELS_ON FlightType.routeTrajectoryGroup.filed.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
EIBT (Estimated In-Block Time)	FlightType.routeTrajectoryGroup.filed.element.point4D.time = (EIBT) FlightType.routeTrajectoryGroup.filed.element.point4D.pointProperty.propertyType = END_STAY FlightType.routeTrajectoryGroup.filed.element.elementStartPoint.aerodromReferencePoint.locationIndicator = FlightType.arrival.destinationAerodrome.locationIndicator

Part of FIXM version 4.2 Core Sample Messages

Data Attribute	Part of FIXM version 4.2 Core Sample Messages
ETO (Estimated Time Over)	<pre> <fx:element seqNum="0"> <fx:elementStartPoint> <fb:designatedPoint> <fb:designator>KIGOB</fb:designator> </fb:designatedPoint> </fx:elementStartPoint> <fx:point4D> <fx:time> <fx:absoluteTime>2023-05- 10T01:11:00Z</fx:absoluteTime> </fx:time> </fx:point4D> <fx:routeDesignatorToNextElement> <fx:routeDesignator>Y11</fx:routeDesignator> </fx:routeDesignatorToNextElement> </fx:element> </pre>
ELDT (Estimated Landing Time)	<pre> <fx:element seqNum="5"> <fx:elementStartPoint> <fb:aerodromeReferencePoint> <fb:locationIndicator>WSSS</fb:locationIndicator> </fb:aerodromeReferencePoint> </fx:elementStartPoint> <fx:point4D> <fx:pointProperty> <fx:propertyType>WHEELS_ON</fx:propertyType> </fx:pointProperty> <fx:time> <fx:absoluteTime>2023-05- 10T02:54:00Z</fx:absoluteTime> </fx:time> </fx:point4D> </fx:element> </pre>

Data Attribute	Part of FIXM version 4.2 Core Sample Messages
CTOT (Calculated Take-Off Time)	<pre> <fx:element seqNum="0"> <fx:constraint> <fx:time> <fx:timeSpecification> <fb:timeValue>2023-05- 10T01:15:00Z</fb:timeValue> </fx:timeSpecification> </fx:time> </fx:constraint> <fx:elementStartPoint> <fb:aerodromeReferencePoint> <fb:locationIndicator>VTBS</fb:locationIndicator> </fb:aerodromeReferencePoint> </fx:elementStartPoint> <fx:point4D> <fx:pointProperty> <fx:propertyType>WHEELS_OFF</fx:propertyType> </fx:pointProperty> <fx:point4D> </fx:point4D> </fx:element> </pre>
CTO (Calculated Time Over)	<pre> <fx:element seqNum="1"> <fx:constraint> <fx:time> </pre>

	<pre> <fx:timeSpecification> <fb:timeValue>2023-05- 10T01:21:00Z</fb:timeValue> </fx:timeSpecification> </fx:time> </fx:constraint> <fx:elementStartPoint> <fb:designatedPoint> <fb:designator>KIGOB</fb:designator> </fb:designatedPoint> </fx:elementStartPoint> </fx:element> </pre>
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Data Attribute	Part of FIXM version 4.2 Core Sample Messages
CLDT (Calculated Landing Time)	<pre> <fx:element seqNum="2"> <fx:constraint> <fx:time> <fx:timeSpecification> <fb:timeValue>2023-05- 10T03:04:00Z</fb:timeValue> </fx:timeSpecification> </fx:time> </fx:constraint> <fx:elementStartPoint> <fb:aerodromeReferencePoint> <fb:locationIndicator>WSSS</fb:locationIndicator> </fb:aerodromeReferencePoint> </fx:elementStartPoint> <fx:point4D> <fx:pointProperty> <fx:propertyType>WHEELS_ON</fx:propertyType> </fx:pointProperty> </fx:point4D> </fx:element> </pre>
EIBT (Estimated In-Block Time)	<pre> <fx:element seqNum="6"> <fx:elementStartPoint> <fb:aerodromeReferencePoint> <fb:locationIndicator>WSSS</fb:locationIndicator> </fb:aerodromeReferencePoint> </fx:elementStartPoint> <fx:point4D> <fx:pointProperty> <fx:propertyType>END_STAY</fx:propertyType> </fx:pointProperty> <fx:time> <fx:absoluteTime>2023-05- 10T03:09:00Z</fx:absoluteTime> </fx:time> </fx:point4D> </fx:element> </pre>

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<?xml version="1.0" encoding="utf-8"?>
<xs:schema targetNamespace="http://www.fixm.aero/ext/apac/4.2"
xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:apac="http://www.fixm.aero/ext/apac/4.2" xmlns:fb="http://www.fixm.aero/base/4.2"
xmlns:fx="http://www.fixm.aero/flight/4.2" elementFormDefault="qualified"
version="4.2.0">
    <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/base/4.2"
schemaLocation="..\..\core\base\AeronauticalReference.xsd"/>
    <xs:import namespace="http://www.fixm.aero/base/4.2"
schemaLocation="..\..\core\base\Base.xsd"/>
    <xs:import namespace="http://www.fixm.aero/base/4.2"
schemaLocation="..\..\core\base\Extension.xsd"/>
    <xs:import namespace="http://www.fixm.aero/flight/4.2"
schemaLocation="..\..\core\flight\Flight.xsd"/>
    <xs:import namespace="http://www.fixm.aero/base/4.2"
schemaLocation="..\..\core\base\Measures.xsd"/>
    <xs:import namespace="http://www.fixm.aero/base/4.2"
schemaLocation="..\..\core\base\RangesAndChoices.xsd"/>
    <xs:import namespace="http://www.fixm.aero/base/4.2"
schemaLocation="..\..\core\base\Types.xsd"/>

    <xs:complexType name="ApacRouteTrajectoryElementType">
        <xs:annotation>
            <xs:documentation>Class containing traffic synchronous
information</xs:documentation>
        </xs:annotation>
        <xs:complexContent>
            <xs:extension base="fb:RouteTrajectoryElementExtensionType">
                <xs:sequence>
                    <xs:element name="targetTimeOver"
type="fb:TimeType" minOccurs="0" maxOccurs="1" nillable="true">
                        <xs:annotation>
                            <xs:documentation>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 calculated by arrival management (AMAN)
system]</xs:documentation>
                        </xs:annotation>
                    </xs:element>
                </xs:sequence>
            </xs:extension>
        </xs:complexContent>
    </xs:complexType>

    <xs:complexType name="ApacDepartureType">
        <xs:annotation>

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<xs:documentation>Class containing ATFM 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:TimeType" minOccurs="0" maxOccurs="1">
        <xs:annotation>
          <xs:documentation>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]</xs:documentation>
        </xs:annotation>
      </xs:element>
      <xs:element name="targetOffBlockTime"
type="fb:TimeType" minOccurs="0" maxOccurs="1" nillable="true">
        <xs:annotation>
          <xs:documentation>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]</xs:documentation>
        </xs:annotation>
      </xs:element>
      <xs:element name="targetStartupApprovalTime"
type="fb:TimeType" minOccurs="0" maxOccurs="1" nillable="true">
        <xs:annotation>
          <xs:documentation>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]</xs:documentation>
        </xs:annotation>
      </xs:element>
      <xs:element name="targetTakeOffTime"
type="fb:TimeType" minOccurs="0" maxOccurs="1" nillable="true">
        <xs:annotation>
          <xs:documentation>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]</xs:documentation>
        </xs:annotation>
      </xs:element>
    </xs:sequence>
  </xs:extension>
</xs:complexContent>
</xs:complexType>

<xs:complexType name="ApacArrivalType">

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        <xs:annotation>
            <xs:documentation>Class containing ATFM 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="targetInBlockTime"
type="fb:TimeType" minOccurs="0" maxOccurs="1">
                        <xs:annotation>
                            <xs:documentation>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)]</xs:documentation>
                        </xs:annotation>
                    </xs:element>
                </xs:sequence>
            </xs:extension>
        </xs:complexContent>
    </xs:complexType>

    <xs:complexType name="ApacActualTrajectoryType">
        <xs:annotation>
            <xs:documentation>Class containing all trajectory elements of a flight.
This class is to be included in extension field under FlightType class.</xs:documentation>
        </xs:annotation>
        <xs:complexContent>
            <xs:extension
base="fb:RouteTrajectoryGroupContainerExtensionType">
                <xs:sequence>
                    <xs:element name="element"
type="apac:ApacActualTrajectoryElementType" minOccurs="0" maxOccurs="2000"/>
                </xs:sequence>
            </xs:extension>
        </xs:complexContent>
    </xs:complexType>
    <xs:complexType name="ApacActualTrajectoryElementType">
        <xs:annotation>
            <xs:documentation>Class containing composition of each trajectory
element(s) specified in ApacTrajectoryType</xs:documentation>
        </xs:annotation>
        <xs:sequence>
            <xs:element name="actualTimeOver" type="fb:TimeType"
minOccurs="1" maxOccurs="1">
                <xs:annotation>
                    <xs:documentation>An actual time of the aircraft over
routePoint</xs:documentation>
                </xs:annotation>
            </xs:sequence>
        </xs:complexType>
    </xs:sequence>

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        </xs:element>
        <xs:element name="level"
type="fb:FlightLevelOrAltitudeChoiceType" minOccurs="1" maxOccurs="1">
            <xs:annotation>
                <xs:documentation>An estimated flight level of the
aircraft at this trajectory element [level can be in the following forms, Flight level; or
Altitude.]</xs:documentation>
            </xs:annotation>
        </xs:element>
        <xs:element name="point" type="fb:SignificantPointChoiceType"
minOccurs="1" maxOccurs="1">
            <xs:annotation>
                <xs:documentation>A specified position of this
trajectory element [point can be in the following forms, Designator; Latitude/Longitude; or
Relative point.]</xs:documentation>
            </xs:annotation>
        </xs:element>
    </xs:sequence>
</xs:complexType>

<xs:complexType name="ApacAircraftTrackType">
    <xs:annotation>
        <xs:documentation>Class containing aircraft track data. This class is
to be included in extension field under FlightType class.</xs:documentation>
    </xs:annotation>
    <xs:complexContent>
        <xs:extension base="fb:FlightExtensionType">
            <xs:sequence>
                <xs:element name="heading" type="fb:BearingType"
minOccurs="1" maxOccurs="1">
                    <xs:annotation>
                        <xs:documentation>Current aircraft
heading</xs:documentation>
                    </xs:annotation>
                </xs:element>
                <xs:element name="level"
type="fb:FlightLevelOrAltitudeChoiceType" minOccurs="1" maxOccurs="1">
                    <xs:annotation>
                        <xs:documentation>Current flight level
[level can be in the following forms, Flight level; or Altitude]</xs:documentation>
                    </xs:annotation>
                </xs:element>
                <xs:element name="position"
type="fb:SignificantPointChoiceType" minOccurs="1" maxOccurs="1">
                    <xs:annotation>
                        <xs:documentation>Current aircraft
position [position can be in the following forms, Designator; Latitude/Longitude; or Relative
point.]</xs:documentation>
                    </xs:annotation>
                </xs:element>
            </xs:sequence>
        </xs:extension>
    </xs:complexContent>
</xs:complexType>

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        <xs:element name="time" type="fb:TimeType"
minOccurs="1" maxOccurs="1">
            <xs:annotation>
                <xs:documentation>Time when all data
in this class is reported</xs:documentation>
            </xs:annotation>
        </xs:element>
        <xs:element name="speed"
type="apac:ApacAircraftTrackSpeedChoiceType" minOccurs="1" maxOccurs="1"/>
    </xs:sequence>
</xs:extension>
</xs:complexContent>
</xs:complexType>
<xs:complexType name="ApacAircraftTrackSpeedChoiceType">
    <xs:choice>
        <xs:element name="groundspeed" type="fb:GroundSpeedType"
minOccurs="1" maxOccurs="1"/>
        <xs:sequence minOccurs="1" maxOccurs="1">
            <xs:element name="airspeed"
type="fb:IndicatedAirspeedType" minOccurs="1" maxOccurs="1"/>
            <xs:element name="groundspeed"
type="fb:GroundSpeedType" minOccurs="0" maxOccurs="1"/>
        </xs:sequence>
    </xs:choice>
</xs:complexType>
</xs:schema>

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