

# **Deficiencies in Consistent Global Weather Products: *A Pilot Advisory Group Response***

## **EASA “Wx Information to Pilots” Workshop**

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## Overview

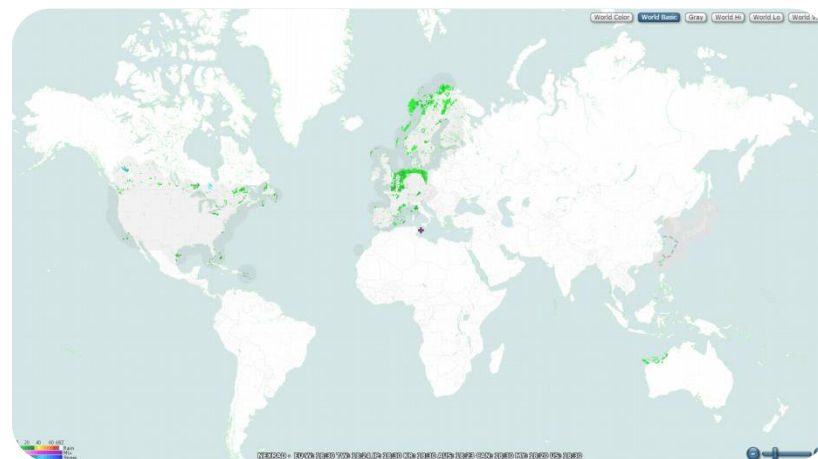
- Rockwell Collins is engaged across the CAT and BA markets, with various integrated weather solutions:
  - Airborne Radar
  - Flight planning, weather, scheduling, and connectivity solutions
  - Text and graphical weather datalink delivery
  - Datalink and broadcast weather graphics integrated on flight decks
  - AMDAR program
- Consistent feedback theme from our partners and customers:
  - Flight hazard products, while readily available in high-quality in few regions, lack consistency and availability on a global basis
    - Existing **global** products and delivery solutions do not provide sufficient threat assessment or timeliness for weather avoidance
    - Long-haul international flights and regional operators in developing nations highly affected

# High-Quality Regional In-flight Solution Examples



## XM WX Aviation

- Broadcast solution
- High-resolution, zoom capability
- NEXRAD Radar, Lightning, Satellite, Winds, Icing, Turbulence, etc.
- Limitation: CONUS only
- Similar solution: ADS-B out



## Ground Radar Coverage (via tablet access)

- US, Canada
- Western Europe
- East Asia, Australia, NZ
- None or very low quality coverage elsewhere

## Global Product Limitations

- Satellite Imagery
  - Resolution
  - Latency
- Ground-based Radar and observation networks
  - Lack of participation, integration, and coverage
- Aviation hazard diagnostics (turbulence, icing, etc.)
  - Highly dependent on base forecast model – weaknesses carry forward into the diagnostic
  - Global scope, without regional customizations (e.g. dust visibility for AfME, varying meteorological processes)
- Atmospheric Modelling
  - Available data assimilation (e.g. EU vs. Africa)
  - Regional high-resolution vs. coarse global scale (again, benefiting NAM and EU)
  - Always improving, however design and computing resource limitations persist
  - Drive poor TAFs production in developing nations - unreliable ceiling & visibility forecasts

## PAG Global Wx Importance Ranking

- Pilot advisory group meeting in May 2015
- 8 corporate aviation pilots, covering various topics including weather solutions
- Rank “Most Important Global Weather Information”
  - Categorized including both observational and forecast products:
    1. Convective Weather
      - Pilots desire “XM-WX-like” convective weather assessment to supplement onboard radar capabilities and range overseas
    2. Ceiling & Visibility
    3. Turbulence
    4. Winds
    5. Icing
    6. Wake Vortex
    7. Volcanic Ash

## Access/Availability Issues

- Connectivity constraints
  - Improving vastly in BA with lower SATCOM costs and standard equipment
  - CAT: separation of the cockpit from the cabin
- Integration and application of new products
  - Mobile Applications
  - Integration within avionics platforms (huge investment in system updates and recertification)
  - Flight planning systems and flight tracking