IWXXM Status

Aaron Braeckel

FPAW – October 22, 2014

National Center for Atmospheric Research

ICAO and WMO

International Civil Aviation Organization (ICAO)
Sets requirements for international aviation weather

World Meteorological Organization (WMO)
Implements requirements, manages technical infrastructure, and other duties

ICAO Annex 3 / WMO No. 49

NCAR

18

APPENDIX 3. TECHNICAL SPECIFICATIONS RELATED TO METEOROLOGICAL OBSERVATIONS AND REPORTS
(See Chapter 4 of this Annex.)

. . .

2. GENERAL CRITERIA RELATED TO METEOROLOGICAL REPORTS

2.1 Format of meteorological reports

. . .

2.1.3 **Recommendation.**— *METAR and SPECI should be disseminated, under bilateral agreements between States in a position to do so, in the WMO BUFR code digital form, in addition to the dissemination of the METAR and SPECI in accordance with 2.1.2.*

Note. — *The BUFR code form is contained in WMO Publication No. 306, Manual on Codes, Volume I.2, Part B Binary Codes.*

2.1.4 METAR and SPECI if disseminated in digital form shall be formatted in accordance with a globally interoperable information exchange model and shall use extensible markup language (XML)/geography markup language (GML).

2.1.5 METAR and SPECI if disseminated in digital form shall be accompanied by the appropriate metadata.

Note.— *Guidance on the information exchange model, XML/GML and the metadata profile is provided in the Manual on the Digital Exchange of Aeronautical Meteorological Information (Doc 10003).*

TAC and XML

Traditional Alphanumeric Codes (TAC) – METAR, SPECI, TAF, SIGMET, …

Useful for:
- Human readability (pilots, flight briefers, …)
- Machine readability (visualization, storage, weather model integration, …)

TAC has primarily addressed human-readability

XML aids machine-readability and can readily be transformed to many forms

XML schema can be used to check message structure to ensure correctness – especially useful for data producers

XML is not for direct human consumption!

TAC Challenges

External References

Aerodrome ('KDEN'), waypoints, etc.

Typographic

"AU" instead of "UA", "N23 E1175", Capital "O" instead of 0, etc.

Human languages

SIGMET 1 VALIDO 140019/140600 UTC - FIR SCCI - POR JET STREAM ENTRE LAT 49/54S CON NUCLEO A LOS 35MFT…

"Other" cases
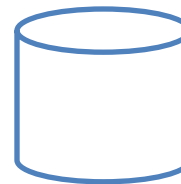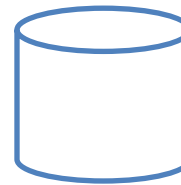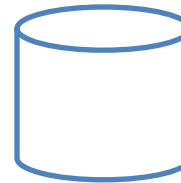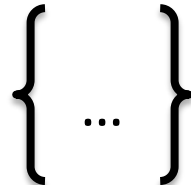
PIREP: /TB MDT WIFE SAYS SVR

XML METAR Example

Weather phenomena observed

XML report created by sensor
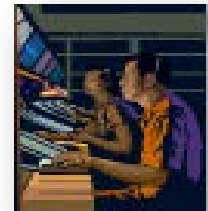
Report issued

Report processed and stored

Report transformed for consumption

Graphics
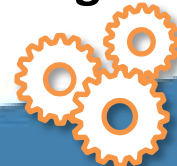
TAC

Forecast Model Integration

Transition Plan

Under discussion and in development within ICAO and WMO
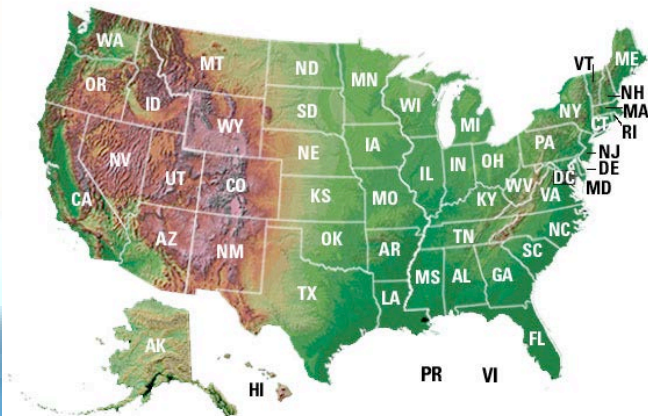
Likely to include simultaneous TAC and XML, via conversion
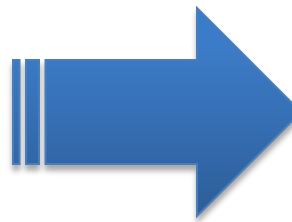
IWXXM-US

The United States files official "differences" with ICAO for METAR, SPECI, TAF, and SIGMET

IWXXM-US represents those differences in XML

IWXXM-US

IWXXM

References

Aaron Braeckel, NCAR
braeckel@ucar.edu

IWXXM:
http://www.wmo.int/pages/prog/www/WIS/wiswiki/tiki-index.php?page=AvXML-1

WMO Codes Registry
http://codes.wmo.int

IWXXM-US
http://nws.weather.gov/schemas/IWXXM-US/Versions/