



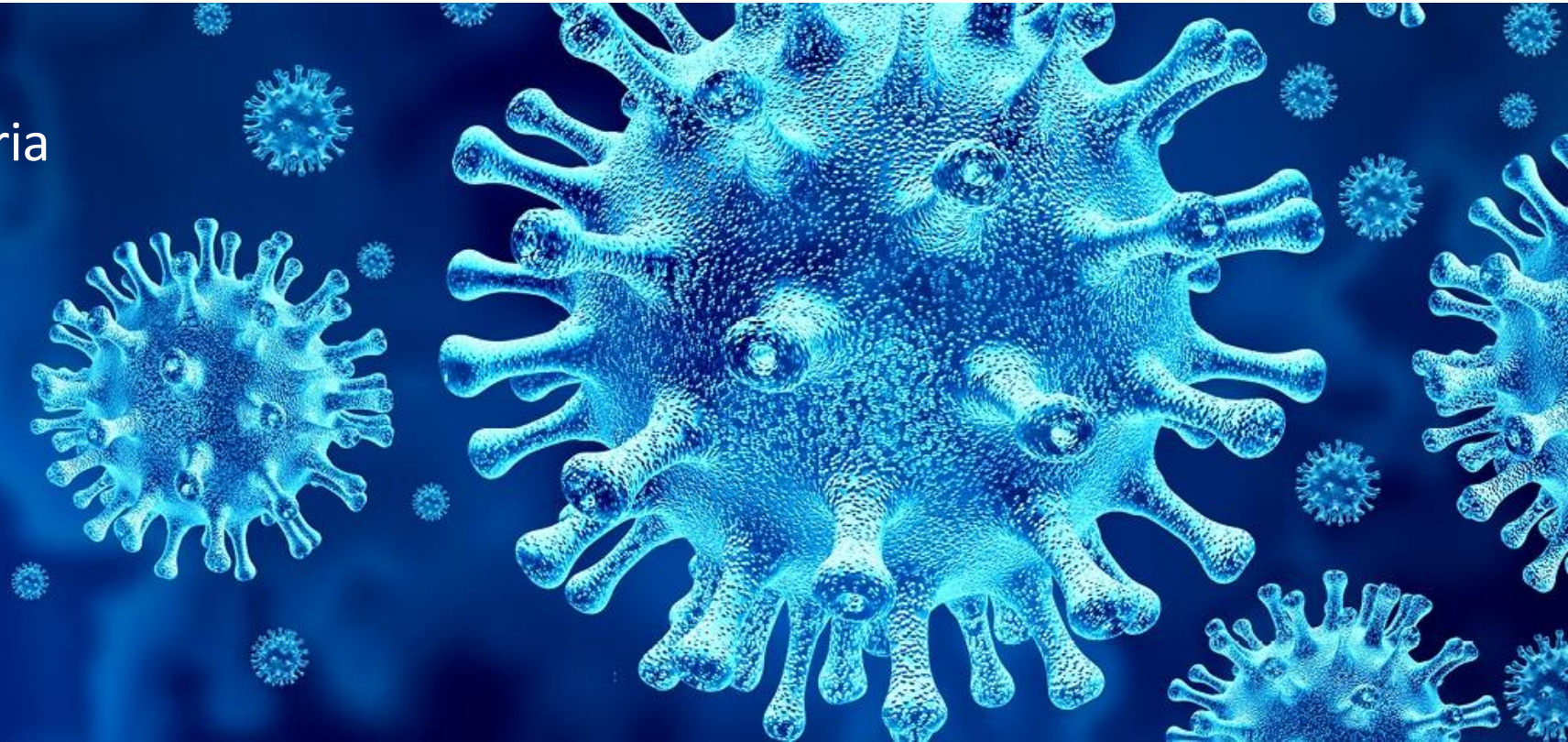
ICAO MID

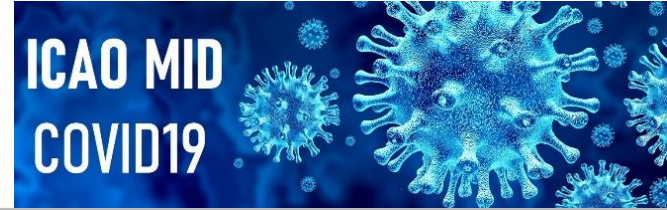
**ICAO MID IWXXM Implementation  
WEBINAR  
26 - 27 May 2021**

IWXXM implementation in Austria

Michael Pichler

Austro Control





## ICAO MID IWXXM Implementation Webinar

### Agenda Item 3: IWXXM Implementation

### IWXXM Implementation in Austria

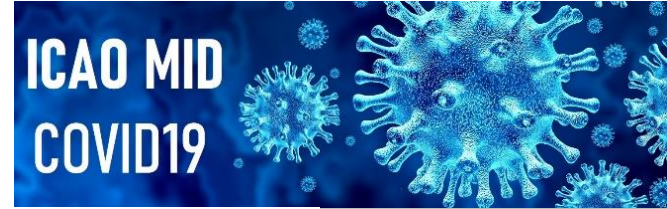
## IWXXM CAPABILITIES IN AUSTRIA (1)



- MET-Switch with IWXXM capabilities since 12/2016
  - Supports ext. AMHS (P3 connection)
  - Capable of TAC ↔ IWXXM V3.0 translation
  - Capable to validate IWXXM-messages
    - Basic (XSD) & Detailed (XSD + Schematron)
  - Capable of Data aggregation (compiling IWXXM-bulletins)
  - Smart View implemented







Content Viewer@ometsw-mw1

Message: LAOS31 LOWM 301150 Size: 33920 Date/time: 30.10.2019, 11:55:00 Channel: MW:10

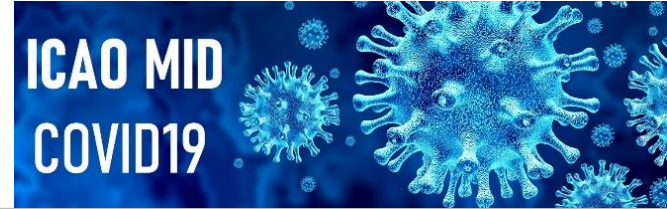
Element	Value	Attributes
Meteorological bulletin	A_LAOS31LOWM301150_C_LOWM	
Report #1: LOWW, iwxxm:METAR 2.1, 30.10.2019, 11:50:00, WIEN/SCHWECHAT-FLUGHAFEN		
Report attributes		
iwxxm:observation		
om:OM_Observation		gml:id="uuid.1ea2b891-6564-4134-b0fd-9b431c822e83" xlink:href="http://codes.wmo.int/49-2/observable-type/IWXXM/1.0/MeteorologicalAerodromeObservation"
om:type		
om:phenomenonTime		
gml:TimeInstant		gml:id="uuid.0666fbd6-ce2a-4cef-8582-19e24efe8e0c"
gml:TimePosition		
om:resultTime	2019-10-30T11:50:00Z	xlink:href="#uuid.0666fbd6-ce2a-4cef-8582-19e24efe8e0c"
om:procedure		
metce:Process		gml:id="uuid.b8979a2e-771a-4940-9d90-38c30559d96a" WMO No. 49 Volume 2 Meteorological Service for International Air Navigation APPENDIX 3 TECHNICAL SPECIFICATIONS RELATED TO METEOROLOGICAL...
gml:description		xlink:href="http://codes.wmo.int/49-2/observable-property/MeteorologicalAerodromeObservation", xlink:title="Observed properties for Meteorolog..."
om:observedProperty		
om:featureOfInterest		
sams:SF_SpatialSamplingFeature		gml:id="uuid.088a2b01-9b90-499c-83cb-c099cd3841c8" xlink:href="http://www.opengis.net/def/samplingFeatureType/OGC-OM/2.0/SF_SamplingPoint"
sf:type		
sf:sampledFeature		
axkm:AirportHeliport		gml:id="uuid.c3803cf9-bbb3-492a-b176-0b945d755d50"
axkm:timeSlice		
axkm:AirportHeliportTimeSlice		gml:id="uuid.6a5578c7-59df-4d99-a4f5-57b27fe4288e"
gml:validTime		
axkm:interpretation	BASELINE	
axkm:designator	LOWW	
axkm:name	WIEN/SCHWECHAT-FLUGHAFEN	
axkm:locationIndicatorICAO	LOWW	
sams:shape		
gml:Point		gml:id="uuid.b108010a-afcd-4863-b7b2-964f0af9f168", uomLabels="deg deg m", axisLabels="Lat Lon Altitude", srsDimension="3", srsName="htt..."
gml:pos	48.12 16.57 183	
om:result		
iwxxm:MeteorologicalAerodromeObservationRecord		gml:id="uuid.5ff56f60-381c-4c23-8a5a-448de692d59f", cloudAndVisibilityOK="false"
iwxxm:airTemperature	7	uom="Cel"
iwxxm:dewpointTemperature	2	uom="Cel"
iwxxm:qnh	1027	uom="hPa"
iwxxm:surfaceWind		
iwxxm:AerodromeSurfaceWind		variableWindDirection="false"
iwxxm:meanWindDirection	360	uom="deg"
iwxxm:meanWindSpeed	6	uom="[kn_i]"
iwxxm:extremeClockwiseWindDirection	320	uom="deg"
iwxxm:extremeCounterClockwiseWindDir...	40	uom="deg"
iwxxm:visibility		
iwxxm:AerodromeHorizontalVisibility		
iwxxm:prevailingVisibility	9999	uom="m"
iwxxm:cloud		
iwxxm:AerodromeObservedClouds		
iwxxm:layer		
iwxxm:CloudLayer		xlink:href="http://codes.wmo.int/bufr4/codeflag/0-20-008/1" uom="[ft_i]"
iwxxm:amount		
iwxxm:base	1700	
iwxxm:layer		
iwxxm:CloudLayer		xlink:href="http://codes.wmo.int/bufr4/codeflag/0-20-008/3" uom="[ft_i]"
iwxxm:amount		
iwxxm:base	2000	
iwxxm:trendForecast		xsi:nil="true", nilReason="http://codes.wmo.int/common/nil/noSignificantChange"
Report #2: LOWL, iwxxm:METAR 2.1, 30.10.2019, 11:50:00, LINZ/HOERSCHING-FLUGHAFEN		
Report #3: LOWS, iwxxm:METAR 2.1, 30.10.2019, 11:50:00, SALZBURG-FLUGHAFEN		
Report #4: LOWI, iwxxm:METAR 2.1, 30.10.2019, 11:50:00, INNSBRUCK-FLUGHAFEN		
Report #5: LOWG, iwxxm:METAR 2.1, 30.10.2019, 11:50:00, GRAZ-THALERHOF-FLUGHAFEN		
Report #6: LOWK, iwxxm:METAR 2.1, 30.10.2019, 11:50:00, KLAGENFURT-FLUGHAFEN		



## IWXXM CAPABILITIES IN AUSTRIA (2)



- RODB with IWXXM capabilities since 12/2016
  - Supports RQM (via AFTN) and RQX (via AMHS)
    - Request/Reply format and possibilities according EUR ICAO Doc 018, App. A
  - Supports SWIM-requests (only internal)
    - Via API conforming to REST-Service (Representational State Transfer)
      - HTTP Basic Authentication (for the time being)
      - HTTP Requests (GET, PUT, POST,...)



## IWXXM CAPABILITIES IN AUSTRIA (3)

```
[py@emetsw-mw2 ~]$ curl --user ██████████ -k 'https://localhost:4443/v1/reports?type=METAR&stations=LOWW&from=2021-05-11+05:00&to=2021-05-11+07:00'  
LOWW 110650Z 13013KT CAVOK 20/11 Q1010 BECMG FM0830 15023KT=  
LOWW 110620Z 13014KT CAVOK 18/10 Q1009 NOSIG=  
LOWW 110550Z 13014KT CAVOK 17/10 Q1009 NOSIG=  
LOWW 110520Z 14013KT CAVOK 17/09 Q1009 NOSIG=  
[py@emetsw-mw2 ~]$ █
```

```
[py@emetsw-mw2 ~]$ curl --user ██████████ -k 'https://localhost:4443/v1/reports.json?type=METAR&iwxxm=true&stations=LOWW&from=2021-05-11+05:00&to=2021-05-11+07:00'  
{  
  {  
    "Name": "LOWW",  
    "Size": 3989,  
    "Received": "2021-05-11 06:50:00",  
    "InstanceId": "report:AgcAAElHASeGkg=="  
  },  
  {  
    "Name": "LOWW",  
    "Size": 3231,  
    "Received": "2021-05-11 06:20:00",  
    "InstanceId": "report:AgcAAElHAoyW5Q=="  
  },  
  {  
    "Name": "LOWW",  
    "Size": 3231,  
    "Received": "2021-05-11 05:50:00",  
    "InstanceId": "report:AgcAAElHALHbHg=="  
  },  
  {  
    "Name": "LOWW",  
    "Size": 3230,  
    "Received": "2021-05-11 05:20:00",  
    "InstanceId": "report:AgcAAElHAh9saQ=="  
  }  
}
```

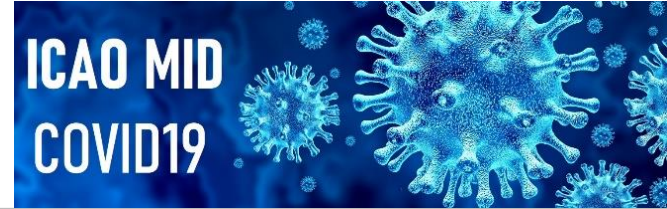




```
[py@emetsw-mw2 ~]$ curl --user [REDACTED] -k 'localhost:4443/v1/reports/instance/report:AgcAAELH9saQ==?dataRepresentation=XML'  
<iwxxm:METAR xmlns:iwxxm="http://icao.int/iwxxm/3.0" xmlns:aixm="http://www.aixm.aero/schema/5.1.1" xmlns:gml="http://www.opengis.net/gml/3.2" xmlns:metce="http://de  
f.wmo.int/metce/2013" xmlns:xlink="http://www.w3.org/1999/xlink" xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" x  
si:schemaLocation="http://icao.int/iwxxm/3.0 http://schemas.wmo.int/iwxxm/3.0/iwxxm.xsd http://www.aixm.aero/schema/5.1.1 http://www.aixm.aero/schema/5.1.1_profiles/  
AIXM_WX/5.1.1b/AIXM_Features.xsd http://www.opengis.net/gml/3.2 http://schemas.opengis.net/gml/3.2.1/gml.xsd http://def.wmo.int/metce/2013 http://schemas.wmo.int/met  
ce/1.2/metce.xsd http://www.w3.org/1999/xlink http://www.w3.org/1999/xlink.xsd" gml:id="uuid.55858658-77d1-4c6f-8785-563b4f310549" permissibleUsage="OPERATIONAL" tra  
nslatedBulletinID="SA0S51LOWW110520" translationCentreDesignator="LOWW" translationCentreName="ROC Vienna" translationTime="2021-05-11T05:20:21Z" translatedBulletinR  
eceptionTime="2021-05-11T05:20:21Z" reportStatus="NORMAL" automatedStation="false">  
  <iwxxm:issueTime>  
    <gml:TimeInstant gml:id="uuid.3db46b47-0a7f-409d-9251-eac50a726347">  
      <gml:timePosition>2021-05-11T05:20:00Z</gml:timePosition>  
    </gml:TimeInstant>  
  </iwxxm:issueTime>  
  <iwxxm:aerodrome>  
    <aixm:AirportHeliport gml:id="uuid.671895b3-d92b-499a-9c3c-c4ef3f6e1b67">  
      <aixm:timeSlice>  
        <aixm:AirportHeliportTimeSlice gml:id="uuid.cc227914-7929-4b1b-ba99-9dd03b6c7c8b">  
          <gml:validTime />  
          <aixm:interpretation>SNAPSHOT</aixm:interpretation>  
          <aixm:designator>LOWW</aixm:designator>  
          <aixm:name>WIEN/SCHWECHAT-FLUGHAFEN</aixm:name>  
          <aixm:locationIndicatorICA0>LOWW</aixm:locationIndicatorICA0>  
          <aixm:ARP>  
            <aixm:ElevatedPoint gml:id="uuid.068ba991-739c-43f1-a499-ab13db1f745a" srsDimension="2" axisLabels="Lat Long" uomLabel  
s="deg deg" srsName="http://www.opengis.net/def/crs/EPSG/0/4326">  
              <gml:pos>48.11 16.57</gml:pos>  
              <aixm:elevation uom="M">183.0000</aixm:elevation>  
              <aixm:verticalDatum>EGM_96</aixm:verticalDatum>  
            </aixm:ElevatedPoint>  
          </aixm:ARP>  
        </aixm:AirportHeliportTimeSlice>  
      </aixm:timeSlice>  
    </aixm:AirportHeliport>  
  </iwxxm:aerodrome>  
  <iwxxm:observationTime>  
    <gml:TimeInstant gml:id="uuid.572a66f4-430f-4d07-9444-f2eb383de54e">  
      <gml:timePosition>2021-05-11T05:20:00Z</gml:timePosition>  
    </gml:TimeInstant>  
  </iwxxm:observationTime>  
  <iwxxm:observation>  
    <iwxxm:MeteorologicalAerodromeObservation cloudAndVisibilityOK="true" gml:id="uuid.bb78e2de-c052-4aea-9f84-1994e60a0581">  
      <iwxxm:airTemperature uom="Cel">17</iwxxm:airTemperature>  
      <iwxxm:dewpointTemperature uom="Cel">9</iwxxm:dewpointTemperature>  
      <iwxxm:qnh uom="hPa">1009</iwxxm:qnh>  
      <iwxxm:surfaceWind>  
        <iwxxm:AerodromeSurfaceWind variableWindDirection="false">  
          <iwxxm:meanWindDirection uom="deg">140</iwxxm:meanWindDirection>  
          <iwxxm:meanWindSpeed uom="[kn_i]">13</iwxxm:meanWindSpeed>  
        </iwxxm:AerodromeSurfaceWind>  
      </iwxxm:surfaceWind>  
    </iwxxm:MeteorologicalAerodromeObservation>  
  </iwxxm:observation>  
  <iwxxm:trendForecast nilReason="http://codes.wmo.int/common/nil/noSignificantChange" />  
</iwxxm:METAR>
```







## IWXXM CAPABILITIES IN AUSTRIA (3)

```
[py@emetsw-mw2 ~]$ curl --user ██████████ -k 'https://localhost:4443/v1/reports/instance/report:AgcAAE\lHAh9saQ==.json?elements=iwxxm:qnh'  
[  
  {  
    "iwxxm:qnh": "1009"  
  }  
]
```

## IWXXM CAPABILITIES IN AUSTRIA (3)

- Distribution of METAR & TAF in IWXXM since 11/2017
- Distribution of SIGMET in IWXXM since 03/2018
- Providing TAC to IWXXM translation service for several states, starting 03/2018



## EXPERIENCES



- Test exchange of IWXXM-data with several states
  - Belgium
  - Croatia
  - France
  - Republic of Serbia
  - Russia
  - Slovenia
  - Switzerland
  - UK
- Test very valuable for both sides to identify issues
  - Usage of “Lon Lat” in SIGMETs instead of “Lat Lon”
  - Using non-unique gml:id
  - Providing feedback in case of schematron errors, e.g. using not allowed characters
- We are still learning



## NEXT STEPS



- Generation of IWXXM at source
- Provide SWIM functionalities via RODB
- Define and implement IWXXM-monitoring
  - Basic monitoring (Received headers, reception time,..)
  - Additional monitoring (message, size, used IWXXM-version, format errors, extensions,..)





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and Caribbean  
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THANK YOU