A4A Meteorology Work Group
Airline Sharing of Automated Aircraft Weather Data

Can Restricted Access & Public Access Co-exist?

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Background

Current Contract Structure:

- Government (FAA/NWS) contracts directly with:
  - Individual carriers → Water Vapor only.
  - ARINC → Turbulence, Wind & Temperature data handling

Current Data Sharing

- Participating carriers have unanimously agree to share data with:
  - NOAA & NWS Offices
  - FAA
  - Other contributing Airlines &
  - Research Universities (when deemed of value & benefit to the airlines & via an accredited University & tenured professor)

Automated Aircraft Data Reporting
Current State

- **MDCRS = Wind and Temperature (Installed on 2800+ aircraft)**
  - FAA & ARINC contracted Program for approx last 25 years
  - But includes no formal agreements with carriers.
  - Since mid 2000's each Airline reimbursed approx 50% of communication costs (FAA/NWS through ARINC).
  - Inconsistencies in location of reports & data rates/capabilities.
  - Data not easily integrated w/ other SOC/OCC/NOC applications.
  - Data is owned by the airlines and is not free and open.

- **NOAA contract = Additional Airline Participation**
  - NOAA Recently awarded to Rockwell Collins (ARINC)

Automated Aircraft Data Reporting
Current State

- **WVSS (Water Vapor Sensing System) = H2O, Wind & Temperature**

  Installed on 130 aircraft at SWA & UPS

  - NOAA Funded & NOAA committed to increasing participation.
  - SWA & UPS subcontract individually to Rockwell Collins (ARINC) and are compensated for participation.
  - Requires installation of an additional sensor.
  - Data viewed as high quality to supplement radiosonde network
  - Data is free and open.

Automated Aircraft Data Reporting
Current State

- **Turbulence**
  - Need enhanced/approved EDR and RMS-g conversions.
  - Data is not free and open.

  - **EDR (Calculated Eddy Dissipation Rate) on 310 Delta & SWA a/c**
    - Limited participation.
    - Quality Control needs to be transferred from NCAR to NWS.
    - No communication cost compensation is in place for EDR.

  - **RMS-g (Root Mean Squared – gravity) on 505 AA a/c**
    - Was originally a NASA research project called TAPS (Turbulence Auto-PIREP System)
    - Now Technology Transferred to a commercial effort
  - **EDR & Wind, Temp. & Water Vapor on 256 Regional a/c**
    - Tropospheric Airborne Meteorological Data Reporting (TAMDAR) a commercial effort

Automated Aircraft Data Reporting
Timeline of A4A Efforts

- May 2014 - Letter from A4A Meteorology Work Group (Met WG) was sent to both FAA & NWS requesting increased resources & priority.
- September 2014 - Face to face meeting held to discuss respective program visions, identify common ground, & establish a future roadmap.
- October 2014 – A4A Met WG presents proposal relating to: Contracting, Data Quality, Liability, Compensation, & Data Access.
- February 2015 – Face to face meeting w/ government response to proposal.
- March 2015 – Monthly NWS & FAA telecons began to facilitate progress.

Additional – Future Methods

- **ADS-C & ADS-B**
  - "C" = Contract: Current Informal Contract with ANSP for position info & includes winds & temps.
  - NOAA impact study planned
  - "B" = Broadcast: Future capability for relaying auto a/c wx reports.

Results

MADIS (Meteorological Assimilation Data Ingest System):

- Fulfills the A4A Met WG request for a gatekeeper & database
- Will eventually feed FAA Weather Information Exchange Model (WXXM)

Turbulence:

- RTCA SC 206 EDR Standards Recommendations Group working on Minimum Operational Performance Standards (MOPS)
- Working on the QC'ing of EDR data

Automated Aircraft Data Reporting
Airline Shared Interests

- We need data access to integrate into our operational applications.
- We want the government to take a more active approach in this program with increased focus on data storage, access, and quality.
- We want to promote additional airline participation and encourage data sharing among the airlines.
- All safety related info (especially significant Turbulence reports) should be shared.
- Turbulence:
  - Automated reports will eventually replace subjective PIREPs, but standardization of turbulence calculations needed first.
  - Airlines will always need info about both the turbulent state of the atmosphere as well as intensity of turbulence encountered by specific aircraft.

Automated Aircraft Data Sharing Summary

- Making progress with the NWS and the FAA.
- Continue to participate in telecons/meeting to work open issues to advance the program.
- Determine next steps for advancement automated turbulence reporting/compensation and contract structure.
- Open to other options for open data sharing.

Thank You!