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| **World Meteorological Organization**  **COMMISSION FOR BASIC SYSTEMS**  **Task Team on Aviation XML**  **Seventh meeting of the Task Team on Aviation XML** Boulder, USA, 7-8 May 2018 | **TT-AvXML-7/Final Report** |
| 22.May.2018 |

# Final Report of the Seventh Meeting of the Task Team on Aviation XML

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# Final Report of the Seventh Meeting of the Task Team on Aviation XML

# Executive Summary

1. The Task Team on Aviation XML met at the National Center for Atmospheric Research in Boulder, USA from 7 to 8 May 2018. Mr Zinkhan (Germany) agreed to chair the meeting.
2. Participants considered the requirements for representing information in XML that were expressed in Amendment 78 to Annex 3 of the Convention on International Air Navigation, and those that were discussed at the fourth meeting of ICAO’s Met Panel Working Group on Meteorological Information Exchange (WG-MIE) that had met the previous week.
3. Participants agreed the contents of release IWXXM 3.0 that would support Amendment 78. The first draft of this release should be ready for testing by 21 June 2018.
4. The operators of the World Area Forecast Centres had informed ICAO’s Meteorological Operations Group that they intended to issue significant weather forecasts in XML format from November 2021, and that they required a standard representation to be available by November 2020 in order to achieve this. Participants agreed that this facility would be built into IWXXM 3.1 in a flexible manner.
5. Noting that the requirement for Hazardous Weather Advisory Centres (HWACs) was not expected to be introduced until Amendment 80, participants agreed that the schema developed to support significant weather forecasts should be made flexible to enable it to include additional information required by the HWACs.

Note that the detailed technical decisions of the meeting are recorded in the Github issues log: <https://github.com/wmo-im/iwxxm/issues>.

## 1 Opening of the meeting, introduction and arrangements

1. The meeting was opened at 0900 on 7 May 2018 by the acting chair for the meeting, Mr Zinkhan (Germany). He welcomed participants and thanked UCAR for hosting the meeting.
2. The agenda is recorded in Annex 1: Agenda.
3. The list of participants is in Annex 2: Participants.

## 2 Key outcomes of WG-MIE and CBS TECO

1. Dr Foreman reported the primary outcomes of the CBS TECO held in March 2018. The between sessions approval procedure could be used to approve IWXXM 3. Members had commented that the frequency of major releases of IWXXM was causing them problems.

## 3 Requirements for IWXXM 3 (including simplification and Amd 78)

### Amendment 78 (Issue #49)

1. Space weather advisories needed a location of “day side”. The proposed solution was to represent this by a sub-solar point with a circle around it. Forecasts within an advisory would be at 6h intervals, and that sequence would describe how the “day side” moved.
2. Changes to the XML for SIGMET might be needed to allow more than one phenomenon to be represented.

### Simplification of IWXXM (Issue #27)

1. In telephone conferences, TT-AvXML had proposed removing the O&M model and AIXM elements from IWXXM (because of regulated nature of IWXXM).
2. Issue #81 identified repetitions in METAR that could be removed from a simplified version of the schema. This would be included in IWXXM 3.0, but care would need to be taken to ensure that observations and forecasts could still be distinguished.
3. As noted in Issue #58, the web validator needed to be amended to associate an IWXXM version with a COLLECT version; the schematrons were already correct.

## 4 Review high level IWXXM schedule

1. The high level schedule for releases of IWXXM after IWXXM 3.0 remained that proposed by TT-AvXML-6.

## 5 IWXXM 3 Schedule and Scope (issues that are included)

1. TT-AvXML had drafted a development plan that envisaged three release candidates for IWXXM 3.0.
2. Choy would combine the contents of iwxxm 3.0RC1 into a single zip file that WMO secretariat could unzip and copy to schemas.wmo.int.
3. The target publication date for iwxxm 3.0 RC1 was 21 June 2018.
4. WMO secretariat needed to approve changes to wiki pages that were in html format. Those editing the pages should notify [wis-help@wmo.int](mailto:wis-help@wmo.int) that the changes needed to be approved.

[*Post meeting note: the Secretariat reformatted the pages to use wiki format so that authorization should not be needed.*]

1. Milestones for preparing IWXXM 3.0 were agreed to be:

| **Date** | **Time** |
| --- | --- |
| 23 May 2018 | Code table entries passed to secretariat |
| 21 June 2018 | Release iwxxm 3.0RC1 |
| 15 September 2018 | Decision on whether second release candidate for testing is needed. |
| 15 October 2018 | Optional release to respond to issues with iwxxm 3.0RC1 (to form iwxxm 3.0RC2) |
| 15 October 2018 to 30 November 2018 | TT-AvXML prepare additional material for approval (Manual on Codes, examples…) |
| 28 November | iwxxm 3.0RCfinal ready for upload |
| 1 December 2018 | Approval procedure starts (approval by Chair OPAG ISS requested) |
| 15 December 2018 | Formal consultation with WMO Members starts (between sessions procedure) |
| 15 February 2019 | Formal consultation ends |
| 15 March 2019 | Notification to Members of result of consultation (iwxxm 3.0 released) |
| 15 May 2019 | Implementation date for iwxxm 3.0 |

### Contents of IWXXM 3.0

1. Conclusions of discussions were entered into the corresponding Github issue ([https://github.com/wmo-im/iwxxm/issues/#](https://github.com/wmo-im/iwxxm/issues/)). Issues addressing aspects of the same topic were merged.
2. Issue #49: “Amendment 78”. The team checked the amendment to identify what changes were required for IWXXM.
3. Issue #81:  
   iwxxm:AerodromeSurfaceWindTrendForecast – the requirement for “TrendForecast” would be checked and the item removed if not required;  
   iwxxm:forecastWeather and iwxxm:PresentWeather – the two types had different rules applied to them and using different names helped to emphasise this and so the pre-IWXXM 3 names would be retained;  
   iwxxm:AerodromeObservedClouds and iwxxm:AerodromeCloudForecast – would be included in the release.
4. Issue #60: “Combine iwxxm.sch, iwxxm-collect.sch and rules for offline checking of WMO Code Registry” was included as an optional element in iwxxm 2.1.1. There would be only one schematron file for iwxxm 3;; this would validate references to register entries. validation.
5. Issue #50: “Space weather”; draft schema had been prepared. “Daylight side” would be specified by a circle with radius one quarter of the circumference of the Earth with centre at the sub-solar point at the specified observation or forecast time. The abbreviations for the zones containing the phenomena would also be included in the report.
6. Issue #48: “Look into whether RunwayState should be restructured” to associate snow closure with the whole aerodrome and not with individual runways.
7. Issue # 46: “Add optional report ids for referencing cancellable, correctable, amendable, etc report type”. No changes would be needed to Collect, but individual reports should have a unique ID to which cancellation reports could be associated.
8. Issue #18: “Update SIGMET CNL rules to leave out VA and TC SIGMETs”. To avoid major restructuring of SIGMET, the properties on TropicalCycloneSIGMET and VolcanicAshSIGMET would be made optional to allow a cancellation message to be created without having to extract the properties from the message being cancelled.
9. Issue #13: “Improve TAF BECMG time support”. Address only through additional guidance for TAF Meteorological AerodromeForecastType phenomenonTime (maybe not tied to IWXXM 3.0 development time scales).
10. The list of issues to be addressed by IWXXM 3.0 is in Annex 3: Contents of IWXXM 3.0.

## 6 Tutorials, documentation and training

1. Issue #82 (“Restructure/improve WMO wiki for IWXXM 3”): The tutorials for IWXXM would be restructured to explain the non-standard aspects of IWXXM, rather than explaining the standard GML components. The tutorials on the WIS wiki for IWXXM 3.0 should concentrate on individual features being introduced in IWXXM 3.0, rather than on full example-based descriptions. WMO‑No. 306 Volume I.3 would also need to be updated to be consistent with IWXXM 3.0.
2. The IWXXM 3.0 page would be based on the release page for IWXXM 2.1 and when preparing the documentation, the following issues would be taken into account: Issue #82: “Restructure/improve WMO wiki for IWXXM 3”; Issue #70: “Create an IWXXM 3.0 transition guide” would be included in the tutorials (Issue #82); Issue #66: “Provide guidance on the use of COLLECT in bulletinizing IWXXM messages” would be addressed in the tutorials (Issue #82); Issue #76: “Provide documentation on IWXXM (conversion) tools for use by States”, was not associated with any IWXXM release. The WMO Secretariat would prepare a WIS wiki page to make available the information provided by suppliers of the tools.
3. Documentation for IWXXM should emphasize that the TAC limitation of seven points in a polygon does not apply to IWXXM reports.
4. Mr Choy would coordinate updating of the examples and wiki pages.
5. Handling trend forecasts with a BECMG/TEMPO group without a specified time (TL,AT,FM). When a trend forecast was reported with a BECMG or TEMPO block without a specified time and the period of applicability commenced at the beginning of the trend forecast period and ceased by the end of the trend forecast period, this should be represented as phenomenonTime with a nilReason of “missing”. Otherwise, if the BECMG time was uncertain within the trend forecast period this should be represented with a nilReason of “unknown”.

## 7 Technical discussion on IWXXM 3

1. IWXXM representation of tropical cyclone SIGMETs could report up to two TCs. Each TC might have multiple CB areas associated with it. For each CB area the observed and forecast intensity, position, height, etc might be reported. The specifications in Annex 3 were not clear on how these should be represented.
2. Mr Choy and Mr Zinkhan would identify current practices on SIGMET TC in different regions and propose changes to IWXXM conformant with those.

### Implementation planning

1. Managing pull requests on Github. Pull requests on Github needed to be reviewed and approved. Using a separate pull request for each open issue would be time consuming.
2. The secretariat would ask all members of IPET-DD to assist in checking the IWXXM 3.0 schemas.
3. Mr Koivunen would assist with the testing of iwxxm 3.0.0RC1.
4. Aaron would create the pull requests to satisfy the identified issues.
5. Choy would update the UML model and check the schematron, and coordinate testing of the pull requests.
6. Telecons would be set up as needed to resolve issues encountered during the preparation of iwxxm 3.0.0RC1. There would be a telecon during the week of 4th June. The date would be chosen by a Doodle poll.
7. The operators of the World Area Forecast Centres had informed ICAO’s Meteorological Operations Group that they intended to issue significant weather forecasts in XML format from November 2021, and that they required a standard representation to be available by November 2020 in order to achieve this. IWXXM 3.1 would introduce support for SigWX, but this would be done in a way that would allow other data groupings to be introduced within a more general structure, with a view to using the same structures for hazardous weather and for the information content of SIGMET and AIRMET.
8. Noting that the requirement for Hazardous Weather Advisory Centres (HWACs) was not expected to be introduced until Amendment 80, participants agreed that the schema developed to support significant weather forecasts should be made flexible to enable it to include additional information required by the HWACs.
9. IWXXM 3.1 would require a face-to-face workshop to confirm the design, including the creation of generic containers from which reports could be built. In order to submit to WG-MIE documents arising from issues identified at the meeting, the TT-AvXML workshop would be in March 2019. Mr Choy would investigate holding the meeting in Asia possibly to co-locate with the Asia-Pacific Met/IE meeting. WMO would not be able to provide financial support for travel for participants attending that meeting. Early drafts of the schemas would need to be available for discussion at the workshop.

## 8 Close of meeting

1. The meeting closed at 1455 on Tuesday 8 May 2018.

# Action and Decision Summary

## Actions

[**A1** Choy would combine the contents of iwxxm 3.0RC1 into a single zip file that WMO secretariat could unzip and copy to schemas.wmo.int.](#_Toc514741684)

[**A2** WMO secretariat needed to approve changes to wiki pages that were in html format. Those editing the pages should notify wis-help@wmo.int that the changes needed to be approved.](#_Toc514741685)

[**A3** Mr Choy would coordinate updating of the examples and wiki pages.](#_Toc514741686)

[**A4** Mr Choy and Mr Zinkhan would identify current practices on SIGMET TC in different regions and propose changes to IWXXM conformant with those.](#_Toc514741687)

[**A5** The secretariat would ask all members of IPET-DD to assist in checking the IWXXM 3.0 schemas.](#_Toc514741688)

[**A6** Mr Koivunen would assist with the testing of iwxxm 3.0.0RC1.](#_Toc514741689)

[**A7** Aaron would create the pull requests to satisfy the identified issues.](#_Toc514741690)

[**A8** Choy would update the UML model and check the schematron, and coordinate testing of the pull requests.](#_Toc514741691)

## Decisions

[**D1** The target publication date for iwxxm 3.0 RC1 was 21 June 2018.](#_Toc514741692)

[**D2** The list of issues to be addressed by IWXXM 3.0 is in Annex 3: Contents of IWXXM 3.0.](#_Toc514741693)

[**D3** Issue #82 (“Restructure/improve WMO wiki for IWXXM 3”): The tutorials for IWXXM would be restructured to explain the non-standard aspects of IWXXM, rather than explaining the standard GML components. The tutorials on the WIS wiki for IWXXM 3.0 should concentrate on individual features being introduced in IWXXM 3.0, rather than on full example-based descriptions. WMO‑No. 306 Volume I.3 would also need to be updated to be consistent with IWXXM 3.0.](#_Toc514741694)

[**D4** The IWXXM 3.0 page would be based on the release page for IWXXM 2.1 and when preparing the documentation, the following issues would be taken into account: Issue #82: “Restructure/improve WMO wiki for IWXXM 3”; Issue #70: “Create an IWXXM 3.0 transition guide” would be included in the tutorials (Issue #82); Issue #66: “Provide guidance on the use of COLLECT in bulletinizing IWXXM messages” would be addressed in the tutorials (Issue #82); Issue #76: “Provide documentation on IWXXM (conversion) tools for use by States”, was not associated with any IWXXM release. The WMO Secretariat would prepare a WIS wiki page to make available the information provided by suppliers of the tools.](#_Toc514741695)

[**D5** Documentation for IWXXM should emphasize that the TAC limitation of seven points in a polygon does not apply to IWXXM reports.](#_Toc514741696)

[**D6** The operators of the World Area Forecast Centres had informed ICAO’s Meteorological Operations Group that they intended to issue significant weather forecasts in XML format from November 2021, and that they required a standard representation to be availale by November 2020 in order to achieve this. IWXXM 3.1 would introduce support for SigWX, but this would be done in a way that would allow other data groupings to be introduced within a more general structure, with a view to using the same structures for hazardous weather and for the information content of SIGMET and AIRMET.](#_Toc514741697)

[**D7** Noting that the requirement for Hazardous Weather Advisory Centres (HWACs) was not expected to be introduced until Amendment 80, participants agreed that the schema developed to support significant weather forecasts should be made flexible to enable it to include additional information required by the HWACs.](#_Toc514741698)

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## Annex 1: Agenda

1 Opening of the meeting, introduction and arrangements

2 Key outcomes of WG-MIE and CBS TECO

3 Requirements for IWXXM 3 (including simplification and Amd 78)

4 Review high level IWXXM schedule

5 IWXXM 3 Schedule and Scope (issues that are included)

6 Tutorials, documentation and training

7 Technical discussion on IWXXM 3

8 Close of meeting

## Annex 2: Participants

|  |  |
| --- | --- |
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| **Bob BARRON**  **(Interested expert)**  **Proposed by: United States** | National Center for Atmospheric Research 1850 Table Mesa Drive  P.O Box 3000 CO 80307  United States of America Fax: N/A  Tel: N/A  Email: N/A |

## Annex 3: Contents of IWXXM 3.0

The issues to be addressed by IWXXM 3.0 are listed below.

* Simplify representation with the removal of O&M (#27)
* Add Space Weather Advisory (#50)
* Add Amendment 78 changes (#49), including add support for Amendment 77 TC SIGMET centre and CB positions (#57), and TC ADVISORY changes in Amendment 78 (#72)
* Add schematrons to check COLLECT bulletins and WMO Code Registry (#32, #60)
* Simplify element names as per (#81)
* Restructure element RunwayState (#48)
* Add optional report ids for referencing cancellable, correctable, amendable, etc report types (#46)
* Ensure that minimum information content of failed translation messages is correct (#41)
* Add schema/Schematron checks to ensure that extended content always has a web accessible schema definition (#29)
* Add nilReason for METAR and SPECI (#23)
* Improve TAF BECMG time support (#13)
* Add explicit TL/AT/FM to TAF and TREND (#7)