

xNOTAM Project (EUROCONTROL)

Eddy Porosnicu
EUROCONTROL

Current status and implementation plans

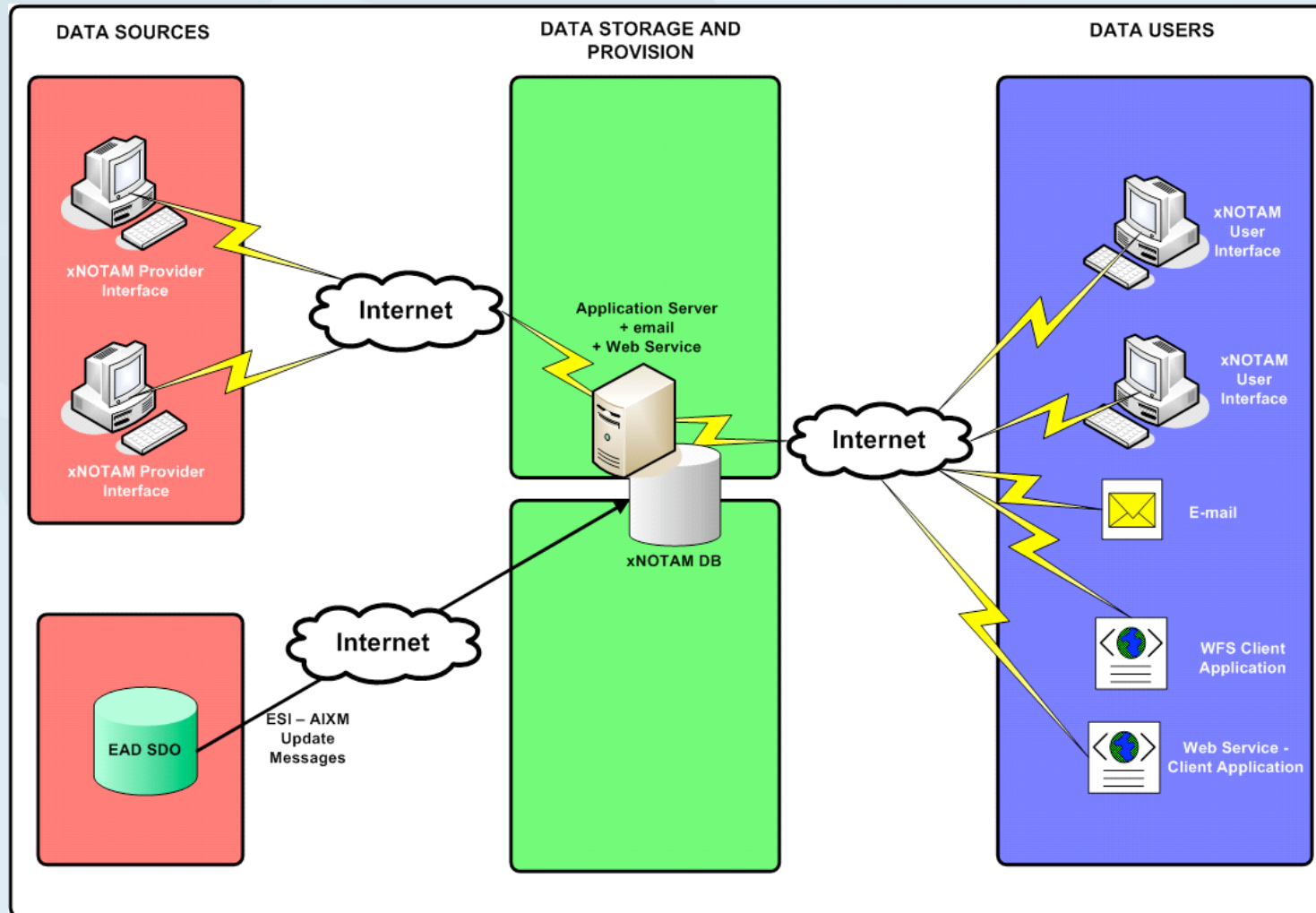
AIXM 5 – joint development effort EUROCONTROL - FAA



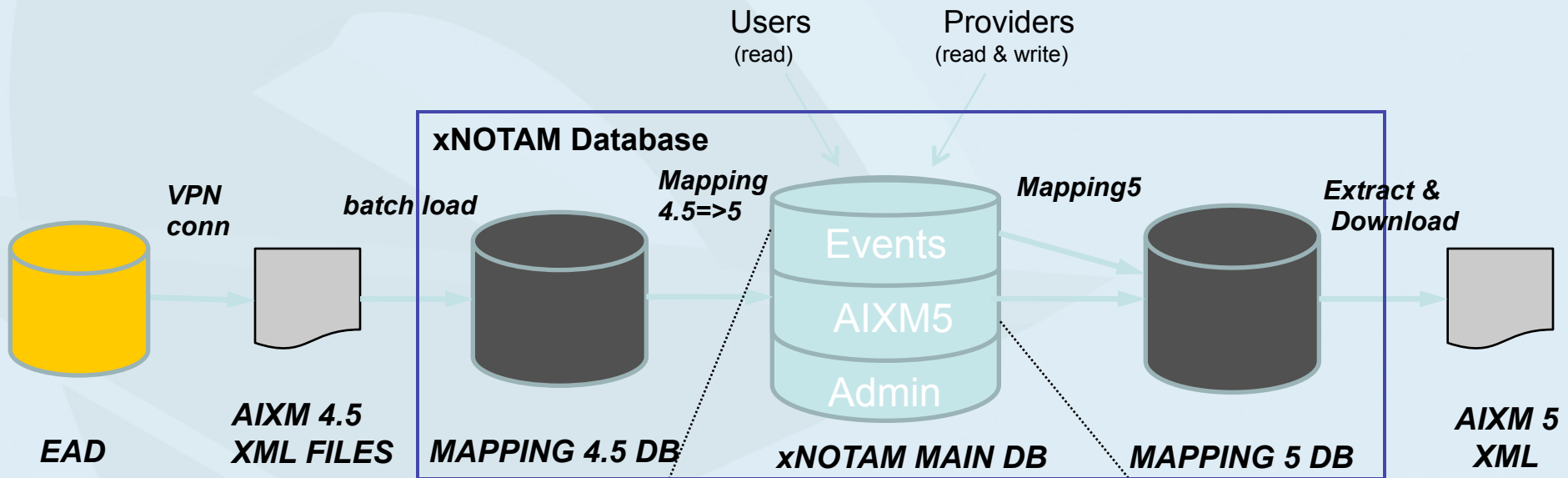
xNOTAM Trial

- To demonstrate the maturity of the “digital NOTAM” concept
 - based on AIXM version 5
- Objectives:
 - Validate AIXM 5
 - encoding the information contained in NOTAM messages
 - temporality concept
 - Provide a proof of concept for a “digital NOTAM encoding application”
 - demonstrate to NOTAM operators
 - not intended for operational use or for production
 - test bed for human-machine interface ideas
 - Provide a significant amount of test xNOTAM data
 - to system developers

xNOTAM Trial



Data Flow



http://xnotam-trial.pulsar.be - Add An Event - Mozilla Firefox

Add A New Event

Please fill the fields

Name: [B1434/08] DANGER AREA ACTIVATED-USAGE
 Temporary Permanent Transient

Start Date & Time: 2008/04/16 00:00

Description: [B1434/08 NOTAMN Q) LRBB/QRCR/IV/BO/W/000/165/4522N02513E001 A) LRBB B) 0802140600 C) 0803141800 E) DANGER AREA ACTIVATED.FRHG WILL TAKE PLACE INTO THE FEN AREA: 452150N0251318E-452125N0251308E-452130N0251155E-452205N0251220E EXPECT RADAR VECTORING F) GND G) 16404FT AMSL

(You can type or paste your NOTAM(s) in the above box)

Save Cancel

http://xnotam-trial.pulsar.be - Navaid Temporary Change - Mozilla Firefox

Navaid Temporary Change

Effective Time Period

Start date and time: 2008/04/04 00:00
 End date and time: 2008/04/25 00:00 Estimated before

Field	New Value	Null	Current	Baseline Value
Type:	[dropdown]	<input type="checkbox"/>	INDB	
Designator:	[text]	<input type="checkbox"/>	A	
Name:	[text]	<input type="checkbox"/>	MIROSLAWIEC	
Landing Category:	[dropdown]	<input type="checkbox"/>		
Operational Status:	[dropdown]	<input type="checkbox"/>	OPERATIONAL	
Flight Checked:	<input type="checkbox"/> Yes	<input type="checkbox"/>		
Elevated Point:	<input type="checkbox"/> Modify	<input type="checkbox"/>		
Notes:	<input type="checkbox"/> Modify	<input type="checkbox"/>		

Save Cancel



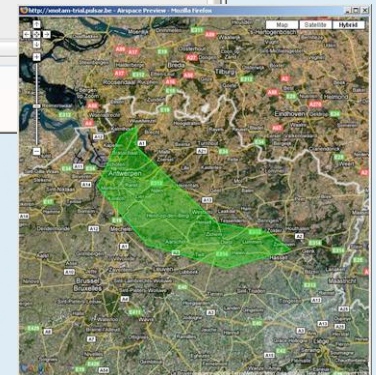
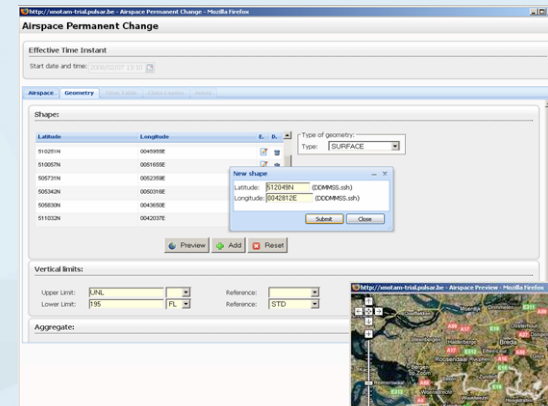
EUROCONTROL xNOTAM Trial

- Participants (FEB – JUN 2008)

<i>Test Data Providers NOTAM Offices from</i>	<i>Test Data Users (starting 10 March)</i>
<ul style="list-style-type: none">✓ Belgium✓ Czech Republic✓ Egypt✓ France✓ Iceland✓ Netherlands Military✓ Poland✓ Romania✓ Serbia and Montenegro✓ Slovenia✓ South Africa✓ Spain✓ Switzerland✓ United States Air Force (USAF)	<ul style="list-style-type: none">✓ AENA✓ Comsoft✓ Frequentis✓ GWDI✓ Jeppesen✓ Luciad✓ SkyJob EFB✓ TheNetFirm✓ EAG✓ NLR✓ BBN✓ SafeSoftware✓ ...

xNOTAM Trial

- Started progressively since 20 FEB 2008
 - Version 1.0
 - Airport, Runway, Navaid, Routes
 - Version 1.1 (since 15 March)
 - added Airspace, Airspace Usage
 - eMail notification for data users
 - Version 1.2 (since 17 April)
 - added Obstacle, Airport Usage, Airspace type circle
 - Version 1.3 (since 29 May)
 - Cancel/update Event
 - Fast AIXM download
- Data providers
 - Some 5000 NOTAM encoded
 - On average, 50% of the NOTAM are covered!
- Data users
 - Feed-back expected after the second session (OCT-NOV)



Example - Airspace

- Airspace

```
A0815/05
Q) EBBU/QRTCL/IV/NBO/W/195/999/5107N00454E022
A) EBBU B) 0802071310 C) PERM
E) NEW LATERAL LIMITS OF THE TRA N1-BRUSSELS AREA,
  STRAIGHT LINES JOINING FOLLOWING PSN :
512252N 0043326E-
511835N 0043325E-
510251N 0045955E-
510057N 0051655E-
505731N 0052359E-
505342N 0050316E-
505830N 0043650E-
511032N 0042037E-
512049N 0042812E-
BACK TO FIRST POINT.
F) FL195 G) UNL
```

TIME

AIRSPACE

COORDINATES

Vertical Limits

Example - Airspace

http://xnotam-trial.pulsar.be - Add An Event - Mozilla Firefox

Add A New Event

Please fill the fields

Name: [A0815/05] NEW LATERAL LIMITS TRA N1-BRUSSELS AREA
 Temporary Permanent Transient

Start Date & Time: 2008/02/07 13:10

Description:
A0815/05
Q) EBBU/QRTCL/IV/NBO/W/195/999/5107M00454E022
A) EBBU B) 0802071310 C) PERM
E) NEW LATERAL LIMITS OF THE TRA N1-BRUSSELS AREA, STRAIGHT LINES JOINING
FOLLOWING PSN :
512252N 0043326E-
511835N 0043325E-
510251N 0045955E-
510057N 0051655E-
505731N 0052359E-
505342N 0050316E-
505830N 0043650E-
511032N 0042037E-
512049N 0042812E-
BACK TO FIRST POINT.
F) FL195 G) UNL

(You can type or paste your NOTAM(s) in the above box)

Save Cancel

http://xnotam-trial.pulsar.be/xnotam-trial-test-1.2/event/EventEditorLoadAction.action?#

A change in the properties of a feature. Considered irreversible at the time the change is made. We call it "Permanent"

TIME



Example - Airspace

Search for features to attach ⌵

General

Feature type:

Owner:

Airspace

Name:

Designator:


Type:

Local Type:




GML Identifier:

Spatial Query

Type:

 Search

Search results: 19 airspaces found

GML Identifier	Type	Designator	Local Type	Name	Start of life	End of life	A
a82b3fc9-4aa4-4e67-8c	TRA	EBTRA N1		BRUSSELS AREA	2008-02-01 00:00:00.0		
25353ccf-ad89-4778-9c	TRA	EBTRA NA		TRA NORTH ALPHA	2008-02-01 00:00:00.0		
f5fd0eca-ebe7-4c43-af	TRA	EBTRA NB		TRA NORTH BRAVO	2008-02-01 00:00:00.0		

- Find and attach the correct Airspace

Example - Airspace

http://xnotam-trial.pulsar.be - Airspace Permanent Change - Mozilla Firefox

Airspace Permanent Change

Effective Time Instant

Start date and time: 2008/02/07 13:10

Airspace Geometry Class Layers Notes

Field	New Value	Null	Current Baseline Value
Start of life:	<input type="text"/>	<input type="checkbox"/>	2008/02/01 00:00
End of life:	<input type="text"/>	<input type="checkbox"/>	
Type:	<input type="text"/>	<input type="checkbox"/>	TRA
Designator:	<input type="text"/>	<input type="checkbox"/>	EBTRA M1
Local Type:	<input type="text"/>	<input type="checkbox"/>	BRUSSELS AREA
Name:	<input type="text"/>	<input type="checkbox"/>	Y
Designator ICAO:	<input type="checkbox"/> Yes	<input type="checkbox"/>	MIL
Control Type:	<input type="text"/>	<input type="checkbox"/>	
Upper Lower Separation:	<input type="text"/>	<input type="checkbox"/>	
Has Geometry:	<input checked="" type="checkbox"/> Modify	<input type="checkbox"/>	
Class Layers:	<input type="checkbox"/> Modify	<input type="checkbox"/>	
Notes:	<input type="checkbox"/> Modify	<input type="checkbox"/>	

Save Cancel

Done

Only change the Geometry. Other baseline data is unaffected

AIRSPACE

Example - Airspace

http://xnotam-trial.pulsar.be - Airspace Permanent Change - Mozilla Firefox

Airspace Permanent Change

Effective Time Instant

Start date and time: 2008/02/07 13:10

Airspace | Geometry | Class Layers | Notes

Shape:

Type: Surface

Latitude	Longitude
512252N	0043325E

Point coordinates

Latitude: 511835N (DDMMSS.ssh)

Longitude: 0043325E (DDMMSS.ssh)

Submit Close

See baseline on map Clear See on map Add point

Save Cancel

Done

Example - Airspace

http://xnotam-trial.pulsar.be - Airspace Permanent Change - Mozilla Firefox

Airspace Permanent Change

Effective Time Instant

Start date and time: 2008/02/07 13:10

Airspace Geometry Class Layers Notes

Shape:

Type: Surface

Latitude	Longitude	E.	D.
512252N	0043326E		
511835N	0043325E		
510251N	0045955E		
510057N	0051655E		
505731N	0052359E		
505342N	0050316E		
505830N	0043650E		

http://xnotam-trial.pulsar.be/xnotam-trial-test-1.2/features/airspace/AirspaceEditorLoadAction.action?seqid=951026&eventSeqId=951025#

COORDINATES

Example - Airspace

http://xnotam-trial.pulsar.be - Airspace Permanent Change - Mozilla Firefox

Airspace Permanent Change

Effective Time Instant

Start date and time: 2008/02/07 13:10

Airspace | Geometry | Class Layers | Notes

Shape:

Type: Surface

Latitude	Longitude	E.	D.
512252.00N	0043326.00E		
511835.00N	0043325.00E		
510251.00N	0045955.00E		
510057.00N	0051655.00E		
505731.00N	0052359.00E		
505342.00N	0050316.00E		
505830.00N	0043650.00E		

See baseline on map | Clear | **See on map** | Add point

Vertical limits:

Lower Limit: 195 FL
Lower Limit Reference: STD
Upper Limit: UNL
Upper Limit Reference:

Aggregate:

Select airspace: Find Clear
Operation:

Save Cancel

Done

Reporting Tool

Report Builder

Effective date between: [] and: []

Name: []

Event Type: []

Description: []

Restrict to the following provider organisations

- Belgium
- EUROCONTROL Helpdesk
- Poland
- Serbia & Montenegro
- Switzerland
- Czech Republic
- Egypt
- Portugal
- Slovenia
- Turkey
- EUROCONTROL EAD
- Iceland
- Romania
- South Africa

Select : [None](#) [All](#)

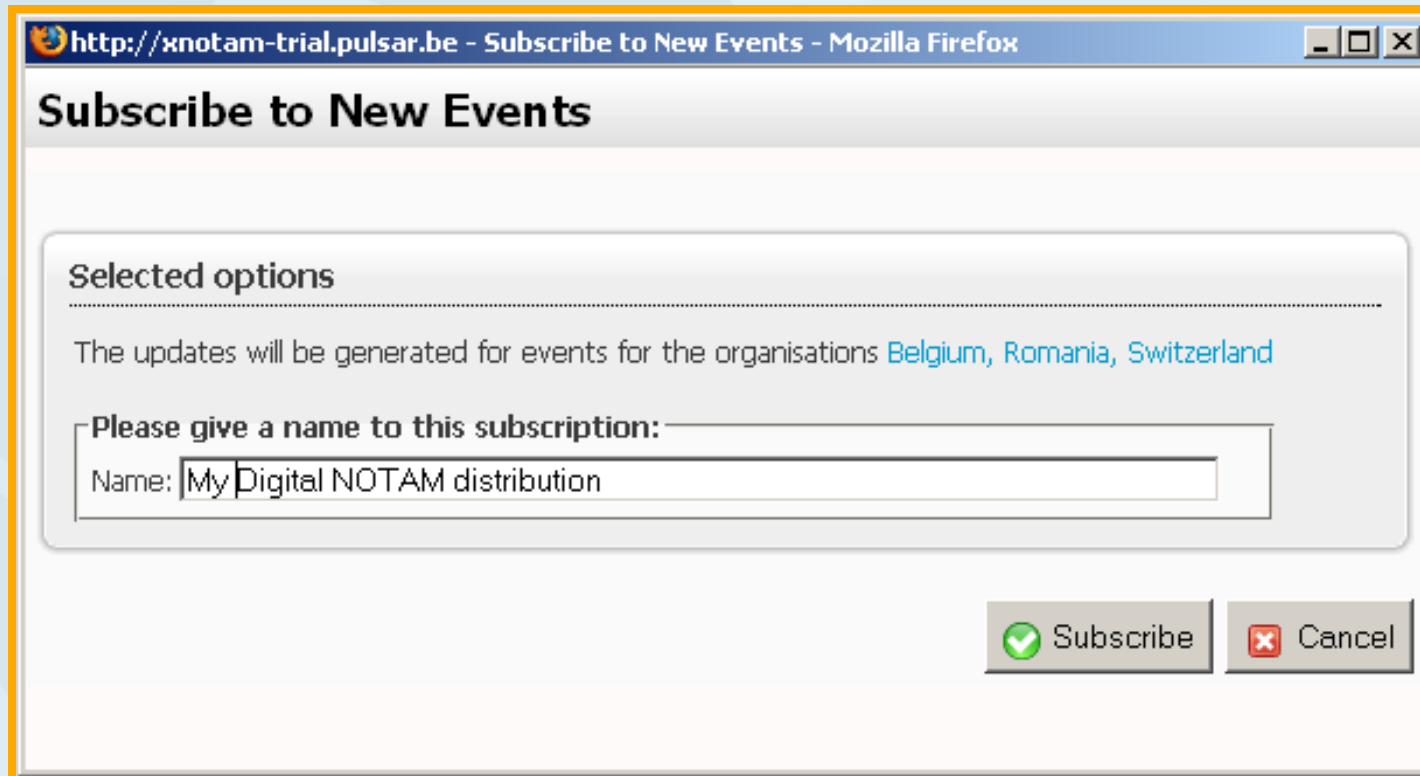
Report Content:

St.	Name	Description	Last Updated On	Type	Start Date	End Date	V.	X.
-----	------	-------------	-----------------	------	------------	----------	----	----

Page 1 of 1

Powered by Pulsar Consulting

Reporting Tool



http://xnotam-trial.pulsar.be - Subscribe to New Events - Mozilla Firefox

Subscribe to New Events

Selected options

The updates will be generated for events for the organisations [Belgium](#), [Romania](#), [Switzerland](#)

Please give a name to this subscription:

Name:

Subscribe Cancel

View AIXM

http://xnotam-trial.pulsar.be - View AIXM5 XML - Mozilla Firefox

View AIXM5 XML

XML

```
<?xml version="1.0" encoding="UTF-8"?>
<dnotam:Event xmlns:dnotam="http://www.aixm.aero/schema/5.0/RC2-xNOTAM/dnotam"
xmlns:aixm="http://www.aixm.aero/schema/5.0/RC2-xNOTAM" 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/5.0/RC2-xNOTAM/dnotam
http://www.aixm.aero/schema/5.0/RC2-xNOTAM/dnotam/Digital_NOTAM_Event.xsd" gml:id="Event-0003">
<dnotam:hasMember>
<aixm:AirportHeliport gml:id="VID178460">
<gml:identifier codeSpace="http://www.eurocontrol.int/xnotam">5131ec80-f314-4712-a9a0-6fd916eb8fbc</gml:identifier>
<aixm:timeSlice>
<aixm:AirportHeliportTimeSlice gml:id="VID946056">
<gml:validTime>
<gml:TimePeriod gml:id="VID000001">
<gml:beginPosition>2008-03-04T00:00:00</gml:beginPosition>
<gml:endPosition>2008-03-29T00:00:00</gml:endPosition>
</gml:TimePeriod>
</gml:validTime>
<aixm:interpretation>TEMPDELTA</aixm:interpretation>
<aixm:sequenceNumber>2</aixm:sequenceNumber><aixm:locationDescription>3.000001 km West from
Arad</aixm:locationDescription>
<aixm:hasReferencePoint>
<aixm:ElevatedPoint gml:id="VID000003" srsName="urn:x-ogc:def:crs:OGC:1.3:CRS84" srsDimension="2">
<gml:coordinates>21.262025,46.1765527777778 </gml:coordinates>
<aixm:elevation uom="FT">352</aixm:elevation>
<aixm:geoidUndulation uom="FT">141</aixm:geoidUndulation>
</aixm:ElevatedPoint>
</aixm:hasReferencePoint>
<aixm:isContactedAt>
<aixm:Address>
<aixm:type>TEL</aixm:type>
<aixm:address>+40122222222</aixm:address>
```

Download XML

Copy XML

Cancel



Lessons Learned

- See AIXM Wiki
 - http://wiki.pulsar.be/xnotam-wiki/index.php/Category:Lessons_Learned
- AIXM 5 is sufficiently mature to support a digital NOTAM implementation!
 - Some corrections might be necessary (AIXM 5.1)

xNOTAM Trial – lessons learned

- AirportHeliportUsage

- **FlightCharacteristic** has a property called **Origin**. The current options are not sufficient. They need to be expanded to cover the situation where the flight is based on the airport in question. This will allow the encoding of NOTAM that say:

LIMITED TO LOCAL FLIGHTS

- **FlightCharacteristic** has a property called **Purpose**. The current options are not sufficient. They need to be expanded to allow identifying aircraft participating in the activity. For example, this would allow to support situations such as

EXCEPT PARTICIPATING AIRCRAFT (DUE TO AIRSHOW)

- **FlightCharacteristic** has a property called **Status**. The current options are not sufficient. They need to be expanded to cover the situation where the flight is an emergency. This will allow the encoding of NOTAM that say:

TKOFF AND LANDING PROHIBITED EXCEPT EMERGENCY

- **AirportHeliportOperation** has a property called **type**. The current options are not sufficient. They need to be expanded to cover

- **parking**. This will allow the encoding of NOTAM that say:

RWY CLOSED FOR LANDING AND TAKE OFF. USED FOR TAXIING AND PARKING DURING AIRSHOW.

- **alternate**. This will allow the encoding of NOTAM such as

AD CANNOT BE CHOSEN AS AN ALTERNATE AD DUE AIRDISPLAY

Flight Characteristic

Type :

Rule :

Status :

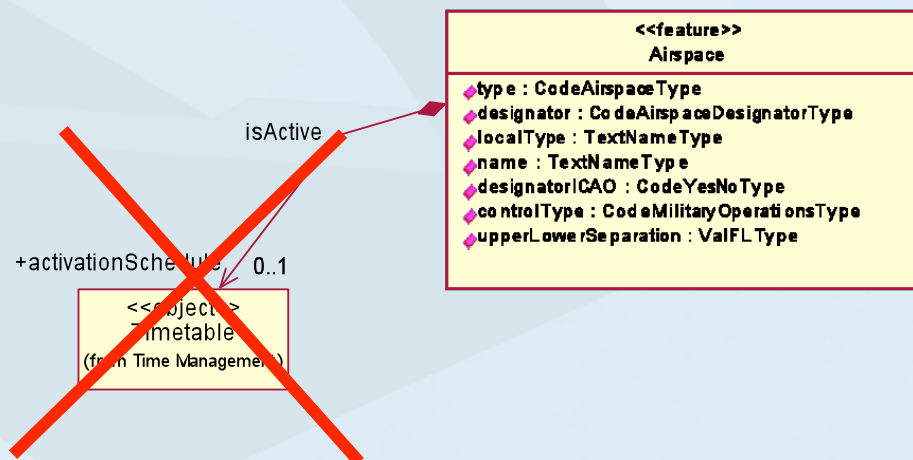
Military :

Origin :

Purpose :

Flight Characteristics

xNOTAM Trial – lessons learned



Lessons Learned Data Provider Interface

“Feature based”

- list of AIXM features and all their properties

Common and exceptional situations are equally hard to encode

“Event based”

- List of specific events and only the feature(s) and properties that are necessary for that event

• *Common situations are easy*
• *Un-common situations might be impossible to support*

Way forward: take what's best from the two

- “wizards”/ “templates” for common events
- full access to features and all properties
 - *to be used in exceptional situations*
 - *might require special training*

xNOTAM Trial – lessons learned

http://xnotam-trial.pulsar.be - Create a new Airspace - Mozilla Firefox

Create a new Restricted Airspace

Airspace

Type:

Designator:

Name:

Control Type:

Shape:

Type:

Latitude	Longitude	E.	D.

Vertical limits:

Upper Limit:

Upper Limit Reference:

Lower Limit:

Lower Limit Reference:

Airspace Usage

Activity:

Status Activation:

Traffic Allowed:

Schedule (to be used only if not continuously active)

Working hours:

Daily between

Start Time: UTC End Time: UTC

Start Event: End Event:

On/From Till

 Start Time: UTC End Time: UTC

 Start Event: End Event:

On/From Till

 Start Time: UTC End Time: UTC

 Start Event: End Event:

On/From Till

 Start Time: UTC End Time: UTC

 Start Event: End Event:

Example of “template” for Airspace reservations

xNOTAM Trial

- After July
 - Application remains available
 - Some maintenance foreseen
- October – November 2008
 - Second session
 - Test Data Providers: France, Italy, Latvia, Netherlands Military, Bahrain, Singapore, Australia, Croatia, Germany, Hungary, Turkey, Slovak Republic, etc.
- Dec 2008 – Dec 2009
 - Application remains available for test, demo, short trials if needed by test data users, training, proof of concept, etc.

Implementation plans

- Current Status: **feasibility proven, pre-operational trial**
- EUROCONTROL Stakeholder Consultation Group (SCG) #8
 - 14-15 May 2008
 - ✓ xNOTAM Project – Information Paper
- 2009 – SCG approval
 - Business case
 - Safety case
- How to
 - Evolution of the current systems for digital data production
 - EAD
 - Local systems
 - Incremental approach
 - Some features cover more than 50% of the NOTAM set
 - Focus on immediate end user needs
 - Focus on training
 - Hundreds of NOTAM operators who need to be re-trained

xNOTAM Workshop #4

- 10-11 Dec 2008 (tentative)
- Objectives
 - summarise with the stakeholders the lessons learned from the Trial
 - present the proposals for corrections in the AIXM 5.0 model
 - present and review the Digital NOTAM concept of operations
 - work on-going EUROCONTROL/FAA
 - define increments for operational implementation

&

Q

