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: 3.3

DEVELOPMENT OF AN OVER-ARCHING WIGOS DEVELOPMENT AND IMPLEMENTATION PLAN

Proposals for monitoring the development and implementation of WIGOS and WIS plans through a "rolling review" mechanism

(Submitted by the Secretariat)

Summary and Purpose of Document

This document outlines a process that should allow the EC WG on WIGOS-WIS the possibility: (1) to establish WIGOS based on the observational data requirements for all WMO and supported Programmes compared with expected performances for present and future observing systems; (2) to establish WIS based on data and product volume and availability requirements compared to existing and planned information systems capabilities; and (3) monitor WIGOS/WIS implementation using standard project management tools.

ACTION PROPOSED

The meeting is invited to review draft proposals for monitoring the development and implementation of WIGOS and WIS and provide advice and guidance on the required actions to establish an effective mechanism to steer and monitor overall implementation activities.

APPENDIX: Draft Initial proposals for monitoring the development and implementation of WIGOS and WIS plans through a "rolling review" mechanism

References:

(1) Cg-XV, PINK 3.1.2, WWW Information System and Services, Including The Global Telecommunication System And Data Management
(2) WIS project plan (DRAFT v0.5) http://www.wmo.int/pages/prog/www/WIS-Web/RefDocuments.html
(3) ICG-WIS - Meeting Reports and Working Documents http://www.wmo.int/pages/prog/www/WIS-Web/MeetingsReports.html
(4) CBS WGSAT, First Session (March 1994), the Final Report
(5) Manual on the GOS, Vol. I, Global Aspects, 2003 edition (WMO-No. 544)
(6) Guide to the GOS, Third edition, 2007 (WMO-No.488)

DISCUSSION

1. As defined by Congress and the EC, WIGOS and WIS are large and long-term projects that require coordination of many separate complex and dependent activities. The overall management of such projects to be accomplished under supervision of the EC WG WIGOS-WIS would require the establishment of an effective mechanism to steer and monitor implementation activities. Based on the experience gained by CBS and WMO Space Programme, it is suggested to apply a Rolling Review of Requirements (RRR) process specified in the *Manual* and *Guide to the GOS* to the implementation of WIGOS and WIS. Annex to this document contains a Draft Initial Proposals to monitor the development and implementation of WIGOS and WIS plans through a “rolling review” mechanism.

Draft proposals for monitoring the development and implementation of WIGOS and WIS plans through a "rolling review" mechanism

WIGOS design and implementation based on the Rolling Review of Requirements Process

The CBS Working Group on Satellites (WG-SAT) (1990's) established a procedure whereby the WMO could assess how well satellite capabilities met their user requirements. Pursuing that work, the Expert Team on Observational Data Requirements and Redesign of the Global Observing System (ET-ODRRGOS) (early 2000's) within the Open Programme Area Group on Integrated Observing Systems (OPAG-IOS) of the Commission for Basic Systems (CBS) has continued the collection of the requirements for observations to meet the needs of all WMO Programmes and also cataloguing the current and planned provision of observations from environmental satellites and *in situ* systems. The database resulting from these efforts is called the Database on User Requirements and Observing System (Space and *In situ*) Capabilities. The ET-ODRRGOS has followed a procedure called the Rolling Review of Requirements (RRR) within which user requirements and observing system capabilities are compared in an objective way using analysis tools established for the purpose. This Critical Review has been conducted for each application area and precedes the drafting of a Statement of Guidance. CBS has requested that ET-ODRRGOS document the review process in order to maintain a heritage as well as an ability to provide feedback to the technical commissions. ET-ODRRGOS is now called the Expert Team on the Evolution of the GOS (ET-EGOS) and has utilized a RRR of space based and *in situ* observing systems.

The draft proposal for WIGOS purposes is to follow the already established procedure as described in the following paragraphs.

Purpose of the Statement of Guidance (SOG)

The SOG, together with the output of the Critical Review, is intended:

- to inform WMO Members on the extent to which their requirements are met by present systems, will be met by planned systems, or would be met by proposed systems. It also provides the means whereby Members, through the Technical Commissions, can check that their requirements have been correctly interpreted and can update them if necessary, as part of the Rolling Review of Requirements process;

- to provide resource materials useful to WMO Members for dialogue with satellite and other agencies regarding whether existing systems should be continued or modified or discontinued, whether new systems should be planned and implemented, and whether research and development is needed to meet unfulfilled aspects of the user requirements.

Rolling Review of Requirements (RRR)

The RRR procedure consists of four stages:

(i) a review of users' requirements for observations, within areas of applications covered by WMO programmes,

(ii) a review of the observing capabilities of existing and planned satellite and *in situ* systems,

(iii) a "Critical Review" of the extent to which the capabilities (ii) meet the requirements (i); and,

(iv) a "Statement of Guidance" based on (iii).

Results from RRR

The RRR:

- has generated a database compendium of WMO user requirements and observing system capabilities that is proving useful to a broad community;

- has addressed both *in situ* and satellite observing systems;

- identifies gaps and overlaps in existing and planned observing system capabilities, and indicates the user requirements satisfied by these satellite systems;

- strives to address user requirements in a technology free way giving little consideration to measurement characteristics, observing platforms, or data processing systems; and

- offers some cost benefit considerations, but does not include cost in the review process.

Guidelines relating to the Statement of Guidance (SOG)

The SOG:

- relies on interpretation and analysis by observing system and applications experts;

- is guided by the critical review of the database of user requirements compared with satellite and *in situ* system capabilities; and

- sets out the role for satellites, balloons, aircraft reports, buoys, ships, etc., without pre-empting judgements on the best or most cost-effective mix of observations.

Scope and Limitations

It is recognized that guidance provided by WMO to satellite and other agencies will be only one of many inputs affecting their decisions on future systems, which will be required to meet national or regional objectives and will be constrained by available resources. However, it is hoped that guidance at this level will be helpful in promoting an integrated global observing system that provides the maximum benefit to the WMO Members.

It is not intended that the process of reviewing requirements and providing guidance in this way should replace the need for detailed activities on the design of instruments and systems, but rather that general guidance should be provided on the users' requirements for these systems. The detailed specification of instruments and systems will remain a task for relevant agencies, with appropriate technical advice from specialists in the user community.

ROLLING REVIEW OF REQUIREMENTS

Summary of the Process

The user requirements are user oriented, not system dependent; they are intended to be technology free in that no consideration is given to what type of measurement characteristics, observing platforms, or data processing systems are necessary (or even possible) to meet them. The requirements are aimed at the 2005-2025 time frame. The comparison of requirements to capabilities utilizes the database summarising both. As the database changes better to reflect the user requirements as well as existing and planned observing capabilities, the RRR must be performed periodically. Figure 1 indicates the interactions with data providers and user groups.

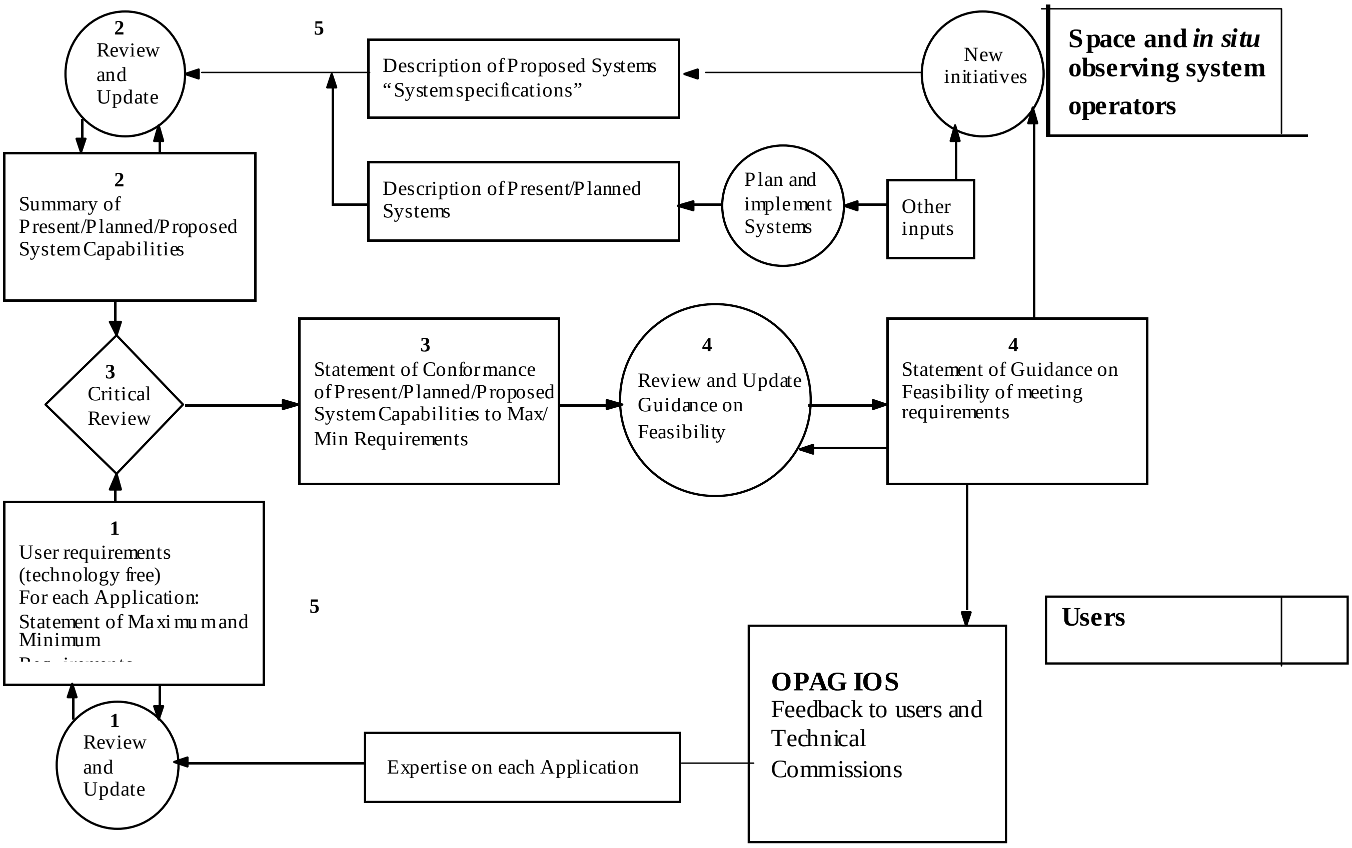


Figure 1

Database of user requirements and observing system capabilities

The database structure and level of detail are designed primarily to assist the assessment of conformance between users' requirements for observations and the potential capability of the space segments of satellite systems. To this end, the information included in the database is:

- from the user communities ("Users"), a summary of their observational requirements;

- from the data providers ("Providers"), a summary of the potential performances of their satellite and *in situ* instruments, expressed in the same terms as the user requirements;

- instrument and mission descriptions sufficiently detailed to support the evaluation of their performances; and

- programmatic information to permit assessment of service continuity aspects.

As the primary role of the database is to establish a bridge between Users and Providers, particular care has been taken to establish a common language, i.e. agreed definitions for the geophysical parameters for which observations are required/provided and agreed terminology to characterize requirements and performances. Users/Providers have been requested to state their requirements/performances in terms of "Level II" products, wherever possible. Also, as indicated earlier, users have been requested to supply their observation requirements in a "technology-free" manner; they should not pre-judge the type of observing system (space-borne or terrestrial) that is best suited to meet their requirements. This aspect is important for proper assessment of the potential role of space-based systems within strategies for integrated observing systems.

User requirements

The database of user requirements has been constructed in the context of a given application (use). The requirements for observations are stated quantitatively in terms of a set of relevant parameters, of which the most important are horizontal and vertical resolution, frequency (observing cycle), timeliness (delay of availability), and accuracy. For each application, there is usually no abrupt transition in the utility of an observation as its quality changes; improved observations (in terms of resolution, frequency, accuracy, etc.) are usually more useful while degraded observations, although less useful, are usually not useless. Moreover, the range of utility varies from one application to another. The requirements for each parameter are expressed in terms of two values, an upper boundary or "maximum" (or goal) and a lower boundary or "minimum" (or threshold) requirement. The "maximum" requirement is the value, if exceeded, does not yield significant improvements in performance for the application in question. Therefore, the cost of improving the observations beyond this requirement would not be matched by a significantly increased benefit. Maximum requirements are likely to evolve; as applications progress, they develop a capacity to make use of better observations. The "minimum" requirement is the value below which the observation does not yield any significant benefit for the application in question. However, as a system that meets only minimum requirements is unlikely to be cost-effective, it should not be used as a minimum target level (for an acceptable system). In July 2007, the third session of the CBS OPAG-IOS Expert Team on the Evolution of the Global Observing System (ET-EGOS-3) reviewed the status of the WMO/CEOS database of observational user requirements and observing system capabilities including a description of “breakthrough” and proposed changes to the database. The “breakthrough” level is an intermediate value between “threshold” and “goal“ that, if achieved, would result in a significant improvement for the targeted application. The breakthrough level is expected to be more appropriate than the “goal” from a cost-benefit point of view. All requirements in the database now contain, threshold, breakthrough and goal values for the requirement descriptors, i.e. horizontal resolution, vertical resolution (if a profile), observing cycle, timeliness and accuracy.

Assessment of minimum requirements for any given observing system is complicated first by assumptions concerning which other observing systems are likely to be available, and second because some characteristics (e.g., spatial remoteness and sampling frequency) need to be combined when determining thresholds of usefulness. Also the very existence of a given application relies on the existence of a basic observing capability. Within the range between the minimum and maximum requirements, the observations become progressively more useful. The “max/min” method necessarily oversimplifies many aspects of the problems of stating user requirements; however, it has been adopted as a simple and workable approach for achieving high level statements of requirements.

Theory indicates that any observation (if the signal is adequately separated from noise and it is sufficiently calibrated) adds information. Thus it is difficult to render observing system capabilities below minimum user requirements as not useful, especially when those observations come from single isolated systems (e.g. island stations, ASAPs and stations in Arctic/Antarctic regions). However in order to provide succinct and comprehensive Critical Review charts that summarize observing system capabilities in a technology free way, both satellite and *in situ* systems will be evaluated against the same minimum user requirement. The interpretation and analysis by applications experts in the generation of a Statement of Guidance will mitigate any problems created by holding both systems to the same standard.

Critical Review

The CR process compares user requirements with the observing system capabilities and records the results, in terms of the extent to which the capabilities of present, planned and proposed systems meet the stated requirements. This is not a trivial process and considerable work has been done to evolve a process and presentation for the CR to meet the following criteria:

- its presentation must be concise and attractive, and understandable to senior managers and decision makers, whilst retaining sufficient detail to represent adequately the full range of observation requirements and observing system capabilities;

- its presentation of the user requirements must be accurate; although necessarily a summary, it must be recognizable to experts in each application as a correct interpretation of their requirements;

- its presentation of the satellite and *in situ* system capabilities must be accurate; although also a summary, it must be recognizable to expert satellite data users as a correct interpretation of the systems' characteristics and potential;

- its results must accurately reflect the extent to which current systems are useful in practice, whilst drawing attention to those areas in which they do not meet some or all of the user requirements; and

- the process must be as objective as possible.

Example output of the CR for high-level wind profiles for the global NWP application is shown in Figure 2. This is a single parameter for a single applications area. The CR produces hundreds of these charts, but subsets of charts can be readily available to experts involved in the RRR. The CR is, however, essentially a comparison and is not intended to be interpretative. Whilst hopefully accurate and informative, the CR does not provide final guidance on what to do next.

Statement of Guidance

The role of the SOG is to provide an interpretation of the output of the CR, to draw conclusions, and to identify priorities for action.

The process of preparing the SOG is necessarily more subjective than that of the CR. Moreover, whilst the CR attempts to provide a comprehensive summary, the SOG is more selective, drawing out key issues. It is at this stage that judgements are required concerning, for example, the relative importance of observations of different variables.

Cost-benefit Considerations

User requirements are expressed in a technology-free manner, and therefore cost-free also. However, decisions on design and implementation of observing systems must take account of cost. The relationship between user requirements, as defined by the RRR process, and decisions on design and implementation of observing systems based on cost-benefit considerations is therefore important. The cost-benefit curve for a single observing system, in the context of a single application, is illustrated schematically in Figure 3. It is assumed that “benefit” can be estimated quantitatively and also that it can be expressed in financial terms. The cost-benefit curve has the following generic characteristics:

- A significant cost must be incurred before any significant benefit is derived. Beyond this point (B), additional cost then results in increasing benefit. However, a point (A) is reached beyond which additional cost does not bring any significant benefit;

- The “maximum” and “minimum” requirements of the CBS method map on to points A and B respectively.

- The cost-benefit curve will (normally) first cross the line of equal cost-benefit at the “break even” point. It represents the point above which we can make a (business) case for implementing the system.

The optimal point, representing the highest ratio of benefit to cost, is also shown.

Note that the point of optimal cost-benefit represents a benefit (and cost) that is, in general, lower than the point of “maximum requirement”. This is important; it is often assumed that we should be striving to meet the maximum requirement. Whereas this analysis shows that a system meeting “maximum” requirements is likely to deliver a level of benefit in a region of diminishing returns. Also a system’s performance must exceed the ”minimum” requirement before it is likely to be cost-effective.

To summarize: (a) significant cost must be incurred before any significant benefit is derived; (b) the unit cost-benefit slope should be exceeded for cost effective systems; (c) optimal cost-benefit occurs after minimum but before maximum user requirements are met; and, (d) considerable cost can be incurred in moving from optimal cost-benefit to meeting maximum user requirements.

Wind profile 500-100 hPa (HT)

Analysis for Global NWP

1. Requirement Summary and assessment key

Colour key	Hor km	Vert km	Cycle h	Delay h	Acc m/s
Optimum	50.0	1.0	1.0	1.0	1.0
Median	107.7 232.1	2.2 4.6	2.3 5.2	1.6 2.5	2.0 4.0
Threshold	500.0	10.0	12.0	4.0	8.0

Cycle colour assessment based on a constellation of 2 polar-orbiting satellites (1 geostationary)

2. Instruments for: Wind profile 500-100 hPa (HT)

Showing relevant instruments for which details are available

Instrument	Hor km	Vert km	Cycle h	Delay h	Acc m/s	Mission name	Mission rating	Orbit
RADAR RA-IV C	3.0	1.0	0.1	0.5	2.00	WWW_in situ		G3
RADAR RA-VI WE	3.0	1.0	0.1	0.5	2.00	WWW_in situ		G3
Amdar FL RA-IV C	90.0	5.0	1.0	1.0	2.00	WWW_in situ		G3
SEVIRI	100.0	5.0	1.0	1.0	4.00	MSG-1,,3		G3
Amdar FL RA-VI WE	38.0	5.0	8.0	1.0	2.00	WWW_in situ		G3
IMAGER	150.0	5.0	1.0	1.0	5.00	GOES-9,,M		G1
IMAGER	150.0	5.0	1.0	1.0	5.00	GOES-8,L		G2
IMAGER/MTSAT	150.0	5.0	1.0	1.0	5.00	MTSAT-1		G5
SOUNDER	150.0	5.0	1.0	1.0	5.00	GOES-9,,M		G1
SOUNDER	150.0	5.0	1.0	1.0	5.00	GOES-8,L		G2
MVIRSR (3 channel)	50.0	5.0	1.0	2.0	5.00	FY-2A,2B		G5
Amdar FL RA-VI EE	159.0	5.0	8.0	1.0	2.00	WWW_in situ		G3
MVIRI	150.0	5.0	1.0	2.0	5.00	Meteosat-3,,7		G3
MVIRI	150.0	5.0	1.0	2.0	5.00	Meteosat-5		G4
VISSR (GMS-5)	150.0	5.0	1.0	2.0	5.00	GMS-5		G5
VHRR	150.0	5.0	1.0	2.0	6.00	INSAT-2A,,2E		G4
Amdar FL RA-V SW	167.0	5.0	12.0	1.0	2.00	WWW_in situ		G3
Amdar FL RA-II S	310.0	5.0	12.0	1.0	2.00	WWW_in situ		G3
Amdar FL RA-IV N	318.0	5.0	12.0	1.0	2.00	WWW_in situ		G3
Amdar FL RA-II W	429.0	5.0	12.0	1.0	2.00	WWW_in situ		G3
WND P 449 RA-IV C	700.0	0.3	1.0	0.5	1.50	WWW_in situ		G3
WND P 915 RA-IV C	1000.0	0.1	1.0	0.5	2.00	WWW_in situ		G3
Amdar FL NAO CST	50.0	5.0	24.0	1.0	2.00	WWW_in situ		G3
Raobs RA-VI WE	218.0	0.3	16.0	1.5	2.00	WWW_in situ		G3
Raobs RA-II E	294.0	0.3	16.0	1.5	2.00	WWW_in situ		G3
Raobs RA-IV C	331.0	0.3	16.0	1.5	2.00	WWW_in situ		G3
Raobs RA-VI EE	369.0	0.3	16.0	1.5	2.00	WWW_in situ		G3
Amdar FL MED	156.0	5.0	24.0	1.0	2.00	WWW_in situ		G3
Raobs RA-II S	442.0	0.3	16.0	1.5	2.00	WWW_in situ		G3
Raobs RA-II N	444.0	0.3	16.0	1.5	2.00	WWW_in situ		G3
Raobs RA-IV N	447.0	0.3	16.0	1.5	2.00	WWW_in situ		G3
Amdar FL NAO OPN	223.0	5.0	24.0	1.0	2.00	WWW_in situ		G3
Amdar FL ARC	270.0	5.0	24.0	1.0	2.00	WWW_in situ		G3
Amdar FL RA-I S	330.0	5.0	24.0	1.0	2.00	WWW_in situ		G3
Amdar FL NIO CST	334.0	5.0	24.0	1.0	2.00	WWW_in situ		G3
Amdar FL RA-I N	375.0	5.0	24.0	1.0	2.00	WWW_in situ		G3

Figure 2

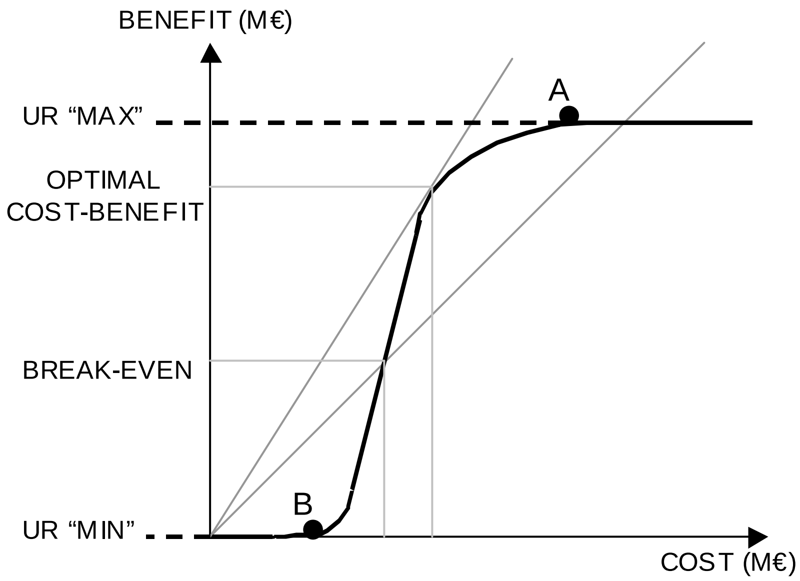


Figure 3. Cost-benefit curve for an observing system.

Current status – It should be noted that there already exists a set of Statements of Guidance (SOGs) for the following application areas: (Global Numerical Weather Prediction, Regional Numerical Weather Prediction, Synoptic Meteorology, Nowcasting and Very Short Range Forecasting, Seasonal to Inter-annual Forecasts, Aeronautical Meteorology, Atmospheric Chemistry, JCOMM Program Areas, Agricultural Meteorology and Hydrology) and can be found on the WMO web site at http://www.wmo.int/pages/prog/sat/Refdocuments.html. Additionally, these SOGs are updated on a regular basis.

WIS design and implementation based on the Rolling Review of Requirements Process

Understanding the information management and exchange requirements of all stakeholders in WIS through user consultation has been a core task in WIS since its inception. So far the user requirements are still rather fragmented including those recorded in the working documents and presentations made to each Inter Commission Task Team on the Future WMO Information System (ITT-FWIS 1999 to 2005), and subsequently the Inter Commission Coordination Group on WIS (ICG-WIS) that first met in 2005. The input has come largely through Technical Commission representatives that have participated in these meetings.

Complementing the expertise of the ITT-WIS and ICG-WIS, have been three questionnaires. One in 2004 that was sent to the Presidents of the Technical Commissions, one in 2006 that was sent to all Members and one in 2007 that was first completed by programme representatives within the WMO Secretariat and is presently being reviewed by the wider Programme communities and Regional Associations. The 2004 and 2007 questionnaires were similar and sought feedback on what the Technical Commissions present and future needs. The 2006 questionnaire addressed mostly what role Members were likely to play in WIS.

Presently, the WIS project office is compiling a list of WIS requirements from all participating programmes with the intent to using it as the basis for the initial design and phased implementation of WIS. The requirement list will later be the subject of a continuous review process, the Rolling Review of Requirements (RRR/WIS) in which all WIS partners will participate to ensure that WIS becomes a common infrastructure serving all programmes in a cost-effective and satisfactory manner. Thus for the WIS, it is anticipated that the user consultation process will be divided into 2 phases:

- user requirements consolidation;
- rolling review of requirements.

User Requirements Consolidation Phase

The purpose of the User Requirements Consolidation Phase is to establish, in a structured format, an initial, consolidated, set of WIS user requirements. The user requirements would be at the level of individual data or products, and would typically consist of:

a) Input data or product characteristics, including:

- identifier
- originator
- collection point
- preferred input mechanism (selected from a standard menu)
- volume
- frequency
- format

b) Data or product dissemination requirements (output), including:

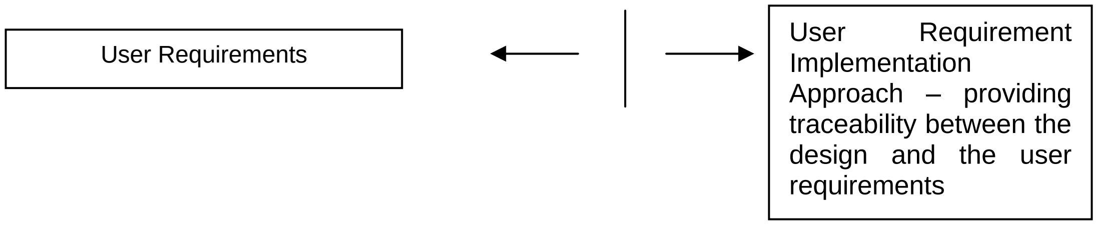
- entities to which the data or product should be delivered
- required timeliness (maximum time between availability of data/product to WIS, and its delivery to users)
- preferred delivery mechanism (selected from a standard menu)
- criticality of data/product (selected from a standard menu and reflecting the significance of the applications that make use of the data/product)

Once an initial consolidated set of user requirements is available in a structured format, users will be asked to verify that their inputs have been correctly reflected. When this verification process is complete, the user requirements consolidation phase can be considered closed.

WIS, as it is developing, is based on meeting known user requirements, including attention to evolving existing systems and practices. The outputs of the user consolidation phase will be a database of requirements. This database will be used to identify the extent to which the WIS architecture addresses present and future needs.

Based on the physical and functional architecture, the approach to fulfilling all the user requirements will also be described in the database (together with, and linked to, the original user requirements) - see following table:

Input Data or Product Characteristics (as specified by the User) – see a) above	Data or Product Access and Dissemination Requirements (as specified by the User) – see b) above	Implementation Approach (defining how the user requirements in the previous 2 columns will be fulfilled by the WIS design)



This database will form the basis for the Rolling Review of Requirements.

Rolling Review of Requirements

A specific RRR process has yet to be decided on for WIS, however, the consultant undertaking the consolidation of user requirements has suggested the bare essentials for WIS/RRR could be to:

- conduct critical reviews for each programme area of the user requirements database (including the associated implementation approach);

- hold a system review that assesses the overall results of the individual programme area critical reviews and issues an overall Statement of Guidance (SOG) to the Secretariat on the way forward for the major issues.

The RRR will need to ensure it includes an effective communication strategy. One of the major problems with consolidating user requirements has been the low frequency of response from the Technical Commissions themselves to the questionnaires. The 2007 approach of utilising the Secretariat staffs' knowledge of TC requirements increased the return rate. However, there is still a need to get information from the Members. The focus of requirements on programmes provides a useful framework for interpreting the requirements, but Regional Associations' input is also essential.

WIGOS-WIS Monitoring through Project Management Utilities

WIGOS and WIS are large and long-term projects that require managers to coordinate many separate activities having complex dependencies. Managing such projects can be simplified with project management techniques and tools. These tools are ideal for facilitating communication among contributors and between projects, to ensure smooth, continuous and effective progress. The following discussion concerns how project management works, what has been proposed for WIS, and the importance of management commitment.

The scheduling of tasks is basic to project management. People schedule tasks all the time, even when not specifically trained as project managers. Scheduling can be seen in the ability to prepare a meal so all elements are ready at the right time, or in maintaining shift rosters in an

NMHS. For people skilled in scheduling, coordinating these events may seem effortless, while others may be prone to panic as they confront each activity without an overall schedule in mind.

An every day example that demonstrates project management is a building site. Building a house requires a sequence of activities: prepare a site, lay the foundation, pour the concrete floor, erect the walls, put on the roof, and so on. If the house is to be erected in a timely and cost effective manner, all these activities need to be done in a particular order. The schedule of activities must be coordinated in advance, and the schedule also impacts other commitments of the subcontractors and building suppliers. It is no good having the roofing contractor arrive only to find no walls on which to sit the roof trusses. Contractors such as plumbers and electricians need to be on site at various stages to perform their rough-in and finishing work at the right times. It is impossible to install under floor plumbing after the concrete floor is poured, or install wiring inside walls that have been plastered over. Because building can be interrupted by external events such as the weather, a good builder also needs to be able to reschedule activities to keep the project on track. Accordingly, building site managers are trained in project management and utilise work plans and schedules. This simple example is for one house. Many building companies have multiple houses underway at once. Project management techniques are scalable enough to handle many subprojects at once.

The WIS project manager recommends using the Microsoft Project tool to facilitate coordination in scheduling among WIS and WIGOS tasks, and to assist in communication of dependencies. The WIS project plan was presented to the fourth session of the ICG-WIS (Reading. Sept 2007). This came with a very strong requirement from the Chair of ICG-WIS for WIS to clearly identify interdependencies and timelines of its activities. Participants agreed to utilise Microsoft Project, and each participant agreed to break out and update their WIS development activities. These updates are then provided to the WIS project manager in order to keep the project schedule current. Alternatives to the Microsoft Project tool for task lists and milestone charts are under consideration, although as yet no alternative has been proposed. Given that WIS and WIGOS have dependencies with each other, it is recommended that WIGOS use complementary project management practices.

When implementing a scheduling tool such as Microsoft Project, it is important to ensure sufficient time and provide effective encouragement for task participants to contribute to the reporting process. Without support and commitment, the project timelines shown in the plan soon drift from real events, and the documented schedule becomes little more than an initial planning guide. With support and commitment, a realistic and up-to-date schedule supported by project management techniques can enhance communication and facilitate flexibility across the implementation process. This will ensure that the EC WG WIGOS-WIS participants can readily assess the current status, and can identify potential resource conflicts in sufficient time to avoid or mitigate any emergent issues.

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