



NM 23.0.0 - NOP/B2B Reference Manuals - AirspaceServices

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External

[1] AIXM: Aeronautical Information Exchange Model (<http://www.aixm.aero>)

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[2] NOP/B2B Reference Manuals - CommonServices

[3] AIXM5.1 Temporality Model Profile for NM B2B ([AIXMTemporalityModelProfileForNMB2B.pdf](#))

[4] ADR Extension Model ([ADRReference.tar.gz](#))

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Terminology

Main Abbreviations and Acronyms

AUP (Airspace Use Plan)

ADR (Airspace Data Repository)

UUP (Updated airspace Use Plan)

CADF (Central Airspace Data Function operators)

CDR (Conditional Route)

DMEAN (Dynamic Management of the European Airspace Network)

EAUP (European Airspace Use Plan)

EUUP (European Updated airspace Use Plan)

FIR (Flight Information Region)

RSA (Restricted Airspace)

UIR (Upper Information Region)

CIAM (Collaborative Interface for Airspace Management)

ASM (Airspace Management)

ADR-E (ADR Extension to AIXM 5.1)

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Chapter 1. Introduction

1.1. Identification

- (1) This document forms part of the set of the NM 23.0.0 - NOP/B2B Reference Manuals, which all together form the NM 23.0.0 - NOP/B2B Documentation.
- (2) Its reference is B2B/23.0.0/Airspace.
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Chapter 2. Context

2.1. Introduction

- (1) The AirspaceServices NOP/B2B service group is intended to provide services related to the management and sharing of Airspace data (e.g. airspaces, routes, aerodromes, etc.) as used by the NM systems.
- (2) The AirspaceServices group consists of two types of services:
 - a) AirspaceStructureService: for retrieving up-to-date airspace data from the CACD database. The CACD database is the repository for the environment data (a.k.a. airspace data) used in the NM systems to perform Flight Planning and Flow Management. This data includes AIP concepts (such as Routes, Points and Aerodromes), and non-AIP concepts (such as Flows, RAD Restrictions and Traffic Volumes).
AIP concepts such as Airspaces may differ slightly from the AIP definition: for example when the AIP in defining an Airspace reads "follow the border between country X and Y", this must be translated into a real geometry that can be interpreted by the NM systems.
 - b) AirspaceAvailabilityService: for querying and modifying the airspace availability information; this includes the Flexible Use of Airspace (AUP/UUP and EAUP/EUUP).
- (3) The Airspace services make use of AIXM/ADR-E types when possible (ADR-E stands for ADR Extension, see below). This does not mean that all data types defined in this service group are AIXM or ADR-E types, as other service groups (Flight and Flow) use non-AIXM types, and because Airspace querying services must still use, for example, traditional ICAO ids (not UUIDs that do not support wildcards).
- (4) Starting from NM version 23.0 the version of AIXM used by NM is 5.1.1 (previous NM versions were using AIXM 5.1).
Whenever the word AIXM is used in this document it refers to AIXM 5.1.1.
- (5) Documentation about AIXM can be found in [1].
- (6) The ADR Extension is based on a UML model which is published on the Eurocontrol OneSky website (see [4]).

2.2. AIXM / ADR-E

- (1) This paragraph describes how the AIXM model is used in terms of:
 - Container message
 - Temporality
 - Feature/Object identification and referencing
 - Subset of the AIXM model and ADR-E used in the Airspace services

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2.2.1. ADR Message

- (1) The ADR Message is the container for exchanging AIXM Features.
- (2) An ADR Message may contain 0..n Features.
- (3) An ADR Message is represented in the NM Exchange Model as typedef.

```
typedef<String> airspace:ADRMessagetype;
```

- (4) Depending on the service, the ADR Message may be embedded in the B2B reply as part of the message or returned as a file. When returned as a file, each file contains a single ADR Message. When embedded in the B2B reply, the reply may contain one or more ADR Messages.

2.2.2. Temporality

- (1) The AIXM Temporality model defines four TimeSlice types:
 - a) BASELINE
 - b) SNAPSHOT
 - c) PERMDELTA
 - d) TEMPDELTA
- (2) The current NM services make use of all four timeslice types as follows:
 - The AirspaceStructure services make use of BASELINE and PERMDELTA timeslices.
 - The AirspaceAvailability services make use of SNAPSHOT and TEMPDELTA timeslices.
- (3) The usage of these TimeSlice types conforms to the AIXM recommendations:
 - BASELINE TimeSlices are used to exchange the lifetime (or part of it) of the Airspace data (see AirspaceStructureService).
 - PERMDELTA TimeSlices are used to exchange permanent changes to the Airspace data, i.e. changes that may or not follow the AIRAC cycles and are effective permanently (see Airspace-StructureService).
 - TEMPDELTA TimeSlices are used to exchange temporary changes to the Airspace data, i.e. changes that do not follow the AIRAC cycles and are effective only for a short period of time (see AirspaceAvailabilityService).
 - SNAPSHOT TimeSlices are used for Feature identification as an alternative to the UUID.
- (4) The temporality model used in the AirspaceStructure services is explained in detail in [3].

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2.2.3. Feature / Object identification

- (1) NM follows the AIXM recommendations for Feature and Object identification.
- (2) AIXM Features and Objects must have a valid `gml:id`.
- (3) A `gml:id` is unique within the scope of an XML document. The `gml:id` is never persisted in the NM systems and cannot be used to identify a Feature or an Object outside of the XML document in which it is defined.
- (4) In the airspace data published by NM, the use of the `gml:id` for Feature identification is limited to the `AirspaceAvailability` services only. In the `AirspaceStructure` services the Feature identification is done exclusively by means of the `gml:identifier`.
- (5) In addition to a `gml:id`, AIXM Features must have a valid `gml:identifier`.
- (6) The `gml:identifier` is used as a persistent identifier for a Feature. A `gml:identifier` will always refer to the same Feature.
- (7) The UUID is normally used as `gml:identifier` and in such cases the `codeSpace` attribute is set to "urn:uuid:". However for some Feature types a valid UUID could not be used. This is the case for those feature types that do not map to entities in the CACD database but are artificially created during the export to AIXM. Here is a list of such Feature types:
 - a) `AirportHeliportCollocation` -- The collocation of two airports.
 - b) `AngleIndication` -- The angle attribute of a *Reference Point* from a *Navaid*.
 - c) `DistanceIndication` -- The distance attribute of a *Reference Point* from a *Navaid*.
 - d) `RouteSegment` -- When it is part of a *NAT Track*.
 - e) `AirTrafficManagementService` -- The *Air Traffic Management Service* associated to the service provider defined by a *Unit*.
 - f) `StandardLevelColumn`
 - g) `StandardLevelTable`
- (8) For example the `AngleIndication` and `DistanceIndication` in CACD are simple attributes of a *Reference Point*. They do not map to stand-alone entities. However when exporting the *Reference Point* to AIXM the angle becomes a separate `AngleIndication` feature, which requires generating a new unique identifier. If afterwards the *Reference Point* is updated in CACD with a new angle value, when re-exporting to AIXM, it is important not to export a new `AngleIndication` without being able to stop the life of the previous one. Being able to identify a previously exported feature becomes paramount. Hence when a Feature does not exist as an entity in CACD, it cannot be assigned a new random UUID but it must be given a deterministic `gml:identifier` which allows referring to the same feature afterwards. Depending on the Feature type, different algorithms are used to generate such an identifier. These algorithms are explained below for each Feature when needed.

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- (9) In those cases in which a valid UUID cannot be used, the codeSpace value is set to "*urn:x-nmb2b:*".
Note that this is in line with the IANA recommendations on URN Namespace Identifiers (NID). In particular RFC 2611 defines three categories of URN namespaces:
- a) *Formal:*
 - i) It requires registration at IANA through RFC review process.
 - b) *Informal:*
 - i) It requires registration at IANA via template submission;
 - ii) It has the form *urn-<number>* (e.g. *urn-2*), where *<number>* is assigned by IANA
 - c) *Experimental:*
 - i) It does not require any registration at IANA;
 - ii) There is no provision for avoiding namespace collisions;
 - iii) It has the form *x-<name>* (it starts with *x-*).
- (10) The URN namespace used by NM falls into the *Experimental* category.
- (11) All UUID values used in ADR Messages are originated and maintained by NM. In other words, NM applications serve and consume only NM UUIDs.
- (12) The UUID is represented in the NM Data Model as:

```
typedef<string> common:UUID;
```

- (13) In few cases in the AirspaceAvailabilityService the feature identification is done through a SNAPSHOT TimeSlice instead of the UUID. When this is the case it is explicitly documented (see AirspaceAvailabilityService).

2.2.4. Feature References

- (1) In the ADR Message NM only makes use of Feature references and never Object references.
- (2) Feature references in the ADR Message conform to the AIXM recommendations.
- (3) The NM general principle about Feature references is that they are always expressed as "remote references", i.e. via *xlink:href* to a *gml:identifier* (UUID), unless where explicitly stated otherwise (see AirspaceAvailabilityService).
- (4) In few cases NM makes use of "local references" using *xlink:href* with an *xpointer* to a *gml:id*. When this is the case it is explicitly documented (see AirspaceAvailabilityService) as this represents a deviation from the NM general principle.

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- (5) When Feature references are used in the NM Data Model they are of type

```
typedef<string> common::UUID;
```

2.2.5. AIXM and ADR Extension coverage

- (1) This paragraph describes which subset of the AIXM model and ADR-E is used by the Airspace services. For each exported feature and Object type, the list of exported attributes and associations is provided.
- (2) Whenever a Feature/Object/Data type is not part of the AIXM core but it has been introduced in the ADR-E, the heading of the corresponding section will have the name of the Feature/Object followed by "(ADR-E)" indicating that AIXM is extended.
Examples: "IntermediateSignificantPoint Object (ADR-E)", "CodeConditionalRouteType (ADR-E)".
- (3) Whenever a Feature/Object that is already part of the AIXM core is extended, the heading of the corresponding section will not have the name of the Feature/Object followed by "(ADR-E)". Instead the new attributes and associations mentioned in the section will be followed by "(ADR-E)" to highlight that those attributes exist only in the ADR-E.
Example: The Airspace Feature section will be called "Airspace Feature" but the attribute "level1" will be documented as "level1 (ADR-E)" indicating that the attribute was added to the existing Airspace Feature and can be found in the ADR-E.
- (4) The following concepts are explained:
 - a) Features
 - b) Objects
 - c) Data Types
 - d) Miscellanea

2.2.5.1. Features

2.2.5.1.1. AirportHeliport Feature

- (1) The exported attributes are:
 - a) name
 - b) locationIndicatorICAO
 - c) designatorIATA
 - d) controlType
 - e) type

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f) defaultTaxiTime (ADR-E)

(2) The exported associations are:

a) servedCity

b) ARP

c) IFR/VFR rules

(3) Example - [AirportHeliport publication](#)

2.2.5.1.2. AirportHeliportCollocation Feature

(1) This is an artificial Feature created during the AIXM export that does not exist as a stand-alone entity in CACD.

(2) Feature identification (see [Feature/Object identification](#)): The `gml:identifier` of an *AirportHeliportCollocation* is the concatenation of the feature type and the UUID of the dependent *AirportHeliport*. This is sufficient because in CACD a dependent Aerodrome (called a child) can have only one host aerodrome (called the parent).

Example:

```
AirportHeliportCollocation_c608da02-859e-4c93-a228-73da81d686c9
```

(3) There are no exported attributes.

(4) The exported associations are:

a) hostAirport

b) dependentAirport

(5) Example:

```
<aixm:AirportHeliportCollocationTimeSlice gml:id="ID_167_1385510754492_3484">
  <aixm:hostAirport xlink:href="urn:uuid:35b44a15-2cb5-455d-98e0-1f2cc09b3160"/>
  <aixm:dependentAirport xlink:href="urn:uuid:2fc069c4-3a18-46f2-9ea8-a77c96701fc9"/>
</aixm:AirportHeliportCollocationTimeSlice>
```

2.2.5.1.3. AirportHeliportSet Feature (ADR-E)

It represents a set of aerodromes, which may be listed explicitly or defined via a pattern id.

(1) The exported attributes are:

a) airportHeliport
To explicitly add aerodromes to an AirportHeliportSet

b) airportHeliportSetPattern

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To implicitly add groups of aerodromes to an AirportHeliportSet based on a pattern in the designator. The value is a string of alfabetic characters and represents the first letters of the ICAO identifier. The semantic is therefore the following: "include all aerodromes whose ICAO identifier starts with the pattern". For example a pattern such as "EB" includes all aerodromes whose ICAO designator starts with 'EB'.

- (2) The exported associations are:
 - a) airportHeliport
- (3) Example showing an AirportHeliportSet composed of 4 explicit aerodromes plus all Aerodromes whose ICAO identifier starts with "EGA":

```
<AirportHeliportSetTimeSlice id="ID_690_1423477720241_130">
  <airportHeliport href="urn:uuid:b6f0ff0c-397c-4140-bf25-c47830a3ddc0"/>
  <airportHeliport href="urn:uuid:ed6ffa29-2e87-439e-a899-d942791ac9cd"/>
  <airportHeliport href="urn:uuid:c3c8b035-26fd-4c9d-a5c9-7dd177d14c08"/>
  <airportHeliport href="urn:uuid:b4274096-7463-40ee-a6b9-008c4fa19834"/>
  <airportHeliportSetPattern>
    <AirportHeliportSetPattern id="ID_690_1423477720241_133">
      <pattern>EGA</pattern>
    </AirportHeliportSetPattern>
  </airportHeliportSetPattern>
</AirportHeliportSetTimeSlice>
```

2.2.5.1.4. Airspace Feature

- (1) The exported attributes are:
 - a) type
 - b) localType

This AIXM property is published with the value CDA when the Airspace's type is a SECTOR or an AUA and when these Airspaces have been defined with a subtype CDA (Client Defined Area).

The property value CDA (Client Defined Area) is used to indicate non-published operational airspaces, mostly for ATFCM requirements like monitoring occupancy/hourly counts, flow definitions, regulation creation.
 - c) designator
 - d) designatorICAO
 - e) name
 - f) flexibleUse (ADR-E)
 - g) level1 (ADR-E): the airspace is manageable at the strategic level. The act of defining and reviewing as required the national airspace policy taking into account national and international airspace requirement.

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- h) level2 (ADR-E): the airspace is manageable at the pre-tactical level. The act of conducting operational management within the framework of pre-determined existing ATM structure and procedures defined in level1 and of reaching specific agreement between civil and military authorities involved.
- i) level3 (ADR-E): the airspace is manageable at the tactical level.
- j) isFBZ (ADR-E): this attribute is only exported when the Airspace.type is one of ('D', 'R', 'P', 'TSA', 'TRA', 'RCA', 'CBA') or Airspace.type is 'D_OTHER' and Airspace.localType is one of ('MRA', 'MTA'). These types correspond to the CACD RestrictedAirspace(RSA). When the attribute isFBZ=='YES', then the Airspace is an FPL Buffer Zone.
- k) fbzDefaultActive (ADR-E): this attribute is only exported when Airspace.isFBZ=='YES'. The attribute fbzDefaultActive is used in the context of FUA.
 - i) AMA: AMC Manageable Area. This corresponds to Airspace.level1=="YES" and level2=="YES". The airspace can be activated in a flexible way for use by the military or other special users after due coordination between military and civilian airspaces during the times defined in the availability. When there is no allocation for this airspace in the AUP/UUP, then the airspace is considered as available for civilian traffic during the availability.
 - ii) NAM: Non AMC Manageable Area. This corresponds to Airspace.level1=="YES" and level2=="NO". The airspace can be activated by the military or other special users without prior coordination with the civilian users, i.e. AMC during the times defined in the availability. When there is no allocation for this airspace in the AUP/UUP, then the airspace is considered as closed for civilian traffic during the availability.

When an airspace managed by an AMC is not allocated, then there is an implicit 'allocation' according to whether the airspace is AMA/NAM. The question arises as whether the RSA or the surrounding FBZ should be used for that. In order to answer that question, the FBZ airspace has an attribute fbzDefaultActive. When fbzDefaultActive=='YES', the FBZ availability will be used for the implicit allocation, otherwise the RSA availability will be used.
- (2) The exported associations are:
 - a) geometryComponent
 - b) activation: refers only to AirspaceActivations with status=AVBL_FOR_ACTIVATION. The related Timesheet (PropertiesWithSchedule) contains a Time Schedule (see Timesheet Time Schedule).
 - c) nearby (ADR-E): refers to RoutePortions potentially extended with a range(AirspaceLayer Object). When the RSA Airspace is allocated, the nearby RoutePortions are considered to be so near that need to be closed.
 - d) offload (ADR-E): refers to RoutePortions potentially extended with a range(AirspaceLayer Object). When the RSA Airspace is allocated, the offload RoutePortions are considered to be an alternative so they are opened.

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- e) notAffected (ADR-E): refers to RoutePortions. When the RSA Airspace is allocated, these RoutePortions are considered as not affected (neither opened nor closed).
- f) rsaActivation (ADR-E): refers to AirspaceActivations with status=ACTIVE. In reality they are the result of the publication of an AUP/UUP. The related Timesheet (PropertiesWith-Schedule) contains a Time Period (see Timesheet Time Period).
- g) ownerRSA (ADR-E): only set when Airspace.isFBZ=='YES'. The owning RSA is indicated with a uuid.

(3) There are basically three levels of composition:

- a) Airblocks
- b) Airspaces composed of Airblocks associated with AltitudeRange to give a 3D volume
- c) Airspaces composed of other Airspaces

2.2.5.1.4.1. Airblocks

- (1) An Airblock describes a horizontal projection. The type of this Airspace is "PART".
- (2) An Airblock is 'anonymous' in the sense that it has no designator.
- (3) An Airblock is a building block for 3D Airspaces.
- (4) The horizontal projection is coded as a flat AIXM AirspaceVolume. None of the attributes of the AirspaceGeometryComponent are set. The geometrical description is defined by the associated Surface object (GML /ISO19107).
- (5) The Surface uses srsName="urn:ogc:def:crs:EPSG::4326".
- (6) A GM_Surface is composed of an array of Patch objects. The Patch object that is used is PolygonPatch.
- (7) The PolygonPatch describes the exterior with a LinearRing.
- (8) The vertices are:
 - a) Point Features which reference a UUID
 - b) Positions which reference coordinates
- (9) Example:

```
<aixm:AirspaceTimeSlice gml:id="ID_171_1385510754499_5">
  <aixm:type>PART</aixm:type>
  <aixm:geometryComponent>
    <aixm:AirspaceGeometryComponent gml:id="ID_171_1385510754499_6">
      <aixm:theAirspaceVolume>
        <aixm:AirspaceVolume gml:id="ID_171_1385510754499_7">
          <aixm:horizontalProjection>
            <aixm:Surface gml:id="ID_171_1385510754499_8" srsName="urn:ogc:def:crs:EPSG::4326">
              <gml:patches>
```

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```

        <gml:PolygonPatch>
          <gml:exterior>
            <gml:LinearRing>
              <gml:pointProperty xlink:href="urn:uuid:da598262-..."/>
              <gml:pointProperty xlink:href="urn:uuid:bbc5c700-..."/>
              <gml:pos>56.66833333333334 -10.0</gml:pos>
            </gml:LinearRing>
          </gml:exterior>
        </gml:PolygonPatch>
      </gml:patches>
    </aixm:Surface>
  </aixm:horizontalProjection>
</aixm:AirspaceVolume>
</aixm:theAirspaceVolume>
</aixm:AirspaceGeometryComponent>
</aixm:geometryComponent>
</aixm:AirspaceTimeSlice>

```

2.2.5.1.4.2. Airspaces composed of Airblocks

- (1) An Airspace composed of Airblocks and AltitudeRange is mapped to an AIXM Airspace having AirspaceVolumes.
- (2) There can be multiple associated AirspaceVolumes.
- (3) The AirspaceVolume defines the altitude range through the upperLimit and lowerLimit attributes.
- (4) For the first (in order of appearance) AirspaceVolume, the corresponding AirspaceGeometry-Component has its "operation" attribute set to "BASE".
- (5) For subsequent (in order of appearance) AirspaceVolumes, the corresponding AirspaceGeometry-Component has its "operation" attribute set to "UNION".
- (6) As the AirspaceVolume depends on an Airblock, the AirspaceVolumeDependency has its "dependency" attribute set to "HORZ_PROJECTION".
- (7) Example:

```

<aixm:AirspaceTimeSlice gml:id="ID_171_1385510754499_41296">
  <aixm:type>SECTOR</aixm:type>
  <aixm:designator>BIRDES</aixm:designator>
  <aixm:designatorICAO>YES</aixm:designatorICAO>
  <aixm:geometryComponent>
    <aixm:AirspaceGeometryComponent gml:id="ID_171_1385510754499_41297">
      <aixm:operation>BASE</aixm:operation>
      <aixm:theAirspaceVolume>
        <aixm:AirspaceVolume gml:id="ID_171_1385510754499_41298">
          <aixm:upperLimit uom="FT">UNL</aixm:upperLimit>
          <aixm:upperLimitReference>MSL</aixm:upperLimitReference>
          <aixm:lowerLimit uom="FL">55</aixm:lowerLimit>
          <aixm:lowerLimitReference>STD</aixm:lowerLimitReference>
          <aixm:contributorAirspace>
            <aixm:AirspaceVolumeDependency gml:id="ID_171_1385510754499_41299">
              <aixm:dependency>HORZ_PROJECTION</aixm:dependency>
              <aixm:theAirspace xlink:href="urn:uuid:a2cf60ce-8fe9-4ee1-913f-06cc0a9bdb84"/>
            </aixm:AirspaceVolumeDependency>
          </aixm:contributorAirspace>
        </aixm:AirspaceVolume>
      </aixm:theAirspaceVolume>
    </aixm:AirspaceGeometryComponent>
  </aixm:geometryComponent>
</aixm:AirspaceTimeSlice>

```

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```

    </aixm:AirspaceGeometryComponent>
  </aixm:geometryComponent>
<aixm:geometryComponent>
  <aixm:AirspaceGeometryComponent gml:id="ID_171_1385510754499_41300">
    <aixm:operation>UNION</aixm:operation>
    <aixm:theAirspaceVolume>
      <aixm:AirspaceVolume gml:id="ID_171_1385510754499_41301">
        <aixm:upperLimit uom="FT">UNL</aixm:upperLimit>
        <aixm:upperLimitReference>MSL</aixm:upperLimitReference>
        <aixm:lowerLimit uom="FL">55</aixm:lowerLimit>
        <aixm:lowerLimitReference>STD</aixm:lowerLimitReference>
        <aixm:contributorAirspace>
          <aixm:AirspaceVolumeDependency gml:id="ID_171_1385510754499_41302">
            <aixm:dependency>HORZ_PROJECTION</aixm:dependency>
            <aixm:theAirspace xlink:href="urn:uuid:418f6ebc-1bfe-41f0-ac9b-d70f584f3375"/>
          </aixm:AirspaceVolumeDependency>
        </aixm:contributorAirspace>
      </aixm:AirspaceVolume>
    </aixm:theAirspaceVolume>
  </aixm:AirspaceGeometryComponent>
</aixm:geometryComponent>
</aixm:AirspaceTimeSlice>

```

2.2.5.1.4.3. Airspaces composed of other Airspaces

- (1) An Airspace composed of other Airspaces defines its volume by AirspaceVolumes.
- (2) There can be multiple associated AirspaceVolumes.
- (3) For the first AirspaceVolume, the corresponding AirspaceGeometryComponent has its "operation" attribute set to "BASE".
- (4) For subsequent AirspaceVolumes, the corresponding AirspaceGeometryComponent has its "operation" attribute set to "UNION".
- (5) As the AirspaceVolume depends on an Airspace, the AirspaceVolumeDependency has its "dependency" attribute set to "FULL_GEOMETRY".
- (6) Example:

```

<aixm:AirspaceTimeSlice gml:id="ID_171_1385510754499_198517">
  <aixm:type>NAS</aixm:type>
  <aixm:designator>EB</aixm:designator>
  <aixm:designatorICA0>YES</aixm:designatorICA0>
  <aixm:geometryComponent>
    <aixm:AirspaceGeometryComponent gml:id="ID_171_1385510754499_198518">
      <aixm:operation>BASE</aixm:operation>
      <aixm:theAirspaceVolume>
        <aixm:AirspaceVolume gml:id="ID_171_1385510754499_198519">
          <aixm:contributorAirspace>
            <aixm:AirspaceVolumeDependency gml:id="ID_171_1385510754499_198520">
              <aixm:dependency>FULL_GEOMETRY</aixm:dependency>
              <aixm:theAirspace xlink:href="urn:uuid:9be9ab99-3df5-4251-9cb9-fba72afeb751"/>
            </aixm:AirspaceVolumeDependency>
          </aixm:contributorAirspace>
        </aixm:AirspaceVolume>
      </aixm:theAirspaceVolume>
    </aixm:AirspaceGeometryComponent>
  </aixm:geometryComponent>
</aixm:geometryComponent>

```

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```

<aixm:AirspaceGeometryComponent gml:id="ID_171_1385510754499_198521">
  <aixm:operation>UNION</aixm:operation>
  <aixm:theAirspaceVolume>
    <aixm:AirspaceVolume gml:id="ID_171_1385510754499_198522">
      <aixm:contributorAirspace>
        <aixm:AirspaceVolumeDependency gml:id="ID_171_1385510754499_198523">
          <aixm:dependency>FULL_GEOMETRY</aixm:dependency>
          <aixm:theAirspace xlink:href="urn:uuid:265ffc98-d66f-454a-811b-3b2f66d490e6"/>
        </aixm:AirspaceVolumeDependency>
      </aixm:contributorAirspace>
    </aixm:AirspaceVolume>
  </aixm:theAirspaceVolume>
</aixm:AirspaceGeometryComponent>
</aixm:geometryComponent>
</aixm:AirspaceTimeSlice>

```

2.2.5.1.4.4. FRA Airspace.

2.2.5.1.4.4.1. Description

- (1) ANSPs are proposing FRA implementations defined by partial AUAs and/or partial Elementary Sectors.
- (2) FRA and DCT Airspace Restrictions have a single Airspace as referenceLocation.
 - a) Currently, this referenceLocation can be of type AUA or AUAG.
 - b) This is extended to referenceLocation that can be of type RAS, AUA or AUAG.
- (3) FRA and DCT Border Restrictions have a border between two Airspaces as referenceLocation.
 - a) Currently, the Airspaces that define this border can be of type AUA or AUAG.
 - b) Similarly, this is extended to support RAS, AUA or AUAG. Combinations of two different types are allowed.

2.2.5.1.4.4.2. Publication

- (1) The new FRA Airspace is mapped to the AIXM property `Airspace::type` with value equals to RAS (Regulated Airspace).
- (2) The AIXM property `Airspace::localType` is used to define the sub-category of the new Airspace RAS e.g. FRA, DCT, other.
- (3) The AIXM property `Airspace::localType` is purely informational.

2.2.5.1.4.4.3. Example

```

<?xml version="1.0"?>
<adrm:hasMember>
  <aixm:Airspace xmlns:aixm="http://www.aixm.aero/schema/5.1" gml:id="ID_30_1489570589960_273977">
    <gml:identifier codeSpace="urn:uuid:">6a73f9f5-9c00-4586-900e-638acdc40570</gml:identifier>
    <aixm:timeSlice>
      <aixm:AirspaceTimeSlice gml:id="ID_30_1489570589960_273978">
        <gml:validTime>

```

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```

    <gml:TimePeriod gml:id="ID_30_1489570589960_273979">
      <gml:beginPosition>2017-03-02T00:00:00</gml:beginPosition>
      <gml:endPosition indeterminatePosition="unknown"/>
    </gml:TimePeriod>
  </gml:validTime>
  <aixm:interpretation>BASELINE</aixm:interpretation>
  <aixm:featureLifetime>
    <gml:TimePeriod gml:id="ID_30_1489570589960_273980">
      <gml:beginPosition>2017-03-02T00:00:00</gml:beginPosition>
      <gml:endPosition indeterminatePosition="unknown"/>
    </gml:TimePeriod>
  </aixm:featureLifetime>
  <aixm:type>RAS</aixm:type>
  <aixm:designator>LPFRA</aixm:designator>
  <aixm:designatorICA0>NO</aixm:designatorICA0>
  <aixm:extension>
    <adrex:AirspaceExtension ...>
      <adrex:usage>OPERATIONAL</adrex:usage>
    </adrex:AirspaceExtension>
  </aixm:extension>
</aixm:AirspaceTimeSlice>
</aixm:timeSlice>
</aixm:Airspace>
</adrm:hasMember>
<adrm:hasMember>
  <aixm:Airspace xmlns:aixm="http://www.aixm.aero/schema/5.1" gml:id="ID_30_1489570589960_273982">
    <gml:identifier codeSpace="urn:uuid:">e1558d89-a550-4546-aabc-d78171e7c95e</gml:identifier>
    <aixm:timeSlice>
      <aixm:AirspaceTimeSlice gml:id="ID_30_1489570589960_273983">
        <gml:validTime>
          <gml:TimePeriod gml:id="ID_30_1489570589960_273984">
            <gml:beginPosition>2017-03-02T00:00:00</gml:beginPosition>
            <gml:endPosition indeterminatePosition="unknown"/>
          </gml:TimePeriod>
        </gml:validTime>
        <aixm:interpretation>BASELINE</aixm:interpretation>
        <aixm:featureLifetime>
          <gml:TimePeriod gml:id="ID_30_1489570589960_273985">
            <gml:beginPosition>2017-03-02T00:00:00</gml:beginPosition>
            <gml:endPosition indeterminatePosition="unknown"/>
          </gml:TimePeriod>
        </aixm:featureLifetime>
        <aixm:type>RAS</aixm:type>
        <aixm:designator>LPFRAL</aixm:designator>
        <aixm:designatorICA0>NO</aixm:designatorICA0>
        <aixm:extension>
          <adrex:AirspaceExtension ...>
            <adrex:usage>OPERATIONAL</adrex:usage>
          </adrex:AirspaceExtension>
        </aixm:extension>
      </aixm:AirspaceTimeSlice>
    </aixm:timeSlice>
  </aixm:Airspace>
</adrm:hasMember>

```

2.2.5.1.5. AirTrafficManagementService Feature

- (1) This is an artificial Feature created during the AIXM export that does not exist as a stand-alone entity in CACD.
- (2) Feature identification (see [Feature/Object identification](#)): The `gml:identifier` for *AirTrafficManagementService* is composed of the feature type and the UUID of the *Unit*.
Example:

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AirTrafficManagementService_4cfcafb8-1841-405c-9c75-454dafd8e5d4

- (3) None of the attributes are exported.
- (4) The exported associations are:
 - a) serviceProvider: this is always a reference to a Unit Feature of type OTHER: __ADR__AMC.
 - b) clientAirspace
- (5) Example:

```
<aixm:AirtrafficManagementServiceTimeSlice gml:id="ID_171_1385510754499_198518">
  <aixm:serviceProvider xlink:href="urn:uuid:4cfcafb8-1841-405c-9c75-454dafd8e5d4"/>
  <aixm:clientAirspace xlink:href="urn:uuid:27b59518-f53c-4ccf-9c38-0495935946c9"/>
  <aixm:clientAirspace xlink:href="urn:uuid:11f90918-73dd-450a-832a-ca5c2b0d061d"/>
</aixm:AirtrafficManagementServiceTimeSlice>
```

2.2.5.1.6. AngleIndication Feature

- (1) This is an artificial Feature created during the AIXM export that does not exist as a stand-alone entity in CACD.
- (2) Feature identification (see [Feature/Object identification](#)): The gml:identifier for *AngleIndication* contains the feature type and the UUID of the *Reference Point*. It is not necessary to include the UUID of the *Navaid* because the reference point can refer to only one Navaid at a time.
Example:

AngleIndication_529f213e-0568-4334-86c0-8bb1a268b9dc

- (3) The exported attributes are:
 - a) angle
 - b) angleType
- (4) The exported associations are:
 - a) fix
This association refers to a DesignatedPoint of type OTHER: __ADR__REFERENCE.
 - b) pointChoice
The pointChoice always refers to a Navaid.
- (5) Example:

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```
<aixm:AngleIndicationTimeSlice gml:id="ID_171_1385510754499_198518">>
  <aixm:angle>10</aixm:angle>
  <aixm:angleType>MAG</aixm:angleType>
  <aixm:fix xlink:href="urn:uuid:c608da02-859e-4c93-a228-73da81d686c9"/>
  <aixm:pointChoice_navaidSystem xlink:href="urn:uuid:529f213e-0568-4334-86c0-8bb1a268b9dc"/>
</aixm:AngleIndicationTimeSlice>
```

2.2.5.1.7. ArrivalLeg Feature

- (1) The exported attributes are:
 - a) upperLimitAltitude and upperLimitReference
 - b) lowerLimitAltitude and lowerLimitReference
- (2) The exported associations are:
 - a) startPoint
 - b) endPoint
 - c) arrival
- (3) Example:

```
<aixm:ArrivalLegTimeSlice gml:id="ID_172_1385510754499_780064">
  <aixm:upperLimitAltitude uom="FL">20</aixm:upperLimitAltitude>
  <aixm:upperLimitReference>STD</aixm:upperLimitReference>
  <aixm:lowerLimitAltitude uom="FT">GND</aixm:lowerLimitAltitude>
  <aixm:lowerLimitReference>MSL</aixm:lowerLimitReference>
  <aixm:startPoint>
    <aixm:TerminalSegmentPoint gml:id="ID_172_1385510754499_780064">
      <aixm:pointChoice_navaidSystem xlink:href="urn:uuid:69ed4c7b-d34c-457c-a780-3baed58fe767"/>
    </aixm:TerminalSegmentPoint>
  </aixm:startPoint>
  <aixm:endPoint>
    <aixm:TerminalSegmentPoint gml:id="ID_172_1385510754499_780065">
      <aixm:pointChoice_airportReferencePoint xlink:href="urn:uuid:dd2a6f3f-bd9b-436e-98..."/>
    </aixm:TerminalSegmentPoint>
  </aixm:endPoint>
  <aixm:arrival xlink:href="urn:uuid:28b8122d-ca51-4cbb-aa5f-b78d859099c9"/>
</aixm:ArrivalLegTimeSlice>
```

2.2.5.1.8. DepartureLeg Feature

- (1) The exported attributes are:
 - a) upperLimitAltitude and upperLimitReference
 - b) lowerLimitAltitude and lowerLimitReference
- (2) The exported associations are:
 - a) startPoint

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- b) endPoint
- c) departure

(3) Example:

```
<aixm:DepartureLegTimeSlice gml:id="ID_172_1385510754499_780098">
  <aixm:upperLimitAltitude uom="FL">110</aixm:upperLimitAltitude>
  <aixm:upperLimitReference>STD</aixm:upperLimitReference>
  <aixm:lowerLimitAltitude uom="FT">GND</aixm:lowerLimitAltitude>
  <aixm:lowerLimitReference>MSL</aixm:lowerLimitReference>
  <aixm:startPoint>
    <aixm:TerminalSegmentPoint gml:id="ID_172_1385510754499_780099">
      <aixm:pointChoice_fixDesignatedPoint xlink:href="urn:uuid:28ac6496-46bf-4c13-8293-..." />
    </aixm:TerminalSegmentPoint>
  </aixm:startPoint>
  <aixm:endPoint>
    <aixm:TerminalSegmentPoint gml:id="ID_172_1385510754499_780100">
      <aixm:pointChoice_navaidSystem xlink:href="urn:uuid:aca80964-9e4f-4e59-970b-..." />
    </aixm:TerminalSegmentPoint>
  </aixm:endPoint>
  <aixm:departure xlink:href="urn:uuid:056b539f-40d5-455b-a3a3-41baf7ceb71d" />
</aixm:DepartureLegTimeSlice>
```

2.2.5.1.9. DesignatedPoint Feature

(1) The exported attributes are:

- a) designator
The designator is only defined for the types:
 - i) ICAO
 - ii) TERMINAL
 - iii) OTHER: __ADR__REFERENCE

b) type

c) name

(2) The exported associations are:

a) location

b) pointUsage

- (1) The point usage is used to facilitate the implementation of FRA projects.
- (2) The AIXM features DesignatedPoint and Navaid are extended. The extended features are associated to PointUsage object with a multiplicity of zero or more instances.

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SignificantPointInAirspace Feature to link the DesignatedPoint and the Airpace together with a relativeLocation attribute set to "BORDER".

- c) OTHER: __ADR__RADAR
This type of point represents a radar located at an Aerodrome. No such points are currently exported.

- (4) Example - [DesignatedPoint publication](#)

2.2.5.1.10. DistanceIndication Feature

- (1) This is an artificial Feature created during the AIXM export that does not exist as a stand-alone entity in CACD.
- (2) Feature identification (see [Feature/Object identification](#)): The gml:identifier for *DistanceIndication* contains the feature type and the UUID of the *Reference Point*. It is not necessary to include the UUID of the *Navaid* because the reference point can refer to only one Navaid at a time. Example:

```
DistanceIndication_529f213e-0568-4334-86c0-8bb1a268b9dc
```

- (3) The exported attribute is:
 - a) distance
- (4) The exported associations are:
 - a) fix
This association refers to a DesignatedPoint of type OTHER: __ADR__REFERENCE.
 - b) pointChoice
The pointChoice always refers to a Navaid.

- (5) Example:

```
<aixm:DistanceIndicationTimeSlice gml:id="ID_172_1385510754499_780099">
  <aixm:distance uom="NM">14</aixm:distance>
  <aixm:fix xlink:href="urn:uuid:c608da02-859e-4c93-a228-73da81d686c9"/>
  <aixm:pointChoice_navaidSystem xlink:href="urn:uuid:529f213e-0568-4334-86c0-8bb1a268b9dc"/>
</aixm:DistanceIndicationTimeSlice>
```

2.2.5.1.11. FlightRestriction Feature

- (1) The exported attributes are:
 - a) designator
 - b) type

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In NM20.5 the data type CodeFlightRestrictionType can be given the value OTHER: __ADR__FORBIDDEN_FOR_DCT. In that case there will be exactly one regulatedRoute with one FlightRoutingElement of type Airspace. The new value expresses that it is forbidden to fly through the Airspace using DCT segments. In exports prior to NM20.5, the whole TimeSlice will be exported as a non-operational TimeSlice, i.e. the usage attribute will be set to WITHHELD.

- c) instruction: this corresponds to the <txtDescr> in AIXM 4.5
- d) processingIndicator (ADR-E)
- e) enabled (ADR-E)
- f) usage (ADR-E): indicates whether the TimeSlice is operational or not.
- g) isFUA (ADR-E): indicates whether the FlightRestriction is a FUARestriction or not.
- h) fuaDefaultActive (ADR-E): indicates that this FlightRestriction should be activated by default when its dependent RSA airspace is allocated by an AUP/UUP. The creation/update of an AUP/UUP must indicate which FlightRestrictions are activated or not.

(2) The exported associations are:

- a) flight
- b) regulatedRoute
- c) annotation: this corresponds to the <txtOprGoal> in AIXM 4.5. It is exported as a Note with propertyName="instruction", purpose="REMARK" (see example)

(3) Example:

```
<aixm:FlightRestrictionTimeSlice gml:id="ID_168_1385510754493_5">
  <aixm:designator>DS2000A</aixm:designator>
  <aixm:type>FORBID</aixm:type>
  <aixm:instruction>GITER NOT AVAILABLE $FOR TRAFFIC ARR ESMS</aixm:instruction>
  <aixm:flight>
    <aixm:FlightConditionCombination gml:id="ID_168_1385510754493_6">
      <!-- not expanded here -->
    </aixm:FlightConditionCombination>
  </aixm:flight>
  <aixm:regulatedRoute>
    <!-- not expanded here -->
  </aixm:regulatedRoute>
  <aixm:annotation>
    <aixm:Note gml:id="ID_4941_1381916120390_9">
      <aixm:propertyName>instruction</aixm:propertyName>
      <aixm:purpose>REMARK</aixm:purpose>
      <aixm:translatedNote>
        <aixm:LinguisticNote gml:id="ID_4941_1381916120390_10">
          <aixm:note>TO SEGREGATE ARR ESMS TO DEP EKCH</aixm:note>
        </aixm:LinguisticNote>
      </aixm:translatedNote>
    </aixm:Note>
  </aixm:annotation>
</aixm:FlightRestrictionTimeSlice>
```

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2.2.5.1.12. Flow Feature (ADR-E)

- (1) A Flow identifies a pattern of traffic and it is used inside a ReferenceLocation or a TrafficVolume (see below).
- (2) It catches flights by defining where they come from, where they are directed and what they cross. This is done by combining Flow Elements.
- (3) A Flow Element is in fact a location, which can be one of the following:
 - An AirportHeliport
 - An AirportHeliportSet
 - An Airspace
 - A Significant Point (i.e. either a Navaid or a DesignatedPoint)

This location is not to be confused with the Reference Location. A Flow Element is a location used to define how the Flow is composed. For example a Flow may be defined as a sequence of Flow Elements such as the following:

 - a) Flights crossing point DIRBO
 - b) And then landing in EDDV

The order of the FlowElements is paramount.
- (4) More precisely a Flow is defined by sequences of upstream and downstream Flow Elements, where the concepts of upstream and downstream are to be intended with respect to the Reference Location to which the Flow will be linked. This allows the same Flow to be linked to several Reference Locations or Traffic Volumes without having to redefine the Flow Elements in each Reference Location/Traffic Volume.
- (5) For example, the following snippet defines a Flow named "EBBR>" (note that the character '>' is escaped as '>' in order to be included in an XML document) with a single downstream Flow Element represented by the EBBR airport (The UUID f44fb7b2-a883-4e4d-b741-97b2d1879ae5 is the 'EBBR' aerodrome). The sematic of this Flow is that it captures all flights departing from EBBR.

```
<Flow id="ID_74_1425258197437_15290">
  <identifier codeSpace="urn:uuid:">0ab1205a-0692-4798-8068-40c15c7e1e6f</identifier>
  <timeSlice>
    <FlowTimeSlice id="ID_74_1425258197437_15291">
      <validTime>
        <TimePeriod id="ID_74_1425258197437_15292">
          <beginPosition>2003-12-25T00:00:00</beginPosition>
          <endPosition indeterminatePosition="unknown"/>
        </TimePeriod>
      </validTime>
      <interpretation>BASELINE</interpretation>
      <featureLifetime>
        <TimePeriod id="ID_74_1425258197437_15293">
          <beginPosition>2003-12-25T00:00:00</beginPosition>
          <endPosition indeterminatePosition="unknown"/>
        </TimePeriod>
      </featureLifetime>
    </FlowTimeSlice>
  </timeSlice>
</Flow>
```

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```

<flowId>EBBR</flowId>
<upstreamFlowElement>
  <FlowLocationElement id="ID_74_1425258197437_15294">
    <index>1</index>
    <locationChoice_airportHeliport href="urn:uuid:f44fb7b2-a883-4e4d-b741-97b2d1879ae5"/>
  </FlowLocationElement>
</upstreamFlowElement>
</FlowTimeSlice>
</timeSlice>
</Flow>

```

- (6) The Flow in the above example can now be used in any ReferenceLocation or Traffic Volume. For example it is used in the ReferenceLocation 'LFRRZU' (which represents a particular sector) to capture flights traversing the sector LFRRZU which departed from the 'EBBR' airport.
- (7) The exported attributes are:
- flowId
- (8) The exported associations are:
- downstreamFlowElement
 - upstreamFlowElement
- (9) Example showing a Flow with one downstream FlowElement and two upstream FlowElements:

```

<FlowTimeSlice id="ID_101_1423664342095_20">
  <flowId>18GWC</flowId>
  <downstreamFlowElement>
    <FlowLocationElement id="ID_101_1423664342095_23">
      <index>3</index>
      <locationChoice_airportHeliportSet href="urn:uuid:b7ed0827-57a6-489a-8fad-6788b1616ee0"/>
    </FlowLocationElement>
  </downstreamFlowElement>
  <upstreamFlowElement>
    <FlowLocationElement id="ID_101_1423664342095_24">
      <index>1</index>
      <locationChoice_airspace href="urn:uuid:f61af630-fe9e-4847-9757-9ba4d36dcd82"/>
    </FlowLocationElement>
  </upstreamFlowElement>
  <upstreamFlowElement>
    <FlowLocationElement id="ID_101_1423664342095_25">
      <index>2</index>
      <locationChoice_navaid href="urn:uuid:f967e31c-5b26-4c4e-8a9d-9c85291f62ee"/>
    </FlowLocationElement>
  </upstreamFlowElement>
</FlowTimeSlice>

```

2.2.5.1.13. Navaid Feature

- (1) The exported attributes are:
- type
 - designator

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c) name

(2) The exported associations are:

a) location

b) pointUsage
see [DesignatedPoint usage](#) [33]

(3) Example - [Navaid publication](#)

2.2.5.1.14. OrganisationAuthority Feature

(1) The exported attributes are:

a) name

b) designator

c) type
The type is always STATE.

(2) Example:

```
<aixm:OrganisationAuthorityTimeSlice gml:id="ID_170_1385510754495_73755">
  <aixm:name>KINGDOM OF BELGIUM</aixm:name>
  <aixm:designator>BELGIUM</aixm:designator>
  <aixm:type>STATE</aixm:type>
</aixm:OrganisationAuthorityTimeSlice>
```

2.2.5.1.15. ReferenceLocation Feature (ADR-E)

(1) A Reference Location can be one of the following entities:

- An Airspace
- An AirportHeliport
- An AirportHeliportSet
- A SignificantPoint (either a DesignatedPoint or a Navaid)

(2) One Reference Location can be used in multiple Traffic Volumes.

(3) If the location is a Significant Point, it has an association to a Flight Level Range (AirspaceLayer)

(4) A Reference Location can have associated Flows (see also Flow Feature and TrafficVolume Feature).

This allows reusing the same Reference Location and the same Flows in multiple Traffic Volumes without having to duplicate the Flows in each Traffic Volume.

When this happens, a Traffic Volume associated to this Reference Location may have

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- *Linked Flows*, i.e. Flows which are directly linked to the Traffic Volumes,
 - *Associated Flows*, i.e. Flows which are associated to the Reference Location
- These concepts will be further explained below, when discussing Traffic Volumes.

(5) The exported attributes are:

- referenceLocationId
- category
Possible values are: ARR = Arrival, DEP = Departure, ALL = Arrival and Departure.
The Category is always set to ALL when the location is an Airspace or a Significant Point, whereas it can take any of the three values if the location is an AirportHeliport or an AirportHeliportSet.

(6) The exported association is:

- location
A reference to one of: Airspace, AirportHeliport, AirportHeliportSet, DesignatedPoint, Navaid.
- airspaceLayer
Present only when the location is a Significant Point.

(7) Example of a ReferenceLocation to an Airspace

```
<ReferenceLocationTimeSlice id="ID_704_1423477742163_19">
  <category>ALL</category>
  <referenceLocationId>ASEBTCWXG</referenceLocationId>
  <locationChoice_airspace href="urn:uuid:a875ce9c-512b-40ba-9ac6-e85032350cb0"/>
</ReferenceLocationTimeSlice>
```

(8) Example of a ReferenceLocation to a DesignatedPoint

```
<ReferenceLocationTimeSlice id="ID_193_1423620275860_25039">
  <category>ALL</category>
  <referenceLocationId>SPABL0MG</referenceLocationId>
  <airspaceLayer>
    <AirspaceLayer id="ID_193_1423620275860_25042">
      <upperLimit uom="FT">UNL</upperLimit>
      <upperLimitReference>MSL</upperLimitReference>
      <lowerLimit uom="FT">GND</lowerLimit>
      <lowerLimitReference>MSL</lowerLimitReference>
    </AirspaceLayer>
  </airspaceLayer>
  <locationChoice_designatedPoint href="urn:uuid:aa19ebe5-485c-40f9-83a5-2aa3e5ae88d1"/>
</ReferenceLocationTimeSlice>
```

2.2.5.1.16. Route Feature

(1) The exported attributes are:

- designatorPrefix
- designatorSecondLetter

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c) designatorNumber

(2) None of the associations are exported.

(3) Example:

```
<aixm:RouteTimeSlice gml:id="ID_170_1385510754495_73755">
  <aixm:designatorPrefix>K</aixm:designatorPrefix>
  <aixm:designatorSecondLetter>H</aixm:designatorSecondLetter>
  <aixm:designatorNumber>501</aixm:designatorNumber>
</aixm:RouteTimeSlice>
```

2.2.5.1.17. RouteSegment Feature

(1) Feature identification (see [Feature/Object identification](#)): This Feature type exists as an entity in CACD when it is part of an ATS Route, but not if it is part of a NAT Track. This means that when the RouteSegment is part of an ATS Route it has its own UUID but when it is part of a NAT Track then it needs an artificially generated gml:identifier which is the concatenation of the NAT Track's UUID, plus the UUIDs of the first and last point of the segment in this order.

Example:

```
Route_024bb6f8-3265-472a-9988-c765f519bcef.
7ae44b19-3827-4ce9-8fd1-ac20ca5e2ead.
f24473c7-85f8-4329-965f-4057bfa7c60c
```

(2) The exported attributes are:

- a) upperLimit and upperLimitReference
- b) lowerLimit and lowerLimitReference

(3) The exported associations are:

- a) start
- b) routeFormed
- c) end
- d) availability: these are the "permanent" availabilities, i.e. the Timesheets (PropertiesWithSchedule) express a Time Schedule (see Timesheet Time Schedule).
The RouteAvailabilityExtension (ADR-E) is used to code the availability.
- e) cdrUpdate (ADR-E): these are the temporary overriding availabilities, i.e. the Timesheets (PropertiesWithSchedule) express a TimePeriod (see Timesheet Time Period).

(4) Example:

```
<aixm:RouteSegmentTimeSlice gml:id="ID_172_1385510754499_82">
  <aixm:upperLimit uom="FL">430</aixm:upperLimit>
```

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```

<aixm:upperLimitReference>STD</aixm:upperLimitReference>
<aixm:lowerLimit uom="FL">185</aixm:lowerLimit>
<aixm:lowerLimitReference>STD</aixm:lowerLimitReference>
<aixm:start>
  <aixm:EnRouteSegmentPoint gml:id="ID_172_1385510754499_82">
    <aixm:pointChoice_fixDesignatedPoint xlink:href="urn:uuid:f24473c7-85f8-4329-965f-..." />
  </aixm:EnRouteSegmentPoint>
</aixm:start>
<aixm:routeFormed xlink:href="urn:uuid:024bb6f8-3265-472a-9988-c765f519bcef" />
<aixm:end>
  <aixm:EnRouteSegmentPoint gml:id="ID_172_1385510754499_83">
    <aixm:pointChoice_fixDesignatedPoint xlink:href="urn:uuid:7ae44b19-3827-4ce9-8fd1-..." />
  </aixm:EnRouteSegmentPoint>
</aixm:end>
<aixm:availability/><!-- not expanded here -->
</aixm:RouteSegmentTimeSlice>

```

- (5) RouteSegments form a Route. In the CACD model they are grouped together into portions. The portions can be in the down or in the up direction. Up and Down portions do not necessarily match. E.g. a Route A-B-C-D-E-F-G could be organised in portions with the following segments:

Portion	Constituting RouteSegments
PortionForward=1	A-B
PortionForward=2	B-C C-D D-E
PortionForward=3	E-F F-G
PortionBackward=1	F-G
PortionBackward=2	C-D D-E E-F
PortionBackward=3	A-B B-C

Table 2.1. Partitioning of CACD Routes into portions.

- (6) Example:

```

<aixm:RouteSegmentTimeSlice>
<!-- start B -->
<!-- end C -->
<!-- availability -->
<aixm:annotation>
  <aixm:Note gml:id="ID_NOTE_1">
    <aixm:purpose>REMARK</aixm:purpose>
    <aixm:translatedNote>
      <aixm:LinguisticNote gml:id="ID_NOTE_1_1">
        <aixm:note>PortionForward=2</aixm:note>
      </aixm:LinguisticNote>
    </aixm:translatedNote>
  </aixm:Note>
</aixm:annotation>
<aixm:annotation>
  <aixm:Note gml:id="ID_NOTE_2">
    <aixm:purpose>REMARK</aixm:purpose>
    <aixm:translatedNote>
      <aixm:LinguisticNote gml:id="ID_NOTE_2_1">
        <aixm:note>PortionBackward=1</aixm:note>
      </aixm:LinguisticNote>
    </aixm:translatedNote>
  </aixm:Note>
</aixm:annotation>

```

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```

</aixm:Note>
</aixm:annotation>
</aixmRouteSegmentTimeSlice>

```

2.2.5.1.18. SpecialDate Feature

(1) The exported attributes are:

- a) type
The type is either HOL or BUSY_FRI.
- b) dateDay
- c) dateYear
- d) name

(2) The exported association is:

- a) authority

(3) Example specific day:

```

<aixm:SpecialDateTimeSlice gml:id="ID_172_1385510754499_82">
  <aixm:type>HOL</aixm:type>
  <aixm:dateDay>19-06</aixm:dateDay>
  <aixm:dateYear>2014</aixm:dateYear>
  <aixm:name>CORPUS CHRISTI DAY (M)</aixm:name>
  <aixm:authority xlink:href="urn:uuid:11bf3600-dcba-4448-85d9-259b3b5e88b7"/>
</aixm:SpecialDateTimeSlice>

```

(4) Example re-occurring holiday:

```

<aixm:SpecialDateTimeSlice gml:id="ID_172_1385510754499_82">
  <aixm:type>HOL</aixm:type>
  <aixm:dateDay>25-12</aixm:dateDay>
  <aixm:name>CHRISTMAS DAY</aixm:name>
  <aixm:authority xlink:href="urn:uuid:2ada7e48-c90d-4f2c-b33e-3f75dd995566"/>
</aixm:SpecialDateTimeSlice>

```

(5) Exemplly busy Friday:

```

<aixm:SpecialDateTimeSlice gml:id="ID_172_1385510754499_82">
  <aixm:type>BUSY_FRI</aixm:type>
  <aixm:dateDay>25-10</aixm:dateDay>
  <aixm:dateYear>2013</aixm:dateYear>
  <aixm:authority xlink:href="urn:uuid:609bcbaf-0960-45da-9e80-645ecdf499f5"/>
</aixm:SpecialDateTimeSlice>

```

2.2.5.1.19. StandardInstrumentArrival Feature

(1) The exported attributes are:

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- a) designator
 - b) instruction
- (2) The exported associations are:
- a) availability
 - b) airportHeliport
 - c) connectingPoint (ADR-E)
 - d) initialApproachFix (ADR-E)
 - e) hasSynonym (ADR-E) (Extension of superclass Procedure)
- (3) Example 1:

```
<aixm:StandardInstrumentArrivalTimeSlice gml:id="ID_172_1385510754499_784149">
  <instruction>VIA UP/P7</instruction>
  <availability>
    <!-- not expanded here -->
  </availability>
  <airportHeliport href="urn:uuid:02876331-3e92-4cea-a67f-a4cf6cf9aefd"/>
  <designator>ABB0T1B</designator>
  <extension>
    <StandardInstrumentArrivalExtension id="ID_142_1423664916078_10">
      <connectingPoint>
        <TerminalSegmentPoint id="ID_142_1423664916078_11">
          <pointChoice_fixDesignatedPoint href="urn:uuid:260a38b8-61ec-4f0e-91d8-d9c79270f461"/>
        </TerminalSegmentPoint>
      </connectingPoint>
      <connectingPoint>
        <TerminalSegmentPoint id="ID_142_1423664916078_12">
          <pointChoice_fixDesignatedPoint href="urn:uuid:376efb12-ca41-46fb-895e-e1a8060210d1"/>
        </TerminalSegmentPoint>
      </connectingPoint>
      <connectingPoint>
        <TerminalSegmentPoint id="ID_142_1423664916078_13">
          <pointChoice_fixDesignatedPoint href="urn:uuid:fe43cb87-cd23-47ad-9a60-60f25cfe451b"/>
        </TerminalSegmentPoint>
      </connectingPoint>
      <connectingPoint>
        <TerminalSegmentPoint id="ID_142_1423664916078_14">
          <pointChoice_fixDesignatedPoint href="urn:uuid:64464f67-bb36-4d72-b664-1acf24332780"/>
        </TerminalSegmentPoint>
      </connectingPoint>
    </StandardInstrumentArrivalExtension>
  </extension>
</StandardInstrumentArrivalTimeSlice>
```

- (4) Example 2 (synonyms):

```
<aixm:StandardInstrumentArrivalTimeSlice>
  <aixm:designator>SARAX1A</aixm:designator>
  <aixm:extension>
    <adext:ProcedureExtension gml:id="pe1320">
      <adext:hasSynonym>
        <adext:Synonym gml:id="s1321">
```

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```

    <adext:synonymId>SARAX1B</adext:synonymId>
  </adext:Synonym>
</adext:hasSynonym>
<adext:hasSynonym>
  <adext:Synonym gml:id="s1322">
    <adext:synonymId>SARAX2A</adext:synonymId>
  </adext:Synonym>
</adext:hasSynonym>
<adext:hasSynonym>
  <adext:Synonym gml:id="s1323">
    <adext:synonymId>SARAX2B</adext:synonymId>
  </adext:Synonym>
</adext:hasSynonym>
</adext:ProcedureExtension>
</aixm:extension>
</aixm:StandardInstrumentArrivalTimeSlice>

```

2.2.5.1.20. SunriseSunsetTable Feature (ADR-E)

- (1) There are no attributes.
- (2) The exported associations are:
 - a) airportHeliport
 - b) row

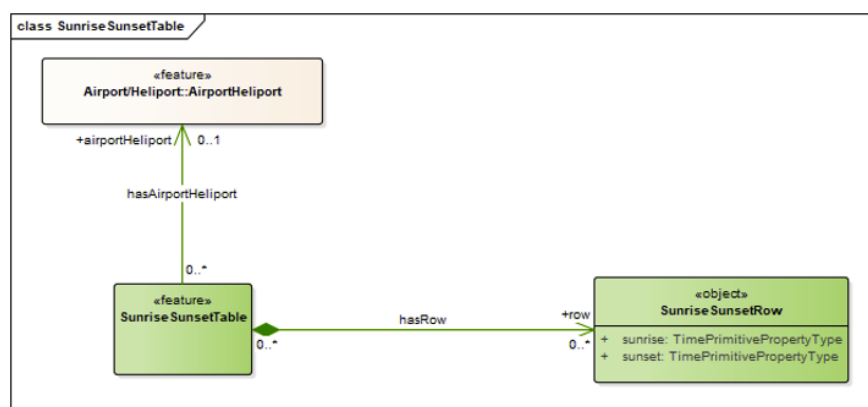


Figure 2.2. SunriseSunsetTable feature extension:

2.2.5.1.21. StandardInstrumentDeparture Feature

- (1) The exported attributes are:
 - a) designator
 - b) instruction
- (2) The exported associations are:
 - a) availability

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- b) airportHeliport
- c) connectingPoint (ADR-E)
- d) hasSynonym (ADR-E) (Extension of superclass Procedure)

(3) Example:

```
<aixm:StandardInstrumentDepartureTimeSlice gml:id="ID_172_1385510754499_780091">
  <aixm:instruction>FL 110 MAX -----&gt; ONLY DEST LFCI/FL110 MAX</aixm:instruction>
  <aixm:availability/><!-- not expanded here -->
  <aixm:airportHeliport xlink:href="urn:uuid:5ba9179b-3306-486e-8970-edce59758396"/>
  <aixm:designator>AB5E</aixm:designator>
  <aixm:extension>
    <adr:StandardInstrumentDepartureExtension gml:id="ID_172_1385510754499_780092">
      <adr:connectingPoint>
        <aixm:TerminalSegmentPoint gml:id="ID_172_1385510754499_780093">
          <aixm:pointChoice_navaidSystem xlink:href="urn:uuid:8b359a52-bf2c-4dc6-af1a-..." />
        </aixm:TerminalSegmentPoint>
      </adr:connectingPoint>
      <adr:connectingPoint>
        <aixm:TerminalSegmentPoint gml:id="ID_172_1385510754499_780094">
          <aixm:pointChoice_navaidSystem xlink:href="urn:uuid:aca80964-9e4f-4e59-970b-..." />
        </aixm:TerminalSegmentPoint>
      </adr:connectingPoint>
    </adr:StandardInstrumentDepartureExtension>
  </aixm:extension>
</aixm:StandardInstrumentDepartureTimeSlice>
```

2.2.5.1.22. TrafficVolume Feature (ADR-E)

- (1) A Traffic Volume represents a volume of air traffic.
It is used for monitoring the amount of air traffic over a given object (e.g. an Airspace) called Reference Location, so that a Regulation can be applied if the load is higher than the available capacity.
- (2) A Traffic Volume is always associated to exactly one Reference Location (see ReferenceLocation Feature above).
- (3) In a simplistic approach, it would seem enough to define a capacity for the Reference Location and count all the flights entering that location in a given unit of time (which is the hour). In reality not all flights crossing a location contribute to the complexity of the traffic in the same way: for example if the majority of the traffic is in the southern part of an airspace and only few flights cross the northern part, it would be desirable to set a specific monitoring for the southern flights alone.
- (4) This is why a Traffic Volume can be refined with Flows (see Flow Feature above).
- (5) A Traffic Volume is therefore the combination of one Reference Location and potentially multiple Flows.
- (6) It is worth noticing here that a Reference Location can itself have Flows (see ReferenceLocation Feature).
 - The Flows defined in the Reference Location are called *Associated Flows*

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- The Flows defined in the Traffic Volume are called *Linked Flows*
- (7) When defining the Linked Flows in a Traffic Volume, these can be combined in several ways. Each Linked Flow can be:
- *Included*
Flights matching the Flow are included in the volume of air traffic.
IMPORTANT: If at least one Included Flow is defined, then the volume of air traffic is defined solely by the Linked Flows. In other words if there is at least one Included Flow then a flight to be in the Traffic Volume must be in one of the Included Flows.
 - *Excluded*
Flights matching the Excluded Flows are excluded from the volume and therefore do not contribute to the counts.
 - *Exempted*
Flights matching an Exempted Flow are not affected by regulations. Exempted Flows participate in the counts provided that no Included Flows are defined (if any Included Flows were defined only flights matching those Flows would be included in the counts, see above).
 - *Included Exempted*
Flights matching an Included Exempted Flow always participate in the counts but are not affected by regulations. The Flow behaves both as an Included Flow and an Exempted Flow at the same time.
- (8) Traffic Volumes can be active or not according to a timetable. This reflects in principle the Sector Configurations and the rationale behind is that the amount of traffic changes according to the period of the year, the day of the week and the time of the day. So for example in a time frame when the traffic is relatively low, a single Traffic Volume could suffice, whereas in a time of high load, the same volume could be split into smaller Traffic Volumes to allow a more granular monitoring. So according to a timetable, the large Traffic Volume could be made inactive and the smaller ones active.
- (9) When a Traffic Volume is not active the counts are not computed.
- (10) The exported attributes are:
- a) tvId
- (11) The exported associations are:
- a) activation
 - b) linkedFlow
- (12) Example:

```
<TrafficVolumeTimeSlice id="ID_705_1423477842671_179">
  <tvId>EGPESTX</tvId>
  <referenceLocation href="urn:uuid:00495049-ecc1-4936-a1d0-35bbbdaf2fe"/>
  <activation>
    <TrafficVolumeActivation id="ID_705_1423477842671_182">
```

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```

    <!-- not expanded here -->
  </TrafficVolumeActivation>
</activation>
<linkedFlow>
  <TrafficVolumeLinkedFlow id="ID_705_1423477842671_186">
    <role>EXCLUDED</role>
    <theFlow href="urn:uuid:c9c75b61-4c5e-4e4f-be75-cdef7b94f258"/>
  </TrafficVolumeLinkedFlow>
</linkedFlow>
</TrafficVolumeTimeSlice>

```

2.2.5.1.23. TrafficVolumeSet Feature (ADR-E)

- (1) Represents a set of Traffic Volumes as a single entity.
- (2) The exported attributes are:
 - a) tvSetId
- (3) The exported associations are:
 - a) trafficVolume
Traffic Volume included in this TrafficVolumeSet
- (4) Example:

```

<TrafficVolumeSetTimeSlice id="ID_46_1423644956269_3">
  <tvSetId>AEROEDNY</tvSetId>
  <trafficVolume href="urn:uuid:64b3ec4b-f673-4709-9771-4517fb70b72b"/>
  <trafficVolume href="urn:uuid:ba60a7d2-11e1-4948-9c0f-566f2db6a23e"/>
  <trafficVolume href="urn:uuid:4b2a81eb-f2dc-4e82-b296-00a406fc9850"/>
</TrafficVolumeSetTimeSlice>

```

2.2.5.1.24. Unit Feature

- (1) The exported attributes are:
 - a) name
 - b) type
The type is always OTHER: __ADR__AMC.
 - c) designator
- (2) None of the associations are exported.
- (3) Example:

```

<aixm:UnitTimeSlice gml:id="ID_172_1385510754499_780092">
  <aixm:name>BELGIUM</aixm:name>
  <aixm:type>OTHER: __ADR__AMC</aixm:type>
  <aixm:designator>EBBRZAMC</aixm:designator>
</aixm:UnitTimeSlice>

```


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2.2.5.2. Objects

2.2.5.2.1. AirspaceActivation Object

- (1) The exported attribute is:
 - a) status
- (2) The exported associations are:
 - a) levels
 - b) hostAirspace (ADR-E)
The Information Region in which the (military) Airspace is located.
 - c) requestor (ADR-E)
 - d) fuaRestriction (ADR-E)
The activation of the associated FUARestrictions (see [<FUARestrictionActivation>](#))
- (3) Typical example from AirspaceActivation in the retrieval of an AUP (AirspaceAvailability Service):

```

<aixm:activation>
  <aixm:AirspaceActivation gml:id="ID_4247_1381851018763_6">
    <aixm:status>ACTIVE</aixm:status>
    <aixm:levels>
      <aixm:AirspaceLayer gml:id="ID_4247_1381851018763_7">
        <aixm:upperLimit uom="FL">55</aixm:upperLimit>
        <aixm:upperLimitReference>STD</aixm:upperLimitReference>
        <aixm:lowerLimit uom="FT">GND</aixm:lowerLimit>
        <aixm:lowerLimitReference>MSL</aixm:lowerLimitReference>
      </aixm:AirspaceLayer>
    </aixm:levels>
    <aixm:extension>
      <adr:AirspaceActivationExtension
        xmlns:adr="http://www.aixm.aero/schema/5.1/extensions/ADR"
        gml:id="ID_4247_1381851018763_8">
        <adr:hostAirspace
          xmlns:xlink="http://www.w3.org/1999/xlink"
          xlink:href="urn:uuid:126db09b-215c-4eee-981b-27063b544b4a"/>
        </adr:AirspaceActivationExtension>
      </aixm:extension>
    </aixm:AirspaceActivation>
  </aixm:activation>

```

- (4) Another typical example is the description of the availability of a (military) Airspace (AirspaceStructure Service):

```

<aixm:activation>
  <aixm:AirspaceActivation gml:id="ID_171_1385510754499_169471">
    <aixm:status>AVBL_FOR_ACTIVATION</aixm:status>
    <aixm:extension>
      <adr:PropertiesWithScheduleExtension gml:id="ID_171_1385510754499_169472">
        <adr:timeTable>
          <adr:TimeTable gml:id="ID_171_1385510754499_169473">
            <!-- not expanded here -->
          </adr:TimeTable>
        </adr:timeTable>
      </adr:PropertiesWithScheduleExtension>
    </aixm:extension>
  </aixm:AirspaceActivation>
</aixm:activation>

```

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```

    </adr:PropertiesWithScheduleExtension>
  </aixm:extension>
</aixm:AirspaceActivation>
</aixm:activation>

```

2.2.5.2.2. AirspaceLayer Object

- (1) It is primarily used in the RouteSegmentExtension
- (2) The exported attributes are:
 - a) upperLimit
 - b) upperLimitReference
 - c) lowerLimit
 - d) lowerLimitReference
- (3) There are no associations.
- (4) An example shows the special behaviour:

```

<adr:RouteSegmentExtension gml:id="ID_172_1385510754499_98">
  <adr:levels gml:id="ID_172_1385510754499_99">
    <aixm:upperLimit uom="FL">430</aixm:upperLimit>
    <aixm:upperLimitReference>STD</aixm:upperLimitReference>
    <aixm:lowerLimit uom="FL">185</aixm:lowerLimit>
    <aixm:lowerLimitReference>STD</aixm:lowerLimitReference>
  </adr:levels>
</adr:RouteSegmentExtension>

```

2.2.5.2.3. FlightConditionCombination Object

- (1) The exported attribute is:
 - a) logicalOperator
- (2) The exported association are:
 - a) element
 - b) timeInterval
- (3) Example:

```

<aixm:FlightConditionCombination gml:id="ID_168_1385510754493_6">
  <aixm:timeInterval>
    <aixm:Timesheet gml:id="ID_168_1385510754493_7">
      <!-- not expanded here -->
    </aixm:Timesheet>
  </aixm:timeInterval>
  <aixm:logicalOperator>ANDNOT</aixm:logicalOperator>
  <aixm:element>
    <!-- not expanded here -->
  </aixm:element>
</aixm:FlightConditionCombination>

```

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```

</aixm:element>
<aixm:element>
  <!-- not expanded here -->
</aixm:element>
</aixm:FlightConditionCombination>

```

2.2.5.2.4. FlightConditionElement Object

- (1) None of the attributes are exported.
- (2) The exported associations are:
 - a) flightCondition
 - b) operationalCondition
 - c) flightLevel
 - d) borderCrossingCondition (ADR-E)
 - e) airportHeliportSetCondition (ADR-E)
- (3) Example of a FlightConditionElement crossing an Airspace reference location between certain levels:

```

<aixm:FlightConditionElement gml:id="ID_168_1385510754493_11">
  <aixm:flightCondition_airspaceCondition xlink:href="urn:uuid:d664b2c4-8b52-4387-b26a-..."/>
  <aixm:operationalCondition>
    <aixm:FlightConditionCircumstance gml:id="ID_168_1385510754493_12">
      <aixm:referenceLocation>YES</aixm:referenceLocation>
      <aixm:relationWithLocation>XNG</aixm:relationWithLocation>
    </aixm:FlightConditionCircumstance>
  </aixm:operationalCondition>
  <aixm:flightLevel>
    <aixm:FlightRestrictionLevel gml:id="ID_168_1385510754493_13">
      <aixm:upperLevel uom="FL">115</aixm:upperLevel>
      <aixm:upperLevelReference>STD</aixm:upperLevelReference>
      <aixm:lowerLevel uom="FT">GND</aixm:lowerLevel>
      <aixm:lowerLevelReference>MSL</aixm:lowerLevelReference>
    </aixm:FlightRestrictionLevel>
  </aixm:flightLevel>
</aixm:FlightConditionElement>

```

- (4) Example of a FlightConditionElement using the borderCrossingCondition (ADR-E):

```

<aixm:FlightConditionElement gml:id="ID_168_1385510754493_3062">
  <aixm:operationalCondition>
    <aixm:FlightConditionCircumstance gml:id="ID_168_1385510754493_3063">
      <aixm:referenceLocation>YES</aixm:referenceLocation>
      <aixm:relationWithLocation>XNG</aixm:relationWithLocation>
    </aixm:FlightConditionCircumstance>
  </aixm:operationalCondition>
  <aixm:flightLevel>
    <aixm:FlightRestrictionLevel gml:id="ID_168_1385510754493_3064">
      <aixm:upperLevel uom="FL">245</aixm:upperLevel>
      <aixm:upperLevelReference>STD</aixm:upperLevelReference>
      <aixm:lowerLevel uom="FT">GND</aixm:lowerLevel>
    </aixm:FlightRestrictionLevel>
  </aixm:flightLevel>
</aixm:FlightConditionElement>

```

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```

    <aixm:lowerLevelReference>MSL</aixm:lowerLevelReference>
  </aixm:FlightRestrictionLevel>
</aixm:flightLevel>
<aixm:extension>
  <adr:FlightConditionElementExtension gml:id="ID_168_1385510754493_3065">
    <adr:borderCrossingCondition>
      <adr:AirspaceBorderCrossingObject gml:id="ID_168_1385510754493_3066">
        <adr:exitedAirspace xlink:href="urn:uuid:d664b2c4-8b52-4387-b26a-4f993180c545"/>
        <adr:enteredAirspace xlink:href="urn:uuid:6013c06c-6cba-4a83-b0dd-b9e527c86920"/>
      </adr:AirspaceBorderCrossingObject>
    </adr:borderCrossingCondition>
  </adr:FlightConditionElementExtension>
</aixm:extension>
</aixm:FlightConditionElement>

```

- (5) Example of a FlightConditionElement using the airportHeliportSetCondition (ADR-E):

```

<aixm:FlightConditionElement gml:id="ID_168_1385510754493_3062">
  <aixm:operationalCondition>
    <aixm:FlightConditionCircumstance gml:id="ID_168_1385510754493_3063">
      <aixm:referenceLocation>YES</aixm:referenceLocation>
      <aixm:relationWithLocation>DEP</aixm:relationWithLocation>
    </aixm:FlightConditionCircumstance>
  </aixm:operationalCondition>
  <aixm:extension>
    <adr:FlightConditionElementExtension gml:id="ID_168_1385510754493_3065">
      <adr:airportHeliportSetCondition xlink:href="urn:uuid:d664b2c4-8b52-4387-b26a-4f..."/>
    </adr:FlightConditionElementExtension>
  </aixm:extension>
</aixm:FlightConditionElement>

```

2.2.5.2.5. FlowLocationElement Object

- (1) The exported attribute is:
- index
Defines the order of the FlowElements in the upstream or downstream sequence.
- (2) The exported association is:
- location
The location that identifies this FlowElement.
- (3) Example of two FlowLocationElements representing the downstream and upstream flow location elements of a Flow:

```

<downstreamFlowElement>
  <FlowLocationElement id="ID_699_1423477726446_12">
    <index>2</index>
    <locationChoice_navaid href="urn:uuid:bf538f1c-21bd-4629-a893-2a1b8292cb8a"/>
  </FlowLocationElement>
</downstreamFlowElement>
<upstreamFlowElement>
  <FlowLocationElement id="ID_699_1423477726446_13">
    <index>1</index>
    <locationChoice_designatedPoint href="urn:uuid:07765def-1d2b-4c9d-8b39-997a61f4cb49"/>
  </FlowLocationElement>
</upstreamFlowElement>

```

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2.2.5.2.6. FUARestrictionActivation Object (ADR-E)

- (1) The exported attributes are
 - a) active: indication that the FUA restriction (theFlightRestriction) is activated during the Air-spaceActivation.
 - b) remark: a remark specific to why the FUA restriction was (not) activated. The remark is only used in the context of AirspaceAvailability Service ((E)AUP/UUP related). In the context of Airspace.rsaActivation (ADR-E), the remark field is not exported.

- (2) The exported association is:

- a) theFlightRestriction: reference to the FUA restriction (using uuid)

- (3) Example:

```
<aixm:extension>
  <adr:AirspaceActivationExtension gml:id="ID_171_1385510754499_169472_1">
    <adr:fuaRestriction>
      <adr:FUARestrictionActivation gml:id="ID_171_1385510754499_169472_2">
        <adr:active>YES</adr:active>
        <!-- remark field not used in the context of Airspace.rsaActivation -->
        <adr:theFlightRestriction xlink:href="urn:uuid:9f7051bf-a004-4d51-b3a4-df4283fe11cd"/>
      </adr:FUARestrictionActivation>
    </adr:fuaRestriction>
    <!-- potentially more fuaRestrictions -->
  </adr:AirspaceActivationExtension>
</aixm:extension>
```

2.2.5.2.7. IntermediateSignificantPoint Object (ADR-E)

- (1) There are no attributes.
- (2) The exported association is:
 - a) pointChoice
- (3) The IntermediateSignificantPoint (ADR-E) is only used by the RoutePortionExtension.

- (4) Example:

```
<adr:IntermediateSignificantPoint gml:id="ID_168_1385510754493_741">
  <adr:pointChoice_fixDesignatedPoint xlink:href="urn:uuid:1b3950ed-6e59-4a0e-a732-49..." />
</adr:IntermediateSignificantPoint>
```

2.2.5.2.8. PointUsage Object (ADR-E)

- (1) The exported attribute is:
 - a) role: of type CodePointUsageType
 Note: the CodePointUsage Object (ADR-E) defines the attributes relativeLocation and reportATC, but these attributes are not used in the export.

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(2) The exported associations are:

- a) `timeInterval` (inherited from `PropertiesWithSchedule`): the associated time table information
- b) `specialDateAuthority` (inherited from `PropertiesWithSchedule`): the associated organisation authority. This association is only provided when there is at least one associated timesheet that contains a special day (`CodeDayType`), i.e. a Timesheet where the value of the attribute `day` is in {`HOL`, `BEF_HOL`, `AFT_HOL` or `BUSY_FRI`}
- c) `levels`: the associated upper and lower limits between which the point usage is defined
- d) `reference`: the associated reference location of type `PointUsageReferenceChoice(ADR-E)`. Which of the choice options is applicable, depends on the value of the role attribute.

PointUsage.role value	PointUsageReferenceChoice attribute
FRA_ENTRY FRA_EXIT	border
FRA_INTERMEDIATE	airspace
FRA_ARRIVAL FRA_DEPARTURE	one of: i) airspace ii) airportHeliport iii) airportHeliportSet

Table 2.2. PointUsageReferenceChoice selection according to the PointUsage.role attribute

2.2.5.2.9. ProcedureAvailability Object

(1) The exported attribute is:

- a) `status`
The value is always set to `USABLE`.

(2) The exported association is:

- a) `timeInterval`

(3) Example:

```
<aixm:ProcedureAvailability gml:id="ID_172_1385510754499_780273">
  <aixm:timeInterval>
    <aixm:Timesheet gml:id="ID_172_1385510754499_780273_1">
      <!-- not expanded here -->
    </aixm:Timesheet>
  </aixm:timeInterval>
  <aixm:status>USABLE</aixm:status>
</aixm:ProcedureAvailability>
```

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2.2.5.2.10. PropertiesWithSchedule Object

- (1) There are no attributes.
- (2) The exported association is:
 - a) `timeInterval`
- (3) Example: see Timesheet Object.

2.2.5.2.11. RouteAvailability Object

- (1) The exported attributes are:
 - a) `direction`
 - b) `status`
 - c) `conditionalRouteType` (ADR-E)
- (2) The exported associations are:
 - a) `timeInterval`
 - b) `levels`
 - c) `hostAirspace` (ADR-E)
This is only used in the context of an AUP, to indicate in which Information Region the `RouteSegment` is located.
- (3) Example of a `RouteAvailability` defining the schedule of CDR usage:

```
<aixm:RouteAvailability gml:id="ID_172_1385510754499_2371">
  <aixm:timeInterval>
    <aixm:Timesheet gml:id="ID_172_1385510754499_2371">
      <!-- not expanded here, see Timesheet (schedule definitions) -->
    </aixm:Timesheet>
  </aixm:timeInterval>
  <aixm:direction>FORWARD</aixm:direction>
  <aixm:status>COND</aixm:status>
  <aixm:levels>
    <aixm:AirspaceLayer gml:id="ID_172_1385510754499_2372">
      <aixm:upperLimit uom="FL">245</aixm:upperLimit>
      <aixm:upperLimitReference>STD</aixm:upperLimitReference>
      <aixm:lowerLimit uom="FL">95</aixm:lowerLimit>
      <aixm:lowerLimitReference>STD</aixm:lowerLimitReference>
      <aixm:discreteLevelSeries xlink:href="urn:uuid:SLC_ODD_IFR"/>
    </aixm:AirspaceLayer>
  </aixm:levels>
  <aixm:extension>
    <adr:RouteAvailabilityExtension gml:id="ID_172_1385510754499_2373">
      <adr:conditionalRouteType>CDR_3</adr:conditionalRouteType>
    </adr:RouteAvailabilityExtension>
  </aixm:extension>
</aixm:RouteAvailability>
```

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2.2.5.2.12. RoutePortion Object

- (1) There are no attributes.
- (2) The exported associations are:
 - a) start
 - b) referencedRoute
 - c) end
 - d) intermediatePoint (ADR-E)
- (3) Example:

```
<aixm:RoutePortion gml:id="ID_168_1385510754493_739">
  <aixm:start_navaidSystem xlink:href="urn:uuid:682543b6-97c6-4bf7-b95c-21a1e5b8c998"/>
  <aixm:referencedRoute xlink:href="urn:uuid:77af856b-078c-484b-a20a-3216cef1be2d"/>
  <aixm:end_fixDesignatedPoint xlink:href="urn:uuid:a7b98cb4-4e28-4258-8a4e-d8b5ab3d95d0"/>
  <aixm:extension>
    <adr:RoutePortionExtension gml:id="ID_168_1385510754493_740">
      <adr:intermediatePoint>
        <adr:IntermediateSignificantPoint gml:id="ID_168_1385510754493_741">
          <adr:pointChoice_fixDesignatedPoint xlink:href="urn:uuid:1b3950ed-6e59-4a0e-a73..."/>
        </adr:IntermediateSignificantPoint>
      </adr:intermediatePoint>
    </adr:RoutePortionExtension>
  </aixm:extension>
</aixm:RoutePortion>
```

2.2.5.2.13. SunriseSunsetRow Object (ADR-E)

- (1) The exported attributes are:
 - a) sunrise
 - b) sunset
- (2) There are no associations.

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(3)

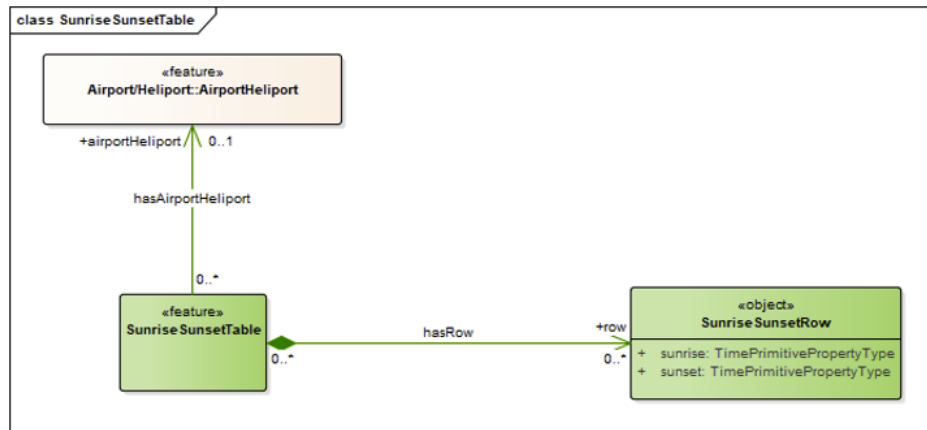


Figure 2.3. *SunriseSunsetTable* feature extension:

2.2.5.2.14. Timesheet Object

2.2.5.2.14.1. Time Period

- (1) The core aixm:Timesheet doesn't allow to express a time period because the Timesheet.startDate and Timesheet.endDate are of type aixm:DateMonthDayType.
- (2) The Timesheet was extended with a gml:validTime to have the possibility to express a time period. An alternative extension would have been to extend the Timesheet with a startYear and endYear, but this alternative was rejected because it would confuse too much the experienced AIXM user.
- (3) The following Timesheet properties are set with fixed values.

Property	Value
timeReference	UTC
day	ANY
excluded	NO

Table 2.3. *Timesheet* properties with fixed values when defining a time period

- (4) Example expressing the time period 2013/11/05 20:30 --> 2013/11/05 21:00.

```
<aixm:Timesheet gml:id="ID_50_1352812184610_10_1">
  <aixm:timeReference>UTC</aixm:timeReference>
  <aixm:day>ANY</aixm:day>
  <aixm:excluded>NO</aixm:excluded>
  <aixm:extension>
    <adr:TimesheetExtension gml:id="ID_50_1352812184610_10_2">
      <gml:validTime>
        <gml:TimePeriod gml:id="ID_40_1377648348105_83">
          <gml:beginPosition>2013-11-05T20:30:00</gml:beginPosition>
          <gml:endPosition>2013-11-05T21:00:00</gml:endPosition>
        </gml:TimePeriod>
      </gml:validTime>
    </adr:TimesheetExtension>
  </aixm:extension>
</aixm:Timesheet>
```

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```

</adr:TimesheetExtension>
</aixm:extension>
</aixm:Timesheet>

```

2.2.5.2.14.2. Time Schedule

- (1) The Time Schedule information in CACD can be represented by a string like "2012/10/18 -> 2014/02/06 -----67 00:00 06:00". The meaning of this is: between the Time Period 2012/10/18 (midnight) -> 2014/02/06 (midnight), on Saturdays(6) and Sundays(7) from 00:00 until 06:00.
- (2) The Time Schedule information is always part of an AIXM Object that is derived from PropertiesWithSchedule.
- (3) Apart from the days of the week, holidays, the day before/after holidays and busy Fridays are possible.
- (4) For each day in a string like "2012/10/18 -> 2014/02/06 -----67 00:00 06:00", a separate aixm:timeInterval element is needed.
- (5) The following Timesheet properties are set:

Property	Value
timeReference	UTC
day	'day of the week or special day'
startTime	'start time'
endTime	'end time'
excluded	NO
gml:validTime (ADR-E)	'the surrounding time period'

Table 2.4. Timesheet properties when defining a Time Schedule

- (6) Example "2012/10/18 -> 2014/02/06 -----67 00:00 06:00":

```

<aixm:timeInterval>
  <aixm:Timesheet gml:id="ID_50_1352812184610_8_1">
    <aixm:timeReference>UTC</aixm:timeReference>
    <aixm:day>SAT</aixm:day>
    <aixm:startTime>00:00</aixm:startTime>
    <aixm:endTime>06:00</aixm:endTime>
    <aixm:excluded>NO</aixm:excluded>
    <aixm:extension>
      <adr:TimesheetExtension gml:id="ID_50_1352812184610_8_2">
        <gml:validTime>
          <gml:TimePeriod gml:id="ID_40_1377648348105_81">
            <gml:beginPosition>2012-10-18T00:00:00</gml:beginPosition>
            <gml:endPosition>2014-02-06T00:00:00</gml:endPosition>
          </gml:TimePeriod>
        </gml:validTime>
      </adr:TimesheetExtension>
    </aixm:extension>
  </aixm:Timesheet>

```

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```

</aixm:timeInterval>
<aixm:timeInterval>
  <aixm:Timesheet gml:id="ID_50_1352812184610_9_1">
    <aixm:timeReference>UTC</aixm:timeReference>
    <aixm:day>SUN</aixm:day>
    <aixm:startTime>00:00</aixm:startTime>
    <aixm:endTime>06:00</aixm:endTime>
    <aixm:excluded>NO</aixm:excluded>
    <aixm:extension>
      <adr:TimesheetExtension gml:id="ID_50_1352812184610_9_2">
        <gml:validTime>
          <gml:TimePeriod gml:id="ID_40_1377648348105_82">
            <gml:beginPosition>2012-10-18T00:00:00</gml:beginPosition>
            <gml:endPosition>2014-02-06T00:00:00</gml:endPosition>
          </gml:TimePeriod>
        </gml:validTime>
      </adr:TimesheetExtension>
    </aixm:extension>
  </aixm:Timesheet>
</aixm:timeInterval>

```

- (7) For summertime and wintertime periods, the gml:validTime (ADR-E) is not used. Instead the core AIXM startDate, endDate are used with the values 'SDLST' and 'EDLST'. The daylightSavingAdjust is set explicitly to 'NO'.

Examples:

```

<!-- WINTERTIME start EDLST end SDLST -->
<aixm:timeInterval>
  <aixm:Timesheet gml:id="uuid.7033a5ab-b30c-4daa-82c3-68ff420e1330">
    <aixm:timeReference>UTC</aixm:timeReference>
    <aixm:startDate>EDLST</aixm:startDate>
    <aixm:endDate>SDLST</aixm:endDate>
    <aixm:day>MON</aixm:day>
    <aixm:startTime>08:30</aixm:startTime>
    <aixm:endTime>17:00</aixm:endTime>
    <aixm:daylightSavingAdjust>NO</aixm:daylightSavingAdjust>
    <aixm:excluded>NO</aixm:excluded>
  </aixm:Timesheet>
</aixm:timeInterval>
<!-- SUMMERTIME start SDLST end EDLST -->
<aixm:timeInterval>
  <aixm:Timesheet gml:id="uuid.7033a5ab-b30c-4daa-82c3-68ff420e1330">
    <aixm:timeReference>UTC</aixm:timeReference>
    <aixm:startDate>EDLST</aixm:startDate>
    <aixm:endDate>SDLST</aixm:endDate>
    <aixm:day>MON</aixm:day>
    <aixm:startTime>07:30</aixm:startTime>
    <aixm:endTime>16:00</aixm:endTime>
    <aixm:daylightSavingAdjust>NO</aixm:daylightSavingAdjust>
    <aixm:excluded>NO</aixm:excluded>
  </aixm:Timesheet>
</aixm:timeInterval>

```

2.2.5.2.14.3. Default schedules

- (1) Time Schedules can be very complex. E.g. in defining the CDRs, it is not allowed to have gaps in the schedule. In order to simplify the definitions, it is possible to define a 'default' schedule. The default schedule is defined as any time, subtracting some Time Schedules from this default.
- (2) The default schedules is represented as a Timesheet with the following properties:

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Property	Value
timeReference	UTC
day	ANY
excluded	NO
gml:validTime (ADR-E)	'the surrounding time period'

Table 2.5. Timesheet properties of the default schedule

- (3) From the default schedule, the other Timeschedules are subtracted by setting the Timesheet.excluded property to YES.
- (4) Example:

```

<aixm:timeInterval>
  <aixm:Timesheet gml:id="ID_50_1352812184610_7_1">
    <aixm:timeReference>UTC</aixm:timeReference>
    <aixm:day>ANY</aixm:day>
    <aixm:excluded>NO</aixm:excluded>
    <aixm:extension>
      <adr:TimesheetExtension gml:id="ID_50_1352812184610_8_2">
        <gml:validTime>
          <gml:TimePeriod gml:id="ID_40_1377648348105_81">
            <gml:beginPosition>2012-10-18T00:00:00</gml:beginPosition>
            <gml:endPosition>2014-02-06T00:00:00</gml:endPosition>
          </gml:TimePeriod>
        </gml:validTime>
      </adr:TimesheetExtension>
    </aixm:extension>
  </aixm:Timesheet>
</aixm:timeInterval>
<aixm:timeInterval>
  <aixm:Timesheet gml:id="ID_50_1352812184610_8_1">
    <aixm:timeReference>UTC</aixm:timeReference>
    <aixm:day>SAT</aixm:day>
    <aixm:startTime>00:00</aixm:startTime>
    <aixm:endTime>06:00</aixm:endTime>
    <aixm:excluded>YES</aixm:excluded>
    <aixm:extension>
      <adr:TimesheetExtension gml:id="ID_50_1352812184610_8_2">
        <gml:validTime>
          <gml:TimePeriod gml:id="ID_40_1377648348105_81">
            <gml:beginPosition>2012-10-18T00:00:00</gml:beginPosition>
            <gml:endPosition>2014-02-06T00:00:00</gml:endPosition>
          </gml:TimePeriod>
        </gml:validTime>
      </adr:TimesheetExtension>
    </aixm:extension>
  </aixm:Timesheet>
</aixm:timeInterval>
<aixm:timeInterval>
  <aixm:Timesheet gml:id="ID_50_1352812184610_9_1">
    <aixm:timeReference>UTC</aixm:timeReference>
    <aixm:day>SUN</aixm:day>
    <aixm:startTime>00:00</aixm:startTime>
    <aixm:endTime>06:00</aixm:endTime>
    <aixm:excluded>YES</aixm:excluded>
    <aixm:extension>
      <adr:TimesheetExtension gml:id="ID_50_1352812184610_9_2">
        <gml:validTime>

```

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```

    <gml:TimePeriod gml:id="ID_40_1377648348105_82">
      <gml:beginPosition>2012-10-18T00:00:00</gml:beginPosition>
      <gml:endPosition>2014-02-06T00:00:00</gml:endPosition>
    </gml:TimePeriod>
  </gml:validTime>
</adr:TimesheetExtension>
</aixm:extension>
</aixm:Timesheet>
</aixm:timeInterval>

```

2.2.5.2.15. TrafficVolumeActivation Object (ADR-E)

- (1) The time-based definition of when the TrafficVolume is active (see Timesheet Object).
- (2) Example:

```

<activation>
  <TrafficVolumeActivation id="ID_705_1423477842671_182">
    <timeInterval>
      <Timesheet id="ID_705_1423477842671_183">
        <timeReference>UTC</timeReference>
        <day>ANY</day>
        <startTime>06:00</startTime>
        <endTime>21:00</endTime>
        <extension>
          <TimesheetExtension id="ID_705_1423477842671_184">
            <validTime>
              <TimePeriod id="ID_705_1423477842671_185">
                <beginPosition>2014-05-29T00:00:00</beginPosition>
                <endPosition indeterminatePosition="unknown"/>
              </TimePeriod>
            </validTime>
          </TimesheetExtension>
        </extension>
      </Timesheet>
    </timeInterval>
  </TrafficVolumeActivation>
</activation>

```

2.2.5.3. Choice types

2.2.5.3.1. PointUsageReferenceChoice (ADR-E)

- (1) The PointUsageReferenceChoice provides the choice of a reference location linked to a PointUsage Object(ADR-E)
- (2) The reference location must be one of:
 - a) border: an AirspaceBorderCrossingObject that specifies the entered and exiting airspace
 - b) airspace: an Airspace
 - c) airportHeliport: an AirportHeliport
 - d) airportHeliportSet: an AirportHeliportSet

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2.2.5.4. Data types

2.2.5.4.1. CodeConditionalRouteType (ADR-E)

- (1) The following information is also available from Eurocontrol ATM Lexicon.
- (2) A Conditional Route may have more than one category, and those categories may change at specified times:
 - a) Category One: Permanently Plannable CDR.
CDR_1 routes are available for flight planning during times published in the relevant AIP.
 - b) Category Two: Non-Permanently Plannable CDR.
CDR_2 routes may be available for flight planning. Flights may only be planned on a CDR_2 in accordance with conditions published daily in the AUP.
 - c) Category Three - Not Plannable CDR.
CDR_3 routes are not available for flight planning; however, ATC Units may issue tactical clearances on such route segments.

2.2.5.4.2. CodePointUsageType (ADR-E)

- (1) This enumerator specifies the role of a PointUsage(ADR-E).
- (2) For the moment, only a limited list of the foreseen enumerator values will be effectively used in the B2B export of the CACD data.
 - a) EN_ROUTE: for potential future use
 - b) ENTRY: for potential future use (replacing SignificantPointInAirspace feature).
 - c) ENTRY_EXIT: for potential future use (replacing SignificantPointInAirspace feature).
 - d) EXIT: for potential future use (replacing SignificantPointInAirspace feature).
 - e) FRA_ENTRY: FRA entry point
 - f) FRA_EXIT: FRA exit point
 - g) FRA_INTERMEDIATE: FRA intermediate point
 - h) FRA_ARRIVAL: FRA arrival point
 - i) FRA_DEPARTURE: FRA departure point
 - j) LAND_FALL: for potential future use
 - k) MILITARY: for potential future use
 - l) OCEANIC_ENTRY_EXIT: for potential future use
 - m) TERMINAL: for potential future use

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- n) VFR: for potential future use
- o) OTHER: standard extension mechanism value

2.2.5.4.3. CodeProcessingIndicatorType (ADR-E)

- (1) This enumerator facilitates the detection of the 'kind' of FlightRestriction.
- (2) Instead of parsing the whole FlightCondition to find out the 'kind' of FlightRestriction, the CodeProcessingIndicatorType puts you on the right track.
 - a) AD_CP: This is an Aerodrome DCT or Aerodrome Connecting Points FlightRestriction. This FlightRestriction corresponds to the FlightRestrictions in RAD Appendix 5.
 - b) FRA_DCT: FRA DCT FlightRestriction. The FlightCondition is either an Airspace or an AirspaceBorder.
 - c) FPR: Flight Profile FlightRestriction. These kind of FlightRestrictions reflect known agreements between ATCs to transfer flights between them (often formulated into "letters of agreement" (LOAs). They are used by NM to calculate a vertical flight profile which is compliant with these LOAs. They are not used to invalidate flight plans.
 - d) RAD_DCT: RAD DCT FlightRestriction. This kind of FlightRestriction defines direct flight limitations traversing or crossing the border of an Airspace.
 - e) TFR: Traffic Flow FlightRestriction. This the most commonly found FlightRestriction as defined in the RAD.
 - f) OTHER:__ADR__AD_FLIGHT_RULE: This is not really a FlightRestriction. It is about IFR/VFR rules that apply on an AirportHeliport. The information is cast into a fake FlightCondition to express the prohibition to depart from or arrive at AirportHeliports that are not equipped with the corresponding IFR hardware.
 - g) OTHER:__ADR__FLIGHT_PROPERTY_ON_TP: This is not really a FlightRestriction. It is about which kind or airplane effectively can use a Procedure.

2.2.5.5. Miscellania

2.2.5.5.1. gml:pos

- (1) A Latitude/Longitude is expressed using the WGE(WGS-84) datum. Latitude is provided first. Both latitude/longitude use a decimal notation instead of minutes/seconds.
- (2) In AIXM (because it is based on GML) the datum must be encoded in the srsName attribute as "urn:ogc:def:crs:EPSG::4326".
- (3) Example:

```
<gml:pos srsName="urn:ogc:def:crs:EPSG::4326">56.66833333333334 -10.0</gml:pos>
```

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This corresponds to 56°40'6"N, 10°W.

2.2.5.5.2. StandardLevel encoding

- (1) The StandardLevelColumns and StandardLevelTables are hardcoded in the Route domain.
- (2) When defining the RouteAvailability, the levels (AirspaceLayer) will refer to a discreteLevelSeries, which is a reference to a StandardLevelColumn Feature.
- (3) The CodeLevelSeriesType is extended with the value OTHER: __ADR__ UNIDIRECTIONAL to express that both EVEN and ODD can be used because the RouteSegment is unidirectional.
- (4) In total 10 StandardLevelColumns are defined to express the possible combinations of CodeLevelSeriesType and StandardColumnTable.
- (5) The following table shows the possible combinations:

	IFR	IFR_RVSM	VFR	VFR_RVSM
EVEN	X	X	X	X
ODD	X	X	X	X
UNIDIRECTIONAL	X	X	-	-

Table 2.6. Possible combinations of CodeLevelSeriesType and StandardColumnTable

- (6) Example (definition of ODD/VFR combination):

```
<aixm:StandardLevelColumn gml:id="ID_172_1385510754499_70">
  <gml:identifier codeSpace="urn:uuid:">SLC_ODD_VFR</gml:identifier>
  <aixm:timeSlice>
    <aixm:StandardLevelColumnTimeSlice gml:id="ID_172_1385510754499_71">
      <gml:validTime>
        <gml:TimePeriod gml:id="ID_172_1385510754499_72">
          <gml:beginPosition>1970-01-01T00:00:00</gml:beginPosition>
          <gml:endPosition indeterminatePosition="unknown"/>
        </gml:TimePeriod>
      </gml:validTime>
      <aixm:interpretation>BASELINE</aixm:interpretation>
      <aixm:featureLifetime>
        <gml:TimePeriod gml:id="ID_172_1385510754499_73">
          <gml:beginPosition>1970-01-01T00:00:00</gml:beginPosition>
          <gml:endPosition indeterminatePosition="unknown"/>
        </gml:TimePeriod>
      </aixm:featureLifetime>
      <aixm:series>ODD</aixm:series>
      <aixm:levelTable xlink:href="urn:uuid:SLT_VFR"/>
    </aixm:StandardLevelColumnTimeSlice>
  </aixm:timeSlice>
</aixm:StandardLevelColumn>
```


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Chapter 3. Port Types

3.1. AirspaceAvailabilityService Port Type

3.1.1. Overview

3.1.1.1. Intro

- (1) The AirspaceAvailabilityService provides services for both querying and modifying the airspace availability. These services are of two kinds:

- a) Management and sharing of AUP
- b) Access to EAUP

3.1.1.2. AUP Management Details

- (1) The management and sharing of AUP cannot be understood outside of the existing operational ASM process, nor the CIAM.
- (2) "Airspace Use Plan", contains the decision of an AMC on the temporary allocation of the airspace within its jurisdiction for a specific time period.
- (3) The convention for operational users is to make a naming distinction between the first AUP of a chain or baseline AUP commonly referred as the "AUP" and the subsequent AUPs in a chain referred as the UUPs (Updated AUPs).
- (4) Due to the equivalence of data structures, in this document, the term AUP refers to both, unless otherwise stated.
- (5) The concept of "AUP chain" is defined as the sequence of AUPs for a given day and AMC. It is made of:
- a) The AUP baseline of the day
 - b) The ordered list of its subsequent versions (often called UUPs, but these are also AUPs)
- The following rules apply:
- a) Any AUP with a validity period comprised in the time span [6:00 day D, 6:00 day D+1 (the next day)] is a member of the AUP-Chain of day D
 - b) The validity period of the Baseline AUP is always: from 6:00 day D till 6:00 D+1
- (6) An AUP has a state at any point in time: DRAFT, READY or RELEASED:
- a) An AUP can be created/updated via NOP/B2B in state DRAFT or READY
 - b) Releasing an AUP is only permitted to the CADF
- The following rule applies:

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- a) AUPs become immutable (cannot be updated anymore) once in RELEASED state
- (7) The retrieval (unique) key of an AUP chain (AUPChain type) is the (day, AMC id) pair.
- (8) AUPSummary contains its unique identification, its validity period, its state and its last update timestamp, among others.
- (9) By definition, a "post-ops AUP chain" is an AUP chain of which the 06:00 AM end is in the past.
- (10) In this document, the phrase "CDR update" is synonym to the phrase "CDR opening/closure".
- (11) A NIL AUP is a Baseline AUP that does not contain CDR updates, nor RSA allocations and is explicitly flagged as such (AUPSummary.nilAUP set to true).
- (12) The requests of the AirspaceAvailabilityService for AUP are:
 - a) [AUPChainRetrievalRequest](#) / [AUPChainRetrievalReply](#)
 - b) [AUPRetrievalRequest](#) / [AUPRetrievalReply](#)
 - c) [AUPCreationRequest](#) / [AUPCreationReply](#)
 - d) [AUPUpdateRequest](#) / [AUPUpdateReply](#)
 - e) [AUPValidationRequest](#) / [AUPValidationReply](#)
 - f) [AUPDeletionRequest](#) / [AUPDeletionReply](#)
 - g) [AUPRSAAllocationExpansionRequest](#) / [AUPRSAAllocationExpansionReply](#)
 - h) [AUPServiceConfigurationRequest](#) / [AUPServiceConfigurationReply](#)
- (13) Airspace data:
 - a) The AUPs and EAUPs published by and retrieved from NM are encoded using the AIXM 5.1 exchange model (see above).
 - b) The convention used for Feature identification and referencing within the AirspaceAvailability service differs from the one used for the AirspaceStructure service in the following:
 - i) it makes use of a SNAPSHOT timeslice for features identification;
 - ii) it uses the gml:id attribute for feature referencing.
 - c) The actual CDR opening/closures and RSA activations are expressed as a TEMPDELTA timeslice.
 - d) Even if the Airspace data used by the client to prepare the AUP has a "local" origin, the final AUP sent to the NM must use the UUIDs published by NM otherwise the AUP will be rejected; therefore local and NM data must be correlated by the client
 - e) The UUIDs sent to NM must belong to the corresponding AIRAC data published by NM.

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- (14) Cross-AIRAC AUP:
- a) An AUP validity period (from D 06:00 to D+1 06:00) may cross AIRAC boundaries
 - b) When provided to NM a CDR update or RSA allocation crossing the AIRAC switch (i.e. midnight of the last day of the running AIRAC), must be split in two:
 - i) A CDR update/RSA allocation ending at midnight
 - ii) and a CDR update/RSA allocation beginning at midnight
The "pre-midnight" part must comply with the running AIRAC data definition; the "post-midnight" part must comply with the next AIRAC data definition
- (15) AUP Availability Period:
- a) All of the AUP requests (including the AUPChainRetrieval) must be performed within the AUP Availability Period. The AUP Availability Period is defined as the on-going AIRAC, plus, once day 23 of the on-going AIRAC has been reached, and not before, the next AIRAC.
- (16) Typical sequence of events:
- a) The AUP is prepared in advance by the client (AMC) with his own application
 - b) Once the time to coordinate comes the AUP must have been created -in NM- in DRAFT status
 - c) The AUP can be updated while in DRAFT status.
 - d) Once the AUP is considered ready for publication the AMC updates to READY.
 - i) If the AUP is a Baseline AUP: once the AUP is in READY the AUP can be updated (in READY or even back to DRAFT) before a cut-off time (cut-off time COT2)
 - ii) If the AUP is not a Baseline AUP (i.e. UUP): the AUP cannot be updated once in READY
 - e) Once all AUPs are in READY status, which is enforced by the CADF (cut-off time COT1), CADF takes the responsibility for the AUP from then onwards. In coordination with the clients, CADF modifies AUPs that still require manual intervention and finally publishes all AUPs. Upon publication, the AUP status is changed to RELEASED.
 - f) Once RELEASED, the AUPs become immutable and the EAUP is published
- (17) The operational meaning of the AUP status must be respected.
- (18) The following diagram depicts the possible state transitions.

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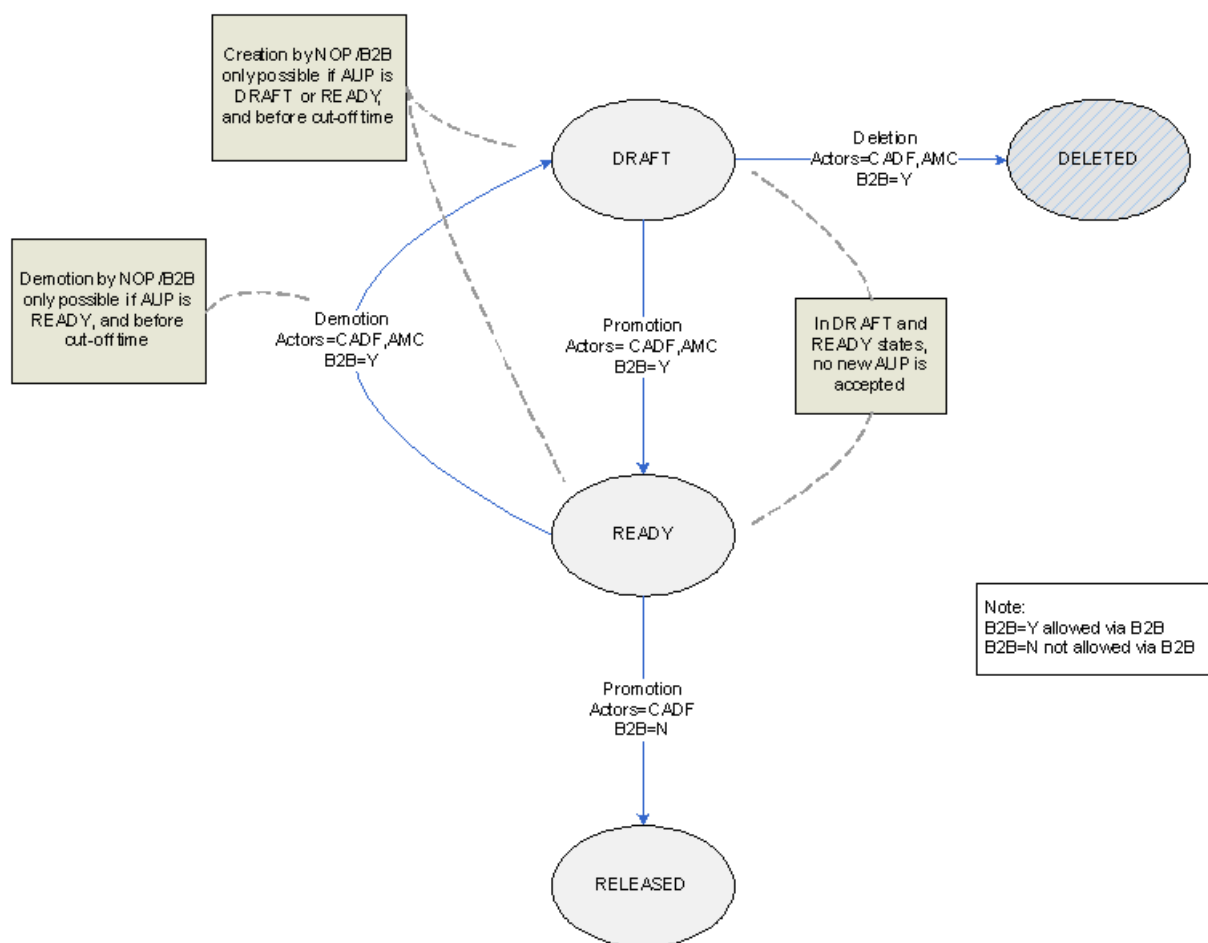


Figure 3.1. AUP Status Transitions

- (19) Attention: A NIL AUP MUST be created directly in status READY. This is a legacy constraint.
- (20) Status transitions have operational cut-off times agreed in advance between the AMC and the CADF in conformance with the operational procedures.
- (21) Creation of an AUP in DRAFT or READY by an AMC is only possible before a cut-off time (COT1), after the cut-off time no creation/modification of AUP is allowed and it is up to the CADF to create at the NM the AUP in coordination with the AMC.
- (22) Update of an AUP is also only possible before a cut-off time, but different cut-off times apply depending on the transition and the AUP:
 - a) If the status transition is from DRAFT to DRAFT COT1 applies. (same for Deletion when the AUP to be deleted is DRAFT)
 - b) If the status transition is from DRAFT to READY it must be done before COT1 too
 - c) If the status transition is from READY to READY or READY to DRAFT (same for Deletion when the AUP we want to delete is in READY):

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- i) For Baseline AUP, the cut-off time (COT2) is not just operational but technical too; it is configured in the NM system in accordance to the latest operational procedures (therefore to be communicated by the CADF to the AMC). The NM system prevents any update after such a cut-off time. In case modifications are required after such a cut-off time the AMC coordinates with the CADF, which updates at the NM premises.
 - ii) For non-baseline AUP: not applicable, see below.
 - d) For non-baseline AUP (i.e. UUP), once an AUP is READY, it cannot be modified by the AMC. Therefore it is most convenient for the AMC to work with the DRAFT and only update to READY when sure that the content is finalised (which is the meaning of READY).
- (23) Note that as of today COT1 > COT2, which means that there is a period between COT1 and COT2 in which a Baseline AUP can be updated from DRAFT to READY, but if the AUP is already in READY it cannot be modified.
- (24) Remark: No specific values for COT1 and COT2 are given as they are expected to change with the introduction of the rolling UUP process.

3.1.1.3. EAUP Access Details

- (1) An EAUP is made of the simplified concatenated merged CDR updates and RSA allocations of all RELEASED AUPs for all AMCs.
- (2) In a nutshell:
 - a) The "EAUP chain" is defined as the sequence of EAUPs for a given day. It is made of:
 - i) The EAUP baseline of the day
 - ii) The ordered list of its subsequent versions (often called EUUPs, but these are also EAUPs)
 - b) All EAUPs of an EAUP chain are released EAUPs
 - c) EAUPs are immutable, i.e. they do not change after release
 - d) The retrieval (unique) key of an EAUP chain (EAUPChain type) is its day
 - e) EAUPChain is made of its date and a list of EAUP summaries (EAUPSummary type)
 - f) EAUPSummary contains its unique identification, its release timestamp and its validity period
 - g) The service allows for querying the contents of an EAUP (CDR openings and closures, and RSA allocations)
- (3) The requests of the AirspaceAvailabilityService for EAUP are:
 - a) [EAUPChainRetrievalRequest](#) / [EAUPChainRetrievalReply](#)

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- b) [EAUPCDRRequest](#) / [EAUPCDRReply](#)
- c) [EAUPCDRCompareRequest](#) / [EAUPCDRCompareReply](#)
- d) [EAUPRSARRequest](#) / [EAUPRSARReply](#)
- e) [EAUPRSACompareRequest](#) / [EAUPRSACompareReply](#)

- (4) The replies in the EAUP related services are self-contained, i.e. all the Features are defined in the resulting ADRMessageType.
- (5) As an example I will dig into the service retrieveEAUPCDRs.
- (6) Example of the call:

```
<?xml version="1.0" encoding="UTF-8"?>
<airspace:EAUPCDRRequest
  xmlns:airspace="eurocontrol/cfmu/b2b/AirspaceServices">
  <endUserId>joe</endUserId>
  <sendTime>2012-09-10 06:53:20</sendTime>
  <eaupId>
    <chainDate>2012-09-19</chainDate>
    <sequenceNumber>1</sequenceNumber>
  </eaupId>
</airspace:EAUPCDRRequest>
```

- (7) The reply has the following skeleton:

```
<?xml version="1.0" encoding="UTF-8"?>
<airspace:EAUPCDRReply
  xmlns:airspace="eurocontrol/cfmu/b2b/AirspaceServices"
  xmlns:common="eurocontrol/cfmu/b2b/CommonServices"
  xmlns:adr="http://www.aixm.aero/schema/5.1/extensions/ADR"
  xmlns:gml="http://www.opengis.net/gml/3.2"
  xmlns:aixmmmsg="http://www.aixm.aero/schema/5.1/message"
  xmlns:aixm="http://www.aixm.aero/schema/5.1"
  xmlns:xlink="http://www.w3.org/1999/xlink">
  <requestReceptionTime>2012-09-19 15:05:55</requestReceptionTime>
  <requestId>B2B_CUR:2487</requestId>
  <sendTime>2012-09-19 15:05:55</sendTime>
  <status>OK</status>
  <data>
    <cdrOpeningsClosures gml:id="ID_991_1348067155492_96">
      <aixmmmsg:hasMember>
        <!-- not expanded here -->
      </aixmmmsg:hasMember>
      <aixmmmsg:hasMember>
        <!-- not expanded here -->
      </aixmmmsg:hasMember>
    </cdrOpeningsClosures>
  </data>
</airspace:EAUPCDRReply>
```

- (8) The content is a list of RouteSegment openings and closures. The RouteSegments are not identified by a UUID. Instead they are identified by feature identifying properties in a SNAPSHOT RouteSegmentTimeSlice.
- (9) The RouteSegment uses the following identifying properties:

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- a) start
- b) routeFormed
- c) end

(10) Example of a RouteSegmentTimeSlice SNAPSHOT:

```
<aixm:timeSlice>
  <aixm:RouteSegmentTimeSlice gml:id="ID_991_1348067155492_97">
    <gml:validTime>
      <gml:TimeInstant gml:id="ID_991_1348067155492_98">
        <gml:timePosition>2012-09-19T15:05:55</gml:timePosition>
      </gml:TimeInstant>
    </gml:validTime>
    <aixm:interpretation>SNAPSHOT</aixm:interpretation>
    <aixm:start>
      <aixm:EnRouteSegmentPoint gml:id="ID_991_1348067155492_99">
        <aixm:pointChoice_fixDesignatedPoint
          xlink:href="urn:uuid:#xpointer(id('ID_991_1348067155492_4'))"/>
        </aixm:pointChoice_fixDesignatedPoint>
      </aixm:EnRouteSegmentPoint>
    </aixm:start>
    <aixm:routeFormed
      xlink:href="urn:uuid:#xpointer(id('ID_991_1348067155492_1'))"/>
    </aixm:routeFormed>
    <aixm:end>
      <aixm:EnRouteSegmentPoint gml:id="ID_991_1348067155492_100">
        <aixm:pointChoice_fixDesignatedPoint
          xlink:href="urn:uuid:#xpointer(id('ID_991_1348067155492_5'))"/>
        </aixm:pointChoice_fixDesignatedPoint>
      </aixm:EnRouteSegmentPoint>
    </aixm:end>
  </aixm:RouteSegmentTimeSlice>
</aixm:timeSlice>
```

- (11) Notice that each feature identifying property uses an xpointer reference to a gml:id.
- (12) In the above example the start of the RouteSegment refers to gml:id="ID_991_1348067155492_4". Therefore further in the cdrOpeningsClosure you will find:

```
<aixmmsg:hasMember>
  <aixm:DesignatedPoint gml:id="ID_991_1348067155492_4">
    <aixm:timeSlice>
      <aixm:DesignatedPointTimeSlice gml:id="ID_991_1348067155492_488">
        <gml:validTime>
          <gml:TimeInstant gml:id="ID_991_1348067155492_489">
            <gml:timePosition>2012-09-19T15:05:55</gml:timePosition>
          </gml:TimeInstant>
        </gml:validTime>
        <aixm:interpretation>SNAPSHOT</aixm:interpretation>
        <aixm:designator>REMBA</aixm:designator>
        <aixm:type>ICAO</aixm:type>
      </aixm:DesignatedPointTimeSlice>
    </aixm:timeSlice>
  </aixm:DesignatedPoint>
</aixmmsg:hasMember>
```

- (13) The DesignatedPoint feature is in this case identified using DesignatedPointTimeSlice SNAPSHOT. More in particular the designator brings the answer as to which point it concerned.
- (14) Similarly we find for the referred Route:

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```

<aixmmsg:hasMember>
  <aixm:Route gml:id="ID_991_1348067155492_1">
    <aixm:timeSlice>
      <aixm:RouteTimeSlice gml:id="ID_991_1348067155492_404">
        <gml:validTime>
          <gml:TimeInstant gml:id="ID_991_1348067155492_405">
            <gml:timePosition>2012-09-19T15:05:55</gml:timePosition>
          </gml:TimeInstant>
        </gml:validTime>
        <aixm:interpretation>SNAPSHOT</aixm:interpretation>
        <aixm:designatorSecondLetter>M</aixm:designatorSecondLetter>
        <aixm:designatorNumber>624</aixm:designatorNumber>
      </aixm:RouteTimeSlice>
    </aixm:timeSlice>
  </aixm:Route>
</aixmmsg:hasMember>

```

- (15) So the RouteTimeSlice SNAPSHOT exposes the designator (through designator[Prefix|Second-Letter|Number]).
- (16) In order to define the opening or closure, a RouteSegmentTimeSlice TEMPDELTA is needed:

```

<aixm:RouteSegmentTimeSlice gml:id="ID_991_1348067155492_101">
  <gml:validTime>
    <gml:TimePeriod gml:id="ID_991_1348067155492_102">
      <gml:beginPosition>2012-09-19T09:45:00</gml:beginPosition>
      <gml:endPosition>2012-09-19T12:15:00</gml:endPosition>
    </gml:TimePeriod>
  </gml:validTime>
  <aixm:interpretation>TEMPDELTA</aixm:interpretation>
  <aixm:availability>
    <aixm:RouteAvailability gml:id="ID_991_1348067155492_103">
      <aixm:levels>
        <aixm:AirspaceLayer gml:id="ID_991_1348067155492_104">
          <aixm:upperLimit>175</aixm:upperLimit>
          <aixm:upperLimitReference>MSL</aixm:upperLimitReference>
          <aixm:lowerLimit>145</aixm:lowerLimit>
          <aixm:lowerLimitReference>MSL</aixm:lowerLimitReference>
        </aixm:AirspaceLayer>
      </aixm:levels>
      <aixm:extension>
        <adr:RouteAvailabilityExtension gml:id="ID_991_1348067155492_105">
          <adr:conditionalRouteType>CDR_1</adr:conditionalRouteType>
          <adr:hostAirspace
            xlink:href="urn:uuid:#xpointer(id('ID_991_1348067155492_2'))"/>
          </adr:RouteAvailabilityExtension>
        </aixm:extension>
      </aixm:RouteAvailability>
    </aixm:availability>
  </aixm:RouteSegmentTimeSlice>

```

- (17) This xml snippet expresses that the RouteSegment will be (CDR_1) closed between 2012-09-19 09:45 and 2012-09-19 12:15 between flightlevels F145-F175. The hostAirspace is the Airspace in which the RouteSegment is located.
- (18) The Airspace is also defined further in the file by an AirspaceTimeSlice SNAPSHOT:

```

<aixm:Airspace gml:id="ID_991_1348067155492_2">
  <aixm:timeSlice>
    <aixm:AirspaceTimeSlice gml:id="ID_991_1348067155492_510">

```


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```

<gml:validTime>
  <gml:TimeInstant gml:id="ID_991_1348067155492_511">
    <gml:timePosition>2012-09-19T15:05:55</gml:timePosition>
  </gml:TimeInstant>
</gml:validTime>
<aixm:interpretation>SNAPSHOT</aixm:interpretation>
<aixm:type>FIR</aixm:type>
<aixm:designator>EBBU</aixm:designator>
<aixm:designatorICA0>YES</aixm:designatorICA0>
</aixm:AirspaceTimeSlice>
</aixm:timeSlice>
</aixm:Airspace>

```

3.1.2. AUP Chain Retrieval

3.1.2.1. SOAP

- (1) The associated SOAP operation is:

```

AUPChainRetrievalReply retrieveAUPChain(
  AUPChainRetrievalRequest request
)

```

3.1.2.2. AUPChainRetrievalRequest

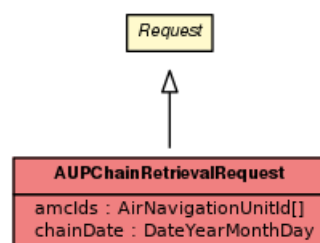


Figure 3.2. AUPChainRetrievalRequest Class Diagram

- (1) Request to retrieve one or more AUP chains from its date (i.e. from the release date of its AUP baseline) and one or more owning AMCs.
- (2) Can be performed at any time (provided the service is available).
- (3) Client applications must take into account that post-ops AUP chains are immutable: they will not gain or lose AUPs, and the AUPs they contain will not be modified anymore. Consequently, NM requires the client applications to avoid retrieving the same post-ops AUP chains repeatedly.
- (4) Regarding mutable AUP chains (i.e. tactical and pre-tactical), NM requires client applications not to poll the service with high frequency, i.e. certainly not more than every minute.
- (5) Inherits from: [Request](#)
- (6) Attributes:

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- a) **[AirNavigationUnitId\[\] amcIds](#)** (*Optional*)
The ANU ids of the AMCs of which the AUP chain is requested. Default is all.
Constraint: Size must be comprised between 0 and ∞ .
- b) **[DateYearMonthDay chainDate](#)** (*Mandatory*)
The date of the requested AUP chain.

3.1.2.3. AUPChainRetrievalReply

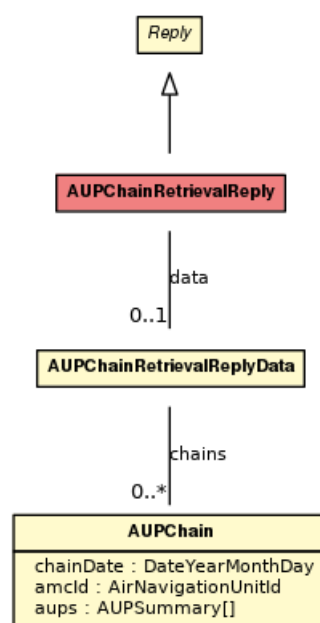


Figure 3.3. AUPChainRetrievalReply Class Diagram

- (1) Reply returned in response to [AUPChainRetrievalRequest](#)
- (2) Inherits from: [Reply](#)
- (3) Attributes:
- a) **[AUPChain\[\] chains](#)** (*Mandatory*)
The retrieved AUP chains. The array can be empty.
REMARK: We return OBJECT_NOT_FOUND if the AUPChain has never been created in the NM system, being for the AUPChain of today, or in 3 months. Note that the situation is slightly different for a "past" AUPChain: it is immutable (won't change anymore) so that if at the end of the day it contains no AUP we know for sure that it is empty and the NM system creates it empty. We then return an AUPChain with OK status and an empty AUP/UUP list.
Constraint: Size must be comprised between 0 and ∞ .

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3.1.3. AUP Retrieval

3.1.3.1. SOAP

- (1) The associated SOAP operation is:

```
AUPRetrievalReply retrieveAUP(
  AUPRetrievalRequest request
)
```

3.1.3.2. AUPRetrievalRequest

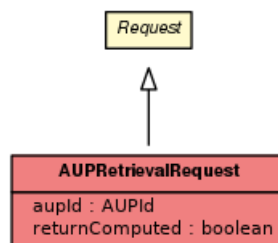


Figure 3.4. AUPRetrievalRequest Class Diagram

- (1) Request to retrieve an AUP from its unique id.
- (2) Can be performed at any time (provided the service is available).
- (3) Client applications must take into account that RELEASED AUPs are immutable: they will not be modified anymore. Consequently, NM requires the client applications to avoid retrieving the same RELEASED AUPs repeatedly.
- (4) Regarding non-RELEASED AUPs, NM requires client applications not to poll the service with high frequency, i.e. certainly not more than every 10 minutes.
- (5) Inherits from: [Request](#)
- (6) Attributes:
 - a) **AUPId** **aupId** (Mandatory)
Unique id of the requested AUP: found in AUPSummary.aupId.
 - b) **boolean** **returnComputed** (Optional)
Specifies if computed AUP entries are to be returned in addition to manual AUP entries, which are always returned as part of an AUP. False by default.

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3.1.3.3. AUPRetrievalReply

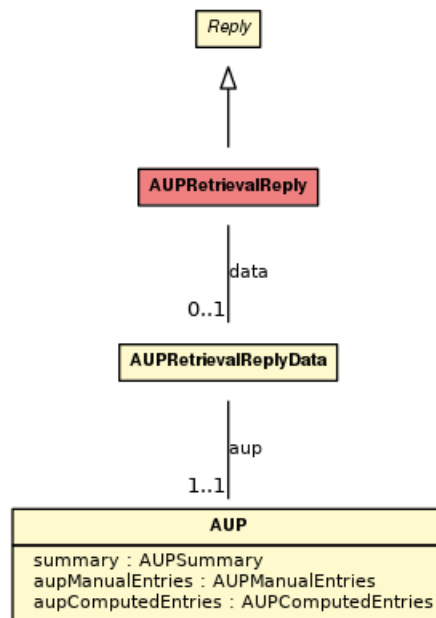


Figure 3.5. AUPRetrievalReply Class Diagram

- (1) Reply returned in response to [AUPRetrievalRequest](#).
- (2) Inherits from: [Reply](#)
- (3) Attributes:
 - a) **AUP aup** (Mandatory)
The retrieved AUP. If returnComputed is true in the request, both manual and computed AUP entries are returned.

3.1.4. AUP Creation

3.1.4.1. SOAP

- (1) The associated SOAP operation is:

```

AUPCreationReply createAUP(
    AUPCreationRequest request
)
  
```

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3.1.4.2. AUPCreationRequest

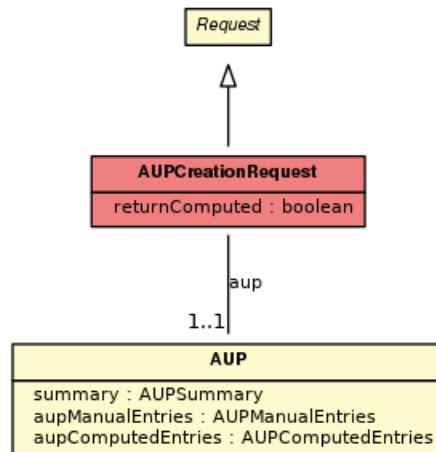


Figure 3.6. *AUPCreationRequest* Class Diagram

- (1) Request to validate a new AUP and, on success, to create it.
- (2) Via NOP/B2B, an AUP can only be created by an AMC, and is thereby owned by the AMC: the AUP can then be updated by a user (certificate) associated to that AMC only.
- (3) This service is constrained in terms of timing/process. See [AUP Status Transitions](#).
- (4) Inherits from: [Request](#)
- (5) Attributes:
 - a) **AUP aup** (*Mandatory*)
An AUP containing manual AUP entries only, i.e. its `aupComputedEntries` must be null.
 - b) **boolean returnComputed** (*Optional*)
Specifies if computed AUP entries are to be returned in addition to manual AUP entries, which are always returned as part of an AUP. False by default.

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3.1.4.3. AUPCreationReply

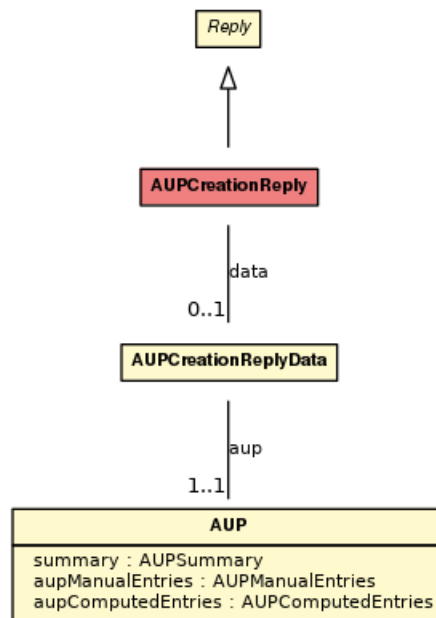


Figure 3.7. AUPCreationReply Class Diagram

- (1) Reply returned in response to [AUPCreationRequest](#).
- (2) Inherits from: [Reply](#)
- (3) Attributes:
 - a) **AUP aup** (Mandatory)
The created AUP. If returnComputed is true in the request, both manual and computed AUP entries are returned.

3.1.5. AUP Update

3.1.5.1. SOAP

- (1) The associated SOAP operation is:

```

AUPUpdateReply updateAUP(
    AUPUpdateRequest request
)
  
```

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3.1.5.2. AUPUpdateRequest

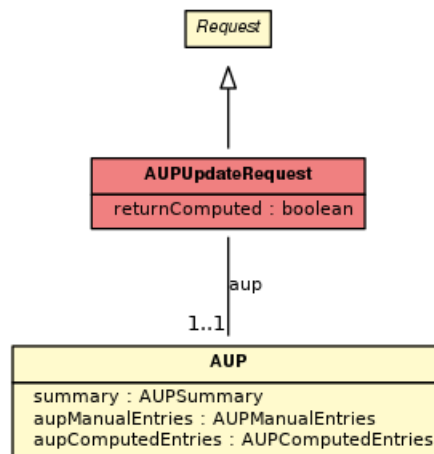


Figure 3.8. AUPUpdateRequest Class Diagram

- (1) Request to validate a new AUP and, on success, to update it.
- (2) Via NOP/B2B, an AUP can only be updated by its owning AMC.
- (3) This service is constrained in terms of timing/process. See [AUP Status Transitions](#)
- (4) Note that if the intention of the client is simply to update the status of a previously created AUP, the original AUP must be provided again.
- (5) AUPSummary.lastUpdate serves in the concurrency control mechanism: in order to overwrite a previously saved AUP in DRAFT or READY state, the provided AUPSummary.lastUpdate must match the AUPSummary.lastUpdate of the AUP version being updated. Hence, when updating an AUP, the caller must pass the lastUpdate of the previous AUP version that he knows.
- (6) Inherits from: [Request](#)
- (7) Attributes:
 - a) **AUP aup** (*Mandatory*)
The updated AUP, containing manual AUP entries only, i.e. its aupComputedEntries must be null.
 - b) **boolean returnComputed** (*Optional*)
Specifies if computed AUP entries are to be returned in addition to manual AUP entries, which are always returned as part of an AUP. False by default.

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3.1.5.3. APUUpdateReply

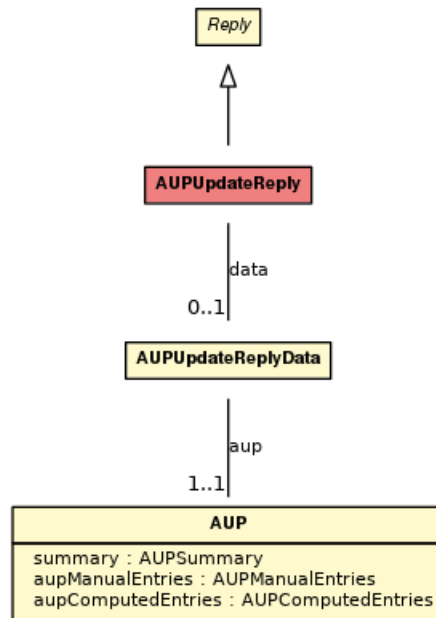


Figure 3.9. APUUpdateReply Class Diagram

- (1) Reply returned in response to [APUUpdateRequest](#).
- (2) Inherits from: [Reply](#)
- (3) Attributes:
 - a) **AUP aup** (Mandatory)
In case of update success, the saved AUP. If returnComputed is true in the request, both manual and computed AUP entries are returned.

3.1.6. AUP Validation

3.1.6.1. SOAP

- (1) The associated SOAP operation is:

```

AUPValidationReply validateAUP(
    AUPValidationRequest request
)
  
```


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3.1.6.2. AUPValidationRequest

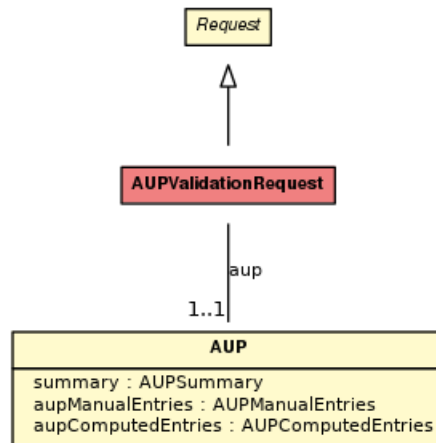


Figure 3.10. AUPValidationRequest Class Diagram

- (1) Request to validate an AUP.
- (2) Can be performed at any time (provided the service is available).
- (3) No transaction takes place: the AUP is neither created or updated. The validation service is meant for the customer to validate an AUP at any time, e.g. to work on an AUP prior to persisting it within the NM system.
- (4) Inherits from: [Request](#)
- (5) Attributes:
 - a) [AUP](#) **aup** (Mandatory)
The AUP to be validated, containing manual AUP entries only, i.e. its **aupComputedEntries** must be null.

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3.1.6.3. AUPValidationReply

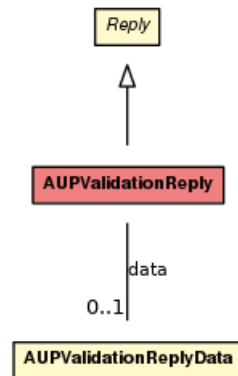


Figure 3.11. AUPValidationReply Class Diagram

- (1) Reply returned in response to [AUPValidationRequest](#).
- (2) Inherits from: [Reply](#)

3.1.7. AUP Deletion

3.1.7.1. SOAP

- (1) The associated SOAP operation is:

```

AUPDeletionReply deleteAUP(
    AUPDeletionRequest request
)
  
```

3.1.7.2. AUPDeletionRequest

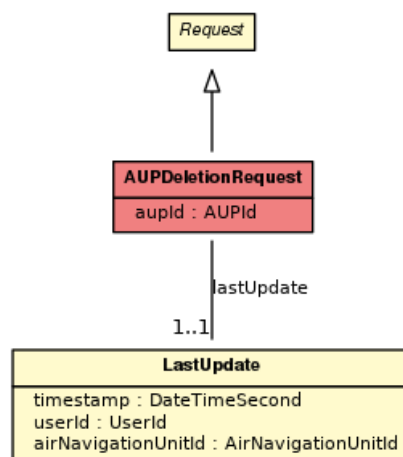


Figure 3.12. AUPDeletionRequest Class Diagram

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Document Title: NM 23.0.0 - NOP/B2B Reference Manuals - Air-spaceServices	Document Reference: B2B/23.0.0/Airspace

- (1) Request to delete an existing AUP.
- (2) Via NOP/B2B, an AUP can only be deleted by the AMC owning the AUP.
- (3) Deleting an AUP can only be done when updating is possible (See [AUP Status Transitions](#)).
- (4) Inherits from: [Request](#)
- (5) Attributes:
 - a) **AUPId** **aupId** (Mandatory)
Id of the AUP to be deleted.
 - b) **LastUpdate** **lastUpdate** (Mandatory)
See AUPUpdateRequest.lastUpdate.

3.1.7.3. AUPDeletionReply

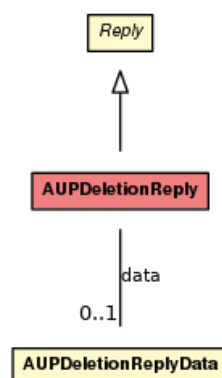


Figure 3.13. AUPDeletionReply Class Diagram

- (1) Reply returned in response to [AUPDeletionRequest](#).
- (2) Inherits from: [Reply](#)

3.1.8. AUP RSA Allocation Expansion

3.1.8.1. SOAP

- (1) The associated SOAP operation is:

```

AUPRSAAllocationExpansionReply expandRSAAllocations(
    AUPRSAAllocationExpansionRequest request
)
  
```

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3.1.8.2. AUPRSAAllocationExpansionRequest

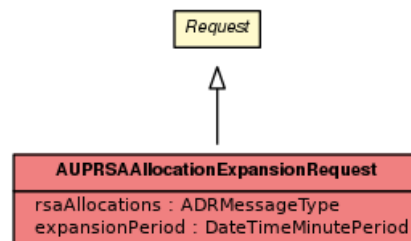


Figure 3.14. AUPRSAAllocationExpansionRequest Class Diagram

- (1) Request to obtain the following expansion.
- (2) Can be performed at any time (provided the service is available).
- (3) The expansion algorithm or simply "expansion" computes a list of CDR opening/closures based on:
- (4)
 - a) A provided list of RSA allocations, and
 - b) The pre-defined RSA allocations as stored in NM, and
 - c) The pre-defined relationships between RSA and CDRs (is-nearby, is-not-affected, etc) as stored in NM
 - d) A period for which the calculation on the affected routes will done
- (5) The output list of CDR openings/closures is labelled implicit to distinguish it from CDR openings and closures managed by the customer.
- (6) This request does not imply any update transaction within the NM system.
- (7) It is up to the client to extract from the returned CDR updates those of interest to him, and include those in the AUP to be created/updated.
- (8) Remark: CHMI users can select the computed CDR updates of interest while creating an AUP. This results in the automatic inclusion of the implicitCDRs CDR updates in the AUP upon saving. The implicitCDRs list of CDR updates is readable by B2B users per AUP. However, B2B users will never generate an AUP with a separate list of implicitCDRs, i.e. all CDR updates in an AUP from a B2B user are always considered explicit.
- (9) Inherits from: [Request](#)
- (10) Attributes:
 - a) [ADRMessageType](#) **rsaAllocations** (Optional)
List of explicit RSA allocations input to the expansion algorithm.

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- b) **[DateTimeMinutePeriod](#) expansionPeriod** (Mandatory)

Period of time input to the expansion algorithm.

Constraint: See [INVALID_EXPANSION_PERIOD](#)

- (11) Constraint:

a)

Name	INVALID_EXPANSION_PERIOD
Attribute	expansionPeriod
Description	Period must be greater or equal to 1 second.

3.1.8.3. AUPRSAAllocationExpansionReply

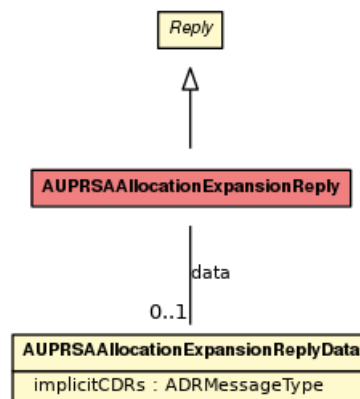


Figure 3.15. AUPRSAAllocationExpansionReply Class Diagram

- (1) Reply returned in response to [AUPRSAAllocationExpansionRequest](#).
- (2) Inherits from: [Reply](#)
- (3) Attributes:
- a) **[ADRMessageType](#) implicitCDRs** (Optional)
The list of implicit CDRs computed by applying the expansion algorithm.

3.1.9. AUP Service Configuration

3.1.9.1. SOAP

- (1) The associated SOAP operation is:

```

AUPServiceConfigurationReply getAUPServiceConfiguration(
    AUPServiceConfigurationRequest request
)
  
```

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3.1.9.2. AUPServiceConfigurationRequest

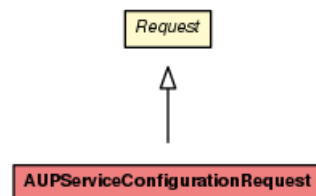


Figure 3.16. AUPServiceConfigurationRequest Class Diagram

- (1) Request to obtain the dynamic part of the AUP service configuration.
- (2) Can be performed at any time (provided the service is available).
- (3) The AUP service configuration data is provided a long time prior to its applicability, hence NM requires the client applications not to retrieve it with high frequency, certainly not more than once every 10 minutes.
- (4) Inherits from: [Request](#)

3.1.9.3. AUPServiceConfigurationReply

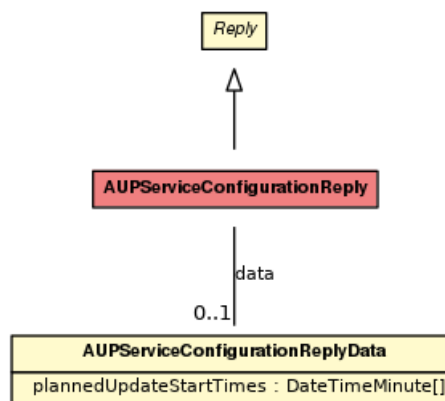


Figure 3.17. AUPServiceConfigurationReply Class Diagram

- (1) Reply returned in response to [AUPServiceConfigurationRequest](#).
- (2) Inherits from: [Reply](#)
- (3) Attributes:
 - a) **DateTimeMinute[] plannedUpdateStartTimes** (Mandatory)
Next planned update (UUP) start times. At the moment, these are possibly:
 - i) One planned update start time for the current AUP chain

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- ii) One planned update start time for the next AUP chain
Constraint: Size must be comprised between 0 and ∞ .

3.1.10. EAUP Chain Retrieval

3.1.10.1. SOAP

- (1) The associated SOAP operation is:

```
EAUPChainRetrievalReply retrieveEAUPChain(
    EAUPChainRetrievalRequest request
)
```

3.1.10.2. EAUPChainRetrievalRequest

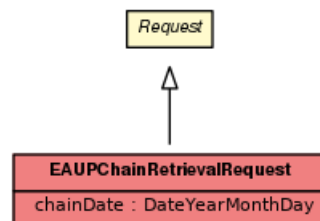


Figure 3.18. EAUPChainRetrievalRequest Class Diagram

- (1) Request to retrieve an EAUP chain from its date, i.e. from the release date of its EAUP baseline.
- (2) Customers must take into account that post-ops (i.e. post-tactical) released EAUP chains are immutable: they will not gain or lose EAUPs, and the EAUPs they contain will not be modified anymore. Consequently, NM requires its customers to undertake their best effort to avoid repeatedly retrieving the same post-ops EAUP chain.
- (3) Given that some hours always elapse between two successive EAUP releases, NM requires its customers not to poll the service with high frequency, i.e. certainly not more than every minute, a lower frequency being preferred.
- (4) Inherits from: [Request](#)
- (5) Attributes:
- a) **[DateYearMonthDay](#) chainDate** (Mandatory)
 The date of the requested EAUP chain.
Constraint: See [INVALID_CHAIN_DATE](#)
- (6) Constraint:

a)

Name	INVALID_CHAIN_DATE
Attribute	chainDate

DNM		EUROCONTROL
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Description	Valid chain dates are: <ul style="list-style-type: none"> i) D-1 (pre-tactical, tomorrow) ii) D (tactical, today) iii) [D + 1 (yesterday), D +15 months] (post-ops)
-------------	--

3.1.10.3. EAUPChainRetrievalReply

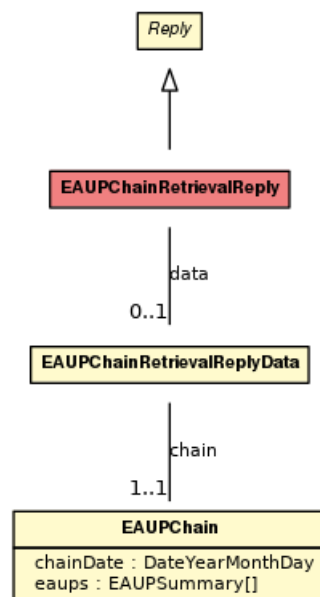


Figure 3.19. EAUPChainRetrievalReply Class Diagram

- (1) Reply returned in response to [EAUPChainRetrievalRequest](#).
- (2) The returned EAUPChain contains EAUP summaries, each containing among others the EAUP identification to be used subsequently to retrieve a complete EAUP or to query its contents.
- (3) Inherits from: [Reply](#)
- (4) Attributes:
 - a) [EAUPChain](#) **chain** (Mandatory)
The retrieved EAUP chain.

3.1.11. EAUP CDR Retrieval

3.1.11.1. SOAP

- (1) The associated SOAP operation is:

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```
EAUPCDRReply retrieveEAUPCDRs(
    EAUPCDRRequest request
)
```

3.1.11.2. EAUPCDRRequest

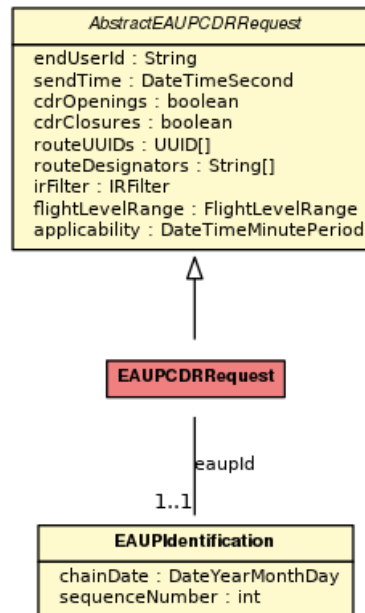


Figure 3.20. EAUPCDRRequest Class Diagram

- (1) Used to retrieve the CDR openings and/or closures within a given EAUP, while possibly applying a filter on the returned result set, as described in [AbstractEAUPCDRRequest](#), from which this request inherits.
- (2) The queried EAUP is identified using the [EAUPIdentification](#) from the [EAUPSummary](#) returned as part of an [EAUPChain](#).
- (3) Inherits from: [AbstractEAUPCDRRequest](#)
- (4) Attributes:
 - a) [EAUPIdentification](#) **eaupId** (Mandatory)
The identification of the EAUP, extracted (and left unchanged) from an [EAUPSummary](#). If no other attribute is specified in this request, all the CDR openings and closures of the EAUP are returned. Mandatory.

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3.1.11.3. EAUPCDRReply

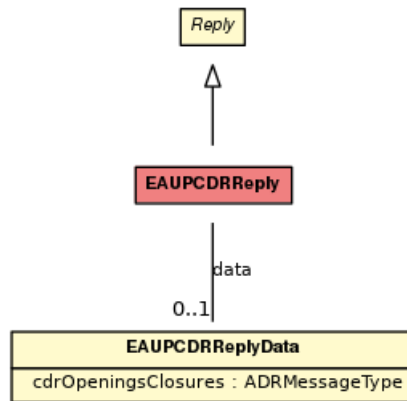


Figure 3.21. EAUPCDRReply Class Diagram

- (1) Reply returned in response to [EAUPCDRRequest](#).
- (2) Inherits from: [Reply](#)
- (3) Attributes:
 - a) [ADVERTISEMENTType](#) **cdrOpeningsClosures** (Optional)
The list of CDR openings and closures matching the request. Empty if no CDR opening/closure matches the request.

3.1.12. EAUP CDR Comparison

3.1.12.1. SOAP

- (1) The associated SOAP operation is:

```

EAUPCDRCompareReply compareEAUPCDRs(
    EAUPCDRCompareRequest request
)
  
```

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3.1.12.2. EAUPCDRCompareRequest

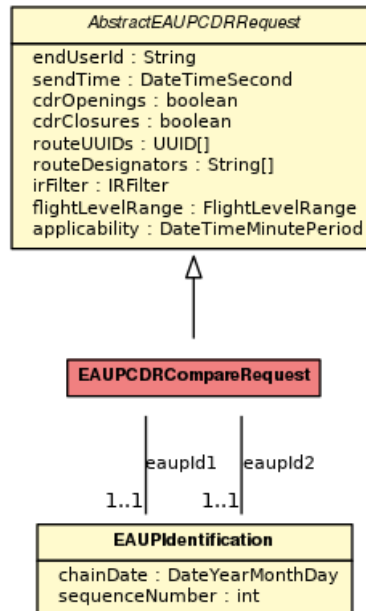


Figure 3.22. EAUPCDRCompareRequest Class Diagram

- (1) Used to retrieve the CDR openings and closures that the two given EAUPs have in common, and those that are in one of these EAUPs only, while possibly applying a filter on the returned result set, as described in [AbstractEAUPCDRRequest](#).
- (2) The queried EAUPs are identified using the [EAUPIdentification](#) from the [EAUPSummary](#) returned as part of an [EAUPChain](#).
- (3) Inherits from: [AbstractEAUPCDRRequest](#)
- (4) Attributes:
 - a) [EAUPIdentification](#) **eaupId1** (Mandatory)
The identification of the first EAUP, extracted (and left unchanged) from an [EAUPSummary](#).
Constraint: See [EAUP_IDS_CANNOT_BE_THE_SAME](#)
 - b) [EAUPIdentification](#) **eaupId2** (Mandatory)
The identification of the second EAUP, extracted (and left unchanged) from an [EAUPSummary](#).
Constraint: See [EAUP_IDS_CANNOT_BE_THE_SAME](#)
- (5) Constraint:

a)	Name	EAUP_IDS_CANNOT_BE_THE_SAME
	Attributes	eaupId1 , eaupId2

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Document Title: NM 23.0.0 - NOP/B2B Reference Manuals - Air-spaceServices		Document Reference: B2B/23.0.0/Airspace

Description	eaupId1 and eaupId2 cannot be the same.
-------------	---

3.1.12.3. EAUPCDRCompareReply

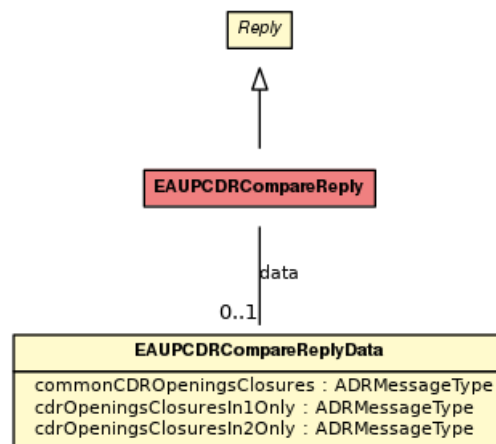


Figure 3.23. EAUPCDRCompareReply Class Diagram

- (1) Reply returned in response to [EAUPCDRCompareRequest](#).
- (2) The three lists below are mandatory, i.e. cannot be null, but are left empty if no matching CDR openings or closures were found. The only circumstances where the lists are left null are those corresponding to request failures, as described in the CommonServices NOP/B2B Reference Manual.
- (3) Inherits from: [Reply](#)
- (4) Attributes:
 - a) [ADReSSageType](#) **commonCDROpeningsClosures** (Optional)
The list of CDR openings and closures matching the request and that are common to the two requested EAUPs.
 - b) [ADReSSageType](#) **cdrOpeningsClosuresIn1Only** (Optional)
The list of CDR openings and closures matching the request and that only appear in the EAUP identified by eaupId1.
 - c) [ADReSSageType](#) **cdrOpeningsClosuresIn2Only** (Optional)
The list of CDR openings and closures matching the request and that only appear in the EAUP identified by eaupId2.

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3.1.13. EAUP RSA Retrieval

3.1.13.1. SOAP

- (1) The associated SOAP operation is:

```
EAUPRSAResponse retrieveEAUPRSAs(
    EAUPRSAResponse request
)
```

3.1.13.2. EAUPRSAResponse

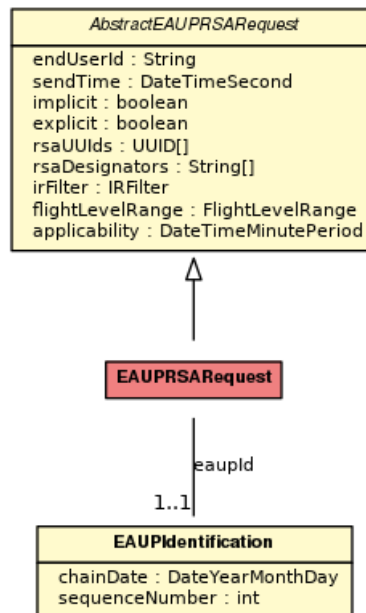


Figure 3.24. EAUPRSAResponse Class Diagram

- (1) Used to retrieve the RSA allocations within a given EAUP, while possibly applying a filter on the returned result set, as described in [AbstractEAUPRSAResponse](#), from which this request inherits.
- (2) The queried EAUP is identified using the [EAUPIdentification](#) from the [EAUPSummary](#) returned as part of an [EAUPChain](#).
- (3) Inherits from: [AbstractEAUPRSAResponse](#)
- (4) Attributes:
 - a) **EAUPIdentification eaupId** (Mandatory)
The identification of the EAUP, extracted (and left unchanged) from an [EAUPSummary](#). If no other attribute is specified in this request, all the RSA allocations of the EAUP are returned.

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3.1.13.3. EAUPRSAReply

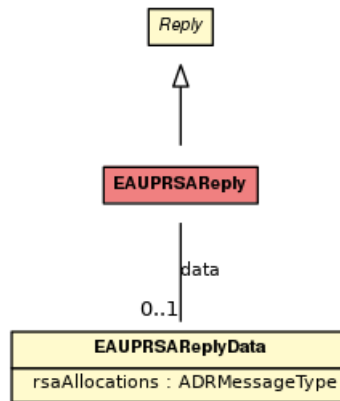


Figure 3.25. EAUPRSAReply Class Diagram

- (1) Reply returned in response to [EAUPRSAResult](#).
- (2) Inherits from: [Reply](#)
- (3) Attributes:
 - a) [ADRMessageType](#) **rsaAllocations** (Optional)
The list of RSA allocations matching the request.

3.1.14. EAUP RSA Comparison

3.1.14.1. SOAP

- (1) The associated SOAP operation is:

```

EAUPRSACompareReply compareEAUPRSAs(
    EAUPRSACompareRequest request
)
  
```

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3.1.14.2. EAUPRSACompareRequest

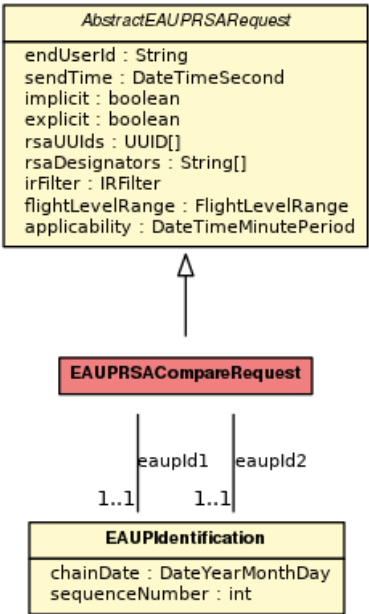


Figure 3.26. EAUPRSACompareRequest Class Diagram

- (1) Used to retrieve the RSA allocations that the two given EAUPs have in common, and those that are in one of these EAUPs only, while possibly applying a filter on the returned result set, as described in [AbstractEAUPRSAResult](#).
- (2) The queried EAUPs are identified using the [EAUPIdentification](#) from the [EAUPSummary](#) returned as part of an [EAUPChain](#).
- (3) Inherits from: [AbstractEAUPRSAResult](#)
- (4) Attributes:
 - a) [EAUPIdentification](#) **eaupId1** (Mandatory)
The identification of the first EAUP, extracted (and left unchanged) from an [EAUPSummary](#).
Constraint: See [EAUP_IDS_CANNOT_BE_THE_SAME](#)
 - b) [EAUPIdentification](#) **eaupId2** (Mandatory)
The identification of the second EAUP, extracted (and left unchanged) from an [EAUPSummary](#).
Constraint: See [EAUP_IDS_CANNOT_BE_THE_SAME](#)
- (5) Constraint:

a)	Name	EAUP_IDS_CANNOT_BE_THE_SAME
	Attributes	eaupId1 , eaupId2

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Description	eaupId1 and eaupId2 cannot be the same.
-------------	---

3.1.14.3. EAUPRSACompareReply

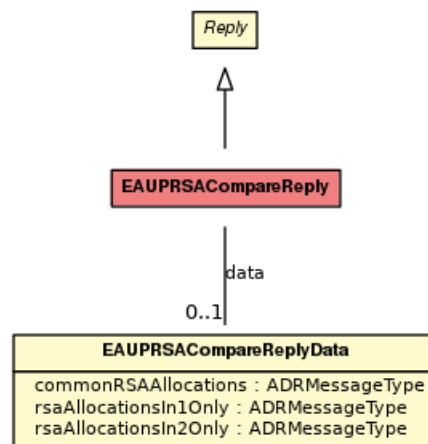


Figure 3.27. EAUPRSACompareReply Class Diagram

- (1) Reply returned in response to [EAUPRSACompareRequest](#).
- (2) The three lists below are mandatory, i.e. cannot be null, but are left empty if no matching RSA allocations were found. The only circumstances where the lists are left null are those corresponding to request failures, as described in the CommonServices NOP/B2B Reference Manual.
- (3) Inherits from: [Reply](#)
- (4) Attributes:
 - a) **ADReSSageType commonRSAAllocations** (Optional)
The list of RSA allocations matching the request and that are common to the two requested EAUPs.
 - b) **ADReSSageType rsaAllocationsIn1Only** (Optional)
The list of RSA allocations matching the request and that only appear in the EAUP identified by eaupId1.
 - c) **ADReSSageType rsaAllocationsIn2Only** (Optional)
The list of RSA allocations matching the request and that only appear in the EAUP identified by eaupId2.

3.1.15. Manageable Routes For AMC

3.1.15.1. SOAP

- (1) The associated SOAP operation is:

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```
AUPGetManageableRoutesForAMCReply getManageableRoutesForAMC(
  AUPGetManageableRoutesForAMCRequest request
)
```

3.1.15.2. AUPGetManageableRoutesForAMCRequest

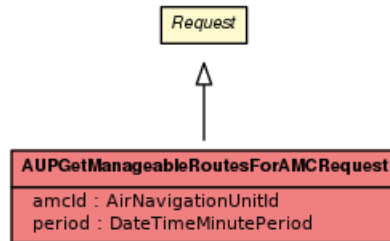


Figure 3.28. *AUPGetManageableRoutesForAMCRequest Class Diagram*

- (1) An AMC is responsible for the management of Elementary and Composed Manageable Airspaces.
- (2) This service returns the potential openable and closeable Routes.
- (3) Inherits from: [Request](#)
- (4) Attributes:
 - a) [AirNavigationUnitId](#) **amcId** (Mandatory)
The id to identify the AMC.
 - b) [DateTimeMinutePeriod](#) **period** (Mandatory)
The period to consider. Typically the validity of an AUP or a part of that validity period.

3.1.15.3. AUPGetManageableRoutesForAMCReply

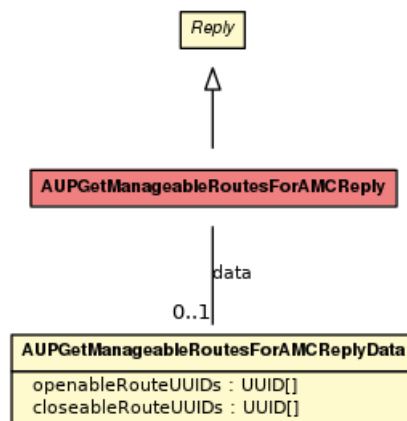


Figure 3.29. *AUPGetManageableRoutesForAMCReply Class Diagram*

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- (1) Reply returned in response to [AUPGetManageableRoutesForAMCRequest](#).
- (2) Inherits from: [Reply](#)
- (3) Attributes:
 - a) **UUID[] openableRouteUUIDs** (Mandatory)
Routes which contain CDRs to open.
Constraint: Size must be comprised between 0 and ∞.
 - b) **UUID[] closeableRouteUUIDs** (Mandatory)
Routes which contain CDRs to close
Constraint: Size must be comprised between 0 and ∞.

3.1.16. Manageable Route Segments For AMC And Route

3.1.16.1. SOAP

- (1) The associated SOAP operation is:

```
AUPGetManageableRouteSegmentsForAMCAndRouteReply getManageableRouteSegmentsForAMCAndRoute(
  AUPGetManageableRouteSegmentsForAMCAndRouteRequest request
)
```

3.1.16.2. AUPGetManageableRouteSegmentsForAMCAndRouteRequest

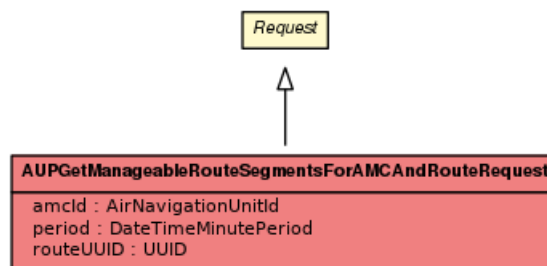


Figure 3.30. *AUPGetManageableRouteSegmentsForAMCAndRouteRequest* Class Diagram

- (1) Return the RouteSegments that can be managed for the given AMC and Route.
- (2) Inherits from: [Request](#)
- (3) Attributes:
 - a) **AirNavigationUnitId amcId** (Mandatory)
The id to identify the AMC.
 - b) **DateTimeMinutePeriod period** (Mandatory)
The period to consider. Typically the validity of an AUP or a part of that validity period.
 - c) **UUID routeUUID** (Mandatory)

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The Route UUID.

3.1.16.3. AUPGetManageableRouteSegmentsForAMCAndRouteReply

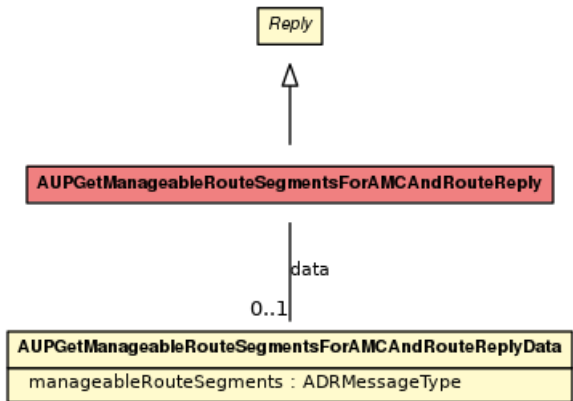


Figure 3.31. AUPGetManageableRouteSegmentsForAMCAndRouteReply Class Diagram

- (1) Reply returned in response to [AUPGetManageableRouteSegmentsForAMCAndRouteRequest](#)
- (2) Inherits from: [Reply](#)
- (3) Attributes:
 - a) [ADRMessageType](#) **manageableRouteSegments** (Optional)
The RouteSegments that can be managed.

3.2. AirspaceStructureService Port Type

3.2.1. Overview

3.2.1.1. Business

- (1) The Airspace Data published by NM is composed of the following AIXM5.1 Feature Types :

AIXM 5.1 Feature types
AirportHeliport AirportHeliportCollocation AirportHeliportSet
AngleIndication DesignatedPoint DistanceIndication Navaid
ArrivalLeg DepartureLeg Route

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AIXM 5.1 Feature types
RouteSegment StandardInstrumentArrival StandardInstrumentDeparture StandardLevelColumn StandardLevelTable
Airspace
AirTrafficManagementService OrganisationAuthority SpecialDate Unit
FlightRestriction
Flow ReferenceLocation TrafficVolume TrafficVolumeSet

Table 3.1. AIXM 5.1 domain types to AIXM feature types mapping

- (2) The granularity of the data retrieved by means of this port type will be at the level of individual AIXM 5.1 Feature types.

3.2.1.1.1. Concepts and definitions

- (1) *AIXM5.1 Temporality Model Profile for NM B2B*
Defines the rules governing the temporality aspects during the export of the CACD data into AIXM 5.1 (see the document [3] for more details).
- (2) *Complete AIXM Dataset*
It is a consistent and self contained set of AIXM 5.1 Features representing the complete NM Air-space Data as it is known at a given point in time.
Remarks:
- a) A Complete AIXM Dataset is published every day by NM and is made available as a set of AIXM5.1 files (one per Feature Type) exposed by this port type.
 - b) A Complete AIXM Dataset is associated with an Airspace Data Update Id (see below) that represents the latest Update included in the dataset.
 - c) This Update Id must be used to query for subsequent Updates.
 - d) The AIXM5.1 Features included in the Complete AIXM Dataset contain only BASELINE Timeslices.
- (3) *Incremental AIXM Dataset*
It is a consistent set of AIXM 5.1 Features that represents an update of the NM Airspace Data. The content of the Incremental AIXM Dataset is the set of updated Features.

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Remarks:

- a) Several Incremental AIXM Datasets may be published by NM every day.
- b) Each Incremental AIXM Dataset is associated with an Airspace Data Update Id (see below) that corresponds to the Airspace Data Update included in the dataset.
- c) Each Incremental AIXM Dataset has a reference to the previous Airspace Data Update Id, so the Incremental AIXM Datasets form a contiguous chain.
- d) The Incremental AIXM Datasets must be applied in the order explicitly specified by NM and one Incremental AIXM Dataset should not be applied if the previous Incremental AIXM Dataset has not been applied.
- e) An Incremental AIXM Dataset can be downloaded as BASELINE or PERMDELTA timeslices. It is up to the data consumer to decide the type of timeslices:
 - If the data consumer asks for BASELINE timeslices, each Feature included in the Dataset will contain all known BASELINE timeslices which are not in the past with respect to the operational AIRAC at the time of the publication of the Dataset.
 - If the data consumer asks for PERMDELTA timeslices, each Feature included in the Dataset will contain the set of PERMDELTA timeslices, computed according to the *AIXM5.1 Temporality Model Profile for NM B2B*.
- f) In both cases the Incremental AIXM Dataset will only contain the updated Features.

(4) *Airspace Data Update*

It is a modification to the NM Airspace Data. It is published as an Incremental AIXM Dataset. One Airspace Data Update may affect one or more Airspace Data entities and therefore result into one or more AIXM5.1 Feature updates. An Airspace Data Update may happen as a result of:

- a) Changes performed between two consecutive AIRAC cycles;
- b) Changes performed during an operational AIRAC cycle;

Remark:

Each Airspace Data Update has a unique identifier (an Airspace Data Update Id, or simply Update Id)

- (5) The Complete AIXM Datasets and Incremental AIXM Datasets are such that: The Complete AIXM Dataset published at day D is the result of applying all Incremental AIXM Datasets of day D-1 to the Complete AIXM Dataset of day D-1 (see picture below).

3.2.1.1.2. Dataset publication

- (1) The publication of Complete and Incremental AIXM Datasets by NM is summarized by the following picture.

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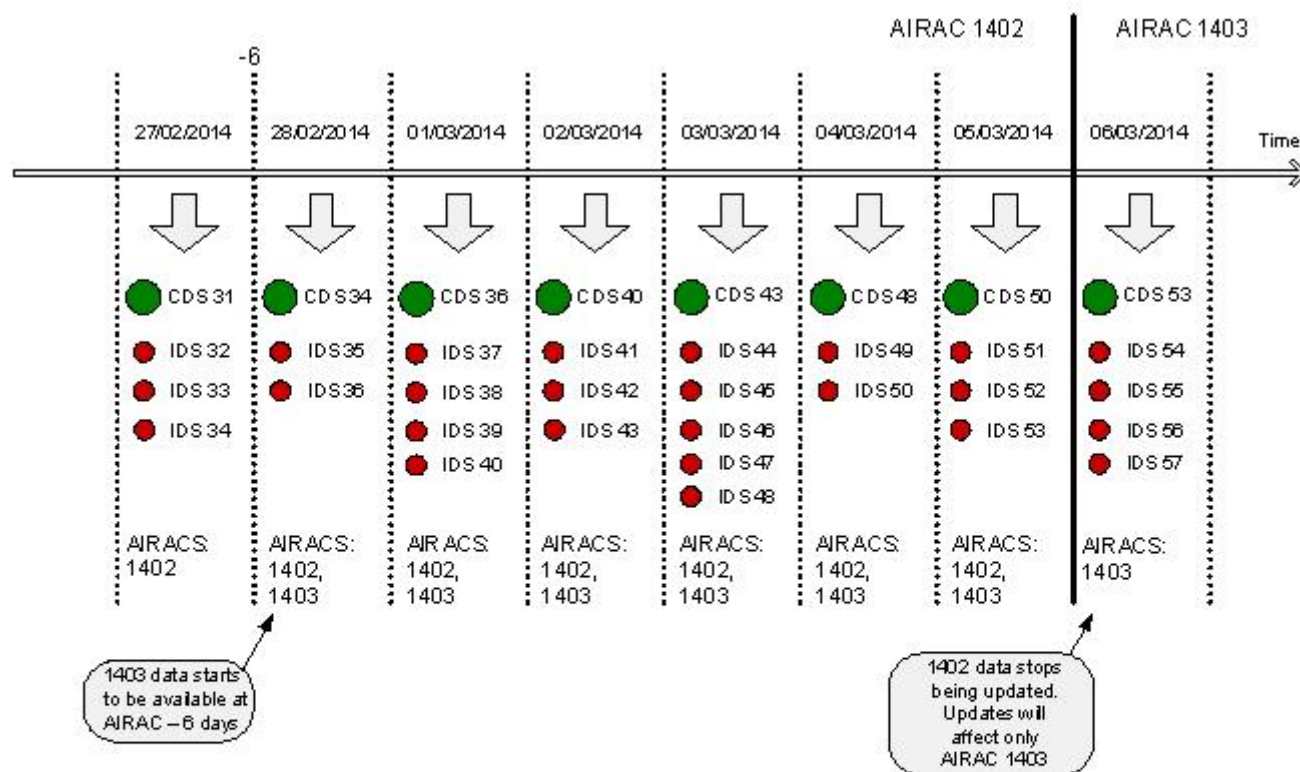


Figure 3.32. Datasets Publication Diagram

- (2) The example shows a simplified scenario of dataset daily publication from 7 days before the AIRAC switch to one day after the AIRAC switch (transition between AIRAC 1402 to AIRAC 1403)
- (3) One Complete AIXM Dataset is published every day (shown as green circles: CDS stands for Complete AIXM Dataset)
- (4) Several Incremental AIXM Datasets are published every day (shown as red circles: IDS stands for Incremental AIXM Dataset)
- (5) Each dataset, Complete or Incremental, is associated with an Airspace Data Update Id that uniquely identifies an update to the NM Airspace Data.
- (6) Each Incremental AIXM Dataset corresponds to a single Airspace Data Update.

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- (7) The Update Id associated to a Complete AIXM Dataset corresponds to the latest update included in the dataset: for example CDS 43 is up-to-date with the Airspace Data Update 43, i.e. it contains all the Updates up to 43 included.
- (8) The AIRAC numbers shown at the bottom of the picture show which AIRACS may be affected by the Updates: normally the data corresponding to an AIRAC starts to be available 6 days before the AIRAC switch. It means that the datasets published between AIRAC -6 and AIRAC day may contain data both for the current AIRAC and the next. In the example shown in the picture above, the datasets (both Complete and Incremental) published on the 28/02 may contain changes to both AIRAC 1402 and 1403. This information is useful to easily identify all the datasets associated to a particular AIRAC.
- (9) The Complete and Incremental AIXM Datasets are made available through the following methods exposed by the *Airspace Structure Port Type*:
 - a) `queryCompleteAIXMDatasets()`
 - b) `queryIncrementalAIXMDatasets()`
 These two methods are explained in detail below. They both return a list of available datasets according to the specified query parameters.
- (10) Each dataset is composed of a number of zipped files, one per AIXM5.1 Feature type.
- (11) NM requires the service consumers not to massively poll the service to know when there are new datasets available: the service consumer should not query for datasets more than once every 5 minutes.
- (12) One of the primary objectives of this service is to provide data that can be automatically processed by ASM tools. However, applicability timetables must be exported as entered by the user. This implies usage of complex time expressions such as weekly expressions (e.g. THU, FRI) and special days (e.g. holidays); in other words, applicability timetables require an interpretation.
- (13) See the ADR-Extension Document for more details on the AIXM 5.1 features and properties that are published.

3.2.1.1.2.1. Recommended workflows

- (1) The service offers a certain level of flexibility in order to allow many possible use cases.
- (2) However NM workflow recommends the following two workflows:
 - a) Periodic download of Complete AIXM Datasets
 - b) Follow the NM Airspace Data updates

3.2.1.1.2.1.1. Periodic download of Complete AIXM Datasets

- (1) This is the simplest scenario in which a data consumer gets a Complete AIXM Dataset at regular (or not) intervals.

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- (2) In this case the data consumer will invoke the method `queryCompleteAIXMDatasets()` for a given AIRAC or a given date.
- (3) In this case the data consumer will not make use of the `UpdateId` and will only deal with BASELINE timeslices.

3.2.1.1.2.1.2. Follow the NM Airspace Data updates

- (1) In this workflow the data consumer will first download a Complete AIXM Dataset and after that will follow the evolution of the NM Airspace Data by downloading the Updates as Incremental AIXM Datasets:
- (2) In this case the data consumer will:
 - a) Invoke the method `queryCompleteAIXMDatasets()` and download one Complete AIXM Dataset, for example the first available dataset for a given AIRAC.
 - b) Start polling the NM systems regularly at an interval not smaller than 5 minutes, by querying the method `queryIncrementalAIXMDatasets()` with the `lastKnownUpdateId` (the first time it is the `UpdateId` received with the Complete AIXM Dataset, the subsequent times it is the one associated to each downloaded Incremental AIXM Dataset).
 - c) The data consumer can also decide to fully re-synchronize with the NM systems by re-invoking the `queryCompleteAIXMDatasets()` method.

3.2.1.2. AirportHeliportSet extension

- (1) RAD Appendix 2 (Area Definitions) defines collections of AirportHeliports as they are referred to in RAD Restrictions.
- (2) Therefore it makes sense to consider these collections of AirportHeliports as a separate Features and refer to these collections of AirportHeliports in FlightRestrictions. The `AirportHeliportSet` is a new Feature that expresses the concept of the "Area Definition" in the RAD Appendix 2.
- (3) The composition of the `AirportHeliportSet` is defined by:
 - a) either explicitly listing all the members AirportHeliports using the `hasAirportHeliport` association,
 - b) and/or using a pattern match using the `hasAirportHeliportSetPattern` association. An example of the pattern is "EB", meaning all the Belgian AirportHeliports.
- (4) As the `AirportHeliportSet` is a Feature, it has Timeslices. This implies that the composition of an `AirportHeliportSet` can change in time.
- (5) Special attention should be paid to `AirportHeliportSets` that use patterns. When a new `AirportHeliport` is created (e.g. Berlin), then there might be an effect on `AirportHeliportSets` that use the pattern "ED".

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3.2.1.3. Airspace extension

- (1) The main reasons to extend the Airspace Feature were:
- to export additional information in the FUA context (see below);
 - to express whether an Airspace is for operational use (see below);

3.2.1.3.1. Airspace extension in FUA context

3.2.1.3.1.1. Flexible Use and related levels

- (1) *FlexibleUse*: the Airspace is not designated as either military or civil airspace but should be used flexibly on a day-to-day basis. Consequently, any necessary airspace segregation should be only of a temporary nature.
- (2) *Level1*: the Airspace is manageable at the strategic level. The act of defining and reviewing as required the national airspace policy taking into account national and international airspace requirements. The RSA activation is determined by the Airspace.activation.
- (3) *Level2*: the Airspace is manageable at the pre-tactical level. The act of conducting operational management within the framework of pre-determined existing ATM structure and procedures defined in Level1 and of reaching specific agreement between civil and military authorities involved. An RSA of Level2 must be included in AUP/UUP to become activated.
- (4) *Level3*: the airspace is manageable at the tactical level.
- (5) Some business rules:
- If FlexibleUse = YES, then at least one of Level1/2/3 must also be YES
 - If FlexibleUse = NO, then all of Level1/2/3 must be NO
 - If Level2 = YES, then Level1 must also be YES
- (6) The FUA Airspaces can be categorized as:
- NAM*: Airspaces which can be activated by the military or other special users without prior coordination with the civilian users, i.e. AMC during the times defined in the availability. This corresponds to Level1 = YES, Level2 = NO.
 - AMA*: Airspaces which can be activated in a flexible way for use by the military or other special users after due coordination between military and civilian airspaces during the times defined in the availability. This corresponds to Level1 = YES, Level2 = YES.

3.2.1.3.1.2. Nearby, Offload and NotAffected

- (1) *Nearby AirRoutes*. An AirRoute can be classified as a nearby Route for zero or more RSAs. The relationship is meant to help AMCs in the decision process for which Routes can be opened/closed by an RSA Activation. As this relationship is bi-directional, it suffices that the RSA/RouteSegment

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vertical limit combination exists in one direction. Activating an RSA implies closing the Nearby AirRoutes.

- (2) *Offload AirRoutes.* An AirRoute can be classified as an Offload Route for zero or more RSAs. The relationship is meant to help AMCs in the decision process for which Routes can be opened/closed by an RSA Activation. Activating an RSA implies opening an Offload AirRoute.
- (3) *NotAffected AirRoutes.* An AirRoute can be classified as a not-affected-by-RSA-activation for zero or more RSAs. The relationship is meant to help AMCs in the decision process for which Routes can be opened/closed by an RSA Activation. Activating an RSA has no impact on the NotAffected AirRoute, even if it geometrically crosses the RSA.

3.2.1.3.1.3. Activations

- (1) The availability of the RSA is expressed with the association `Airspace.activation` where the `AirspaceActivation.status = AVBL_FOR_ACTIVATION`. Note that the AIXM 5.1 attribute is called `activation` but it is in fact used to express the availability.
- (2) The activation of an RSA is expressed in the `Airspace.rsaActivation` in the `AirspaceExtension`, with `AirspaceActivation.status = ACTIVE`.

3.2.1.3.2. Airspace Operational Usage

3.2.1.3.2.1. Description

- (1) The majority of airspaces modeled in CACD are for operational use. However, in addition to those airspaces, NM also uses other airspaces that, although they may not be operational at some moment, they may become operational at some point in time. The reasons behind the use of such airspaces are varied, some may be experimental, some may be for contingency, others to allow reacting quickly to crisis situations, etc.
- (2) It would be desirable not to export such airspaces because they are not of general interest when not operational. However, if they do become operational they would have to be exported. Also note that these airspaces may potentially switch from operational to not-operational several times. Therefore exporting an airspace only when it is operational and not exporting it when not-operational would create "holes" in the feature's lifetime. The AIXM 5.1 model does not foresee "holes" in the lifetime of a feature.
- (3) For this reason the following approach has been chosen: such airspaces, or any such feature in general, is always exported and the notion of being or not operational is exported by means of a new attribute `Airspace.usage` in the `AirspaceExtension` class which may take the following values:

- **OPERATIONAL:** meaning that the feature is for operational use.
- **WITHHELD:** meaning that the feature is not for operational use and for this reason it has been withheld.

In addition to this new usage attribute, in the WITHHELD timeslices all other attributes are nullified, to make it more explicit that the feature is not to be used (hence the word "withheld").

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- (4) The following four scenarios are possible:
- a) The feature is new and it is not operational:
 - i) The feature is exported and all its properties in the only timeslice are nullified
 - ii) The usage attribute is set to WITHHELD
 - b) The feature is new and it is operational:
 - i) The feature is exported and its only timeslice has its properties set
 - ii) The usage attribute is set to OPERATIONAL
 - c) The feature is changed from operational to non-operational:
 - i) A new timeslice is exported and all its properties are nullified
 - ii) The usage attribute is set to WITHHELD
 - d) The feature is changed from non-operational to operational:
 - i) A new timeslice is exported with its properties set
 - ii) The usage attribute is set to OPERATIONAL
- (5) UML representation:

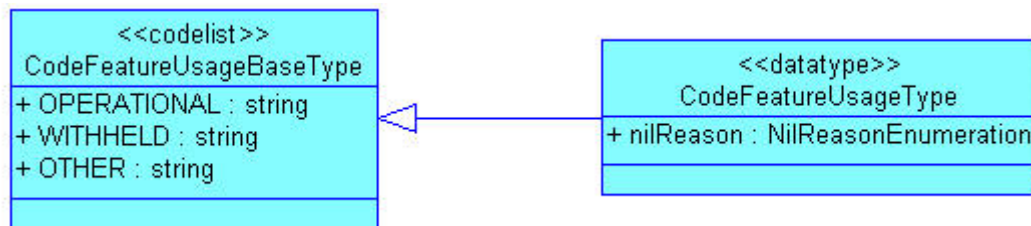


Figure 3.33. FeatureUsage

DNM		EUROCONTROL
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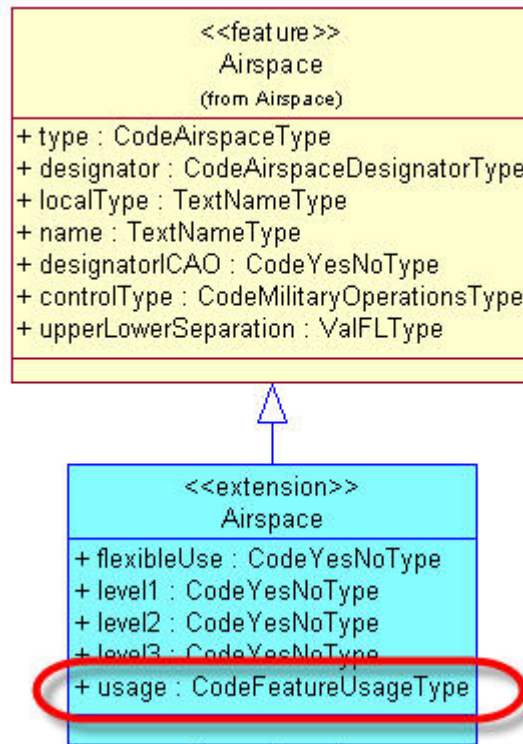


Figure 3.34. Airspace Extension

(6) XSD:

```

<simpleType name="CodeFeatureUsageBaseType">
  <union>
    <simpleType>
      <restriction base="xsd:string">
        <enumeration value="WITHHELD"/>
        <enumeration value="OPERATIONAL"/>
      </restriction>
    </simpleType>
    <simpleType>
      <restriction base="string">
        <pattern value="OTHER(:(\w|_){1,58})?" />
      </restriction>
    </simpleType>
  </union>
</simpleType>
<complexType name="CodeFeatureUsageType">
  <simpleContent>
    <extension base="adr:CodeFeatureUsageBaseType">
      <attribute name="nilReason" type="gml:nilReasonEnumeration"/>
    </extension>
  </simpleContent>
</complexType>
  
```

(7) Example -- WITHHELD as PERMDELTA:

DNM	EUROCONTROL
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```

<adrmmsg:hasMember>
  <aixm:Airspace gml:id="ID_36_1398421189613_755">
    <gml:identifier codeSpace="urn:uuid:">d7064a20-6b6f-4bc6-a946-5bb3cd887c7b</gml:identifier>
    <aixm:timeSlice>
      <aixm:AirspaceTimeSlice gml:id="ID_36_1398421189613_756">
        <gml:validTime>
          <gml:TimeInstant>
            <gml:timePosition>2006-06-08T00:00:00</gml:timePosition>
          </gml:TimeInstant>
        </gml:validTime>
        <aixm:interpretation>PERMDelta</aixm:interpretation>
        <aixm:type> xsi:nil="true" nilReason="withheld"> </aixm:type>
        <aixm:designator xsi:nil="true" nilReason="withheld"> </aixm:designator>
        <aixm:designatorICAO xsi:nil="true" nilReason="withheld"> </aixm:designatorICAO>
        <aixm:geometryComponent xsi:nil="true" nilReason="withheld"> </aixm:geometryComponent>
        <aixm:extension>
          <adrex:AirspaceExtension gml:id="ID_36_1398421189613_762">
            <adrex:usage>WITHHELD</adrex:usage>
          </adrex:AirspaceExtension>
        </aixm:extension>
      </aixm:AirspaceTimeSlice>
    </aixm:timeSlice>
  </aixm:Airspace>
</adrmmsg:hasMember>

```

(8) Example -- WITHHELD as BASELINE:

```

<adrmmsg:hasMember>
  <aixm:Airspace gml:id="ID_36_1398421189613_755">
    <gml:identifier codeSpace="urn:uuid:">d7064a20-6b6f-4bc6-a946-5bb3cd887c7b</gml:identifier>
    <aixm:timeSlice>
      <aixm:AirspaceTimeSlice gml:id="ID_36_1398421189613_756">
        <gml:validTime>
          <gml:TimePeriod gml:id="ID_36_1398421189613_757">
            <gml:beginPosition>2006-06-08T00:00:00</gml:beginPosition>
            <gml:endPosition indeterminatePosition="unknown"/>
          </gml:TimePeriod>
        </gml:validTime>
        <aixm:interpretation>BASELINE</aixm:interpretation>
        <aixm:featureLifetime>
          <gml:TimePeriod gml:id="ID_36_1398421189613_758">
            <gml:beginPosition>2006-06-08T00:00:00</gml:beginPosition>
            <gml:endPosition indeterminatePosition="unknown"/>
          </gml:TimePeriod>
        </aixm:featureLifetime>
        <aixm:extension>
          <adrex:AirspaceExtension gml:id="ID_36_1398421189613_762">
            <adrex:usage>WITHHELD</adrex:usage>
          </adrex:AirspaceExtension>
        </aixm:extension>
      </aixm:AirspaceTimeSlice>
    </aixm:timeSlice>
  </aixm:Airspace>
</adrmmsg:hasMember>

```

(9) Example -- OPERATIONAL:

```

<adrmmsg:hasMember>
  <aixm:Airspace gml:id="ID_36_1398421189613_755">

```

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```

<gml:identifier codeSpace="urn:uuid:">d7064a20-6b6f-4bc6-a946-5bb3cd887c7b</gml:identifier>
<aixm:timeSlice>
  <aixm:AirspaceTimeSlice gml:id="ID_36_1398421189613_756">
    <gml:validTime>
      <gml:TimePeriod gml:id="ID_36_1398421189613_757">
        <gml:beginPosition>2006-06-08T00:00:00</gml:beginPosition>
        <gml:endPosition indeterminatePosition="unknown"/>
      </gml:TimePeriod>
    </gml:validTime>
    <aixm:interpretation>BASELINE</aixm:interpretation>
    <aixm:featureLifetime>
      <gml:TimePeriod gml:id="ID_36_1398421189613_758">
        <gml:beginPosition>2006-06-08T00:00:00</gml:beginPosition>
        <gml:endPosition indeterminatePosition="unknown"/>
      </gml:TimePeriod>
    </aixm:featureLifetime>
    <aixm:type>TMA</aixm:type>
    <aixm:designator>LEBBTMA</aixm:designator>
    <aixm:designatorICA0>YES</aixm:designatorICA0>
    <aixm:geometryComponent>
      <aixm:AirspaceGeometryComponent gml:id="ID_36_1398421189613_759">
        <aixm:operation>BASE</aixm:operation>
        <aixm:theAirspaceVolume>
          <aixm:AirspaceVolume gml:id="ID_36_1398421189613_760">
            <aixm:contributorAirspace>
              <aixm:AirspaceVolumeDependency gml:id="ID_36_1398421189613_761">
                <aixm:dependency>FULL_GEOMETRY</aixm:dependency>
                <aixm:theAirspace xlink:href="urn:uuid:8627b55f-5f3e-4490-9a87-1a03aa409f0c"/>
              </aixm:AirspaceVolumeDependency>
            </aixm:contributorAirspace>
          </aixm:AirspaceVolume>
        </aixm:theAirspaceVolume>
      </aixm:AirspaceGeometryComponent>
    </aixm:geometryComponent>
    <aixm:extension>
      <adrex:AirspaceExtension gml:id="ID_36_1398421189613_762">
        <adrex:usage>OPERATIONAL</adrex:usage>
      </adrex:AirspaceExtension>
    </aixm:extension>
  </aixm:AirspaceTimeSlice>
</aixm:timeSlice>
</aixm:Airspace>
</adrm:hasMember>

```

3.2.1.4. AirspaceActivation extension

- (1) It contains the Information Region in which the airspace is located and the AMC requesting the activation. It also allows specifying which associated FUARestrictions are to be activated.

3.2.1.5. CodeFeatureUsage extension

- (1) Possible values are OPERATIONAL and WITHHELD.
- (2) For information about its usage refer to [Airspace Operational Usage](#)

3.2.1.6. FlightCondition extension

- (1) hasAirspaceBorderCrossing:

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The reason for this extension is that the core AIXM AirspaceBorderCrossing is a Feature, whereas we rather see this as an <<Object>>. So it is a replacement for the FlightConditionElementChoice.borderCrossingCondition.

- (2) **hasAirportHeliportSet:**
Some FlightRestrictions in the RAD are expressed as departing from or arriving at a collection of AirportHeliports as described in RAD Appendix 2.

3.2.1.7. FlightRestriction extension

3.2.1.7.1. processingIndicator

3.2.1.7.1.1. AerodromeConnectingPoints

- (1) processingIndicator = AD_CP.
- (2) These FlightRestrictions are described in RAD Appendix 5.
- (3) The FlightCondition is a combination of arriving and/or departing AirportHeliport and a DirectFlightClass.
- (4) The FlightRouting describes the DCT connecting points to the AirportHeliport.

3.2.1.7.1.2. FRA DCT

- (1) processingIndicator = FRA_DCT.
- (2) FlightRoutings are limited to:
 - a) DirectFlightSegment
 - b) SignificantPoint
- (3) The FlightCondition can be:
 - a) Crossing an Airspace
A SignificantPoint in the FlowRouting has to be interpreted as an intermediate point in the crossed Airspace from the FlightCondition.
 - b) Crossing an AirspaceBorder
A SignificantPoint in the FlowRouting has to be interpreted as an Entry and/or Exit Point depending on the following.
 - i) The FlightCondition consists of one AirspaceBorder AsExit - AsEntry.
 - A) For the Airspace AsExit, the SignificantPoint is an Exit Point.
 - B) For the Airspace AsEntry, the SignificantPoint is an Entry Point.
 - ii) The FlightCondition consists of two AirspaceBorders As1 - As2 and As2 - As1.
The SignificantPoint is an Entry/Exit Point.

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- (4) In order to find all the Entry/Exit Points, all the FRA-DCT FlightRestrictions that contains Airspace-Border FlightConditions have to be considered.

3.2.1.7.1.3. Flight Profile Restriction

- (1) processingIndicator = FPR.
- (2) These FlightRestrictions do not invalidate flight plans.

3.2.1.7.1.4. RAD DCT

- (1) processingIndicator = RAD_DCT.
- (2) The FlightCondition can be:
- a) Airspace
 - b) AirspaceBorder
- (3) The FlightConditionCircumstance has fixed values:
- a) referenceLocation = YES
 - b) relationWithLocation = YES
- (4) It is possible to express a DCT limit with allowed and disallowed segments. But this means you have to define two FlightRestrictions.
- a) The first FlightRestriction expresses the DCT limit in an Airspace (FlightCondition) and the allowed FlightRoutings (DCT segments longer than the DCT limit).
 - b) The second FlightRestriction expresses a FlightCondition on the same Airspace but without DCT limit. The FlightRoutings are the disallowed DCT segments (DCT segments shorter than the DCT limit specified in the other FlightRestriction).

3.2.1.7.1.5. Traffic Flow Restriction

- (1) processingIndicator = TFR.
- (2) These FlightRestrictions originate from the RAD, AIP, ENV-COR, NOTAMs and other communication between ANSPs and NM.

3.2.1.7.1.6. Aerodrome Flight Rule

- (1) processingIndicator = OTHER: __ADR_AD_FLIGHT_RULE.
- (2) The CACD model differs from the AIXM model. The AirportHeliportAvailability with regards to IFR usage is modelled in CACD as a FlightRestriction.
- (3) A Flight Plan will be rejected if that Flight Plan specifier IFR and arriving/departing AirportHeliport is not supporting IFR at that time of the day.

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- (4) The CACD data are modelled into a FlightRestriction with a FlightCondition arriving to /departing from an AirportHeliport.
- (5) IFPS will return the FlightRestriction designator when the Flight Plan violates the FlightRestriction.

3.2.1.7.1.7. Flight Properties on Procedures

- (1) processingIndicator = OTHER: __ADR_FLIGHT_PROPERTY_ON_TP.
- (2) Here again, the CACD models differs from the AIXM model. The Procedure.aircraftCharacteristic is modelled in CACD as a FlightRestriction.
- (3) A Flight Plan will be rejected when the SID/STAR doesn't support the AircraftCharacteristic.
- (4) The FlightRestriction is modelled as a FlightCondition arriving to / departing from an AirportHeliport and FlightRoutings forbidding/imposing the use of some SID/STARs.

3.2.1.7.2. enabled

- (1) When enabled = NO, this means that the FlightRestriction is not active. This is typically used for re-occurring events, like annual exhibitions.

3.2.1.7.3. usage

3.2.1.7.3.1. Description

- (1) It expresses the same concept already described for Airspaces (see [Airspace Operational Usage](#)).
- (2) Example -- WITHHELD as PERMDelta:

```
<adrmmsg:hasMember>
  <aixm:FlightRestriction gml:id="ID_14_1398421187379_2">
    <gml:identifier codeSpace="urn:uuid:">cca9c008-a718-4d5d-9339-1bf013fbc94a</gml:identifier>
    <aixm:timeSlice>
      <aixm:FlightRestrictionTimeSlice gml:id="ID_14_1398421187379_3">
        <gml:validTime>
          <gml:TimeInstant>
            <gml:timePosition>2014-04-03T00:00:00</gml:timePosition>
          </gml:TimeInstant>
        </gml:validTime>
        <aixm:interpretation>PERMDelta</aixm:interpretation>
        <aixm:instruction xsi:nil="true" nilReason="withheld"> </aixm:instruction>
        <aixm:extension>
          <adrex:FlightRestrictionExtension gml:id="ID_14_1398421187379_125">
            <adrex:usage>WITHHELD</adrex:usage>
          </adrex:FlightRestrictionExtension>
        </aixm:extension>
      </aixm:FlightRestrictionTimeSlice>
    </aixm:timeSlice>
  </aixm:FlightRestriction>
</adrmmsg:hasMember>
```

- (3) Example -- WITHHELD as BASELINE:

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```

<adrmmsg:hasMember>
  <aixm:FlightRestriction gml:id="ID_14_1398421187379_2">
    <gml:identifier codeSpace="urn:uuid:">cca9c008-a718-4d5d-9339-1bf013fbc94a</gml:identifier>
    <aixm:timeSlice>
      <aixm:FlightRestrictionTimeSlice gml:id="ID_14_1398421187379_3">
        <gml:validTime>
          <gml:TimePeriod gml:id="ID_14_1398421187379_4">
            <gml:beginPosition>2014-04-03T00:00:00</gml:beginPosition>
            <gml:endPosition indeterminatePosition="unknown"/>
          </gml:TimePeriod>
        </gml:validTime>
        <aixm:interpretation>BASELINE</aixm:interpretation>
        <aixm:featureLifetime>
          <gml:TimePeriod gml:id="ID_14_1398421187379_5">
            <gml:beginPosition>2014-04-03T00:00:00</gml:beginPosition>
            <gml:endPosition indeterminatePosition="unknown"/>
          </gml:TimePeriod>
        </aixm:featureLifetime>
        <aixm:extension>
          <adrex:FlightRestrictionExtension gml:id="ID_14_1398421187379_125">
            <adrex:usage>WITHHELD</adrex:usage>
          </adrex:FlightRestrictionExtension>
        </aixm:extension>
      </aixm:FlightRestrictionTimeSlice>
    </aixm:timeSlice>
  </aixm:FlightRestriction>
</adrmmsg:hasMember>

```

(4) Example -- OPERATIONAL:

```

<adrmmsg:hasMember>
  <aixm:FlightRestriction gml:id="ID_14_1398421187379_2">
    <gml:identifier codeSpace="urn:uuid:">cca9c008-a718-4d5d-9339-1bf013fbc94a</gml:identifier>
    <aixm:timeSlice>
      <aixm:FlightRestrictionTimeSlice gml:id="ID_14_1398421187379_3">
        <gml:validTime>
          <gml:TimePeriod gml:id="ID_14_1398421187379_4">
            <gml:beginPosition>2014-04-03T00:00:00</gml:beginPosition>
            <gml:endPosition indeterminatePosition="unknown"/>
          </gml:TimePeriod>
        </gml:validTime>
        <aixm:interpretation>BASELINE</aixm:interpretation>
        <aixm:featureLifetime>
          <gml:TimePeriod gml:id="ID_14_1398421187379_5">
            <gml:beginPosition>2014-04-03T00:00:00</gml:beginPosition>
            <gml:endPosition indeterminatePosition="unknown"/>
          </gml:TimePeriod>
        </aixm:featureLifetime>
        <aixm:designator>DS5525G</aixm:designator>
        <aixm:type>MANDATORY</aixm:type>
        <aixm:instruction>
          DEP EKCH:THE USE OF SIDS IS MANDATORY EXCEPT FOR DEST.
          WITHIN THE COPENHAGENGROUP,MALMO GROUP
          INFO:
          MANDATES THE ONLY POSSIBILITIES FOR JET AC,BEING
          BETUD,KEMAX,LANGO,MIKSI,NEXEN,ODN,SIMEG AND VEDAR SIDS
          OUTSIDE THE ACTIVATION OF THE RSA MULTEX/EKD352/53
        </aixm:instruction>
        <aixm:flight>
          <aixm:FlightConditionCombination gml:id="ID_14_1398421187379_6">
            ...
          </aixm:FlightConditionCombination>
        </aixm:flight>
      </aixm:FlightRestrictionTimeSlice>
    </aixm:timeSlice>
  </aixm:FlightRestriction>
</adrmmsg:hasMember>

```

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```

    </aixm:flight>
    <aixm:regulatedRoute>
      <aixm:FlightRestrictionRoute gml:id="ID_14_1398421187379_23">
        ...
      </aixm:FlightRestrictionRoute>
    </aixm:regulatedRoute>
    <aixm:regulatedRoute>
      <aixm:FlightRestrictionRoute gml:id="ID_14_1398421187379_23">
        ...
      </aixm:FlightRestrictionRoute>
    </aixm:regulatedRoute>
    <aixm:extension>
      <adext:FlightRestrictionExtension gml:id="ID_14_1398421187379_125">
        <adext:processingIndicator>TFR</adext:processingIndicator>
        <adext:enabled>NO</adext:enabled>
        <adext:usage>OPERATIONAL</adext:usage>
      </adext:FlightRestrictionExtension>
    </aixm:extension>
  </aixm:FlightRestrictionTimeSlice>
</aixm:timeSlice>
</aixm:FlightRestriction>
</adrmgs:hasMember>

```

3.2.1.8. RouteAvailability extension

- (1) The conditionalRouteType is used to express a RouteAvailability as follows:
 - a) CDR_1: Conditional Route Type 1, normally available for flight planning, but can be closed.
 - b) CDR_2: Conditional Route Type 2, normally not available for flight planning, but can be opened.
 - c) CDR_3: Conditional Route Type 3, potentially available for ATC re-routeing.
- (2) The hostAirspace is used in the AirspaceAvailability Service to express in which FIR(s) the RouteSegments are located.

3.2.1.9. RoutePortion extension

- (1) The referencedProcedure allows to define a 'ProcedurePortion'. Instead of having a RoutePortion between any two points of Route, this extension allows to expressing a portion between any two points on SID/STAR.
- (2) The range allows to express some altitudes related to the RoutePortion. This is used to express vertical limits when defining nearBy and offLoad associations between Airspaces and RoutePortions.
- (3) The intermediatePoint(s) is used when defining FlightConditions and FlightRoutings where the order (sequence) of the SignificantPoints to be traversed is important, but not Route dependent.

3.2.1.10. RouteSegment extension

- (1) The verticalLimits describe during which part of the day the portions of the route exist, i.e. it is possible to declare a Route as non-existing, e.g. during the night to allow DCT in the Airspace.

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- (2) The `cdUpdate` association is used to export the AIXM `TEMP_DELTAs` related to the publication of the AUP/UUP.

3.2.1.11. StandardInstrumentArrival extension

- (1) The `connectingPoint(s)` in a STAR are the published ICAO Points (Navigation Aid or Waypoint) that may serve as connecting point to the en-route network. In other words a flight may join the STAR only at these points.
- (2) The `initialApproachFix(s)` in a STAR is a point that connects the Arrival Procedure to the Instrument Approach Procedure.

3.2.1.12. StandardInstrumentDeparture extension

- (1) The `connectingPoint(s)` in a SID are the published ICAO Points (Navigation Aid or Waypoint) that may serve as connecting point to the en-route network. In other words a flight may leave the SID only at these points.

3.2.1.13. TimeSheet extension

- (1) The granularity of the CACD Timeslices are at AIRAC boundaries. This granularity is not sufficient to express permanent changes during the AIRAC, e.g. permanent changes to the CDR definitions.
- (2) There are two types of time information inside the CACD Timeslices:
- a) Timetables that express when a property is defined, i.e during certain times of some days of the week. In CACD these timetables are expressed with a string like "2012/10/18->2014/04/03 -----67 06:00 - 10:00". It is a bit more complex than that, because it is also possible to express a holiday, day-before-holiday, busy-Friday...
 - b) A time period when a property needs is valid, i.e. typically when AIXM would use a `TEMP_DELTA` to express Route closures/openings and Airpace allocations.
- (3) The AIXM Timesheet (part of `PropertiesWithSchedule`) doesn't cover the concept of 'year'. There is 'startDate' and 'endDate' but there is no calendar year involved.
- (4) It was chosen to extend the AIXM.Timesheet with a `gml:validTime` element in order to express the fact that CACD properties have sub-AIRAC validities.

3.2.1.14. NAT Tracks publication

3.2.1.14.1. Description

- (1) NAT Tracks are used to fly over the Atlantic Ocean. They are published daily by Shanwick Center.
- a) The Daytime - Westbound OTS NAT tracks are available between 11:30 - 19:00. The most northerly starts with designator 'A'.
 - b) The Nighttime - Eastbound OTS NAT tracks are available between 01:00 - 08:00. The most southerly start with the designator 'Z'.

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- (2) The same NAT track (same UUID) may change shape over different days. For example one day it may be composed of some segments, and another day by other segments. In other words, the same segment may be used in the NAT track in one day, and not used in another day, and then used again.

This creates a conceptual problem: when a RouteSegment is not used in any NAT track, it still continues to exist in CACD with its own UUID and it may become part of a NAT track later in the future. This behaviour must be reflected in the exported AIXM features. A feature cannot have holes in its lifetime (this would also cause problems in the computation of PERMDELTA's). So rather than omitting timeslices, the chosen solution was to always export the RouteSegment timeslices as follows:

- a) when the RouteSegment is in use, i.e. it is part of a NAT track, a new timeslice is created with a reference to the route (attribute routeFormed) and its availability;
- b) when the RouteSegment is not in use, i.e. it is not part of any NAT tracks, a new timeslice is created without a reference to any NAT track (attribute routeFormed omitted or null) and with no availability;

This behaviour should also be quite intuitive because it reflects the reality.

- (3) The availability of a RouteSegment corresponds to the NAT Signal Period, which is as follows:
For Westbound:

- a) lifetime from 19:00 till 19:00
- b) NAT Signal Period from 11:30 till 19:00

For Eastbound:

- a) lifetime from 08:00 till 8:00
- b) NAT Signal Period from 01:00 till 08:00

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3.2.1.14.2. Publication

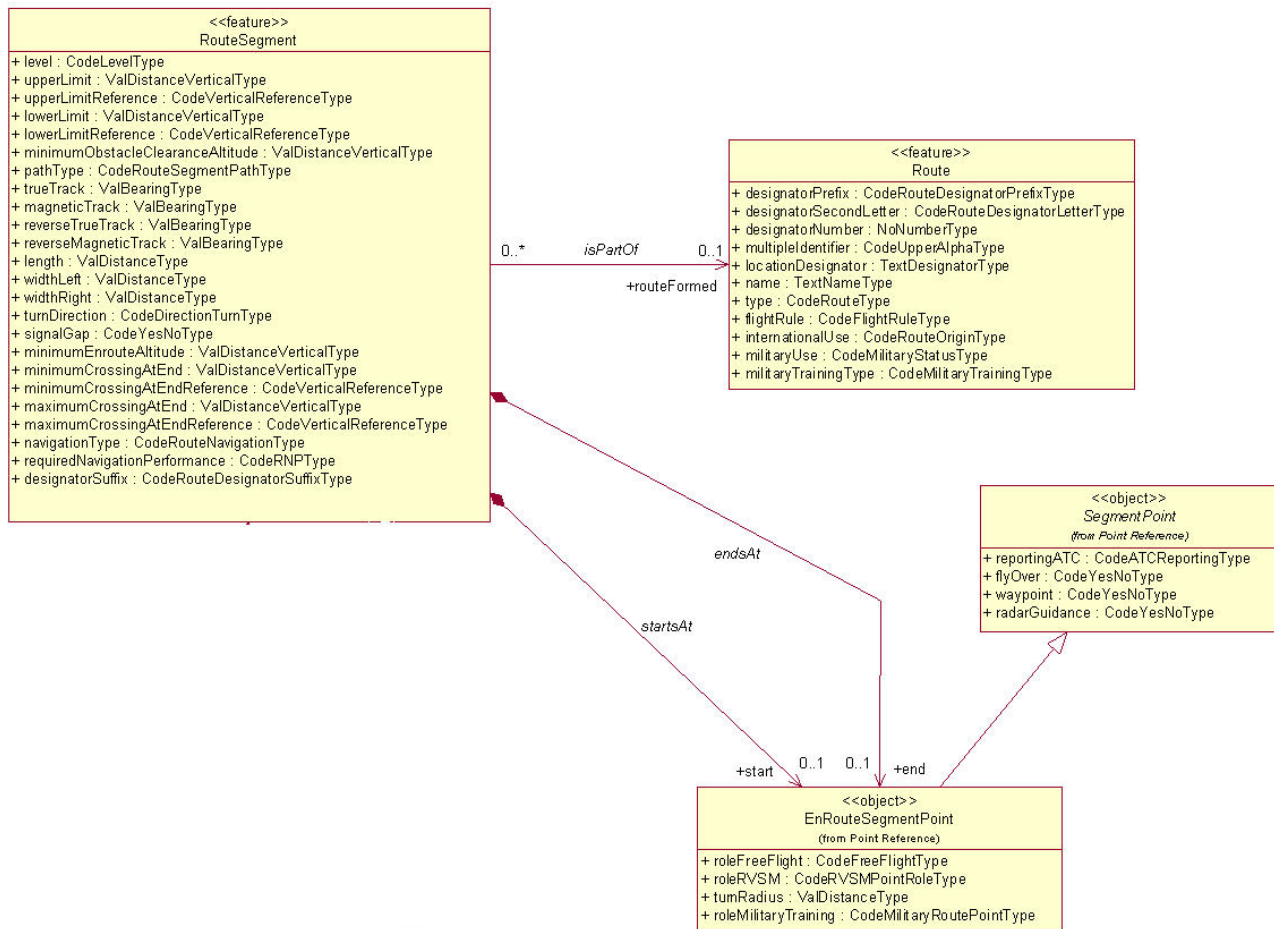


Figure 3.35. AIXM 5.1 features and objects used to publish the NAT Tracks

3.2.1.14.2.1. aixm:Route

- (1) The attribute `aixm:Route.name` will contain the ICAO id of the OTS route (e.g. 'NATZ')
- (2) The attribute `aixm:Route.type` will be always 'NAT'.

3.2.1.14.2.2. aixm:RouteSegment

- (1) RouteSegments will tend to have many timeslices towards the end of an AIRAC cycle. Potentially they may have up to 1 timeslice per day.
- (2) Each `aixm:RouteSegment` feature merely contains a `aixm:RouteSegment.start`, a `aixm:RouteSegment.end` and a `aixm:RouteSegment.availability`.
- (3) The `aixm:RouteSegment.routeFormed` will contain the reference to the NAT track. IMPORTANT: note that this may be empty in some timeslices, see explanation above.

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- (4) The `aixm:RouteSegment.availability.direction` will be always 'FORWARD'.
- (5) The `aixm:RouteSegment.availability.status` will be always 'OPEN'.
- (6) The `aixm:RouteSegment.availability.timeInterval` is expressed using the AIXM extension `adr:TimesheetExtension`. It is a Period where:
 - a) The `timeReference` is always 'UTC'.
 - b) The day is always 'ANY'.
 - c) The excluded attribute is always 'NO'.
 - d) The period is expressed using the `gml:TimePeriod`.

3.2.1.14.2.3. Example of Publication

```

<adrmsg:ADRMessage
  gml:id="ID_51_1352812234877_1"
  xmlns:adrmsg="http://www.eurocontrol.int/cfmu/b2b/ADRMessage"
  xmlns:adr="http://www.aixm.aero/schema/5.1/extensions/ADR"
  xmlns:gml="http://www.opengis.net/gml/3.2"
  xmlns:aixm="http://www.aixm.aero/schema/5.1"
  xmlns:xlink="http://www.w3.org/1999/xlink">
  <adrmsg:hasMember>
    <aixm:Route gml:id="ID_40_1377648348105_74">
      <gml:identifier codeSpace="urn:uuid:">6b2791d6-c61d-4d8a-8fef-eb74b4bd07e3</gml:identifier>
      <aixm:timeSlice>
        <aixm:RouteTimeSlice gml:id="ID_40_1377648348105_75">
          <gml:validTime>
            <gml:TimePeriod gml:id="ID_40_1377648348105_76">
              <gml:beginPosition>2013-07-25T00:00:00</gml:beginPosition>
              <gml:endPosition indeterminatePosition="unknown"/>
            </gml:TimePeriod>
          </gml:validTime>
          <aixm:interpretation>BASELINE</aixm:interpretation>
          <aixm:featureLifetime>
            <gml:TimePeriod gml:id="ID_40_1377648348105_77">
              <gml:beginPosition>2013-07-25T00:00:00</gml:beginPosition>
              <gml:endPosition indeterminatePosition="unknown"/>
            </gml:TimePeriod>
          </aixm:featureLifetime>
          <aixm:name>NATZ</aixm:name>
          <aixm:type>NAT</aixm:type>
        </aixm:RouteTimeSlice>
      </aixm:timeSlice>
    </aixm:Route>
  </adrmsg:hasMember>
  <adrmsg:hasMember>
    <aixm:RouteSegment gml:id="ID_40_1377648348105_78">
      <gml:identifier
        codeSpace="urn:uuid:">Route_6b2791d6-c61d-4d8a-8fef-eb74b4bd07e3.
        51855585-f528-41f1-b254-4b7c139d46a8.
        2ca64b3c-535f-47f0-a57f-adb3cda37600</gml:identifier>

      <aixm:timeSlice>
        <aixm:RouteSegmentTimeSlice gml:id="ID_40_1377648348105_79">
          <gml:validTime>
            <gml:TimePeriod gml:id="ID_40_1377648348105_80">
              <gml:beginPosition>2013-07-24T08:00:00</gml:beginPosition>
              <gml:endPosition>2013-07-25T08:00:00</gml:endPosition>
            </gml:TimePeriod>
          </gml:validTime>
        </aixm:RouteSegmentTimeSlice>
      </aixm:timeSlice>
    </aixm:RouteSegment>
  </adrmsg:hasMember>
</adrmsg:ADRMessage>

```

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```

    </gml:TimePeriod>
  </gml:validTime>
  <aixm:interpretation>BASELINE</aixm:interpretation>
  <aixm:featureLifetime>
    <gml:TimePeriod gml:id="ID_40_1377648348105_81">
      <gml:beginPosition>2013-07-24T08:00:00</gml:beginPosition>
      <gml:endPosition>2013-07-25T08:00:00</gml:endPosition>
    </gml:TimePeriod>
  </aixm:featureLifetime>
  <aixm:start>
    <aixm:EnRouteSegmentPoint gml:id="ID_40_1377648348105_82">
      <!-- YQX -->
      <aixm:pointChoice_fixDesignatedPoint
        xlink:href="urn:uuid:51855585-f528-41f1-b254-4b7c139d46a8"/>
    </aixm:EnRouteSegmentPoint>
  </aixm:start>
  <aixm:routeFormed xlink:href="urn:uuid:024bb6f8-3265-472a-9988-c765f519bcef"/>
  <aixm:end>
    <aixm:EnRouteSegmentPoint gml:id="ID_40_1377648348105_83">
      <!-- KOBEV -->
      <aixm:pointChoice_fixDesignatedPoint
        xlink:href="urn:uuid:2ca64b3c-535f-47f0-a57f-adb3cda37600"/>
    </aixm:EnRouteSegmentPoint>
  </aixm:end>
  <aixm:availability>
    <aixm:RouteAvailability gml:id="ID_40_1377648348105_84">
      <!-- Timesheet -->
      <aixm:timeInterval>
        <aixm:Timesheet gml:id="ID_50_1352812184610_10_1">
          <aixm:timeReference>UTC</aixm:timeReference>
          <aixm:day>ANY</aixm:day>
          <aixm:excluded>NO</aixm:excluded>
          <aixm:extension>
            <adr:TimesheetExtension gml:id="ID_50_1352812184610_10_2">
              <gml:validTime>
                <gml:TimePeriod gml:id="ID_40_1377648348105_83">
                  <gml:beginPosition>2013-07-25T01:00:00</gml:beginPosition>
                  <gml:endPosition>2013-07-25T08:00:00</gml:endPosition>
                </gml:TimePeriod>
              </gml:validTime>
            </adr:TimesheetExtension>
          </aixm:extension>
        </aixm:Timesheet>
      </aixm:timeInterval>
      <aixm:direction>FORWARD</aixm:direction>
      <aixm:status>OPEN</aixm:status>
    </aixm:RouteAvailability>
  </aixm:availability>
</aixm:RouteSegmentTimeSlice>
</aixm:timeSlice>
</aixm:RouteSegment>
</adrmmsg:hasMember>
<!-- other RouteSegments -->
</adrmmsg:ADRMessage>

```


DNM		EUROCONTROL
Document Title: NM 23.0.0 - NOP/B2B Reference Manuals - Air-spaceServices		Document Reference: B2B/23.0.0/Airspace

3.2.1.15. FlightRestriction Publication

3.2.1.15.1. FlightRestriction with FlightConditionElementChoice being AircraftCharacteristic as defined in ICAO 2012

3.2.1.15.1.1. Description

- (1) In ICAO 2012 the content of some fields of the flight plan message changed, describing the precise NAV/COM/SUR capabilities of the flight.
- (2) This information is now used to determine whether an aircraft can or can not operate in an airspace.
- (3) The density of traffic in certain locations requires restrictions on the communication, navigation, and surveillance capabilities of aircraft traversing them. Therefore, NM will now prevent aircraft from flying through locations where they are not properly equipped to operate based on communication, navigation, and surveillance capabilities.
- (4) Complicated manoeuvres or terrain shapes (Mountains) require restrictions on the PBN capabilities required to use SIDs and STARs.

Example 3.1. Operational goal of the FlightRestriction

EDDF EMPAX STARS COMPULSORY FOR TRAFFIC TYPE RNAV VIA SONOM

3.2.1.15.1.2. Publication

- (1) AIXM 5.1 didn't follow the pace with ICAO 2012; as a result, the Aircraft Capability model within AIXM 5.1 is not rich enough to represent the full set of Aircraft Capabilities.
- (2) AIXM provides an easy extension mechanism to support enumerates and values not yet catered for.
- (3) XML/XSD can be extended using the codelist inline extension mechanism.

Example 3.2. extension of CodeNavigationSpecificationBaseType

OTHER:____RNP_APCH_BARO_RNAV

- (4) Since NM 21.0, FlightRestrictions can contain FlightConditions on communication, navigation, and surveillance capabilities of an Aircraft.

DNM		EUROCONTROL
Document Title: NM 23.0.0 - NOP/B2B Reference Manuals - Air-spaceServices		Document Reference: B2B/23.0.0/Airspace

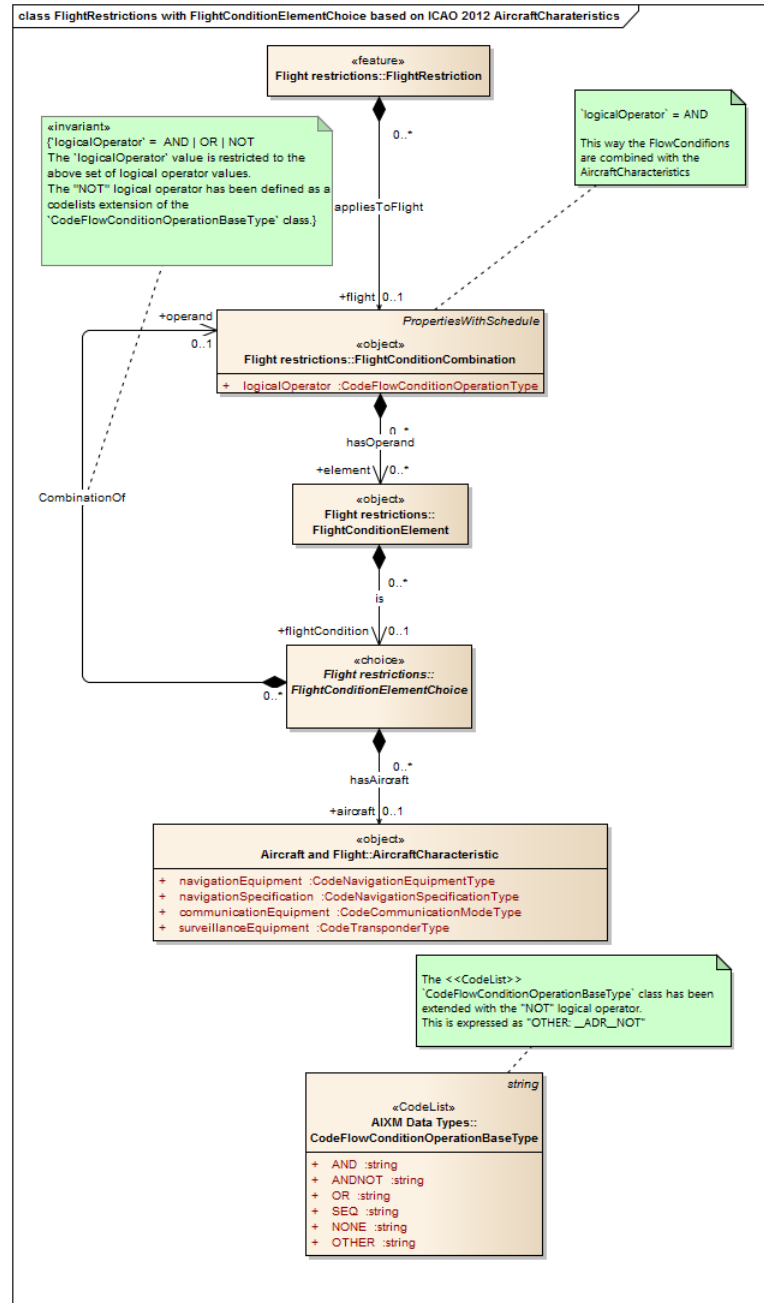


Figure 3.36. FlightRestriction with combination of AircraftCharacteristic conditions

- (5) The navigation capabilities are expressed by a codeList inline extension of the CodeNavigationEquipmentBaseType class.

DNM		EUROCONTROL
Document Title: NM 23.0.0 - NOP/B2B Reference Manuals - Air-spaceServices		Document Reference: B2B/23.0.0/Airspace

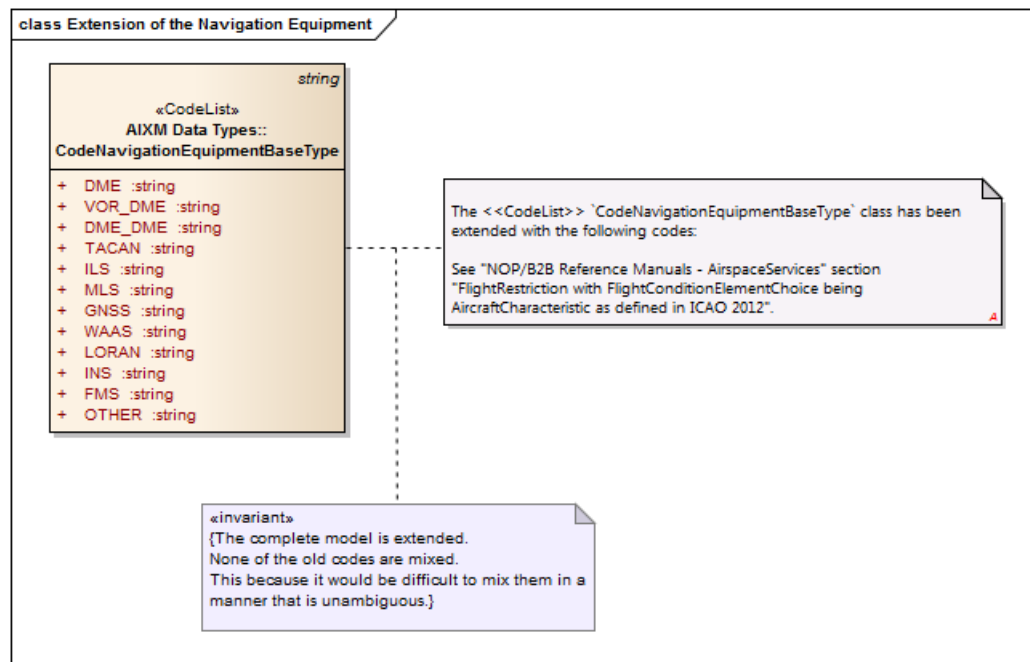


Figure 3.37. Extension of the CodeNavigationEquipmentBaseType class

- (6) Mapping between ICAO 2012 navigation equipment capabilities and the extension of the Code-NavigationEquipmentBaseType class:

ICAO Codes	AIXM 5.1 Extended Codes
A	__ADR__GBAS_CAPABILITY
	GBAS capability
B	__ADR__LPV
	LPV capability
C	__ADR__LORAN_C
	LORAN-C capability
D	__ADR__DME
	DME capability
F	__ADR__ADF
	ADF capability
G	__ADR__GNSS
	GNSS capability
I	__ADR__INERTIAL_NAVIGATION
	Inertial Navigation capability
K	__ADR__MLS

DNM	EUROCONTROL
Document Title: NM 23.0.0 - NOP/B2B Reference Manuals - Air-spaceServices	Document Reference: B2B/23.0.0/Airspace

ICAO Codes	AIXM 5.1 Extended Codes
	MLS capability
L	__ADR__ILS
	ILS capability
O	__ADR__VOR
	VOR capability
T	__ADR__TACAN
	TACAN capability
W	__ADR__RVSM_APPROVED
	RVSM capability
X	__ADR__MNPS_APPROVED
	MNPS capability

Table 3.2. Navigation Equipment Mapping

- (7) The communication capabilities are expressed by an AIXM 5.1 ADR extension of the CodeCommunicationModeBaseType class.

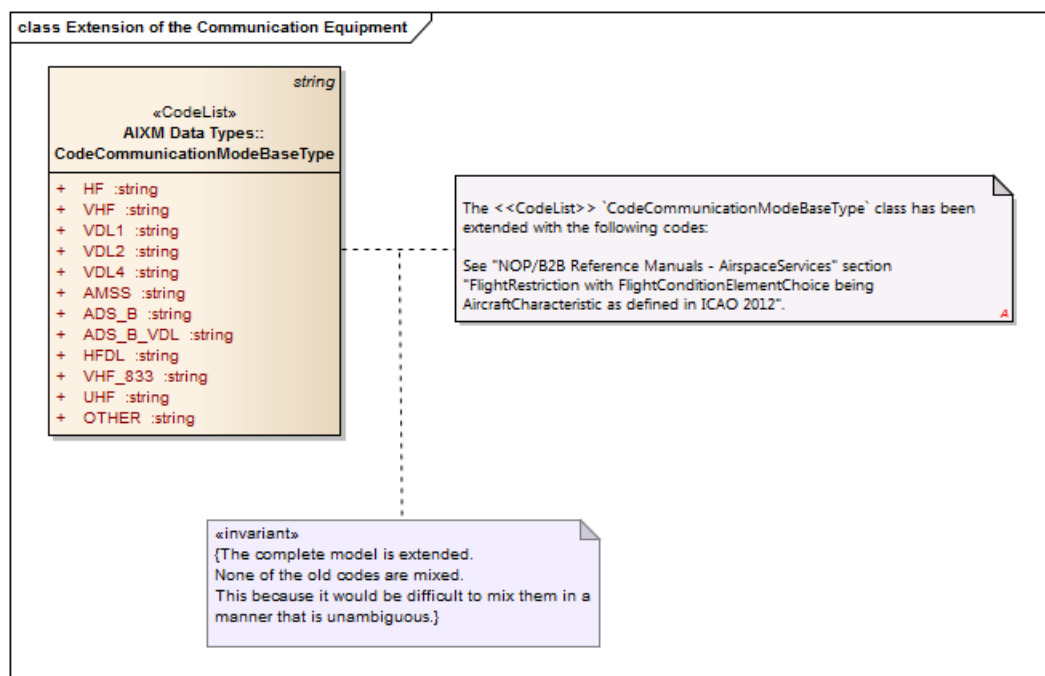


Figure 3.38. Extension of the CodeCommunicationModeBaseType class

- (8) Mapping between ICAO 2012 communication capabilities and the extension of the CodeCommunicationModeBaseType class:

DNM		EUROCONTROL
Document Title: NM 23.0.0 - NOP/B2B Reference Manuals - Air-spaceServices		Document Reference: B2B/23.0.0/Airspace

ICAO Codes	AIXM 5.1 Extended Codes
J1	__ADR__CPDLC_ATN_VDL_MODE_2
	Controller Pilot Data Link Communications ATN VDL Mode 2
J2	__ADR__CPDLC_FANS_1_A_HFDL
	Controller Pilot Data Link Communications FANS 1/A HFDL
J3	__ADR__CPDLC_FANS_1_A_VDL_MODE_A
	Controller Pilot Data Link Communications FANS 1/A VDL Mode A
J4	__ADR__CPDLC_FANS_1_A_VDL_MODE_2
	Controller Pilot Data Link Communications FANS 1/A VDL MODE 4 capability
J5	__ADR__CPDLC_FANS_1_A_SATCOM_INMARSAT
	Controller Pilot Data Link Communications FANS 1/A SATCOM (IN-MARSAT)
J6	__ADR__CPDLC_FANS_1_A_SATCOM_MTSAT
	Controller Pilot Data Link Communications FANS 1/A SATCOM (MT-SAT)
J7	__ADR__CPDLC_FANS_1_A_SATCOM_IRIDIUM
	Controller Pilot Data Link Communications FANS 1/A SATCOM (Iridium)
E1	__ADR__FMC_WPR_ACARS
	Flight Management Computer Waypoint Reporting Aircraft Communications Addressing and Reporting System
E2	__ADR__DFIS_ACARS
	Digital-Flight Information Services Aircraft Communications Addressing and Reporting System
E3	__ADR__ACARS_OVER_AVLC
	ACARS over AVLC
H	__ADR__HF_RTF
	Hi frequency Radio Transmission Frequency
M1	__ADR__ATC_RTF_SATCOM_INMARSAT
	Aeronautical Telecommunication Network RTF INMARSAT
M2	__ADR__ATC_RTF_MTSAT
	Aeronautical Telecommunication Network RTF MTSAT
M3	__ADR__ATC_RTF_IRIDIUM
	Aeronautical Telecommunication Network RTF Iridium
P1	__ADR__RCP_1
	(Reserved) Required Communications Performance

DNM		EUROCONTROL
Document Title: NM 23.0.0 - NOP/B2B Reference Manuals - Air-spaceServices		Document Reference: B2B/23.0.0/Airspace

ICAO Codes	AIXM 5.1 Extended Codes
P2	__ADR__RCP_2
	(Reserved) Required Communications Performance
P3	__ADR__RCP_3
	(Reserved) Required Communications Performance
P4	__ADR__RCP_4
	(Reserved) Required Communications Performance
P5	__ADR__RCP_5
	(Reserved) Required Communications Performance
P6	__ADR__RCP_6
	(Reserved) Required Communications Performance
P7	__ADR__RCP_7
	(Reserved) Required Communications Performance
P8	__ADR__RCP_8
	(Reserved) Required Communications Performance
P9	__ADR__RCP_9
	(Reserved) Required Communications Performance
U	__ADR__UHF_RTF
	Ultra-High frequency Radio Transmission Frequency
V	__ADR__VHF_RTF
	Very High frequency Radio Transmission Frequency
Y	__ADR__VHF_WITH_8_33_KHZ_CHANNEL_SPACING_CAPABILITY
	8.33 KHz equipment status
S	__ADR__STANDARD_EQUIPMENT
	Standard communication and navigation equipment

Table 3.3. Communication Equipment Mapping

- (9) The surveillance capabilities are expressed by a codelist inline extension of the CodeTransponderBaseType class.

DNM		EUROCONTROL
Document Title: NM 23.0.0 - NOP/B2B Reference Manuals - Air-spaceServices		Document Reference: B2B/23.0.0/Airspace

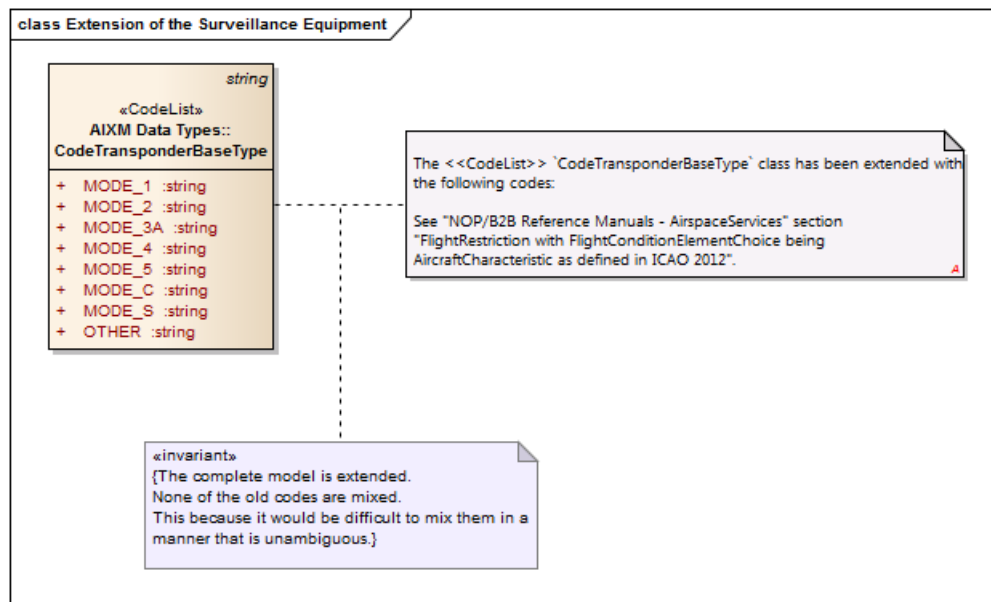


Figure 3.39. Extension of the CodeTransponderBaseType class

- (10) Mapping between ICAO 2012 surveillance capabilities and the extension of the CodeTransponderBaseType class:

ICAO Codes	AIXM 5.1 Extended Codes
A	__ADR__MODE_A Transponder Mode A (4 digits - 4096 codes)
B1	__ADR__ADS_B_1090MHZ_ADS_B_OUT ADS-B with dedicated 1090 MHz ADS-B 'out' capability
B2	__ADR__ADS_B_1090MHZ_ADS_B_OUT_IN ADS-B with dedicated 1090 MHz ADS-B 'out' and 'in' capability
C	__ADR__MODE_A_AND_C Transponder Mode A (4 digits - 4096 codes) and Mode C
D1	__ADR__ADS_C_FANS_1A ADS-C with FANS 1/A capabilities
G1	__ADR__ADS_C_ATN ADS-C with ATN capabilities
E	__ADR__MODE_S_ID_PRESSURE_EXTENDED_SQUITTER Transponder Mode S, including aircraft identification transmission, pressure-altitude transmission and extended squitter (ADS-B) capability
H	__ADR__MODE_S_ID_PRESSURE_ENHANCED_SURVEILLANCE

DNM		EUROCONTROL
Document Title: NM 23.0.0 - NOP/B2B Reference Manuals - Air-spaceServices		Document Reference: B2B/23.0.0/Airspace

ICAO Codes	AIXM 5.1 Extended Codes
	Transponder Mode S, including aircraft identification transmission, pressure-altitude transmission and enhanced surveillance capability
I	__ADR__MODE_S_ID_NO_PRESSURE
	Transponder Mode S, including aircraft identification transmission, but no pressure-altitude capability
L	__ADR__MODE_S_ID_PRESSURE_EXT_SQUITTER_ENHANCED_SURV
	Transponder Mode S, including aircraft identification transmission, pressure-altitude transmission, extended squitter (ADS-B) capability and enhanced surveillance capability
S	__ADR__MODE_S
	Transponder Mode S, including both pressure-altitude and aircraft identification capability
P	__ADR__MODE_S_NO_ID_PRESSURE
	Transponder Mode S, including pressure-altitude transmission, but no aircraft identification capability
X	__ADR__MODE_S_NO_ID_NO_PRESSURE
	Transponder Mode S without both aircraft identification and pressure-altitude capability
U1	__ADR__ADS_B_OUT_UAT
	ADS-B 'out' capability using UAT
U2	__ADR__ADS_B_OUT_IN_UAT
	ADS-B 'out' and 'in' capability using UAT
V1	__ADR__ADS_B_OUT_VDL_MODE_4
	ADS-B 'out' capability using VDL Mode 4
V2	__ADR__ADS_B_OUT_IN_VDL_MODE_4
	ADS-B 'out' and 'in' capability using VDL Mode 4

Table 3.4. Surveillance Equipment Mapping

- (11) The navigation specification capabilities are expressed by an AIXM 5.1 ADR extension of the `CodeNavigationSpecificationBaseType` class.

DNM		EUROCONTROL
Document Title: NM 23.0.0 - NOP/B2B Reference Manuals - Air-spaceServices		Document Reference: B2B/23.0.0/Airspace

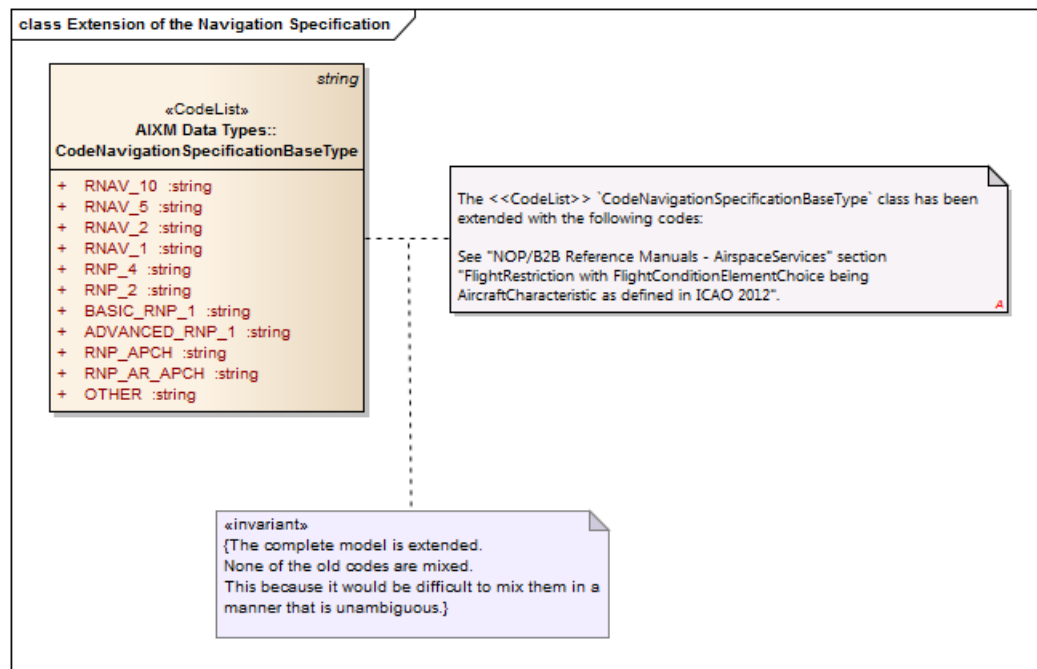


Figure 3.40. Extension of the CodeNavigationSpecificationBaseType class

- (12) Mapping between ICAO 2012 navigation specification capabilities and the extension of the CodeNavigationSpecificationBaseType class:

ICAO Codes	AIXM 5.1 Extended Codes
A1	__ADR__RNAV_10
	RNAV 10 (RNP 10) capability
B1	__ADR__RNAV_5_ALL_PERMITTED_SENSORS
	RNAV 5 all permitted sensors capability
B2	__ADR__RNAV_5_GNSS
	RNAV 5 GNSS capability
B3	__ADR__RNAV_5_DME_DME
	RNAV 5 DME DME capability
B4	__ADR__RNAV_5_VOR_DME
	RNAV 5 VOR DME capability
B5	__ADR__RNAV_5_INS_OR_IRS
	RNAV 5 INS or IRS capability
B6	__ADR__RNAV_5_LORANC
	RNAV 5 LORAN C capability
C1	__ADR__RNAV_2_ALL_PERMITTED_SENSORS

DNM		EUROCONTROL
Document Title: NM 23.0.0 - NOP/B2B Reference Manuals - Air-spaceServices		Document Reference: B2B/23.0.0/Airspace

ICAO Codes	AIXM 5.1 Extended Codes
	RNAV 2 all permitted sensors capability
C2	__ADR__RNAV_2_GNSS
	RNAV 2 GNSS capability
C3	__ADR__RNAV_2_DME_DME
	RNAV 2 DME DME capability
C4	__ADR__RNAV_2_DME_DME_IRU
	RNAV 2 DME DME IRU capability
D1	__ADR__RNAV_1_ALL_PERMITTED_SENSORS
	RNAV 1 all permitted sensors capability
D2	__ADR__RNAV_1_GNSS
	RNAV 1 GNSS capability
D3	__ADR__RNAV_1_DME_DME
	RNAV 1 DME DME capability
D4	__ADR__RNAV_1_DME_DME_IRU
	RNAV 1 DME DME IRU capability
L1	__ADR__RNP4
	RNP associated with operations in oceanic and remote continental airspaces
O1	__ADR__BASIC_RNP_1_ALL_PERMITTED_SENSORS
	Basic RNP 1 all permitted sensors capability
O2	__ADR__BASIC_RNP_1_GNSS
	Basic RNP 1 GNSS capability
O3	__ADR__BASIC_RNP_1_DME_DME
	Basic RNP 1 DME DME capability
O4	__ADR__BASIC_RNP_1_DME_DME_IRU
	Basic RNP 1 DME DME IRU capability
S1	__ADR__RNP_APCH
	RNP APCH capability
S2	__ADR__RNP_APCH_WITH_BARO_VNAV
	RNP APCH with BARO VNAV capability
T1	__ADR__RNP_AR_APCH_WITH_RF
	RNP AR APCH with RF capability
T2	__ADR__RNP_AR_APCH_WITHOUT_RF

DNM		EUROCONTROL
Document Title: NM 23.0.0 - NOP/B2B Reference Manuals - AirspaceServices		Document Reference: B2B/23.0.0/Airspace

ICAO Codes	AIXM 5.1 Extended Codes
	RNP AR APCH without RF capability

Table 3.5. Navigation Specification Mapping

- (13) FlightConditionCombination can be defined between AircraftCharateristics. The logical operators supported are:
- OR
 - AND
 - NOT
- (14) The NOT logical operator has been defined as a codelist inline extension of the CodeFlowConditionOperationBaseType class.

3.2.1.15.1.3. Example

- (1) Prior to NM 21.0 publications - Restriction LO5509A

```
<?xml version="1.0"?>
<adrm:hasMember>
  <aixm:FlightRestriction ...>
    <gml:identifier codeSpace="urn:uuid:">e7ed96c2-ced2-4b77-900e-d4f33db82674</gml:identifier>
    <aixm:timeSlice>
      <aixm:FlightRestrictionTimeSlice gml:id="ID_19951_1488247408556_487152">
        <gml:validTime>
          <gml:TimePeriod gml:id="ID_19951_1488247408556_487153">
            <gml:beginPosition>2015-10-15T00:00:00</gml:beginPosition>
            <gml:endPosition indeterminatePosition="unknown"/>
          </gml:TimePeriod>
        </gml:validTime>
        <aixm:interpretation>BASELINE</aixm:interpretation>
        <aixm:featureLifetime>
          <gml:TimePeriod gml:id="ID_19951_1488247408556_487154">
            <gml:beginPosition>2015-10-15T00:00:00</gml:beginPosition>
            <gml:endPosition indeterminatePosition="unknown"/>
          </gml:TimePeriod>
        </aixm:featureLifetime>
        <aixm:designator>LO5509A</aixm:designator>
        <aixm:type>MANDATORY</aixm:type>
        <aixm:instruction>APP 5 SBG$COMPULSORY FOR TRAFFIC
TYPE NON RNAV</aixm:instruction>
      </aixm:FlightRestrictionTimeSlice>
    </aixm:timeSlice>
  </aixm:FlightRestriction>
</adrm:hasMember>
```

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```

        <gml:beginPosition>2015-10-15T00:00:00</gml:beginPosition>
        <gml:endPosition indeterminatePosition="unknown"/>
    </gml:TimePeriod>
    </gml:validTime>
    </adrex:TimesheetExtension>
    </aixm:extension>
    </aixm:Timesheet>
</aixm:timeInterval>
<aixm:logicalOperator>ANDNOT</aixm:logicalOperator>
<aixm:element>
    <aixm:FlightConditionElement gml:id="ID_19951_1488247408556_487159">
        <aixm:flightCondition_airportHeliportCondition ...>
            <aixm:operationalCondition>
                <aixm:FlightConditionCircumstance gml:id="ID_19951_1488247408556_487160">
                    <aixm:referenceLocation>YES</aixm:referenceLocation>
                    <aixm:relationWithLocation>ARR</aixm:relationWithLocation>
                </aixm:FlightConditionCircumstance>
            </aixm:operationalCondition>
        </aixm:FlightConditionElement>
    </aixm:element>
    <aixm:element>
        <aixm:FlightConditionElement gml:id="ID_19951_1488247408556_487161">
            <aixm:flightCondition_aircraft>
                <aixm:AircraftCharacteristic gml:id="ID_19951_1488247408556_487162">
                    <aixm:navigationSpecification>RNAV_1</aixm:navigationSpecification>
                </aixm:AircraftCharacteristic>
            </aixm:flightCondition_aircraft>
        </aixm:FlightConditionElement>
    </aixm:element>
</aixm:FlightConditionCombination>
</aixm:flight>
<aixm:regulatedRoute>
    <aixm:FlightRestrictionRoute gml:id="ID_19951_1488247408556_487163">
        <aixm:routeElement>
            <aixm:FlightRoutingElement gml:id="ID_19951_1488247408556_487164">
                <aixm:orderNumber>1</aixm:orderNumber>
                <aixm:pointElement_navaidSystem ...>
            </aixm:FlightRoutingElement>
        </aixm:routeElement>
    </aixm:FlightRestrictionRoute>
</aixm:regulatedRoute>
<aixm:annotation>
    <aixm:Note gml:id="ID_19951_1488247408556_487165">
        <aixm:propertyName>instruction</aixm:propertyName>
        <aixm:purpose>REMARK</aixm:purpose>
        <aixm:translatedNote>
            <aixm:LinguisticNote gml:id="ID_19951_1488247408556_487166">
                <aixm:note>RNAV EQUIPPED FLIGHTS SHALL FILE VIA PUBLISHED STAR</aixm:note>
            </aixm:LinguisticNote>
        </aixm:translatedNote>
    </aixm:Note>
</aixm:annotation>
<aixm:extension>
    <adrex:FlightRestrictionExtension ...>
        <adrex:processingIndicator>TFR</adrex:processingIndicator>
        <adrex:enabled>YES</adrex:enabled>
        <adrex:usage>OPERATIONAL</adrex:usage>
    </adrex:FlightRestrictionExtension>
</aixm:extension>
</aixm:FlightRestrictionTimeSlice>
</aixm:timeSlice>
</aixm:FlightRestriction>
</adrm:hasMember>

```

DNM	EUROCONTROL
Document Title: NM 23.0.0 - NOP/B2B Reference Manuals - Air-spaceServices	Document Reference: B2B/23.0.0/Airspace

(2) NM 21.0 publication - Restriction LO5509A

```

<?xml version="1.0"?>
<adrm:hasMember>
  <aixm:FlightRestriction ...>
    <gml:identifier codeSpace="urn:uuid:">e7ed96c2-ced2-4b77-900e-d4f33db82674</gml:identifier>
    <aixm:timeSlice>
      <aixm:FlightRestrictionTimeSlice gml:id="ID_45_1488621985525_536433">
        <gml:validTime>
          <gml:TimePeriod gml:id="ID_45_1488621985525_536434">
            <gml:beginPosition>2015-10-15T00:00:00</gml:beginPosition>
            <gml:endPosition indeterminatePosition="unknown"/>
          </gml:TimePeriod>
        </gml:validTime>
        <aixm:interpretation>BASELINE</aixm:interpretation>
        <aixm:featureLifetime>
          <gml:TimePeriod gml:id="ID_45_1488621985525_536435">
            <gml:beginPosition>2015-10-15T00:00:00</gml:beginPosition>
            <gml:endPosition indeterminatePosition="unknown"/>
          </gml:TimePeriod>
        </aixm:featureLifetime>
        <aixm:designator>L05509A</aixm:designator>
        <aixm:type>MANDATORY</aixm:type>
        <aixm:instruction>APP 5 SBG$COMPULSORY FOR TRAFFIC
TYPE NON RNAV</aixm:instruction>
        <aixm:flight>
          <aixm:FlightConditionCombination gml:id="ID_45_1488621985525_536436">
            <aixm:timeInterval>
              <aixm:Timesheet gml:id="ID_45_1488621985525_536437">
                <aixm:timeReference>UTC</aixm:timeReference>
                <aixm:day>ANY</aixm:day>
                <aixm:startTime>00:00</aixm:startTime>
                <aixm:endTime>24:00</aixm:endTime>
                <aixm:excluded>N0</aixm:excluded>
                <aixm:extension>
                  <adext:TimesheetExtension ...>
                    <gml:validTime>
                      <gml:TimePeriod gml:id="ID_45_1488621985525_536439">
                        <gml:beginPosition>2015-10-15T00:00:00</gml:beginPosition>
                        <gml:endPosition indeterminatePosition="unknown"/>
                      </gml:TimePeriod>
                    </gml:validTime>
                  </adext:TimesheetExtension>
                </aixm:extension>
              </aixm:Timesheet>
            </aixm:timeInterval>
            <aixm:logicalOperator>AND</aixm:logicalOperator>
            <aixm:element>
              <aixm:FlightConditionElement gml:id="ID_45_1488621985525_536440">
                <aixm:flightCondition_airportHelipportCondition ...>
                  <aixm:operationalCondition>
                    <aixm:FlightConditionCircumstance gml:id="ID_45_1488621985525_536441">
                      <aixm:referenceLocation>YES</aixm:referenceLocation>
                      <aixm:relationWithLocation>ARR</aixm:relationWithLocation>
                    </aixm:FlightConditionCircumstance>
                  </aixm:operationalCondition>
                </aixm:FlightConditionElement>
              </aixm:element>
              <aixm:element>
                <aixm:FlightConditionElement gml:id="ID_45_1488621985525_536442">
                  <aixm:flightCondition_operand>
                    <aixm:FlightConditionCombination gml:id="ID_45_1488621985525_536443">
                      <aixm:logicalOperator>OR</aixm:logicalOperator>
                      <aixm:element>
                        <aixm:FlightConditionElement gml:id="ID_45_1488621985525_536444">
                          <aixm:flightCondition_aircraft>

```

DNM		EUROCONTROL
Document Title: NM 23.0.0 - NOP/B2B Reference Manuals - Air-spaceServices		Document Reference: B2B/23.0.0/Airspace

```

        <aixm:AircraftCharacteristic gml:id="ID_45_1488621985525_536445">
        <aixm:navigationSpecification>OTHER: __ADR__RNAV_5_ALL_PERMITTED_SENSORS
        </aixm:navigationSpecification>
        </aixm:AircraftCharacteristic>
    </aixm:flightCondition_aircraft>
</aixm:FlightConditionElement>
</aixm:element>
<aixm:element>
    <aixm:FlightConditionElement gml:id="ID_45_1488621985525_536446">
        <aixm:flightCondition_aircraft>
            <aixm:AircraftCharacteristic gml:id="ID_45_1488621985525_536447">
            <aixm:navigationSpecification>OTHER: __ADR__RNAV_5_GNSS
            </aixm:navigationSpecification>
            </aixm:AircraftCharacteristic>
            </aixm:flightCondition_aircraft>
        </aixm:FlightConditionElement>
    </aixm:element>
    <aixm:element>
        <aixm:FlightConditionElement gml:id="ID_45_1488621985525_536448">
            <aixm:flightCondition_aircraft>
                <aixm:AircraftCharacteristic gml:id="ID_45_1488621985525_536449">
                <aixm:navigationSpecification>OTHER: __ADR__RNAV_5_DME_DME
                </aixm:navigationSpecification>
                </aixm:AircraftCharacteristic>
            </aixm:flightCondition_aircraft>
        </aixm:FlightConditionElement>
    </aixm:element>
    <aixm:element>
        <aixm:FlightConditionElement gml:id="ID_45_1488621985525_536450">
            <aixm:flightCondition_aircraft>
                <aixm:AircraftCharacteristic gml:id="ID_45_1488621985525_536451">
                <aixm:navigationSpecification>OTHER: __ADR__RNAV_5_VOR_DME
                </aixm:navigationSpecification>
                </aixm:AircraftCharacteristic>
            </aixm:flightCondition_aircraft>
        </aixm:FlightConditionElement>
    </aixm:element>
    <aixm:element>
        <aixm:FlightConditionElement gml:id="ID_45_1488621985525_536452">
            <aixm:flightCondition_aircraft>
                <aixm:AircraftCharacteristic gml:id="ID_45_1488621985525_536453">
                <aixm:navigationSpecification>OTHER: __ADR__RNAV_5_INS_OR_IRS
                </aixm:navigationSpecification>
                </aixm:AircraftCharacteristic>
            </aixm:flightCondition_aircraft>
        </aixm:FlightConditionElement>
    </aixm:element>
</aixm:FlightConditionCombination>
</aixm:flightCondition_operand>
</aixm:FlightConditionElement>
</aixm:element>
</aixm:FlightConditionCombination>
</aixm:flight>
<aixm:regulatedRoute>
    <aixm:FlightRestrictionRoute gml:id="ID_45_1488621985525_536454">
        <aixm:routeElement>
            <aixm:FlightRoutingElement gml:id="ID_45_1488621985525_536455">
                <aixm:orderNumber>1</aixm:orderNumber>
                <aixm:pointElement_navaidSystem ...>
            </aixm:FlightRoutingElement>
        </aixm:routeElement>
    </aixm:FlightRestrictionRoute>
</aixm:regulatedRoute>
<aixm:annotation>
    <aixm:Note gml:id="ID_45_1488621985525_536456">
        <aixm:propertyName>instruction</aixm:propertyName>

```

DNM	EUROCONTROL
Document Title: NM 23.0.0 - NOP/B2B Reference Manuals - Air-spaceServices	Document Reference: B2B/23.0.0/Airspace

```

    <aixm:purpose>REMARK</aixm:purpose>
    <aixm:translatedNote>
      <aixm:LinguisticNote gml:id="ID_45_1488621985525_536457">
        <aixm:note>RNAV EQUIPPED FLIGHTS SHALL FILE VIA PUBLISHED STAR</aixm:note>
      </aixm:LinguisticNote>
    </aixm:translatedNote>
  </aixm:Note>
</aixm:annotation>
<aixm:extension>
  <adrex:FlightRestrictionExtension ...>
    <adrex:processingIndicator>TFR</adrex:processingIndicator>
    <adrex:enabled>YES</adrex:enabled>
    <adrex:usage>OPERATIONAL</adrex:usage>
  </adrex:FlightRestrictionExtension>
</aixm:extension>
</aixm:FlightRestrictionTimeSlice>
</aixm:timeSlice>
</aixm:FlightRestriction>
</adrm:hasMember>

```

3.2.1.15.2. Multiple Dependent Applicabilities can be defined in a FlightRestriction.

3.2.1.15.2.1. Description

- (1) Prior to NM 21.0, a RAD Dependent Applicability actually referenced only 1 danger area or CDR.
- (2) From NM 21.0 onwards, we can publish a FlightRestriction depending on a CDR that passes through more than one danger area and that can be activated independently of each other.

3.2.1.15.2.2. Publication

- (1) Multiple DependentApplicabilities in all possible AND/OR combinations can be published.
- (2) The publication of multiple DependentApplicabilities is performed within the standard AIXM XML Schema. No AIXM 5.1 extension has been used.

DNM		EUROCONTROL
Document Title: NM 23.0.0 - NOP/B2B Reference Manuals - Air-spaceServices		Document Reference: B2B/23.0.0/Airspace

```

WITH ARR PARIS GROUP
WITH RFL ABOVE FL195
SEE AUP/UUP/AIP</aixm:instruction>
  <aixm:flight>
    <aixm:FlightConditionCombination gml:id="ID_19951_1488247408556_183246">
      <aixm:timeInterval>
        <aixm:Timesheet gml:id="ID_19951_1488247408556_183247">
          <aixm:timeReference>UTC</aixm:timeReference>
          <aixm:day>ANY</aixm:day>
          <aixm:startTime>00:00</aixm:startTime>
          <aixm:endTime>24:00</aixm:endTime>
          <aixm:excluded>N0</aixm:excluded>
          <aixm:extension>
            <adext:TimesheetExtension ...>
              <gml:validTime>
                <gml:TimePeriod gml:id="ID_19951_1488247408556_183249">
                  <gml:beginPosition>2015-07-23T00:00:00</gml:beginPosition>
                  <gml:endPosition indeterminatePosition="unknown"/>
                </gml:TimePeriod>
              </gml:validTime>
            </adext:TimesheetExtension>
          </aixm:extension>
        </aixm:Timesheet>
      </aixm:timeInterval>
      <aixm:logicalOperator>AND</aixm:logicalOperator>
      <aixm:element>
        <aixm:FlightConditionElement gml:id="ID_19951_1488247408556_183250">
          <aixm:flightCondition_directFlightCondition>
            <aixm:DirectFlightSegment gml:id="ID_19951_1488247408556_183251">
              <aixm:end_fixDesignatedPoint
                xmlns:xlink="http://www.w3.org/1999/xlink"
                xlink:href="urn:uuid:69871243-17e0-4214-9d2d-fd13a9de58b4"/>
              <aixm:start_fixDesignatedPoint
                xmlns:xlink="http://www.w3.org/1999/xlink"
                xlink:href="urn:uuid:8ac259c8-65e9-4d18-ad00-283121ecd6d4"/>
            </aixm:DirectFlightSegment>
          </aixm:flightCondition_directFlightCondition>
          <aixm:operationalCondition>
            <aixm:FlightConditionCircumstance gml:id="ID_19951_1488247408556_183252">
              <aixm:referenceLocation>YES</aixm:referenceLocation>
              <aixm:relationWithLocation>XNG</aixm:relationWithLocation>
            </aixm:FlightConditionCircumstance>
          </aixm:operationalCondition>
          <aixm:flightLevel>
            <aixm:FlightRestrictionLevel gml:id="ID_19951_1488247408556_183253">
              <aixm:upperLevel uom="FL">245</aixm:upperLevel>
              <aixm:upperLevelReference>STD</aixm:upperLevelReference>
              <aixm:lowerLevel uom="FL">105</aixm:lowerLevel>
              <aixm:lowerLevelReference>STD</aixm:lowerLevelReference>
            </aixm:FlightRestrictionLevel>
          </aixm:flightLevel>
        </aixm:FlightConditionElement>
      </aixm:element>
      <aixm:element>
        <aixm:FlightConditionElement gml:id="ID_19951_1488247408556_183254">
          <aixm:flightCondition_airspaceCondition
            xmlns:xlink="http://www.w3.org/1999/xlink"
            xlink:href="urn:uuid:d8bcbdba-b993-4953-9ec5-b8d6e21ae651"/>
          <aixm:operationalCondition>
            <aixm:FlightConditionCircumstance gml:id="ID_19951_1488247408556_183255">
              <aixm:referenceLocation>YES</aixm:referenceLocation>
              <aixm:relationWithLocation>ACT</aixm:relationWithLocation>
            </aixm:FlightConditionCircumstance>
          </aixm:operationalCondition>
        </aixm:FlightConditionElement>
      </aixm:element>
    </aixm:FlightConditionCombination>
  </aixm:flight>

```

DNM	EUROCONTROL
Document Title: NM 23.0.0 - NOP/B2B Reference Manuals - Air-spaceServices	Document Reference: B2B/23.0.0/Airspace

```

    </aixm:FlightConditionCombination>
  </aixm:flight>
  <aixm:regulatedRoute>
    <aixm:FlightRestrictionRoute gml:id="ID_19951_1488247408556_183256">
      <aixm:routeElement>
        <aixm:FlightRoutingElement gml:id="ID_19951_1488247408556_183257">
          <aixm:orderNumber>1</aixm:orderNumber>
          <aixm:pointElement_fixDesignatedPoint
            xmlns:xlink="http://www.w3.org/1999/xlink"
            xlink:href="urn:uuid:8ac259c8-65e9-4d18-ad00-283121ecd6d4"/>
          </aixm:FlightRoutingElement>
        </aixm:routeElement>
      </aixm:FlightRestrictionRoute>
    </aixm:regulatedRoute>
    <aixm:annotation>
      <aixm:Note gml:id="ID_19951_1488247408556_183258">
        <aixm:propertyName>instruction</aixm:propertyName>
        <aixm:purpose>REMARK</aixm:purpose>
        <aixm:translatedNote>
          <aixm:LinguisticNote gml:id="ID_19951_1488247408556_183259">
            <aixm:note>BETTER FLIGHT PLANNING
WHEN EBTRANA/EBTRANB/ EBTRASB NOT ACTIVE</aixm:note>
          </aixm:LinguisticNote>
        </aixm:translatedNote>
      </aixm:Note>
    </aixm:annotation>
    <aixm:extension>
      <adrex:FlightRestrictionExtension ...>
        <adrex:processingIndicator>TFR</adrex:processingIndicator>
        <adrex:enabled>YES</adrex:enabled>
        <adrex:usage>OPERATIONAL</adrex:usage>
        <adrex:isFUA>NO</adrex:isFUA>
      </adrex:FlightRestrictionExtension>
    </aixm:extension>
  </aixm:FlightRestrictionTimeSlice>
</aixm:timeSlice>
</aixm:FlightRestriction>
</adrm:hasMember>

```

- (2) Publication in NM 21.0 - multiple DependentApplicabilities

Example 3.4. EBED5000A depends on EBTRANA and EBTRANB

The FlightRestriction **EBED5000A** has dependent applicability associations with the Air-spaces **EBTRANA** and **EBTRANB**

```

<?xml version="1.0" encoding="UTF-8"?>
<adrm:ADRMMessage ...>
  <adrm:hasMember>
    <aixm:FlightRestriction ...>
      <gml:identifier codeSpace="urn:uuid:">7406424d-5212-48a5-bd66-cf346aaae8e9</gml:identifier>
      <aixm:timeSlice>
        <aixm:FlightRestrictionTimeSlice gml:id="ID_6_1489090835692_3">
          <gml:validTime>
            <gml:TimePeriod gml:id="ID_6_1489090835692_4">
              <gml:beginPosition>2017-03-02T00:00:00</gml:beginPosition>
              <gml:endPosition indeterminatePosition="unknown"/>
            </gml:TimePeriod>
          </gml:validTime>
          <aixm:interpretation>BASELINE</aixm:interpretation>
          <aixm:featureLifetime>
            <gml:TimePeriod gml:id="ID_6_1489090835692_5">
              <gml:beginPosition>2017-03-02T00:00:00</gml:beginPosition>

```

DNM		EUROCONTROL
Document Title: NM 23.0.0 - NOP/B2B Reference Manuals - Air-spaceServices		Document Reference: B2B/23.0.0/Airspace

```

        <gml:endPosition indeterminatePosition="unknown"/>
      </gml:TimePeriod>
    </aixm:featureLifetime>
    <aixm:designator>EBED5000A</aixm:designator>
    <aixm:type>FORBID</aixm:type>
    <aixm:instruction>NETEX DCT DELOM APP4$ONLY AVAILABLE FOR TRAFFIC
DEP EDDL/LV
WITH ARR PARIS GROUP
WITH RFL ABOVE FL195
SEE AUP/UUP/AIP</aixm:instruction>
    <aixm:flight>
      <aixm:FlightConditionCombination gml:id="ID_6_1489090835692_6">
        <aixm:timeInterval>
          <aixm:Timesheet gml:id="ID_6_1489090835692_7">
            <aixm:timeReference>UTC</aixm:timeReference>
            <aixm:day>ANY</aixm:day>
            <aixm:startTime>00:00</aixm:startTime>
            <aixm:endTime>24:00</aixm:endTime>
            <aixm:excluded>NO</aixm:excluded>
            <aixm:extension>
              <adrest:TimesheetExtension ...>
                <gml:validTime>
                  <gml:TimePeriod gml:id="ID_6_1489090835692_9">
                    <gml:beginPosition>2017-03-02T00:00:00</gml:beginPosition>
                    <gml:endPosition indeterminatePosition="unknown"/>
                  </gml:TimePeriod>
                </gml:validTime>
              </adrest:TimesheetExtension>
            </aixm:extension>
          </aixm:Timesheet>
        </aixm:timeInterval>
        <aixm:logicalOperator>AND</aixm:logicalOperator>
        <aixm:element>
          <aixm:FlightConditionElement gml:id="ID_6_1489090835692_10">
            <aixm:flightCondition_directFlightCondition>
              <aixm:DirectFlightSegment gml:id="ID_6_1489090835692_11">
                <aixm:end_fixDesignatedPoint
                  xmlns:xlink="http://www.w3.org/1999/xlink"
                  xlink:href="urn:uuid:69871243-17e0-4214-9d2d-fd13a9de58b4"/>
                <aixm:start_fixDesignatedPoint
                  xmlns:xlink="http://www.w3.org/1999/xlink"
                  xlink:href="urn:uuid:8ac259c8-65e9-4d18-ad00-283121ecd6d4"/>
                </aixm:DirectFlightSegment>
              </aixm:flightCondition_directFlightCondition>
              <aixm:operationalCondition>
                <aixm:FlightConditionCircumstance gml:id="ID_6_1489090835692_12">
                  <aixm:referenceLocation>YES</aixm:referenceLocation>
                  <aixm:relationWithLocation>XNG</aixm:relationWithLocation>
                </aixm:FlightConditionCircumstance>
              </aixm:operationalCondition>
            </aixm:flightLevel>
            <aixm:FlightRestrictionLevel gml:id="ID_6_1489090835692_13">
              <aixm:upperLevel uom="FL">245</aixm:upperLevel>
              <aixm:upperLevelReference>STD</aixm:upperLevelReference>
              <aixm:lowerLevel uom="FL">105</aixm:lowerLevel>
              <aixm:lowerLevelReference>STD</aixm:lowerLevelReference>
            </aixm:FlightRestrictionLevel>
          </aixm:flightLevel>
        </aixm:FlightConditionElement>
      </aixm:element>
    </aixm:element>
    <aixm:FlightConditionElement gml:id="ID_6_1489090835692_14">
      <aixm:flightCondition_airspaceCondition
        xmlns:xlink="http://www.w3.org/1999/xlink"
        link:href="urn:uuid:d8bcbdba-b993-4953-9ec5-b8d6e21ae651"/>
      <aixm:operationalCondition>

```

DNM	EUROCONTROL
Document Title: NM 23.0.0 - NOP/B2B Reference Manuals - Air-spaceServices	Document Reference: B2B/23.0.0/Airspace

```

        <aixm:FlightConditionCircumstance gml:id="ID_6_1489090835692_15">
          <aixm:referenceLocation>YES</aixm:referenceLocation>
          <aixm:relationWithLocation>ACT</aixm:relationWithLocation>
        </aixm:FlightConditionCircumstance>
      </aixm:operationalCondition>
    </aixm:FlightConditionElement>
  </aixm:element>
</aixm:element>
  <aixm:FlightConditionElement gml:id="ID_6_1489090835692_16">
    <aixm:flightCondition_airspaceCondition
      xmlns:xlink="http://www.w3.org/1999/xlink"
      xlink:href="urn:uuid:e90918d9-0ce1-4db2-a870-e370a3d83048"/>
    <aixm:operationalCondition>
      <aixm:FlightConditionCircumstance gml:id="ID_6_1489090835692_17">
        <aixm:referenceLocation>YES</aixm:referenceLocation>
        <aixm:relationWithLocation>ACT</aixm:relationWithLocation>
      </aixm:FlightConditionCircumstance>
    </aixm:operationalCondition>
  </aixm:FlightConditionElement>
</aixm:element>
</aixm:FlightConditionCombination>
</aixm:flight>
<aixm:regulatedRoute>
  <aixm:FlightRestrictionRoute gml:id="ID_6_1489090835692_18">
    <aixm:routeElement>
      <aixm:FlightRoutingElement gml:id="ID_6_1489090835692_19">
        <aixm:orderNumber>1</aixm:orderNumber>
        <aixm:pointElement_fixDesignatedPoint
          xmlns:xlink="http://www.w3.org/1999/xlink"
          xlink:href="urn:uuid:8ac259c8-65e9-4d18-ad00-283121ecd6d4"/>
        </aixm:FlightRoutingElement>
      </aixm:routeElement>
    </aixm:FlightRestrictionRoute>
  </aixm:regulatedRoute>
  <aixm:annotation>
    <aixm:Note gml:id="ID_6_1489090835692_20">
      <aixm:propertyName>instruction</aixm:propertyName>
      <aixm:purpose>REMARK</aixm:purpose>
      <aixm:translatedNote>
        <aixm:LinguisticNote gml:id="ID_6_1489090835692_21">
          <aixm:note>BETTER FLIGHT PLANNING
WHEN EBTRANA/EBTRANB/ EBTRASB NOT ACTIVE</aixm:note>
        </aixm:LinguisticNote>
      </aixm:translatedNote>
    </aixm:Note>
  </aixm:annotation>
  <aixm:extension>
    <aixm:FlightRestrictionExtension ...>
      <adrex:processingIndicator>TFR</adrex:processingIndicator>
      <adrex:enabled>YES</adrex:enabled>
      <adrex:usage>OPERATIONAL</adrex:usage>
    </adrex:FlightRestrictionExtension>
  </aixm:extension>
</aixm:FlightRestrictionTimeSlice>
</aixm:timeSlice>
</aixm:FlightRestriction>
</adrm:hasMember>
</adrm:ADRMMessage>

```

Example 3.5. EBED5000A depends on EBTRANA or EBTRANB

The FlightRestriction **EBED5000A** has dependent applicability associations with the Air-spaces **EBTRANA** or **EBTRANB**

DNM		EUROCONTROL
Document Title: NM 23.0.0 - NOP/B2B Reference Manuals - Air-spaceServices		Document Reference: B2B/23.0.0/Airspace

```

<?xml version="1.0" encoding="UTF-8"?>
<adrm:ADRMMessage ...>
  <adrm:hasMember>
    <aixm:FlightRestriction ...>
      <gml:identifier
        codeSpace="urn:uuid:">7406424d-5212-48a5-bd66-cf346aaae8e9
      </gml:identifier>
      <aixm:timeSlice>
        <aixm:FlightRestrictionTimeSlice gml:id="ID_6_1489093857329_3">
          <gml:validTime>
            <gml:TimePeriod gml:id="ID_6_1489093857329_4">
              <gml:beginPosition>2017-03-02T00:00:00</gml:beginPosition>
              <gml:endPosition indeterminatePosition="unknown"/>
            </gml:TimePeriod>
          </gml:validTime>
          <aixm:interpretation>BASELINE</aixm:interpretation>
          <aixm:featureLifetime>
            <gml:TimePeriod gml:id="ID_6_1489093857329_5">
              <gml:beginPosition>2017-03-02T00:00:00</gml:beginPosition>
              <gml:endPosition indeterminatePosition="unknown"/>
            </gml:TimePeriod>
          </aixm:featureLifetime>
          <aixm:designator>EBED5000A</aixm:designator>
          <aixm:type>FORBID</aixm:type>
          <aixm:instruction>NETEX DCT DELOM APP4$ONLY AVAILABLE FOR TRAFFIC
DEP EDDL/LV
WITH ARR PARIS GROUP
WITH RFL ABOVE FL195
SEE AUP/UUP/AIP</aixm:instruction>
        <aixm:flight>
          <aixm:FlightConditionCombination gml:id="ID_6_1489093857329_6">
            <aixm:timeInterval>
              <aixm:Timesheet gml:id="ID_6_1489093857329_7">
                <aixm:timeReference>UTC</aixm:timeReference>
                <aixm:day>ANY</aixm:day>
                <aixm:startTime>00:00</aixm:startTime>
                <aixm:endTime>24:00</aixm:endTime>
                <aixm:excluded>NO</aixm:excluded>
                <aixm:extension>
                  <adext:TimesheetExtension ...>
                    <gml:validTime>
                      <gml:TimePeriod gml:id="ID_6_1489093857329_9">
                        <gml:beginPosition>2017-03-02T00:00:00</gml:beginPosition>
                        <gml:endPosition indeterminatePosition="unknown"/>
                      </gml:TimePeriod>
                    </gml:validTime>
                  </adext:TimesheetExtension>
                </aixm:extension>
              </aixm:Timesheet>
            </aixm:timeInterval>
            <aixm:logicalOperator>AND</aixm:logicalOperator>
          </aixm:element>
          <aixm:FlightConditionElement gml:id="ID_6_1489093857329_10">
            <aixm:flightCondition_directFlightCondition>
              <aixm:DirectFlightSegment gml:id="ID_6_1489093857329_11">
                <aixm:end_fixDesignatedPoint
                  xmlns:xlink="http://www.w3.org/1999/xlink"
                  xlink:href="urn:uuid:69871243-17e0-4214-9d2d-fd13a9de58b4"/>
                <aixm:start_fixDesignatedPoint
                  xmlns:xlink="http://www.w3.org/1999/xlink"
                  xlink:href="urn:uuid:8ac259c8-65e9-4d18-ad00-283121ecd6d4"/>
              </aixm:DirectFlightSegment>
            </aixm:flightCondition_directFlightCondition>
            <aixm:operationalCondition>
              <aixm:FlightConditionCircumstance gml:id="ID_6_1489093857329_12">
                <aixm:referenceLocation>YES</aixm:referenceLocation>
              </aixm:FlightConditionCircumstance>
            </aixm:operationalCondition>
          </aixm:FlightConditionElement>
        </aixm:flight>
      </aixm:FlightRestrictionTimeSlice>
    </aixm:timeSlice>
  </aixm:FlightRestriction>
</adrm:hasMember>
</adrm:ADRMMessage>

```

DNM		EUROCONTROL
Document Title: NM 23.0.0 - NOP/B2B Reference Manuals - Air-spaceServices		Document Reference: B2B/23.0.0/Airspace

```

        <aixm:relationWithLocation>XNG</aixm:relationWithLocation>
      </aixm:FlightConditionCircumstance>
    </aixm:operationalCondition>
    <aixm:flightLevel>
      <aixm:FlightRestrictionLevel gml:id="ID_6_1489093857329_13">
        <aixm:upperLevel uom="FL">245</aixm:upperLevel>
        <aixm:upperLevelReference>STD</aixm:upperLevelReference>
        <aixm:lowerLevel uom="FL">105</aixm:lowerLevel>
        <aixm:lowerLevelReference>STD</aixm:lowerLevelReference>
      </aixm:FlightRestrictionLevel>
    </aixm:flightLevel>
  </aixm:FlightConditionElement>
</aixm:element>
<aixm:element>
  <aixm:FlightConditionElement gml:id="ID_6_1489093857329_14">
    <aixm:flightCondition_operand>
      <aixm:FlightConditionCombination gml:id="ID_6_1489093857329_15">
        <aixm:logicalOperator>OR</aixm:logicalOperator>
        <aixm:element>
          <aixm:FlightConditionElement gml:id="ID_6_1489093857329_16">
            <aixm:flightCondition_airspaceCondition
              xmlns:xlink="http://www.w3.org/1999/xlink"
              xlink:href="urn:uuid:d8bcbdba-b993-4953-9ec5-b8d6e21ae651"/>
            <aixm:operationalCondition>
              <aixm:FlightConditionCircumstance gml:id="ID_6_1489093857329_17">
                <aixm:referenceLocation>YES</aixm:referenceLocation>
                <aixm:relationWithLocation>ACT</aixm:relationWithLocation>
              </aixm:FlightConditionCircumstance>
            </aixm:operationalCondition>
          </aixm:FlightConditionElement>
        </aixm:element>
        <aixm:element>
          <aixm:FlightConditionElement gml:id="ID_6_1489093857329_18">
            <aixm:flightCondition_airspaceCondition
              xmlns:xlink="http://www.w3.org/1999/xlink"
              xlink:href="urn:uuid:e90918d9-0ce1-4db2-a870-e370a3d83048"/>
            <aixm:operationalCondition>
              <aixm:FlightConditionCircumstance gml:id="ID_6_1489093857329_19">
                <aixm:referenceLocation>YES</aixm:referenceLocation>
                <aixm:relationWithLocation>ACT</aixm:relationWithLocation>
              </aixm:FlightConditionCircumstance>
            </aixm:operationalCondition>
          </aixm:FlightConditionElement>
        </aixm:element>
      </aixm:FlightConditionCombination>
    </aixm:flightCondition_operand>
  </aixm:FlightConditionElement>
</aixm:element>
</aixm:FlightConditionCombination>
</aixm:flight>
<aixm:regulatedRoute>
  <aixm:FlightRestrictionRoute gml:id="ID_6_1489093857329_20">
    <aixm:routeElement>
      <aixm:FlightRoutingElement gml:id="ID_6_1489093857329_21">
        <aixm:orderNumber>1</aixm:orderNumber>
        <aixm:pointElement_fixDesignatedPoint
          xmlns:xlink="http://www.w3.org/1999/xlink"
          xlink:href="urn:uuid:8ac259c8-65e9-4d18-ad00-283121ecd6d4"/>
        </aixm:pointElement_fixDesignatedPoint>
      </aixm:FlightRoutingElement>
    </aixm:routeElement>
  </aixm:FlightRestrictionRoute>
</aixm:regulatedRoute>
<aixm:annotation>
  <aixm:Note gml:id="ID_6_1489093857329_22">
    <aixm:propertyName>instruction</aixm:propertyName>
    <aixm:purpose>REMARK</aixm:purpose>
  </aixm:Note>
</aixm:annotation>

```

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```

    <aixm:translatedNote>
      <aixm:LinguisticNote gml:id="ID_6_1489093857329_23">
        <aixm:note>BETTER FLIGHT PLANNING
WHEN EBTRANA/EBTRANB/ EBTRASB NOT ACTIVE</aixm:note>
      </aixm:LinguisticNote>
    </aixm:translatedNote>
  </aixm:Note>
</aixm:annotation>
<aixm:extension>
  <adrex:FlightRestrictionExtension ...>
    <adrex:processingIndicator>TFR</adrex:processingIndicator>
    <adrex:enabled>YES</adrex:enabled>
    <adrex:usage>OPERATIONAL</adrex:usage>
    </adrex:FlightRestrictionExtension>
  </aixm:extension>
</aixm:FlightRestrictionTimeSlice>
</aixm:timeSlice>
</aixm:FlightRestriction>
</adrmsg:hasMember>
</adrmsg:ADRMessag>

```

3.2.1.15.3. New FlightRestriction conditions based on Flight Special Status for a Flight Plan.

3.2.1.15.3.1. Description

- (1) Currently NM operators have to manually exempt from restrictions aircraft with certain Special Status and/or Flight Type.
- (2) It is a common use case not to restrict aircraft with certain Flight Special Status (Medical Evacuation, Fire Fighting).
- (3) For humanitarian or for defence reasons these aircraft should automatically be able to skip certain restrictions.
- (4) The Flight Special Status represents the reason for special handling by ATS.
- (5) The Flight Special Status can be provided via the ICAO/ADEXP field **STS**.
- (6) Example: -STS STATE (ADEXP)

3.2.1.15.3.2. Publication

- (1) In NM 21.5, FlightRestrictions can contain FlightConditions based on Flight Special Status.
- (2) In AIXM 5.1 the Flight Special Status is defined by the class CodeFlightStatusBaseType.
- (3) This class has been extended to express the full ICAO possibilities.
- (4) AIXM provides an easy extension mechanism to support enumerates and values not yet catered for.
- (5) XML/XSD can be extended using the codelist inline extension mechanism.

Example: OTHER: __ADR__ALTRV

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- (6) Here is the description of the CodeFlightStatusBaseType class.

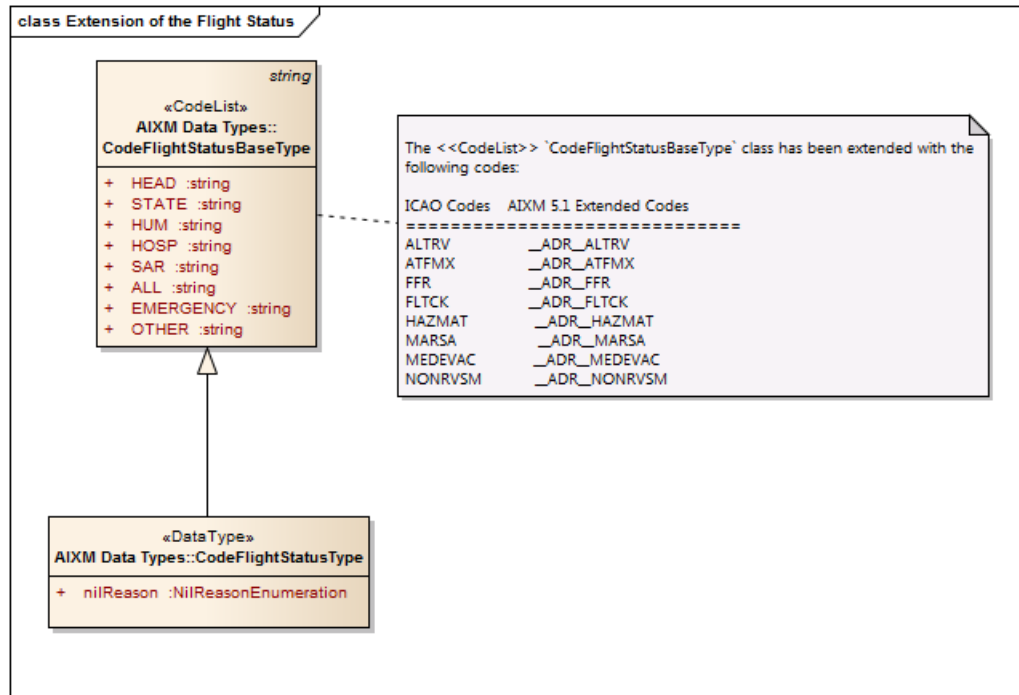


Figure 3.41. Extension of the CodeFlightStatusBaseType class

- (7) Mapping between ICAO flight special status and the extension of the CodeFlightStatusBase-Type class:

ICAO Codes	AIXM 5.1 Extended Codes	Description
ALTRV	__ADR__ALTRV	The ALTRV descriptor indicates a flight operating in accordance with an altitude reservation.
ATFMX	__ADR__ATFMX	The ATFMX descriptor shall be used for a flight approved for exemption from flow regulations by the appropriate ATS authority.
FFR	__ADR__FFR	The FFR descriptor indicates a flight engaged in a fire-fighting mission.
FLTCK	__ADR__FLTCK	The FLTCK descriptor indicates a flight check

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ICAO Codes	AIXM 5.1 Extended Codes	Description
		for calibration of nav aids.
HAZMAT	__ADR__HAZMAT	The HAZMAT descriptor indicates a flight carrying hazardous material.
MARSA	__ADR__MARSA	The MARSA descriptor indicates a flight for which a military entity assumes responsibility for separation of military aircraft.
MEDEVAC	__ADR__MEDEVAC	The MEDEVAC descriptor indicates a flight for a life critical emergency evacuation.
NONRVSM	__ADR__NONRVSM	The NONRVSM descriptor indicates a non-RVSM capable flight intending to operate in RVSM airspace.

Table 3.6. Flight Special Status Mapping

3.2.1.15.3.3. Example

- (1) Restriction LF5545A - short description

```

Designator = LF5545A
Type = FORBID
Instruction = APP5 LFPN/P0/PV DCT EVX/LGL/MTD/NIPOR$
BELOW FL115 AND NON RNAV ONLY
ProcessingIndicator = TFR
Enabled = True
Usage = OPERATIONAL
isFUA = False
fuaDefaultActive = False
temporality = BASELINE
validbeginTime = 2017-08-17T00:00:00
validendTime = 9999-12-31T23:59:59
featurebeginTime = 2017-08-17T00:00:00
featureendTime = 9999-12-31T23:59:59
Excluding ANY 00:00 UTC - 24:00 UTC from 2017-08-17T00:00:00 until unknown
(
  (
    Crossing Navaid urn:uuid:eaebccf2-c78b-4420-a450-f30fa9516a03
    between lower 115 FL ref STD upper UNL FT ref STD
  )
  OR
  (
    Crossing Navaid urn:uuid:fc7b1c60-5743-41ce-9913-9f7c9077a47c
  )
)

```

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```

between lower 115 FL ref STD upper UNL FT ref STD
)
OR
(
Crossing Navaid urn:uuid:f6bbebc2-9edc-4f74-881d-41979412b3ec
between lower 115 FL ref STD upper UNL FT ref STD
)
OR
(
Crossing DesignatedPoint NIPOR between lower 115 FL ref STD upper UNL FT ref STD
)
)
AND
(
Flight status HOSP
)

```

(2) NM 21.5 publications - Restriction LF5545A - XML sample

```

<?xml version="1.0" encoding="UTF-8"?>
<adrmsg:ADRMMessage ...>
  <adrmsg:hasMember>
    <aixm:FlightRestriction xmlns:aixm="http://www.aixm.aero/schema/5.1" gml:id="ID_208_1504080504557_2">
      <gml:identifier codeSpace="urn:uuid:">376a2072-baca-44a0-9ef1-f384013eb663</gml:identifier>
      <aixm:timeSlice>
        <aixm:FlightRestrictionTimeSlice gml:id="ID_208_1504080504557_3">
          <gml:validTime>
            <gml:TimePeriod gml:id="ID_208_1504080504557_4">
              <gml:beginPosition>2017-08-17T00:00:00</gml:beginPosition>
              <gml:endPosition indeterminatePosition="unknown"/>
            </gml:TimePeriod>
          </gml:validTime>
          <aixm:interpretation>BASELINE</aixm:interpretation>
          <aixm:featureLifetime>
            <gml:TimePeriod gml:id="ID_208_1504080504557_5">
              <gml:beginPosition>2017-08-17T00:00:00</gml:beginPosition>
              <gml:endPosition indeterminatePosition="unknown"/>
            </gml:TimePeriod>
          </aixm:featureLifetime>
          <aixm:designator>LF5545A</aixm:designator>
          <aixm:type>FORBID</aixm:type>
          <aixm:instruction>APP5 LFPN/P0/PV DCT EVX/LGL/MTD/NIPOR$
BELOW FL115 AND NON RNAV ONLY</aixm:instruction>
          <aixm:flight>
            <aixm:FlightConditionCombination gml:id="ID_208_1504080504557_6">
              <aixm:timeInterval>
                <aixm:Timesheet gml:id="ID_208_1504080504557_7">
                  <aixm:timeReference>UTC</aixm:timeReference>
                  <aixm:day>ANY</aixm:day>
                  <aixm:startTime>00:00</aixm:startTime>
                  <aixm:endTime>24:00</aixm:endTime>
                  <aixm:excluded>NO</aixm:excluded>
                  <aixm:extension>
                    <adrex:TimesheetExtension ...>
                      <gml:validTime>
                        <gml:TimePeriod gml:id="ID_208_1504080504557_9">
                          <gml:beginPosition>2017-08-17T00:00:00</gml:beginPosition>
                          <gml:endPosition indeterminatePosition="unknown"/>
                        </gml:TimePeriod>
                      </gml:validTime>
                    </adrex:TimesheetExtension>
                  </aixm:extension>
                </aixm:Timesheet>
              </aixm:timeInterval>
            </aixm:FlightConditionCombination>
          </aixm:flight>
        </aixm:FlightRestrictionTimeSlice>
      </aixm:timeSlice>
    </aixm:FlightRestriction>
  </adrmsg:hasMember>
</adrmsg:ADRMMessage>

```

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```

    <aixm:logicalOperator>AND</aixm:logicalOperator>
    <aixm:element>
...
    </aixm:element>
    <!-- START: New flight condition based on the Flight Special Status -->
    <aixm:element>
      <aixm:FlightConditionElement gml:id="ID_208_1504080504557_24">
        <aixm:flightCondition_flight>
          <aixm:FlightCharacteristic gml:id="ID_208_1504080504557_25">
            <aixm:status>HOSP</aixm:status>
          </aixm:FlightCharacteristic>
        </aixm:flightCondition_flight>
      </aixm:FlightConditionElement>
    </aixm:element>
    <!-- END: New flight condition based on the Flight Special Status -->
    </aixm:FlightConditionCombination>
  </aixm:flight>
  <aixm:regulatedRoute>
...
  </aixm:regulatedRoute>
  <aixm:annotation>
    <aixm:Note gml:id="ID_208_1504080504557_62">
      <aixm:propertyName>instruction</aixm:propertyName>
      <aixm:purpose>REMARK</aixm:purpose>
      <aixm:translatedNote>
        <aixm:LinguisticNote gml:id="ID_208_1504080504557_63">
          <aixm:note>BELOW FL115 ONLY</aixm:note>
        </aixm:LinguisticNote>
      </aixm:translatedNote>
    </aixm:Note>
  </aixm:annotation>
  <aixm:extension>
    <adrex:FlightRestrictionExtension ...>
      <adrex:processingIndicator>TFR</adrex:processingIndicator>
      <adrex:enabled>YES</adrex:enabled>
      <adrex:usage>OPERATIONAL</adrex:usage>
      <adrex:verticalLimitReference>CALCULATED</adrex:verticalLimitReference>
    </adrex:FlightRestrictionExtension>
  </aixm:extension>
  </aixm:FlightRestrictionTimeSlice>
  </aixm:timeSlice>
  </aixm:FlightRestriction>
  </adrm:hasMember>
</adrm:ADRMMessage>

```

3.2.1.15.4. New FlightRestriction conditions based on the Aircraft Address (CODE) and/or the Aircraft Registration (REG) flight plan fields.

3.2.1.15.4.1. Description

- (1) The aircraft registration (REG) and CODE squawked by the MODE-S transponder of the aircraft needs to be the same as the CODE present in the Flight Plan in order to automatically correlate them in the Flight Plan Processing system. The presence of the CODE and REG fields in flight plans is mandatory to cross specific reference locations (e.g. NAT region).
- (2) The ICAO EUR Regional Supplementary Procedures (Doc 7030) include a provision that makes it mandatory to include the aircraft registration (REG) in FPLs for flights operating in RVSM airspace (290FL to 410FL).
- (3) Example: -REG EIFNW (ADEXP) or REG/YLBAH (ICAO)

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- (4) The field CODE is the aircraft address code in 24 bit or six hexadecimal characters. It is a unique identification code programmed into the aircraft transponder or ABS-B transmitter during installation. The code, expressed as six alphanumeric characters, provides a digital identification of the aircraft. It is used by the air traffic system to link information contained in the flight notification (notified flight plan) to the aircraft position information received by the ADS-B.

Example: CODE/4B9688O (ICAO)

3.2.1.15.4.2. Publication

- (1) In NM 21.5, FlightRestrictions can contain FlightConditions based on the Aircraft Address (CODE) and/or the Aircraft Registration (REG) flight plan fields.
- (2) The class AircraftCharacteristic has been extended with new properties called aircraftAddresses and aircraftRegistrations:

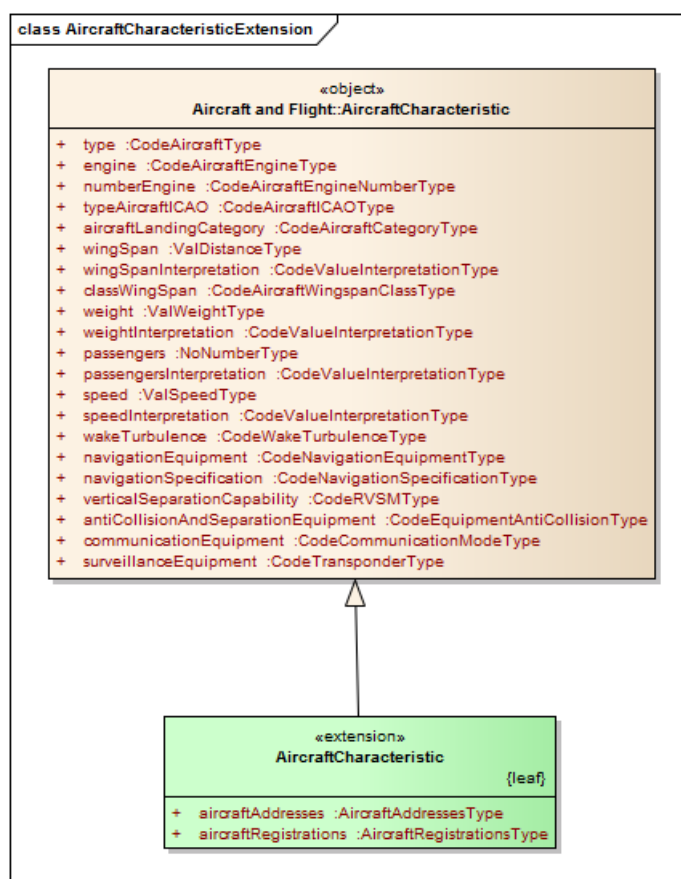


Figure 3.42. Extension of the AircraftCharacteristic class

- (3) The FlightCondition based on the aircraft addresses is expressed by the following regular expression:

(1) ([A-F0-9*\?]){1,6}

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(2) Example: AF????

- (4) The FlightCondition based on the aircraft registrations is expressed by the following regular expression:

(1) `([A-Z0-9\?*]){1,7}`

(2) Example: EI*

3.2.1.15.4.3. Example

- (1) Restriction LF5544A - short description

```

Designator = LF5544A
Type = FORBID
Instruction = APP 5 LFPG DCT ALIM0/EVX/LGL/MTD/NIPOR$
ONLY AVAILABLE FOR TRAFFIC
TYPE NON RNAV
WITH RFL BELOW FL115
ProcessingIndicator = TFR
Enabled = True
Usage = OPERATIONAL
isFUA = False
fuaDefaultActive = False
temporality = BASELINE
validbeginTime = 2017-08-17T00:00:00
validendTime = 9999-12-31T23:59:59
featurebeginTime = 2017-08-17T00:00:00
featureendTime = 9999-12-31T23:59:59
Excluding ANY 00:00 UTC - 24:00 UTC from 2017-08-17T00:00:00 until unknown
(
  (
    Crossing DesignatedPoint ALIM0 between lower 115 FL ref STD upper UNL FT ref STD
  )
  OR
  (
    Crossing Navaid urn:uuid:eaebccf2-c78b-4420-a450-f30fa9516a03
    between lower 115 FL ref STD upper UNL FT ref STD
  )
  OR
  (
    Crossing Navaid urn:uuid:fc7b1c60-5743-41ce-9913-9f7c9077a47c
    between lower 115 FL ref STD upper UNL FT ref STD
  )
  OR
  (
    Crossing Navaid urn:uuid:f6bbebc2-9edc-4f74-881d-41979412b3ec
    between lower 115 FL ref STD upper UNL FT ref STD
  )
  OR
  (
    Crossing DesignatedPoint NIPOR between lower 115 FL ref STD upper UNL FT ref STD
  )
)
AND
(
  Crossing Airspace LF between lower 115 FL ref STD upper UNL FT ref STD
)
AND
(
  Aircraft aircraftAddresses AF????
)

```

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```

AND
(
Aircraft aircraftRegistrations EI*w
)

```

(2) NM 21.5 publications - Restriction LF5544A - XML sample

```

<?xml version="1.0"?>
<adrm:hasMember>
  <aixm:FlightRestriction xmlns:aixm="http://www.aixm.aero/schema/5.1" gml:id="ID_494_1504314076928_451499">
    <gml:identifier codeSpace="urn:uuid:">b32e7a82-48ea-4a92-a53a-332c9b366547</gml:identifier>
    <aixm:timeSlice>
      <aixm:FlightRestrictionTimeSlice gml:id="ID_494_1504314076928_451500">
        <gml:validTime>
          <gml:TimePeriod gml:id="ID_494_1504314076928_451501">
            <gml:beginPosition>2017-08-17T00:00:00</gml:beginPosition>
            <gml:endPosition indeterminatePosition="unknown"/>
          </gml:TimePeriod>
        </gml:validTime>
        <aixm:interpretation>BASELINE</aixm:interpretation>
        <aixm:featureLifetime>
          <gml:TimePeriod gml:id="ID_494_1504314076928_451502">
            <gml:beginPosition>2017-08-17T00:00:00</gml:beginPosition>
            <gml:endPosition indeterminatePosition="unknown"/>
          </gml:TimePeriod>
        </aixm:featureLifetime>
        <aixm:designator>LF5544A</aixm:designator>
        <aixm:type>FORBID</aixm:type>
        <aixm:instruction>APP 5 LFPG DCT ALIM0/EVX/LGL/MTD/NIPOR$
ONLY AVAILABLE FOR TRAFFIC
TYPE NON RNAV
WITH RFL BELOW FL115</aixm:instruction>
        <aixm:flight>
          <aixm:FlightConditionCombination gml:id="ID_494_1504314076928_451503">
            <aixm:timeInterval>
              <aixm:Timesheet gml:id="ID_494_1504314076928_451504">
                <aixm:timeReference>UTC</aixm:timeReference>
                <aixm:day>ANY</aixm:day>
                <aixm:startTime>00:00</aixm:startTime>
                <aixm:endTime>24:00</aixm:endTime>
                <aixm:excluded>N0</aixm:excluded>
                <aixm:extension>
                  <adext:TimesheetExtension ...>
                    <gml:validTime>
                      <gml:TimePeriod gml:id="ID_494_1504314076928_451506">
                        <gml:beginPosition>2017-08-17T00:00:00</gml:beginPosition>
                        <gml:endPosition indeterminatePosition="unknown"/>
                      </gml:TimePeriod>
                    </gml:validTime>
                  </adext:TimesheetExtension>
                </aixm:extension>
              </aixm:Timesheet>
            </aixm:timeInterval>
            <aixm:logicalOperator>AND</aixm:logicalOperator>
          </aixm:element>
          ...
        </aixm:element>
      </aixm:element>
      <aixm:FlightConditionElement gml:id="ID_494_1504314076928_451527">
        <aixm:flightCondition_aircraft>
          <aixm:AircraftCharacteristic gml:id="ID_494_1504314076928_451528">
            <aixm:extension>
              <adext:AircraftCharacteristicExtension ...>
                <adext:aircraftAddresses>AF????</adext:aircraftAddresses>

```

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```

        </adrest:AircraftCharacteristicExtension>
    </aixm:extension>
</aixm:AircraftCharacteristic>
</aixm:flightCondition_aircraft>
</aixm:FlightConditionElement>
</aixm:element>
<aixm:element>
    <aixm:FlightConditionElement gml:id="ID_494_1504314076928_451530">
        <aixm:flightCondition_aircraft>
            <aixm:AircraftCharacteristic gml:id="ID_494_1504314076928_451531">
                <aixm:extension>
                    <adrest:AircraftCharacteristicExtension ...>
                        <adrest:aircraftRegistrations>EI*</adrest:aircraftRegistrations>
                    </adrest:AircraftCharacteristicExtension>
                </aixm:extension>
            </aixm:AircraftCharacteristic>
        </aixm:flightCondition_aircraft>
    </aixm:FlightConditionElement>
</aixm:element>
</aixm:FlightConditionCombination>
</aixm:flight>
<aixm:regulatedRoute>
...
</aixm:regulatedRoute>
<aixm:annotation>
    <aixm:Note gml:id="ID_494_1504314076928_451548">
        <aixm:propertyName>instruction</aixm:propertyName>
        <aixm:purpose>REMARK</aixm:purpose>
        <aixm:translatedNote>
            <aixm:LinguisticNote gml:id="ID_494_1504314076928_451549">
                <aixm:note>BELOW FL115 ONLY</aixm:note>
            </aixm:LinguisticNote>
        </aixm:translatedNote>
    </aixm:Note>
</aixm:annotation>
<aixm:extension>
    <adrest:FlightRestrictionExtension ...>
        <adrest:processingIndicator>TFR</adrest:processingIndicator>
        <adrest:enabled>YES</adrest:enabled>
        <adrest:usage>OPERATIONAL</adrest:usage>
        <adrest:verticalLimitReference>CALCULATED</adrest:verticalLimitReference>
    </adrest:FlightRestrictionExtension>
</aixm:extension>
</aixm:FlightRestrictionTimeSlice>
</aixm:timeSlice>
</aixm:FlightRestriction>
</adrmgs:hasMember>

```

3.2.1.15.5. New FlightRestriction conditions based on Aircraft Operator Identification (AO id.).

3.2.1.15.5.1. Description

- (1) Airlines and airports have agreements on the terminal to be used. When there are special circumstances that prevent a terminal of an airport from being used, the flight plan of the airlines supposed to land in that terminal should be automatically invalidated.
- (2) NMOC receives requests from countries asking to forbid the overflying of their airspace by certain Aircraft Operators.

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- (3) NMOC should, after coordination with the relevant actors, be able to restrict flight plans based on Aircraft Operator Identification (AO Id).
- (4) Example of flight plan fields associated to an AO id:
 - a) -AOARCID HOP
 - b) -AOOPR AFR
 - c) -ARCID HOP42LR

3.2.1.15.5.2. Publication

- (1) In NM 21.5, FlightRestrictions can contain FlightConditions based on Aircraft Operator Identification (AO id.).
- (2) The new FlightConditions uses the existing FlightConditionElement organisationCondition of type Organisation::OrganisationAuthority:

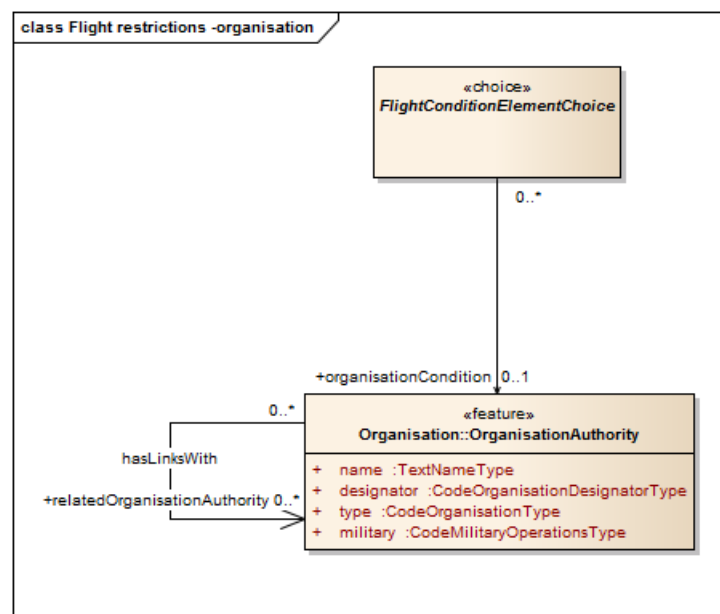


Figure 3.43. FlightConditions based on Aircraft Operator Identification

3.2.1.15.5.3. Example

- (1) Restriction LF5543A - short description

```

Designator = LF5543A
Type = FORBID
Instruction = APP 5 LF0B DCT EVX$
EVX (BELOW FL115 AND NON RNAV ONLY)
ProcessingIndicator = TFR
Enabled = True
Usage = OPERATIONAL

```


DNM	EUROCONTROL
Document Title: NM 23.0.0 - NOP/B2B Reference Manuals - Air-spaceServices	Document Reference: B2B/23.0.0/Airspace

```

isFUA = False
fuaDefaultActive = False
temporality = BASELINE
validbeginTime = 2017-08-17T00:00:00
validendTime = 9999-12-31T23:59:59
featurebeginTime = 2017-08-17T00:00:00
featureendTime = 9999-12-31T23:59:59
Excluding ANY 00:00 UTC - 24:00 UTC from 2017-08-17T00:00:00 until unknown
(
  (
    Departing from AirportHeliport LFOB
  )
  SEQ
  (
    Crossing Navaid urn:uuid:eaebccf2-c78b-4420-a450-f30fa9516a03
  )
)
AND
(
  Crossing Airspace LF between lower 115 FL ref STD upper UNL FT ref STD
)
AND
(
  Organisation urn:uuid:09e78910-e9a1-4f08-9a36-7a6c68aeacca
)

```

(2) NM 21.5 publications - Restriction LF5543A - XML sample

```

<?xml version="1.0" encoding="UTF-8"?>
<adrm:ADRMMessage ...>
  <adrm:hasMember>
    <aixm:FlightRestriction xmlns:aixm="http://www.aixm.aero/schema/5.1" gml:id="ID_726_1504512846632_2">
      <gml:identifier codeSpace="urn:uuid:">a82dc6eb-5604-4dbb-b0c2-50c6f9d2190a</gml:identifier>
      <aixm:timeSlice>
        <aixm:FlightRestrictionTimeSlice gml:id="ID_726_1504512846632_3">
          <gml:validTime>
            <gml:TimePeriod gml:id="ID_726_1504512846632_4">
              <gml:beginPosition>2017-08-17T00:00:00</gml:beginPosition>
              <gml:endPosition indeterminatePosition="unknown"/>
            </gml:TimePeriod>
          </gml:validTime>
          <aixm:interpretation>BASELINE</aixm:interpretation>
          <aixm:featureLifetime>
            <gml:TimePeriod gml:id="ID_726_1504512846632_5">
              <gml:beginPosition>2017-08-17T00:00:00</gml:beginPosition>
              <gml:endPosition indeterminatePosition="unknown"/>
            </gml:TimePeriod>
          </aixm:featureLifetime>
          <aixm:designator>LF5543A</aixm:designator>
          <aixm:type>FORBID</aixm:type>
          <aixm:instruction>APP 5 LFOB DCT EVX$
EVX (BELOW FL115 AND NON RNAV ONLY)</aixm:instruction>
          <aixm:flight>
            <aixm:FlightConditionCombination gml:id="ID_726_1504512846632_6">
              <aixm:timeInterval>
                <aixm:Timesheet gml:id="ID_726_1504512846632_7">
                  <aixm:timeReference>UTC</aixm:timeReference>
                  <aixm:day>ANY</aixm:day>
                  <aixm:startTime>00:00</aixm:startTime>
                  <aixm:endTime>24:00</aixm:endTime>
                  <aixm:excluded>NO</aixm:excluded>
                  <aixm:extension>
                    <adrm:TimesheetExtension ...>
                      <gml:validTime>

```

DNM		EUROCONTROL
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```

        <gml:TimePeriod gml:id="ID_726_1504512846632_9">
          <gml:beginPosition>2017-08-17T00:00:00</gml:beginPosition>
          <gml:endPosition indeterminatePosition="unknown"/>
        </gml:TimePeriod>
        </gml:validTime>
      </adrex:TimesheetExtension>
    </aixm:extension>
  </aixm:Timesheet>
</aixm:timeInterval>
<aixm:logicalOperator>AND</aixm:logicalOperator>
<aixm:element>
...
  </aixm:element>
  <aixm:FlightConditionElement gml:id="ID_726_1504512846632_19">
    <aixm:flightCondition_organisationCondition
      xmlns:xlink="http://www.w3.org/1999/xlink" xlink:href="urn:uuid:09e78910-e9a1-4f08-9a36-7a6
    </aixm:FlightConditionElement>
  </aixm:element>
  </aixm:FlightConditionCombination>
</aixm:flight>
<aixm:regulatedRoute>
...
</aixm:regulatedRoute>
<aixm:annotation>
  <aixm:Note gml:id="ID_726_1504512846632_23">
    <aixm:propertyName>instruction</aixm:propertyName>
    <aixm:purpose>REMARK</aixm:purpose>
    <aixm:translatedNote>
      <aixm:LinguisticNote gml:id="ID_726_1504512846632_24">
        <aixm:note>BELOW FL115 ONLY</aixm:note>
      </aixm:LinguisticNote>
    </aixm:translatedNote>
  </aixm:Note>
</aixm:annotation>
<aixm:extension>
  <adrex:FlightRestrictionExtension ...>
    <adrex:processingIndicator>TFR</adrex:processingIndicator>
    <adrex:enabled>YES</adrex:enabled>
    <adrex:usage>OPERATIONAL</adrex:usage>
    <adrex:verticalLimitReference>CALCULATED</adrex:verticalLimitReference>
  </adrex:FlightRestrictionExtension>
</aixm:extension>
</aixm:FlightRestrictionTimeSlice>
</aixm:timeSlice>
</aixm:FlightRestriction>
</adrmsg:hasMember>
</adrmsg:ADRMessage>

```

3.2.1.15.6. New FlightRestriction conditions based on Flight Plan Source.

3.2.1.15.6.1. Description

- (1) Flight conditions based on the Flight Plan Source will be used in combination with other Flight conditions types. Examples:
- AOs do not know which REG will fly when they submit RPLs. The flight restriction we want to express is: reject flight plans that contain aircraft with a navigation equipment W and where the registration mark field must be present. To avoid this rejection the flight restriction we want to express is:
 - FlightPlanSource is not 'RPL'

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- ii) NavigationEquipment is 'W'
- iii) REG field presence is 'TRUE'
- b) It happens that AOs are massively rerouted when the flight plan processing system receives FNM or MFS messages. The aircraft involved may have just exactly the enough calculated fuel to the destination. In order to avoid this massive re-routing for these AOs and to highlight these messages to the operator, the flight restriction we want to express is:
 - i) AO id is ELY
 - ii) FlightPlanSource is 'MFS' or 'FNM'
- (2) Example of flight plan field associated to a flight plan source:
 - a) SRC/RPL (ICAO)
 - b) -SRC AFP (ADEXP)

3.2.1.15.6.2. Publication

- (1) In NM 21.5, FlightRestrictions can contain FlightConditions based on Flight Plan Source.
- (2) The class FlightCharacteristic has been extended with a new property called flightPlanSource:

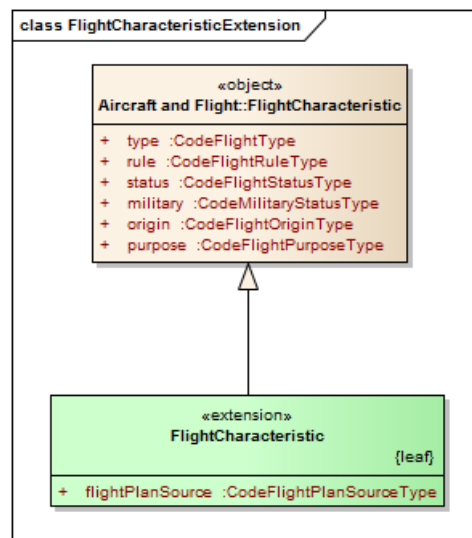


Figure 3.44. Extension of the FlightCharacteristic class

- (3) Two new classes CodeFlightPlanSourceBaseType and CodeFlightPlanSourceType have been created in the NM AIXM 5.1 extension.

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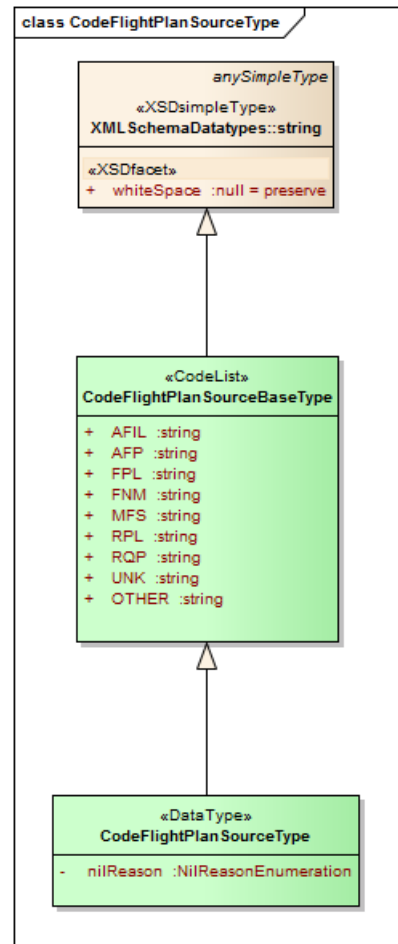


Figure 3.45. New class CodeFlightPlanSourceType

3.2.1.15.6.3. Example

(1) Restriction LF5542A - short description

```

Designator = LF5542A
Type = FORBID
Instruction = APP 5 LFOB DCT ROU$
NOT AVAILABLE FOR TRAFFIC
DEP LFOB
EXCEPT DEST LFOH/OP/RG
ProcessingIndicator = TFR
Enabled = True
Usage = OPERATIONAL
isFUA = False
fuaDefaultActive = False
temporality = BASELINE
validbeginntime = 2017-08-17T00:00:00
validendtime = 9999-12-31T23:59:59
featurebeginntime = 2017-08-17T00:00:00
featureendtime = 9999-12-31T23:59:59

Excluding ANY 00:00 UTC - 24:00 UTC from 2017-08-17T00:00:00 until unknown
(

```

DNM	EUROCONTROL
Document Title: NM 23.0.0 - NOP/B2B Reference Manuals - AirspaceServices	Document Reference: B2B/23.0.0/Airspace

```
(
  Crossing Navaid urn:uuid:725906e2-9a4f-442c-a3cd-e9e0e4418508
)
ANDNOT
(
  (
    Arriving at AirportHeliport LFOH
  )
  OR
  (
    Arriving at AirportHeliport LFOP
  )
  OR
  (
    Arriving at AirportHeliport LFRG
  )
)
)
AND
(
  Aircraft aircraftRegistrations EI*
)
AND
(
  Flight flightPlanSource RPL
)
AND
(
  Aircraft verticalSeparationCapability RVSM
)
)
```

(2) NM 21.5 publications - Restriction LF5542A - XML sample

```
<?xml version="1.0" encoding="UTF-8"?>
<adrmmsg:ADRMMessage ...>
  <adrmmsg:hasMember>
    <aixm:FlightRestriction xmlns:aixm="http://www.aixm.aero/schema/5.1" gml:id="ID_736_1504535716984_2">
      <gml:identifier codeSpace="urn:uuid:">6a6074e8-f308-4dfe-a8e3-c4ca57ce8a56</gml:identifier>
      <aixm:timeSlice>
        <aixm:FlightRestrictionTimeSlice gml:id="ID_736_1504535716984_3">
          <gml:validTime>
            <gml:TimePeriod gml:id="ID_736_1504535716984_4">
              <gml:beginPosition>2017-08-17T00:00:00</gml:beginPosition>
              <gml:endPosition indeterminatePosition="unknown"/>
            </gml:TimePeriod>
          </gml:validTime>
          <aixm:interpretation>BASELINE</aixm:interpretation>
          <aixm:featureLifetime>
            <gml:TimePeriod gml:id="ID_736_1504535716984_5">
              <gml:beginPosition>2017-08-17T00:00:00</gml:beginPosition>
              <gml:endPosition indeterminatePosition="unknown"/>
            </gml:TimePeriod>
          </aixm:featureLifetime>
          <aixm:designator>LF5542A</aixm:designator>
          <aixm:type>FORBID</aixm:type>
          <aixm:instruction>APP 5 LFOB DCT ROUS
NOT AVAILABLE FOR TRAFFIC
DEP LFOB
EXCEPT DEST LFOH/OP/RG</aixm:instruction>
          <aixm:flight>
            <aixm:FlightConditionCombination gml:id="ID_736_1504535716984_6">
              <aixm:timeInterval>
                <aixm:Timesheet gml:id="ID_736_1504535716984_7">
                  <aixm:timeReference>UTC</aixm:timeReference>
                </aixm:Timesheet>
              </aixm:timeInterval>
            </aixm:FlightConditionCombination>
          </aixm:flight>
        </aixm:FlightRestrictionTimeSlice>
      </aixm:timeSlice>
    </aixm:FlightRestriction>
  </adrmmsg:hasMember>
</adrmmsg:ADRMMessage>
```

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```

    <aixm:day>ANY</aixm:day>
    <aixm:startTime>00:00</aixm:startTime>
    <aixm:endTime>24:00</aixm:endTime>
    <aixm:excluded>NO</aixm:excluded>
    <aixm:extension>
      <adrex:TimesheetExtension ...>
        <gml:validTime>
          <gml:TimePeriod gml:id="ID_736_1504535716984_9">
            <gml:beginPosition>2017-08-17T00:00:00</gml:beginPosition>
            <gml:endPosition indeterminatePosition="unknown"/>
          </gml:TimePeriod>
        </gml:validTime>
      </adrex:TimesheetExtension>
    </aixm:extension>
  </aixm:Timesheet>
</aixm:timeInterval>
<aixm:logicalOperator>AND</aixm:logicalOperator>
<aixm:element>
...
</aixm:element>
<aixm:element>
  <aixm:FlightConditionElement gml:id="ID_736_1504535716984_22">
    <aixm:flightCondition_aircraft>
      <aixm:AircraftCharacteristic gml:id="ID_736_1504535716984_23">
        <aixm:extension>
          <adrex:AircraftCharacteristicExtension ...>
            <adrex:registrationMarkPresence>YES</adrex:registrationMarkPresence>
          </adrex:AircraftCharacteristicExtension>
        </aixm:extension>
      </aixm:AircraftCharacteristic>
    </aixm:flightCondition_aircraft>
  </aixm:FlightConditionElement>
</aixm:element>
<aixm:element>
  <aixm:FlightConditionElement gml:id="ID_736_1504535716984_25">
    <aixm:flightCondition_flight>
      <aixm:FlightCharacteristic gml:id="ID_736_1504535716984_26">
        <aixm:extension>
          <adrex:FlightCharacteristicExtension ...>
            <adrex:flightPlanSource>RPL</adrex:flightPlanSource>
          </adrex:FlightCharacteristicExtension>
        </aixm:extension>
      </aixm:FlightCharacteristic>
    </aixm:flightCondition_flight>
  </aixm:FlightConditionElement>
</aixm:element>
<aixm:element>
  <aixm:FlightConditionElement gml:id="ID_736_1504535716984_28">
    <aixm:flightCondition_aircraft>
      <aixm:AircraftCharacteristic gml:id="ID_736_1504535716984_29">
        <aixm:verticalSeparationCapability>RVSM</aixm:verticalSeparationCapability>
      </aixm:AircraftCharacteristic>
    </aixm:flightCondition_aircraft>
  </aixm:FlightConditionElement>
</aixm:element>
</aixm:FlightConditionCombination>
</aixm:flight>
<aixm:regulatedRoute>
...
</aixm:regulatedRoute>
<aixm:annotation>
  <aixm:Note gml:id="ID_736_1504535716984_33">
    <aixm:propertyName>instruction</aixm:propertyName>
    <aixm:purpose>REMARK</aixm:purpose>
    <aixm:translatedNote>
      <aixm:LinguisticNote gml:id="ID_736_1504535716984_34">

```

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```

        <axm:note>NA</axm:note>
      </axm:LinguisticNote>
    </axm:translatedNote>
  </axm:Note>
</axm:annotation>
<axm:extension>
  <adrest:FlightRestrictionExtension ...>
    <adrest:processingIndicator>TFR</adrest:processingIndicator>
    <adrest:enabled>YES</adrest:enabled>
    <adrest:usage>OPERATIONAL</adrest:usage>
    <adrest:verticalLimitReference>CALCULATED</adrest:verticalLimitReference>
  </adrest:FlightRestrictionExtension>
</axm:extension>
</axm:FlightRestrictionTimeSlice>
</axm:timeSlice>
</axm:FlightRestriction>
</adrmmsg:hasMember>
</adrmmsg:ADRMMessage>

```

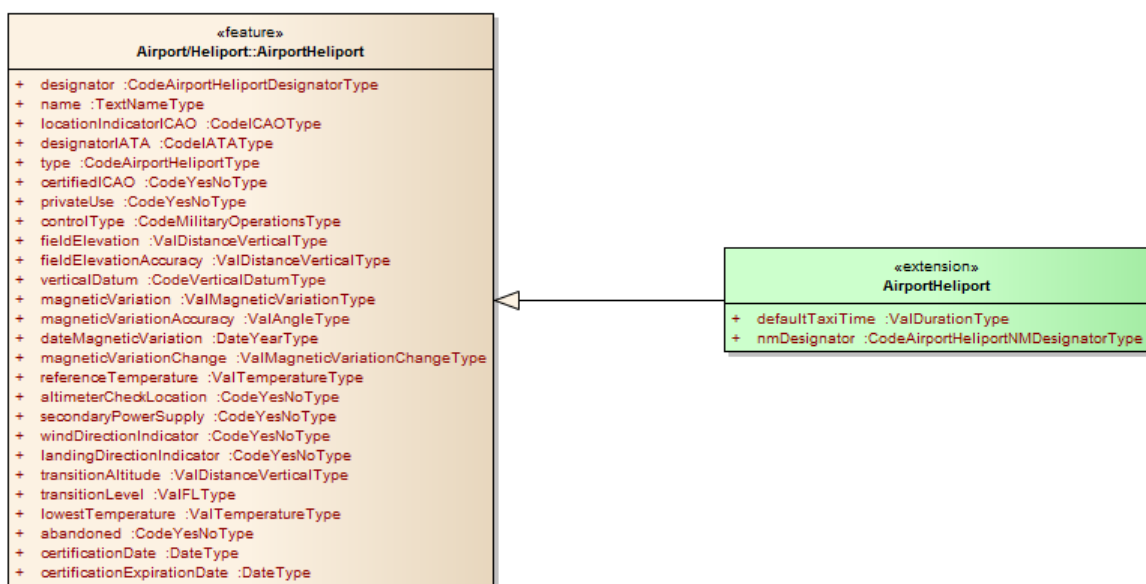
3.2.1.15.7. Allow Aerodromes to be defined without ICAO or IATA Id.

3.2.1.15.7.1. Description

- (1) In order to support future VFR flight plan processing, additional Aerodromes need to be defined with neither an ICAO Location Indicator, nor a IATA Identifier.

3.2.1.15.7.2. Publication

- (1) Two additional properties designator and nmDesignator will be published in the AirportHeliport feature.
- (2) The class AirportHeliport has been extended with a new property called nmDesignator:



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3.2.1.15.7.3. Example

- (1) NM 21.5 publications - Aerodrome EG00

```
<?xml version="1.0"?>
<adrmmsg:hasMember>
  <aixm:AirportHeliport xmlns:aixm="http://www.aixm.aero/schema/5.1" gml:id="ID_16_1504675130924_8521">
    <gml:identifier codeSpace="urn:uuid:">f7832ed8-e3d5-4d55-a5ab-1fdf57a186b9</gml:identifier>
    <aixm:timeSlice>
      <aixm:AirportHeliportTimeSlice gml:id="ID_16_1504675130924_8522">
        <gml:validTime>
          <gml:TimePeriod gml:id="ID_16_1504675130924_8523">
            <gml:beginPosition>2017-08-17T00:00:00</gml:beginPosition>
            <gml:endPosition indeterminatePosition="unknown"/>
          </gml:TimePeriod>
        </gml:validTime>
        <aixm:interpretation>BASELINE</aixm:interpretation>
        <aixm:featureLifetime>
          <gml:TimePeriod gml:id="ID_16_1504675130924_8524">
            <gml:beginPosition>2017-08-17T00:00:00</gml:beginPosition>
            <gml:endPosition indeterminatePosition="unknown"/>
          </gml:TimePeriod>
        </aixm:featureLifetime>
        <aixm:designator>EB004</aixm:designator>
        <aixm:name>SOVET</aixm:name>
        <aixm:controlType>CIVIL</aixm:controlType>
        <aixm:servedCity>
          <aixm:City gml:id="ID_16_1504675130924_8525">
            <aixm:name>SOVET</aixm:name>
          </aixm:City>
        </aixm:servedCity>
        <aixm:ARP>
          <aixm:ElevatedPoint gml:id="ID_16_1504675130924_8526">
            <gml:pos srsName="urn:ogc:def:crs:EPSG::4326">55.86666488647461 -4.333333492279053</gml:pos>
            <aixm:elevation uom="FT">0</aixm:elevation>
          </aixm:ElevatedPoint>
        </aixm:ARP>
        <aixm:extension>
          <adrex:AirportHeliportExtension ...>
            <adrex:defaultTaxiTime uom="MIN">15</adrex:defaultTaxiTime>
            <adrex:nmDesignator>EB04</adrex:nmDesignator>
          </adrex:AirportHeliportExtension>
        </aixm:extension>
      </aixm:AirportHeliportTimeSlice>
    </aixm:timeSlice>
  </aixm:AirportHeliport>
</adrmmsg:hasMember>
```

3.2.1.15.8. The NM flight plan processing system will use the FL/RFL flag from RAD flight restrictions when processing flight plan messages.

3.2.1.15.8.1. Description

- (1) Only in RAD flight restrictions RFL are sometimes entered into the textual descriptions of the RAD document.
- (2) These Operational Instructions are for NM flight plan processing system s operators to manually ignore errors when the RFL complies with the textual description in the Restrictions.

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- (3) In order to avoid repetitive and not useful task for operators, NM will implement the possibility for a RAD flight restriction to process the level compliance with both computed profile (FL) and RFL.
- (4) Example:

a) If we consider the following restriction EG5026 from RAD document:

i) Operational goal: To provide an alternative routing ARR EGBB via MOSUN through military ATC. This service is subject to no-notice withdrawal and traffic may be required to accept a tactical re-route or re-file in such cases.

ii) Textual description: (in yellow we have a mention of RFL reference)

Only available for traffic ARR EGBB

- Type Propeller Via STU With RFL below FL165 in EGTTFIR/UIR
- Via STU
- DEP GC??/LP?? Via STU

b) If we consider the following flight plan message:

```
(FPL-RFL012-IS
-AT76/M-SDGILRVY/S
-EIBT1200
-N0264F210 DCT NAVEM DCT SHA L9 SLANY/N0250F150 L9 BCN DCT MOSUN DCT GROVE
-EGBB0125 EGNX
-PBN/B1)
```

c) We have to do the following controls:

i) When the restriction is defined in CACD to use the flight level (FL), the NM flight plan processing system uses the calculated profile. The flight plan processing returns an error like this one :

```
PROF204: RS: TRAFFIC VIA BCN MOSUN:F000..F245 IS ON FORBIDDEN ROUTE REF:[EG5026C] BCN DCT MOSUN
```

ii) When the restriction is defined in ENV to use the requested flight level (RFL), the NM flight plan processing system uses the levels defined in the route field of the flight plan message. The flight plan processing accepts the flight plan message.

3.2.1.15.8.2. Publication

- (1) In NM 21.5, RAD FlightRestrictions contain a Vertical Limit Reference.
- (2) The class FlightRestriction has been extended with a new property called verticalLimitReference:

DNM		EUROCONTROL
Document Title: NM 23.0.0 - NOP/B2B Reference Manuals - Air-spaceServices		Document Reference: B2B/23.0.0/Airspace

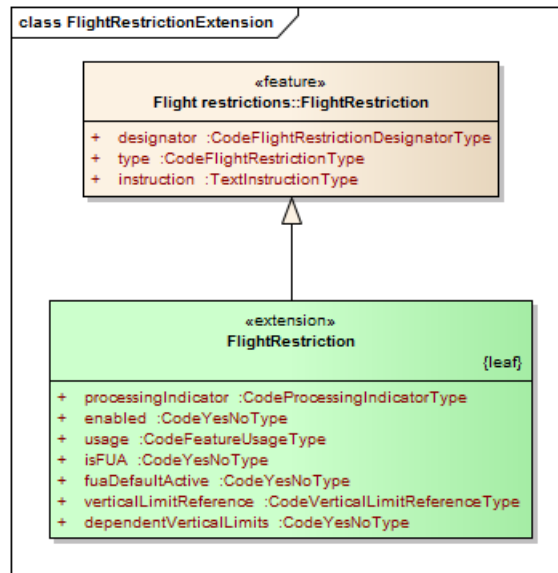


Figure 3.46. Extension of the FlightRestriction class

- (3) Two new classes CodeVerticalLimitReferenceBaseType and CodeVerticalLimitReferenceType have been created in the NM AIXM 5.1 extension.

DNM		EUROCONTROL
Document Title: NM 23.0.0 - NOP/B2B Reference Manuals - Air-spaceServices		Document Reference: B2B/23.0.0/Airspace

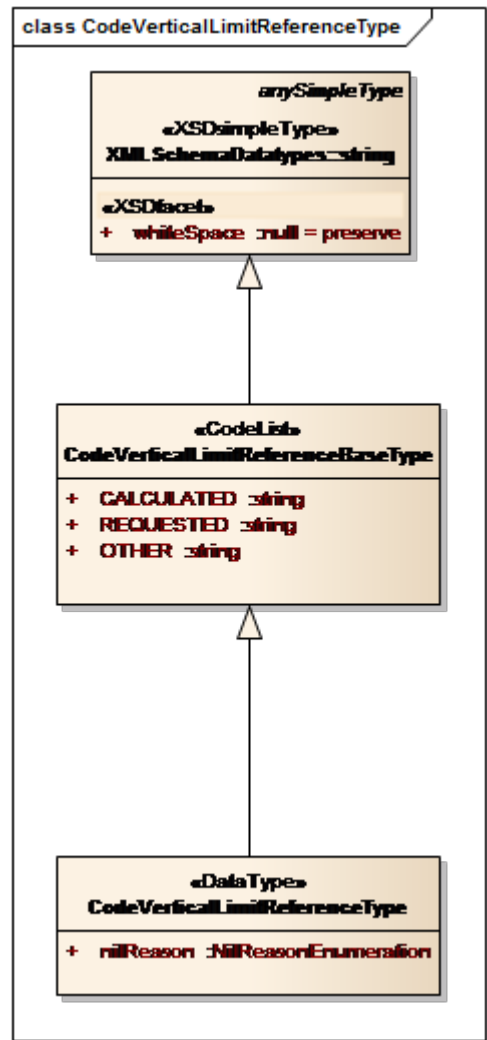


Figure 3.47. New class CodeVerticalLimitReferenceType

3.2.1.15.8.3. Example

- (1) RAD FlightRestriction EG5026A - short description

```

Designator = EG5026A
Type = FORBID
Instruction = BCN DCT MOSUN APP4$ONLY AVAILABLE FOR TRAFFIC ARR EGBB
1. (H24) TYPE PROPELLER VIA STU WITH RFL BELOW FL165 IN EGTTFIR/UIR
2.MON,FRI 17:00,09:00(16:00,08:00)FRI 17:00(16:00),MON 09:00(08:00)VIA STU
3.MON,FRI 09:00,10:00(08:00,09:00)DEP GC**/LP**VIA STU
ProcessingIndicator = TFR
Enabled = True
Usage = OPERATIONAL
isFUA = False
fuaDefaultActive = False
verticalLimitReference = CALCULATED
temporality = BASELINE
validbeginTime = 2017-08-17T00:00:00
validendTime = 9999-12-31T23:59:59
  
```

DNM	EUROCONTROL
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```

featurebeginTime = 2017-08-17T00:00:00
featureendTime = 9999-12-31T23:59:59

Excluding ANY 00:00 UTC - 24:00 UTC from 2017-08-17T00:00:00 until unknown
(
  Crossing DirectFlightSegment MOSUN between lower GND FT ref MSL upper 245 FL ref MSL
)
ANDNOT
(
  (
    Crossing Navaid urn:uuid:12740d55-530d-436f-b23e-6a05afb2204f
  )
  SEQ
  (
    Arriving at AirportHeliport EGBB
  )
)

```

(2) NM 21.5 publications - RAD FlightRestriction EG5026A

```

<?xml version="1.0"?>
<adrm:hasMember>
  <aixm:FlightRestriction ...>
    <gml:identifier codeSpace="urn:uuid:">28f7a61a-0e33-4853-86db-7229299a53e8</gml:identifier>
    <aixm:timeSlice>
      <aixm:FlightRestrictionTimeSlice gml:id="ID_76_1504675228268_220079">
        <gml:validTime>
          <gml:TimePeriod gml:id="ID_76_1504675228268_220080">
            <gml:beginPosition>2017-05-25T00:00:00</gml:beginPosition>
            <gml:endPosition indeterminatePosition="unknown"/>
          </gml:TimePeriod>
        </gml:validTime>
        <aixm:interpretation>BASELINE</aixm:interpretation>
        <aixm:featureLifetime>
          <gml:TimePeriod gml:id="ID_76_1504675228268_220081">
            <gml:beginPosition>2017-05-25T00:00:00</gml:beginPosition>
            <gml:endPosition indeterminatePosition="unknown"/>
          </gml:TimePeriod>
        </aixm:featureLifetime>
        <aixm:designator>EG5026A</aixm:designator>
        <aixm:type>FORBID</aixm:type>
        <aixm:instruction>BCN DCT MOSUN APP4$ONLY AVAILABLE FOR TRAFFIC ARR EGBB
1. (H24) TYPE PROPELLER VIA STU WITH RFL BELOW FL165 IN EGTTFIR/UIR
2. MON, FRI 17:00, 09:00(16:00, 08:00) FRI 17:00(16:00), MON 09:00(08:00) VIA STU
3. MON, FRI 09:00, 10:00(08:00, 09:00) DEP GC**/LP** VIA STU</aixm:instruction>
        <aixm:flight>
          <aixm:FlightConditionCombination gml:id="ID_76_1504675228268_220082">
            <aixm:timeInterval>
              <aixm:Timesheet gml:id="ID_76_1504675228268_220083">
                <aixm:timeReference>UTC</aixm:timeReference>
                <aixm:day>ANY</aixm:day>
                <aixm:startTime>00:00</aixm:startTime>
                <aixm:endTime>24:00</aixm:endTime>
                <aixm:excluded>N0</aixm:excluded>
                <aixm:extension>
                  <adext:TimesheetExtension ...>
                    <gml:validTime>
                      <gml:TimePeriod gml:id="ID_76_1504675228268_220085">
                        <gml:beginPosition>2017-05-25T00:00:00</gml:beginPosition>
                        <gml:endPosition indeterminatePosition="unknown"/>
                      </gml:TimePeriod>
                    </gml:validTime>
                  </adext:TimesheetExtension>
                </aixm:extension>
              </aixm:Timesheet>
            </aixm:timeInterval>
          </aixm:FlightConditionCombination>
        </aixm:flight>
      </aixm:FlightRestrictionTimeSlice>
    </aixm:timeSlice>
  </aixm:FlightRestriction>
</adrm:hasMember>

```

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```

        </aixm:Timesheet>
        </aixm:timeInterval>
        <aixm:logicalOperator>ANDNOT</aixm:logicalOperator>
...
    </aixm:flight>
    <aixm:regulatedRoute>
...
    </aixm:regulatedRoute>
    <aixm:annotation>
        <aixm:Note gml:id="ID_76_1504675228268_220098">
            <aixm:propertyName>instruction</aixm:propertyName>
            <aixm:purpose>REMARK</aixm:purpose>
            <aixm:translatedNote>
                <aixm:LinguisticNote gml:id="ID_76_1504675228268_220099">
                    <aixm:note>TO PROVIDE AN ALTERNATIVE ROUTING ARR EGBB VIA MOSUN THROUGH MILITARY ATC.
                    THIS SERVICE IS SUBJECT TO NO-NOTICE WITHDRAWAL AND TRAFFIC MAY BE REQUIRED
                    TO ACCEPT A TACTICAL RE-ROUTE OR RE-FILE IN SUCH CASES.</aixm:note>
                </aixm:LinguisticNote>
            </aixm:translatedNote>
        </aixm:Note>
    </aixm:annotation>
    <aixm:extension>
        <adrest:FlightRestrictionExtension ...>
            <adrest:processingIndicator>TFR</adrest:processingIndicator>
            <adrest:enabled>YES</adrest:enabled>
            <adrest:usage>OPERATIONAL</adrest:usage>
            <adrest:verticalLimitReference>CALCULATED</adrest:verticalLimitReference>
        </adrest:FlightRestrictionExtension>
    </aixm:extension>
</aixm:FlightRestrictionTimeSlice>
</aixm:timeSlice>
</aixm:FlightRestriction>
</adrmmsg:hasMember>

```

3.2.1.15.9. RAD Dependent Applicability can apply to traffic not crossing referenced CDRs or RSAs.

3.2.1.15.9.1. Description

- (1) For Restrictions with Dependent Applicability set to CDR(s) or RSA(s), the Dependent Applicability should be considered valid even if traffic is not crossing the CDRs or RSAs used in the Dependent Applicability.
- (2) In other words, for the purpose of reducing complexities in traffic management, RSA activation or CDR availability/unavailability should be able to re-route traffic not crossing the entities concerned.
- (3) The dependant applicability based on RSA activation should be able to:
 - a) Use the RSA(s) as reference location taking in account the time and optional the level definitions set by the RSA(s) activation.
 - b) Use other entities than the RSA(s) as reference location but taking in account the time (as it is now) and optional the level definition set by the RSA(s) activation.
 - c) By optional it is meant that it must be possible for the user to take in account the level information or not.

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(4) Examples:

a) Example 1

- a) The restriction EBR04Z (dummy restriction) is an example which depends on a RSA activation and its vertical limits.
- b) Here is its definition:

ID Number value	RSA	Operational Goal
EBR04Z	EBR04	EBR04 FL 030_120 FORBIDDEN OUT-SIDE ACTIVATION 10:00_12:00

Table 3.7. Restriction EBR04Z definition

c)



Figure 3.48. Restriction EBR04Z - on the map

d)

Overall Applicability				
Start -> End (Date)	Days	Start -> End (Time)	Low FL	Upp FL
2017/09/14 -> 2017/09/18	---4567	00:00 -> 00:00	GND	170
2017/09/18 -> 2017/10/02	1234567	00:00 -> 00:00	GND	170
2017/10/02 -> 2017/10/03	1-----	00:00 -> 10:00	GND	170
2017/10/02 -> 2017/10/03	1-----	10:00 -> 12:00	GND	030
2017/10/02 -> 2017/10/03	1-----	10:00 -> 12:00	120	170
2017/10/02 -> 2017/10/09	1-----	12:00 -> 00:00	GND	170
2017/10/02 -> 2017/10/09	-234567	00:00 -> 00:00	GND	170
2017/10/09 -> 2018/09/17	1234567	00:00 -> 00:00	GND	170

Figure 3.49. Restriction EBR04Z - overall applicability

b) Example 2

a)

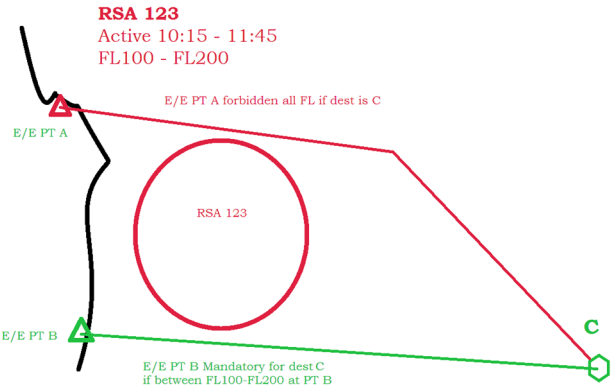


Figure 3.50.

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- b) Entry/Exit point A is forbidden for all flight levels if the destination is C
- c) Entry/Exit point B is mandatory for destination C between FL100-FL200 at point B

3.2.1.15.9.2. Publication

- (1) RAD FlightRestrictions can have dependent level applicability.
- (2) The class `FlightRestriction` has been extended with a new property called `dependentVerticalLimits`:

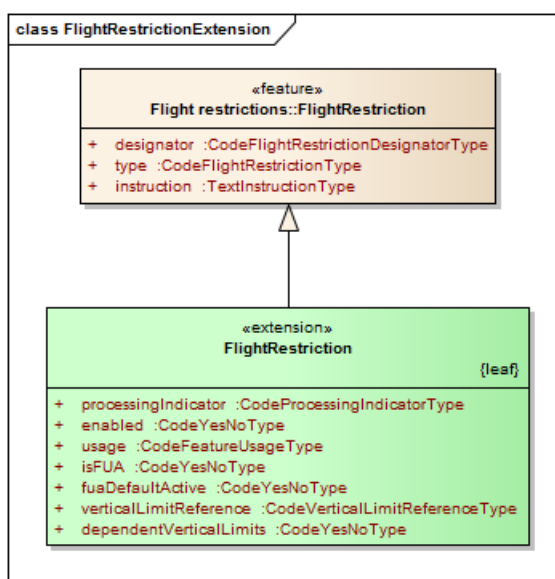


Figure 3.51. Extension of the `FlightRestriction` class

- (3) The property `dependentVerticalLimits` provided on the dependent applicability indicates if there is a level dependency in addition to the time dependency.

The meaning of the property's value is:

dependentVerticalLimits value	Description
YES	The <code>FlightRestriction</code> has dependent level applicability. Time and Level dependency.
NO	The <code>FlightRestriction</code> has no dependent level applicability. Time dependency only

Table 3.8. Property `dependentVerticalLimits`

- (4) The dependent level applicability is only valid for reference location of type `Airspace` or `Point`.

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3.2.1.15.9.3. Important Remark

- (1) For old B2B versions, the FlightRestriction will be hidden using the **WITHHELD** mechanism.

3.2.1.15.9.4. Example

- (1) NM 21.5 publications - Prior to B2B version 21.5 - RAD FlightRestriction EBR04Z

```
<?xml version="1.0"?>
<adrm:hasMember>
  <aixm:FlightRestriction ...>
    <gml:identifier codeSpace="urn:uuid:">80baa235-6fef-4159-91b6-84933875a29e</gml:identifier>
    <aixm:timeSlice>
      <aixm:FlightRestrictionTimeSlice gml:id="ID_63_1507215112981_13266">
        <gml:validTime>
          <gml:TimePeriod gml:id="ID_63_1507215112981_13267">
            <gml:beginPosition>2017-09-14T00:00:00</gml:beginPosition>
            <gml:endPosition indeterminatePosition="unknown"/>
          </gml:TimePeriod>
        </gml:validTime>
        <aixm:interpretation>BASELINE</aixm:interpretation>
        <aixm:featureLifetime>
          <gml:TimePeriod gml:id="ID_63_1507215112981_13268">
            <gml:beginPosition>2017-09-14T00:00:00</gml:beginPosition>
            <gml:endPosition indeterminatePosition="unknown"/>
          </gml:TimePeriod>
        </aixm:featureLifetime>
        <aixm:extension>
          <adrex:FlightRestrictionExtension ...>
            <adrex:usage>WITHHELD</adrex:usage>
          </adrex:FlightRestrictionExtension>
        </aixm:extension>
      </aixm:FlightRestrictionTimeSlice>
    </aixm:timeSlice>
  </aixm:FlightRestriction>
</adrm:hasMember>
```

- (2) NM 21.5 publications - B2B version 21.5 - RAD FlightRestriction EBR04Z

```
<?xml version="1.0"?>
<adrm:hasMember>
  <aixm:FlightRestriction ...>
    <gml:identifier codeSpace="urn:uuid:">80baa235-6fef-4159-91b6-84933875a29e</gml:identifier>
    <aixm:timeSlice>
      <aixm:FlightRestrictionTimeSlice gml:id="ID_64_1507215112982_13284">
        <gml:validTime>
          <gml:TimePeriod gml:id="ID_64_1507215112982_13285">
            <gml:beginPosition>2017-09-14T00:00:00</gml:beginPosition>
            <gml:endPosition indeterminatePosition="unknown"/>
          </gml:TimePeriod>
        </gml:validTime>
        <aixm:interpretation>BASELINE</aixm:interpretation>
        <aixm:featureLifetime>
          <gml:TimePeriod gml:id="ID_64_1507215112982_13286">
            <gml:beginPosition>2017-09-14T00:00:00</gml:beginPosition>
            <gml:endPosition indeterminatePosition="unknown"/>
          </gml:TimePeriod>
        </aixm:featureLifetime>
        <aixm:designator>EBR04Z</aixm:designator>
      </aixm:FlightRestrictionTimeSlice>
    </aixm:timeSlice>
  </aixm:FlightRestriction>
</adrm:hasMember>
```


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```

<aixm:type>FORBID</aixm:type>
<aixm:instruction>EBR04 FL 030_120 FORBIDDEN OUTSIDE ACTIVATION 10:00_12:00</aixm:instruction>
<aixm:flight>
  <aixm:FlightConditionCombination gml:id="ID_64_1507215112982_13287">
    <aixm:timeInterval>
      <aixm:Timesheet gml:id="ID_64_1507215112982_13288">
        <aixm:timeReference>UTC</aixm:timeReference>
        <aixm:day>ANY</aixm:day>
        <aixm:startTime>00:00</aixm:startTime>
        <aixm:endTime>24:00</aixm:endTime>
        <aixm:excluded>NO</aixm:excluded>
        <aixm:extension>
          <adrex:TimesheetExtension ...>
            <gml:validTime>
              <gml:TimePeriod gml:id="ID_64_1507215112982_13290">
                <gml:beginPosition>2017-09-14T00:00:00</gml:beginPosition>
                <gml:endPosition indeterminatePosition="unknown"/>
              </gml:TimePeriod>
            </gml:validTime>
          </adrex:TimesheetExtension>
        </aixm:extension>
      </aixm:Timesheet>
    </aixm:timeInterval>
    <aixm:logicalOperator>AND</aixm:logicalOperator>
    <aixm:element>
      <aixm:FlightConditionElement gml:id="ID_64_1507215112982_13291">
        <aixm:flightCondition_airspaceCondition .../>
        <aixm:operationalCondition>
          <aixm:FlightConditionCircumstance gml:id="ID_64_1507215112982_13292">
            <aixm:referenceLocation>YES</aixm:referenceLocation>
            <aixm:relationWithLocation>XNG</aixm:relationWithLocation>
          </aixm:FlightConditionCircumstance>
        </aixm:operationalCondition>
      </aixm:FlightConditionElement>
    </aixm:element>
    <aixm:element>
      <aixm:FlightConditionElement gml:id="ID_64_1507215112982_13293">
        <aixm:flightCondition_operand>
          <aixm:FlightConditionCombination gml:id="ID_64_1507215112982_13294">
            <aixm:logicalOperator>OTHER: __ADR__NOT</aixm:logicalOperator>
            <aixm:element>
              <aixm:FlightConditionElement gml:id="ID_64_1507215112982_13295">
                <aixm:flightCondition_airspaceCondition .../>
                <aixm:operationalCondition>
                  <aixm:FlightConditionCircumstance gml:id="ID_64_1507215112982_13296">
                    <aixm:referenceLocation>YES</aixm:referenceLocation>
                    <aixm:relationWithLocation>ACT</aixm:relationWithLocation>
                  </aixm:FlightConditionCircumstance>
                </aixm:operationalCondition>
              </aixm:FlightConditionElement>
            </aixm:element>
          </aixm:FlightConditionCombination>
        </aixm:flightCondition_operand>
      </aixm:FlightConditionElement>
    </aixm:element>
  </aixm:FlightConditionCombination>
</aixm:flight>
<aixm:regulatedRoute>
  <aixm:FlightRestrictionRoute gml:id="ID_64_1507215112982_13297">
    <aixm:routeElement>
      <aixm:FlightRoutingElement gml:id="ID_64_1507215112982_13298">
        <aixm:orderNumber>1</aixm:orderNumber>
        <aixm:element_airspaceElement .../>
      </aixm:FlightRoutingElement>
    </aixm:routeElement>
  </aixm:FlightRestrictionRoute>

```

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```

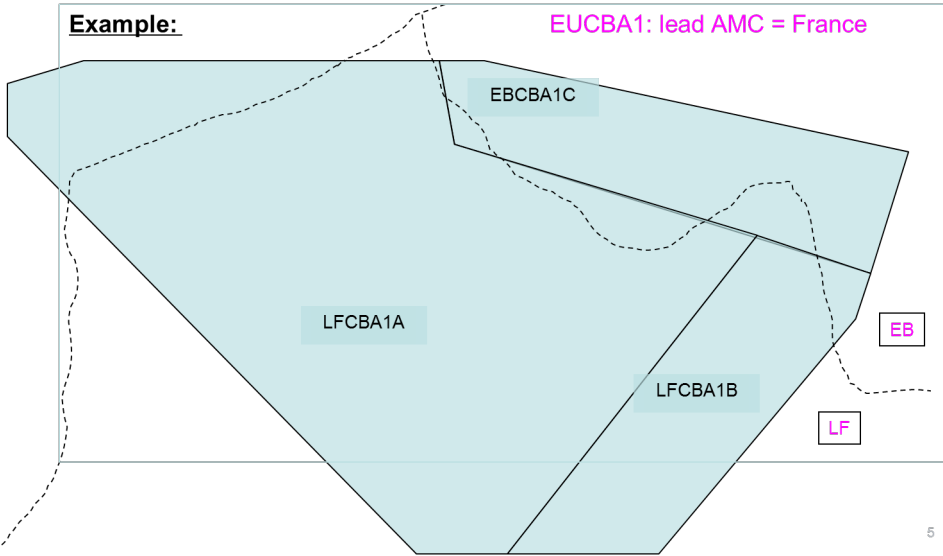
</aixm:regulatedRoute>
<aixm:annotation>
  <aixm:Note gml:id="ID_64_1507215112982_13299">
    <aixm:propertyName>instruction</aixm:propertyName>
    <aixm:purpose>REMARK</aixm:purpose>
    <aixm:translatedNote>
      <aixm:LinguisticNote gml:id="ID_64_1507215112982_13300">
        <aixm:note>EBR04 FL 030_120 FORBIDDEN OUTSIDE ACTIVATION 10:00_12:00</aixm:note>
      </aixm:LinguisticNote>
    </aixm:translatedNote>
  </aixm:Note>
</aixm:annotation>
<aixm:extension>
  <adrex:FlightRestrictionExtension ...>
    <adrex:processingIndicator>TFR</adrex:processingIndicator>
    <adrex:enabled>YES</adrex:enabled>
    <adrex:usage>OPERATIONAL</adrex:usage>
    <adrex:isFUA>YES</adrex:isFUA>
    <adrex:fuaDefaultActive>YES</adrex:fuaDefaultActive>
    <adrex:verticalLimitReference>CALCULATED</adrex:verticalLimitReference>
    <adrex:dependentVerticalLimits>YES</adrex:dependentVerticalLimits>
  </adrex:FlightRestrictionExtension>
</aixm:extension>
</aixm:FlightRestrictionTimeSlice>
</aixm:timeSlice>
</aixm:FlightRestriction>
</drmsg:hasMember>

```

3.2.1.16. Lead AMC publication.

3.2.1.16.1. Description

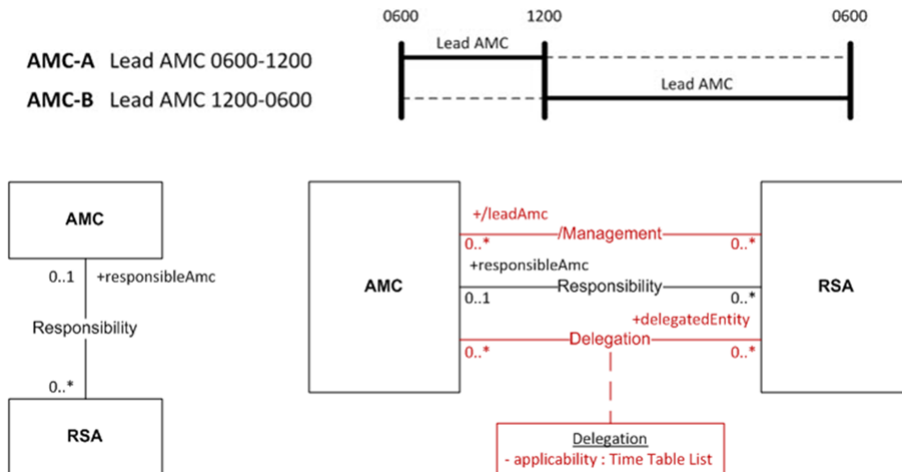
- (1) The lead AMC is a predetermined AMC responsible for the coordination with adjacent AMCs of the harmonised allocation of Cross Border Areas (CBAs) and/or the availability of specific Cross-Border Routes (CDRs).



- (2) The lead AMC was updateable on an AIRAC cycle basis and some AMCs requested to handle it on a daily basis.

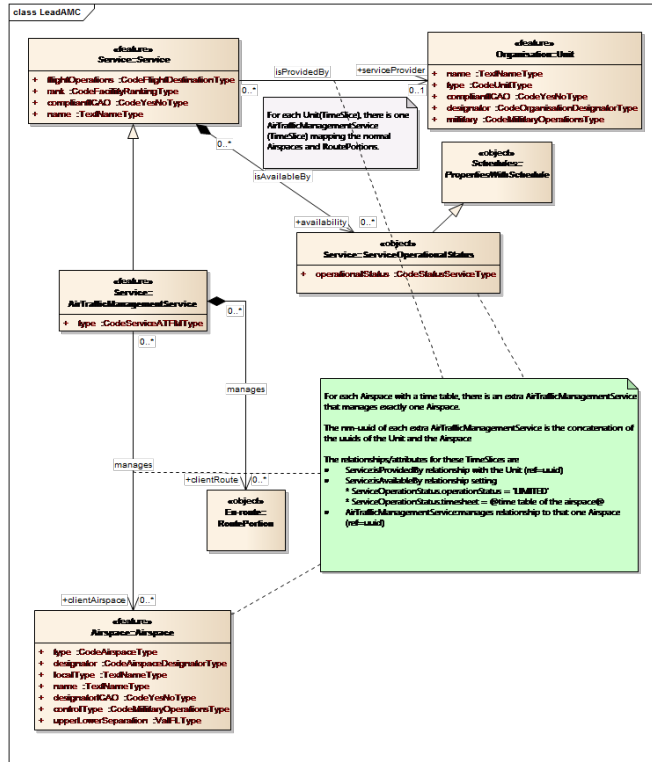
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- (3) Therefore, the association between the lead AMC and the RSA Airspaces need to be time dependent.



3.2.1.16.2. Publication

- (1) The Delegated Airspaces in the AMC are exported by the B2B AirspaceStructure Service using the mapping as explained in the following diagram:



- (2) The concept of **default lead AMC** is defined in AIXM 5.1 as:
For each validity period of an AirTrafficManagementService

- An AirTrafficManagementService.isProvidedBy a serviceProvider (Unit)

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- An AirTrafficManagementService manages zero or more clientAirspace (Airspace)

Example 3.6. EBBRZAMC

The Service::AirTrafficManagementService provided by the Organisation::Unit **EBBRZAMC** manages the following list of client Airspaces **EBR20, EBR21, ..**

- (3) In the NM 21.0 publication, the concept of **delegated airspaces to lead AMC** is defined in AIXM 5.1 as:

- An AirTrafficManagementService.isProvidedBy a serviceProvider (Unit) during specific periods of time is model as a Service.isAvailableBy relationship where:
 - The ServiceOperationStatus.operationalStatus is defined as LIMITED and
 - The ServiceOperationStatus.timesheet defines when the AirTrafficManagement-Service.clientAirspace is managed by the AMC.
- The NM-UUID of these AirTrafficManagementService features is the concatenation of the UUIDs of the Unit and the Airspace features.

Example 3.7. EBBRZAMC

The Service::AirTrafficManagementService provided by the Organisation::Unit **EBBRZAMC** manages the client Airspace **EDR10D** the Thursday 02/03/2107 from 02:00 till 03:00 UTC and the client Airspace **EHD02** during the week-end from 06:00 till 08:00 UTC. The rest of the time, the Airspace **EHD02** is managed by the default lead AMC **EHMCZAMC** and the Airspace **EDR10D** is managed by the default lead AMC **EDDAZAMC**

3.2.1.16.3. Example of Publication

- In the below example, the first part represents the publication of a delegation of an airspace to a lead AMC for a period of time. The second part represents the publication of the default lead AMC.
- The UUID of a delegate airspace to a lead AMC is composed of the following:
 - The string "AirTrafficManagementService_" followed by
 - the UUID of the AirTrafficManagementService followed by
 - the character "_" followed by
 - the UUID of the Airspace.
- Ex: AirTrafficManagementService_4cfcafb8-1841-405c-9c75-454dafd8e5d4_1305adf2-d353-4a83-99c8-26885f156514

```
<?xml version="1.0" encoding="UTF-8"?>
<adrmmsg:ADRMMessage ...>
  <adrmmsg:hasMember>
```

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```

<aixm:AirTrafficManagementService ...>
  <gml:identifier
    codeSpace="urn:x-nmb2b:">
    AirTrafficManagementService_
    4cfcafb8-1841-405c-9c75-454dafd8e5d4_1305adf2-d353-4a83-99c8-26885f156514
  </gml:identifier>
  <aixm:timeSlice>
    <aixm:AirTrafficManagementServiceTimeSlice gml:id="ID_57_1488621997395_3">
      <gml:validTime>
        <gml:TimePeriod gml:id="ID_57_1488621997395_4">
          <gml:beginPosition>2017-03-02T00:00:00</gml:beginPosition>
          <gml:endPosition indeterminatePosition="unknown"/>
        </gml:TimePeriod>
      </gml:validTime>
      <aixm:interpretation>BASELINE</aixm:interpretation>
      <aixm:featureLifetime>
        <gml:TimePeriod gml:id="ID_57_1488621997395_5">
          <gml:beginPosition>2017-03-02T00:00:00</gml:beginPosition>
          <gml:endPosition indeterminatePosition="unknown"/>
        </gml:TimePeriod>
      </aixm:featureLifetime>
      <aixm:serviceProvider .../>
      <aixm:availability>
        <aixm:ServiceOperationalStatus gml:id="ID_57_1488621997395_6">
          <aixm:timeInterval>
            <aixm:Timesheet gml:id="ID_57_1488621997395_7">
              <aixm:timeReference>UTC</aixm:timeReference>
              <aixm:day>SUN</aixm:day>
              <aixm:startTime>06:00</aixm:startTime>
              <aixm:endTime>08:00</aixm:endTime>
              <aixm:extension>
                <adrest:TimesheetExtension ...>
                  <gml:validTime>
                    <gml:TimePeriod gml:id="ID_57_1488621997395_9">
                      <gml:beginPosition>2017-03-02T00:00:00</gml:beginPosition>
                      <gml:endPosition indeterminatePosition="unknown"/>
                    </gml:TimePeriod>
                  </gml:validTime>
                </adrest:TimesheetExtension>
              </aixm:extension>
            </aixm:Timesheet>
          </aixm:timeInterval>
          <aixm:timeInterval>
            <aixm:Timesheet gml:id="ID_57_1488621997395_10">
              <aixm:timeReference>UTC</aixm:timeReference>
              <aixm:day>SAT</aixm:day>
              <aixm:startTime>06:00</aixm:startTime>
              <aixm:endTime>08:00</aixm:endTime>
              <aixm:extension>
                <adrest:TimesheetExtension ...>
                  <gml:validTime>
                    <gml:TimePeriod gml:id="ID_57_1488621997395_12">
                      <gml:beginPosition>2017-03-02T00:00:00</gml:beginPosition>
                      <gml:endPosition indeterminatePosition="unknown"/>
                    </gml:TimePeriod>
                  </gml:validTime>
                </adrest:TimesheetExtension>
              </aixm:extension>
            </aixm:Timesheet>
          </aixm:timeInterval>
          <aixm:operationalStatus>LIMITED</aixm:operationalStatus>
        </aixm:ServiceOperationalStatus>
      </aixm:availability>
      <aixm:clientAirspace .../>
    </aixm:AirTrafficManagementServiceTimeSlice>
  </aixm:timeSlice>

```

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```

    </aixm:AirTrafficManagementService>
  </adrmmsg:hasMember>
<adrmmsg:hasMember>
  <aixm:AirTrafficManagementService ...>
    <gml:identifier
      codeSpace="urn:x-nmb2b:">AirTrafficManagementService_4cfcafb8-1841-405c-9c75-454dafd8e5d4
    </gml:identifier>
    <aixm:timeSlice>
      <aixm:AirTrafficManagementServiceTimeSlice gml:id="ID_57_1488621997395_14">
        <gml:validTime>
          <gml:TimePeriod gml:id="ID_57_1488621997395_15">
            <gml:beginPosition>2016-11-10T00:00:00</gml:beginPosition>
            <gml:endPosition indeterminatePosition="unknown"/>
          </gml:TimePeriod>
        </gml:validTime>
        <aixm:interpretation>BASELINE</aixm:interpretation>
        <aixm:featureLifetime>
          <gml:TimePeriod gml:id="ID_57_1488621997395_16">
            <gml:beginPosition>2016-11-10T00:00:00</gml:beginPosition>
            <gml:endPosition indeterminatePosition="unknown"/>
          </gml:TimePeriod>
        </aixm:featureLifetime>
        <aixm:serviceProvider
          xmlns:xlink="http://www.w3.org/1999/xlink"
          xlink:href="urn:uuid:4cfcafb8-1841-405c-9c75-454dafd8e5d4"/>
        <aixm:clientAirspace
          xmlns:xlink="http://www.w3.org/1999/xlink"
          xlink:href="urn:uuid:f4e93f7a-c908-4657-b5ec-b909da1ef971"/>
        <aixm:clientAirspace
          xmlns:xlink="http://www.w3.org/1999/xlink"
          xlink:href="urn:uuid:f0a6d4eb-41e5-46b6-a1d8-9e8d5663b6a7"/>
        ...
        <aixm:clientRoute>
          <aixm:RoutePortion gml:id="ID_57_1488621997395_17">
            <aixm:start_fixDesignatedPoint
              xmlns:xlink="http://www.w3.org/1999/xlink"
              xlink:href="urn:uuid:2a92b8db-9617-489c-b854-5c791bf5caa7"/>
            <aixm:referencedRoute
              xmlns:xlink="http://www.w3.org/1999/xlink"
              xlink:href="urn:uuid:1bf5f9a1-f00a-4d2b-8db1-fcf27c271bcc"/>
            <aixm:end_fixDesignatedPoint
              xmlns:xlink="http://www.w3.org/1999/xlink"
              xlink:href="urn:uuid:c253fb18-fe15-4232-ae82-323253660771"/>
            </aixm:RoutePortion>
          </aixm:clientRoute>
        ...
      </aixm:AirTrafficManagementServiceTimeSlice>
    </aixm:timeSlice>
  </aixm:AirTrafficManagementService>
</adrmmsg:hasMember>
</adrmmsg:ADRMMessage>

```

3.2.2. Query Complete AIXM data sets

3.2.2.1. SOAP

- (1) The associated SOAP operation is:

```

CompleteAIXMDatasetReply queryCompleteAIXMDatasets(
  CompleteAIXMDatasetRequest request
)

```

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3.2.2.2. CompleteAIXMDatasetRequest

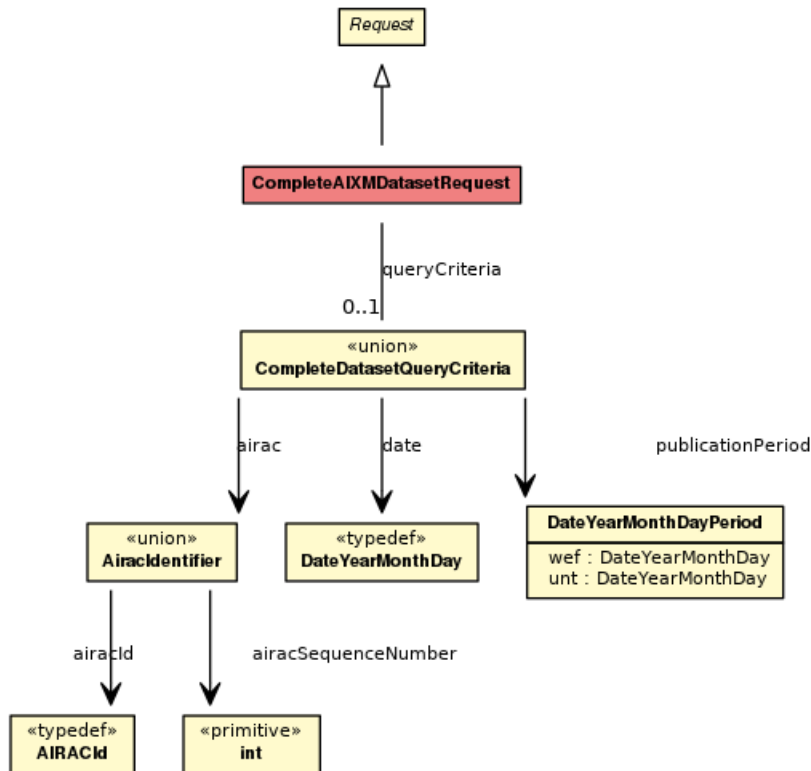


Figure 3.52. CompleteAIXMDatasetRequest Class Diagram

- (1) Request to query complete AIXM Datasets.
- (2) Inherits from: [Request](#)
- (3) Attributes:
 - a) [CompleteDatasetQueryCriteria](#) **queryCriteria** (Optional)
The criteria by which to query for Complete AIXM Datasets. Default is any criteria.

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3.2.2.3. CompleteAIXMDatasetReply

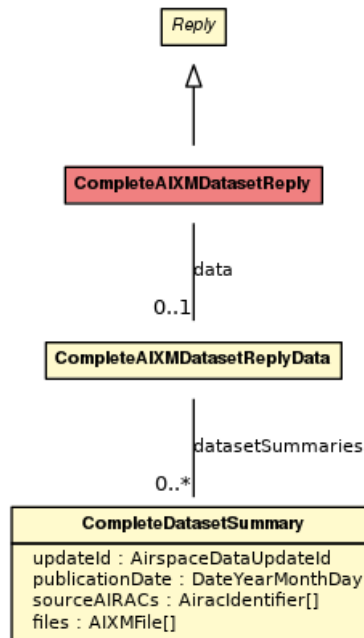


Figure 3.53. CompleteAIXMDatasetReply Class Diagram

- (1) Reply returned in response to [CompleteAIXMDatasetRequest](#)
- (2) The service returns a list of datasets available for downloads. More precisely it returns a list of CompleteDatasetSummary objects. Each summary contains relevant information about the dataset.
- (3) A Complete AIXM Dataset is a set of AIXM files, one per AIXM feature type.
- (4) **Note**
 - These services do not return the content of each file, but only the file identifiers. Each file must then be downloaded separately (see document [Essentials Reference Manual - Access to Files](#) for a detailed description).
- (5) When querying the datasets for a given AIRAC, the service returns all the Complete AIXM Datasets published for that AIRAC: this means from six days before the AIRAC switch until the end of the cycle.
- (6) Past timeslices which are no longer relevant to the correspondent AIRACS are not included in the dataset.
- (7) Inherits from: [Reply](#)
- (8) Attributes:

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- a) [CompleteDatasetSummary\[\] datasetSummaries](#) (Mandatory)

The references to the requested ADR AIXM files.

Constraint: Size must be comprised between 0 and ∞ .

3.2.3. Query Incremental AIXM data sets

3.2.3.1. SOAP

- (1) The associated SOAP operation is:

```
IncrementalAIXMDatasetReply queryIncrementalAIXMDatasets(
    IncrementalAIXMDatasetRequest request
)
```

3.2.3.2. IncrementalAIXMDatasetRequest

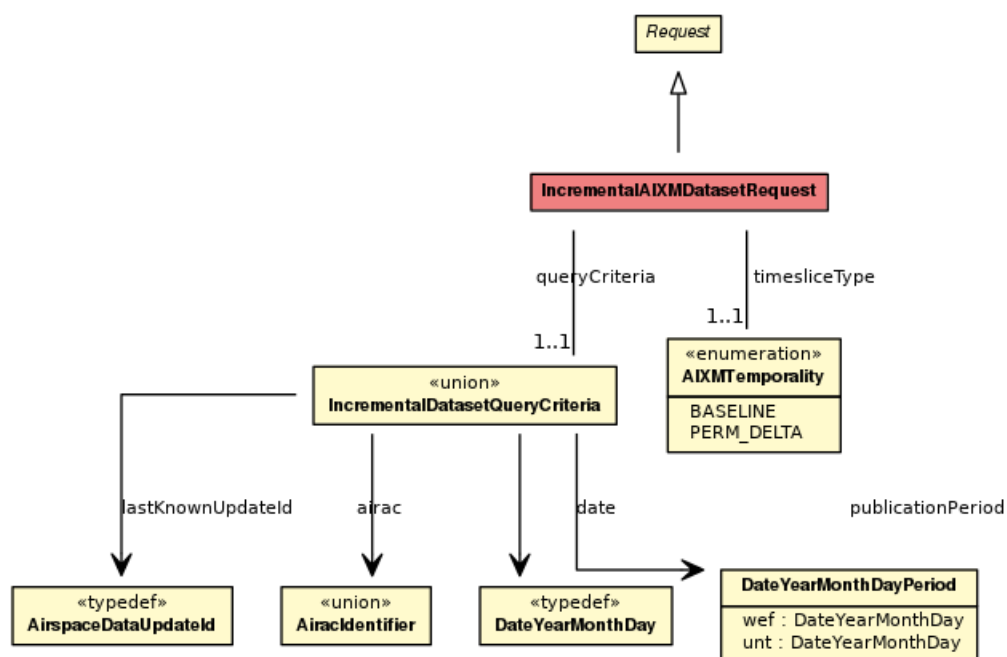


Figure 3.54. *IncrementalAIXMDatasetRequest Class Diagram*

- (1) Request to query incremental AIXM Datasets.
- (2) In the most common scenario the consumer provides the last known UpdateId and the service returns all available Incremental AIXM Datasets newer than the given UpdateId.
- (3) The UpdateId provided by the caller must be a valid UpdateId previously obtained through:
 - a) either the download of a Complete AIXM Dataset.
 - b) or the retrieval of an Incremental AIXM Dataset.

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- (4) The method also allows using other query parameters in order not to limit the possible use cases.
- (5) Inherits from: [Request](#)
- (6) Attributes:
- [IncrementalDatasetQueryCriteria](#) **queryCriteria** (Mandatory)
The criteria by which to query for Incremental AIXM Datasets.
 - [AIXMTemporality](#) **timesliceType** (Mandatory)
It allows the data consumer to choose whether to get the dataset as BASELINE or PERM-DELTA timeslices.

3.2.3.3. IncrementalAIXMDatasetReply

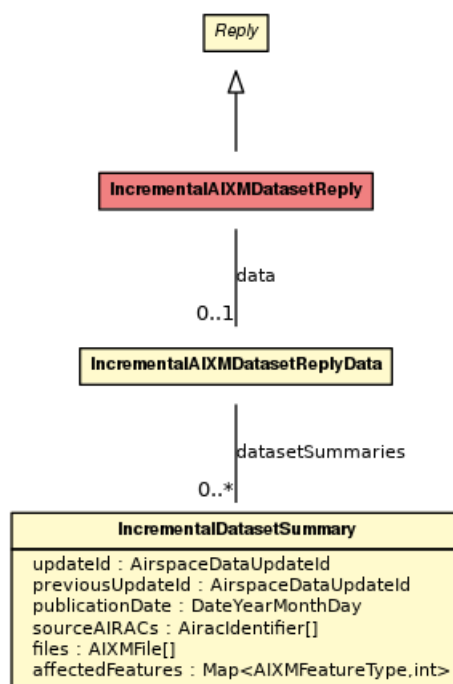


Figure 3.55. IncrementalAIXMDatasetReply Class Diagram

- (1) Reply returned in response to [IncrementalAIXMDatasetRequest](#)
- (2) The service returns a list of available Incremental AIXM Datasets. More precisely it returns a list of Incremental AIXM Dataset Summaries.
- (3) Inherits from: [Reply](#)
- (4) Attributes:
- [IncrementalDatasetSummary](#)[] **datasetSummaries** (Mandatory)
A collection of summaries of the available Incremental AIXM Datasets.

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Constraint: Size must be comprised between 0 and ∞ .

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Chapter 4. Data Types

4.1. <<abstract>> AbstractEAUPCDRRequest

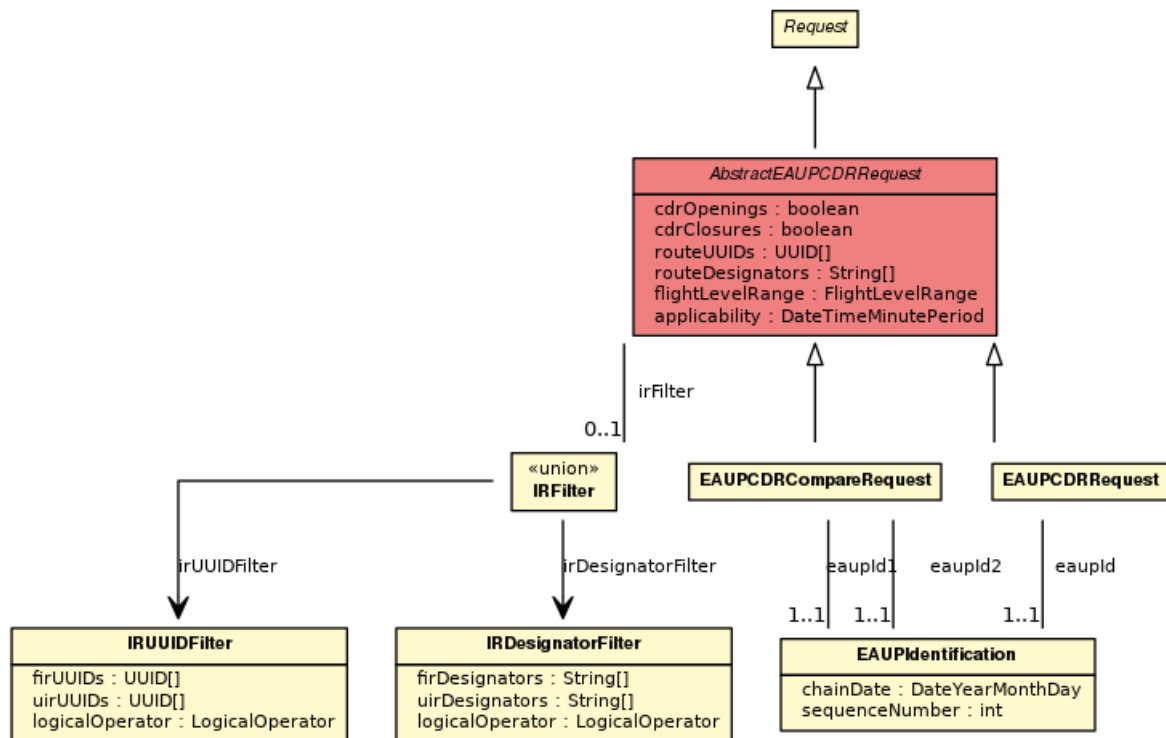


Figure 4.1. <<abstract>> AbstractEAUPCDRRequest Class Diagram

- (1) Used to retrieve the CDR openings and closures within an EAUP, or between EAUPs, while possibly applying a filter on the returned result set, i.e. keep only the CDR openings/closures for:
 - a) A CDR type (i.e. opening and/or closure), and
 - b) A list of route wildcards, and
 - c) A list of FIR and/or UIR UUIDs, and
 - d) A list of FIR and/or UIR designator wildcards, and
 - e) A flight level range, and
 - f) An applicability period
- (3) The logical AND operator applies between all the query attributes described below.
- (4) Since released EAUPs are immutable, i.e. their contents will not be modified anymore, NM requires its customers to undertake their best effort to avoid repeatedly launching the same requests on the same EAUP.

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- (5) Inherits from: [Request](#).
- (6) Attributes:
- a) **boolean cdrOpenings** *(Optional)*
If true, CDR openings are returned. True by default.
 - b) **boolean cdrClosures** *(Optional)*
If true, CDR closures are returned. True by default.
 - c) **UUID[] routeUUIDs** *(Optional)*
Query attribute on route UUIDs. The default meaning is "all route UUIDs".
Constraints:
 - i) Size must be comprised between 1 and ∞ .
 - ii) See [ROUTE_UUIDS_CANNOT_CONTAIN_DUPLICATE](#)
 - d) **string[] routeDesignators** *(Optional)*
Query attribute on route designators. Each string item in the array can be a full route designator or a wildcard for a route designator. Supported wildcards are limited to at least one character and the star sign ("*") at the end of the expression. The default meaning is "all routes".
Constraints:
 - i) Size must be comprised between 1 and ∞ .
 - ii) Item Pattern: (UALPHA|DIGIT){1,7}|(UALPHA|DIGIT){1,6}*
 - iii) See [ROUTE_DESIGNATORS_CANNOT_CONTAIN_DUPLICATE](#)
 - e) **IRFilter irFilter** *(Optional)*
Used to filter the IR airspaces on which CDR openings/closures apply, based on UUIDs or on IR designators.
 - f) **FlightLevelRange flightLevelRange** *(Optional)*
Query attribute on flight level range. The CDR opening/closure matches this query attribute if its flight level range and the given flight level range overlap. Be aware that the FlightLevelRange is right-opened, i.e. if e.g. a CDR opening flight level range is [300, 400 [and the caller queries on flight level range [400, 500 [, the CDR opening does not match the query. The default meaning is "any flight level range".
 - g) **DateTimeMinutePeriod applicability** *(Optional)*
Query attribute on CDR opening/closure applicability period. The CDR opening/closure matches this query attribute if its applicability period and the given applicability period overlap. Note that time period are left-closed and right-opened, i.e. no match if obtained if the CDR opening/closure applicability period starts at the time corresponding to the end of the query attribute. The default meaning is "any applicability".
- (7) Constraints:

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a)	Name	ROUTE_UUIDS_CANNOT_CONTAIN_DUPLICATE
	Attribute	routeUUIDs
	Description	If specified, the array cannot be empty and does not accept duplicates.

b)	Name	ROUTE_DESIGNATORS_CANNOT_CONTAIN_DUPLICATE
	Attribute	routeDesignators
	Description	Query attribute on route designators. Each string item in the array can be a full route designator or a wildcard for a route designator. Supported wildcards are limited to at least one character and the star sign ("*") at the end of the expression. The default meaning is "all routes".

(8) Extended by: [EAUPCDRRequest](#), [EAUPCDRCompareRequest](#).

4.2. <<abstract>> AbstractEAUPRSAResult

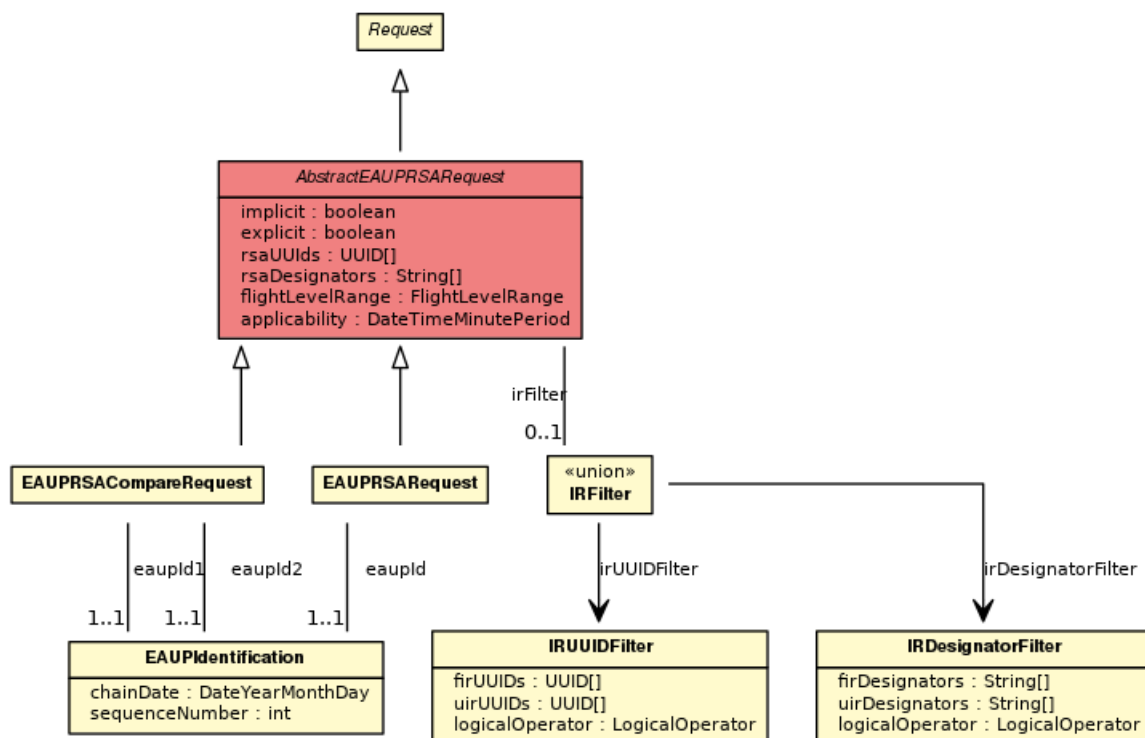


Figure 4.2. <<abstract>> AbstractEAUPRSAResult Class Diagram

- (1) Used to retrieve the RSA allocations within an EAUP, or between EAUPs, while possibly applying a filter on the returned result set, i.e. keep only the RSA allocations for:
- (2) a) An RSA allocation type (i.e. implicit and/or explicit), and

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- b) A list of RSA wildcards, and
 - c) A list of FIR and/or UIR UUIDs, and
 - d) A list of FIR and/or UIR designator wildcards, and
 - e) A flight level range, and
 - f) An applicability period
- (3) The logical AND operator applies between all the query attributes described below.
- (4) Since released EAUPs are immutable, i.e. their contents will not be modified anymore, NM requires its customers to undertake their best effort to avoid repeatedly launching the same requests on the same EAUP.
- (5) Inherits from: [Request](#).
- (6) Attributes:
- a) **boolean implicit** (*Optional*)
If true, implicit RSA allocations are returned. True by default.
 - b) **boolean explicit** (*Optional*)
If true, explicit RSA allocations are returned. True by default.
 - c) **[UUID\[\]](#) rsaUUIDs** (*Optional*)
Query attribute on RSA UUIDs. The default meaning is "all RSA UUIDs".
Constraints:
 - i) Size must be comprised between 1 and ∞ .
 - ii) See [RSA_UUIDS_CANNOT_CONTAIN_DUPLICATE](#)
 - d) **string[] rsaDesignators** (*Optional*)
Query attribute on RSA designators, i.e. ICAO-compliant RSA designator. Each string item in the array can be a full RSA designator or a wildcard for a RSA designator. Supported wildcards are limited to at least one character and the star sign ("*") at the end of the expression. The default meaning is "all RSAs".
Constraints:
 - i) Size must be comprised between 1 and ∞ .
 - ii) Item Pattern: `(UALPHA|DIGIT){1,7}|(UALPHA|DIGIT){1,6}*`
 - iii) See [RSA_DESIGNATORS_CANNOT_CONTAIN_DUPLICATE](#)
 - e) **[IRFilter](#) irFilter** (*Optional*)
Used to filter the IR airspaces on which RSA allocations apply, based on UUIDs or on IR designators.

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f) **[FlightLevelRange](#) flightLevelRange** (Optional)

Query attribute on flight level range. The RSA allocation matches this query attribute if its flight level range and the given flight level range overlap. Be aware that the FlightLevelRange is right-opened, i.e. if e.g. an RSA allocation flight level range is [300, 400 [and the caller queries on flight level range [400, 500 [, the RSA allocation does not match the query. The default meaning is "any flight level range".

g) **[DateTimeMinutePeriod](#) applicability** (Optional)

Query attribute on RSA allocation applicability period. The RSA allocation matches this query attribute if its applicability period and the given applicability period overlap. Note that time period are left-closed and right-opened, i.e. no match if obtained if the RSA allocation applicability period starts at the time corresponding to the end of the query attribute. The default meaning is "any applicability".

(7) Constraints:

a)

Name	RSA_UUIDS_CANNOT_CONTAIN_DUPLICATE
Attribute	rsaUUIDs
Description	If specified, the array cannot be empty and does not accept duplicates.

b)

Name	RSA_DESIGNATORS_CANNOT_CONTAIN_DUPLICATE
Attribute	rsaDesignators
Description	If specified, the array cannot be empty and does not accept duplicates.

(8) Extended by: [EAUPRSAResponse](#), [EAUPRSACompareRequest](#).

4.3. **typedef<eurocontrol.cfmua.b2b.aixm.ADRMessage> ADRMessageType**

- (1) This is an envelope of Features. The envelope can be empty. Depending on the service, the envelope can contain different types of Features.
- (2) Used by: [AUPRSAAllocationExpansionReply](#), [AUPGetManageableRouteSegmentsForAMCAndRouteReply](#), [EAUPRSACompareReply](#), [EAUPCDRCompareReply](#), [AUPComputedEntries](#), [AUPManualEntries](#), [EAUPCDRReply](#), [EAUPMessage](#), [EAUPRSAResponse](#), [AUPRSAAllocationExpansionRequest](#).

4.4. **typedef<string> AerodromeIATAId**

- (1) IATA identifier of an aerodrome.
- (2) Examples: BRU, CDG,...
- (3) Pattern: UALPHA{3}

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- (4) Used by: [PredictedDPIRequest](#).

4.5. **typedef<string> AerodromeIATA0rICA0Id**

- (1) IATA (3 characters) or ICAO (4 characters) identifier of an aerodrome.
- (2) Pattern: UALPHA{3,4}
- (3) Used by: [TerminalProcedureIdentifier](#), [ACC3Accreditation](#), [FlightSetDefinitionElement](#).

4.6. **typedef<string> AerodromeICA0Id**

- (1) ICAO id of an Aerodrome.
- (2) Pattern: UALPHA{4}
- (3) Used by: [AlternateAerodrome](#), [FlightPoint](#), [Aerodrome](#), [ReclearanceInFlight](#), [ATFCMSituationRegulation](#), [FlightInformationUpdateRequest](#), [FlightListByAerodromeRequest](#), [TrafficCountsByAerodromeRequest](#), [ReferenceLocationAerodrome](#), [RunwayConfigurationPlan](#), [AerodromeDAL](#), [FlightKeys](#), [Flight](#), [RunwayConfigurationPlanRetrievalRequest](#), [TargetTime](#), [AerodromeOrPublishedPointId](#).

4.7. **Aerodrome0rPublishedPointId**

- (1) Represents an aerodrome or a published point ICAO identifier.
- (2) Choices:
- a) **[AerodromeICA0Id](#) aerodrome**
The aerodrome ICAO identifier.
 - b) **[PublishedPointId](#) point**
The published point ICAO identifier.
- (3) Used by: [ArrivalInformation](#), [TargetAPIRequest](#).

4.8. **<<enumeration>> Aerodrome0rPublishedPointIdType**

- (1) Values:
- a) **aerodrome**
 - b) **point**
- (2) Used by: [AerodromeOrPublishedPointId](#).

4.9. **typedef<string> AerodromeSetId**

- (1) NM unique id of the AerodromeSet.

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- (2) Pattern: ANY{1, 8}
- (3) Used by: [TrafficCountsByAerodromeSetRequest](#), [FlightListByAerodromeSetRequest](#), [Reference-LocationAerodromeSet](#).

4.10. typedef<string> AIRACId

- (1) Identifier of the AIRAC based on the year and a sequence number in the year.
- (2) Its format is "YYSS": where YY are the last two digits of the year and SS the two digits for the AIRAC sequence number within the year. Example: "1203" is the third AIRAC of 2012.
- (3) Pattern: DIGIT{4}
- (4) Used by: [AiracIdentifier](#).

4.11. AiracIdentifier

- (1) Identification of a airac, either via a airac id or via a airac sequence number.
- (2) Choices:
 - a) **AIRACId** airacId
Specific AIRAC id.
 - b) **int** airacSequenceNumber
Specific AIRAC sequence number.
- (3) Used by: [CompleteDatasetQueryCriteria](#), [IncrementalDatasetSummary](#), [CompleteDatasetSummary](#), [IncrementalDatasetQueryCriteria](#).

4.12. typedef<long> AirspaceDataUpdateId

- (1) Airspace data update identifier.
- (2) Range:] - ∞ , ∞ [.
- (3) Used by: [IncrementalDatasetSummary](#), [CompleteDatasetSummary](#), [IncrementalDatasetQueryCriteria](#).

4.13. typedef<string> AirspaceId

- (1) NM unique id of the Airspace.
- (2) Pattern: ANY{1, 12}
- (3) Used by: [SectorConfigurationPlan](#), [RoutingAssistanceRequest](#), [TrafficCountsByAirspaceRequest](#), [MeasureIdAndTV](#), [DeltaEntry](#), [ReferenceLocationAirspace](#), [ScenarioAttributes](#), [FlightAirspace](#), [FlightListByAirspaceRequest](#), [SectorConfigurationPlanRetrievalRequest](#), [AvoidViaAirspaceReroutingConstraint](#).

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4.14. <<enumeration>> AirspaceType

(1) Enumerates airspace types

(2) Values:

Value	Description
A0I	Area Of Interest
A0P	Area Of Protection
AREA	NM or Eurocontrol Defined Area
AUA	ATC Unit Airspace
AUAG	ATC Unit Airspace Group
CDA	Client Defined Airspace
CLUS	Cluster
CRAS	CRAS
CRSA	Composed Manageable Airspace.
CS	Collapsed Sector
ERAS	ERAS
ERSA	Elementary Manageable Airspace
ES	Elementary Sector
FIR	Flight Information Region
IFPZ	IFPS Zone
NAS	National Airspace
REG	Region

Table 4.1. <<enumeration>> AirspaceType

(3) Used by: [FlightAirspace](#).

4.15. AirSpeed

(1) Representation of a true Airspeed, together with its unit.

(2) Attributes:

- a) [AirSpeed_DataType](#) **speed** (Mandatory)
The true airspeed value, in the provided unit. Must be in [0, 9999].
- b) [SpeedUnit](#) **unit** (Mandatory)
Speed unit.

(3) Used by: [WindVector](#), [Flight](#), [AirSpeedOrInitial](#), [LevelAndSpeedReroutingConstraint](#).

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4.16. typedef<int> AirSpeed_DataType

- (1) Airspeed data type.
- (2) Range:] - ∞ , ∞ [.
- (3) Used by: [AirSpeed](#).

4.17. AirSpeed0rInitial

- (1) Represents a AIR_SPEED or INITIAL air speed value.
- (2) Choices:
 - a) **void INITIAL**
The INITIAL value.
 - b) **[AirSpeed](#) AIR_SPEED**
The AIR_SPEED value.
- (3) Used by: [LevelAndSpeedReroutingConstraint](#).

4.18. <<enumeration>> AIXMDatasetType

- (1) Enumerates the supported AIXM datasets
- (2) Values:
 - a) **COMPLETE**
The Complete AIXM dataset
 - b) **INCREMENTAL**
The Incremental AIXM dataset
- (3) Used by: [AIXMDatasetMessagePayload](#), [AIXMDatasetMessageFilter](#).

4.19. <<enumeration>> AIXMFeatureType

- (1) The Feature type.
- (2) Values:
 - a) **AirTrafficManagementService**
 - b) **AirportHeliport**
 - c) **AirportHeliportCollocation**
 - d) **AirportHeliportSet**

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- e) **Airspace**
- f) **AngleIndication**
- g) **ArrivalLeg**
- h) **DepartureLeg**
- i) **DesignatedPoint**
- j) **DistanceIndication**
- k) **FlightRestriction**
- l) **Flow**
- m) **Navaid**
- n) **OrganisationAuthority**
- o) **ReferenceLocation**
- p) **Route**
- q) **RouteSegment**
- r) **SpecialDate**
- s) **StandardInstrumentArrival**
- t) **StandardInstrumentDeparture**
- u) **StandardLevelColumn**
- v) **StandardLevelTable**
- w) **SunriseSunsetTable**
- x) **TrafficVolume**
- y) **TrafficVolumeSet**
- z) **Unit**

(3) Used by: [IncrementalDatasetSummary](#).

4.20. AIXMFile

- (1) Represents a ADR AIXM file for a given DATE, DATA_SET_TYPE, UPDATE_ID, NM_RELEASE, AIXM feature type and temporality.

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- (2) Inherits from: [File](#).
- (3) Used by: [IncrementalDatasetSummary](#), [CompleteDatasetSummary](#).

4.21. <<enumeration>> AIXMTemporality

- (1) The temporality of the data in accordance with AIXM 5.1 (or higher) model.
- (2) Values:
- a) **BASELINE**
 - b) **PERM_DELTA**
- (3) Used by: [IncrementalAIXMDatasetRequest](#).

4.22. AUP

- (1) Represents an AUP, i.e. either indeed a (baseline) AUP or a UUP.
- (2) Attributes:
- a) **AUPSummary summary** (*Mandatory*)
Contains the summary information of the AUP/UUP.
Constraint: See [INCONSISTENT_AUP_MANUAL_ENTRIES_AND_SUMMARY_NIL_AUP](#)
 - b) **AUPManualEntries aupManualEntries** (*Optional*)
The list of manual AUP entries managed by the client application.
Constraint: See [INCONSISTENT_AUP_MANUAL_ENTRIES_AND_SUMMARY_NIL_AUP](#)
 - c) **AUPComputedEntries aupComputedEntries** (*Contextual*)
The list of computed AUP entries as computed by the NM system.
Presence:
 - i) Must be null in [AUPCreationRequest](#), [AUPUpdateRequest](#), [AUPValidationRequest](#)
 - ii) Optional otherwise.
- (3) Constraint:

a)	<table> <tr> <td>Name</td><td>INCONSISTENT_AUP_MANUAL_ENTRIES_AND_SUMMARY_NIL_AUP</td></tr> <tr> <td>Attributes</td><td>summary, aupManualEntries</td></tr> <tr> <td>Context</td><td>AUPCreationRequest, AUPValidationRequest, AUPUpdateRequest</td></tr> <tr> <td>Description</td><td>The attribute <code>aupManualEntries</code> must be null if <code>summary.nilAUP</code> is true. Cannot be null otherwise.</td></tr> </table>	Name	INCONSISTENT_AUP_MANUAL_ENTRIES_AND_SUMMARY_NIL_AUP	Attributes	summary , aupManualEntries	Context	AUPCreationRequest , AUPValidationRequest , AUPUpdateRequest	Description	The attribute <code>aupManualEntries</code> must be null if <code>summary.nilAUP</code> is true. Cannot be null otherwise.
Name	INCONSISTENT_AUP_MANUAL_ENTRIES_AND_SUMMARY_NIL_AUP								
Attributes	summary , aupManualEntries								
Context	AUPCreationRequest , AUPValidationRequest , AUPUpdateRequest								
Description	The attribute <code>aupManualEntries</code> must be null if <code>summary.nilAUP</code> is true. Cannot be null otherwise.								

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- (4) Used by: [AUPValidationRequest](#), [AUPRetrievalReply](#), [AUPCreationRequest](#), [AUPUpdateReply](#), [AUPCreationReply](#), [AUPUpdateRequest](#).

4.23. AUPChain

- (1) Represents an AUP chain, i.e. the AUP baseline of a (AMC, day) pair and its subsequent versions (UUPs) in the day.
- (2) Attributes:
- a) **[DateYearMonthDay](#) chainDate** (*Mandatory*)
The date of the AUP chain.
 - b) **[AirNavigationUnitId](#) amcId** (*Mandatory*)
The ANU id of the AMC to which this AUP chain belongs.
 - c) **[AUPSummary](#)[] aups** (*Mandatory*)
The ordered list of AUP summaries in the chain. The list is ordered according to the sequence of versions: the first summary in the list is the baseline AUP, the second one is the first update version after the baseline AUP, and so forth. The array can be empty.
Constraint: Size must be comprised between 0 and ∞ .
- (3) Used by: [AUPChainRetrievalReply](#).

4.24. AUPComputedEntries

- (1) AUP entries that are not manual, i.e. computed by the NM system based on default RSA availability (implicitRSAs) and/or based on the result of the expansion via CHMI.
- (2) Attributes:
- a) **[ADRMessageType](#) implicitCDRs** (*Optional*)
The list of implicit CDR openings and closures of this AUP. Is available (not null) when an AMC has executed the expansion via CHMI.
Presence:
 - i) Must be null if `summary.expandedAUP` is false, or if `summary.nilAUP` is true.
 - ii) Cannot be null (but can be empty) otherwise.
 - b) **[ADRMessageType](#) mergedCDRs** (*Optional*)
The list of merged CDR openings and closures of this AUP. Computed based on merging the explicit CDRs and the implicit CDRs (if any) according to the following criteria (simplified): Merge all CDR updates for the same route, CDR type and source that overlap or touch in flight level range, applicability period or CDR update portion, where "merge" means taking the union of overlapping and touching elements. E.g. periods 09:00 until 12:00 and 10:00 until 14:00 are merged into 09:00 until 14:00.
Presence:
 - i) Must be null if `summary.nilAUP` is true.

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ii) Cannot be null otherwise.

c) **ADRMessageType implicitRSAs** (*Optional*)

The list of implicit RSA allocations of this AUP. Implicit RSA are non manageable airspaces that are automatically allocated based on the default definition existing in NM. If a non manageable Airspace is allocated explicitly instead, it will not be included in this list.

Presence:

i) Must be null if `summary.nilAUP` is true.

ii) Cannot be null otherwise.

(3) Used by: [AUP](#).

4.25. **typedef<string> AUPId**

(1) Unique id of an AUP, allocated by the NM system.

(2) Pattern: HEXA{24}

(3) Used by: [AUPRetrievalRequest](#), [AUPDeletionRequest](#), [AUPSummary](#).

4.26. **AUPManualEntries**

(1) AUP Entries, i.e. CDR openings/closures and RSA allocations, to be provided by the client to NM.

(2) The NM system does not support cross-AIRAC AUP entries, i.e. an `AUPRSAAllocation` or `AUP-CDROpeningClosure` cannot have a validity period crossing an AIRAC boundary (midnight on an AIRAC date). Consequently, it is the client's responsibility to "cut" the AUP entries within an AUP to comply with this constraint.

(3) Attributes:

a) **ADRMessageType cdrs** (*Optional*)

The list of explicit CDR openings and closures of this AUP.

b) **ADRMessageType rsas** (*Optional*)

The list of explicit RSA allocations of this AUP.

(4) Used by: [AUP](#).

4.27. **<<enumeration>> AUPState**

(1) Enumerates the possible states of an AUP.

(2) Values:

a) **DRAFT**

After initial upload and successful validation the AUP is in status DRAFT.

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b) **READY**

Once the AUP is in DRAFT status operational coordination between adjacent AMCs and FMPs takes place. Once the coordination is completed the AUP is promoted to READY status by the AMC.

c) **RELEASED**

AUPs in READY are promoted to "RELEASED" by the CADF after the CADF himself has validated the AUPs for completeness and non-contradiction.

(3) Used by: [AUPSummary](#).

4.28. AUPSummary

(1) Represents an AUP summary, i.e. all its associated data apart from its main contents (CDR openings/closures and RSA allocations).

(2) Attributes:

a) **AUPId id** (*Contextual*)

Unique id that the NM system associates to the AUP.

Presence:

- i) Mandatory in [AUPUpdateRequest](#)
- ii) Must be null in [AUPCreationRequest](#), [AUPValidationRequest](#)
- iii) Optional otherwise.

b) **AUPId originatingAupId** (*Optional*)

Unique id of the originating AUP.

It must be the value of the use plan this UUP is based on.

Constraints:

- i) See [ORIGINATING_AUP_ID_CANNOT_BE_NULL_IF_UUP_WRITE](#)
- ii) See [ORIGINATING_AUP_ID_MUST_BE_NULL_IF_AUP_WRITE](#)

c) **DateYearMonthDay chainDate** (*Mandatory*)

The chain date of the chain to which this AUP belongs. Mandatory.

d) **AirNavigationUnitId amcId** (*Contextual*)

The ANU id of the AMC to which this AUP belongs. Associated to the AUP at creation time by the NM system. Must be equal to the caller's ANU id in any service that modifies an existing AUP.

Presence:

- i) Mandatory in [AUPUpdateRequest](#)
- ii) Must be null in [AUPCreationRequest](#), [AUPValidationRequest](#)

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- iii) Optional otherwise.
- e) **AUPType aupType** (Mandatory)
Specifies if this AUP is a BASELINE (AUP) or an UPDATE (UUP). Redundant, used to check that the client and server share the same understanding of what the object represents, especially at creation time.
- f) **DateTimeMinutePeriod validityPeriod** (Mandatory)
The period in which this AUP is valid. When saving an AUP of type AUPType.BASELINE, must be [06:00, 06:00 [; when saving an AUP of type AUPType.UPDATE, must be [S, 06:00 [where S is posterior or equal to the start time of the validity period of the predecessor.
- g) **DateTimeMinute releaseTime** (Contextual)
The time at which the AUP was released.
Presence:
 - i) Must be null in [AUPCreationRequest](#), [AUPUpdateRequest](#), [AUPValidationRequest](#)
 - ii) Optional otherwise.
- h) **AUPState aupState** (Mandatory)
Current state of this AUP.
Constraints:
 - i) See [DRAFT_STATUS_NOT_ALLOWED_FOR_NIL_AUP](#)
 - ii) See [RELEASED_STATUS_NOT_ALLOWED_IN_WRITE_MODE](#)
- i) **boolean nilAUP** (Mandatory)
Indicates whether this AUP is nil or not.
- j) **string remark** (Mandatory)
Short remark associated to the AUP.
Constraints:
 - i) Pattern: (UALPHA | DIGIT | / |) { 0 , 128 }
 - ii) See [INVALID_REMARK](#)
- k) **string[] note** (Mandatory)
Additional information on the AUP.
Constraints:
 - i) Size must be comprised between 0 and 25.
 - ii) Item Pattern: (UALPHA | DIGIT |) { 0 , 60 }
- l) **boolean expandedAUP** (Mandatory)

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Indicates whether the AUP contains implicit CDRs as a result of the AMC running the expansion via CHMI. Attention: the value of this attribute is not affected by the B2B - AUP expand service. Mandatory -- ignored in all input AUPs.

m) **LastUpdate lastUpdate** (*Contextual*)

Last update information -- set by system.

Presence:

- i) Mandatory in [AUPUpdateRequest](#)
- ii) Must be null in [AUPCreationRequest](#), [AUPValidationRequest](#)
- iii) Optional otherwise.

(3) Constraints:

a)

Name	ORIGINATING_AUP_ID_MUST_BE_NULL_IF_AUP_WRITE
Attribute	originatingAupId
Context	AUPCreationRequest , AUPValidationRequest , AUPUpdateRequest
Description	Must be null when it is an AUP.

b)

Name	ORIGINATING_AUP_ID_CANNOT_BE_NULL_IF_UUP_WRITE
Attribute	originatingAupId
Context	AUPCreationRequest , AUPValidationRequest , AUPUpdateRequest
Description	Cannot be null when it is an UUP.

c)

Name	RELEASED_STATUS_NOT_ALLOWED_IN_WRITE_MODE
Attribute	aupState
Context	AUPCreationRequest , AUPValidationRequest , AUPUpdateRequest
Description	Must be either DRAFT or READY in all write services -- can be DRAFT, READY or RELEASED in read-only services.

d)

Name	DRAFT_STATUS_NOT_ALLOWED_FOR_NIL_AUP
Attribute	aupState
Context	AUPCreationRequest , AUPValidationRequest , AUPUpdateRequest
Description	DRAFT status is not allowed for a nil AUP.

e)

Name	INVALID_REMARK
Attribute	remark

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Context	AUPCreationRequest , AUPValidationRequest , AUPUpdateRequest
Description	<p>According to the current CIAM/CHMI process, the AUP remark must start with the phrase "NIL AUP " or "NIL UUP " if nilAUP is true and cannot start with these phrases otherwise; the "AUP" or "UUP" bit must match the actual AUP type. In order to remove this constraint from the client applications, the NOP/B2B system prefixes the given remark value with the appropriate phrase (hence 8 characters) when nilAUP is true. As a consequence the character set is:</p> <p>i) (UALPHA DIGIT /) {0,128} in output</p> <p>ii) (UALPHA DIGIT /) {0,120} in input</p>

- (4) Used by: [AUPChain](#), [AUP](#).

4.29. <<enumeration>> AUPTYPE

- (1) Enumerates the possible types of an AUP.
- (2) Values:
- a) **BASELINE**
actual AUP, starting an AUPChain
 - b) **UPDATE**
actual UUP, following an AUP or UUP in an AUPChain

- (3) Used by: [AUPSummary](#).

4.30. CompleteDatasetQueryCriteria

- (1) The criteria by which to query for Complete AIXM Datasets.
- (2) Choices:
- a) [AiracIdentifier](#) **airac**
Specific AIRAC (AIRAC id or AIRAC sequence number) for which datasets are requested. Only datasets related to the specified AIRAC are returned. Normally the data effective at a particular AIRAC is made available by NM 6 days before the AIRAC switch, so a query for all datasets of a given AIRAC may return from 0 to 34 datasets (28 days of AIRAC + 6 days in advance).
 - b) [DateYearMonthDay](#) **date**
Allows querying for datasets based on their publication date.
 - c) [DateYearMonthDayPeriod](#) **publicationPeriod**
Allows querying for datasets based on their publication date: only datasets published within the given period will be returned.

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- (3) Used by: [CompleteAIXMDatasetRequest](#).

4.31. CompleteDatasetSummary

- (1) Describes a Complete AIXM Dataset.

- (2) Attributes:

- a) **[AirspaceDataUpdateId](#) updateId** (*Mandatory*)
The id of the latest update included in the data set. This updateId is the key to be used to query for subsequent updates (Incremental AIXM Datasets).
Remark: This key is not supposed to be manipulated by the consumer. It is a kind of opaque key exchanged between the consumer and the provider.
- b) **[DateYearMonthDay](#) publicationDate** (*Mandatory*)
The date in which the dataset was made available by NM.
- c) **[AiracIdentifier\[\]](#) sourceAIRACs** (*Mandatory*)
This is an array of either 1 or 2 elements that contains the identifiers of the AIRAC cycles potentially affected by the data set.
Constraint: Size must be comprised between 1 and 2.
- d) **[AIXMFile\[\]](#) files** (*Mandatory*)
The list of AIXM file ids that compose the dataset.
Constraint: Size must be comprised between 0 and ∞.

- (3) Used by: [AIXMDatasetMessagePayload](#), [CompleteAIXMDatasetReply](#).

4.32. DBEOrPublishedPointId

- (1) Represents a DBE or Published point identifier.

- (2) Choices:

- a) **[DBEPointId](#) DBE**
The DBE point identifier.
- b) **[PublishedPointId](#) PUBLISHED**
The PUBLISHED point identifier.

- (3) Used by: [DeltaLevelReroutingConstraint](#), [ScenarioLevelConstraint](#), [LevelAndSpeedReroutingConstraint](#), [AvoidViaPointReroutingConstraint](#).

4.33. DBEPoint

- (1) Represents a non-published db point.

- (2) Inherits from: [NonPublishedPoint](#).

- (3) Attributes:

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- a) **DBEPointId** **dbePointId** (Mandatory)
DBE point identifier.
Constraint: See [UNSUPPORTED_POINT_TYPE](#)

(4) Constraint:

a)

Name	UNSUPPORTED_POINT_TYPE
Attribute	dbePointId
Context	FlightListByAerodromeReply , FlightListByAerodromeSetReply , FlightListByAircraftOperatorReply , FlightListByAircraftRegistrationMarkReply , FlightListByAirspaceReply , FlightListByHotspotReply , FlightListByKeysReply , FlightListByMeasureReply , FlightListByPointReply , FlightListByTrafficVolumeReply , FlightRetrievalReply
Description	TheDBEPoint is supported only in FLIGHT_LIST_REPLY context.

4.34. typedef<string> DBEPointId

- (1) Old Point id still in use by IPFS and EFTMS.
(2) Pattern: (UALPHA|DIGIT|*){1,5}
(3) Used by: [DBEOrPublishedPointId](#), [DBEPoint](#), [ReferenceLocationDBEPoint](#).

4.35. EAUPChain

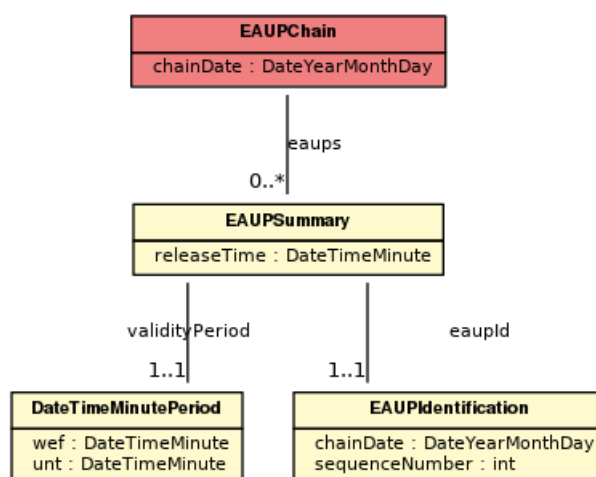


Figure 4.3. EAUPChain Class Diagram

- (1) Represents an EAUP chain, i.e. the EAUP baseline of a day and its subsequent versions in the day.

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(2) Attributes:

- a) **[DateYearMonthDay](#) chainDate** (*Mandatory*)
The date of the EAUP chain. Valid chain dates are:
- i) D-1 (pre-tactical, tomorrow)
 - ii) D (tactical, today)
 - iii) [D+1 (yesterday), D+15 months] (post-ops)
- b) **[EAUPSummary\[\]](#) eaups** (*Mandatory*)
The ordered list of EAUP summaries in the chain. The list is ordered according to the sequence of versions: the first summary in the list is the baseline EAUP, the second one is the first update version after the baseline EAUP, and so forth. This ordering is recalled in the EAUPIdentification through a sequence number. The array can be empty.
REMARK: We return OBJECT_NOT_FOUND if the EAUPChain has never been created in the NM system, being for the EAUPChain of today, or in 3 months. Note that the situation is slightly different for a "past" EAUPChain: it is immutable (won't change anymore) so that if at the end of the day it contains no EAUP we know for sure that it is empty and the NM system creates it empty. We then return an EAUPChain with OK status and an empty EAUP/EUUP list.
Constraint: Size must be comprised between 0 and ∞ .

(3) Used by: [EAUPChainRetrievalReply](#).

4.36. EAUPIdentification

(1) Represents the unique id of a released EAUP.

(2) Attributes:

- a) **[DateYearMonthDay](#) chainDate** (*Mandatory*)
The date of the chain to which this EAUP belongs.
Constraint: See [INVALID_CHAIN_DATE](#)
- b) **int sequenceNumber** (*Mandatory*)
The position of the EAUP in its chain. The baseline occupies position 0.
Constraint: Range: [0, ∞].

(3) Constraint:

a)

Name	INVALID_CHAIN_DATE
Attribute	chainDate
Context	EAUPCDRCompareRequest , EAUPCDRRequest , EAUPRSACompareRequest , EAUPRSAResponse
Description	The chainDate must be a date which belongs to interval [today - 15 months, today + 2 days].

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- (4) Used by: [EAUPCDRRequest](#), [EAUPRSACompareRequest](#), [EAUPCDRCompareRequest](#), [EAUPSummary](#), [EAUPRSAResult](#).

4.37. EAUPSummary

- (1) Represents an EAUP summary, i.e. all its associated data apart from its main contents (CDR openings/closures and RSA allocations).
- (2) Attributes:
- a) **[DateTimeMinute](#) releaseTime** (*Mandatory*)
The time at which the EAUP has been released and therefore became available to the caller of this service.
 - b) **[DateTimeMinutePeriod](#) validityPeriod** (*Mandatory*)
The period in which this EAUP is valid.
 - c) **[EAUPIdentification](#) eaupId** (*Mandatory*)
The unique id of the EAUP. This is the object to be subsequently used for retrieving/querying the contents of the EAUP.
- (3) Used by: [EAUPMessage](#), [EAUPChain](#).

4.38. <<enumeration>> ErrorCategory

- (1) Error categories for this service group.
- (2) Values:
- a) **FUA**
for all input validation errors related to AUP/EAUP

4.39. <<enumeration>> ErrorType

- (1) Error types for this service group.
- (2) Values:
- a) **ALL_RS_IN_RSG_MUST_BE_ACTIVATED**
ALL_RS_IN_RSG_MUST_BE_ACTIVATED
 - b) **AUP_ALREADY_EXISTS**
The referred AUP already exists -- no parameter
 - c) **AUP_AMC_BID_NOT_FOUND**
The AMC must exist in NM -- no parameter.
 - d) **AUP_AMC_DELEGATED_ROUTE_PORTION_NOT_USED**
This is a warning indicating that the AUP/UUP does not use a route portion that was the delegated to the corresponding AMC

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- e) **AUP_AMC_MUST_EXIST**
AMC must exist for the whole lifetime of AUP -- no parameter
- f) **AUP_CDR_UPDATE_AMC_NOT_RESPONSIBLE**
The originator AMC must be completely responsible for the CDR update segment of the CDR update -- parameters:
 - i) "ROUTE": Route the route segment is part of given by its NM unique id
 - ii) "START_POINT": Start point of the route segment given by its NM unique id
 - iii) "END_POINT": End point of the route segment given by its NM unique id
- g) **AUP_CDR_UPDATE_CLOSURE_CDR_TYPE**
A CDR closure must refer to route segments that are closeable in at least one direction, i.e. ATS and CDR1 in one direction, and not CDR2 in the other direction-- parameters:
 - i) "ROUTE": Route the route segment is part of given by its NM unique id
 - ii) "START_POINT": Start point of the route segment given by its NM unique id
 - iii) "END_POINT": End point of the route segment given by its NM unique id
- h) **AUP_CDR_UPDATE_FL_RANGE**
A singleton altitude range cannot be opened/closed -- parameters:
 - i) "ROUTE": Route the route segment is part of given by its NM unique id
 - ii) "START_POINT": Start point of the route segment given by its NM unique id
 - iii) "END_POINT": End point of the route segment given by its NM unique id
- i) **AUP_CDR_UPDATE_FL_RANGE_ERROR**
The provided FL Range must be valid e.g. lower limit < upper limit -- parameters:
 - i) "LOWERLIMIT": Lower limit of the FL range.
 - ii) "UPPERLIMIT": Upper limit of the FL range.
 - iii) "ROUTE": Route the route segment is part of given by its NM unique id
 - iv) "START_POINT": Start point of the route segment given by its NM unique id
 - v) "END_POINT": End point of the route segment given by its NM unique id
- j) **AUP_CDR_UPDATE_FL_TOO_LARGE**
n CDR update, FL range must be inside the FL range of the route -- parameters:
 - i) "ROUTE": Route the route segment is part of given by its NM unique id
 - ii) "START_POINT": Start point of the route segment given by its NM unique id

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- iii) "END_POINT": End point of the route segment given by its NM unique id
- k) **AUP_CDR_UPDATE_LOWER_CRUISING_LEVEL**
In CDR update, if there is no cruising FL between the lower limit of the CDR update and the lower limit of the default route availability, the lower limit of the CDR update must be extended to the lower limit of the default route availability -- parameters:
 - i) "ROUTE": Route the route segment is part of given by its NM unique id
 - ii) "START_POINT_1": Start point of the first route segment given by its NM unique id
 - iii) "END_POINT_1": End point of the first route segment given by its NM unique id
 - iv) "START_POINT_2": Start point of the second route segment given by its NM unique id
 - v) "END_POINT_2": End point of the second route segment given by its NM unique id
 - vi) "FLIGHT_LEVEL": Altitude given by a flight level value
 - vii) "EXPECTED_FL": Expected lower limit of the CDR update given by a flight level value
- l) **AUP_CDR_UPDATE_LOWER_FL_NOT_CRUISING_LEVEL**
For bi-directional route segments, the lower limit of the CDR update must be such that the CDR update covers the lower cruising level of the route segment -- parameters:
 - i) "ROUTE": Route the route segment is part of given by its NM unique id
 - ii) "START_POINT_1": Start point of the first route segment given by its NM unique id
 - iii) "END_POINT_1": End point of the first route segment given by its NM unique id
 - iv) "START_POINT_2": Start point of the second route segment given by its NM unique id
 - v) "END_POINT_2": End point of the second route segment given by its NM unique id
 - vi) "FLIGHT_LEVEL": Altitude given by a flight level value
 - vii) "EXPECTED_FL": Expected lower limit of the CDR update given by a flight level value
- m) **AUP_CDR_UPDATE_NOTAM_CLOSURE**
A CDR closure must refer to route segments that are closed by NOTAM for the whole FL range and applicability period -- parameters:
 - i) "ROUTE": Route the route segment is part of given by its NM unique id
 - ii) "START_POINT": Start point of the route segment given by its NM unique id
 - iii) "END_POINT": End point of the route segment given by its NM unique id
- n) **AUP_CDR_UPDATE_NO_CRUISING_LEVEL**

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In CDR update, the FL range must include at least one cruising level -- parameters:

- i) "ROUTE": Route the route segment is part of given by its NM unique id
 - ii) "START_POINT": Start point of the route segment given by its NM unique id
 - iii) "END_POINT": End point of the route segment given by its NM unique id
- o) **AUP_CDR_UPDATE_OPENING_CDR_TYPE**
A CDR opening must refer to route segments that can be opened in at least one direction, i.e. CDR2, and not ATS or CDR1 in the other -- parameters:
- i) "ROUTE": Route the route segment is part of given by its NM unique id
 - ii) "START_POINT": Start point of the route segment given by its NM unique id
 - iii) "END_POINT": End point of the route segment given by its NM unique id
- p) **AUP_CDR_UPDATE_OVERLAP**
Applicability period and FL range of CDR updates cannot overlap -- parameters:
- i) "ROUTE": Route the route segment is part of given by its NM unique id
 - ii) "START_POINT": Start point of the route segment given by its NM unique id
 - iii) "END_POINT": End point of the route segment given by its NM unique id
- q) **AUP_CDR_UPDATE_OVERLAPS_AIRAC_SWITCH**
- r) **AUP_CDR_UPDATE_OVERLAPS_BETWEEN_AMCS**
A CDR update conflicts with a CDR update from another AMC. -- parameters:
- i) "ROUTE": NM unique id of the route from the CDR update
 - ii) "START_POINT": NM unique id of the start point from the CDR update
 - iii) "END_POINT": NM unique id of the end point from the CDR update
 - iv) "ROUTE": NM unique id of the route from the CDR update of the other AMC
 - v) "START_POINT": NM unique id of the start point from the CDR update of the other AMC
 - vi) "END_POINT": NM unique id of the end point from the CDR update of the other AMC
 - vii) "AMC": AMC id of the other AMC
- s) **AUP_CDR_UPDATE_PERIOD_AUP_MISMATCH**
- t) **AUP_CDR_UPDATE_POINT_IN_ROUTE**
The points forming the route segment of CDR update must be part of the route -- parameters:

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- i) "ROUTE": Route the route segment is part of given by its NM unique id
 - ii) "START_POINT": Start point of the route segment given by its NM unique id
 - iii) "END_POINT": End point of the route segment given by its NM unique id
- u) **AUP_CDR_UPDATE_PTS_ROUTE**
The CDR update is not allowed for a PTS route -- parameters:
 - i) "ROUTE": Route the route segment is part of given by its NM unique id
 - ii) "START_POINT": Start point of the route segment given by its NM unique id
 - iii) "END_POINT": End point of the route segment given by its NM unique id
- v) **AUP_CDR_UPDATE_ROUTE_MUST_EXIST**
The route must exist for the whole lifetime of the CDR update -- parameters:
 - i) "ROUTE": Route the route segment is part of given by its NM unique id
 - ii) "START_POINT": Start point of the route segment given by its NM unique id
 - iii) "END_POINT": End point of the route segment given by its NM unique id
- w) **AUP_CDR_UPDATE_STATUS_CONFLICT**
- x) **AUP_CDR_UPDATE_UPPER_CRUISING_LEVEL**
In CDR update, if there is no cruising FL between the upper limit of the CDR update and the upper limit of the default route availability, the upper limit of the CDR update must be extended to the upper limit of the default route availability -- parameters:
 - i) "ROUTE": Route the route segment is part of given by its NM unique id
 - ii) "START_POINT_1": Start point of the first route segment given by its NM unique id
 - iii) "END_POINT_1": End point of the first route segment given by its NM unique id
 - iv) "START_POINT_2": Start point of the second route segment given by its NM unique id
 - v) "END_POINT_2": End point of the second route segment given by its NM unique id
 - vi) "FLIGHT_LEVEL": Altitude given by a flight level value
 - vii) "EXPECTED_FL": Expected upper limit of the CDR update given by a flight level value
- y) **AUP_CDR_UPDATE_UPPER_FL_NOT_CRUISING_LEVEL**
In CDR update, for bi-directional route segments, the upper limit of the CDR update must be such that the CDR update covers a cruising level -- parameters:
 - i) "ROUTE": Route the route segment is part of given by its NM unique id

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- ii) "START_POINT_1": Start point of the first route segment given by its NM unique id
- iii) "END_POINT_1": End point of the first route segment given by its NM unique id
- iv) "START_POINT_2": Start point of the second route segment given by its NM unique id
- v) "END_POINT_2": End point of the second route segment given by its NM unique id
- vi) "FLIGHT_LEVEL": Altitude given by a flight level value
- vii) "EXPECTED_FL": Expected upper limit of the CDR update given by a flight level value
- z) **AUP_CDR_UPDATE_VALID_POINT_TYPES**
The start and end points of merged opened or closed route segment (one or more segments) must be way points or navigation aid points (this validation does not refer to manual CDR updates) -- parameters:
 - i) "ROUTE": Route the route segment is part of given by its NM unique id
 - ii) "START_POINT": Start point of the route segment given by its NM unique id
 - iii) "END_POINT": End point of the route segment given by its NM unique id
- aa) **AUP_CDR_UPDATE_WRONG_ROUTE_TYPE**
CDR updates are not allowed on oceanic routes -- parameters:
 - i) "ROUTE": Route the route segment is part of given by its NM unique id
 - ii) "START_POINT": Start point of the route segment given by its NM unique id
 - iii) "END_POINT": End point of the route segment given by its NM unique id
- ab) **AUP_DOES_NOT_EXIST**
The referred AUP must exist - no parameter
- ac) **AUP_EMPTY**
The AUP is not nil and does not contain any AUP manual entry -- no parameter
- ad) **AUP_FBZ_ALLOCATION_MUST_HAVE_FUA_ALLOCATION**
An FBZ allocation must have at least one activated FUA activation. -- parameters:
 - i) "RESTRICTED_AIRSPACE_1": NM unique id of the FBZ
- ae) **AUP_FL_RANGE_UOM_ERROR**
The unit of measurement is not correct (see companion doc) -- no parameter.
- af) **AUP_FUA_ACTIVATION_FOR_DISABLED_RESTRICTION**
The FUA restriction of the FUA allocation must be enabled in the AIRAC of the activation. -- parameters:

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- i) "FUA_RESTRICTION": NM unique id of the FUA restriction which is not enabled
- ag) **AUP_FUA_ACTIVATION_FUA_MUST_EXIST**
The FUA Restriction that is being activated doesn't exist (yet or anymore) in the AIRAC of the RSA allocation. -- parameters:
 - i) "FUA_RESTRICTION": NM unique id of the FUA restriction
 - ii) "RESTRICTED_AIRSPACE": NM unique id of the RSA
- ah) **AUP_FUA_ACTIVATION_IS_NOT_RELATED_TO_RSA**
The FUA restriction of the FUA allocation must have the allocated RSA as its reference location. -- parameters:
 - i) "FUA_RESTRICTION": NM unique id of the FUA restriction
 - ii) "RESTRICTED_AIRSPACE": NM unique id of the RSA
- ai) **AUP_FUA_ACTIVATION_REMARK_INVALID_CHARS**
The FUA restriction activation remark contains invalid characters. -- parameters:
 - i) "FUA_RESTRICTION": NM unique id of the FUA restriction
- aj) **AUP_FUA_ACTIVATION_REMARK_INVALID_FORMAT**
The FUA activation remark is composed of a limited set of characters. Lowercase characters are not part of this limited set. -- parameters:
 - i) "FUA_RESTRICTION": NM unique id of the FUA restriction
- ak) **AUP_FUA_ACTIVATION_REMARK_TOO_LONG**
The size of the FUA activation remark is limited to 128 characters. -- parameters:
 - i) "FUA_RESTRICTION": NM unique id of the FUA restriction
- al) **AUP_INVALID_PERIOD**
The provided period is invalid.
- am) **AUP_NIL_AUP_MANUAL_MUST_BE_NULL**
In a nil AUP, AUP manual entries must be null -- no parameter
- an) **AUP_NIL_AUP_NOT_EMPTY**
- ao) **AUP_NIL_AUP_STATE**
A nil AUP cannot be DRAFT state -- no parameter
- ap) **AUP_ONLY_ONE_SEGMENT_PROVIDED_AT_AIRAC_SWITCH**
Only one AUP segment was provided at AIRAC switch.
- aq) **AUP_ORIGINATING_ID_EMPTY**
When creating a UUP, the originating AUP id should not be empty.

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- ar) **AUP_ORIGINATING_ID_INVALID**
The originating AUP id is invalid. Valid AUP ids are the results of a creation or query.
- as) **AUP_ORIGINATING_ID_NON_EMPTY**
When creating an AUP, the originating AUP id should be empty.
- at) **AUP_ORIGINATING_ID_NON_UPDATEABLE**
Read only originating AUPs cannot be updated.
- au) **AUP_OUTSIDE_AVAILABILITY_PERIOD**
The AUP and its content must be defined within the availability period -- no parameter
- av) **AUP_PERIOD_BETWEEN_6_AND_6_AM**
Aup period should be 6AM of first day till 6AM following day
- aw) **AUP_PUBLISH_TIME_MUST_NOT_BE_SET**
The AUP must have an empty publication time
- ax) **AUP_RSA_ALLOCATIONS_OVERLAP**
Two geometrically overlapping RSAs under the responsibility of on AMC must not have RSA allocations overlapping in time and flight level. -- parameters:
 - i) "RESTRICTED_AIRSPACE_1": NM unique id of the first RSA
 - ii) "WEF_TIME": start time of the time overlap (e.g. 10:00)
 - iii) "TIL_TIME": end time of the time overlap (e.g. 11:00)
 - iv) "RESTRICTED_AIRSPACE_2": NM unique id of the second RSA
 - v) "LOWER_FL": lower flight level of the flight level overlap
 - vi) "UPPER_FL": upper flight level of the flight level overlap
- ay) **AUP_RSA_ALLOCATIONS_OVERLAP_OTHER_AMC**
Two geometrically overlapping RSAs under the responsibility of two different AMCs must not have RSA allocations overlapping in time and flight level range. -- parameters:
 - i) "RESTRICTED_AIRSPACE_1": NM unique id of the first RSA
 - ii) "WEF_TIME": start time of the time overlap (e.g. 10:00)
 - iii) "TIL_TIME": end time of the time overlap (e.g. 11:00)
 - iv) "RESTRICTED_AIRSPACE_2": NM unique id of the second RSA
 - v) "LOWER_FL": lower flight level of the flight level overlap
 - vi) "UPPER_FL": upper flight level of the flight level overlap
- az) **AUP_RSA_ALLOCATION_AMC_NOT_RESPONSIBLE**

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The originator AMC must be responsible for the RSA of the RSA allocations -- no parameter

ba) **AUP_RSA_ALLOCATION_COMPOSED_OVERLAP**

Applicability period and FL range of (composed) RSA allocations cannot overlap with (composing) RSA allocations -- parameters:

- i) "RESTRICTED_AIRSPACE_COMPOSED": Composed restricted airspace given by its NM unique id
- ii) "RESTRICTED_AIRSPACE_COMPOSING": Composing restricted airspace given by its NM unique id

bb) **AUP_RSA_ALLOCATION_FL_RANGE**

In RSA allocation, a singleton altitude range cannot be allocated -- no parameter

bc) **AUP_RSA_ALLOCATION_FL_RANGE_ERROR**

The provided FL Range must be valid e.g. lower limit < upper limit -- parameters:

- i) "LOWERLIMIT": Lower limit of the FL range.
- ii) "UPPERLIMIT": Upper limit of the FL range.
- iii) "AIRSPACE": The Airspace that is allocated given by its NM unique id.

bd) **AUP_RSA_ALLOCATION_MUST_HAVE_FUA_ALLOCATION**

All the FUA restrictions which have the RSA as their reference location should be explicitly mentioned as activated or not. -- parameters:

- i) "RESTRICTED_AIRSPACE": NM unique id of the RSA
- ii) "FUA_RESTRICTION": NM unique id of the FUA restriction that is not in the list of FUA activations

be) **AUP_RSA_ALLOCATION_OVERLAP**

Applicability period and FL range of RSA allocations cannot overlap -- no parameter

bf) **AUP_RSA_ALLOCATION_PERIOD_AUP_MISMATCH**

The RSA allocation period must be within the validity period of the AUP -- no parameter

bg) **AUP_RSA_ALLOCATION_PERIOD_RSA_MISMATCH**

The RSA allocation period must be within the availability period of the RSA -- no parameter

bh) **AUP_RSA_ALLOCATION_RSA_FBZ_OVERLAP**

When both FBZ and its owner RSA are allocated, the allocations must not overlap in time or flight level range. -- parameters:

- i) "RESTRICTED_AIRSPACE_1": NM unique id of the FBZ
- ii) "RESTRICTED_AIRSPACE_2": NM unique id of the owner RSA

bi) **AUP_RSA_ALLOCATION_RSA_MUST_EXIST**

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The RSA must exist for the whole lifetime of the RSA allocation -- no parameter

- bj) **AUP_RSA_ALLOCATION_VERTICAL_LIMITS**
Vertical limits of an RSA allocation must be within the vertical limits of the RSA -- no parameter
- bk) **AUP_RSA_UPDATE_OVERLAPS_AIRAC_SWITCH**
- bl) **AUP_UNDEFINED_UUP_START_TIME**
The start time of an UUP must have been defined by the CADF -- no parameter
- bm) **AUP_USES_ROUTE_PORTION_DELEGATED_TO_OTHER_AMC**
This is a warning indicating that the AUP/UUP is using a route portion that was delegated to another AMC.
- bn) **AUP_UUP_NO_CLOSURE_WITH_NOTAM**
An AUP closure is not at all covered by a NOTAM closure
- bo) **AUP_UUP_PARTIALLY_COVERED_BY_NOTAM**
An AUP closure is only partially covered by NOTAM closures
- bp) **AUP_UUP_PARTIALLY_COVERS_NOTAM**
A NOTAM closure is only partially covered by AUP closures
- bq) **AUP_VALID_STATUS**
The AUP must have a valid status -- no parameter
- br) **EXPAND_WRONG_PERIOD**
The period provided for expansion should end at 06:00 AM and cannot be longer than 24 hours -- no parameter
- bs) **FUA_RSG_ACTIVATION_REMARK_INVALID_CHARS**
FUA_RSG_ACTIVATION_REMARK_INVALID_CHARS
- bt) **FUA_RSG_ACTIVATION_REMARK_TOO_LONG**
FUA_RSG_ACTIVATION_REMARK_TOO_LONG
- bu) **INVALID_UUID**
The provided AUP uuid must have a valid format -- no parameter
- bv) **RSA_DEALLOCATED_WHILE_FBZ_STILL_ALLOCATED**
This is a warning that the RSA has been de-allocated for an applicability period and a FL range while its FBZ is still allocated
- bw) **RSG_NOT_ENABLED**
RSG_NOT_ENABLED
- bx) **RSG_NOT_LINKED_TO_RSA_ERROR_MSG**
RSG_NOT_LINKED_TO_RSA_ERROR_MSG

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- by) **RSG_NOT_VALID_FUA_RSG**
RSG_NOT_VALID_FUA_RSG
- bz) **SET_FUA_RSG_CONFIRMED_INDICATOR_TO_TRUE**
SET_FUA_RSG_CONFIRMED_INDICATOR_TO_TRUE
- ca) **TIMESTAMP_MISMATCH**
The provided AUP timestamp does not match the timestamp of the existing AUP -- no parameter
- cb) **UUP_CDR_CLOSURE_LEAD_TIME_TOO_SHORT**
Users should be warned of any new or extended (FL range or applicability) CDR1/ATS route closure with lead time of less than configured value
- cc) **UUP_CDR_RECLOSURE_FOUND**
When promoting UUP to the Ready status the users must be warned of any occurrence of CDR2 closure of a route portion which was previously open by AUP or UUP
- cd) **UUP_CDR_RECLOSURE_LEAD_TIME_TOO_SHORT**
Users should be warned of any new or extended (FL range or applicability) CDR2 re-closure with lead time of less than configured value
- ce) **UUP_MUST_NOT_BE_EMPTY**
The UUP can not be empty
- cf) **UUP_PUBLISH_IN_PROGRESS**
UUP publish is in progress
- cg) **UUP_RSA_ALLOCATION_LEAD_TIME_TOO_SHORT**
Users should be warned of any new or extended (FL range or applicability) RSA allocation with lead time of less than configured value
- ch) **UUP_WILL_CANCEL_PREVIOUS_AUP_UUP**
This is a warning to indicate that all RSA allocations and CDR updates from the previous AUP/UUP will be overwritten.

4.40. **typedef<string> FIRICA0Id**

- (1) ICAO id of an FIR.
- (2) Pattern: UALPHA{4}
- (3) Used by: [EstimatedElapsedTimeAtLocation](#).

4.41. **FlightLevel**

- (1) Flight level value together with its flight level unit.
- (2) Attributes:

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a) **[FlightLevelUnit](#) unit** (*Mandatory*)

Unit used to express this flight level.

Constraints:

i) See [LEVEL_A_F_NOT_BETWEEN_0_AND_999](#)

ii) See [LEVEL_S_M_NOT_BETWEEN_0_AND_3050](#)

b) **[FlightLevel_DataType](#) level** (*Optional*)

Flight level value in the given unit.

Constraints:

i) See [LEVEL_A_F_NOT_BETWEEN_0_AND_999](#)

ii) See [LEVEL_GROUND_CEILING_MUTUALLY_EXCLUSIVE](#)

iii) See [LEVEL_S_M_NOT_BETWEEN_0_AND_3050](#)

c) **boolean ground** (*Optional*)

Indicates the ground flight level, i.e. 0.

Constraint: See [LEVEL_GROUND_CEILING_MUTUALLY_EXCLUSIVE](#)

d) **boolean ceiling** (*Optional*)

Indicates the highest flight level, which corresponds to level F999.

Constraint: See [LEVEL_GROUND_CEILING_MUTUALLY_EXCLUSIVE](#)

(3) Constraints:

a)

Name	LEVEL_A_F_NOT_BETWEEN_0_AND_999
Attributes	unit , level
Description	When unit is <code>FlightLevelUnit.F</code> or <code>FlightLevelUnit.A</code> , then level must be in [0, 1000 [.

b)

Name	LEVEL_S_M_NOT_BETWEEN_0_AND_3050
Attributes	unit , level
Description	When unit is <code>FlightLevelUnit.S</code> or <code>FlightLevelUnit.M</code> , then level must be in [0, 3050].

c)

Name	LEVEL_GROUND_CEILING_MUTUALLY_EXCLUSIVE
Attributes	level , ground , ceiling
Description	<code>level</code> , <code>ground</code> and <code>ceiling</code> are mutually exclusive: exactly one of them must be not null.

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- (4) Used by: [FourDFlightPoint](#), [RequestedFlightLevel](#), [AirFiledData](#), [FlightPoint](#), [FlightLevelRange](#), [Flight](#), [FlightLevelOrInitial](#), [FourDPosition](#), [TargetTime](#), [LevelAndSpeedReroutingConstraint](#), [FlightRestriction](#), [FlightAirspace](#).

4.42. `typedef<int> FlightLevel_DataType`

- (1) FlightLevel data type.
- (2) Range:] - ∞ , ∞ [.
- (3) Used by: [ScenarioLevelConstraint](#), [FlightLevel](#).

4.43. `FlightLevelOrInitial`

- (1) Represents a FLIGHT_LEVEL or INITIAL flight level value.
- (2) Choices:
- a) **void INITIAL**
The INITIAL flight level value.
 - b) **[FlightLevel](#) FLIGHT_LEVEL**
The FLIGHT_LEVEL value.
- (3) Used by: [LevelAndSpeedReroutingConstraint](#).

4.44. `FlightLevelRange`

- (1) Interval of flight levels.
- (2) The range is left-closed and right-opened, i.e. a flight level range from 100 to 200 is interpreted as [100, 200 [.
- (3) Attributes:
- a) **[FlightLevel](#) min** (*Mandatory*)
Bottom boundary of the flight level range.
 - b) **[FlightLevel](#) max** (*Mandatory*)
Top boundary of the flight level range.
- (4) Used by: [AbstractEAUPCDRRequest](#), [AbstractEAUPRSAResponse](#), [FlightListByPointRequest](#), [TrafficCountsByPointRequest](#), [TrafficVolumeLocation](#).

4.45. `<<enumeration>> FlightLevelUnit`

- (1) Enumerates the units in which a flight level can be expressed.
- (2) Values:

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Value	Description
A	Altitude in hundreds of feet (as in "A330")
F	Standard flight level (as in "F330")
M	Altitude in tens of meters (as in "S1130")
MM	Altitude in meters.
S	Standard metric level in tens of meters (as in "S1130")
SM	Standard metric level in meters.

Table 4.2. <<enumeration>> *FlightLevelUnit*

- (3) Used by: [FlightLevel](#).

4.46. <<enumeration>> **FlightPlanProcessing**

- (1) Indicates the kind of restriction with regards to flight plan processing.
- (2) Values:
- a) **AERODROME_FLIGHT_RULE**
This restriction defines that arrivals to or departures from the aerodrome reference location must be conducted under VFR
 - b) **DCT_LIMIT**
This restriction indicates a DCT segment limit for FIRs and for Aerodromes, as well as the general exceeding limit, specific DCT segments which are longer but nevertheless allowed can be defined and DCT segments which are shorter but still not allowed can also be defined
 - c) **FRA_DCT_LIMIT**
This is an extension of DCT_LIMIT for FRA ("Free Route Airspace") - in addition to the DCT_LIMIT restrictions, it defines FRA entry/exit and intermediate points
 - d) **PROFILE_TUNING**
Represents "letters of agreements" i.e. agreements between ATCs to transfer flights between them - when met they should only be used for profile tuning (avoid/force airspace penetration)
 - e) **RAD**
Indicates a RAD restriction that can be used by NM to invalidate a flight plan
 - f) **SSR_CODE_ALLOCATION**
Denotes a restriction which will be used in the allocation of SSR Codes (by CCAMS)
 - g) **TP_AIRCRAFT_TYPE_CLASSIFICATION**
This restriction indicates if terminal procedures are restricted to given aircraft type classification e.g. propellers only or jets only
- (3) Used by: [FlightRestriction](#).

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4.47. GeoPoint

- (1) Represents a non-published point expressed via its position.
- (2) Inherits from: [NonPublishedPoint](#).
- (3) Attributes:
 - a) [Position](#) **position** (*Mandatory*)
Position of the point.

4.48. ICAOPoint

- (1) Either a published point id, or an explicit non-published point.
- (2) Choices:
 - a) [PublishedPointId](#) **pointId**
Published point id.
 - b) [NonPublishedPoint](#) **nonPublishedPoint**
Non-published point and therefore expressed inline.
- (3) Used by: [FourDFlightPoint](#), [OceanicInformation](#), [EstimatedElapsedTimeAtLocation](#), [AirFiledData](#), [OtherAerodromeDesignation](#), [PointDAL](#), [FlightPoint](#), [EnrouteDelay](#), [TargetTime](#), [DepartureInformation](#), [EnRouteInformation](#).

4.49. IncrementalDatasetQueryCriteria

- (1) The criteria by which to query for Incremental AIXM Datasets.
- (2) Choices:
 - a) [AirspaceDataUpdateId](#) **lastKnownUpdateId**
This is the latest UpdateId known by the consumer.
 - b) [AiracIdentifier](#) **airac**
The AIRAC the datasets refer to.
 - c) [DateYearMonthDay](#) **date**
Allows querying for datasets based on their publication date.
 - d) [DateYearMonthDayPeriod](#) **publicationPeriod**
Allows querying for datasets based on their publication date: only datasets published within the given period will be returned.
- (3) Used by: [IncrementalAIXMDatasetRequest](#).

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4.50. IncrementalDatasetSummary

- (1) Describes an Incremental AIXM Dataset.
- (2) Attributes:
 - a) **[AirspaceDataUpdateId](#) updateId** *(Mandatory)*
The id of the Airspace Data Update included in this data set.
 - b) **[AirspaceDataUpdateId](#) previousUpdateId** *(Mandatory)*
The id of the previous Airspace Data Update: to ensure continuity in the chain of Updates.
 - c) **[DateYearMonthDay](#) publicationDate** *(Mandatory)*
The date in which the dataset was made available by NM.
 - d) **[AiracIdentifier](#)[] sourceAIRACs** *(Mandatory)*
This is an array of either 1 or 2 elements that contains the identifiers of the AIRAC cycles included in the data set.
Constraint: Size must be comprised between 1 and 2.
 - e) **[AIXMFile](#)[] files** *(Mandatory)*
The list of AIXM file ids that compose the dataset.
Constraint: Size must be comprised between 0 and ∞ .
 - f) **[Map](#)<[AIXMFeatureType](#),int> affectedFeatures** *(Optional)*
This gives some information about the content of the update: it says for each AIXM Feature Type how many features are affected by this Update.
This allows for the following scenario: if for example an Incremental AIXM Dataset only contains changes to FlightRestriction features and the consumer of the data is not interested in FlightRestrictions he may decide not to download this Incremental AIXM Dataset. The map can be null, denoting an update to the NM Airspace Data that does not map to any AIXM Feature or property currently exported.
Constraints:
 - i) Size must be comprised between 0 and ∞ .
 - ii) Item Range: $[0, \infty[$.
- (3) Used by: [AIXMDatasetMessagePayload](#), [IncrementalAIXMDatasetReply](#).

4.51. IRDesignatorFilter

- (1) Represents a filter on IR airspace designator (ICAO-compliant FIR/UIR location indicators) wild-cards.
- (2) Attributes:
 - a) **string[] firDesignators** *(Optional)*

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FIR designator wildcards. Each string item in the array can be a full FIR designator or a wildcard for a FIR designator. Supported wildcards are limited to at least one character and the star sign ("*") at the end of the expression. If null, all FIRs match.

Constraints:

- i) Size must be comprised between 1 and ∞ .
- ii) Item Pattern: UALPHA{4} | UALPHA{1,3}*
- iii) See [FIRDESIGNATORS_AND_UIRDESIGNATORS_CANNOT_BE_BOTH_NULL](#)
- iv) See [FIRDESIGNATORS_CANNOT_CONTAIN_DUPLICATE](#)

b) **string[] uirDesignators** (*Optional*)

UIR designator wildcards. Each string item in the array can be a full UIR designator or a wildcard for a UIR designator. Supported wildcards are limited to at least one character and the star sign ("*") at the end of the expression. If null, all UIRs match.

Constraints:

- i) Size must be comprised between 1 and ∞ .
- ii) Item Pattern: UALPHA{4} | UALPHA{1,3}*
- iii) See [FIRDESIGNATORS_AND_UIRDESIGNATORS_CANNOT_BE_BOTH_NULL](#)
- iv) See [UIRDESIGNATORS_CANNOT_CONTAIN_DUPLICATE](#)

c) **LogicalOperator logicalOperator** (*Optional*)

Specifies if AND or OR is meant between firDesignators and uirDesignators. AND by default.

(3) Constraints:

a)

Name	FIRDESIGNATORS_AND_UIRDESIGNATORS_CANNOT_BE_BOTH_NULL
Attributes	firDesignators , uirDesignators
Description	firDesignators and uirDesignators cannot be both null.

b)

Name	FIRDESIGNATORS_CANNOT_CONTAIN_DUPLICATE
Attribute	firDesignators
Description	If specified, the array cannot be null, and cannot contain null or duplicate items.

c)

Name	UIRDESIGNATORS_CANNOT_CONTAIN_DUPLICATE
Attribute	uirDesignators
Description	If specified, the array cannot be null, and cannot contain null or duplicate items.

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- (4) Used by: [IRFilter](#).

4.52. IRFilter

- (1) Used to filter the IR airspaces on which CDR openings/closures apply, based on either UUIDs or IR designators.
- (2) Choices:
- a) [IRUUIDFilter](#) **irUUIDFilter**
Filter the IR airspaces based on UUIDs.
 - b) [IRDesignatorFilter](#) **irDesignatorFilter**
Filter the IR airspaces based on IR designators.
- (3) Used by: [AbstractEAUPCDRRequest](#), [AbstractEAUPRSAResponse](#).

4.53. IRUUIDFilter

- (1) Represents a filter on IR airspace UUIDs.
- (2) Attributes:
- a) [UUID\[\]](#) **firUUIDs** *(Optional)*
Matching FIR UUIDs. If null, all FIR UUIDs match.
Constraints:
 - i) Size must be comprised between 1 and ∞ .
 - ii) See [FIRUUIDS_AND_UIRUUIDS_CANNOT_BE_BOTH_NULL](#)
 - iii) See [FIRUUIDS_CANNOT_CONTAIN_DUPLICATE](#)
 - b) [UUID\[\]](#) **uirUUIDs** *(Optional)*
Matching UIR UUIDs. If null, all UIR UUIDs match.
Constraints:
 - i) Size must be comprised between 1 and ∞ .
 - ii) See [FIRUUIDS_AND_UIRUUIDS_CANNOT_BE_BOTH_NULL](#)
 - iii) See [UIRUUIDS_CANNOT_CONTAIN_DUPLICATE](#)
 - c) [LogicalOperator](#) **logicalOperator** *(Optional)*
Specifies if AND or OR is meant between firUUIDs and uirUUIDs. AND by default.
- (3) Constraints:

a)	Name	FIRUUIDS_AND_UIRUUIDS_CANNOT_BE_BOTH_NULL
	Attributes	firUUIDs , uirUUIDs

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Description	firUUIDs and uirUUIDs cannot be both null.
-------------	--

b)	Name	FIRUUIDS_CANNOT_CONTAIN_DUPLICATE
	Attribute	firUUIDs
	Description	If specified, the array cannot be null, and cannot contain null or duplicate items.

c)	Name	UIRUUIDS_CANNOT_CONTAIN_DUPLICATE
	Attribute	uirUUIDs
	Description	If specified, the array cannot be null, and cannot contain null or duplicate items.

(4) Used by: [IRFilter](#).

4.54. <<enumeration>> LoadState

(1) Enumeration of possible load states.

(2) Values:

- a) **HIGH_THRESHOLD**
- b) **LOW_THRESHOLD**
- c) **NORMAL**
- d) **OVERLOAD**
- e) **UNDEFINED**

(3) Used by: [LoadStateAtReferenceLocation](#).

4.55. <<enumeration>> Network

(1) Enumerates the possible network types used for flight message exchange.

(2) Values:

- a) **AFTN**
- b) **OTHER**
- c) **SITA**

(3) Used by: [NetworkAddress](#).

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4.56. NetworkAddress

- (1) Address on a network.
- (2) Attributes:
 - a) **Network** **network** (Mandatory)
Type of network.
 - b) **NetworkAddress_DataType** **address** (Mandatory)
Examples:EGGOZDZX, LOVVZRZO,...
- (3) Used by: [MessageOriginator](#).

4.57. typedef<string> NetworkAddress_DataType

- (1) Network Address data type.
- (2) Pattern: ANY{1,8}
- (3) Used by: [NetworkAddress](#).

4.58. <<abstract>> NonPublishedPoint

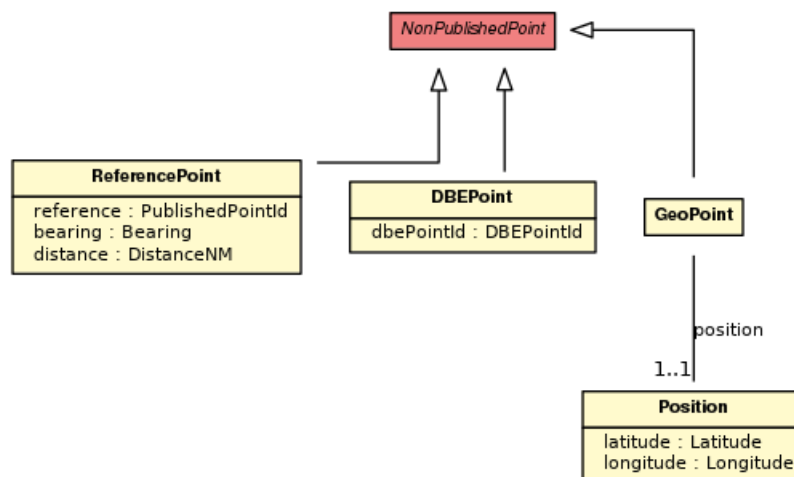


Figure 4.4. <<abstract>> NonPublishedPoint Class Diagram

- (1) Represents a non-published point, i.e. expressed inline (not via a reference).
- (2) Extended by: [GeoPoint](#), [DBEPoint](#), [ReferencePoint](#).
- (3) Used by: [ICAOPoint](#), [OtherAerodromeDesignation](#).

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4.59. <<enumeration>> OceanicAreaControlCentre

- (1) Oceanic area control centre.
- (2) Values:
 - a) **GANDER**
 - b) **SANTA_MARIA**
 - c) **SHANWICK**
- (3) Used by: [OceanicInformation](#).

4.60. typedef<string> PublishedPointId

- (1) ICAO identifier for way points and navigation aid points.
- (2) Pattern: (UALPHA|DIGIT){1,5}
- (3) Used by: [ICAOPoint](#), [RoutingAssistanceRequest](#), [ReferencePoint](#), [FlightListByPointRequest](#), [ReferenceLocationPublishedPoint](#), [TerminalProcedure](#), [TrafficCountsByPointRequest](#), [DBEOrPublishedPointId](#), [AerodromeOrPublishedPointId](#).

4.61. <<abstract>> ReferenceLocation

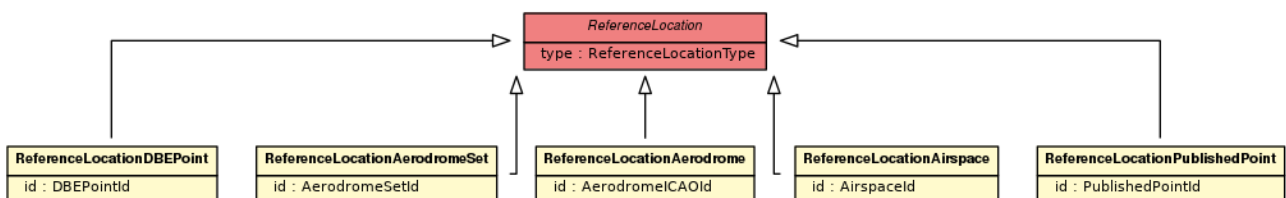


Figure 4.5. <<abstract>> ReferenceLocation Class Diagram

- (1) Abstract reference location, i.e. a reference to an aerodrome, an aerodrome set, an airspace or a point.
- (2) Attributes:
 - a) **ReferenceLocationType** type (Mandatory)
Specifies the type of the reference location and therefore the attribute above selected to pass the location id.
- (3) Extended by: [ReferenceLocationPublishedPoint](#), [ReferenceLocationDBEPoint](#), [ReferenceLocationAirspace](#), [ReferenceLocationAerodrome](#), [ReferenceLocationAerodromeSet](#).
- (4) Used by: [RegulationOrMCDMOnly](#), [FlightRegulationLocation](#), [FlightHotspotLocation](#), [TrafficVolumeLocation](#), [FlightAtfcmmMeasureLocation](#), [ScenarioAttributes](#).

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4.62. ReferenceLocationAerodrome

- (1) Reference to an aerodrome.
- (2) The type must be ReferenceLocationType.AERODROME.
- (3) Inherits from: [ReferenceLocation](#).
- (4) Attributes:
 - a) **[AerodromeICA0Id](#) id** (*Mandatory*)
ICAO id of the referenced aerodrome.

4.63. ReferenceLocationAerodromeSet

- (1) Reference to an aerodrome set.
- (2) The type must be ReferenceLocationType.AERODROME_SET.
- (3) Inherits from: [ReferenceLocation](#).
- (4) Attributes:
 - a) **[AerodromeSetId](#) id** (*Mandatory*)
Id of the referenced aerodrome set.

4.64. ReferenceLocationAirspace

- (1) Reference to an airspace.
- (2) The type must be ReferenceLocationType.AIRSPACE.
- (3) Inherits from: [ReferenceLocation](#).
- (4) Attributes:
 - a) **[AirspaceId](#) id** (*Mandatory*)
Id of the referenced airspace.

4.65. ReferenceLocationDBEPoint

- (1) Reference to a DBE point (internal to NM).
- (2) The type must be ReferenceLocationType.DBE_POINT.
- (3) Inherits from: [ReferenceLocation](#).
- (4) Attributes:
 - a) **[DBEPointId](#) id** (*Mandatory*)

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Id of the referenced DBE point.

4.66. ReferenceLocationPublishedPoint

- (1) Reference to a published point.
- (2) The type must be ReferenceLocationType.PUBLISHED_POINT.
- (3) Inherits from: [ReferenceLocation](#).
- (4) Attributes:
 - a) [PublishedPointId](#) **id** (Mandatory)
Id of the referenced published point.

4.67. <<enumeration>> ReferenceLocationType

- (1) Enumerates reference location types.
- (2) Values:
 - a) **AERODROME**
 - b) **AERODROME_SET**
 - c) **AIRSPACE**
 - d) **DBE_POINT**
 - e) **PUBLISHED_POINT**
- (3) Used by: [ReferenceLocation](#).

4.68. ReferencePoint

- (1) Represents a non-published point expressed via a bearing and distance with regards to a reference published point.
- (2) Inherits from: [NonPublishedPoint](#).
- (3) Attributes:
 - a) [PublishedPointId](#) **reference** (Mandatory)
Reference point.
 - b) [Bearing](#) **bearing** (Mandatory)
Bearing with regards to the reference point.
 - c) [DistanceNM](#) **distance** (Mandatory)
Distance to the reference point.

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4.69. `typedef<string> RestrictionId`

- (1) Unique id of a restriction, allocated by NM.
- (2) Pattern: (UALPHA|DIGIT){1,10}
- (3) Used by: [Rerouting](#), [FlightRestriction](#), [ScenarioAttributes](#).

4.70. `typedef<string> RouteId`

- (1) ICAO identifier of a route.
- (2) Pattern: (UALPHA|DIGIT){1,7}
- (3) Used by: [TerminalProcedureIdentifier](#), [TrajectorySegment](#), [TerminalProcedure](#), [RouteOrTerminalProcedure](#).

4.71. `RouteOrTerminalProcedure`

- (1) Represents either a Route or a Terminal Procedure (ICAO or non-ICAO) or a DCT.
- (2) Choices:
 - a) **void DCT**
A DCT route or terminal procedure.
 - b) **[RouteId](#) route**
The route identifier.
 - c) **[TerminalProcedureIdentifier](#) SID**
The departure procedure identifier.
 - d) **[TerminalProcedureIdentifier](#) STAR**
The arrival procedure identifier.
- (3) Used by: [FlightPoint](#).

4.72. `typedef<string> RunwayId`

- (1) Unique id of a runway within an aerodrome.
- (2) Pattern: DIGIT{2}(UALPHA|) {0,1}
- (3) Used by: [GeneralAPIRequest](#), [RunwayConfigurationPlan](#), [ArrivalInformation](#), [CDMInfo](#), [RunwayConfiguration](#), [UpdateDPIRequest](#).

4.73. `<<enumeration>> SpeedUnit`

- (1) Enumerates the supported speed units.

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(2) Values:

Value	Description
FEET_PER_MINUTE	Feet per minute.
KILOMETERS_PER_HOUR	Kilometers per hour.
KNOTS	Nautical miles.
MACH_NUMBER	Mach number. Related to the speed of sound.
UNDEFINED	Undefined.

Table 4.3. <<enumeration>> SpeedUnit

(3) Used by: [AirSpeed](#).

4.74. TerminalProcedure

(1) Represents either a Terminal Procedure (ICAO or non-ICAO) or a DCT.

(2) Choices:

- a) **[RouteId](#) id**
The ICAO or non-ICAO id of the terminal procedure.
- b) **void DCT**
Indicates that the terminal procedure is a DCT from ADEP to the first en-route point.
- c) **[PublishedPointId](#) pointId**
Indicates that the terminal procedure is a DCT from ADEP to the specified point. The specified point can be an intermediate point of the current SID, or an intermediate point of the route, or even an ad-hoc point not part of the SID definition neither part of the route.

(3) Used by: [GeneralAPIRequest](#), [ArrivalInformation](#), [CDMInfo](#), [DepartureInformation](#), [EnRouteInformation](#), [UpdateDPIRequest](#).

4.75. TerminalProcedureIdentifier

(1) Terminal procedure identifier.

(2) Attributes:

- a) **[RouteId](#) id (Mandatory)**
Terminal procedure identifier.
- b) **[AerodromeIATAOrICAOId](#) aerodromeId (Mandatory)**
Aerodrome identifier.

(3) Used by: [RouteOrTerminalProcedure](#).

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4.76. typedef<string> TrafficVolumeId

- (1) NM unique identifier for a traffic volume.
- (2) Pattern: (ALPHA|DIGIT){1,8}
- (3) Used by: [HotspotPlans](#), [HotspotListRequest](#), [OTMVPlans](#), [FlightListByTrafficVolumeRequest](#), [HotspotId](#), [TrafficVolumeLocation](#), [ATFCMSituationRegulation](#), [TrafficCountsByTrafficVolumeRequest](#).

4.77. typedef<string> TrafficVolumeIdWildcard

- (1) NM identifier for a traffic volume, with basic wildcard support ("*" is replaced by 0 or more characters).
- (2) Pattern: (ALPHA|DIGIT|*){1,8}
- (3) Used by: [RegulationMessageFilter](#), [MeasureListRequest](#).

4.78. typedef<string> TrafficVolumeSetId

- (1) NM unique identifier for a traffic volume set.
- (2) Pattern: (ALPHA|DIGIT){1,8}
- (3) Used by: [RegulationOrMCDMOnly](#), [TrafficVolumeLocation](#).

4.79. typedef<string> TrafficVolumeSetIdWildcard

- (1) Either a full traffic volume set id, or a simple wildcard for traffic volume set ids.
- (2) Pattern: (ALPHA|DIGIT|*){1,8}
- (3) Used by: [RegulationMessageFilter](#), [MeasureListRequest](#).

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Chapter 5. PRE-OPS Testing

5.1. AUP/UUP testing

5.1.1. Introduction

- (1) The B2B services on AUP/UUP are:
 - a) Creation of AUP/UUP
 - b) Update of AUP/UUP
 - c) Deletion of AUP/UUP
 - d) Functional expansion
 - e) Promotion to Ready
 - f) Demotion from Ready
- (2) Manage AUP/UUP Release is and remains accessible via (CIAM) CHMI only and is limited to the CADF user. It is defined as:
 - a) Promotion to Released
 - b) Demotion from Released
 - c) Set next UUP WEF
- (3) Each AMC is responsible of its area of concern. The CACD system will check if the AMC id matches the AMC id associated with the RSA data present in the CACD database.
- (4) In order to test the UUPs management, the associated AUPs must be in status Released. To arrive to this status, all the AUPs of all the AMCs must have been promoted to status Ready before the CADF can promote all AUPs to status Released.
- (5) The AUP/UUPs data are validated against the CACD data that are kept up to date by LUs.
- (6) The test setup described below takes these requirements into account and tries to replace the human activities by scripts.

5.1.2. PRE-OPS platform setup

- (1) PRE-OPS platform is automated so as to provide the capability to test all AUP/UUP services without any manual intervention.
- (2) Everyday, a script makes the AUPs releasable (by complementing the AUPs already submitted with NIL- AUP), releases the AUPs, sets up UUP times and releases UUPs.
- (3) Here are the actions the script automatically performs on daily basis:

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- a) At 22:00 UTC D-1 each day:
 - i) It deletes all remaining unpublished UUP valid for the current day.
 - ii) It deletes all AUPs that are in status DRAFT or INTENT for next day.
 - iii) It generates NIL-AUP for all AMCs that do not have AUP in status READY for next day.
 - iv) It releases the AUPs for next day.
 - v) It sets the first UUP time.
- b) UUP times are predefined at 10:00,12:00,14:00,16:00. At each UUP time on D-day:
 - i) It deletes all UUPs valid for current day in status DRAFT or INTENT.
 - ii) It releases the UUP if any exists.
 - iii) It sets next UUP time if applicable.

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