

xSNOWTAM – TEC

REST Interface for Data Users

TECHNICAL ANALYSIS

Version 1.1

DOCUMENT DISTRIBUTION LIST

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1 Introduction

As stated in the Technical Specifications 3.0 document, talking about project objectives:

“A **third objective** *[of the project]* is to continue the testing of Web service standards that can support the provision of AIXM 5.0 data to end-user applications. The use of a full REST architecture (see <http://www.xfront.com/REST-Web-Services.html>) for the provision of AIXM 5.0 data needs to be investigated.”

The purpose of this document is to describe the REST interface that will be available to data users.

2 Requirements

These requirements come from EUROCONTROL Technical Specification 3.0.

114. The data contained in the digital SNOWTAM database (Airport, airport surfaces, surface contamination, SNOWTAM text and free text conversions) shall be made available through an interface applying REST principles (see <http://www.xfront.com/REST-Web-Services.html>). To the maximum possible extent, the AIXM 5.1 XML schema shall be used for this purpose.

115. The REST interface shall enable digital users to:

- *Query the Digital SNOWTAM database for the list of airports contained in the database and select one of these airports;*
- *Get the list of airports features for a selected airport;*
- *Get the surface contamination records for each such feature;*
- *Get the feature related through xlink:href;*
- *Get the SNOWTAM text and the free text translation associated with an Airport.*

It's important to note that requirement 115 above specifies read-only queries.

3 REST Interface Implementation

3.1 Introduction

The REST interface is supported by HTTP protocol but in this particular case, the GET method is the only one necessary to perform the query as required in chapter 2 above. Thus, POST, PUT and DELETE methods won't be supported.

A REST request has the following structure:

<protocol>//<server>/<app>/<REST suffix>

where

- <protocol> is http or https
- <server> and <app> depends upon the specific instance of the REST interface
- <REST suffix> has one of the possible forms described in chapter 3.2 below.

In this case:

<protocol> = https

<server> = extranet.eurocontrol.int/http://prisme-websrv.hq.corp.eurocontrol.int

<app> = xsnowtam/rest

<REST suffix> is e.g. airportheliports

<arguments> e.g. features=yes

Example:

https://extranet.eurocontrol.int/http://prisme-websrv.hq.corp.eurocontrol.int/xsnowtam/rest/airportheliports

Except when state otherwise, the response to the request is an AIXM5.1-compliant XML text.

If the response contains a so-called xlink:href attribute, its value is a valid REST request which in turn can be used to drill down in database and get additional details about current response.

For instance, a request for a runway returns an XML text containing xlink:href pointing to related runway directions as well as an xlink:href pointing to the parent airport/heliport.

In order to interrogate the database, a user, be it a human or a machine, is supposed:

- first, to request the list of airports
- then, to select from the response, one airport and use the xlink:href to get the details about this airport
- then, to select from the response a runway, a taxiway, ... and use the corresponding xlink:href to get the details about this feature

Since the structure of a request is defined (see below), as long as the unique id of a feature is known (for instance, since a previous request), it is always possible to guess the exact REST request to use.

3.2 REST Suffixes

3.2.1 Preliminary remarks:

Here are a few remarks valid for all the suffixes described below:

- **date** is an optional parameter and <date&time> is the search date&time in the format dd/mm/yyyy hh:mm (e.g.: 11/06/2009 12:35). In each case, the response will be limited to data valid at that date&time. If no date&time is provided, the current date and time is used.
- **features** is an optional parameter to specify if xlink:href pointing to related features must be included in the results, e.g. runways, taxiways, apron of an airport or runway directions of a runway. Possible values are yes and no. If missing, no is assumed.
- **contaminations** is an optional parameter to specify if contaminations must be included or not in the result. Possible values are yes and no. If missing, no is assumed.
- An xlink:href is a URL compliant to the REST request structure described here. As such, it can be used as a new request to drill down in data.

3.2.2 Airport – Heliport List

/airportheliports[?designator=<pattern>&date=<date&time>]

Syntax used to get a list of airport designators and gml:identifier and for each of them, a href to the corresponding AirportHeliport.

Since there are about 15000 airports/heliports in the database, there's an optional **designator** parameter to specify a pattern used to limit returned airports heliports based on their designator. The pattern is of the form [A-Z*]{1,4} where * is the wildcard character.

Pattern samples:

- EB* matches any designator beginning with EB
- *BBR matches any designator ending in BBR
- E*R matches any designator beginning with E and ending with R

The response to this request is not AIXM5.1-compliant since AIXM5.1 doesn't define the concept of list of airports/heliports.

3.2.3 Airport – Heliport Details

/airportheliports/<gml:identifier>[?features=yes/no&contaminations=yes/no&date=<date&time>]

Syntax used to get the valid baseline of AirportHeliport with uuid = <gml:identifier>.

The **gml:identifier** can be obtained in the response to the previous request in the xlink:href corresponding to the targeted airport heliport.

Use “features=yes” to get xlink:href of associated runways, taxiways, and aprons. Default is no.

Use “contaminations=yes” to get contaminations data. Default is no.

3.2.4 Runway Details

/runways/<gml:identifier>[?features=yes/no&contaminations=yes/no&date=<date&time>]

To get the valid baseline of Runway with uuid = <gml:identifier>.

The **gml:identifier** can be obtained in the response to the previous request in the xlink:href corresponding to the targeted runway.

Use “features=yes” to get xlink:href of associated runway directions. Default is no.

Use “contaminations=yes” to get contaminations data. Default is no.

3.2.5 Runway Direction Details

/runwaydirections/<gml:identifier>[?features=yes/no&date=<date&time>]

To get the valid baseline of Runway direction with uuid = <gml:identifier>.

The **gml:identifier** can be obtained in the response to the previous request in the xlink:href corresponding to the targeted runway.

Use “features=yes” to get xlink:href of associated runway center line points. Default is no.

3.2.6 Runway Center Line Point Details

/runwaycenterlinepoints/<gml:identifier>[?date=<date&time>]

To get the valid baseline of Runway centre line point with uuid = <gml:identifier>.

The **gml:identifier** can be obtained in the response to the previous request in the xlink:href corresponding to the targeted runway.

3.2.7 Taxiway Details

/taxiways/<gml:identifier>[?features=yes&contaminations=yes/no&date=<date&time>]

To get the valid baseline of Taxiway with uuid = <gml:identifier>.

The **gml:identifier** can be obtained in the response to the previous request in the xlink:href corresponding to the targeted taxiway.

Use “features=yes” to get xlink:href of associated taxiway elements and guidance lines.

Use “contaminations=yes” to get contaminations data. Default is no.

3.2.8 Taxiway Element Details

/taxiwayelements/<gml:identifier>[?date=<date&time>]

To get the valid baseline of Taxiway element with uuid = <gml:identifier>.

The **gml:identifier** can be obtained in the response to the previous request in the xlink:href corresponding to the targeted taxiway element.

3.2.9 Guidance Line Details

/guidancelines/<gml:identifier>[?date=<date&time>]

To get the valid baseline of guidance line with uuid = <gml:identifier>.

The **gml:identifier** can be obtained in the response to the request described at 3.2.7 above in the xlink:href corresponding to the targeted guidance line.

3.2.10 Apron Details

/aprons/<gml:identifier>[?features=yes/no&contaminations=yes/no&date=<date&time>]

To get the valid baseline of the Apron with uuid = <gml:identifier>.

The **gml:identifier** can be obtained in the response to the previous request in the xlink:href corresponding to the targeted apron.

Use “features=yes” to get xlink:href of associated apron elements. Default is no.

Use “contaminations=yes” to get contaminations data. Default is no.

3.2.11 Apron Element Details

`/apronelements/<gml:identifier>[?features=yes/no&date=<date&time>]`

To get the valid baseline of the Apron element with uuid = <gml:identifier>.

The **gml:identifier** can be obtained in the response to the previous request in the xlink:href corresponding to the targeted apron element.

Use “features=yes” to get xlink:href of associated aircraft stands. Default is no.

3.2.12 Aircraft Stand Details

`/aircraftstands/<gml:identifier>[?date=<date&time>]`

To get the valid baseline of the AircraftStand with uuid = <gml:identifier>.

The **gml:identifier** can be obtained in the response to the previous request in the xlink:href corresponding to the targeted Aircraft stand.

3.3 Error conditions

A successful request results in a response with status 200 (OK).

A request for an unknown feature results in a response with status 404 (Not found)

A request of the wrong type, i.e. any type but GET, results in a response with status 501 (Not implemented).

3.4 REST requests - responses examples

3.4.1 Airport Heliport List - All

`https://extranet.eurocontrol.int/http://prisme-websrv.hq.corp.eurocontrol.int/xsnowtam/rest/airportheliports`

This request returns a result of the form as the one in next section. However, all the airports and heliports contained in the database are returned.

See next section.

3.4.2 Airport Heliport List – Several Elements

`https://extranet.eurocontrol.int/http://prisme-websrv.hq.corp.eurocontrol.int/xsnowtam/rest/airportheliports?designator=EBB*`

Same as previous section but limited to airports/ heliports with a designator starting with EBB.

```
<?xml version="1.0" encoding="UTF-8"?>
<ResultList>
```

```

    <AirportHeliportFeature designator="EBBA" id="464580bc-8eff-4342-9ad6-cc6feb20e070" href="http://localhost:8080/xsnowtam-
rest/airportheliports/464580bc-8eff-4342-9ad6-cc6feb20e070"/>
    <AirportHeliportFeature designator="EBBC" id="bde763dd-4780-4b22-8041-7a25a2b5379c" href="http://localhost:8080/xsnowtam-
rest/airportheliports/bde763dd-4780-4b22-8041-7a25a2b5379c"/>
    <AirportHeliportFeature designator="EBBE" id="7a4cce15-cac6-4875-8f71-81d4f22ed8ab" href="http://localhost:8080/xsnowtam-
rest/airportheliports/7a4cce15-cac6-4875-8f71-81d4f22ed8ab"/>
    <AirportHeliportFeature designator="EBBG" id="52a1992a-98b7-4108-9a8f-4d649322c9db" href="http://localhost:8080/xsnowtam-
rest/airportheliports/52a1992a-98b7-4108-9a8f-4d649322c9db"/>
    <AirportHeliportFeature designator="EBBH" id="21895527-fd23-4183-b892-90025bd8f56e" href="http://localhost:8080/xsnowtam-
rest/airportheliports/21895527-fd23-4183-b892-90025bd8f56e"/>
    <AirportHeliportFeature designator="EBBL" id="7a8a9824-a993-4cec-a826-87e1b346a284" href="http://localhost:8080/xsnowtam-
rest/airportheliports/7a8a9824-a993-4cec-a826-87e1b346a284"/>
    <AirportHeliportFeature designator="EBBN" id="2417f091-2890-40a0-acd0-811c2929f119" href="http://localhost:8080/xsnowtam-
rest/airportheliports/2417f091-2890-40a0-acd0-811c2929f119"/>
    <AirportHeliportFeature designator="EBBO" id="651592c0-c2ce-44f2-abc7-2567d8b52f71" href="http://localhost:8080/xsnowtam-
rest/airportheliports/651592c0-c2ce-44f2-abc7-2567d8b52f71"/>
    <AirportHeliportFeature designator="EBBR" id="732d64d4-cd11-4bf1-9b97-b219c5d06141" href="http://localhost:8080/xsnowtam-
rest/airportheliports/732d64d4-cd11-4bf1-9b97-b219c5d06141"/>
    <AirportHeliportFeature designator="EBBT" id="5278f4d9-ee54-4e6e-84d1-0bad8ba8ad19" href="http://localhost:8080/xsnowtam-
rest/airportheliports/5278f4d9-ee54-4e6e-84d1-0bad8ba8ad19"/>
    <AirportHeliportFeature designator="EBBX" id="7f17a336-b4a7-4eef-b267-e3b2b4b1673e" href="http://localhost:8080/xsnowtam-
rest/airportheliports/7f17a336-b4a7-4eef-b267-e3b2b4b1673e"/>
    <AirportHeliportFeature designator="EBBY" id="cc8736c1-d4a0-49bc-8527-69ae82c85d49" href="http://localhost:8080/xsnowtam-
rest/airportheliports/cc8736c1-d4a0-49bc-8527-69ae82c85d49"/>
    <AirportHeliportFeature designator="EBBZ" id="5e23baf0-51a0-4085-82d9-f67fdb6e8bcc" href="http://localhost:8080/xsnowtam-
rest/airportheliports/5e23baf0-51a0-4085-82d9-f67fdb6e8bcc"/>
</ResultList>

```

3.4.3 Airport Heliport List - One Element

<https://extranet.eurocontrol.int/http://prisme-websrv.hq.corp.eurocontrol.int/xsnowtam/rest/airportheliports?designator=EBBR>

```

<?xml version="1.0" encoding="UTF-8"?>
<ResultList>
    <AirportHeliportFeature designator="EBBR" id="732d64d4-cd11-4bf1-9b97-b219c5d06141" href="http://localhost:8080/xsnowtam-
rest/airportheliports/732d64d4-cd11-4bf1-9b97-b219c5d06141"/>
</ResultList>

```

3.4.4 Airport Heliport Details

<https://extranet.eurocontrol.int/http://prisme-websrv.hq.corp.eurocontrol.int/xsnowtam/rest/airportheliports/732d64d4-cd11-4bf1-9b97-219c5d06141?features=yes&contaminations=yes>

This is the way to require details about airport 'EBBR' using the gml:id obtained in previous response.

```

<?xml version="1.0" encoding="UTF-8"?>
<AIXMBasicMessage xmlns:gmd="http://www.isotc211.org/2005/gmd" xmlns:gco="http://www.isotc211.org/2005/gco"
xmlns="http://www.aixm.aero/schema/5.1/message" xmlns:aixm="http://www.aixm.aero/schema/5.1" xmlns:gml="http://www.opengis.net/gml/3.2"
xmlns:xlink="http://www.w3.org/1999/xlink" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.aixm.aero/schema/5.1/message http://www.aixm.aero/schema/5.1/message/AIXM_BasicMessage.xsd"
gml:id="M000001">
    <hasMember>
        <aixm:AirportHeliport gml:id="VID29090">
            <gml:identifier codeSpace="http://www.eurocontrol.int/xsnowtam">732d64d4-cd11-4bf1-9b97-
b219c5d06141</gml:identifier>
            <aixm:timeSlice>
                <aixm:AirportHeliportTimeSlice gml:id="VID388342">
                    <gml:validTime>
                        <gml:TimePeriod gml:id="VID11">
                            <gml:beginPosition>2009-03-30T00:00:00Z</gml:beginPosition>
                            <gml:endPosition indeterminatePosition="unknown">
                                </gml:TimePeriod>
                        </gml:validTime>
                        <aixm:interpretation>BASELINE</aixm:interpretation>
                        <aixm:sequenceNumber>6</aixm:sequenceNumber>
                        <aixm:correctionNumber>0</aixm:correctionNumber>
                    </aixm:AirportHeliportTimeSlice>
                </aixm:timeSlice>
            </aixm:AirportHeliport>
        </hasMember>
    </AIXMBasicMessage>

```

```

<aixm:featureLifetime>
  <gml:TimePeriod gml:id="VID22">
    <gml:beginPosition>2009-03-11T00:00:00Z</gml:beginPosition>
    <gml:endPosition indeterminatePosition="unknown"/>
  </gml:TimePeriod>
</aixm:featureLifetime>
<aixm:designator>EBBR</aixm:designator>
<aixm:name>BRUSSELS/BRUSSELS-NATIONAL</aixm:name>
<aixm:locationIndicatorICAO>EBBR</aixm:locationIndicatorICAO>
<aixm:designatorIATA>BRU</aixm:designatorIATA>
<aixm:type>AD</aixm:type>
<aixm:fieldElevation uom="FT">184</aixm:fieldElevation>
<aixm:magneticVariation>-1.25</aixm:magneticVariation>
<aixm:dateMagneticVariation>2005</aixm:dateMagneticVariation>
<aixm:magneticVariationChange>0.12</aixm:magneticVariationChange>
<aixm:referenceTemperature uom="C">23.2</aixm:referenceTemperature>
<aixm:altimeterCheckLocation>YES</aixm:altimeterCheckLocation>
<aixm:windDirectionIndicator>YES</aixm:windDirectionIndicator>
<aixm:landingDirectionIndicator>YES</aixm:landingDirectionIndicator>
<aixm:transitionAltitude uom="FT">4500</aixm:transitionAltitude>
<aixm:servedCity>
  <aixm:City>
    <aixm:name>BRUSSELS</aixm:name>
  </aixm:City>
</aixm:servedCity>
<aixm:ARP>
  <aixm:ElevatedPoint gml:id="VID33" srsDimension="2"
srsName="urn:ogc:def:crs:OGC:1.3:CRS84">
    <gml:pos>4.4845722222222 50.9013944444444</gml:pos>
    <aixm:geoidUndulation uom="FT">141</aixm:geoidUndulation>
  </aixm:ElevatedPoint>
</aixm:ARP>
<aixm:contact>
  <aixm:ContactInformation>
    <aixm:phoneFax>
      <aixm:TelephoneContact>
        <aixm:voice>+32 (0)2 753 21 11</aixm:voice>
      </aixm:TelephoneContact>
    </aixm:phoneFax>
  </aixm:ContactInformation>
</aixm:contact>
<aixm:associatedRunways>
  <aixm:associatedRunway id="02/20" xlink:href="http://l-accept-04.pulsar.be/ec-
xsnwtam-rest-accept/runways/646fb6c0-af37-477f-bfba-f19c69dca428"/>
  <aixm:associatedRunway id="07L/25R" xlink:href="http://l-accept-04.pulsar.be/ec-
xsnwtam-rest-accept/runways/dce9d2f8-0969-4a60-b4d9-e845530ae138"/>
  <aixm:associatedRunway id="07R/25L" xlink:href="http://l-accept-04.pulsar.be/ec-
xsnwtam-rest-accept/runways/5617429a-bbc5-41e0-9f74-d36fe818f5c1"/>
</aixm:associatedRunways>
<aixm:associatedTaxiways>
  <aixm:associatedTaxiway id="E1" xlink:href="http://l-accept-04.pulsar.be/ec-
xsnwtam-rest-accept/taxiways/9d6f3568-403b-49bc-b3cc-29ea28d60d06"/>
  <aixm:associatedTaxiway id="V2" xlink:href="http://l-accept-04.pulsar.be/ec-
xsnwtam-rest-accept/taxiways/52517ab8-b774-43b8-9a2c-57495d35a0c0"/>
  <aixm:associatedTaxiway id="OUT-5" xlink:href="http://l-accept-04.pulsar.be/ec-
xsnwtam-rest-accept/taxiways/7c1d3b51-9b73-4ef8-b419-cc3f84df299b"/>
  <aixm:associatedTaxiway id="INN-10" xlink:href="http://l-accept-04.pulsar.be/ec-
xsnwtam-rest-accept/taxiways/92b26cd2-0a1b-4b13-9bc6-01c1018dca2a"/>
  <aixm:associatedTaxiway id="W1" xlink:href="http://l-accept-04.pulsar.be/ec-
xsnwtam-rest-accept/taxiways/17e1131a-a82f-4d53-bbc0-b189e352ace1"/>
  <aixm:associatedTaxiway id="OUT-6" xlink:href="http://l-accept-04.pulsar.be/ec-
xsnwtam-rest-accept/taxiways/a4e90665-1021-4f23-aa9b-75ca3bd8716f"/>
  <aixm:associatedTaxiway id="A3" xlink:href="http://l-accept-04.pulsar.be/ec-
xsnwtam-rest-accept/taxiways/1bf01fb2-6ecd-4107-a475-b68050bfea69"/>
  <aixm:associatedTaxiway id="F3" xlink:href="http://l-accept-04.pulsar.be/ec-
xsnwtam-rest-accept/taxiways/ea48f268-1fec-4ce2-becca-2c6994eed053"/>
  <aixm:associatedTaxiway id="D2" xlink:href="http://l-accept-04.pulsar.be/ec-
xsnwtam-rest-accept/taxiways/33524e97-b347-4d92-ba39-8b762fb031bc"/>
  <aixm:associatedTaxiway id="E3" xlink:href="http://l-accept-04.pulsar.be/ec-
xsnwtam-rest-accept/taxiways/10f9d62d-e621-4efa-8d2e-3cbbbc213a31"/>
  <aixm:associatedTaxiway id="N5" xlink:href="http://l-accept-04.pulsar.be/ec-
xsnwtam-rest-accept/taxiways/d5691e40-12b7-4ba5-b166-c77c5c74591f"/>
  <aixm:associatedTaxiway id="J" xlink:href="http://l-accept-04.pulsar.be/ec-
xsnwtam-rest-accept/taxiways/ad06ffd3-2bee-4fb0-aafc-8a023da104f4"/>

```

<aixm:associatedTaxiway id="OUT-8" xlink:href="http://l-accept-04.pulsar.be/ec-xsnowtam-rest-accept/taxiways/a04bbfeb-2dfb-4f3e-915f-706430c010dc"/>
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<aixm:associatedTaxiway id="OUT-10" xlink:href="http://l-accept-04.pulsar.be/ec-xsnowtam-rest-accept/taxiways/531ff414-5771-4fda-b349-ffa9e559ca0f"/>
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<aixm:associatedTaxiway id="C4" xlink:href="http://l-accept-04.pulsar.be/ec-xsnowtam-rest-accept/taxiways/28d5fa27-f536-410f-bbad-bf2ad8d09e0e"/>
<aixm:associatedTaxiway id="A7" xlink:href="http://l-accept-04.pulsar.be/ec-xsnowtam-rest-accept/taxiways/5af44496-73e7-404a-8be9-90205bda9df9"/>
<aixm:associatedTaxiway id="B5" xlink:href="http://l-accept-04.pulsar.be/ec-xsnowtam-rest-accept/taxiways/f5595d94-7d7a-4e6c-8371-c93d6e9a1247"/>
<aixm:associatedTaxiway id="B7" xlink:href="http://l-accept-04.pulsar.be/ec-xsnowtam-rest-accept/taxiways/71a7b4e5-7f57-4ac2-bad1-d9b359fd8b8c"/>
<aixm:associatedTaxiway id="N1" xlink:href="http://l-accept-04.pulsar.be/ec-xsnowtam-rest-accept/taxiways/aecbe3cc-69d9-4610-bf37-2c7f2cf0ec76"/>
<aixm:associatedTaxiway id="W2" xlink:href="http://l-accept-04.pulsar.be/ec-xsnowtam-rest-accept/taxiways/1349a95a-6b59-41e6-afbb-8282785f96c2"/>
<aixm:associatedTaxiway id="A6" xlink:href="http://l-accept-04.pulsar.be/ec-xsnowtam-rest-accept/taxiways/e39b7247-060e-41dd-abf6-ff3637642c1a"/>
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<aixm:associatedTaxiway id="OUT-2" xlink:href="http://l-accept-04.pulsar.be/ec-xsnowtam-rest-accept/taxiways/6ba74de9-03fb-4d80-bdf9-1aa49194ab51"/>
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<aixm:associatedTaxiway id="C3" xlink:href="http://l-accept-04.pulsar.be/ec-xsnowtam-rest-accept/taxiways/2aec6f65-824b-465e-82d8-e728d5db83ad"/>
<aixm:associatedTaxiway id="N4" xlink:href="http://l-accept-04.pulsar.be/ec-xsnowtam-rest-accept/taxiways/373930b0-52e0-4d60-b223-f1186940cb2b"/>
<aixm:associatedTaxiway id="N3" xlink:href="http://l-accept-04.pulsar.be/ec-xsnowtam-rest-accept/taxiways/8a6af12c-0f01-4b62-b935-209eaf0c5598"/>
<aixm:associatedTaxiway id="U" xlink:href="http://l-accept-04.pulsar.be/ec-xsnowtam-rest-accept/taxiways/3af00abd-b957-4269-ac78-9a1271c6394a"/>
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<aixm:associatedTaxiway id="F2" xlink:href="http://l-accept-04.pulsar.be/ec-xsnowtam-rest-accept/taxiways/b1d4b364-1f1f-4ccd-a8f4-102e7a4a5b50"/>
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<aixm:associatedTaxiway id="N6" xlink:href="http://l-accept-04.pulsar.be/ec-xsnowtam-rest-accept/taxiways/5f0df25c-b8ee-4988-b8ec-6ff95bece3e3"/>
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<aixm:associatedTaxiway id="B1" xlink:href="http://l-accept-04.pulsar.be/ec-
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<aixm:associatedTaxiway id="INN-5" xlink:href="http://l-accept-04.pulsar.be/ec-
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<aixm:associatedTaxiway id="INN-7" xlink:href="http://l-accept-04.pulsar.be/ec-
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<aixm:associatedTaxiway id="K" xlink:href="http://l-accept-04.pulsar.be/ec-
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<aixm:associatedTaxiway id="A5" xlink:href="http://l-accept-04.pulsar.be/ec-
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<aixm:associatedTaxiway id="N2" xlink:href="http://l-accept-04.pulsar.be/ec-
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<aixm:associatedTaxiway id="F1" xlink:href="http://l-accept-04.pulsar.be/ec-
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<aixm:associatedTaxiway id="OUT-4" xlink:href="http://l-accept-04.pulsar.be/ec-
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<aixm:associatedTaxiway id="INN-4" xlink:href="http://l-accept-04.pulsar.be/ec-
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<aixm:associatedTaxiway id="OUT-11" xlink:href="http://l-accept-04.pulsar.be/ec-
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<aixm:associatedApron id="4" xlink:href="http://l-accept-04.pulsar.be/ec-xsnowtam-
rest-accept/aprons/79bcd636-4d55-4be7-b509-6b97dceffffd"/>
<aixm:associatedApron id="2N" xlink:href="http://l-accept-04.pulsar.be/ec-xsnowtam-
rest-accept/aprons/e0b71442-70d2-4e3d-a1cd-a057c7a249b4"/>
<aixm:associatedApron id="50" xlink:href="http://l-accept-04.pulsar.be/ec-xsnowtam-
rest-accept/aprons/61dcb5fd-e332-4488-a647-a70a0c241764"/>
<aixm:associatedApron id="9" xlink:href="http://l-accept-04.pulsar.be/ec-xsnowtam-
rest-accept/aprons/e978dae3-93e5-48fb-983c-2ebe4006f37d"/>
<aixm:associatedApron id="1S" xlink:href="http://l-accept-04.pulsar.be/ec-xsnowtam-
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Aviation)</aixm:note>
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At 378 m from THR 25L (lighted).
At 430 m from THR 20 and 209 m from THR 25R (lighted).
At 472 m from THR 02 and 940 m from THR 07R (lighted).</axim:note>
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</hasMember>
</AIXMBasicMessage>

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3.4.5 Runway Details

<https://extranet.eurocontrol.int/http://prisme-websrv.hq.corp.eurocontrol.int/xsnowtam/rest/runways/5617429a-bbc5-41e0-9f74-d36fe818f5c1?features=yes&contaminations=yes>

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xmlns:xlink="http://www.w3.org/1999/xlink" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.aixm.aero/schema/5.1/message http://www.aixm.aero/schema/5.1/message/AIXM_BasicMessage.xsd"
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    <hasMember>
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            <aixm:timeSlice>
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                    </gml:validTime>
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    <axim:associatedRunwayDirections>
        <axim:associatedRunwayDirection id="20" xlink:href="http://l-accept-04.pulsar.be/ec-xsnowtam-rest-accept/runwaydirections/31e887b5-e78e-4a67-aa50-6d22ee01384c"/>
            <axim:associatedRunwayDirection id="02" xlink:href="http://l-accept-04.pulsar.be/ec-xsnowtam-rest-accept/runwaydirections/f5a65a2c-944d-4a2e-9a05-c7cd13b8308a"/>
                </axim:associatedRunwayDirections>
                <axim:annotation>
                    <axim:Note>
                        <axim:definition>descriptions</axim:definition>
                        <axim:translatedNote>
                            <axim:LinguisticNote>
                                <axim:note lang="eng">RWY 02: slope -0.78%
RWY 20: slope +0.78%</axim:note>
                            </axim:LinguisticNote>
                        </axim:translatedNote>
                    </axim:Note>
                </axim:annotation>
            </axim:RunwayTimeSlice>
        </axim:timeSlice>
    </axim:Runway>
</hasMember>
</AIXMBasicMessage>

```

3.4.6 Runway Direction Details

<https://extranet.eurocontrol.int/http://prisme-websrv.hq.corp.eurocontrol.int/xsnowtam/rest/runwaydirections/fbbb5f7f-354d-43ae-922a-556ae216ec99?features=yes>

```

<?xml version="1.0" encoding="UTF-8"?>
<AIXMBasicMessage xmlns:gmd="http://www.isotc211.org/2005/gmd" xmlns:gco="http://www.isotc211.org/2005/gco"
xmlns="http://www.aixm.aero/schema/5.1/message" xmlns:aixm="http://www.aixm.aero/schema/5.1" xmlns:gml="http://www.opengis.net/gml/3.2"
xmlns:xlink="http://www.w3.org/1999/xlink" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.aixm.aero/schema/5.1/message http://www.aixm.aero/schema/5.1/message/AIXM_BasicMessage.xsd"
gml:id="M000001">
    <hasMember>
        <aixm:RunwayDirection gml:id="VID259528">
            <gml:identifier codeSpace="http://www.eurocontrol.int/xsnowtam">31e887b5-e78e-4a67-aa50-6d22ee01384c</gml:identifier>
            <aixm:timeSlice>
                <aixm:RunwayDirectionTimeSlice gml:id="VID259530">
                    <gml:validTime>
                        <gml:TimePeriod gml:id="VID11">
                            <gml:beginPosition>2009-03-11T00:00:00Z</gml:beginPosition>
                            <gml:endPosition indeterminatePosition="unknown"/>
                        </gml:TimePeriod>
                    </gml:validTime>
                    <aixm:interpretation>BASELINE</aixm:interpretation>
                    <aixm:sequenceNumber>1</aixm:sequenceNumber>
                    <aixm:correctionNumber>0</aixm:correctionNumber>
                    <aixm:featureLifetime>
                        <gml:TimePeriod gml:id="VID22">
                            <gml:beginPosition>2009-03-11T00:00:00Z</gml:beginPosition>
                            <gml:endPosition indeterminatePosition="unknown"/>
                        </gml:TimePeriod>
                    </aixm:featureLifetime>
                    <aixm:designator>20</aixm:designator>
                    <aixm:trueBearing>194.43</aixm:trueBearing>
                    <aixm:magneticBearing>195.68</aixm:magneticBearing>
                    <aixm:slopeTDZ>3</aixm:slopeTDZ>
                    <aixm:elevationTDZ uom="FT">131</aixm:elevationTDZ>
                    <aixm:usedRunway xlink:href="http://l-accept-04.pulsar.be/ec-xsnowtam-rest-accept/runways/646fb6c0-af37-477f-bfba-f19c69dca428"/>
                </aixm:associatedRunwayCentrelinePoints>
                <aixm:associatedRunwayCentrelinePoint xlink:href="http://l-accept-04.pulsar.be/ec-xsnowtam-rest-accept/runwaycenterlinepoints/bc4788d2-ed36-4efc-be54-57c6d960e879"/>
            </aixm:associatedRunwayCentrelinePoints>

```

```

        </aixm:RunwayDirectionTimeSlice>
      </aixm:timeSlice>
    </aixm:RunwayDirection>
  </hasMember>
</AIXMBasicMessage>

```

3.4.7 Runway Center Line Point Details

<https://extranet.eurocontrol.int/http://prisme-websrv.hq.corp.eurocontrol.int/xsnowtam/rest/runwaycenterlinepoints/bc4788d2-ed36-4efc-be54-57c6d960e879>

```

<?xml version="1.0" encoding="UTF-8"?>
<AIXMBasicMessage xmlns:gmd="http://www.isotc211.org/2005/gmd" xmlns:gco="http://www.isotc211.org/2005/gco"
xmlns="http://www.aixm.aero/schema/5.1/message" xmlns:aixm="http://www.aixm.aero/schema/5.1" xmlns:gml="http://www.opengis.net/gml/3.2"
xmlns:xlink="http://www.w3.org/1999/xlink" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.aixm.aero/schema/5.1/message http://www.aixm.aero/schema/5.1/message/AIXM_BasicMessage.xsd"
gml:id="M000001">
  <hasMember>
    <aixm:RunwayCentrelinePoint gml:id="VID347015">
      <gml:identifier codeSpace="http://www.eurocontrol.int/xsnowtam">bc4788d2-ed36-4efc-be54-
57c6d960e879</gml:identifier>
      <aixm:timeSlice>
        <aixm:RunwayCentrelinePointTimeSlice gml:id="VID347016">
          <gml:validTime>
            <gml:TimePeriod gml:id="VID11">
              <gml:beginPosition>2009-03-11T00:00:00Z</gml:beginPosition>
              <gml:endPosition indeterminatePosition="unknown"/>
            </gml:TimePeriod>
          </gml:validTime>
          <aixm:interpretation>BASELINE</aixm:interpretation>
          <aixm:sequenceNumber>1</aixm:sequenceNumber>
          <aixm:correctionNumber>0</aixm:correctionNumber>
          <aixm:featureLifetime>
            <gml:TimePeriod gml:id="VID22">
              <gml:beginPosition>2009-03-11T00:00:00Z</gml:beginPosition>
              <gml:endPosition indeterminatePosition="unknown"/>
            </gml:TimePeriod>
          </aixm:featureLifetime>
          <aixm:role>THR</aixm:role>
          <aixm:location>
            <aixm:ElevatedPoint gml:id="VID33" srsDimension="2"
              <gml:pos>4.50123888888889 50.91101111111111</gml:pos>
              <aixm:elevation uom="FT">113</aixm:elevation>
              <aixm:geoidUndulation uom="FT">141</aixm:geoidUndulation>
            </aixm:ElevatedPoint>
          </aixm:location>
          <aixm:onRunway xlink:href="http://l-accept-04.pulsar.be/ec-xsnowtam-rest-
accept/runwaydirections/31e887b5-e78e-4a67-aa50-6d22ee01384c"/>
        </aixm:RunwayCentrelinePointTimeSlice>
      </aixm:timeSlice>
    </aixm:RunwayCentrelinePoint>
  </hasMember>
</AIXMBasicMessage>

```

3.4.8 Taxiway Details

<https://extranet.eurocontrol.int/http://prisme-websrv.hq.corp.eurocontrol.int/xsnowtam/rest/taxiways/838d796d-aaab-476e-b947-39c07e0063b4?features=yes&contaminations=yes>

```

<?xml version="1.0" encoding="UTF-8"?>
<AIXMBasicMessage xmlns:gmd="http://www.isotc211.org/2005/gmd" xmlns:gco="http://www.isotc211.org/2005/gco"
xmlns="http://www.aixm.aero/schema/5.1/message" xmlns:aixm="http://www.aixm.aero/schema/5.1" xmlns:gml="http://www.opengis.net/gml/3.2"
xmlns:xlink="http://www.w3.org/1999/xlink" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.aixm.aero/schema/5.1/message http://www.aixm.aero/schema/5.1/message/AIXM_BasicMessage.xsd"
gml:id="M000001">
  <hasMember>
    <aixm:Taxiway gml:id="VID221573">

```

```

39c07e0063b4</gml:identifier>
    <gml:identifier codeSpace="http://www.eurocontrol.int/xsnowtam">838d796d-aaab-476e-b947-
    <aixm:timeSlice>
      <aixm:TaxiwayTimeSlice gml:id="VID221574">
        <gml:validTime>
          <gml:TimePeriod gml:id="VID11">
            <gml:beginPosition>2009-03-11T00:00:00Z</gml:beginPosition>
            <gml:endPosition indeterminatePosition="unknown"/>
          </gml:TimePeriod>
        </gml:validTime>
        <aixm:interpretation>BASELINE</aixm:interpretation>
        <aixm:sequenceNumber>1</aixm:sequenceNumber>
        <aixm:correctionNumber>0</aixm:correctionNumber>
        <aixm:featureLifetime>
          <gml:TimePeriod gml:id="VID22">
            <gml:beginPosition>2009-03-11T00:00:00Z</gml:beginPosition>
            <gml:endPosition indeterminatePosition="unknown"/>
          </gml:TimePeriod>
        </aixm:featureLifetime>
        <aixm:designator>W7</aixm:designator>
        <aixm:type>GND</aixm:type>
        <aixm:width uom="M">25</aixm:width>
        <aixm:associatedAirportHeliport xlink:href="http://l-accept-04.pulsar.be/ec-xsnowtam-rest-
accept/airportheliports/0c44c1b2-94ca-497f-bfd0-6348d0dec918"/>
        <aixm:associatedTaxiwayElements>
          <aixm:associatedTaxiwayElement xlink:href="http://l-accept-04.pulsar.be/ec-
xsnowtam-rest-accept/taxiwayelements/0d9646d4-2d46-46b1-88df-65debd9eb4fd"/>
        </aixm:associatedTaxiwayElements>
        <aixm:associatedGuidanceLineElements>
          <aixm:associatedGuidanceLine xlink:href="http://l-accept-04.pulsar.be/ec-xsnowtam-
rest-accept/guidancelines/cafeb540-f4f1-450c-9fe6-0d8b39206688"/>
          <aixm:associatedGuidanceLine xlink:href="http://l-accept-04.pulsar.be/ec-xsnowtam-
rest-accept/guidancelines/2a86cd8c-18e9-4e62-bcb0-235e4d808d8c"/>
          <aixm:associatedGuidanceLine xlink:href="http://l-accept-04.pulsar.be/ec-xsnowtam-
rest-accept/guidancelines/a654e71f-170d-4703-9de5-c96192fa4f5e"/>
          <aixm:associatedGuidanceLine xlink:href="http://l-accept-04.pulsar.be/ec-xsnowtam-
rest-accept/guidancelines/41b17b3a-3292-4dd4-a1dc-0d366913121e"/>
          <aixm:associatedGuidanceLine xlink:href="http://l-accept-04.pulsar.be/ec-xsnowtam-
rest-accept/guidancelines/ec39e611-1e50-4ede-a920-b3db72196187"/>
          <aixm:associatedGuidanceLine xlink:href="http://l-accept-04.pulsar.be/ec-xsnowtam-
rest-accept/guidancelines/43dbd338-8d7b-4188-b585-3434072dfc20"/>
          <aixm:associatedGuidanceLine xlink:href="http://l-accept-04.pulsar.be/ec-xsnowtam-
rest-accept/guidancelines/eedbe228-cc6b-4968-9747-9100535e09cd"/>
        </aixm:associatedGuidanceLineElements>
      </aixm:TaxiwayTimeSlice>
    </aixm:timeSlice>
  </aixm:Taxiway>
</hasMember>
</AIXMBasicMessage>

```

3.4.9 Taxiway Element Details

<https://extranet.eurocontrol.int/http://prisme-websrv.hq.corp.eurocontrol.int/xsnowtam/rest/taxiwayelements/0d9646d4-2d46-46b1-88df-65debd9eb4fd>

```

<?xml version="1.0" encoding="UTF-8"?>
<AIXMBasicMessage xmlns:gmd="http://www.isotc211.org/2005/gmd" xmlns:gco="http://www.isotc211.org/2005/gco"
xmlns="http://www.aixm.aero/schema/5.1/message" xmlns:aixm="http://www.aixm.aero/schema/5.1" xmlns:gml="http://www.opengis.net/gml/3.2"
xmlns:xlink="http://www.w3.org/1999/xlink" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.aixm.aero/schema/5.1/message http://www.aixm.aero/schema/5.1/message/AIXM_BasicMessage.xsd"
gml:id="M000001">
  <hasMember>
    <aixm:TaxiwayElement gml:id="VID405671">
      <gml:identifier codeSpace="http://www.eurocontrol.int/xsnowtam">0d9646d4-2d46-46b1-88df-
65debd9eb4fd</gml:identifier>
      <aixm:timeSlice>
        <aixm:TaxiwayElementTimeSlice gml:id="VID405672">
          <gml:validTime>
            <gml:TimePeriod gml:id="VID11">
              <gml:beginPosition>2009-08-13T00:00:00Z</gml:beginPosition>
              <gml:endPosition indeterminatePosition="unknown"/>
            </gml:TimePeriod>

```

```

    </gml:validTime>
    <aixm:interpretation>BASELINE</aixm:interpretation>
    <aixm:sequenceNumber>1</aixm:sequenceNumber>
    <aixm:correctionNumber>0</aixm:correctionNumber>
    <aixm:featureLifetime>
      <gml:TimePeriod gml:id="VID22">
        <gml:beginPosition>2009-08-13T00:00:00Z</gml:beginPosition>
        <gml:endPosition indeterminatePosition="unknown"/>
      </gml:TimePeriod>
    </aixm:featureLifetime>
    <aixm:type>NORMAL</aixm:type>
    <aixm:associatedTaxiway xlink:href="http://l-accept-04.pulsar.be/ec-xsnowtam-rest-accept/taxiways/838d796d-aaab-476e-b947-39c07e0063b4"/>
    <aixm:extent>
      <aixm:ElevatedSurface gml:id="VID33" srsDimension="2"
srsName="urn:ogc:def:crs:OGC:1.3:CRS84">
        <gml:segments>
          <gml:LineStringSegment>
            <gml:posList>17.954972 59.64829901 17.955008
59.648347 17.955052 59.64837899 17.955117 59.648417 17.955193 59.64844199 17.955304 59.648464 17.955508 59.64848101 17.955724
59.648408 17.957022 59.648374 17.95704 59.64837101 17.957131 59.64835501 17.957254 59.64832601 17.957388 59.64828899 17.957544
59.64823299 17.957702 59.64816099 17.957807 59.648099 17.957898 59.648034 17.95797 59.64797001 17.958029 59.64789299 17.95806 59.647823
17.958068 59.647748 17.958053 59.64767101 17.958047 59.64762601 17.958201 59.648048 17.958346 59.64844899 17.958364 59.64850101
17.957177 59.64861299 17.956979 59.64863099 17.956821 59.648648 17.956799 59.648651 17.956329 59.648707 17.956145 59.648732 17.955932
59.64876701 17.955789 59.64879299 17.955686 59.648815 17.955549 59.648849 17.955503 59.64886299 17.955443 59.64888601 17.955381
59.648918 17.955326 59.64895499 17.955287 59.64899601 17.955261 59.64904 17.955254 59.64908999 17.955258 59.64912901 17.955139
59.648783 17.955084 59.64862301 17.954972 59.64829901</gml:posList>
          </gml:LineStringSegment>
          <gml:LineStringSegment>
            <gml:posList>17.954972 59.64829901 17.955084
59.64862301 17.955139 59.648783 17.955258 59.64912901 17.955259 59.649134 17.954972 59.64829901</gml:posList>
          </gml:LineStringSegment>
        </gml:segments>
      </aixm:ElevatedSurface>
    </aixm:extent>
  </aixm:TaxiwayElementTimeSlice>
</aixm:timeSlice>
</aixm:TaxiwayElement>
</hasMember>
</AIXMBasicMessage>

```

3.4.10 Guidance Line Details

<https://extranet.eurocontrol.int/http://prisme-websrv.hq.corp.eurocontrol.int/xsnowtam/rest/guidancelines/cafeb540-f4f1-450c-9fe6-0d8b39206688>

```

<?xml version="1.0" encoding="UTF-8"?>
<AIXMBasicMessage xmlns:gmd="http://www.isotc211.org/2005/gmd" xmlns:gco="http://www.isotc211.org/2005/gco"
xmlns="http://www.aixm.aero/schema/5.1/message" xmlns:aixm="http://www.aixm.aero/schema/5.1" xmlns:gml="http://www.opengis.net/gml/3.2"
xmlns:xlink="http://www.w3.org/1999/xlink" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.aixm.aero/schema/5.1/message http://www.aixm.aero/schema/5.1/message/AIXM_BasicMessage.xsd"
gml:id="M000001">
  <hasMember>
    <aixm:GuidanceLine gml:id="VID408473">
      <gml:identifier codeSpace="http://www.eurocontrol.int/xsnowtam">cafeb540-f4f1-450c-9fe6-
0d8b39206688</gml:identifier>
      <aixm:timeSlice>
        <aixm:GuidanceLineTimeSlice gml:id="VID408476">
          <gml:validTime>
            <gml:TimePeriod gml:id="VID11">
              <gml:beginPosition>2009-08-13T00:00:00Z</gml:beginPosition>
              <gml:endPosition indeterminatePosition="unknown"/>
            </gml:TimePeriod>
          </gml:validTime>
          <aixm:interpretation>BASELINE</aixm:interpretation>
          <aixm:sequenceNumber>1</aixm:sequenceNumber>
          <aixm:correctionNumber>0</aixm:correctionNumber>
          <aixm:featureLifetime>
            <gml:TimePeriod gml:id="VID22">
              <gml:beginPosition>2009-08-13T00:00:00Z</gml:beginPosition>
              <gml:endPosition indeterminatePosition="unknown"/>
            </gml:TimePeriod>
          </aixm:featureLifetime>
        </aixm:GuidanceLineTimeSlice>
      </aixm:timeSlice>
    </aixm:GuidanceLine>
  </hasMember>
</AIXMBasicMessage>

```

```

        </gml:TimePeriod>
        </aixm:featureLifetime>
        <aixm:type>TWY</aixm:type>
        <aixm:extent>
            <aixm:ElevatedCurve gml:id="VID33" srsDimension="2"
srsName="urn:ogc:def:crs:OGC:1.3:CRS84">
                <gml:LineString gml:id="408477">
                    <gml:posList>17.954759 59.64873301 17.955587 59.648651
17.95562 59.648648</gml:posList>
                </gml:LineString>
            </aixm:ElevatedCurve>
        </aixm:extent>
        <aixm:connectedTaxiway xlink:href="http://l-accept-04.pulsar.be/ec-xsnowtam-rest-
accept/taxiways/838d796d-aaab-476e-b947-39c07e0063b4"/>
            <aixm:GuidanceLineTimeSlice>
                <aixm:timeSlice>
                    <aixm:GuidanceLine>
                        </hasMember>
                    </aixm:GuidanceLine>
                </aixm:timeSlice>
            </aixm:GuidanceLineTimeSlice>
        </hasMember>
    </AIXMBasicMessage>

```

3.4.11 Apron Details

<https://extranet.eurocontrol.int/http://prisme-websrv.hq.corp.eurocontrol.int/xsnowtam/rest/aprons/eb078348-c307-4f3c-9160-d12c0454860a?features=yes&contaminations=yes>

```

<?xml version="1.0" encoding="UTF-8"?>
<AIXMBasicMessage xmlns:gmd="http://www.isotc211.org/2005/gmd" xmlns:gco="http://www.isotc211.org/2005/gco"
xmlns="http://www.aixm.aero/schema/5.1/message" xmlns:aixm="http://www.aixm.aero/schema/5.1" xmlns:gml="http://www.opengis.net/gml/3.2"
xmlns:xlink="http://www.w3.org/1999/xlink" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.aixm.aero/schema/5.1/message http://www.aixm.aero/schema/5.1/message/AIXM_BasicMessage.xsd"
gml:id="M000001">
    <hasMember>
        <aixm:Apron gml:id="VID398178">
            <gml:identifier codeSpace="http://www.eurocontrol.int/xsnowtam">eb078348-c307-4f3c-9160-
d12c0454860a</gml:identifier>
            <aixm:timeSlice>
                <aixm:ApronTimeSlice gml:id="VID398180">
                    <gml:validTime>
                        <gml:TimePeriod gml:id="VID11">
                            <gml:beginPosition>2009-07-10T00:00:00Z</gml:beginPosition>
                            <gml:endPosition indeterminatePosition="unknown"/>
                        </gml:TimePeriod>
                    </gml:validTime>
                    <aixm:interpretation>BASELINE</aixm:interpretation>
                    <aixm:sequenceNumber>1</aixm:sequenceNumber>
                    <aixm:correctionNumber>0</aixm:correctionNumber>
                    <aixm:featureLifetime>
                        <gml:TimePeriod gml:id="VID22">
                            <gml:beginPosition>2009-07-10T00:00:00Z</gml:beginPosition>
                            <gml:endPosition indeterminatePosition="unknown"/>
                        </gml:TimePeriod>
                    </aixm:featureLifetime>
                    <aixm:name>K</aixm:name>
                    <aixm:associatedAirportHeliport xlink:href="http://l-accept-04.pulsar.be/ec-xsnowtam-rest-
accept/airportheliports/0c44c1b2-94ca-497f-bfd0-6348d0dec918"/>
                        <aixm:associatedApronElements>
                            <aixm:associatedApronElement xlink:href="http://l-accept-04.pulsar.be/ec-xsnowtam-
rest-accept/apronelements/975dc920-ff67-4928-9cb0-2ee4c4641a4b"/>
                                <aixm:associatedApronElement xlink:href="http://l-accept-04.pulsar.be/ec-xsnowtam-
rest-accept/apronelements/8ecadf2c-ec02-4474-8198-79ef6b550add"/>
                                    <aixm:associatedApronElements>
                                        </aixm:ApronTimeSlice>
                                    </aixm:timeSlice>
                                </aixm:Apron>
                            </hasMember>
                        </AIXMBasicMessage>

```

3.4.12 Apron Element Details

<https://extranet.eurocontrol.int/http://prisme-websrv.hq.corp.eurocontrol.int/xsnowtam/rest/apronelements/975dc920-ff67-4928-9cb0-2ee4c4641a4b?features=yes&contaminations=yes>

```
<?xml version="1.0" encoding="UTF-8"?>
<AIXMBasicMessage xmlns:gmd="http://www.isotc211.org/2005/gmd" xmlns:gco="http://www.isotc211.org/2005/gco"
xmlns="http://www.aixm.aero/schema/5.1/message" xmlns:aixm="http://www.aixm.aero/schema/5.1" xmlns:gml="http://www.opengis.net/gml/3.2"
xmlns:xlink="http://www.w3.org/1999/xlink" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.aixm.aero/schema/5.1/message http://www.aixm.aero/schema/5.1/message/AIXM_BasicMessage.xsd"
gml:id="M000001">
  <hasMember>
    <aixm:ApronElement gml:id="VID406718">
      <gml:identifier codeSpace="http://www.eurocontrol.int/xsnowtam">975dc920-ff67-4928-9cb0-
2ee4c4641a4b</gml:identifier>
      <aixm:timeSlice>
        <aixm:ApronElementTimeSlice gml:id="VID406719">
          <gml:validTime>
            <gml:TimePeriod gml:id="VID11">
              <gml:beginPosition>2009-08-13T00:00:00Z</gml:beginPosition>
              <gml:endPosition indeterminatePosition="unknown">
            </gml:TimePeriod>
          </gml:validTime>
          <aixm:interpretation>BASELINE</aixm:interpretation>
          <aixm:sequenceNumber>1</aixm:sequenceNumber>
          <aixm:correctionNumber>0</aixm:correctionNumber>
          <aixm:featureLifetime>
            <gml:TimePeriod gml:id="VID22">
              <gml:beginPosition>2009-08-13T00:00:00Z</gml:beginPosition>
              <gml:endPosition indeterminatePosition="unknown">
            </gml:TimePeriod>
          </aixm:featureLifetime>
          <aixm:type>NORMAL</aixm:type>
          <aixm:associatedApron xlink:href="http://l-accept-04.pulsar.be/ec-xsnowtam-rest-
accept/aprons/eb078348-c307-4f3c-9160-d12c0454860a"/>
          <aixm:extent>
            <aixm:ElevatedSurface gml:id="VID33" srsDimension="2"
              <gml:polygonPatches>
                <gml:PolygonPatch>
                  <gml:exterior>
                    <gml:LinearRing>
                      <gml:posList>17.96164308
59.6592 17.96024592 59.659011 17.96012046 59.6589957 17.95978008 59.65894998 17.95975992 59.65890696 17.95973004 59.658867 17.95967604
59.65882002 17.95963302 59.65879599 17.95956894 59.65876503 17.95947696 59.65873902 17.95938192 59.65871904 17.95905504 59.65867899
17.95869198 59.65863201 17.95859298 59.65861104 17.95848408 59.65854102 17.957412 59.65840098 17.95742892 59.65836597 17.95727394
59.65834698 17.95725702 59.65838199 17.95706892 59.65836003 17.95719708 59.65812099 17.95723704 59.65806096 17.95727898 59.65797996
17.95806792 59.65808202 17.95833792 59.65754301 17.95984506 59.65773498 17.95991796 59.657751 17.95998708 59.65777098 17.96003496
59.65778799 17.96015592 59.657841 17.96024304 59.65786899 17.96033592 59.65789203 17.96043402 59.65790904 17.96469102 59.65844697
17.96504508 59.65847199 17.96452308 59.65953003 17.96284296 59.659317 17.96262696 59.65929099 17.96241006 59.65926696 17.96219406
59.65924599 17.961975 59.659227 17.96175504 59.65921098 17.96164308 59.6592</gml:posList>
                    </gml:LinearRing>
                  </gml:exterior>
                </gml:PolygonPatch>
              </gml:polygonPatches>
            </aixm:ElevatedSurface>
          </aixm:extent>
        </aixm:ApronElementTimeSlice>
      </aixm:timeSlice>
    </aixm:ApronElement>
  </hasMember>
</AIXMBasicMessage>
```

3.4.13 Aircraft Stand Details

<https://extranet.eurocontrol.int/http://prisme-websrv.hq.corp.eurocontrol.int/xsnowtam/rest/aircraftstands/0233d4e1-e03b-46da-911c-3234fce1b5c6>

```
<?xml version="1.0" encoding="UTF-8"?>
<AIXMBasicMessage xmlns:gmd="http://www.isotc211.org/2005/gmd" xmlns:gco="http://www.isotc211.org/2005/gco"
xmlns="http://www.aixm.aero/schema/5.1/message" xmlns:aixm="http://www.aixm.aero/schema/5.1" xmlns:gml="http://www.opengis.net/gml/3.2"
xsi:schemaLocation="http://www.aixm.aero/schema/5.1/message http://www.aixm.aero/schema/5.1/message/AIXM_BasicMessage.xsd"
gml:id="M000001">
```

```

xmlns:xlink="http://www.w3.org/1999/xlink" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.aixm.aero/schema/5.1/message http://www.aixm.aero/schema/5.1/message/AIXM_BasicMessage.xsd"
gml:id="M000001">
  <hasMember>
    <aixm:AircraftStand gml:id="VID249036">
      <gml:identifier codeSpace="http://www.eurocontrol.int/xsnowtam">0233d4e1-e03b-46da-911c-
3234fce1b5c6</gml:identifier>
      <aixm:timeSlice>
        <aixm:AircraftStandTimeSlice gml:id="VID249037">
          <gml:validTime>
            <gml:TimePeriod gml:id="VID11">
              <gml:beginPosition>2009-03-11T00:00:00Z</gml:beginPosition>
              <gml:endPosition indeterminatePosition="unknown"/>
            </gml:TimePeriod>
          </gml:validTime>
          <aixm:interpretation>BASELINE</aixm:interpretation>
          <aixm:sequenceNumber>1</aixm:sequenceNumber>
          <aixm:correctionNumber>0</aixm:correctionNumber>
          <aixm:featureLifetime>
            <gml:TimePeriod gml:id="VID22">
              <gml:beginPosition>2009-03-11T00:00:00Z</gml:beginPosition>
              <gml:endPosition indeterminatePosition="unknown"/>
            </gml:TimePeriod>
          </aixm:featureLifetime>
          <aixm:designator>67</aixm:designator>
          <aixm:type>ANG_NI</aixm:type>
          <aixm:location>
            <aixm:ElevatedPoint gml:id="VID33" srsDimension="2"
              <gml:pos>4.473444444444444 50.46959444444444</gml:pos>
              <aixm:elevation uom="FT">571</aixm:elevation>
            </aixm:ElevatedPoint>
          </aixm:location>
          <aixm:apronLocation xlink:href="http://l-accept-04.pulsar.be/ec-xsnowtam-rest-
accept/apronelements/07e8dc91-e407-41ed-be05-ca80ac33f9b2"/>
        </aixm:AircraftStandTimeSlice>
      </aixm:timeSlice>
    </aixm:AircraftStand>
  </hasMember>
</AIXMBasicMessage>

```

4 REST Implementation

4.1 REST Framework

The REST implementation framework used will be the Struts 2 REST plug-in which in turn uses the Convention plug-in.

See <http://struts.apache.org/2.x/docs/rest-plugin.html> for more information.

Please note the REST plug-in is only available for Struts 2.1.1 or above.

4.2 REST Plug-in Configuration

The REST plug-in for Struts 2 uses the Convention plug-in. Since xSNOWTAM web application is not compatible with the Convention plug-in, the REST Interface of xSNOWTAM requires a distinct web application.

4.2.1 struts.xml

```
<?xml version="1.0" encoding="UTF-8" ?>
<!DOCTYPE struts PUBLIC "-//Apache Software Foundation//DTD Struts Configuration
2.0//EN" "http://struts.apache.org/dtds/struts-2.0.dtd">
<struts>
  <constant name="struts.convention.action.suffix" value="Controller"/>
  <constant name="struts.convention.action.mapAllMatches" value="true"/>
  <constant name="struts.convention.default.parent.package" value="rest-
default"/>

  <constant name="struts.convention.package.locators" value="example"/>
  <bean name="aixm" type="org.apache.struts2.rest.handler.ContentTypeHandler"
class="org.apache.struts2.rest.example.xSNOWTAM_AIXM_TypeHandler" />

  <constant name="struts.enable.DynamicMethodInvocation" value="false" />
  <constant name="struts.devMode" value="false" />
</struts>
```

4.2.2 struts.properties

```
struts.rest.handlerOverride.xml=aixm
```

```
### specifies the autoWiring logic when using the SpringObjectFactory.
### valid values are: name, type, auto, and constructor (name is the default)
struts.objectFactory.spring.autoWire = name
```

```
### indicates to the struts-spring integration if Class instances should be cached
### this should, until a future Spring release makes it possible, be left as true
### unless you know exactly what you are doing!
### valid values are: true, false (true is the default)
struts.objectFactory.spring.useClassCache = true
```

4.2.3 web.xml

```
<?xml version="1.0" encoding="UTF-8"?>
```

```
<web-app id="WebApp_9" version="2.4" xmlns="http://java.sun.com/xml/ns/j2ee"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://java.sun.com/xml/ns/j2ee
http://java.sun.com/xml/ns/j2ee/web-app_2_4.xsd">

  <display-name>GID Plus Starter</display-name>

  <!-- SECURITY FILTER CONFIGURATION -->
  <filter>
    <filter-name>Security Filter</filter-name>
    <filter-class>org.securityfilter.filter.SecurityFilter</filter-class>
    <init-param>
      <param-name>config</param-name>
      <param-value>/WEB-INF/securityfilter-config.xml</param-value>
    </init-param>
    <init-param>
      <param-name>validate</param-name>
      <param-value>>true</param-value>
    </init-param>
  </filter>

  <filter-mapping>
    <filter-name>Security Filter</filter-name>
    <url-pattern>/*</url-pattern>
  </filter-mapping>

  <!-- STRUTS 2 -->
  <filter>
    <filter-name>struts2</filter-name>
    <filter-
class>org.apache.struts2.dispatcher.ng.filter.StrutsPrepareAndExecuteFilter</filter-
r-class>
  </filter>

  <filter-mapping>
    <filter-name>struts2</filter-name>
    <url-pattern>/*</url-pattern>
  </filter-mapping>

  <welcome-file-list>
    <welcome-file>index.html</welcome-file>
  </welcome-file-list>

  <!-- SPRING CONFIGURATION FOR WEB APPS -->
  <listener>
    <listener-class>
      org.springframework.web.context.ContextLoaderListener
    </listener-class>
  </listener>

  <context-param>
    <param-name>contextConfigLocation</param-name>
    <param-value>
      classpath:spring-webapp.xml
      classpath:spring-webapp-database.xml
      classpath:spring-kernel.xml
      classpath:spring-kernel-database.xml
    </param-value>
  </context-param>
</web-app>
```

4.3 Security

4.3.1 Introduction

The user authentication is performed by the security filter of Struts 2.

The security-filter is configured to use an LDAP server.

Any request to the server must contain a user name and a password the LDAP server can authenticate.

The REST Interface uses the same usernames/passwords as the xSNOWTAM web application.

Note: the password is case sensitive but the username is not

4.3.2 sample securityfilter-config.xml

```

<!DOCTYPE securityfilter-config PUBLIC
    "-//SecurityFilter.org//DTD Security Filter Configuration 1.1//EN"
    "http://www.securityfilter.org/dtd/securityfilter-config_1_1.dtd">

<securityfilter-config>
    <security-constraint>
        <web-resource-collection>
            <web-resource-name>Protected Area</web-resource-name>
            <!-- Define the context-relative URL(s) to be protected -->
            <url-pattern>/*</url-pattern>
            <http-method>DELETE</http-method>
            <http-method>GET</http-method>
            <http-method>POST</http-method>
            <http-method>PUT</http-method>
        </web-resource-collection>
        <auth-constraint>
            <role-name>XSNOWTAM_USERS</role-name>
        </auth-constraint>
        <user-data-constraint>
            <description>
            </description>
            <transport-guarantee>
                NONE
            </transport-guarantee>
        </user-data-constraint>
    </security-constraint>

    <login-config>
        <auth-method>BASIC</auth-method>
        <realm-name>xSNOWTAM Trial</realm-name>
    </login-config>

    <security-role>
        <description>XSNOWTAM</description>
        <role-name>XSNOWTAM_DEVL</role-name>
    </security-role>

    <realm className="org.securityfilter.realm.catalina.CatalinaRealmAdapter" />

    <!-- pulsar ladap -->
    <realm className="org.apache.catalina.realm.JNDIRealm">

        <realm-param name="connectionName" value="CN=ActiveDirectoryLister, CN=Users,
DC=pulsar, DC=be"/>
        <realm-param name="debug" value="99"/>
        <realm-param name="connectionPassword" value="adl123"/>
        <realm-param name="connectionURL" value="ldap://orion:389"/>
        <realm-param name="userBase" value="OU=PulsarLDAP,DC=pulsar,DC=be"/>
        <realm-param name="userSubtree" value="true"/>
        <realm-param name="userSearch" value="(sAMAccountName={0})"/>
        <realm-param name="userRoleName" value="member"/>
        <realm-param name="roleBase" value="OU=PulsarLDAP,DC=pulsar,DC=be"/>
        <realm-param name="roleName" value="CN"/>
        <realm-param name="roleSearch" value="(member={0})"/>
        <realm-param name="roleSubtree" value="true"/>

    </realm>

```

</securityfilter-config>