New Data Link Wx Concepts and Capabilities

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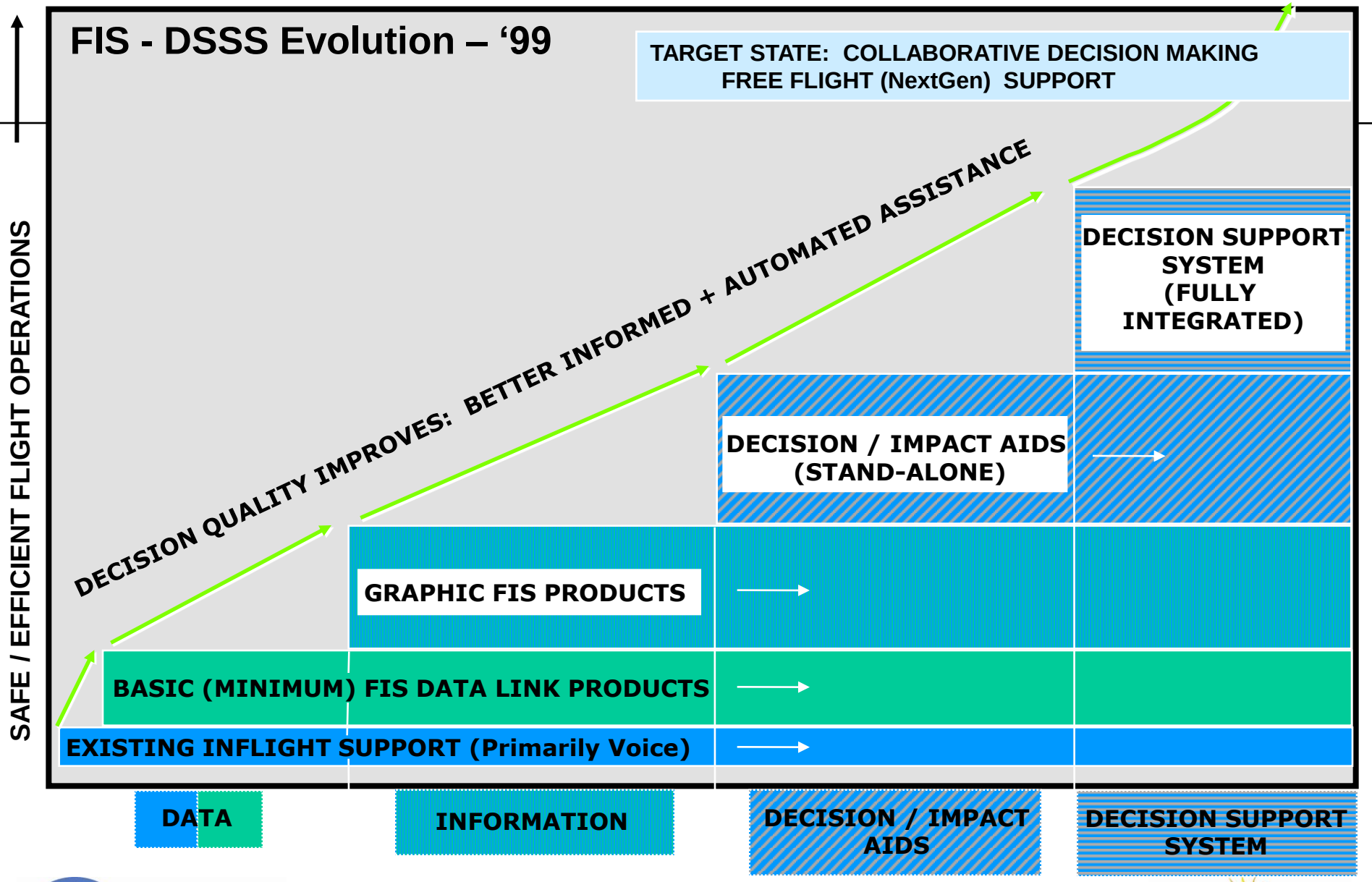
FIS - DSSS Evolution – ‘99

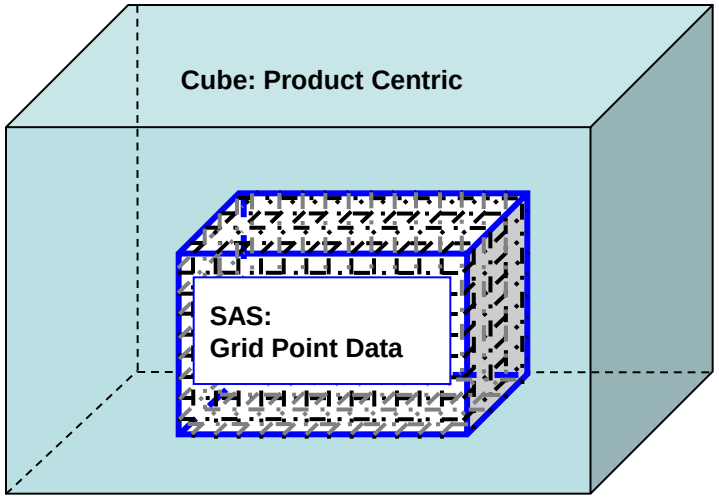


New Concepts & Capabilities

- Data Sources
- Data Link Standards
- Cockpit Display Standards
- Summary

Data Source: 4-D Wx Cube/SAS

- Dynamic updates, SAS gridded database of probabilistic wx info
- Current concept of issuing routine wx products is outdated



4-D Wx Cube/SAS - Issues

- How to insure "common wx picture" between aircraft and ground users - ??
- What's the guidance and operational approval process for pilot use for Cube/SAS [or commercial service] cockpit products –??

Data Link Standards

- Joint US/European development – partial list
  - Ground Uplink
    - AIS and MET data base updates
      - NextGen/SESAR concepts – gridded data and graphics
      - RTCA SC-206/EUROCAE WG-76
    - ATS Data Comm – NOTAM and MET reports
      - Primarily text via VDL Mode 2 comm link
      - RTCA SC-214/EUROCAE WG-78
    - Inmarsat AMS (R) S – Swift Broadband Service
      - Voice and data in remote oceanic regions
      - RTCA SC-222
    - Airport Surface Wireless Comm (IEEE 802.16e)
      - Broadband transmissions of MET data (Airport area)
      - RTCA SC-223/EUROCAE WG-82

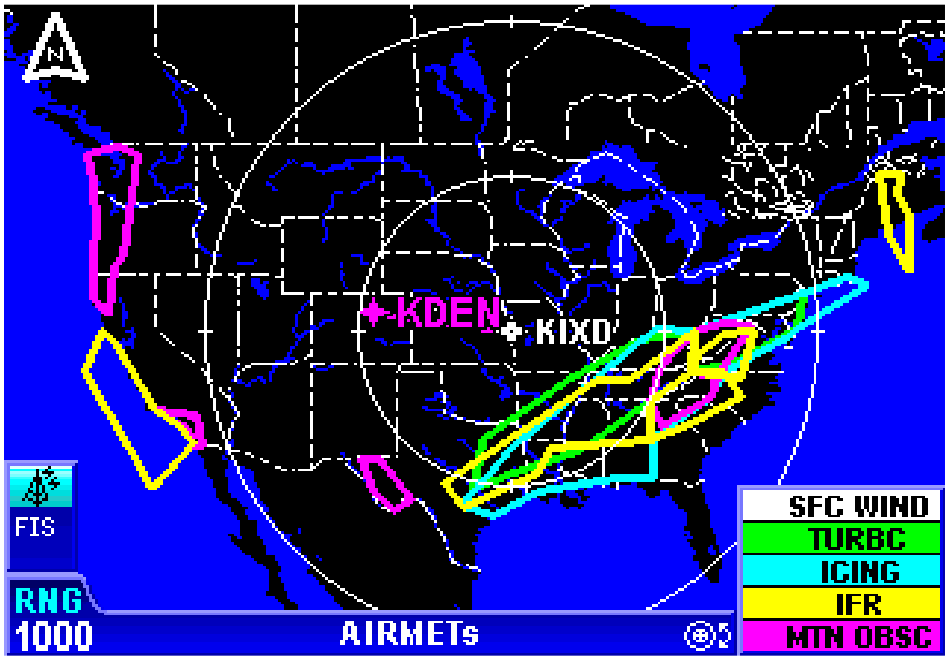
Data Link Standards (con't)

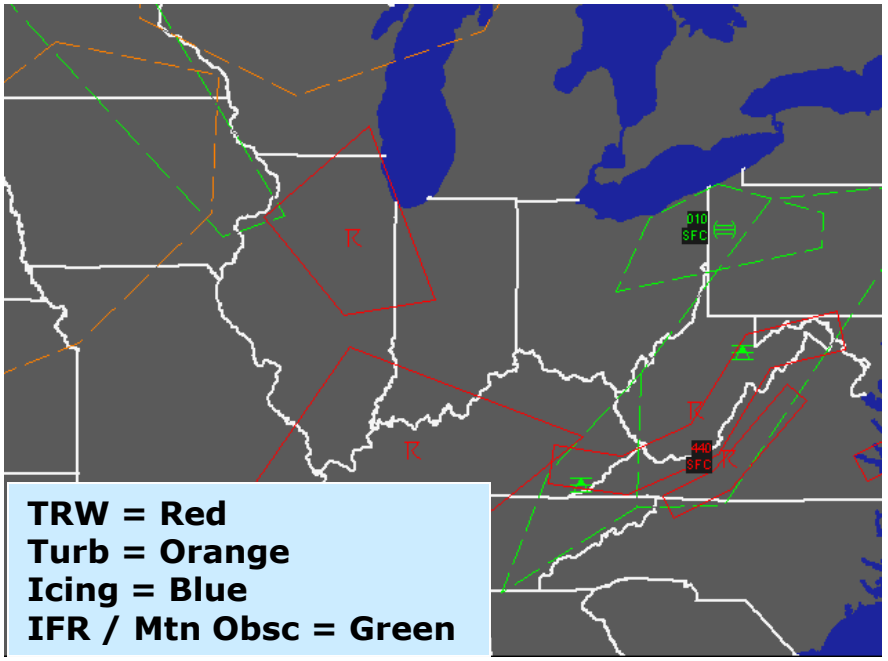
- Joint US/European development – partial list
  - Aircraft Downlink / Crosslink
    - ADS-B "Out" – Aircraft parameters & MET Data
      - Support for wake turbulence avoidance
      - RTCA SC-186/EUROCAE WG-51 [RFG]
- Challenges
  - What are the concepts for cockpit-ground collaboration [aircraft or ground centric or shared] - ??
    - Defining specific ground MET info required to perform cockpit functions
    - Defining required timelines for data link communication and cockpit receipt

Cockpit Display Standards

- Near term applications are focused on human centered "processing" through visual displays
- Future applications will involve automated processing, and potentially interactive data processing and sharing between ground and aircraft systems
- Need standards to
  - Maximize consistency between (and among) ground and aircraft systems
  - Avoid misleading (or mis-understood) information
  - Address issues of workload, situation awareness, training and information management

Graphical AIRMET / SIGMET Examples





- Little consistency today
- SAE G10-W developing ARP 5740
  - Not an easy task – but have good cross-section of industry represented

Summary

- Much to learn and resolve as 4-D Wx Cube/SAS capabilities evolve
- Important that policy and regulatory issues are identified and worked early
  - Need to work issues concurrently – not sequentially
- Encourage participation in the standards development work