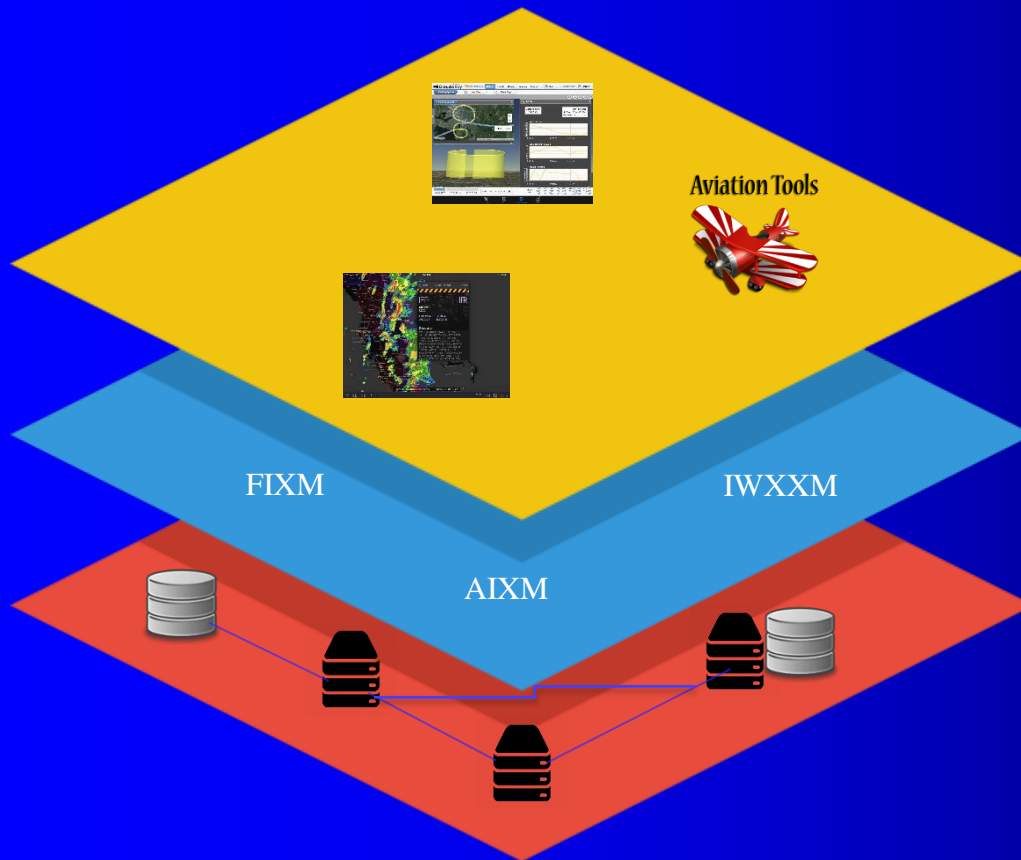# SWIM and IWXXM

Wellington
0830 - 1700
31 August 2017

Hosted by Civil Aviation Authority of New Zealand

SWIM Concept

Applications

Common Data Formats

Data Infrastructure

FIXM

IWXXM

AIXM

Aviation Tools

IWXXM – the data format for meteorology

- ➤ Structured Data Model
- ➤ Aligned with WMO and ICAO Annex 3
- ➤ Available since 2013
  - ➤ Version 2.1 latest
- ➤ OPMET "should" be disseminated in IWXXM format from November 2016 (Amd 77, Annex 3) in addition to TAC
- ➤ OPMET "shall" be disseminated in IWXXM format from November 2020 (Amd 78, Annex 3) in addition to TAC

TAC vs IWXXM (1)

METAR YUDO 221630Z **24004MPS 0600** R12/1000U DZ FG SCT010 OVC020 **17/16 Q1018**

```xml
<iwxxm:MeteorologicalAerodromeObservationRecord gml:id="or1" cloudAndVisibilityOK="false">
    <iwxxm:airTemperature uom="Cel">17.0</iwxxm:airTemperature>
    <iwxxm:dewpointTemperature uom="Cel">16.0</iwxxm:dewpointTemperature>
    <iwxxm:qnh uom="hPa">1018</iwxxm:qnh>
    <iwxxm:surfaceWind>
        <iwxxm:AerodromeSurfaceWind variableDirection="false">
            <iwxxm:meanWindDirection uom="deg">240</iwxxm:meanWindDirection>
            <iwxxm:meanWindSpeed uom="m/s">4.0</iwxxm:meanWindSpeed>
        </iwxxm:AerodromeSurfaceWind>
    </iwxxm:surfaceWind>
    <iwxxm:visibility>
        <iwxxm:AerodromeHorizontalVisibility>
            <iwxxm:prevailingVisibility uom="m">600</iwxxm:prevailingVisibility>
        </iwxxm:AerodromeHorizontalVisibility>
    </iwxxm:visibility>
```

TAC vs IWXXM (2)
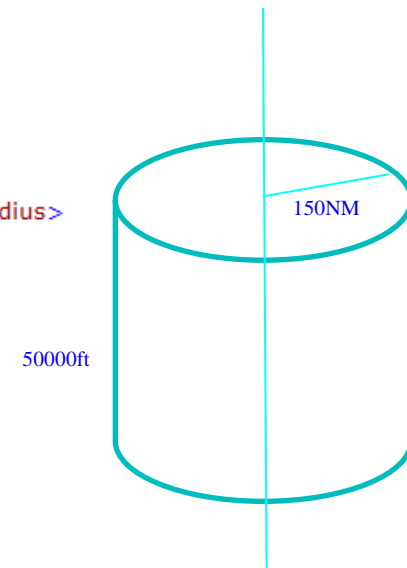
W07305 S2705 WI 150NM OF TC CENTER TOP ABV FL500

```
- <iwxxm:geometry>
  - <saf:AirspaceVolume gml:id="as1">
      <saf:upperLimit uom="ft">50000</saf:upperLimit>
    - <saf:horizontalProjection>
      - <gml:Surface gml:id="tc-obs-N2706-sfc" srsName="http://www.opengis.net/def/crs/EPSG/0/4326">
        - <gml:polygonPatches>
          - <gml:PolygonPatch>
            - <gml:exterior>
              - <gml:Ring>
                - <gml:curveMember>
                  - <gml:Curve gml:id="curve01">
                    - <gml:segments>
                      - <gml:CircleByCenterPoint numArc="1">
                          <gml:pos>27.06 -73.06</gml:pos>
                          <gml:radius uom="n.mi">150</gml:radius>
                        </gml:CircleByCenterPoint>
                      </gml:segments>
                    </gml:Curve>
                  </gml:curveMember>
                </gml:Ring>
              </gml:exterior>
            </gml:PolygonPatch>
          </gml:polygonPatches>
        </gml:Surface>
      </saf:horizontalProjection>
    </saf:AirspaceVolume>
  </iwxxm:geometry>
```

150NM

50000ft

Why IWXXM?

- Aids machine-readability and can readily be transformed to many other forms

- XML schema can be used to check messages for correctness (i.e., 'validation') – especially useful for data producers

- Explicit geo-locations (points, polygons, etc.) for weather phenomena

- Permissible usage: operational, non-operational - test or exercise

- Future changes are likely to be made to add elements to IWXXM that are not possible to carry in TAC

SWIM Workgroup within NSS