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# Completeness of IWXXM 2 for Representing TAC

Ján Kőrösi & Boris Burger  
*IBL Software Engineering*

ROC/IWXXM Implementation  
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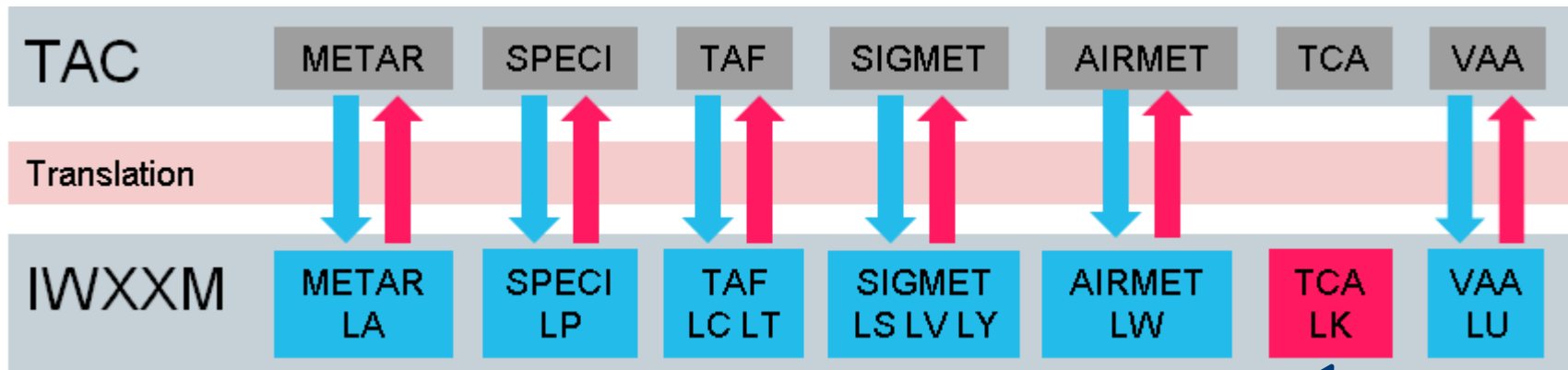
## Outline



- How do we know?
- What is the status of individual report schemas?
  - IWXXM 1.1 vs 2.0 vs 2.1
- What is still open in IWXXM 2.1 (in terms of translation from TAC)
- IWXXM challenges after translation is solved



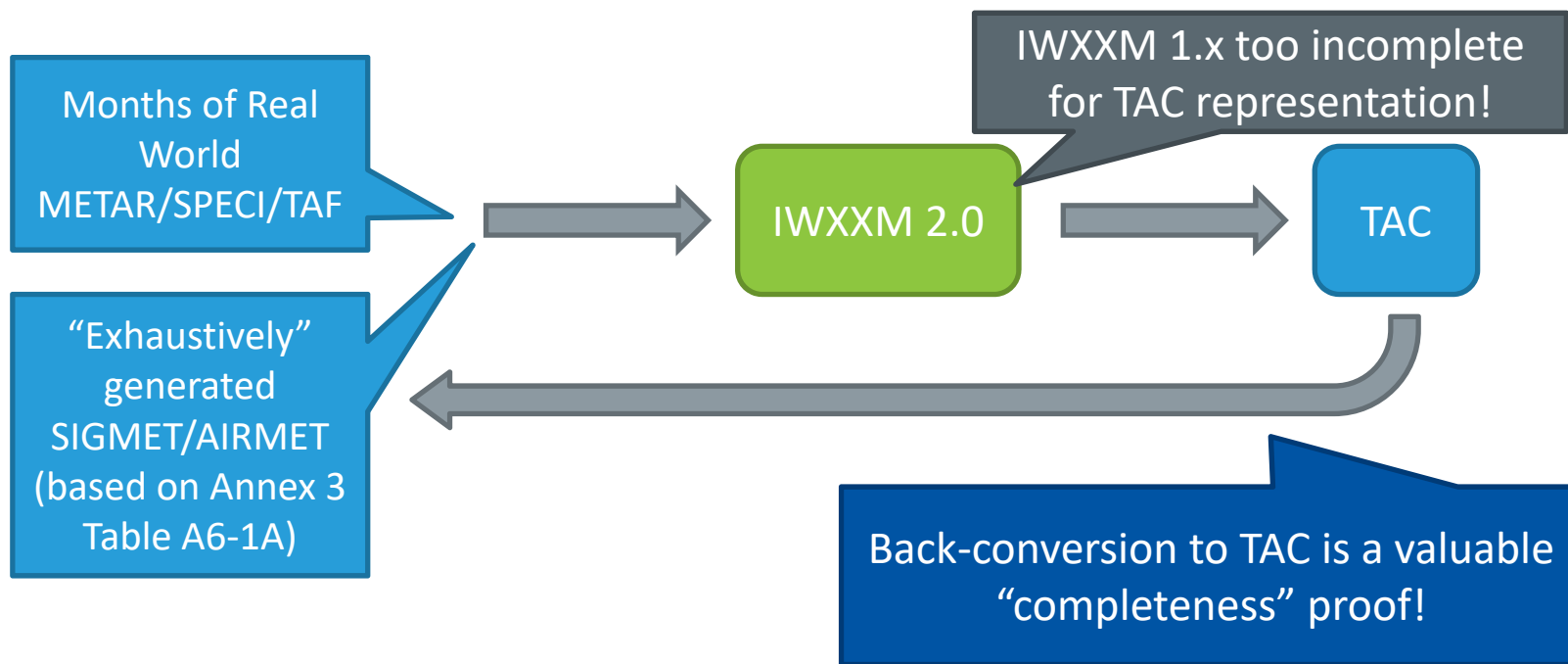
## Gained experience from bi-di translation



Did not attempt to translate TC Advisories



# Testing with a large dataset





## METAR, SPECI, TAF

- IWXXM 2.0 METAR/SPECI/TAF schemas nearly complete in terms of representing TAC
  - NSC in METAR/SPECI not representable in 2.0 (fixed in IWXXM 2.1)
  - VV in METAR TREND schematron rule buggy in 1.1/2.0 (fixed in IWXXM 2.1)
  - NSC/NCD not representable in METAR observation (just in TREND) (fixed in 2.1)
  - TAF NSC (No Significant Change) (fixed in 2.1)

Only Annex 3 Amendment 77 reports are representable in IWXXM 2.x !

= METAR, SPECI & TAF in really good shape after IWXXM 2.1 !



## SIGMET & AIRMET Issues

- Vertical extent (levels) representation issues
  - **SFC/FL550** – VA EGXX example in IWXXM 2.0/2.1 distribution is wrong in our opinion (leaves SFC completely out which causes conflict with TOP FL550)
  - Not documented how to represent **single-level** (e.g. “FL250” based on Special AIREP for turbulence)
- Single latitude/longitude (pilot report) representation unclear
  - Triangle (gml:LinearRing) with zero area?
  - Circle with zero radius?



## SIGMET & AIRMET Issues

- Relative hazard position indicators (NW OF ...)
  - Conversion to polygons produces 300 point polygons (breaking the max. 7 point in polygon rule in Annex 3)
  - E OF E018 – Requires knowledge of FIR, UIR, CTA boundaries and coding them into IWXXM
  - NW OF LINE A – B – Is the line a straight line in Mercator projection (rhumb line), or a straight line in simple latitude/longitude “projection” (like ICAO FIR polygons) ?
  - APRX nnKM WID LINE BTN A - B - C : How to convert to GML?
  - How to convert polygons back to TAC?
- Eyjafjallajökull 😊 with 3 VA cloud layers?

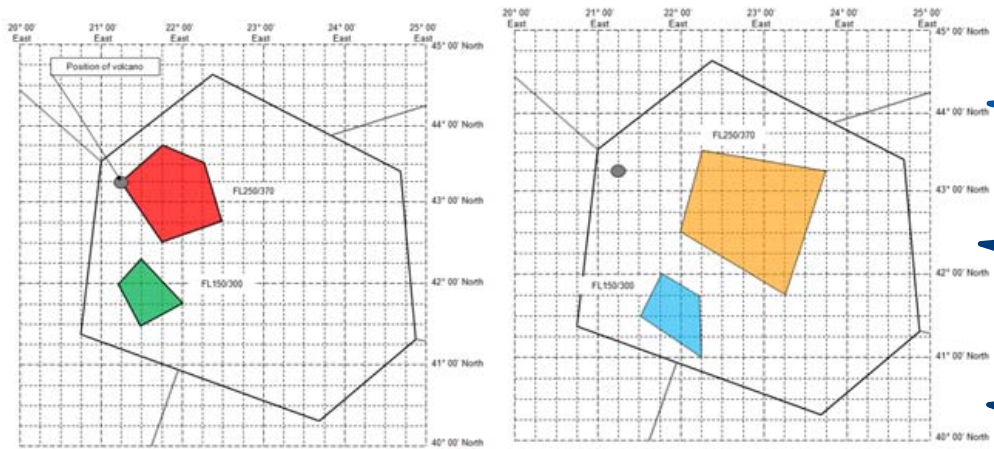
Many questions still open!



# VA SIGMET with multiple ash cloud layers

Source: ICAO EUR Doc 014 SIGMET and AIRMET Guide (the same in ASIA/PAC)

YUDD SIGMET 2 VALID 101200/101800YUSO-  
 YUDD SHANLON FIR/UIR VA ERUPTION MT ASHVAL PSN N4315 E02115 VA CLD OBS AT 1200Z  
 WI P1 - P2 - P3 - P4 - P5 - P6 FL250/370 MOVE SE 20KT NC FCST 1800Z VA CLD APRX Q1 - Q2 - Q3 - Q4 - Q5 AND  
 WIR1 - R2 - R3 - R4 - R5 FL150/300 MOVE SE 20KT NC FCST 1800Z VA CLD APRX S1 - S2 - S3 - S4 - S5=



Impossible in IWXXM 2.0!

IWXXM 2.1 fixed by introducing support for up to 2 layers!

Are 2 layers sufficient? Iceland & Eyjafjallajökull ?





## IWXXM Challenges after Translation

- Decoding and visualisation
  - Efficiency challenge for software (XML parsers tend to eat computer time & memory)
- Encoding IWXXM as primary format at the source
  - Instead of translation (especially for station observations)
- If IWXXM takes over TAC one day:
  - How to display it to users in a standardised manner?
  - How to broadcast on radio/VOLMET?



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THANK YOU