**LATEST ET-ISA WORKING ARRANGEMENTS AND WORK PLAN**

*(Submitted by Stéphanie Desbios and Jun Ryuzaki, Co-Chairs of ET-ISA)*

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| **TEAM** | | | | |
| **Commission** | **WMO Commission for Aeronautical Meteorology (CAeM)** | | | |
| **Expert Team on** | **Information & Services for Aviation (ISA)** | | | |
| **Start Date / End Date** | August 2014 | | August 2018 | |
| **Stakeholders** | ATM community, NMHS Aviation Weather Services, VAACs, Space Weather community | | | |
| **Team** | **Name** | **Organization / Country** | | **E-mail** |
| **Chair / Co-chairs** | Stephanie Desbios  Jun Ryuzaki | Meteo-France, France  Japan Meteorological Agency, Japan | | [stephanie.desbios@meteo.fr](mailto:stephanie.desbios@meteo.fr)  [jryuzaki@met.kishou.go.jp](mailto:jryuzaki@met.kishou.go.jp) |
| **Core Members** | Cecilia Miner  Bart Nicolaï  P.W. Chan  Albert Moloto  Michael Berechree | NOAA/NWS, USA  Belgocontrol, Belgium  Hong Kong Observatory, Hong Kong, China  South African Weather Service,  South Africa  Bureau of Meteorology, Australia | | [cecilia.miner@noaa.gov](mailto:cecilia.miner@noaa.gov)  [bart.nicolai@belgocontrol.be](mailto:bart.nicolai@belgocontrol.be)  [pwchan@hko.gov.hk](mailto:pwchan@hko.gov.hk)  [albert.moloto@weathersa.co.za](mailto:albert.moloto@weathersa.co.za)  [m.berechree@bom.gov.au](mailto:m.berechree@bom.gov.au) |

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| **DESCRIPTION** | |
| **Objective** | To develop proposals for enhanced Meteorological Information and Services for Aviation (ISA) which will meet future requirements from the ICAO’s GANP/ASBU framework, including digital exchange of meteorological information via SWIM environment. The proposals for ISA should be developed in response to user needs identified in coordination with the relevant ICAO expert group(s) and grounded on high-level scientific basis. The proposal(s) may be put forward to the relevant ICAO expert group(s), when necessary, during the inter-session period and finally shall be reported to the WMO CAeM 16th session in 2018. |
| **Background** | With increasing air traffic in several regions leading to severe issues of aerodrome and route capacity limits, different regions are developing different tailored meteorological products to support Air Traffic Management (ATM) to fill the perceived gap between the legacy products required by Annex 3 and ATM requirements on MET. To avoid further costly parallel development of similar products, with a high risk of confusion between similar products using different ways of presentation to users, the WMO Commission for Aeronautical Meteorology (CAeM) has undertaken an initiative to develop, harmonize, and promote new meteorological services for the wider terminal area[[1]](#footnote-1) intended mainly for ATM/ATC and operations staff. In the context of the two major regional programs SESAR and NextGen and the emerging project in other regions (e.g. CARATS in Japan) and taking into account that ICAO has recently embarked in the development of requirements for MET support to ATM and information exchange through its MARIE -PT, the scope of the CAeM initiative has been expanded to be performed to all MET Services to ATM and to also include MET Information Exchange related activities. In this way, the CAeM expert team for Met Services To ATM & Met Information Exchange (ET/M&M) has been supporting the work of the MARIE-PT in coordination with the ICAO ATMRPP for the development of the Meteorological Information Integration for Trajectory-Based Operations (TBO) Concept and Roadmap, by providing a detailed description of the current, emerging and foreseen MET capabilities in terms of services in support to ATM, with a focus on the terminal area.  In July 2014 in Montreal, the ICAO MET Divisional Meeting agreed on the development of the MET components of the Aviation System Block Upgrades (ASBU) methodology for the Global Air Navigation Plan (GANP). The Meeting also endorsed the recommendation for the inclusion of ATM-tailored meteorological services for the terminal area in Block 1 and subsequent blocks of the ASBU methodology, and their integration into the future system-wide information management (SWIM) environment. The future development of the MET Information Integration for TBO Concept & Roadmap, as well as of the other concept of operations and roadmaps for the future WAFS, for the International Airways Volcano Watch (IAVW) or space weather services has also been adopted by the Meeting. The service-related components of these roadmaps and concepts of operations need to be addressed by the ET-ISA, in collaboration with ICAO and in cooperation with relevant subsidiary bodies of WMO, such as the CBS and the CAS. |
| **Terms of Reference** | *Refer to the work programme below.* |

**CAeM ET-ISA**

**Work Programme***(updated 17 May 2017)*

1. **Terms of Reference** *(updated by CAeM-MG in May 2015)*
2. **To work closely with ICAO and other partners in developing relevant background material, methodology and implementation guidance on the MET components of the Aviation System Block Upgrades (ASBU) based on identified user requirements;**

***Translated into actions:***

* + *Support the development and finalization of CONOPS and roadmaps: TBO, RRM, SpWx, WAFS, RHWAC*
  + *Advise on current MET capabilities vis-à-vis requirements established by ICAO*

1. **To contribute to the development of new or enhanced MET information and services in close collaboration with ICAO;**

***Translated into actions:***

* + *Organize repository of development of new MET I&S under the large-scale projects (SESAR, NextGen, CARATS, etc.) and facilitate result sharing*
  + *Assist in WMO projects and dissemination of results (e.g., AvRDP)*

1. **To develop relevant performance metrics and validation methodologies for new or enhanced MET information and services;**

***Translated into actions:***

* + *Develop a “white paper” on performance metrics and validation to build common understanding*
  + *Collect examples of current performance metrics and verification/validation methods, containing evaluation of MET impact on ATM*
  + *Develop draft guidance on performance metrics and verification/validation including impact-oriented approach*

1. **To contribute to the development of SWIM MET data standards and policies, and to promote implementation of MET information exchange under SWIM by Members;**

***Translated into actions:***

* + *Contribute to the development of guidance and training materials on the implementation of IWXXM*
  + *Support trials and testing of MET information exchange under SWIM*

1. **To report regularly on progress to the president of CAeM**

**Translated into actions:**

* + *Submit regular reports on progress*
  + *Submit other relevant information to raise awareness of developments in the area of responsibility of the ET-ISA*

1. **Work Packages (WP), Tasks, Activities**

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| **WP A (TOR a)** | **Development of relevant background material, methodology and implementation guidance on the MET components of the Aviation System Block Upgrades (ASBU) based on identified user requirements** | | | **Responsibility** | **Deliverable** | | **Target date** | | **Status** |
|  | **Task A1** | ***Assist in finalizing the TBO roadmap by providing background material on the envisaged new or enhanced MET information and services*** | | | | | | | |
| Activity A1.1 | Provide comments and additions to the TBO roadmap as required by the ICAO METP WG-MRI Rapporteur | All, coord. by co-chairs | Comments on TBO doc provided to WG-MRI Rapporteur | | As required by the WG-MRI Rapporteur | | Comments provided on 25.09.2015  No other request since then. |
| Activity A1.2 | Complete/update the Appendices A & B to the TBO roadmap, with information on performance of the current and foreseen MET capabilities, when available, and with generic examples ( See also A4.1) | All, coord. by co-chairs | Updated Appendices A & B to the TBO roadmap  (To coordinate with WG-MRI Rapporteur) | | To coordinate with WG-MRI Rapporteur. | | No request from WG-MRI Rapporteur (see A4.1) |
| **Task A2** | ***Assist in development of other relevant roadmaps and CONOPS (WAFS, SpWx, RRM, RHWAC), as necessary*** *(Note: need to define to what extent ET-ISA will be into this task and who will be responsible)* | | | | | | | |
| Activity A2.1 | Contribute to the development of other relevant roadmaps and CONOPS | ET-ISA members as advisors in the ICAO METP WG | Inputs as necessary | | According to WG-MISD work streams time lines. | | On-going WAFS, RRM, SpWx: inputs provided in July 2016 RHWAC : new concept for IAHW adopted by METP/2, new CONOPS and roadmap to be defined by WG-MISD.  Issues related to WAFS ConOps and process for REQs definition to be presented in a SN at MRI/3 in July 2017 (or MISD/3) |
| Activity A2.2 | Report to the ET-ISA on foreseeable consequences on existing or foreseen MET information & services; raise any issues related to this development | ET-ISA members as advisors in the ICAO METP WG | As necessary | | METP WG meetings ; METP meeting | | Summary of MISD/2 and MRI/2 and of METP/2 provided in Q1 2017. |
| **Task A3** | ***Support development of implementation guidance on new MET information and services*** *(Note: this is relevant for mature information and services that are in or close to implementation phase)* | | | | | | | |
| Activity A3.1 | Communicate to the ET-ISA on new services requirements, starting with Met Services for the terminal area ; seek and collate feedback | Bart & Stephanie (SESAR Projects);  Cecilia (NextGen and other US projects);  Jun & Michael (ASIAPAC) | Report, web pages about requirements for these new services. | | End 2016 | | On-going.  Reminder sent to ET members in March 2017.  To be discussed at F2F meeting in May 2017*.* |
| Activity A3.2 | Review, comment and report (one page) on implementation guidance on new MET information and services, starting with Met Services for the terminal area | All.  Through ICAO METP WG-MRI or WG-MISD or regional groups | Y | | When guidance is available. | | 1st draft of APAC’s implementation guidance for an ad-hoc group of ICAO APAC MET/R WG, shared within APAC region by Jun. To be shared within ET-ISA.  Guidance on new service for SpWx? |
|  | **Task A4** | ***Study and inform on current and future MET capabilities to support requirements of GANP and ASBU*** | | | | | | | |
| Activity A4.1 | Update the existing demonstration documentation, with information on performance of the current and foreseen MET capabilities, when available, and with generic examples (See also A1.2) | Bart & Stephanie (Europe);  Cecilia (N&S America);  Jun & PW (Asia);  Michael (S Pacific, Australia, NZ);  Albert (Africa) | | Y | End June 2017 | Demonstration documentation from the former CAeM ET-M&M sent by Stephanie to the group. On-going action to update it with performance information of the Met capabilities | |
| Activity A4.2 | Gather information on science supporting foreseen and future MET capabilities, in coordination with ET-ASC | All | | Inputs to Scientific Conference | 6-10 Nov 2017 | Co-chairs are members of Organizing Committee. Stephanie acts as host representative. Scientific topics and possible presenters to be discussed at F2F meeting in May 2017. | |
| **Task A5** | ***Contribute to further development of MET ASBU modules*** | | | | | | | |
| Activity A5.1 | Contribute to the development of ASBU-2 Met module (description to be included in update of GANP) | ET-ISA members as advisors in the ICAO METP WG-MRI | | Y | According to WG-MRI time line. Act. 3.2 of WG-MRI starting May 2016, ending May 2017 | Waiting for WG-MRI to start the activity. | |
| Activity A5.2 | Contribute to the description improvement on terminal area aspects of ASBU-1 Met module (A-MET) | ET-ISA members as advisors in the ICAO METP WG-MRI | | Y | First draft by Stephanie in May 2016 | Complete. First draft discussed at MRI/2 in July 2016, revised version endorsed at METP/2. Approval from ANC expected in Mar2017 | |
| Activity A5.3 | Assist WG-MRI in the development of functional requirements of MET information & services to support selected ASBU-1 Met modules (A-MET) | ET-ISA members as advisors in the ICAO METP WG-MRI | | N | According to WG-MRI time line. Activity 2.1 of WG-MRI started in Jul 2016 | On-going. Assistance from ET-ISA members as advisors in the ICAO METP WG-MRI agreed at MRI/2.  Draft development of functional & performance requirements sent by the WG-MRI task leader on 23 March 2017. Feedback from ET-ISA members is requested. | |
| Activity A5.4 | Contribute to the ICAO Review of ASBU framework (GANP update in 2019 ; inputs to be ready mid-2017) | Stephanie (in coordination with Dennis Hart and Sue O’Rourke) | | N | According to ASBU framework time line. | On-going.  First teleconference on 20 Oct 2016.  F2F meeting in May 2017 : AMET thread restructured and reworded. Dependencies of operational threads on MET identified. | |

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| **WP B (TOR b)** | **Current and future MET capabilities to support requirements of GANP and ASBU** | | | **Responsibility** | **Deliverable** | **Target date** | **Status** |
|  | **Task B1** | ***Organize repository of development of new MET I&S under the large-scale projects (SESAR, NextGen, CARATS, etc.) and facilitate result sharing*** | | | | | |
| Activity B1.1 | Organize the repository into WMO web facilities ; provide URLs and communicate to the CAeM community through the ET-CCP | Dimitar & ET-ISA Co-chairs | Y | End June 2017 | On-going. Team members to check for existing demo projects on MSTA website to be made public on the AeM website |
| **Task B2** | ***Assist in WMO projects and dissemination of results (e.g., AvRDP)*** | | | | | |
| Activity B2.1 | Contribute to WMO CAeM-CAS Av-RDP project as appropriate; report to the ET and the CAeM-MG | Jun, Cecilia, Stéphanie, Albert (for JNB airport) | Y | According to the AvRDP time line. | On-going.  Stephanie: report for CDG IOP1 (winter 2015-2016) finalized, information provided at SSC meeting in July 2016  Jun: provide information on current services for Tokyo, incl. RJTT & RJAA  Cecilia: present information on the NextGen’s update  *To seek update from Albert* |
| Activity B2.2 | Contribute to other WMO projects as appropriate; report to the ET and the CAeM-MG | All | Y | According to those projects time line. | No other project up to now. |
| **WP C (TOR c)** | **Develop relevant performance metrics and validation methodologies for new or enhanced MET information and services** | | | **Responsibility** | **Deliverable** | **Target date** | **Status** |
|  | **Task C1** | ***Develop a “white paper” on performance metrics and validation to build common understanding*** | | | | | |
| Activity C1.1 | Develop a “white paper” on performance metrics and verification | All | Y | First draft end June 2017 | *Not started* |
| Activity C1.2 | Develop a “white paper” on evaluation of MET impact on ATM | All | Y | First draft end Sep 2017 | *Not started* |
| **Task C2** | ***Collect examples of current performance metrics and verification/validation methods, containing evaluation of MET impact on ATM*** | | | | | |
| Activity C2.1 | Establish a catalog of current performance metrics and verification/validation methods [refer to existing ET-M&M documentation] (See also A4.1) | All | Y | End Nov 2017 | *Not started* |
| Activity C2.2 | Identify generic performance metrics and verification/validation methods | All | Y | Q1 2018 | *Not started* |
| **Task C3** | ***Develop draft guidance on performance metrics and verification/validation including impact-oriented approach*** | | | | | |
| Activity C3.1 | Develop draft guidance on performance metrics and verification/validation including impact-oriented approach [Predecessors C2.1 and C2.2] |  | Y | Q1 2018 | *Not started* |
| Activity C3.2 | Communicate to the CAeM community through the ET-CCP |  | N | As available |  |

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| **WP D (TOR d)** | **SWIM MET data standards and policies; Implementation of MET information exchange under SWIM by WMO Members** | | | **Responsibility** | **Deliverable** | **Target date** | **Status** |
|  | **Task D1** | ***Contribute to the development of SWIM MET data standards and policies*** | | | | | |
| Activity D1.1 | Contribute to this development in coordination with WMO CBS TT-AvXML and other relevant WMO teams | Bart, Stephanie | N | According to WMO CBS time line. | On-going.  Bart : communication on IWXXM releases  Stephanie & Greg : contribution to the new ICTT on WIS, for CAeM requirements on WIS (12-13 Sep) |
| Activity D1.2 | Contribute to this development in coordination with the ICAO METP WG-MIE and other relevant ICAO groups | Albert, PW, Stephanie | N | According to WG-MIE time line. | On-going. |
| Activity D1.3 | Contribute to the new CBS Task Team on Information Management (under ICT-ISS) as necessary  **NEW ACTIVITY TBC** | TBD | N | According the TT-IM time line | Set up of new TT to be endorsed by the CBS in Nov 2016  TBC |
| **Task D2** | ***Development of guidance and training materials on the implementation of IWXXM*** | | | | | |
| Activity D2.1 | Contribute to the development of guidance and training materials based on the CONOPS on IWXXM ; in coordination with the ICAO METP WG-MIE | All | Y | According to WG-MIE time line. | On-going. |
| **Task D3** | ***Support trials and testing of MET information exchange under SWIM*** | | | | | |
| Activity D3.1 | Inform the CAeM-MG on trials and testing of MET information exchange under SWIM | All | N | As available | On-going |
| Activity D3.2 | Inform the CAeM-MG on the status of implementation of MET information exchange under SWIM, in States | All | N | As available | On-going |
| **WP E (TOR e)** | **Reporting and outreach** | | | **Responsibility** | **Deliverable** | **Target date** | **Status** |
|  | **Task E1** | ***Submit regular reports on progress*** | | | | | |
| Activity E1.1 | Yearly reporting | Co-chairs | Y | May each year | Report for MG Nov 2016 |
| **Task E2** | ***Prepare and disseminate other relevant information to raise awareness of CAeM community on developments in the area of responsibility of the ET-ISA*** | | | | | |
| Activity E2.1 | Prepare relevant information to raise awareness of the CAeM Community on developments under the ET-ISA scope (reports, web pages, etc) | All | Y ? | As available |  |
| Activity E2.2 | Communicate through the ET-CCP articles for the Newsletter | Co-chairs | Y | On a quarterly basis | Three articles on ET-ISA in First CAeM Newsletter. |

List of meetings:

Teleconference, 23 Jan 2015; Joint ET-ISA / ET-ASC face-to-face meeting, 30 March – 1 April 2015, Toulouse, France; Teleconference, 4 May 2015; Informal co-chairs meeting, 18 Nov 2015, Washington, DC, USA; Teleconference, 1 March 2016; Teleconference, 7 April 2016; Informal co-chairs meetings, Jul and 20 Oct 2016, Montreal, Canada; CAeM Management Group meeting (co-chairs), 8-10 Nov 2016, Innsbruck, Austria; Teleconference, 8 Dec 2016; Teleconference, 31 Mar 2017.

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1. The terminal area is defined as that portion of the airspace within the proximity of a controlled aerodrome within which arriving and departing aircraft are managed to provide separation, assurance, appropriate arrival spacing, appropriate departure spacing and final approach sequencing. [↑](#footnote-ref-1)