ICAO PARIS UNITING AVIATION

IWXXM implementation in Belgium

Wim Demol

Belgocontrol - Brussels RODB & NOC

Service improvement through integration of AIM, MET & ATM services

Eurocontrol 2-4/10/2017

IWXXM project in Belgium

→ 1/2016 – 7/2017
→ budget: +/- 250k€
→ co-financed by the European Union (INEA)

- Scope
- Implementation items
- SWIM?

In Scope

- National OPMET Centre (NOC) functionalities
- Regional OPMET Databank (RODB) functionalities

→ Ref ICAO docs: - EUR Doc 18: EUR OPMET Data Management Handbook
- EUR Doc 20: EUR AMHS Manual
- EUR Doc 33: Guidelines for the Implementation of OPMET Data Exchange using IWXXM in the EUR Region

Out of scope

- generation of IWXXM at source (observing & forecasting systems)
- processing of IWXXM by other ATM or MET systems
- web/SWIM services built on the (I)WXXM data model

Implementation items (1)

- connection MET Switch – COM Centre: P3 AMHS with extended services
  → In operation since > 5 years
- implementation of IWXXM functionalities in COM Centre & COM workstations
  - support exchange of IWXXM messages
  - visualisation of IWXXM messages
  - send requests to RODB
- implementation of IWXXM NOC functionalities in MET switch
  - switching functionalities for TAF / METAR / SIGMET / AIRMET / TCA / VAA in IWXXM format
    → reception, validation, store & forward message switching…
  - TAC → IWXXM translation: TAF / METAR / SIGMET / AIRMET
  - Compilation of collections: TAF / METAR

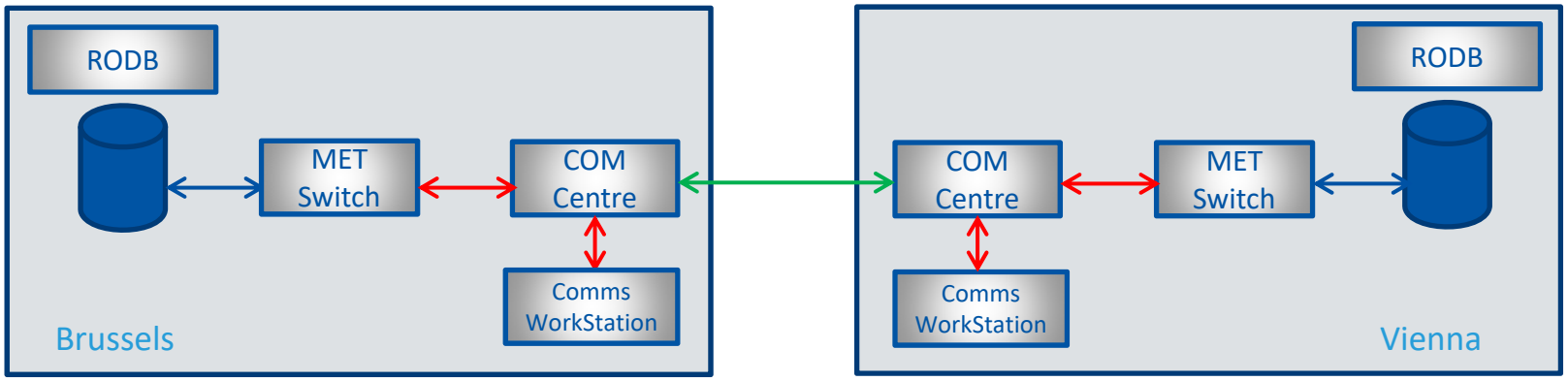
Implementation items (2)

- implementation of IWXXM RODB functionalities
  - message/data storage, decoding, …
  - request/reply functionality
  - RODB data availability and usage statistics
  - access control
  - error/information replies
  - …

→operational since 20/07/2017
→IWXXM v2.0 (v2.1 planned)
→message transmission & reception via FTBP AMHS (compressed)
→message distribution via ROC London (METAR/TAF only)

Implementation (testing)

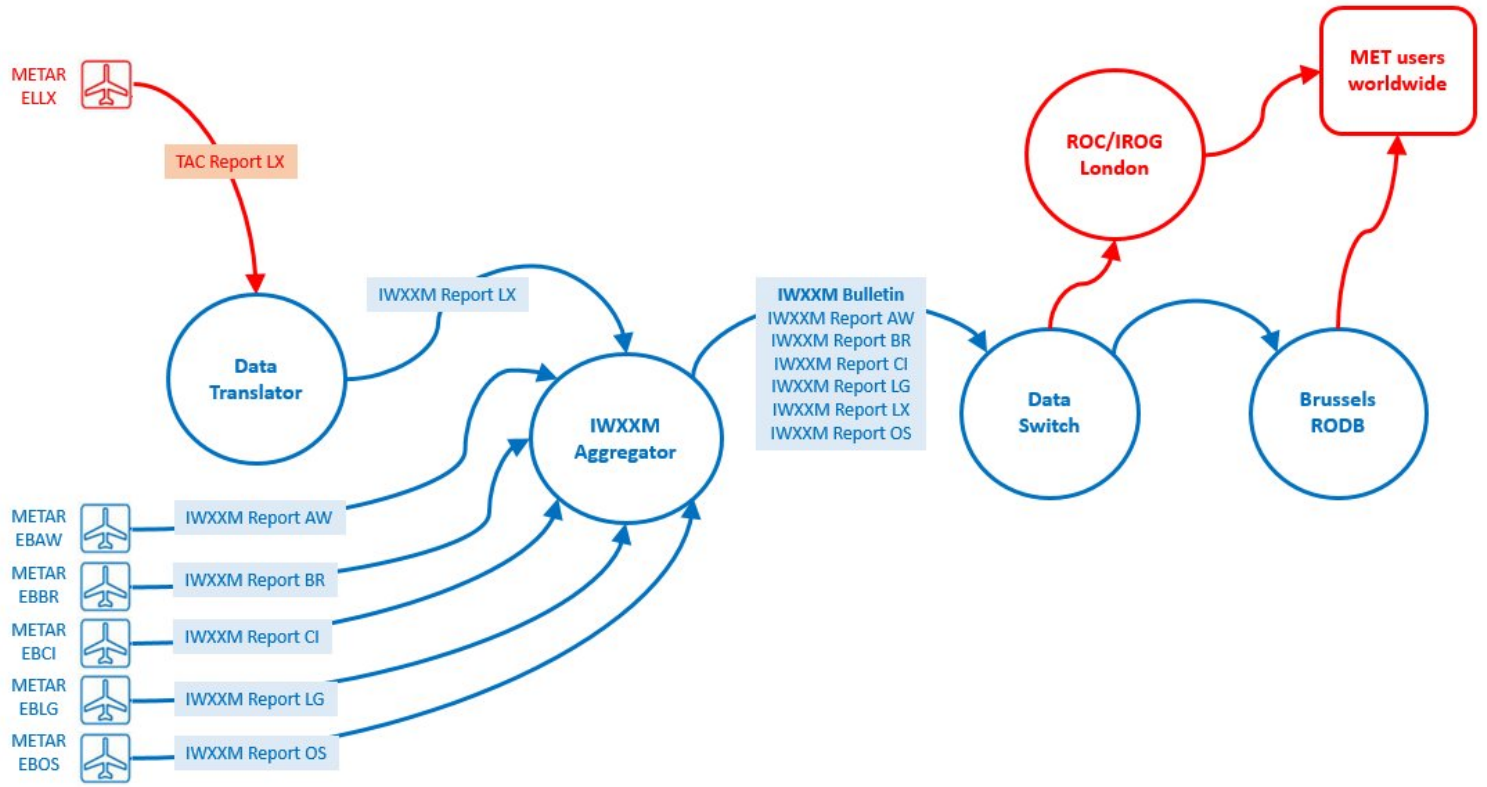
- internal MET Switch Brussels
- MET Switch - COM Centre Brussels
- bilateral end-to-end tests with Austrocontrol

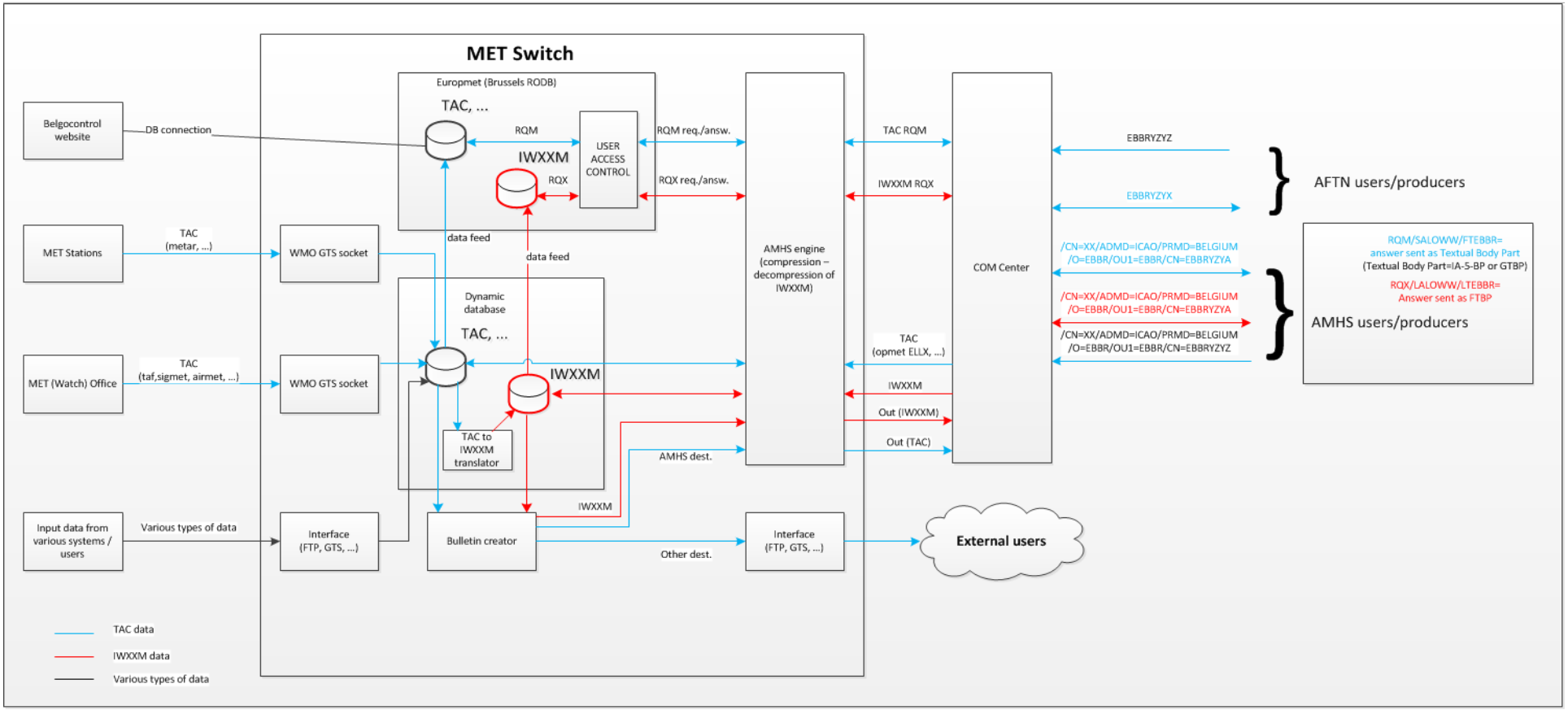


Example report (MET part only)

METAR EBBR 310550Z 26003KT 240V300 CAVOK 16/11 Q1013 NOSIG=

```
<om:result>
  <iwxxm:MeteorologicalAerodromeObservationRecord gml:id="EBBR-0550-or1" cloudAndVisibilityOK="true">
    <iwxxm:airTemperature uom="Cel">16.0</iwxxm:airTemperature>
    <iwxxm:dewpointTemperature uom="Cel">11.0</iwxxm:dewpointTemperature>
    <iwxxm:qnh uom="hPa">1013</iwxxm:qnh>
    <iwxxm:surfaceWind>
      <iwxxm:AerodromeSurfaceWind variableWindDirection="false">
        <iwxxm:meanWindDirection uom="deg">260</iwxxm:meanWindDirection>
        <iwxxm:meanWindSpeed uom="[kn_i]">3.0</iwxxm:meanWindSpeed>
        <iwxxm:extremeClockwiseWindDirection uom="deg">300</iwxxm:extremeClockwiseWindDirection>
        <iwxxm:extremeCounterClockwiseWindDirection uom="deg">240</iwxxm:extremeCounterClockwiseWindDirection>
      </iwxxm:AerodromeSurfaceWind>
    </iwxxm:surfaceWind>
  </iwxxm:MeteorologicalAerodromeObservationRecord>
</om:result>
```


METAR ELLX
TAC Report LX
Data Translator
IWXXM Report LX
IWXXM Aggregator
IWXXM Bulletin
IWXXM Report AW
IWXXM Report BR
IWXXM Report CI
IWXXM Report LG
IWXXM Report LX
IWXXM Report OS
Data Switch
ROC/IROG London
MET users worldwide
Brussels RODB
METAR EBAW
IWXXM Report AW
METAR EBBR
IWXXM Report BR
METAR EBCI
IWXXM Report CI
METAR EBLG
IWXXM Report LG
METAR EBOS
IWXXM Report OS


MET Switch
Europmet (Brussels RODB)
TAC, ...
RQM
IWXXM
RQX
USER ACCESS CONTROL
RQM req./answ.
RQX req./answ.
Belgocontrol website
DB connection
MET Stations
TAC (metar, ...)
WMO GTS socket
data feed
data feed
Dynamic database
TAC, ...
IWXXM
TAC to IWXXM translator
MET (Watch) Office
TAC (taf,sigmet, airmet, ...)
WMO GTS socket
AMHS dest.
IWXXM
Input data from various systems / users
Various types of data
Interface (FTP, GTS, ...)
Bulletin creator
Other dest.
Interface (FTP, GTS, ...)
AMHS engine (compression – decompression of IWXXM)
TAC RQM
IWXXM RQX
TAC (opmet ELLX, ...)
IWXXM
Out (IWXXM)
Out (TAC)
COM Center
EBBRYZYZ
EBBRYZYX
/CN=XX/ADMD=ICAO/PRMD=BELGIUM /O=EBBR/OU1=EBBR/CN=EBBRYZYA
/CN=XX/ADMD=ICAO/PRMD=BELGIUM /O=EBBR/OU1=EBBR/CN=EBBRYZYA
/CN=XX/ADMD=ICAO/PRMD=BELGIUM /O=EBBR/OU1=EBBR/CN=EBBRYZYZ
AFTN users/producers
RQM/SALOWW/FTEBBR= answer sent as Textual Body Part (Textual Body Part=IA-5-BP or GTBP)
RQX/LALOWW/LTEBBR= Answer sent as FTBP
AMHS users/producers
External users
TAC data
IWXXM data
Various types of data

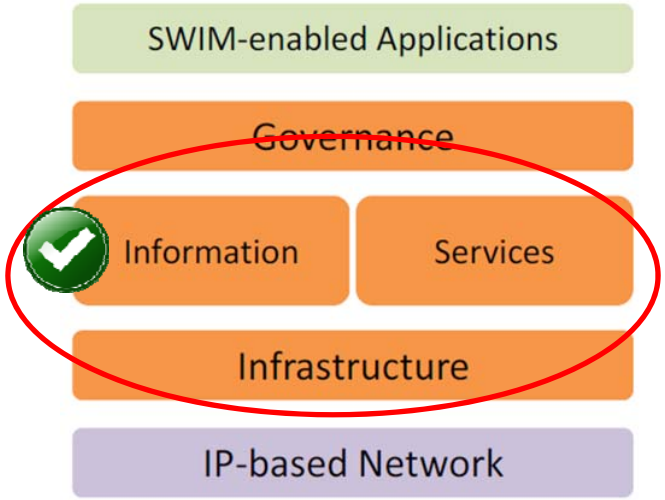
Implementation - challenges

- specification changes during project
- open issues to be dealt with by TT-AvXML & WG-MIE
- European Interoperability requirements
  - → not really clear for MET systems
  - → IWXXM AMHS profile was not published yet
  - → declaration of Suitability for Use prepared based on the proposed IWXXM AMHS profile

SWIM?

- ICAO EUR Doc 33: “Guidelines for the Implementation of OPMET Data Exchange using IWXXM in the EUR Region”
  - new message formats: gml
  - new communication technology: (compressed) AMHS File Transfer Body Part
- BUT: still “old school” message distribution → “RODEX” scheme
- Huh????? Isn’t this supposed to be a SWIM workshop?????

SWIM?



(hopefully not so far) future

→ generation of (I)WXXM at source: observation stations, forecaster workstations

→ development of SWIM/web services

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

(Spare slide)

Regional Opmet Data EXchange