ICAO Meteorological Exchange Model (IWXXM)

- Extensible* Markup Language (XML)
  - XML emphasize simplicity, generality and usability across the internet and applications
  - Is a markup language which defines a set of rules for encoding documents
- Defined by free open standards
  - International Organization for Standardization (ISO)
  - Open Geospatial Consortium (OGC)

IWXXM Status

- IWXXM version 3.0 to be implemented March 2019
- ICAO Annex 3
  - November 2016, Amendment 77
    - Allows the exchange of IWXXM products as ***'recommended'*** practice
  - November 2020 Amendment 79
    - Will make the [International] exchange of IWXXM products a ***'mandatory'*** practice

IWXXM Status

- Products include:
  - TAF
  - METAR & SPECI
  - SIGMET
  - AIRMET
  - Volcanic Ash Advisory
  - Tropical Cyclone Advisory
  - *Space Wx
    - Effective November 2018
  - SIGWX
    - “Test” status by 2021, Operational 2022
  - Future – Data centric rather than Product Centric

Why IWXXM?

- Why would we move from a 1-2 line TAC METAR to a 5-page IWXXM METAR?
  - Enables a commonality across the aviation system domains (e.g., weather, flight, and aeronautical information)
  - Allows the geographic position and time of information to be easily integrated with multiple systems
  - Supports ‘modernization’ of MET information
    - Higher resolution met information
    - User-definable visualization and integration
    - Modern/future communications infrastructure
  - *Separates the ***exchange*** of the information from the ***use*** of the information

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Why IWXXM

- Essentially makes information “digital”
  - Supports multiple uses, applications, and integration
    - Unlike BUFR or GRIB; follows International Standards
- TAC supports human reading only
- IWXXM supports multiple formats & uses
  - Digital (machine to machine)
    - Flight planning systems
    - Integration with AWIPS, NWP, NDFD, etc.
    - Graphical output
    - SIGWX, CCFP
  - Mapping integration
    - Google maps, GPS
  - Text output/Human consumption

IWXXM Is a Key Enabler of SWIM Concepts

- SWIM core services will enable systems
  - Request and receive information when needed
  - Subscriptions for automatic receipt
  - Publishing information & services as appropriate

- One of three information sets used by aviation
  - Aeronautical Information (AIXM)
    - Routes, Aerodromes, FIRs
    - Traffic, Traffic Management
    - NOTAM
    - Airspace Restrictions
  - Flight Information (FIXM)
    - Flight Plan
    - Aircraft type/performance
    - Route preferences
  - Weather Information (IWXXM)

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SWIM

- SWIM
  - One standard “connection” that uses universal programming language across all data
  - In the past, a new connection was created every time someone wanted to access a set of data
- SWIM allows more efficient data sharing among aviation stakeholders
  - Streamlines connections among different systems; can access multiple systems through one connection
  - SWIM utilizes standard data formats nationally and globally

System Wide Information Management

Definition