WORLD METEOROLOGICAL ORGANIZATION

EXECUTIVE COUNCIL WORKING GROUP ON
THE WMO INTEGRATED GLOBAL OBSERVING SYSTEM (WIGOS)
AND
THE WMO INFORMATION SYSTEM (WIS)

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ITEM: 3.1

DEVELOPMENT OF AN OVER-ARCHING WIGOS DEVELOPMENT AND IMPLEMENTATION PLAN

Draft Initial WIGOS Development and Implementation Plan

(Submitted by the Secretariat)

Summary and Purpose of Document

This document presents a Draft Initial WIGOS Development and Implementation Plan based on the guidelines given by Cg and the EC. The Draft Plan contains appropriate sections intended to foresee actions and activities ensuring the extension of benefits of the Integration into the overall WMO programmes activities at national and international levels. As directed by Cg and the EC the planning and implementation of WIGOS should proceed in parallel to the planning and implementation of WIS.

ACTION PROPOSED

Following the mandate given by the Executive Council to the Working Group, the meeting is invited to review a Draft Initial WIGOS Development and Implementation Plan and provide advice and guidance on the required actions to finalize this over-arching document.

APPENDIX: Draft Initial WIGOS Development and Implementation Plan

References:

1. Cg-XV, PINK 7.4(3), Evolution of NMHSs and WMO, Towards Enhanced Integration between the WMO Observing Systems.

2. Res. 2/4 (EC-LIX) - Executive COUNCIL WORKING GROUP on the WMO Integrated Global Observing System (WIGOS) and the WMO Information System (WIS).

3. Towards Enhanced Integration between the WMO Observation Systems (Revised EC-TT/WIGOS Doc. 3, submitted by Jim Rasmussen 15 July 2007)

DISCUSSION

1. The preparation of a WMO Integrated Global Observing Systems (WIGOS) Development and Implementation Plan requires a description of WIGOS. Such a description should be articulated at a top level for Senior Managers with a more detailed description for all users. Based on the top level and detailed descriptions, a WIGOS Development and Implementation Plan can be prepared.

2. The Appendix to this document contains a Draft Initial WIGOS Development and Implementation Plan.

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Draft Initial WIGOS Development and Implementation Plan

Introduction

The top-level and detailed descriptions for WMO Integrated Global Observing Systems (WIGOS) are foundational documents and identify the urgent need for WIGOS implementation. The following document describes an initial WIGOS Development and Implementation Plan as mandated by the Fifteenth WMO Congress (Cg-XV).

Strategic Roadmap for Integration

Cg-XV agreed that planning and implementation of the WIGOS integration process should proceed in phases defined by the annual meetings of the WMO Executive Council in order to assure oversight, review and direction. To that end, Cg-XV requested EC-LIX to appoint a Working Group to oversee WIGOS and WIS. The process foreseen was one where planning and implementation of WIGOS and of WIS would culminate with Cg-XVI (2011) adopting improvements towards strengthening the WMO programme structure and the system of technical commissions, which would be positioned to extend the benefits of the integration into the service and application components of the overall WMO Programmes at both the national and international levels.

EC-LIX, in its Resolution 2/4 (EC-LIX), established the EC Working Group on WMO Integrated Global Observing Systems and WMO Information System (EC-WG WIGOS/WIS) with the following TOR:

(1) Provide advice and guidance in the preparation of an over-arching WIGOS Development and Implementation Plan;

(2) Refine the WIS Development and Implementation Plan and ensure coordination between WIGOS and WIS plans to allow for an integrated WMO end-to-end system of systems;

(3) Monitor the development and implementation of WIGOS and WIS through a “rolling review” mechanism; and

(4) Monitor WIGOS/WIS “Pilot Projects”, as identified by Cg-XV, to test concepts, identify problem areas, and to help in elaborating the Development and Implementation Plan.

Preparation of the overarching WIGOS Development and Implementation Plan (WDIP) closely coordinated with the WIS Development and Implementation Plan will be a critical ongoing activity during the four-year period 2008-20011. WDIP will be a “living” document. Version 1.0 is this document, the initial WDIP, and was prepared and reviewed at the first session of the EC-WG WIGOS/WIS. Subsequent versions will be prepared at least annually as the planning proceeds and experience is gained from the various Pilot Projects and inputs from the Technical Commissions, Regional Associations and the advisory/steering bodies of WMO co-sponsored programmes are received. Meetings of EC-WG WIGOS/WIS will provide oversight and guidance regarding the evolution of the plan, which subsequently would be considered at each session of EC. While further evolution of the plan will occur, it is anticipated that it should include an assessment of the total observational requirements for all WMO Programmes and co-sponsored programmes and identify those (including characteristics such as observational accuracy and resolution) that are needed to service all programmes or applications. It would also include implementation details for the various Pilot Projects and their results, details of actions required to address revisions of the TR of the Technical Commissions, the WMO Programme structure, and WMO Secretariat budgetary, personnel and organizational implications.

The “Roadmap” or schedule below is broken into annual “Phases” timed according to sessions of EC. The items listed under each Phase required further elaboration since the dates of various events (e.g. Commission Meetings) are not yet confirmed, but they should be incorporated as the information becomes available. For historical purposes as well as further elaboration of the plan, a description is provided of the Preparatory Phase that occurred prior to Cg-XV. The preparation of Version 1.0 of WDIP (WDIP V-1.0) that can be endorsed by the EC in June 2008 will be a crucial first step. WDIP V-1.0, and its subsequent revisions, will be important for informing the Technical Commissions, Regional Associations and the steering committees of GCOS, GOOS and WCRP of WIGOS and WIS planning activities and to encourage their input into the process. Scheduling of as many regular sessions as possible of Technical Commissions and Regional Associations before 2010 would be most useful in obtaining their input in the planning process. EC-LXII (2010) marks the end of the active planning period since during its session the basic proposals to Cg-XVI will be prepared.

Preparatory Phase. December 2006 – Cg-XV (May 2007)

(1) Document prepared for the EC Task Team on the WMO Integrated Global Observing Systems (EC-TT/WIGOS) Feb. 2007.

(2) Report of EC-TT/WIGOS submitted to Cg-XV. This report to address the decision of EC-LVIII as contained in Resolution 13 (EC-LVIII).

(3) Formation of an internal Interim WMO Secretariat WIGOS Team under the chairmanship of a Director with participation from all relevant WMO Programmes. The Interim Secretariat WIGOS Task Team to address follow-up actions as required according to proposals by the EC-TT/WIGOS in preparation for presentation to Cg-XV.

Phase I. Cg-XV (May 2007) – EC-LX (June 2008)

(1) Cg-XV through the EC-LIX establishes the EC-WG/WIGOS-WIS to oversee the development of WIGOS and WIS.

(2) Full time WIGOS Planning Unit organized in the WMO Secretariat (June 2007)

(3) Coordinate with IOC regarding the WIGOS-WIS initiatives.

(4) Initiate the preparation of the draft WDIP v.1.0 (completion by Dec. 2007). Present the draft WDIP v.1.0 to EC-WG/WIGOS-WIS.

(5) Initiate first Pilot Projects (see paragraphs below).

   a. Integration of WWW/GOS and GAW into WIGOS;

   b. Initiation of Global Hydrological Network in context of WIGOS;

   c. Integration of AMDAR into WIGOS;

   d. Elaborating the underpinning/crosscutting role and responsibilities of the Instruments and Methods of Observation Programme in the context of WIGOS;

   e. Integration of marine meteorological and other appropriate oceanic observations into WIGOS.

(6) Adjust draft WDIP v.1.0 as guided by EC-WG/WIGOS-WIS and present draft WDIP v.1.1 to EC-LX.

(7) The agendas of Technical Commissions and Regional Associations should include an item relating to the Integration of WMO Observing Systems and should seek their "consensus inputs" to the WDIP.

(8) At meetings of Presidents of Technical Commissions a major agenda item should be the WDIP.

Phase II. EC-LX (June 2008) - EC-LXI (June 2009)

(1) EC-LX reviews draft WDIP v.1.1 and provides guidance to issue the WDIP v1.1.

(2) The Pilot Projects begun in Phase I implemented and evaluated; adjustments to the WDIP may arise from the evaluations.

(3) Initiate planning for Pilot Project concerning the integration of marine meteorological and oceanographic observations with WIGOS-WIS (see paragraph below)

(4) Additional Pilot Projects may be identified.

(5) Schedule possible concurrent sessions of CAS and CBS with joint agenda items regarding WIGOS-WIS and the integration of GAW and GOS into WIGOS (see paragraph below).

(6) Initiate work on the proposed revisions to the WMO Technical Regulations.

(7) Revise the WDIP v.1.1 as appropriate with guidance from EC-WG/WIGOS-WIS – issue WDIP v. 1.2 and submit to EC –LXI for review and guidance.

(8) The agendas of Technical Commissions and Regional Associations should include an item relating to the Integration of WMO Observing Systems and should seek their "consensus inputs" to the WDIP.

Phase III. EC-LXI (June 2009) - EC-LXII (June 2010)

(1) EC-LXI provides guidance for this year (note this is the last period for active planning before specific proposals are prepared to submit to CG-XVI).

(2) Pilot Projects begun in Phase I and II should be completed and evaluated. Results to be appropriately incorporated into the WIP v.2.0.

(3) EC-WG/WIGOS-WIS meets to review in detail the WDIP that is nearing completion at this stage.

(4) The agendas of Technical Commissions and Regional Associations should include an item relating to the WIGOS-WIS and should seek their "consensus inputs" to the WDIP.

(5) Matters relating to the revision of the Technical Regulations, the TORs of Technical Commissions, and proposals regarding WMO Programme structure and content and Secretariat structure will be addressed in this Phase.

(6) The final preparations for the presentation of the overall WMO structure and function that reflects the WIGOS-WIS should be prepared for EC–LXII. The action of EC at this time will consist of the details that will be presented to Cg-XVI.

Phase IV. EC-LXII (June 2010) - Cg-XVI (May 2011)

(1) WDIP (final version) is completed.

(2) EC-LXII to agree on the content of the submission to Congress regarding the implementation of WIGOS-WIS. This will include the proposed changes to the Technical Regulations, the revised roles and TORs of the various Technical Commissions, the adjustments to the WMO Programme structure, and the impact on Secretariat budgets and personnel. Proposed actions of Cg-XVI to implement the programme.

(3) EC-WG/WIGOS-WIS submits its final report and recommendations to Cg-XVI.

Pilot Projects

While the preparation of an over-arching WIDP will be the crucial centerpiece of the planning and implementation of WIGOS, Cg-XV felt that undertaking at the earliest possible stage several WIGOS Pilot Projects would be useful to address major issues in the integration process and would help in elaborating the WDIP. The following are the Pilot Projects identified by Cg-XV. Pilot Projects will emphasize the role and contributions to be made by the Technical Commissions. Following the description of five Pilot Projects, there is also a description of the need for Demonstration Projects that will emphasize the role of and contributions of Regional Associations.

Pilot Project I: Integration of WWW/GOS and GAW into WIGOS

One of the major elements of the creation of WIGOS will be the incorporation of the WWW/GOS and GAW into WIGOS. The integration will center on a planned transition of required functions of both GOS and GAW to WIGOS. Through integration of GAW into a system of observing systems, atmospheric composition data will be available into operational GDPFS centres and other users that require comprehensive data resources in near real time. Through integration of GOS into a system of observing systems, interfaces to other observing systems will be set-up.

The initial work of this Pilot Project will center on the definition of the Pilot Project itself. Since the Project is so central to the whole initiative, it should cover the whole spectrum of issues to be faced in the WIGOS initiative. These include:

- Structure and content of the WMO TR as it relates to GOS and GAW for both *in-situ* and spaced based components;
- Structure of the joint standard observing practices;
- Mechanisms for scientific and technical guidance, system oversight and evaluation (joint CBS and CAS responsibility);
- Relationships to WIS including the data acquisition and the connection to and management of analysis centers;
- System support issues such as network design and management, QC/QA, sensor inter-comparisons and calibrations, operational information services, data management, data archiving.

The initial work on this Pilot Project started in August 2007 through WMO Secretariat discussions leading to a decision by the Presidents of CAS and CBS to approve a proposal for development of a Joint CAS/CBS Pilot Project on WIGOS and associated Terms of Reference for an “ad hoc CAS/CBS Experts Group on WIGOS”. This ad hoc Experts Group includes representatives of both CBS and CAS, and the involvement of the Secretariat designated to lead in the development of WIGOS. Annex I contains the text from the CAS Management Group Meeting held 24-26 September 2007 at which the ad hoc Experts Group’s Terms of Reference were approved. Annex I will serve as a template for the other Pilot Projects involving two or more Technical Commissions and/or other relevant Planning Offices.

The work of the ad hoc Experts Group will be a major element to be considered by the first meeting of the EC-WG WIGOS/WIS. The ad hoc Experts Group's efforts will be reviewed and monitored by the EC-WG WIGOS/WIS in order that more in-depth knowledge of the individual elements of its work programme can be addressed by EC-LX (2008). The EC-WG WIGOS/WIS report to EC-LX will indicate specifics of the incorporation of WWW/GOS and GAW into WIGOS. This will provide a clear indication of the scope and depth of the initial integration activities that WIGOS will require.

The results of the ad hoc Experts Group will also be an early source of material for presentation to the Presidents of Technical Commissions and will provide basic input to CBS for consideration at its meeting in 2008.

Pilot Project II: Initiation of a Global Hydrologic Network

This Pilot Project is based on Action T4 of the GCOS Implementation Plan[1] which calls for the provision of daily runoff observations (not necessarily real-time) from 380 river gauging stations located near the down-stream end of the largest rivers of the world. The climate objective is to monitor the global freshwater flux into the oceans. This Pilot Project is also essentially the same as the Hydrological Applications and Run-Off Network (HARON) proposed to be initiated by GEO in cooperation with the Global Terrestrial Network – Hydrology (GTN-H) and the Integrated global Water Cycle Observation (IGWCO) Theme of IGOS. Some work has already been undertaken under the auspices of GEO to prepare a conceptual framework for HARON.

In the context of WIGOS, this Pilot Project should involve the participation of CHy, CBS, the GCOS Secretariat, the Global Run-Off Data Center (Germany) as well as the WMO Secretariat centering on a cooperative effort with the GEO Secretariat and the over-all HARON effort. HARON is conceived as an effort coordinated by GEO and its Members, the WMO, WCRP, GCOS and IGOS-IGWCO. WMO WIGOS and WIS bring a truly global (all nations) dimension to the HARON initiative and provide a systems approach to its implementation.

Pilot Project III: Integration of AMDAR into WIGOS

This Pilot Project centers on a joint CAeM – CBS activity. A small task team of experts (based on the concept described in Annex I) from both Commissions with Secretariat involvement would study the issue and propose the actions necessary to accomplish the integration. The spectrum of issues are essentially those for the integration of GAW and GOS into WIGOS. One issue in the case of AMDAR is how to transition the AMDAR Panel into the WIGOS structure and function. Other technical issues are probably minor but should be thoroughly reviewed and addressed.

Pilot Project IV: Elaborating on the Underpinning/cross-cutting Role and responsibilities of the Instruments and Methods of Observation Programme and CIMO in the Context of WIGOS

This Pilot Project focuses on the role and relationship of the Instruments and Methods of Observation Programme and of CIMO in the context of WIGOS. A small task team with participation from the Secretariat and representatives from the Management Groups of CBS, CIMO, CAS and other bodies as appropriate would be assigned to study the issue during the period 2008-2009 between EC-LX and EC-LXI. It is expected that EC-LX would provide the initial guidance to the task team regarding their terms of reference and scope of their deliberations.

Pilot Project V: Integration of Marine Meteorological and Other Appropriate Oceanographic Observation Systems into WIGOS.

[1] See pages 88-89. of the *Implementation Plan for the Global Observing System for the GCOS In Support of the UNFCCC. GCOS-92 (WMO/TD No. 1219)*

A Pilot Project regarding the integration of Marine Meteorology and Oceanographic Observations with WIGOS is proposed to be undertaken in the 2008-2010 timeframe, and would be a joint study by JCOMM and CBS regarding the potential for closer integration of the Marine Meteorology and Oceanographic observing systems within WIGOS. The joint IOC and WMO collaboration is unique and more specific definition of the scope and details of WIGOS is required. After the work on the over-all WDIP and Pilot Projects has begun, there will be a basis for considering how the joint IOC and WMO activities can fit into the WIGOS structure and function.

Demonstration Projects on the Development and Implementation of WIGOS at NMHSs

Cg-XV emphasized that support and involvement of NMHSs and Regional Associations in the implementation of WIGOS concept was a crucial factor for ensuring important benefits for all Members. Helping Members to more fully understand WIGOS and keeping them current on its practical development should be considered as an essential component in WIGOS implementation. This can be achieved through launching Demonstration Projects in selected NMHSs. These NMHSs will be at the operational end of the WIGOS implementation demonstrating to all concerned how to initiate and keep WIGOS together with WIS components running at the required levels of performance. Feedback and lessons learnt from these NMHSs will be extremely beneficial in understanding others' expectations of WIGOS/WIS concept implementation. These projects will also have a high profile impact since they would include all observing systems, i.e. in addition to WWW/GOS, the Demonstration Projects would involve functions of other observing networks that provide the delivery of time critical data and products, as well as other information, underlying the basic operations of NMHS. The Secretariat working with appropriate working bodies of Regional Associations and Technical Commissions would ensure regular coordination and communication between Members involved in Demonstration Projects. The Demonstration Projects would complement the already agreed-upon Pilot Projects. The Pilot Projects focus on Technical Commission involvement while the Demonstration Projects focus on NMHSs in Regional Associations.

Possible candidates for "test-bed" Demonstration Projects include the following NMHSs: Kenya (RA I), Republic of Korea (RA II), Brazil (RA III), United States of America (RA-IV), Australia (RA V) and the Russian Federation (RA VI).

Develop and maintain WIGOS web page

It would be essential to have an effective website containing current information about WIGOS roles and tasks, related upcoming events and background information. The WMO Secretariat, in coordination with Members concerned, relevant focal points for WIGOS in RAs and Technical Commissions, should establish and update of a WIGOS web page on the WMO Web site by publishing information about WIGOS, including general information on the current status of implementation of Pilot and Demonstration Projects, providing a condensed information to various WIGOS user communities.

Policy and Governance Aspects

To accomplish the goals above regarding the development of a truly integrated WMO global observing systems, adjustments must be made in the WMO Technical Regulations, the WMO Programme structure, the working structure and function of the Technical Commission, and of the WMO Secretariat. The motivations for WIGOS are focused; i.e. to the objective of instituting a truly integrated end-to-end system - comprised principally of the WIGOS and WIS. The development of an effective and efficient system of governance to guide and implement it, arrangements for effective scientific and technical advisory mechanisms to develop, monitor and evaluate it, and an

appropriate WMO Programme and WMO Secretariat structure to support it, will all be important and essential components of the systems into system integration.

WMO Technical Regulations (TR)

One of the principal strengths of WMO is the organizational and operational backbone provided by the *WMO Basic Document Series No. 2, Technical Regulations (WMO- No.49)*. The three volumes of the WMO Basic Document Series are supplemented by Annexes called Manuals, which have the same status as the Basic Documents and are aimed at facilitating cooperation between WMO Members, specifying their obligations and ensuring adequate uniformity and standardization in the practices and procedures employed. In addition to the Manuals, there is a class of WMO documentation, not part of the technical regulations, usually called *Guides* (e.g. the *Guide to the Global Observing System, WMO No. 488).* The purpose of the *Guides* is to provide practical information on the development, organization, implementation and operation of the system, subsystem(s) or service in order to enhance both the participation of individual WMO Members in the activity and the benefits they may obtain from it. The *Guides* often supplement the regulatory material contained in the *TR* and their *Annexes*.

The present structure of the Technical Regulations (TR) Volume I centers around the WWW/GOS, GDPFS, and GTS with other components of the overall WMO programmes or systems distributed within the GOS or simply added on as they evolved. In order to effectively approach the integration of WMO Global Observing Systems (WIGOS), and to incorporate WIS, a fundamental reorganization and approach to the WMO TR is required. Undertaking this task early in the WIGOS and WIS planning activity will provide structure and organization to the overall effort, and will help in organizing the work programme required to implement WIGOS and WIS. In this regard, CBS-Ext.(06), (Seoul, Republic of Korea, November 2006) has already noted that the implementation of the WIGOS and WIS will ultimately require a major revision of the TR.

Space based observing and communications systems are becoming more and more central to the over-all WMO system operations. In fact, many future applications will often rely on space-based sensors as the primary source of data, and require surface based or *in situ* observations for calibration or “ground truth” purposes, thus changing the operational requirements placed on the integrated system substantially. The present set of TR often treats the satellite systems as entities separate from the surface based networks and systems.

The revised structure of the TR should provide a foundation for WIGOS. It should document the structure of a system of systems based on interoperability and compatibility among all its elements and with the user community. The revised TR would need to be comprehensive and reflect all of the component systems. It would allow room to address, the wide ranging multi-discipline issues and requirements for observational resources from all domains (atmosphere, ocean, and terrestrial) facing WMO today (weather monitoring and prediction, atmospheric composition monitoring, climate monitoring and change, disaster risk reduction and mitigation, water resources etc.); it should also build on and amplify the integration across surface-based and space-based sources of observations.

In undertaking such a revision, a clearer vision for the purpose, scope, content and a process for continuous review and updating of the various elements that make up the TR, including the Guides, should be developed.

There is also an opportunity to make the TR easier to access, update and use. The application of electronic access through the Internet or similar technology for technical regulatory information should be considered as part of the integration activity. The role of WIS as the vehicle for this function may be a viable option.

WMO Programmes and Technical Commissions

One single WMO Programme should be assigned the responsibility to lead the planning of WIGOS and WIS and with its ultimate implementation and operation. Participation during the integration by the other Programmes which currently have responsibility for components of the total WMO observation system will be crucial in this transition.

Likewise WIGOS and WIS should fall under a revised Commission for Basic Systems. The revised CBS TOR would be designed to reinforce its 'basic systems' responsibilities while building in stronger mechanisms for assessing and meeting the needs of the different applications sectors and programmes. The revised CBS would be focused on operational systems issues including planning and implementation across the full spectrum of observing domains and disciplines. Scientific research, system requirements, service provision etc would be the prerogatives of other Commissions, WMO Programmes or the various Advisory/Steering bodies.

As recognized in Resolution 7.4/1 (Cg-XV), the process leading to WIGOS and WIS would have a wide ranging impact on the structure and functions of WMO including the WMO Technical Regulations, data policy, roles, terms of reference, and working arrangements of the technical commissions, the WMO Programme structure and the WMO Secretariat. Initially what is needed to effectively proceed is the decision to focus the WIGOS and WIS within a single Programme and associated Commission. Given that decision, proposals with regard to how to organize and adjust the rest of the WMO Programme structure and Technical Commission TOR can be developed as an early step in the planning and implementation process.

Cg-XV agreed further that the integration process would centre initially upon the preparation of an over-arching WIGOS Development and Implementation Plan (WDIP). The plan should be kept up-to-date through a “rolling review” mechanism. It should also serve as the source of information on the integration initiative for all WMO Members and in particular developing countries. Several “Pilot Projects”, as apprived by Cg-XV, should be designed to test concepts, identify problem areas, and to help in elaborating WDIP. The possible candidate Pilot Projects approved by Cg-XV include those mentioned above under “*Phase I. Cg-XV (May 2007) – EC-LX (June 2008)”*

Jointly Sponsored Observing Systems

In progressing toward enhanced integration of, and interoperability amongst, WMO observing systems, it will be especially important that this be carried out in close consultation with WMO’s partner organizations that co-sponsor some of those systems. This will apply particularly to:

- the joint WMO-IOC-UNEP-ICSU Global Climate Observing System (GCOS);
- the WMO contribution to the joint IOC-UNEP-WMO-ICSU Global Ocean Observing System (GOOS); and
- those terrestrial/hydrological observing systems which serve as part of the FAO-UNEP-WMO-ICSU Global Terrestrial Observing System (GTOS).

Integration levels within WIGOS

As a system of observing systems, integration will be accomplished at three levels: observation standardization; a common information infrastructure, i.e. WIS; and end-product quality assurance.

Coordination of WIGOS development and implementation through standardization at the observation level

A sustained, optimized, end-to-end WMO Integrated Global Observing System should encompass homogeneity, interoperability, compatibility of observations from all WIGOS constituent observing systems. This should be achieved through implementation of guidance and studies on methods of observations by IMOP within WIGOS constituent networks including tests, calibration and comparisons. Schematically, it could be defined as an “instruments” level of integration.

Coordination of WIGOS development and implementation with WIS

Cg XV emphasised that the planning and implementation of WIGOS should proceed in parallel to the planning and implementation of WIS. It is therefore crucial that as from its early planning stages the WIGOS activities be coordinated with WIS. This will be accomplished through activities of the EC WG on WIGOS&WIS, with active participation of representatives of RAs and Technical Commissions concerned and coordination role of the Secretariat. Technologically, the key action leading to the desired integrated networks will be the generation of data and information from WIGOS constituent networks using a comprehensive, standardized data presentation in compliance with WIS information exchange requirements for all WMO Programmes. This may be considered as “WIS” integration.

Development of WMO Regulatory material related to WIGOS, including QMF aspects

To ensure integrated/coordinated data acquisition efforts among NMHSs and other operators to minimize duplication, reduce costs and maximize data and products availability and quality, the development of an integrated management system to secure sustained, timeliness data streams and adequate quality control, there is the need for appropriate regulatory documentation including organization and recommended practices and procedures so that Members can proceed adequately with WIGOS development and implementation taking into account QMF aspects. This will constitute an “end-products” integration.

Annex I

CBS- CAS Collaboration and the WIGOS GOS/GAW Pilot Project

1. In considering a mechanism towards close collaboration, mandated by the Fifteenth WMO Congress, between CAS and CBS in the areas of integrated observing systems, a proposal by the CBS President to hold a joint meeting of CAS and CBS Management Groups was discussed and accepted by the CAS Management Group.

2. The proposal towards a GOS/GAW Pilot Project within WIGOS was discussed between D/AREP and AD/WWW. As a first step, it was agreed to develop Terms of Reference for an "ad hoc CAS/CBS Experts Group on WIGOS" as described below. The CAS Management Group and CBS President agreed that the plan was a suitable response to the request from Congress XV to implement WIGOS. Thus, it agreed to establish an "ad-hoc CBS & CAS Experts Group on WIGOS" to develop a project implementation plan as outlined in Attachment 1 with an associated timetable. In response to 3(i) of the proposal, it was agreed that the Terms of Reference of the Group are:

a) *Produce a Joint CAS/CBS GAW-GOS Project Plan for review by both MGs as a matter of urgency. The Project Plan will also be available to the EC WG on WIGO/WIS whose first meeting is tentatively planned for December 2007. The Project Plan should support the high level WIGOS/WIS goal to establish a comprehensive, coordinated and sustainable system of WMO observing systems with ensured access to its component observing systems' data and products through interoperable arrangements.*

b) *Following approval by the respective Management Groups, the* ad-hoc CBS & CAS Experts Group on WIGOS *will facilitate activities towards implementation of the Plan during two years (2007-2008) to enhance delivery of chemical composition data for assimilation by numerical weather prediction models and the delivery of pre-operational products to a user community.*

c) *Members of the Experts Group are:*

(i) *CBS OPAG-IOS Chair;*
(ii) *CBS ET-EGOS Chair;*
(iii) *CBS Co-chair of OPAG-ISS (Dr. Steve Foreman);*
(iv) *CAS Chair OPAG-EPAC;*
(v) *CAS Chair of GAW Expert Team on NRT-CDD; and*
(vi) *CAS Chair of Expert Team on World Data Centres.*

Attachment 1

Proposal towards a Joint CAS/CBS Pilot Project on WIGOS

1. Background

As part of its WIGOS decision, Cg-XV (Attachment 2) requested several pilot projects: – one for CBS and CAS to undertake a joint pilot project to enhance coordination of GOS and GAW in WIGOS/WIS. The high level WIGOS/WIS goal is to establish a comprehensive, coordinated and sustainable *system of observing systems* with ensured access to its component observing systems' data and products through interoperable arrangements. WIGOS is the *system of observing systems* and WIS provides the access through the interoperable arrangements. WIGOS/WIS will address all WMO Programme requirements, ensure availability of required information, meet data quality standards, and facilitate access in real/quasi-real time as well as to archived information. The CBS/CAS Joint Pilot Project will make an important contribution in the development of WIGOS/WIS.

Factors bearing on planning:

- CAS MG meeting to be held 24-26 Sept 2007, Oslo and planned for Geneva in Sept 2008
- CBS MG meeting in August 2008
- EC WIGOS/WIS Working Group Meeting Dec 2007 or January 2008
- CAS OPAG EPAC Meeting March 2009

2. Joint GOS-GAW Pilot Project Development

To accelerate implementation of WIGOS/WIS, the GOS-GAW pilot project (including relevant WIS items) mandated by CG-XV should, as a first step, develop a draft project plan through an "ad-hoc CBS & CAS Experts Group on WIGOS". Follow-on steps envision joint meetings of CAS and CBS management groups (MGs) and appropriate OPAGs to finalize the project plan and implement it as well as reporting to the MGs and the EC WIGOS/WIS Working Group.

3. Proposed Schedule and Actions:

i. Early August 2007, D/AREP and D/WWW consult by email with the CAS and CBS Presidents, OPAG chairs, explaining the proposal and assign responsibilities for a joint document to be submitted to the CAS MG meeting jointly by AREP and WWW.

ii. 24-26 September 2007 at CAS MG Meeting Oslo. CBS MG would be represented by President of CBS and AD/WWW. Expected decision: (i) initiate development of a draft project plan by approving terms of reference of the "ad-hoc CBS & CAS Expert Group on WIGOS" and (ii) and approve a joint CAS/CBS MG meeting in 2008, possibly July.

iii. October 2007- Geneva meeting of the "ad-hoc CBS & CAS Expert Group on WIGOS":

a. Purpose: Produce first draft of a joint CAS-CBS GAW-GOS project plan for review by both MGs and the EC WG on WIGOS-WIS meeting tentatively planned for December 2007.

b. Who: A small group of no more than six persons – three from each Commission (see Annex I paragraph 2c) above).

iv. February 2008 Geneva 2nd Meeting of "ad-hoc CBS & CAS Expert Group on WIGOS". Complete the joint CBS-CAS project plan for GAW-GOS for the EC WG WIGOS/WIS review and the EC-LX guidance (June 2008).

v. July 2008: Joint meeting of CBS & CAS MG (accordance with item ii) Purpose: Incorporate the EC-LX guidance and decisions into final joint plan.

vi. Implement the project by November 2010 reporting to CAS and CBS and EC WG and finally Cg-XVI(May 2011).

Attachment 2

Excerpt from Cg-XV, PINK 7.4(3), Evolution of NMHSs and WMO, Towards Enhanced Integration between the WMO Observing Systems.

Roadmap

7.4.3.17 Congress agreed that planning and implementation of the integration process should proceed in phases defined by the annual meetings of the Council in order to assure oversight, review and direction. The process foreseen is one where planning and implementation of an integrated WMO observing system and of the WIS would culminate with Cg-XVI (2011) adopting improvements towards strengthening the WMO programme structure and the system of technical commissions, which would be positioned to extend the benefits of the integration into the service and application components of the overall WMO Programmes at both the national and international levels.

7.4.3.18 Several “Pilot Projects”, as proposed by the EC Task Team, should be designed to test concepts, identify problem areas, and to help in elaborating the Plan. Possible candidate Pilot Projects include:

(a) Integration of WWW/GOS and GAW;

(b) Initiation of a Global Hydrologic network addressing a GCOS requirement;

(c) Elaborating the underpinning/crosscutting role and responsibilities of the Instruments and Methods of Observation Programme;

(d) Integration of AMDAR into the WMO global observing systems;

(e) Integration of marine meteorological and other appropriate oceanic observations into the WMO global observing systems.

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