

WORLD METEOROLOGICAL ORGANIZATION

CIMO/MG-2/Doc.4.3
(7.IV.2005)

COMMISSION FOR INSTRUMENTS AND METHODS
OF OBSERVATION

ITEM: 4.3

CIMO MANAGEMENT GROUP
Second session

Original: ENGLISH ONLY

Bucharest, Romania 2 – 3 May 2005

**Quality Management Framework (QMF)
Progress since Cg-XIV and EC LVI**

(Submitted by the Secretariat)

Summary and purpose of document

This document summarizes the decisions of Cg-XIV and EC LVI concerning the WMO Quality Management Framework. It also reviews the Quality Management Framework activities, which have already taken place.

Action proposed

The management group is invited to consider possible contributions of CIMO with respect to QMF. It is also invited to discuss the propositions of a consultant report suggesting specific actions to the CIMO management group.

Quality Management Framework

1. Congress decided (Resolution 27 (Cg-XIV) refers) that WMO should work towards a Quality Management Framework (QMF) for NMSs that would eventually include and develop the following distinct though related elements, which could be addressed, possibly on a phased basis:
 - (a) WMO technical standards;
 - (b) Quality management system(s) including quality control; and
 - (c) Certification procedure(s).
2. The development of a WMO Quality Management Framework should enable the provision of early and continuing relevant advice to Members on developing their quality management system. The first priority is to consolidate the available pertinent technical standards to enable easy access and reference in the WMO QMF.
3. EC-LVI agreed to pursue the phased approach recommended by the presidents of the technical commissions. In particular, the Council agreed that the WMO QMF should focus on technical aspects of the operation of the NMSs. The first steps should address the QM aspects of observing systems and of aeronautical meteorological services.
4. Study reports have been completed on QM implications on the Instrument Sector and on the QM Approach to in-situ Observing Systems, and a draft Guide on QM Procedures and Practices for PWS is being prepared. CBS and CIMO will consider this material in due course, as appropriate. The new edition of the *Guide to Practices of Meteorological Offices Serving Aviation* (WMO-No. 732) developed by CAeM now contains a new section on QM and a joint ICAO/WMO Guide is being prepared on QM related to the provision of aeronautical meteorological service oriented towards ISO 9001, with the expectation that the manual will be published by the second half of 2005. Several Members have contributed to WMO basic documents on QMS developed in their NMSs.
5. With a view to progressing the development of the WMO Quality Management Framework, WMO organized a Workshop on QMF (Kuala Lumpur, Malaysia, October 2004).
6. A first survey among NMSs to assess the QM activities, plans and requirements for assistance through WMO was carried out in 2004. This led Secretary-General to give priority to the early publishing of guidance material in English and through electronic means (as CD-ROM compilation) to meet the urgent needs of the Members who would have to address the QM issues in the near future. The CD-ROM, which includes the final Report of the Workshop on QMF held in Kuala Lumpur, several conceptual documents on QMS and the basic documentation referenced in paragraph 4 above, has been distributed to all Members of WMO. A website containing most of this guidance documentation and further information on quality management and on the WMO-QMF has also been developed.
7. The Meeting of the Presidents of Technical Commissions (PTC, Geneva, January 2005) reviewed the outcome of the Workshop on QMF, and the PTC Meeting's conclusions will be submitted to EC-LVII (Geneva, June 2005).
 - a. The PTC Meeting agreed with the Workshop's recommendation that the next actions should focus on a review of WMO Technical Regulations relevant to observation generation with a view to identifying and rectifying deficiencies, duplications, inconsistencies and errors; this task should achieve that the relevant WMO Technical Regulations would become viable documents of reference for use within national QMS.
 - b. It also agreed that a document that would describe work processes typical for observation generation be developed making reference to the relevant WMO documents; this document should serve as a model or template for use in process

description within national QMS and introduce at the same time a Quality Control scheme related to the quality of observations.

- c. The PTC Meeting agreed that these actions should be pursued by the ICTT-QMF.
8. A large number of NMHSs required guidance from WMO in creating national QMSs. This points to the need of continuing the development of WMO guidance material on the Quality Management Framework, taking into account the experience of a number of NMHSs in implementing their own QM systems and those based on the ISO 9001 standard.
9. A second survey on Quality Management among NMHSs has been distributed to all Members. It was designed to obtain more information as far as certification and capacity building activities are concerned, addressing the needs of NHMSs as well as the help capability of NMHSs having implemented a quality management system.
10. A meeting of the ICTT-QMF is being planned for the second half of 2005.

Annex to paragraph 4.3

Implication from Quality Management on the CIMO Guide and Recommendations to CIMO

(Extract from the document: “Study of Quality Management Implications on the Instrumentation Sector” by C. Richter, 2004)

Implications on the CIMO Guide

In a first overview, the CIMO Guide is conform with the most important requested elements of the ISO standard. It documents:

- **monitoring, analysis and improvement activities** to demonstrate conformity of data and products with established requirements and to continually improve the quality of internationally exchange data and products;
- **controls** and related responsibilities to ensure that data and products which do not conform to relevant regulatory requirements are identified and documented to prevent its unintended use or delivery; and
- **analyses** of appropriate information to demonstrate the effectiveness of the quality management system and improvements achieved therefrom.

The Part I, Measurement of Meteorological Variables, and Part II, Observing Systems, of the Guide describe all requirements for the IMOP components by going into detail of all the relevant aspects as outlined in Section 1.1 of this study. The Guide is under review at the moment and will at the end of the review cycle include all up-dated requirements of Members. It will be of utmost importance to maintain regular reviews and to implement a change-request procedure.

The third part of the Guide (Part III, Quality Assurance and Management of Observing Systems) gives guidance for the performance of continuous improvement activities in its following chapters:

1. Sampling of meteorological variables
2. Data reduction
3. Quality Management
4. Training of instrument specialists
5. Testing, calibration and intercomparison

The first two chapters are important guidelines for the quality standard and its quality control processes which are tools to practise the continuous improvement process with regard to meteorological observations.

The Chapter 3 on quality management needs to be up-dated with respect to the process orientation of the new ISO 9000:2000. Furthermore, this section should be at the start of Part III, otherwise it gives the wrong impression that quality management is just another part of the quality control process and not an overall concept on how to manage processes within one area.

The part on training of specialist, Chapter 4, is an obligatory element of the ISO 9000 and very well documented in the Guide.

The last section of Part III, Chapter 5, is about testing, calibration and global and regional intercomparison which is crucial for the continuous improvement process of a QMS and reflects already the idea of having the designated calibration and testing laboratories accredited following ISO 17025. This section should be reviewed and up-dated in the light of a possible future accreditation process. It should not only discuss intercomparisons but also discuss the Regional Instrumentation Centres and World Calibration Centres.

The CIMO Guide belongs within the QMS document hierarchy to Level 3 (cp. Figure 3). The Guide describes working processes and respective tasks and serves as important reference material. To be in alignment with ISO 9000 standard, the CIMO Guide needs to be in that way controlled as outlined in Section 2.3 of this study.

The intention and the contents of the CIMO Guide should be made transparent and available for all users to ensure that it can serve as reference document for any user's process. It should be made electronically accessible either via the Internet or by contribution on CD-ROM.

Recommendations

Recommendations on the process of certification and accreditation:

- a) CIMO-MG should make sure that the idea of a QMF as discussed in Section 1.2 of this study is fully understood by CIMO Members. In a first step, Members can be informed via the CIMO homepage and the CIMO newsletter.
- b) The CIMO Management Group (CIMO-MG) should give a statement on the preferred scenario of setting-up a quality management system. In general, among WMO Members should be consent to which degree management systems should be recommended for implementation:

	ISO 9000	ISO 9000 and ISO 17025	WMO
Scenario I	yes	-	-
Scenario II	-	yes	-
Scenario III	-	-	yes

“ISO 9000” stands for the procedure of certification (scenario I). “ISO 9000 and ISO 17025” stands for the certification of a process followed by accreditation of the organisational body (scenario II). “WMO ” means, that WMO has developed its own standard and might also pursue to become an accredited body (scenario III). Note that it is not possible to apply the ISO 17025 without ISO 9000. In other words, you need to be certified before you can get accredited.

- c) CIMO-MG should consider to discuss a proposal already put forward to the CBS Management Group in May 2003 on the investigation of the possibility of WMO as an accredited body (Annex II). (CBS-MG decided not to discuss this topic at that stage.)
- d) CIMO OPAGs should discuss if the designated testing and calibration laboratories should be recommended for accreditation and if necessary select alternate or additional institutions. CIMO-MG should prepare some practicable advice to the hosts of the laboratories on how to proceed in the case there is a decision made towards accreditation.
- e) CIMO-MG should liaise with the WMO focal point on quality management, who has been designated by EC-LV in May 2003 and with the work of the Intercommission Task Group. The results of the CIMO discussions need to be harmonized with the other Technical Commissions. CIMO should dedicate one expert or a small expert team to support the focal point and the Intercommission Task Group and help to achieve a common approach of all WMO Commissions to QM issues.
- f) CIMO OPAGs should identify the main processes within the IMOP area and focus on the realisation of processes. The main processes should be based on the general objectives of CIMO. An expert team should give advice to Members on the determination of main processes as elements of a possible certification process. The CIMO experts should focus on the process of “Instruments and Methods of Observations” with its sub-processes, e.g., “Measurement of Meteorological Surface Variables”, “Marine Observations Systems” or “Satellite Observation Systems”. The expert team should also analyse to which degree the aspects of the CIMO Guide (compare Section 1.1 of this study) are a complete list of input and output parameters for the process of product realisation. The actions of the expert team should be based on “Phase 3, Process Analyses” of the certification procedure as outlined in Section 2.1 of this study.
- g) CIMO-MG should discuss to which degree the process approach of a QMS would take into account the specific concerns of developing countries with small NMSs. The study should contain if they could avoid that they have to install complex quality management systems with heavy financial implications but rather could piggy-back on other bodies in the process of certification in being a part of a main (overall) process. CIMO-MG together with other management groups of the Technical Commissions should investigate the implications of a process oriented WMO QMF to small NMS.

Recommendations on the review of documents:

- h) CIMO-MG should ensure that the CIMO Guide is regularly reviewed and up-dated so as to be readily referenced for purposes of quality management. A review mechanism has to be implemented to ensure that the CIMO Guide will be controlled as outlined in Section 2.3 of this study.
- i) CIMO-MG should review its policies and strategies and make its goals and objectives transparent to Members by publishing it via the Internet of the newsletter.
- j) CIMO ETs should develop supplements to the CIMO Guide with regard to the process oriented QMS, the specific CIMO processes and its particular elements. They should develop models/templates for QM supplements to the GOS Manual and CIMO Guide. CIMO need to review and endorse the draft supplements, therefore an Expert Meeting should be held on the review and endorsement of draft supplements on the instrument sector.
- k) The section on quality management in Part III of the CIMO Guide needs to be up-dated with respect to the process orientation of the new ISO 9000:2000. Furthermore, it should be placed at the start of Part III, otherwise it gives the wrong impression that quality management is just another part of the quality control process and not an overall concept on how to manage processes within one area.
- l) The last section of Part III of the CIMO Guide is about testing, calibration and intercomparison which is crucial for the continuous improvement process of a QMS and reflects already the idea of having the QMS accredited following ISO 17025. This section should be reviewed and up-dated in the light of a possible future accreditation. It should not only discuss intercomparisons but also discuss the Regional Instrumentation Centres and World Calibration Centres and their use for CIMO activities.
- m) OPAG ETs should review the existing achievement-, efficiency- and effectiveness measurements as an important process element. All changes, up-dates and supplements should be inserted to the CIMO Guide.
- n) The intention and the contents of the CIMO Guide should be made transparent and available for all users to ensure that it can serve as reference document for any user's process. It should be made electronically accessible either via the Internet or by contribution on CD-ROM.
- o) CIMO-MG should make a proposal on how to implement a change-request mechanism for the CIMO Guide and its relevant documents.
- p) CIMO-MG needs to review, endorse and recommend proposals with respect to QMS to EC-LVIII, scheduled for 2005, for inclusion in the CIMO Guide. The EC-LVIII needs to approve the supplements for inclusion in the Manual on the GOS and the CIMO Guide.