EUROCONTROL lessons learned and GNSS NOTAM
ICAO APV workshop - 25 to 27 May 2011

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Structure of the presentation

• Lessons learned from EUROCONTROL pioneer projects
• GNSS NOTAM and pre-flight information
  ➢ Concept
  ➢ Tools (EURONOTAM and AUGUR)
  ➢ Role of NOFs in GNSS NOTAM
  ➢ GNSS NOTAM format
EUROCONTROL Pioneer Projects

- Aurigny
- ATI (Beluga)
- Mielec

On EUROCONTROL www.ecacnav.com website:
- Generic description of the projects:
  http://www.ecacnav.com/RNAV_Applications/Implementation_Projects
- Outcomes and Deliverables:
EUR Pioneer Project in UK

• **Partners**:  
  - NATS  
  - Aurigny Airlines  
  - Anglo Normandy Engineering  
  - Pildo  
  with the support of:  
  - States of Guernsey  
  - UK CAA

• **Airport/Procedures**:  
  - Southampton  
  - Alderney

• **Nb Aircraft**: 1  
  - Britten Norman Trislander

• **Receiver**: Garmin 430

• **Achievements and future milestones**:  
  - LNAV and LPV flight validation in February 2011  
  - Publication planned in July & Oct.

• ESA press release: [here](#)
EUR Pioneer Project in France

• Partners:
  ✓ EGIS AVIA
  ✓ DSNA
  ✓ ATI
  ✓ Pildo

• Airports/Procedures:
  ✓ (Clermont-Ferrand)
  ✓ Pau

• Nb Aircraft: 1 (+4)
  Beluga – Airbus A300-600ST

• Avionics: CMC Electronics

• Achievements and future milestones
  ✓ Successful ground tests: March 2011
  ✓ Certification flight around summer

• Deliverables
  ✓ Initial Business Case
  ✓ Lessons learned
  ✓ Safety assessment methodology applied

✓ Press release: here
EUR Pioneer Project in Poland (1/2)

• **Partners:**
  - Pildo
  - PANSA
  - Royal Star-Aero
  - ANS Czech
  - Helios
  - ADV Systems

• **Airport/Procedures:**
  - Mielec
  - Katowice

• **Nb Aircraft:** 1
  - Piper PA-34 Seneca II

• **Receiver:** Garmin 430

• **Achievements and future milestones**
  - Successful flight demonstration: 14 March 2011
  - Euronews Fly programme under preparation – end April 2011

• **Deliverables**
  - Certification and Standardisation overview
  - MIELEC Safety Case
  - MIELEC Business Case
EUR Pioneer Project in Poland (2/2)

- Euronews fly program in cooperation with EUROCONTROL:
GNSS NOTAM and pre-flight information

• Definition in cooperation with AIS/AIM experts of a « GNSS NOTAM concept »
  Includes NOTAM and web-based information, and defines roles, responsibilities and tasks
  Adoption by RATF & ANT and AI OPS & AIT (AI OPS4 – 8 & 9 June 2011)

• Development of tools to generate RAIM and EGNOS NOTAM proposals for interested NOFs

• GNSS predictions(*) available at http://augur.ecacnav.com

(*) EGNOS predictions for LPV not yet available
Overview of the concept

- NOTAM proposals
- EGNOS NOTAM Proposals Generator
- GPS RAIM NOTAM Proposals Generator
- AFTN
- EAD/ECIT
- EAD/ESI
- NOF
- Official NOTAM
- Civil Aviation Users
- Internet

- NOTAM proposals
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Detailed architecture to support the concept

- **AUGUR tool**
  - GPS data collection
  - GPS RAIM prediction
  - Formatting to Web
  - Formatting to NOTAM

- **EURONOTAM tool**
  - EGNOS prediction
  - Formatting to NOTAM

- **Civil Aviation Users**
  - EAD
  - ESI
  - NOF
  - AISP

- **LEGEND:**
  - EGNOS NOTAM proposals
  - EGNOS predictions
  - RAIM predictions
  - Secured interface
  - Area of responsibility
  - Communication network/system
  - AFTN address, ESI or ECIT interface to EAD
  - Existing and future EGNOS related data flow
  - Existing and future GPS and RAIM related data flow
Tools to support the concept (1/4)
- On EGNOS NOTAM side -

- Design and Development of the EURONOTAM tool (including both “EGNOS prediction” and “Formatting to NOTAM” functions) by EUROCONTROL
- Completion of the transfer to EC/ESSP in January 2011 for operation from 2nd March 2011
- EUROCONTROL/EC agreement sets responsibilities as follows:
  - **EC/ESSP** responsible for:
    - Maintenance of the tool (« prediction » and « formatting ») &
    - Upgrades of the « prediction » function
  - **EUROCONTROL** responsible for:
    - Upgrades of the « formatting » function

EUROCONTROL will continue to collect user needs relevant to NOTAM formatting in order to ensure harmonisation at European wide level (through AI OPS).
Tools to support the concept (2/4)
- On GPS RAIM NOTAM side -

• Design and Development of the upgraded AUGUR tool (including both “RAIM prediction” and “Formatting to NOTAM” functions) by EUROCONTROL
• Demonstration of the tool planned May/June 2011 (waited EAD Release 6 deployment : March 2011)
Tools to support the concept (3/4)
- EGNOS and RAIM Predictions on the web -

http://augur.ecacnav.com (prediction options)
Tools to support the concept (4/4)
- EGNOS and RAIM Predictions on the web -
  [http://augur.ecacnav.com](http://augur.ecacnav.com)
  (prediction results)
As described in the Concept doc:

- **Task 1**: Coordination between the State/ANSP and the NOTAM proposal generator
  
  To set the NOTAM service where needed

- **Task 2**: NOTAM proposal content verification by the NOF

- **Task 3**: Generation of the official NOTAM by the NOF
NOTAM and NOTAM proposal format

As described in the Concept doc:

- Compliance with ICAO formatting
- NOTAM and NOTAM proposal N and C
- Details on content for Item Q, A, B, C, D and E
- Q code used: QGAAU, QGAXX and QGAAK

NOTAM proposal

Q) LFBB/ QGAAU/ I/ NBO/ A/ 000/ 999/ 4100N00200E005
A) LFBO
B) 0908240145
C) 0908250225
D) 24 0145-0230 0630-0645 25 0155-0225
E) 0011/09 NOTAMPN
EGNOS UNAVBL FOR LPV

Official NOTAM

A1234/09 NOTAMN
Q) LFBB/ QGAAU/ I/ NBO/ A/ 000/ 999/ 4100N00200E005
A) LFBO
B) 0908240145
C) 0908250225
D) 24 0145-0230 0630-0645 25 0155-0225
E) EGNOS UNAVBL FOR LPV
For more information:
• www.ecacnav.com
• https://extranet.eurocontrol.int

Next meetings:
• RATF13: 21-22 Sept 2011 in Bretigny/France

Thanks for your attention
Any questions?
European Commission and GSA projects (with EUROCONTROL involvement)

- HEDGE
- GIANT-2
- ACCEPTA
Partners:

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High Level Objectives:

- To develop the helicopter SOAP (SBAS Offshore Approach Procedure) procedure (and necessary avionics) and then to successfully demonstrate it to the user community.
- To develop helicopter PINS (Point in Space) procedures for mountain rescue and HEMS (Helicopter Emergency Medical Services), and to then successfully demonstrate them to the user community.
- To develop and demonstrate an integrated navigation/surveillance concept.
... participating to other Pioneer Projects (2/3)

**GIANT 2** ([http://giant2.ineco.es](http://giant2.ineco.es))

- **Partners:**
  - INECO
  - AENA
  - GMV
  - Rockwell Collins
  - Dassault Aviation
  - Augusta Westland
  - GestAir
  - Global Air Solutions
  - Pildo
  - Air Nostrum

- **Aircraft:**
  - Dassault Falcon 2000
  - Cessna 172

- **Avionics:** Rockwell Collins

- **Airport/Procedures:**
  - Santander
  - Cordoba
Objective of the project

to encourage the adoption of EGNOS in the sectors of regional airlines and corporate aviation, the main niche markets interested in the use of the EGNOS signal. It expects to create a snowball effect with the involvement and commitment of early adopters: airlines, end users, operators, ANSPs and airports.

Partners

- INECO
- Rockwell Collins
- AENA
- DSN
- SKYGUIDE
- Helios
- NATS
- ERAA
- EBAA
- Air Nostrum
- NETJETS
- BRIT AIR