



ICAO BANGKOK

UNITING AVIATION

Preparation of IWXXM - from source; and via translation

Marco Kok

Hong Kong Observatory, Hong Kong, China

Webinar on the implementation of the IWXXM

27 to 29 October 2020





Outline

1. Preparation of IWXXM
2. Generating IWXXM from source
3. Translation
4. Aggregation



ICAO BANGKOK | UNITING AVIATION

Preparation of IWXXM reports





Report envelope

This XML file does not appear to have any style information associated with it. The document tree is shown below.

```
--<!--  
  An example of a METAR.  Original METAR from ICAO Annex 3 Example A3-1:  
  
  METAR YUDO 221630Z 24004MPS 0600 R12/1000U DZ FG SCT010 OVC020 17/16 Q1018  
  BECMG TL1700 0800 FG BECMG AT1800 9999 NSW  
  
  <iwxxm:METAR xsi:schemaLocation="http://icao.int/iwxxm/3.0 http://schemas.wmo.int/iwxxm/3.0/iwxxm.xsd" gml:id="uuid.510df5de-feb-4406-bafd-faab35333ec0" reportStatus="NORMAL" permissibleUsage="OPERATIONAL" automatedStation="false">  
    +<iwxxm:issueTime></iwxxm:issueTime>  
    +<!--<!-->  
    +<iwxxm:aerodrome></iwxxm:aerodrome>  
    <!-- time at which the METAR phenomena were observed -->  
    +<iwxxm:observationTime></iwxxm:observationTime>  
    +<iwxxm:observation></iwxxm:observation>  
    +<iwxxm:trendForecast></iwxxm:trendForecast>  
    +<iwxxm:trendForecast></iwxxm:trendForecast>  
  </iwxxm:METAR>
```



Report status indicator

- This indicates the issuance status of the report, including:
 - NORMAL: The report is issued for the first time
 - AMENDMENT: The report is an amendment to a previously issued report
 - CORRECTION: The report is a correction to a previously issued report
- Individual report, however, may have restrictions on the status it can mention.
 - For example, a SIGMET report cannot have AMENDMENT or CORRECTION status.

```
<iwxxm:METAR xsi:schemaLocation="http://icao.int/iwxxm/3.0 http://schemas.wmo.int/iwxxm/3.0/iwxxm.xsd" gml:id="uuid.510df5de-feb-4406-bafd-faab35333ec0" reportStatus="NORMAL" permissibleUsage="OPERATIONAL" automatedStation="false">
```



Operational status indicator

- `<iwxxm:CLASSNAME ... permissibleUsage="OPERATIONAL">...</iwxxm:CLASSNAME>`
- An operational message is intended as the basis for operational decision-making.
- Recipients of such messages (either automatic or human) would therefore expect that
 - the information is sourced from a competent entity
 - the originating equipment (sensors, etc.) is serviceable
 - any human involvement is carried out by qualified, competent personnel

```
<iwxxm:METAR xsi:schemaLocation="http://icao.int/iwxxm/3.0 http://schemas.wmo.int/iwxxm/3.0/iwxxm.xsd" gml:id="uuid.510df5de-feb-4406-bafd-faab3533ec0" reportStatus="NORMAL" permissibleUsage="OPERATIONAL" automatedStation="false">
```



Operational status indicator

- A non-operational message is not intended to be used for operational decision-making, even though it may contain realistic data (particularly during an exercise).
- Recipients of such messages shall ignore the content of the message with regard to operational decision-making.
- Non-operational messages may be further classified as either being related to tests or exercises

```
<iwxxm:CLASSNAME ... permissibleUsage = "NON-OPERATIONAL" permissibleUsageReason = "TEST"  
permissibleUsageSupplementary = "EUR SIGMET TEST 17/09/2018">...</iwxxm:CLASSNAME>
```

```
<iwxxm:CLASSNAME ... permissibleUsage = "NON-OPERATIONAL" permissibleUsageReason = "EXERCISE"  
permissibleUsageSupplementary = "EUR VOLCEX 12/03/2018">...</iwxxm:CLASSNAME>
```



Use of UUID4 in gml:id

- IWXXM requires the gml:id elements within a document to be distinct.
- IWXXM 3.0 further requires gml:Id to be in the form of a Universally Unique Identifier (uuid).
- Recommended practice is to use a UUIDv4 identifier based on a random number with prefix “uuid.”

```
<iwxxm:SIGMETEvolvingConditionCollection gml:id="uuid.06446fea-1935-4101-b3e8-74f286a9b74d" timeIndicator="FORECAST">
```



Nilable elements and use of nilReason

- For XML, while it is possible to allow an element having no content to be completely absent in a report (c.f. TAC where solidi are needed as placeholders to maintain the structure of the report), it would be more informative to present it as a null element with an attribute nilReason to indicate why it is not available

===== METAR/SPECI =====

NSC - No clouds of operational significance

When no cloud of operational significance is observed/forecast, and no restriction on vertical visibility and 'CAVOK' is not appropriate, "cloud" shall be reported with a nilReason of "http://codes.wmo.int/common/nil/nothingOfOperationalSignificance"

```
<iwxxm:cloud nilReason="http://codes.wmo.int/common/nil/nothingOfOperationalSignificance" xsi:nil="true"/>
```



Code lists

- Supplemental resources required to publish IWXXM are made in the form of Universal Resource Indicator (URI)
- Additional information can be obtained from the WMO Codes Registry (codes.wmo.int)

The screenshot shows the WMO Codes Registry interface. At the top, there are navigation links for 'Browse', 'About', and 'Advanced'. A search bar with a 'Submit' button is present. The URL bar shows 'http://codes.wmo.int / _306'. A green 'stable' badge is visible. The main heading is 'Register: 306: Significant Weather', followed by the URI 'http://codes.wmo.int/306' and the title 'WMO No. 306 Manual on Codes: Significant Weather.' Below this are links for 'Core metadata', 'All properties', and 'Download'. The 'Contents' section features a table with columns for Name, Notation, Description, Types, and Status. A single entry is shown with the notation '4678' and a 'stable' status. Navigation controls for the table are at the bottom, showing 'Showing 1 to 1 of 1 entries' and 'Previous 1 Next'. Footer text includes 'Content negotiation is supported.' and 'Design and development by Epimorphics.'

Name ▲	Notation ♯	Description ♯	Types ♯	Status ♯
w/w	4678	This register provides terms that may be used to describe sig...	Container, Register, Collection	stable

This XML file does not appear to have any style information associated with it. The document tree is shown below.

```
-<!--  
  An example of a METAR. Original METAR from ICAO Annex 3 Example A3-1:  
  
  METAR YUDO 221630Z 24004MPS 0600 R12/1000U DE FG SCT010 OVC020 17/16 Q1018  
  BECMG TL1700 0800 FG BECMG AT1800 9999 NSW  
-->  
-<iwxxm:METAR xsi:schemaLocation="http://icao.int/iwxxm/3.0 http://schemas.wmo.int/iwxxm/3.0/iwxxm.xsd" gml:id="uuid.510df5de-feb-4406-bafd-faab35333ec0" reportStatus="NORMAL"  
  permissibleUsage="OPERATIONAL" automatedStation="false">  
  +<!-->  
  +<iwxxm:issueTime></iwxxm:issueTime>  
  +<!-->  
  +<iwxxm:aerodrome></iwxxm:aerodrome>  
  <!-- time at which the METAR phenomena were observed -->  
  +<iwxxm:observationTime></iwxxm:observationTime>  
  -<iwxxm:observation>  
    -<iwxxm:MeteorologicalAerodromeObservation gml:id="uuid.dc262f4d-1dc8-428b-91d8-74e10ed3cf69" 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:surfaceWind>  
      +<iwxxm:visibility></iwxxm:visibility>  
      +<iwxxm:rvt></iwxxm:rvt>  
      <iwxxm:presentWeather xlink:href="http://codes.wmo.int/306/4678/DZ"/>  
      <iwxxm:presentWeather xlink:href="http://codes.wmo.int/306/4678/FG"/>  
      +<iwxxm:cloud></iwxxm:cloud>  
    </iwxxm:MeteorologicalAerodromeObservation>  
  </iwxxm:observation>  
  +<iwxxm:trendForecast></iwxxm:trendForecast>  
  +<iwxxm:trendForecast></iwxxm:trendForecast>  
</iwxxm:METAR>
```

codes.wmo.int/ui/about



Content structure across IWXXM reports

	METAR/SPECI	TAF	AIRMET	SIGMET	VAA	TCA	SWA
Issue time	issueTime	issueTime	issueTime	issueTime	issueTime	issueTime	issueTime
Issuing institution	aerodrome	aerodrome	issuingAirTrafficServiceUnit	issuingAirTrafficServicesUnit	issuingVolcanicAshAdvisoryCentre	issuingTropicalCycloneAdvisoryCentre	issuingSpaceWeatherCentre
			originatingMeteorologicalWatchOffice	originatingMeteorologicalWatchOffice			
			issuingAirTrafficServiceRegion	issuingAirTrafficServicesRegion			
VA/TC name					volcano	tropicalCycloneName	
Report num			sequenceNumber	sequenceNumber	advisoryNumber	advisoryNumber	advisoryNumber
Event time	observationTime	validTime	validPeriod	validPeriod			
Previous Report		previousReportValidPeriod	cancelledSequenceNumber cancelledValidPeriod	cancelledSequenceNumber cancelledValidPeriod			replacedAdvisoryNumber



Content structure across IWXXM reports

	METAR/SPECI	TAF	AIRMET	SIGMET	VAA	TCA	SWA
Phenomenon			phenomenon	phenomenon			phenomenon
Analysis	observation		analysis	analysis	analysis	observation	analysis
Forecast	trendForecast	baseForecast changeForecast		forecastPositionAnalysis	(analysis also covers forecast)	forecast	(analysis also covers forecast)
Remark					remarks	remarks	remarks
Next report					nextAdvisoryTime	expectedNextAdvisoryTime	nextAdvisoryTime
Extension	extension	extension	extension	extension	extension	extension	extension
VA/TC name and information				tropicalCyclone (TC SIGMET only) eruptingVolcano (VA SIGMET only) volcanicAshMovedToFIR (VA SIGMET only)			
VA information					informationSource colourCode		



ICAO BANGKOK | UNITING AVIATION

Generating IWXXM from source





IWXXM generated from source

- METAR: using source data provided by weather observers via a Web Input Form
 - E.g. 'Present Wx', 'Cloud (SYNOP code)', 'Recent Wx' and 'TREND'.

METAR / SPECI		Local Routine Report (LRR)		LRR - Supp. Info.					
Heading	AMD	Station	Date/Time	Wind Dir	Speed(m/s)	Gust(m/s)	Mnm(m/s)	Var(dddVddd)	Cross wind(kt)
METAR		VHHH	300500Z	240	3.1			180V280	1KT
Visibility	Vis (Dir Var)	R07R	R25L	R07L	R25R	Present Wx 1	Wx 1	Present Wx 2	Wx 2
9999	1400E	P2000N	1600D	P2000N	1900D	SHRA	81		
Cloud(N)	Cloud 1	Cloud 2	Cloud 3	Cloud 4	TT	DP	QNH	Recent Wx 1	Recent Wx 2
	FEW010CB 81910	SCT025 83825			29	26	1007		
Wind Shear (code)	Local METAR	QFF	MW(m/s)	Gust(m/s)					
		1007.1	3.1	6.4					
TREND	Wind Dir	Speed(kt)	Gust(kt)	Visibility	Weather 1	Weather 1 (plain)	Weather 2	Weather 2 (plain)	
TEMPO				4000	SHRA	MOD SHOWER			
	Cloud 1 (code)	Cloud 2 (code)	Cloud 3 (code)	Cloud 4 (code)	Cross wind(kt)				
	FEW010CB	SCT025			-				
TREND 2									
		Get TREND	Save TREND						





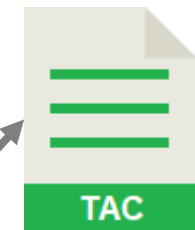
IWXXM generated from source

- TAF: using source data provided by forecasters via a Web Input Form

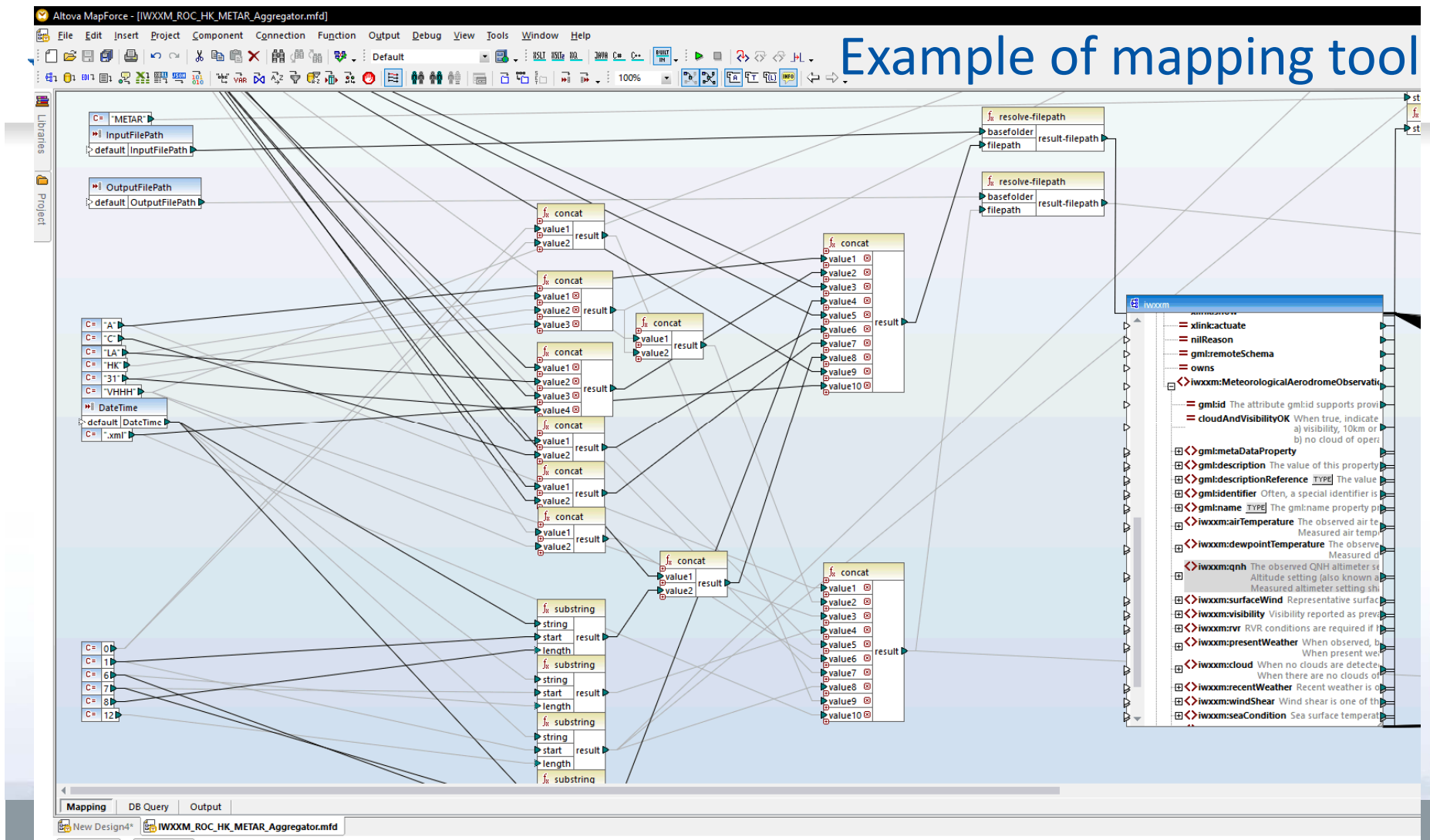
Schedule Send Time (DDHHMM) Z

TAF (issue time) 270934Z

TEMPO/BECMG	START	END	WIND	XW	VISIBILITY	WEATHER	CLOUD	REMARKS
MAIN	0906	1012	11010KT	6	7000		FEW010 SCT020 BKN040	TAF TAF
TX 24 / 0907 Z TN 11 / 1012 Z ddhh Z								
TEMPO	0906	0912	VRB15G25KT		3000	-TSRA SHRA	FEW008CB SCT018	
TEMPO	0912	0918			4000	RA		
TEMPO	0918	1004	VRB20G30KT		3000	-TSRA SHRA	FEW008CB SCT012	
BECMG	1000	1002	01015KT	-13				
TEMPO	1004	1012			4000	RA		



Example of mapping tool





ICAO BANGKOK | UNITING AVIATION

Translation of TAC to IWXXM



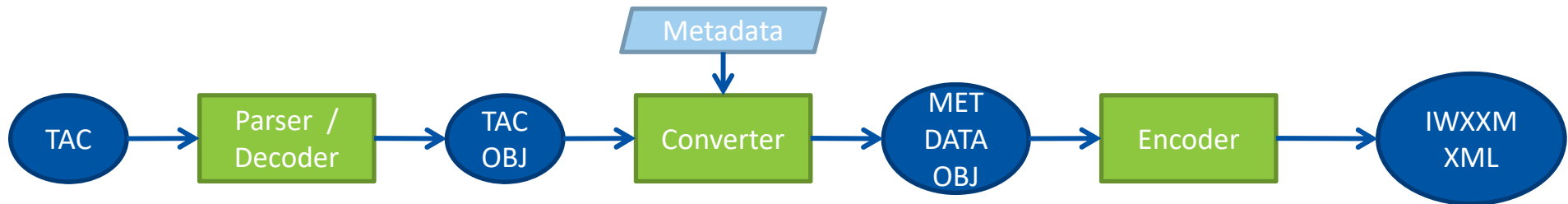


Why we need TAC-IWXXM translation?

- **Within a State**
 - An originator may want to keep the existing TAC only preparation platform unchanged before the one with IWXXM preparation capability is available.
- **Beyond a State**
 - A translation centre may conduct a translation on behalf of another State when the required IWXXM reports are not available



General Data flow of TAC-IWXXM Translation





1. Parse / Decode

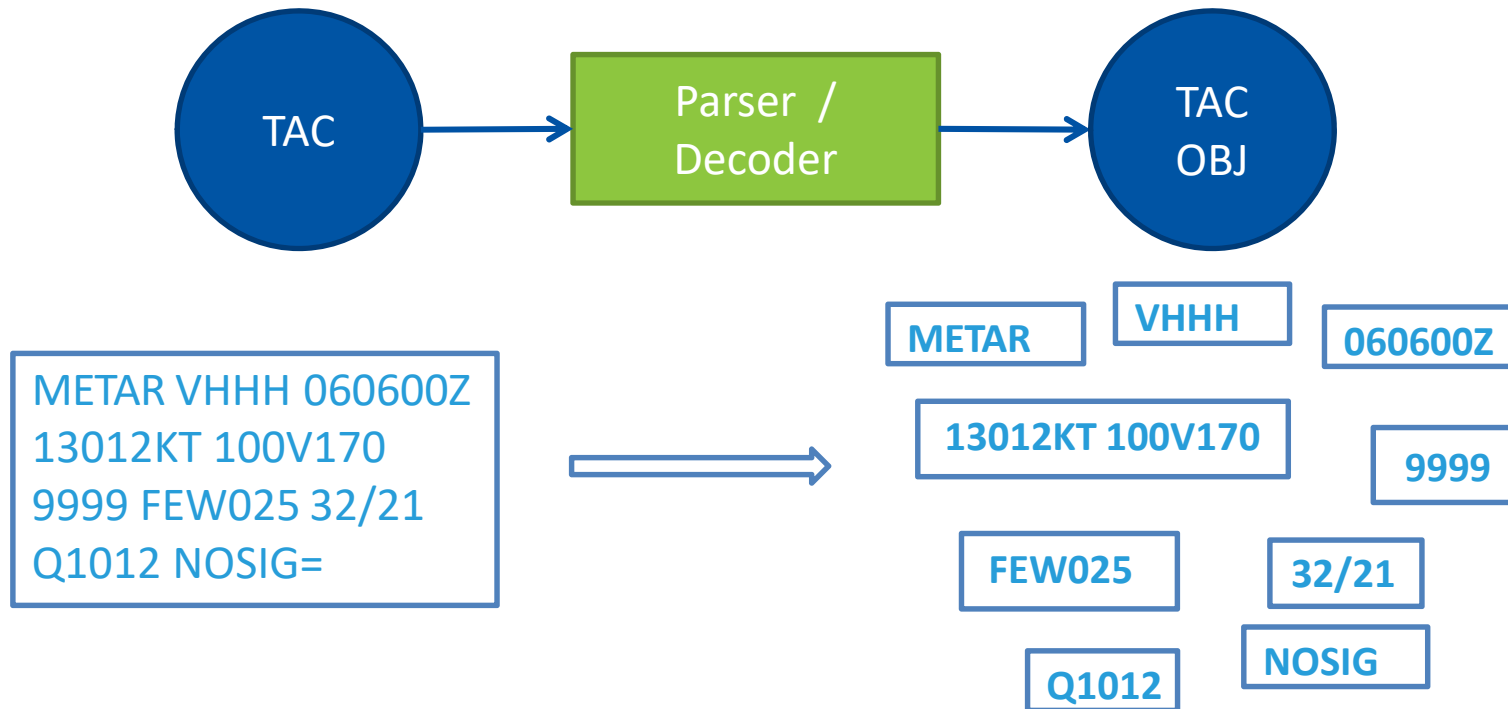


Challenges:

- 1) Sometimes TAC may not be compatible with ANNEX3 latest amendment version
- 2) Extra information is required for guessing the observation time (e.g. receiving time of TAC, as "YEAR" is not available in TAC).

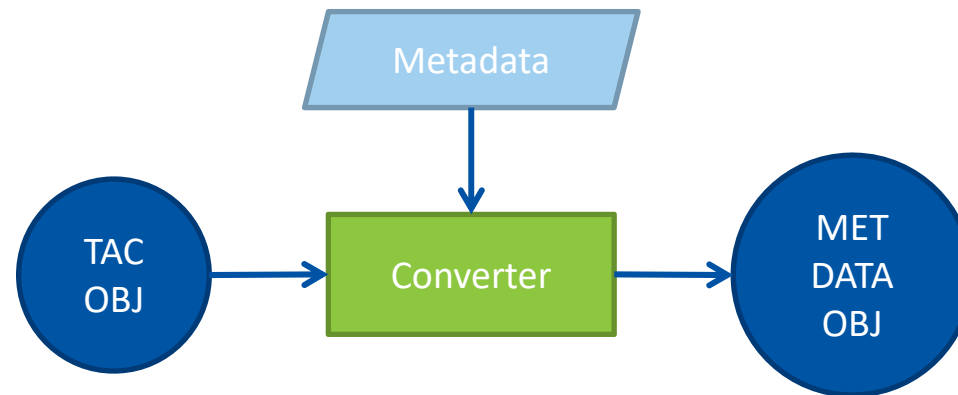


1. Parse / Decode





2. Convert

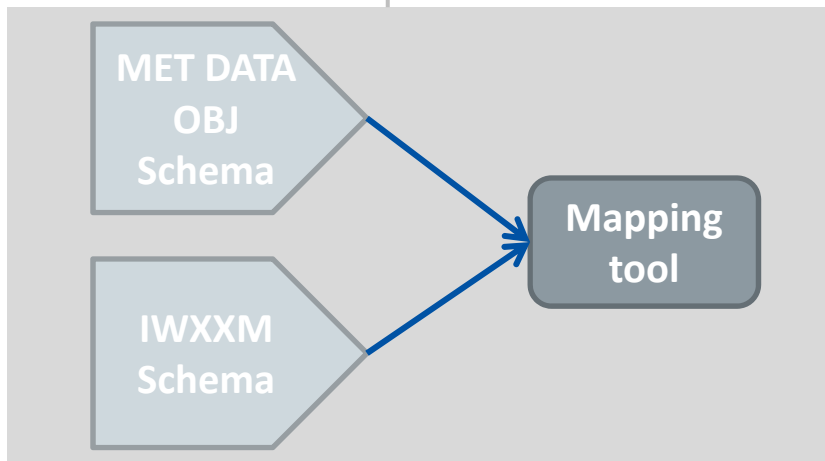
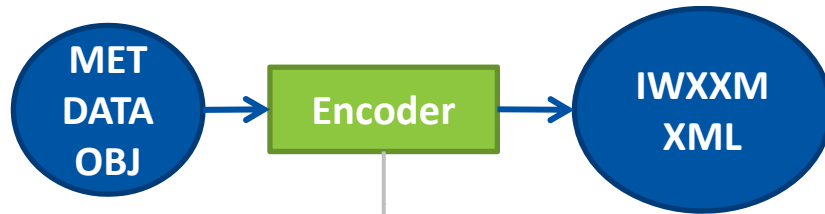


Additional metadata or information required include:

- 1) HREF (ref links to <http://codes.wmo.int/>)
- 2) FIR
- 3) AIRPORT Location
- 4) GML ID
- 5) UNIT (as specified in Annex 3)



3. Encode



The screenshot displays two XML editors side-by-side. The left editor shows the structure of a `metar.xml` file, with a tree view containing elements like `iwxxmMapping`, `reportType`, `featureType`, `gmlId`, `permissibleUsage`, `status`, `automatedStation`, `observation`, `omTypeHref`, `phenomenonTime`, `resultTime`, `procedure`, `description`, `observedPropertyHref`, `spatialSamplingFeature`, `airportHelicopter`, `airportHelicopterTimeSlice`, and `interpretation`. The right editor shows the structure of an `iwxxm.xml` file, with a tree view containing elements like `iwxxm:METAR`, `gml:id`, `permissibleUsage`, `permissibleUsageReason`, `permissibleUsageSupplementary`, `translatedBulletinID`, `translatedBulletinReceptionTime`, `translationCentreDesignator`, `translationCentreName`, `translationTime`, `translationFailedTAC`, `status`, `automatedStation`, `gml:metaDataProperty`, `gml:description`, `gml:descriptionReference`, `gml:identifier`, `gml:name`, `gml:boundedBy`, `gml:location`, `gml:priorityLocation`, `iwxxm:extension`, and `iwxxm:observation`. Arrows indicate the mapping between the two structures.



TAC Parsing Challenges



External References

Aerodrome ('KDEN') locations,
waypoint locations, FIR
boundaries, etc.

Typographic

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

Human language

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
AIRMET phenomena in SIGMET reports



Translation Issues

- The success rate of translation depends very much on the success rate of decoding the TAC message
 - Generally speaking, the success rate of decoding an external SIGMET TAC messages is lower than that for METAR/SPECI and TAF
 - For location information in SIGMET not expressed in the form of a polygon, the translation may not be perfect
- **Best implementation: IWXXM generated from source**
 - Very high success rate



Translation Centre Information

- Translation centre information has been introduced as metadata in IWXXM
 - to identify these messages from those generated at the source
 - to enable translated message traceability

```
<iwxxm:SIGMET ... translatedBulletinID="WSYU31 YUSO 101000"  
translatedBulletinReceptionTime="2012-08-10T10:05:00Z" translationCentreDesignator="YUZZ"  
translationCentreName="Fictional translation centre" translationTime="2012-08-10T10:05:00Z"  
translationFailedTAC="YUDD SIGMET 2 VALID 101200/101600 YUSO-YUDD SHANLON FIR INVALID  
TS">...</iwxxm:SIGMET>
```



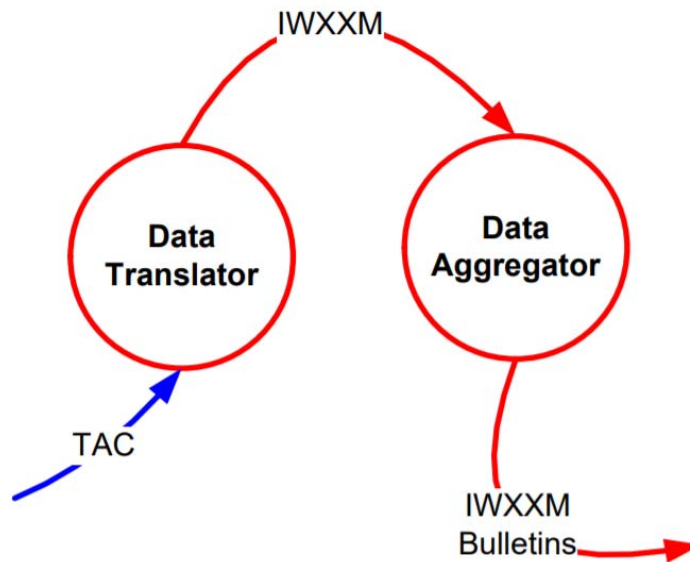
Incomplete (Partial) Translation

When TAC to IWXXM translation fails

- an IWXXM message of the corresponding type (METAR, TAF, ...) without any translated MET parameters but containing the original TAC message should be disseminated to users
 - for their manual interpretation
- an error message be sent to the TAC originator
 - encouraging the TAC originator to re-issue a valid TAC message for subsequent translation and distribution.



Aggregation of IWXXM reports





Aggregation - “Bulletinisation” with the COLLECT construct

- The COLLECT construct is developed to represent a collection of GML feature instances of the same type of meteorological information.
- The intent is to allow XML encoded meteorological information to be aggregated in a way that emulates the existing data distribution practices used within the WMO Information System (WIS) and AFS.
- Only regular reports will be aggregated
 - e.g. METAR and TAF
- Non-regular reports will NOT be aggregated
 - e.g. SPECI, SIGMET, AIRMET, VAA, TCA, TAF AMDs, etc



```

<?xml version="1.0" encoding="UTF-8"?>
- <collect:MetereologicalBulletin xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:collect="http://def.wmo.int/collect/2014" gml:id="LAHK31VHHH-202010260000" xsi:schemaLocation="http://def.wmo.int/collect/2014
http://schemas.wmo.int/iwxxm/3.0/iwxxm.xsd" xmlns:xlink="http://www.w3.org/1999/xlink" xmlns:om="http://www.opengis.net/om/2.0" xmlns:gml="http://www.opengis.net/gml/3.2" xmlns:gts="http://www.isotc211.org/2005/gts"
xmlns:gss="http://www.isotc211.org/2005/gss" xmlns:gsr="http://www.isotc211.org/2005/gsr" xmlns:gmd="http://www.isotc211.org/2005/gmd" xmlns:gco="http://www.isotc211.org/2005/gco"
xmlns:aixm="http://www.aixm.aero/schema/5.1.1" xmlns:iwxxm="http://icao.int/iwxxm/3.0" xmlns:opm="http://def.wmo.int/opm/2013" xmlns:metce="http://def.wmo.int/metce/2013">
- <collect:metereologicalInformation>
+ <iwxxm:METAR gml:id="metar-RCFN-202010260000" automatedStation="false" translationTime="2020-10-26T00:00:00Z" translationCentreName="Taipei Aeronautical Meteorological Center" translationCentreDesignator="RCTP"
translatedBulletinReceptionTime="2020-10-26T00:06:03Z" translatedBulletinID="LACI31RCTP260000" permissibleUsageReason="TEST" permissibleUsage="NON-OPERATIONAL" reportStatus="NORMAL">
+ <iwxxm:METAR gml:id="metar-RCMQ-202010260000" automatedStation="false" translationTime="2020-10-26T00:00:00Z" translationCentreName="Taipei Aeronautical Meteorological Center" translationCentreDesignator="RCTP"
translatedBulletinReceptionTime="2020-10-26T00:06:03Z" translatedBulletinID="LACI31RCTP260000" permissibleUsageReason="TEST" permissibleUsage="NON-OPERATIONAL" reportStatus="NORMAL">
+ <iwxxm:METAR gml:id="metar-RCNN-202010260000" automatedStation="false" translationTime="2020-10-26T00:00:00Z" translationCentreName="Taipei Aeronautical Meteorological Center" translationCentreDesignator="RCTP"
translatedBulletinReceptionTime="2020-10-26T00:06:03Z" translatedBulletinID="LACI31RCTP260000" permissibleUsageReason="TEST" permissibleUsage="NON-OPERATIONAL" reportStatus="NORMAL">
+ <iwxxm:METAR gml:id="metar-RCSS-202010260000" automatedStation="false" translationTime="2020-10-26T00:00:00Z" translationCentreName="Taipei Aeronautical Meteorological Center" translationCentreDesignator="RCTP"
translatedBulletinReceptionTime="2020-10-26T00:06:03Z" translatedBulletinID="LACI31RCTP260000" permissibleUsageReason="TEST" permissibleUsage="NON-OPERATIONAL" reportStatus="NORMAL">
+ <iwxxm:METAR gml:id="metar-RCTP-202010260000" automatedStation="false" translationTime="2020-10-26T00:00:00Z" translationCentreName="Taipei Aeronautical Meteorological Center" translationCentreDesignator="RCTP"
translatedBulletinReceptionTime="2020-10-26T00:06:03Z" translatedBulletinID="LACI31RCTP260000" permissibleUsageReason="TEST" permissibleUsage="NON-OPERATIONAL" reportStatus="NORMAL">
+ <iwxxm:METAR gml:id="metar-RPLB-202010260000" automatedStation="false" translationTime="2020-10-26T12:09:20.693Z" translationCentreName="Hong Kong Regional OPMET Centre" translationCentreDesignator="VHHH"
translatedBulletinReceptionTime="2020-10-26T12:08:06Z" translatedBulletinID="LAHK31VHHH260000" permissibleUsage="OPERATIONAL" reportStatus="NORMAL">
+ <iwxxm:METAR gml:id="metar-RPLI-202010260000" automatedStation="false" translationTime="2020-10-26T12:09:25.469Z" translationCentreName="Hong Kong Regional OPMET Centre" translationCentreDesignator="VHHH"
translatedBulletinReceptionTime="2020-10-26T12:08:06Z" translatedBulletinID="LAHK31VHHH260000" permissibleUsage="OPERATIONAL" reportStatus="NORMAL">
+ <iwxxm:METAR gml:id="metar-RPLL-202010260000" automatedStation="false" translationTime="2020-10-26T12:09:07.459Z" translationCentreName="Hong Kong Regional OPMET Centre" translationCentreDesignator="VHHH"
translatedBulletinReceptionTime="2020-10-26T12:08:06Z" translatedBulletinID="LAHK31VHHH260000" permissibleUsage="OPERATIONAL" reportStatus="NORMAL">
+ <iwxxm:METAR gml:id="metar-RPMD-202010260000" automatedStation="false" translationTime="2020-10-26T12:09:12.074Z" translationCentreName="Hong Kong Regional OPMET Centre" translationCentreDesignator="VHHH"
translatedBulletinReceptionTime="2020-10-26T12:08:06Z" translatedBulletinID="LAHK31VHHH260000" permissibleUsage="OPERATIONAL" reportStatus="NORMAL">
+ <iwxxm:METAR gml:id="metar-RPMZ-202010260000" automatedStation="false" translationTime="2020-10-26T12:09:30.071Z" translationCentreName="Hong Kong Regional OPMET Centre" translationCentreDesignator="VHHH"
translatedBulletinReceptionTime="2020-10-26T12:08:06Z" translatedBulletinID="LAHK31VHHH260000" permissibleUsage="OPERATIONAL" reportStatus="NORMAL">
+ <iwxxm:METAR gml:id="metar-RPVM-202010260000" automatedStation="false" translationTime="2020-10-26T12:09:16.197Z" translationCentreName="Hong Kong Regional OPMET Centre" translationCentreDesignator="VHHH"
translatedBulletinReceptionTime="2020-10-26T12:08:06Z" translatedBulletinID="LAHK31VHHH260000" permissibleUsage="OPERATIONAL" reportStatus="NORMAL">
+ <iwxxm:METAR gml:id="metar-VHHH-202010260000" automatedStation="false" translationTime="2020-10-26T12:15:02.425Z" translationCentreName="Hong Kong Regional OPMET Centre" translationCentreDesignator="VHHH"
translatedBulletinReceptionTime="2020-10-26T12:14:24.166Z" translatedBulletinID="LAHK31VHHH260000" permissibleUsageReason="TEST" permissibleUsage="NON-OPERATIONAL" reportStatus="NORMAL"
permissibleUsageSupplementary="DEVELOPING BY A1">
- <iwxxm:METAR gml:id="metar-VMMC-202010260000" automatedStation="false" translationTime="2020-10-26T12:09:03.642Z" translationCentreName="Hong Kong Regional OPMET Centre" translationCentreDesignator="VHHH"
translatedBulletinReceptionTime="2020-10-26T12:08:06Z" translatedBulletinID="LAHK31VHHH260000" permissibleUsage="OPERATIONAL" reportStatus="NORMAL">
- <iwxxm:issueTime>
- <gml:TimeInstant gml:id="uuid.079982b5-9531-49cd-b782-f73c0ee5391d">
<gml:timePosition>2020-10-26T00:08:06.000Z</gml:timePosition>
</gml:TimeInstant>
</iwxxm:issueTime>
- <iwxxm:aerodrome>
- <aixm:AirportHeliport gml:id="uuid.913b2bc8-5c0d-468a-a1ec-c7cd06c99d59">
- <aixm:timeSlice>
- <aixm:AirportHeliportTimeSlice gml:id="uuid.acd90ecc-b277-46fb-a044-888d63b9c273">
<gml:validTime/>
<aixm:interpretation>BASELINE</aixm:interpretation>
<aixm:name>MACAU/INTERNATIONAL</aixm:name>
<aixm:locationIndicatorICAO>VMMC</aixm:locationIndicatorICAO>
- <aixm:ARP>
- <aixm:ElevatedPoint gml:id="uuid.c30a3dae-e98c-4b46-886e-d41f58e53c45" axisLabels="Lat Lon" srsDimension="2" srsName="http://www.opengis.net/def/crs/EPSSG/0/4326">
<gml:pos>22.149369 113.591411</gml:pos>
</aixm:ElevatedPoint>
</aixm:ARP>
</aixm:TimeSlice>
</aixm:AirportHeliportTimeSlice>

```

Aggregated IWXXM report (fictitious example)



Aggregated IWXXM report (fictitious example)

```
<?xml version="1.0" encoding="UTF-8"?>
- <collect:MeteorologicalBulletin xmlns:xsi="http://www.w3.org/2001/XMLSchema-imp
http://schemas.wmo.int/iwxxm/3.0/iwxxm.xsd" xmlns:xlink="http://www.w3.o
xmlns:gss="http://www.isotc211.org/2005/gss" xmlns:gsr="http://www.isotc21
xmlns:aixm="http://www.aixm.aero/schema/5.1.1" xmlns:iwxxm="http://icao.in
- <collect:meteorologicalInformation>
  + <iwxxm:METAR gml:id="metar-RCFN-202010260000" automatedStation="fal
    translatedBulletinReceptionTime="2020-10-26T00:06:03Z" translatedBulletinID
  + <iwxxm:METAR gml:id="metar-RCMQ-202010260000" automatedStation="fa
    translatedBulletinReceptionTime="2020-10-26T00:06:03Z" translatedBulletinID
  + <iwxxm:METAR gml:id="metar-RCNN-202010260000" automatedStation="fal
    translatedBulletinReceptionTime="2020-10-26T00:06:03Z" translatedBulletinID
  + <iwxxm:METAR gml:id="metar-RCSS-202010260000" automatedStation="fal
    translatedBulletinReceptionTime="2020-10-26T00:06:03Z" translatedBulletinID
  + <iwxxm:METAR gml:id="metar-RCTP-202010260000" automatedStation="fal
    translatedBulletinReceptionTime="2020-10-26T00:06:03Z" translatedBulletinID
```



Example: a NIL TAF packaged into a bulletin

--<!--

An example of a NIL TAF (which can be used independently) packaged into a bulletin:

```
FTYU31 YUDO 160000  
TAF YUDO 160000Z NIL
```

-->

```
-<collect:MeteorologicalBulletin xsi:schemaLocation="http://def.wmo.int/collect/2014 http://schemas.wmo.int/collect/1.2/collect.xsd" gml:id="uuid.507b41d4-2656-4f93-a1d7-2d01bd8e4c50">  
-<collect:meteorologicalInformation>  
-<iwxxm:TAF xsi:schemaLocation="http://icao.int/iwxxm/3.0 http://schemas.wmo.int/iwxxm/3.0/iwxxm.xsd" gml:id="uuid.ae3b123f-4fa1-447e-aa0e-5a950c8abff2" reportStatus="NORMAL"  
permissibleUsage="OPERATIONAL">  
-<iwxxm:issueTime>  
-<gml:TimeInstant gml:id="uuid.b28ba3dd-6544-4d7b-9a1f-342c63b458b5">  
  <gml:timePosition>2012-08-16T00:00:00Z</gml:timePosition>  
  </gml:TimeInstant>  
</iwxxm:issueTime>  
-<iwxxm:aerodrome>  
-<aixm:AirportHeliport gml:id="uuid.b50f56f1-7291-40bb-90c1-5aad1c0ba833">  
-<aixm:timeSlice>  
  -<aixm:AirportHeliportTimeSlice gml:id="uuid.64158cdb-c157-4df0-aba7-f2a385bb5935">  
    <gml:validTime/>  
    <aixm:interpretation>SNAPSHOT</aixm:interpretation>  
    <aixm:designator>YUDO</aixm:designator>  
    <aixm:name>DONLON/INTERNATIONAL</aixm:name>  
    <aixm:locationIndicatorICAO>YUDO</aixm:locationIndicatorICAO>  
    </aixm:AirportHeliportTimeSlice>  
  </aixm:timeSlice>  
</aixm:AirportHeliport>  
</iwxxm:aerodrome>  
<iwxxm:baseForecast nilReason="http://codes.wmo.int/common/nil/missing"/>  
</iwxxm:TAF>  
</collect:meteorologicalInformation>  
<collect:bulletinIdentifier>A_LCYU31YUDO160000_C_YUDO_20120816000000.xml</collect:bulletinIdentifier>  
</collect:MeteorologicalBulletin>
```



From translation to aggregation

- After translation (from TAC to IWXXM), the data can be sent
 - directly to the aggregator; or
 - to the originator who then send it to the aggregator
- Either scenario is acceptable, as long as the translated data can reach the aggregator
 - depending on the arrangement between the originator and the translation centre



ICAO BANGKOK | UNITING AVIATION



ICAO

- North American Central American and Caribbean (NACC) Office
Mexico City
- South American (SAM) Office
Lima
- ICAO Headquarters
Montréal
- Western and Central African (WACAF) Office
Dakar
- European and North Atlantic (EUR/NAT) Office
Paris
- Middle East (MID) Office
Cairo
- Eastern and Southern African (ESAF) Office
Nairobi
- Asia and Pacific (APAC) Sub-office
Beijing
- Asia and Pacific (APAC) Office
Bangkok



THANK YOU