CANSO Global ATM Operations Conference

MADRID | SPAIN | 8-9 MARCH

How will future aircraft technology affect and drive ATM ground technology and procedures?

Daniel Ferro

Airbus

ATM Concept and Performance Manager

What airlines are asking us ?

Just a few things …

- « Full » coverage of FANS operations (FANS 1/A, A+, FANS 2/B …)
  - Forward-fit & retrofit
  - With reduced airborne costs (…)
- Services : ex. Customized PBN procedures

How can we translate this on the ground side :

➔Harmonization of communication networks

➔*Pursue the harmonization of use of CPDLC messages (ref.* ***GOLD*** *!)*

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A reminder on modern A/C capabilities (FMS *et all …*)

Towards Trajectory Based Operations (TBO) :

- Datalink (CPDLC, ADS-C) ➔ ex. ED228A standard

- Performance Based Navigation
  - RNAV, RNP, SBAS, LPV …
  - Let's develop more detailed concepts of use
  - Standardize them (interoperability)

- 4D Navigation (DO236C / ED75C)
  (next slide)

- ADS-B … Let's make best use of it !

Enhancing Safety, Capacity, Flight efficiency, Predictability, Cost-efficiency

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Paving the way for Trajectory Based Operations

Extended Projected Profile (**EPP**)

FMS 4D predicted trajectory

(ADS-C / EPP)

(Enhanced Traj. Predictor)

Ex. : Improved anticipation of Top of Climb, Top of Descent

⇒ **More accurate conflict detection and efficient use of airspace**

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Automation : some points from the Airborne side

- **Creative Mindset in the air ! (**Competitive situation …)

- Technological opportunities explored, validated, deployed as needed
  - **Advanced functionalities** & HMI (hardware ; software) ; enabled by :
    - **<u>Data of appropriate quality</u>** : accuracy ; integrity ; availability…
    - Ambitious countermeasures to degraded situations

- A similar mindset needs to appear on the ground side
  - Enhanced automation using accurate A/C data : EPP, FF-ICE, ADS-B, A/C data : Local Weather, Runway friction and Occupancy Time …
  - For Conflict Management (CD&R), DCB, Traffic Synchronization …

- Airborne side (A/C + Crews) daily faces diversity of procedures from the ground side
  - Need equivalent on the ANSP side ➔ Adaptation to every A/C
  - Supported by automation

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Additional needs…

- Also contributing to future ATM enhancements

  – Differentiating services (ex. RNP, Geometric navigation)
  – Incentives for Airborne transformation:
    – Operational (Best Capable Best Served), Financial, …
    – Mandates when needed

- More common frames for consistent developments on Air & Ground side
  (cf RVSM)

- Improve voice Comms !
  ex. HF ➔ SATCOM Voice everywhere …

- CNS Rationalization, Navaids Decommissionning

'The use of HF is not from this world anymore. If we, on earth, can direct a vehicle on Mars to sniff at the right stone, I'm sure we can figure out some sort of Satcom instead of HF'
(2004)

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Thank you

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What else ?

Airspace is getting more and more complex to crews

- Good reasons : ex. diversity of PBN procedures
  - ➔ Scalability !

- Less good reasons : complexification :
  - Too many airports Doc's / Airspace classification
  - Too many regulations
  - Documentation …

  ➔Increases cockpit workload
  Flight Preparation & execution

  ➔Increases risks of procedures infringement, breaches …

➔ A Global challenge

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