Future Aeronautical Communication
System - FCI

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EUROCONTROL/CND

TAKE OFF Conference
Salzburg, April 21st 2009
What has already happened?
Key events

⇒ 11th ANConf
⇒ EUROCONTROL/FAA AP17 Activities
⇒ SESAR Definition Phase completion
⇒ ICAO ACP endorsement
⇒ SJU establishment
AP17 in a slide

- FAA/NASA and EUROCONTROL
- Response to AN-Conf/11 outcome
- Contributions from France, Germany, Spain, Sweden, UK and ESA
- International Coordination and Communication (ACP, Conferences)

6 Technical Tasks
- Improvements to current systems
- Concept and Requirements
- Technology Evaluations
- Communication Roadmap
- Integration Aspects
- Spectrum Aspects

3 Business Tasks
- International Perspective
- Industry Participation
- Business Aspects

- Supporting SESAR and NextGEN
- Recommendations and Actions
The future system must support **ATS** and **AOC** end-to-end communications including **air/ground** and **air/air**

Emphasis first in data communications – digital voice in a next step

**No single technology** meets all requirements across all operational flight domains

The future system will be a **system of systems** integrating **existing communication systems** (voice, VDL) as well as **new communications systems** to meet the operational requirements

No COTS technologies have been identified that can be adopted as new components of the future system without some modification
AP17 - Data Link Recommendations

3 New Components: Data link

- Airport surface: C band
- General terrestrial: L Band
- Satellite: Oceanic + Continental
FCI activities in ECTL
3 New Components: Data link

- Airport surface: C band
- General terrestrial: L Band
- Satellite: Oceanic + Continental
Airport Surface Communications System
Airport Surface System Activities

- Study - identification of potential 802.16e profiles for aviation
  - Report available

- Study – certification cost estimation (of OFDMA based FCI component)
  - Report available

- Participation in SJU activities (P15.2.7 and P9.16)

- Info/reports at:
  www.eurocontrol.int/communications/public/standard_page/WIMAX.html
LDACS: Continental Communications system
Plan for LDACS development activities

ECTL

LDACS1/2 specifications

Interference Scenarios, Criteria and Testing Plan

2009

SESAR JU WP15

Development of LDACS1/2 TX prototype

Development of LDACS1/2 RX prototype

Testing and Evaluation

2010?

? ICAO

LDACS selection

20??
LDACS System “Success Criteria” – High level Objectives

- Can operate in the L band without interfering with existing users of the band
- System performance is meeting requirements
- System development is facilitated and expedited through the choice of appropriate components and/or mature standards.
LDACS System Activities

- LDACS1 system specifications
- LDACS2 system specifications
- L band systems compatibility criteria and Interference Scenarios
- Participation in SJU activities (P15.2.4)

Info/reports at:
www.eurocontrol.int/communications/public/standard_page/LDACS.html
LDACS1 System

- B-AMC
- P34
- Wimax

LDACS1
Objective: Provide input to SJU activities (Project 15.2.4) by developing initial specifications for the LDACS1/2 system

Deliverables:
- L-DACS1/2 System Overall Specifications
- Design Specifications for LDACS1/2 Tx and Rx prototypes
- Deliverables to be finalised by end of April 2009
LDACS1/2 studies: Separate presentations

Key characteristics and Features

- LDACS1
  - D2 Deliverable
  - Draft D3 Deliverable

- LDACS2
  - D2 Deliverable
Criteria and Scenarios Study expected outcome

- Development of Spectrum Compatibility Criteria
  - LDACS Tx
  - Existing systems

- Development of Critical Interference Scenarios
  - Existing Systems
  - LDACS Rx
Compatibility Criteria

- Systems to consider
- Cases
  - Ground and airborne scenarios
  - Cosite – limitations of using suppression bus
Interference Scenarios

- Systems to consider
  - Previous case (compatibility criteria), and
  - JTIDS/MIDS

- Cases
  - Ground and airborne scenarios
  - Cosite
Criteria and Scenarios study key deliverables

- Compatibility Criteria for system X
- Testing Plan for system X
- Interference Scenarios for system X
- Cosite case: use of suppression bus and interference scenarios
- Deliverables are expected by April 2009
Satellite Communications System
Satellite Communication System

Short term objectives:

- Agreement on a global new satellite communication standard
- Update of AMS(R)S SARPs

- Close cooperation with ESA – support for the Iris project
- Participation in SJU activities (P15.2.6)

Info at:
www.eurocontrol.int/communications/public/standard_page/SATCOM.html
SESAR context
Since April 2008: intense collaborative work involving the partners
- 15 members selected in Sept. 07 and EUROCONTROL

Description of Work (DOW)
- Initial offers mid-September
- Prioritisation and refinement led to DOW 4.0
- Invitation to submit Binding & Final Offer published on 17 December

16 February 2009: submission of binding offers for majority of work packages

Selection of partners is now finalised
WP9: Aircraft

- Project 9.16: New Communication Technology at Airport
- Project 9.20: Military data link accommodation
- Project 9.21: ADS-B - 1090 Higher Performance Study
- Project 9.22: Mid & Full ADS-B Capability
- Project 9.44: Flexible Communication Avionics
WP 15: Ground CNS Infrastructure

- SWP 15.1: Common CNS Studies
  - Project 15.1.6: Spectrum Management & Impact Assessment

- SWP 15.2: Communication
  - Project 15.2.4: Future Mobile data Link system definition
  - Project 15.2.6: Future Mobile Satellite Communication
  - Project 15.2.7: Airport Surface Data link
  - Project 15.2.8: Civil-Military Data Link Interoperability
  - Project 15.2.10: Terrestrial communication infrastructure - SWIM backbone

- SWP 15.3: Navigation
- SWP 15.4: Surveillance
FCI: ATM Communications in 2020+ and SJU projects

New Terrestrial System(s)

NETWORK

VHF

15.2.4

15.2.7

9.44

15.2.10

9.21/22

15.2.6
Com Projects budget in SJU
Next Steps
What’s Next:

- Finalization of SJU agreements
- Progressive initiations of SJU projects
  - Rump up period
- Swift Progress of FCI key activities
- Preparation of WRC2011
- Maintain International Context (ICAO, NextGen, other regions)
THANK YOU

Questions?
## AP17 Results

### United States

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<thead>
<tr>
<th>Continent</th>
<th>Technologies</th>
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### Common Technologies

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L-DACS
### L-DACS: L-band Digital Aeronautical Communication System

#### Key Characteristics

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### L band system: Development and Deployment Plan

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Cooperation with FAA on FCI matters

Proposal to cover 3 key areas of work:

1. Facilitate technical coordination between SESAR and NextGen
2. Joint technical investigations
   - Airport Surface System – C band
   - Continental system - L band system
   - Satellite Communications System
   - Integration aspects
3. Joint contributions/submissions to standardisation bodies