AIRBUS FANS Update and Future

ATN CPDLC in an AIRBUS
AGENDA

• FANS Context

• FANS Project status
  ‣ FANS A Update
  ‣ FANS B Definition

• FANS Evolution
FANS context
Where and when?

Europe (FANS B): Eurocontrol Program Link2000+
Initial operation: from 2003
Deployment in core area: from 2009

US (FANS B):
FAA Pgm CPDLC Build 1/1A
Initial operation Build 1: 2003
National Deployment Build 1A from 2009 to 2012 (tbc)

Oceanic/remote area:
FANS 1/A routes and services operational
FANS Project status
• Consistent with
  • Air Traffic Alliance Roadmap
  • ICAO ATMCP concept

Pre-FANS
Airline Datalink

C: AOC over ACARS
S: Transponder
N: Classical means
ATM: Conventional Air Traffic Control procedures

FANS A/FANS A+
Oceanic/Remote airspace/Accommodation

C & S: ATC & AOC datalink over ACARS
N: GPS-based
ATM: ATC processes enhancement with initial A/G automation

FANS B
High Density airspace

C: ATC over ATN
S: Elementary & Enhanced Surveillance
N: RNP, MLS, GLS
ATM: First Applications of A/G automation to ATC/ATM

“CNS/ATM"
North America, Europe

ASAS Package 1
4D Trajectory Management
Automated support to Air Traffic Management
FANS operation status

• FANS A operation
  - Oceanic area
    - LR
    - A380
    - A319 LR/CJ
    - A321/A32O (ETOPS)
  - remote area (low/medium density airspace)
    - all family

• FANS B operation
  - continental area (high density)
    - all families
      - A320 family in priority
      - A340/A330 & A380 families to be accommodated till tbd
FANS A Update

• FANS A has been developed for Oceanic/Remote operation
• FANS A has been certified in July 2000 on A340/A330 family
• FANS A+ has been developed as an update from FANS A with
  ‣ ACARS enhancement
    – Router upgrade
    – VDL Mode 2 option
  ‣ FANS A improvement: In Service experience
  ‣ A623 option (DCL, D-ATIS, OCL)
  ‣ Message latency (for Continental accommodation).

• FANS A+
  ‣ has been certified in July 2004 on A340/A330 family
  ‣ will be certified by Q1 2005 on A320 family
  ‣ will be certified for EIS on A380 family and A400M
FANS B definition

- Objective: continental operation = ATC datalink function complying with performance required in dense area
  - Controller Pilot Data Link Communication (ICAO ATC set of messages with syntax different from FANS A set of messages)
    - Link 2000+ CPDLC messages
      - Data link Initiation Capability (DLIC)
      - ATC Communication Management (ACM)
      - ATC clearance (ACL)
      - ATC microphone check (AMC)
  - ATN protocol (network performance improvement)

- Advantage:
  - High density operations
  - High performance requirements

Dedicated FANS HMI Integrated Architecture
FANS B development

• Standard for Initial Phase: FANS B
  ✦ Full ACARS capability (Router & AOC)
  ✦ ATN functionality
    – ATN router
    – Initial CPDLC applications (ACM, AMC, ACL) for Link2000+
  ✦ Candidate pioneers airlines for Link 2000+

• Next Step
  ✦ Level C development
  ✦ Applications with FMS integration
    – Full ED110 + initial 4D applications
  ✦ Data link recording
FANS B Status

• FANS B (ATN CPDLC) has been launched by Airbus in July 2004, in compliance with Eurocontrol Link 2000+ programme,

• Current customers:
  - Finnair 29 a/c (A320, A321, A319)
  - Aeroflot 18 a/c (A320, A321)
  - Alitalia (TBC)

• On going discussion with major customers

• Objective: initial certification for mid 2006
FANS evolutions
Operation evolutions

• Oceanic versus Continental but same functional needs

• Different technologies (ACARS/ATN)

? Need for accommodation and convergence

• Communication Performance based approach required
  • Required Communication Performance (RCP) concept defined
  • Need for RCP implementation program
Technology evolutions

• Take credit of investment already done:
  - ACARS for AOC, then initial ATC usage
  - ATN for full ATC operation

• Evaluate challenging technologies before standardisation
  - Broadband Satcom, IP…for APC then AOC before ATC

• CAREFUL safety & security considerations
AIRBUS FANS summary

- FANS development in support of **Air Traffic Alliance roadmap**

- **FANS A certified and In Service**
  - Positive validation of ATC datalink operation

- **FANS B in development**
  - Progressive product maturity for basic ATC datalink operation

- **Future FANS evolutions**
  - Global standardised use of ATC datalink for ATC evolution towards ATM (accommodation and convergence required)
  - Performance based communication concept deployment (RCP)
  - Careful consideration of technology evolutions
    - Safety
    - Security
  - To be developed in consistency with
    - the SESAME framework in Europe
    - global ICAO ATM transition plan
    - Datalink strategy elaborated with Boeing in the frame of MoA on future ATM interoperability.
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