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| WEATHER CLIMATE WATER | **World Meteorological Organization**  **EXECUTIVE COUNCIL**  **Seventy-Sixth Session** 27 February to 3 March 2023, Geneva | **EC-76/Doc. 3.2(19)** |
| Submitted by: President of INFCOM  30.XI.2022  **DRAFT 1 WiP** |

**AGENDA ITEM 3: IMPLEMENTATION OF CONGRESS DECISIONS: TECHNICAL MATTERS**

**AGENDA ITEM 3.2: Long-term goal 2: Earth system observations and predictions**

# Implementation plan update of the WMO Information System 2.0

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| **Summary** |
| **Document presented by:** President of INFCOM  **Strategic objective 2020–2023:** 2.2  **Financial and administrative implications:** within the parameters of the Strategic and Operational Plans 2020–2023, will be reflected in the Strategic and Operational Plans 2024–2027.  **Key implementers:** INFCOM and RAs  **Time frame:** 2023–2027  **Action expected:** Review the proposed draft resolution. |

# DRAFT RESOLUTION

## Draft Resolution 3.2(19)/1 (EC-76)

## Implementation plan update of the WMO Information System 2.0

THE EXECUTIVE COUNCIL,

**Recalling** [Resolution 22 (EC-73)](https://library.wmo.int/doc_num.php?explnum_id=11008/#page=365) - WMO Information System 2.0 implementation plan, functional architecture and demonstration projects,

**Noting**

(1) That the WMO Information System 2.0 (WIS 2.0) principles have been applied and tested through the demonstration projects (as reported in [INFCOM-2/INF. 6.3.1(1)](https://meetings.wmo.int/INFCOM-2/InformationDocuments/Forms/AllItems.aspx)) laying the foundations of WIS 2.0 Architecture,

(2) That LDCs participated through the WIS 2.0 demonstration projects in the experimentation and testing of the technologies used in WIS 2.0 with the aim to demonstrate their suitability for the implementation in their technical environment,

(3) That the WMO disciplines and domains mentioned in the WMO Unified Data Policy ([Resolution 1 (Cg-Ext(2021))](https://library.wmo.int/doc_num.php?explnum_id=11113/#page=9) - WMO Unified Policy for the International Exchange of Earth System Data) participated to the demonstration projects phase providing valuable input for the development of WIS 2.0 technical architecture (see [INFCOM-2/ INF. 6.3.1(1)](https://meetings.wmo.int/INFCOM-2/_layouts/15/WopiFrame.aspx?sourcedoc=/INFCOM-2/InformationDocuments/INFCOM-2-INF06-3(1-1)-WIS-2-0-IN-A-BOX_en.docx&action=default)),

(4) That the project WIS 2.0 in a box has been established (see [INFCOM-2/INF. 6.3.1(1))](https://meetings.wmo.int/INFCOM-2/_layouts/15/WopiFrame.aspx?sourcedoc=/INFCOM-2/InformationDocuments/INFCOM-2-INF06-3(1-1)-WIS-2-0-IN-A-BOX_en.docx&action=default) to foster the implementation of WIS 2.0 in the LDCs, SIDS, developing countries [Mr. Konate] and Members able to implement open-source software in their operations,

**Recognizing**:

(1) The compelling need of implementing a WMO Information System 2.0 able to support the WMO Unified Data Policy ([Resolution 1 (Cg-Ext(2021](https://library.wmo.int/doc_num.php?explnum_id=11113/#page=9))) and the establishment of the Global Basic Observing Network ([Resolution 2 (Cg-Ext(2021](https://library.wmo.int/doc_num.php?explnum_id=11113/#page=29))) - Amendments to the Technical Regulations related to the establishment of the Global Basic Observing Network),

(2) The urgent need of developing the required technical and regulatory framework for enabling the international data exchange by all the disciplines and domains as required by the WMO Unified Data Policy ([Resolution 1 (Cg-Ext(2021](https://library.wmo.int/doc_num.php?explnum_id=11113/#page=9))),

(3) The importance of establishing a pilot phase to prepare the operational implementation of the WIS 2.0 global infrastructure and facilitate the transition of Members’ operations to WIS 2.0 according to the implementation plan,

**Having considered** [Recommendation 6.3(1)/1 (INFCOM-2)](https://meetings.wmo.int/INFCOM-2/_layouts/15/WopiFrame.aspx?sourcedoc=/INFCOM-2/English/2.%20PROVISIONAL%20REPORT%20(Approved%20documents)/INFCOM-2-d06-3(1)-IMPLEMENTATION-WIS-2-0-approved_en.docx&action=default) - Implementation plan of the WMO Information System 2.0,

**Adopts**: the WMO Information System 2.0 implementation plan update in the [annex](#Annex_1);

**Urges** Members:

(1) To consider the WIS 2.0 in their future technical and financial plans to ensure its implementation according to the “WMO Information System 2.0 implementation plan update” in the annex;

(2) To support WIS 2.0 implementation through secondments and additional funding to the WIS Trust Fund.

**Requests** the Secretary General to publish guidance and organize training with the support of the Regional Training Centres and the Global Information System Centres to facilitate Members who will encounter difficulties in the ownership and implementation of WIS 2.0. [Mr. Konate]

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See [INFCOM-2/INF. 6.3.1(1)](https://meetings.wmo.int/INFCOM-2/_layouts/15/WopiFrame.aspx?sourcedoc=/INFCOM-2/InformationDocuments/INFCOM-2-INF06-3(1-1)-WIS-2-0-IN-A-BOX_en.docx&action=default) for more information.

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[Annex: 1](#Annex_1)

**Annex to draft Resolution 3.2(19)/1 (EC-76)**

**WMO Information System 2.0 Implementation Plan Update**

The WIS 2.0 implementation plan was endorsed by the seventy-third session of the Executive Council with Resolution 22. The progress has been regular and aligned with the expectations of the Commission for Observation, Infrastructure and Information Systems (INFCOM) and the Standing Committee for Information Management and Technology (SC-IMT).

The "WIS 2.0 demonstration projects workshop" held online in September 2021 showed the significant projects' progress in applying the WIS2 principles to different contexts and in all WMO disciplines and domains. The principal outcomes of the workshop are the following:

1. The demonstration projects have confirmed the soundness of WIS 2.0 principles by applying them to various contexts and in all the WMO disciplines and domains. Moreover, they have produced precious input to SC-IMT for designing the technical architecture and choosing the technologies supported by WIS 2.0 (see final report in [INFCOM-2/INF. 6.3.1(1)](https://meetings.wmo.int/INFCOM-2/_layouts/15/WopiFrame.aspx?sourcedoc=/INFCOM-2/InformationDocuments/INFCOM-2-INF06-3(1-1)-WIS-2-0-IN-A-BOX_en.docx&action=default)).

2. The workshop recommended the establishment of the "WIS2 in a box" project (see [INFCOM-2/INF. 6.3.1(1)](https://meetings.wmo.int/INFCOM-2/_layouts/15/WopiFrame.aspx?sourcedoc=/INFCOM-2/InformationDocuments/INFCOM-2-INF06-3(1-1)-WIS-2-0-IN-A-BOX_en.docx&action=default)) with the objectives:

(a) To accelerate the implementation of WIS 2.0 by providing a ready-made software solution for LDCs, SIDS and those Members willing to adopt open-source solutions

(b) To provide a reference implementation to test the WIS 2.0 technical specifications and support the industry in providing solutions for WMO Members.

The workshop represented a turning point for developing WIS 2.0 technical architecture and its implementation. It provided clear indications for the way forward and suggested that the WIS2 in a box project could serve as an accelerator to draft the final technical specifications and implement WIS 2.0 in many Members.

WIS 2.0 new data sharing framework can support the growing requirements in all WMO disciplines and domains associated with the WMO Unified Data Policy ([Resolution 1 (Cg‑Ext(2021](https://library.wmo.int/doc_num.php?explnum_id=11113/#page=9)))) and GBON ([Resolution 2 (Cg-Ext(2021](https://library.wmo.int/doc_num.php?explnum_id=11113/#page=29)))). WIS 2.0 role as the enabler for these two important initiatives is the primary motivation for the changes in the implementation plan. The outcomes of the workshop and the newly developed transition strategy provide opportunities for improving the plan in order to accelerate the implementation.

The transition strategy from the Global Telecommunication System (GTS) to WIS 2.0 proposed in the [INFCOM-2/INF. 6.3(2)](https://meetings.wmo.int/INFCOM-2/_layouts/15/WopiFrame.aspx?sourcedoc=/INFCOM-2/InformationDocuments/INFCOM-2-INF06-3(2)-WIS-METADATA-KPI_en.docx&action=default) is aimed at ensuring that Centres migrating to WIS 2.0 can switch off their GTS reception and transmission equipment shortly after migrating, without having to wait the end of the migration.

Other elements underpinning the updated implementation plan are the WIS 2.0 global infrastructure components: Global Brokers, Global Caches and a Global Discovery Catalogue, and the WIS2 nodes operated by National Centres and Data Collection and Production Centres (DCPCs). Those WIS2 components need a pilot phase to be developed and integrated into the WIS2 infrastructure.

The revised implementation plan is reported in the table below and provides a more precise timeline than the previous version. However, most of the plan remains unchanged, and new pilot and pre-operational phases have been added. The original streams: projects, normative, monitoring and transition are kept in the new plan, and the streams of communication and training are merged for convenience.

|  | Projects | Normative | Monitoring | Transition | Communication & Training |
| --- | --- | --- | --- | --- | --- |
| 2022 INFCOM EC-75 | Demonstration projects final report  WIS2 in a box release 1.0 | WIS 2.0 draft architecture |  | INFCOM determine how and where industry should be engaged to support WIS 2.0 implementation | Communication plan for WIS 2.0 implementation published to Members |
| 2023 Cg-19 EC-76 | Pilot projects for Global Services, NCs, and DCPCs  Pilot projects for transition infrastructure  Pilot projects for disciplines and domains  WIS 2 in a box community building | WIS 2.0 Technical Regulations approved with ‘Operational Status’  Guidelines for WIS 2.0 implementation published | New monitoring implemented (able to monitor GTS and WIS2 to support transition)  Define KPIs for GTS to WIS2 transition | GISC with the support of Regional Associations engage the transition of their Area of Responsibility toward WIS 2.0 | WIS 2.0 training plans in place for all Regions  WIS 2.0 workshops in RAs |
| 2024 INFCOM-3 EC-77 | Finalize Pilot projects | WIS Centres providing Global Services  Final Draft of technical guidance in the Guide to WIS | Start yearly transition monitoring report | Start pre-operational phase  GISC with the support of Regional Associations engage the transition of their Area of Responsibility toward WIS 2.0  Old WIS DAR Catalogue ‘frozen’. | WIS 2.0 training in all RAs |
| 2025 | Migration projects in LDCs and SIDS |  | Yearly transition monitoring report | Start operational phase and transition GTS to WIS2 |
| 2030 |  |  |  | 90% of Members migrated to WIS 2.0 |
| 2033 |  |  |  | Stop transition infrastructure and GTS transmission |

**Projects**

The WIS 2.0 demonstration projects were established to validate the principles underpinning WIS 2.0 technical framework and provide input for developing WIS 2.0 architecture. The objectives were successfully achieved at the workshop on WIS 2.0 demonstration projects in September 2021, and with the final report in [INFCOM-2/INF. 6.3(2)](https://meetings.wmo.int/INFCOM-2/_layouts/15/WopiFrame.aspx?sourcedoc=/INFCOM-2/InformationDocuments/INFCOM-2-INF06-3(2)-WIS-METADATA-KPI_en.docx&action=default) they can be considered closed for the purpose of WIS 2.0.

New projects will be established for the WIS 2.0 pilot phase starting from the last quarter of 2022.

The WIS 2.0 pilot projects will cover all the components of WIS 2.0:

- Global Infrastructure: Global Broker, Global Cache, Global Discovery Catalogue

- NCs and DCPCs

- Transition Infrastructure: GTS to WIS2 and WIS2 to GTS gateways

* Provision of a standardized and unified catalogue of WMO "core" and "recommended" data
* Development of interoperability approaches with ICAO System Wide Information Management (SWIM)

The projects will have one year to develop the requested operational functions, and an integration exercise will be performed in the last quarter of 2023. SC-IMT will draft a final report for the pilot phase at the end of 2023, reporting whether the planned technical objectives have been achieved and the readiness for the operational phase.

The following table reports the list of Members or Partner Organizations providing a pilot project for the initial phase of WIS 2.0.

| Member/Partner Organization | Global Cache | Global Broker | Global Discovery Catalogue | DCPC | NC |
| --- | --- | --- | --- | --- | --- |
| Algeria |  |  |  |  | x |
| Argentina |  |  |  |  | x |
| Australia | x | x |  |  |  |
| Canada |  |  | x |  | x |
| China |  | x | x |  |  |
| France |  | x |  |  |  |
| Germany | x | TBC | TBC |  | x |
| Italy |  |  |  |  | x |
| Japan | x |  |  |  |  |
| Republic of Korea | x [Dr. Yoo] |  | x |  |  |
| Morocco |  |  |  |  | x |
| United Kingdom | TBC |  |  |  |  |
| United States of America | x |  |  |  |  |
| ECMWF |  |  |  | x |  |
| EUMETSAT |  |  |  | x |  |

WIS 2.0 shall enable the data exchange for all WMO disciplines and domains as required by the WMO Unified Data Policy ([Resolution 1 (Cg-Ext-2021)](https://library.wmo.int/doc_num.php?explnum_id=11113/#page=9)). Therefore, INFCOM will initiate pilot projects to ensure preparedness for the pre-operational and operational phases for those disciplines and domains not yet integrated into the WIS/GTS data exchange. In particular, INFCOM will set up pilot projects for hydrology (WHOS), cryosphere and climate (OpenCDMS) to develop the necessary regulatory and technical framework to allow adequate data exchange through WIS 2.0. The projects will be part of the WIS 2.0 pilot phase and participate in the planned integration exercise. A report will be drafted by SC-IMT at the end of the pilot phase, reporting on the readiness for the pre-operational phase and covering eventual gaps and areas for improvement. The following table reports the list of Members providing pilot projects for the mentioned disciplines and domains.

|  |  |  |  |
| --- | --- | --- | --- |
| Member | Hydrology | Cryosphere | Climate |
| Argentina | x |  |  |
| Belize |  |  | x |
| Brazil | x |  |  |
| Norway |  | x |  |
| Uruguay | x |  |  |

**Normative**

The amendments to the *Manual on the WMO Information System* (WMO-No. 1060) defining the technical architecture and functions of WIS 2.0 have been drafted by SC-IMT.

The first draft of the "Guidance on technical specifications for WIS 2.0", containing the technical details for implementing the WIS 2.0 technical framework, is available here [*Guidance on technical specifications for WIS 2.0*](https://community.wmo.int/WIS2_Technical_Specification_Guidance)for the benefit of the Members and for the specific use by the WIS 2.0 pilot projects. SC-IMT, with the support of the Secretariat, will gather feedback from the pilot projects and update the Guidance. At the end of the pilot phase, SC-IMT will:

(1) Finalize the Guidance and propose to INFCOM the amendments for inclusion into the [*Guide to the WMO Information System*](https://library.wmo.int/index.php?lvl=notice_display&id=6856) (WMO-No. 1061);

(2) Propose amendments to the [*Manual on WIS Vol. 2*](https://library.wmo.int/index.php?lvl=notice_display&id=9254) (WMO-No. 1060) to define the functions and the designation procedure of WIS Centres providing Global Services.

**MONITORING**

Monitoring the data sharing and services in WIS 2.0 is part of the infrastructure and will provide valuable information to be used by all WMO disciplines and domains. However, the principal objective of WIS 2.0 monitoring is initially to monitor the transition from GTS to WIS 2.0 to ensure that all the data are migrated and accessible from WIS 2.0.

The required monitoring tools will be developed and tested during the pilot phase. SC-IMT will define a set of Key Performance Indicators (KPIs) to monitor the status of the implementation of WIS 2.0. The monitoring tools will be developed to allow periodic computation of WIS 2.0 KPIs.

SC-IMT, in collaboration with the Secretariat, will produce a yearly report on the implementation of WIS 2.0 starting from the pre-operational phase.

**Transition**

The GISCs, with the support of the Secretariat, will engage with the National Centres and Data Production and Collection Centres (DCPCs) in their area of responsibility to support the transition from GTS/WIS to WIS 2.0. However, the NCs and DCPCs are encouraged to proactively approach the transition and request support to their primary or secondary GISC if required.

A Guidance for the transition from GTS to WIS 2.0 is available as INFCOM-2/INF6.3.1(2) and will be made available via the Web by the Secretariat.

The guidance will define the requirements for NCs and DCPCs concerning the transition.

The Secretariat will provide coordination for the transition.

**Communication and training**

Communication and training will be a particular focus area for all WIS 2.0 implementation. The Secretariat will provide Web resources and a plan for the workshops and training as coordinated with SC-IMT and the Regional Associations (RAs).

Initially, the Secretariat will focus on organizing workshops in all the WMO Regions to inform and foster the transition in close collaboration with the Regional Associations, SC-IMT and the GISCs.

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