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COMMISSION FOR BASIC SYSTEMS
OPEN PROGRAMME AREA GROUP ON
INTEGRATED OBSERVING SYSTEMS

ITEM: 7.3.1

**INTER PROGRAMME EXPERT TEAM ON
OBSERVING SYSTEM DESIGN AND EVOLUTION
(IPET-OSDE)
*First Session***

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GENEVA, SWITZERLAND, 31 MARCH – 3 APRIL 2014

ROLLING REVIEW OF REQUIREMENTS AND STATEMENTS OF GUIDANCE

STATEMENTS OF GUIDANCE

OVERVIEW OF THE STATUS

(Submitted by John Eyre (United Kingdom) and the Secretariat)

SUMMARY AND PURPOSE OF DOCUMENT

The document provides information on the current status of all Statements of Guidance (SoGs), as held by the WMO Secretariat.

ACTION PROPOSED

The Meeting is invited to note the information contained in this document when discussing how it organises its work and formulates its recommendations.

Reference: Current versions of Statements of Guidance
<http://www.wmo.int/pages/prog/www/OSY/GOS-RRR.html#SOG>

Appendix:

- A.** The Procedure for update, validation and approval of Statements of Guidance within the WMO Rolling Review of Requirements process
- B.** Status of Existing Statements of Guidance
- C.** Draft template for Statements of Guidance

DISCUSSION

1. The Statement of Guidance (SoG) is a gap analysis and is meant to help CBS formulate plans to address gaps in the observing system with respect to user requirements. Recommendations derived from these gap analyses eventually go into the Implementation Plan¹ and the Vision for the GOS². The RRR process informs the Points of Contact (POCs) of all WMO Application Areas (and indirectly all Members, WMO constituent bodies, WMO Programmes and co-sponsored Programmes) 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 allows Members, WMO constituent bodies, WMO Programmes and co-sponsored Programmes, to check whether their requirements have been correctly interpreted and update them through the relevant POC according to the RRR process.
2. The procedure agreed by the former CBS Expert Team on the Evolution of Global Observing Systems (ET-EGOS) for update, validation and approval of SoGs is provided in Appendix A.
3. Following recommendations from ET-EGOS, some of the Statements of Guidance have been updated since the seventh ET-EGOS Session (Geneva, Switzerland, May 2012). IPET-OSDE will also respond to the requirements of CBS-VX (2012) to ensure that all requirements, including in particular those of the Global Cryosphere Watch (GCW), and the Global Framework for Climate Services (GFCS) are captured through the ongoing RRR process. The IPET-OSDE will assess whether there is a need to revise some SoGs, and discuss whether there is any new areas requiring SoGs.
4. Status of existing Statements of Guidance as well as those that have been requested or may be needed are provided in the Appendix B.
5. Since ET-EGOS-7, a template for SoGs was prepared by Secretariat in consultation with IPET-OSDE Chair. The IPET-OSDE is invited to review the template, and recommend its use. The draft template is provided in Appendix C.

1 <http://www.wmo.int/pages/prog/www/OSY/Publications/EGOS-IP-2025/EGOS-IP-2025-en.pdf>
2 http://www.wmo.int/pages/prog/www/OSY/WorkingStructure/documents/CBS-2009_Vision-GOS-2025.pdf

APPENDIX A

THE PROCEDURE FOR UPDATE, VALIDATION AND APPROVAL OF STATEMENTS OF GUIDANCE WITHIN THE WMO ROLLING REVIEW OF REQUIREMENTS PROCESS

(As of: 11 May 2012, and approved by ET-EGOS-7)

1. The Point-of-Contact (PoC) for the Application Area reviews the latest version of the SoG and proposes amendments, in the form of a Microsoft Word document using the “track changes” option. (If there is no pre-existing version, then the PoC drafts the first version of the SoG.) In performing this update, the PoC is expected to refer to some or all of the following: (i) the latest version of the user requirements for the Application Area; (ii) the latest version of the database Observing System Capabilities; (iii) his / her own expertise on the Application Area; (iv) advice from other international experts on the Application Area including, where relevant, WMO constituent bodies, and WMO Programmes and co-sponsored Programmes);
2. The PoC refers the new draft version of the SoG to the Chair of the ET-EGOS, with copy to the WMO Secretariat staff responsible for ET-EGOS;
3. The Chair of the ET-EGOS decides the appropriate review process for the new draft. If a meeting of ET-EGOS is imminent, the new draft becomes a document for this meeting and is reviewed by the Meeting. If a meeting is not imminent, the new draft may be referred to the ET-EGOS for comment(s) by correspondence;
4. The Chair of the ET-EGOS refers the comments of the ET-EGOS to the PoC, either by reference to the report of an ET-EGOS meeting or otherwise, as appropriate;
5. The PoC updates the draft to take account of comments received. Contentious issues are discussed with the Chair of ET-EGOS, as necessary. Microsoft Word “track changes” option continues to be used at this stage;
6. The PoC refers the revised draft version of the SoG to Chair of ET-EGOS, with copy to WMO Secretariat staff responsible for the ET-EGOS;
7. The Chair of the ET-EGOS considers the revised draft and adopts it, or refers it back to the PoC with comments for further revision (by steps 5 and 6 mentioned above);
8. The Chair of the ET-EGOS informs the WMO Secretariat staff responsible for the ET-EGOS when the revised version has been adopted;
9. The WMO Secretariat staff responsible for the ET-EGOS updates the WMO documentation (website, etc.) with the new version of the SoG, with due attention to version control procedures; and
10. At each ET-EGOS meeting, the WMO Secretariat staff responsible for the ET-

EGOS reports to the ET on changes since the last meeting, in relation to the SoG version and its review and adoption status.

APPENDIX B

STATUS OF EXISTING STATEMENTS OF GUIDANCE

(March 2014)

This document provides for an overview of the status of statements of guidance regarding the WMO Application Areas.

| No. | Application | Contact | Formal version – web (date) | New draft version (date) | Comment |
|-----|---|--------------------------------|----------------------------------|--------------------------|---|
| 1 | Global NWP | Erik Andersson (ECMWF) | May 2012 (approved by ET-EGOS-7) | March 2014 | <p>Consider comments by OceanObs'09 review team and consider implications for SoG.</p> <p>Consider the need to update the SoG to take account of recent NWP developments including the findings of recent observation impact studies. ET-EGOS-7 requested the PoC to update the SoG for GNWP with the latest information from THORPEX on targeting (e.g. for tropical regions).</p> <p>The new version proposed is taking into account recent changes in the global observing systems, and the increased importance of coupled assimilation with ocean and land surfaces. The PoC has involved experts on satellite data assimilation, conventional data and ocean analysis in preparing this update.</p> |
| 2 | High Resolution NWP (previously Regional NWP) | Thibaut Montmerle (France) | May 2012 (approved by ET-EGOS-7) | Not available | <p>The PoC reviewed the SoG in March 2014. He essentially added MODE-S observations that allow to retrieve the wind and eventually the temperature at the airplane location. Some recent works, performed in particular at KNMI, have proved that this new type of AMDAR-like observation is worth to be considered in the future.</p> <p>The PoC has also made some minor modifications to the observational user requirements in OSCAR, mainly for reducing uncertainties and spatial resolutions which were found a bit too large with hindsight.</p> |
| 3 | Nowcasting and Very Short | Paolo Ambrosetti (Switzerland) | June 2013 (approved) | March 2014 | ET-EGOS-7 requested the PoC, then to merge the user requirements for Synoptic Meteorology into those for NVSRF in the database. This was done in |

| No. | Application | Contact | Formal version – web (date) | New draft version (date) | Comment |
|-----|------------------------------------|---------------------------|----------------------------------|--------------------------|--|
| | Range Forecasting | | by IPET-OSDE Chair) | | April 2013, and a new draft SoG provided to the Chair. A slightly revised draft was then provided. A further revised version was proposed in March 2014 to better reflect requirements for lightning detection, and for being consistent with proposed changes in OSCAR. The UR in OSCAR have been also been edited, and some further changes related to lightning detection proposed. |
| 4 | Seasonal to Inter-annual Forecasts | Laura Ferranti (ECMWF) | May 2012 (approved by ET-EGOS-7) | March 2014 | <p>It was noted that observation requirements for the monthly forecasting (defined in more general terms as forecasts on sub-seasonal time scales) are the same of the ones for the seasonal forecasting. Considering the growing interest in applications in the "gap" between SIAF and Climate Monitoring (CM), i.e. decadal forecasting, the IPET-OSDE may wish to provide guidance whether it will be necessary to address the decadal forecast requirements in this SIAF SoG.</p> <p>The meeting of the CBS/CCI Expert Team on Operational Predictions from Sub-Seasonal to Longer-Time Scales (ET-OPSLs, UK, March 2014) expressed the interest of adding an additional paragraph to deal with the observational needs for decadal predictions. ET-OPSLs also proposed also to change the name of the Application Area to “<i>Sub-Seasonal to longer time scale predictions</i>” in order to better reflect the content of the SoG since it now includes observational needs for sub-seasonal to longer time scale predictions. ET-OPSLs discussed and approved a new version of the Statement of Guidance, and proposed that Dr. Yuhei Takaya (Japan) should be the new Point of Contact.</p> |
| 5 | Aeronautical Meteorology | Jitze van der Meulen (NL) | May 2012 (approved by ET-EGOS-7) | March 2014 | ET-EGOS-7 agreed that the measurement uncertainty had to be consistent in the RRR framework with the WMO-No. 8 (CIMO Guide), and the recommendations from the outcome of the WMO-BIPM Report ³ of the workshop on Measurement Challenges for Global Observing Systems for Climate Change Monitoring - Traceability, Stability and Uncertainty, Geneva, 30 March - 1 April |

3 <http://www.bipm.org/utis/common/pdf/rapportBIPM/2010/08.pdf>

| No. | Application | Contact | Formal version – web (date) | New draft version (date) | Comment |
|------------|--------------------------|---------------------------|------------------------------------|---------------------------------|--|
| | | | | | <p>2010.</p> <p>Starting May, 2012 a significant number of comments and suggestions from various experts (CAeM, Volcanic Ash, Eumetnet) were received to update the SoG. Valuable changes are made because of significant progress in technologies used for observations.</p> <p>A significant modification on Volcanic Ash can be observed, largely because of the introduction of new applications based on satellite data. Also, the item on Space Weather was updated after the introduction of this new application area.</p> <p>The database (OSCAR) was updated as well. However, for a large number of variables, the requirements are indicated as TBD or 'tentative'. Consultancies with experts in aero-meteorology need to be carried out to obtain objective figures on firm uncertainty requirements, time intervals and coverage.</p> |
| 6 | Atmospheric Chemistry | Oksana Tarasova (WMO) | Dec 2005 (Approved by ET-EGOS-1) | Not available | ET-EGOS-7 proposed roadmap for updating the SoG (Annex XIV of the meeting report). |
| 7 | Ocean Applications | Guimei Liu (China) | May 2012 (approved by ET-EGOS-7) | Mar. 2014 | Ocean applications variables UR in OSCAR and the Statement of Guidance for Ocean applications were reviewed and updated in March 2014. Proposing nutrients variables to be added into OSCAR. |
| 8 | Agricultural Meteorology | Mr Robert Stefanski (WMO) | June 2011 (approved by ET-EGOS-6) | Not available | <p>ET-EGOS-7 noted that a CAgM / JCOMM Task Team on Weather, Climate and Fisheries would meet in 2013 and would undertake a review of requirements for the fisheries side of the Agricultural Meteorology Programme. Therefore these have not been included in the SoG at the time but it was anticipated that the SoG would be updated once the fisheries review is completed.</p> <p>Based on the discussions at the ET-EGOS-7, several outstanding issues still need to be reviewed or revised (no progress ET-EGOS-7).</p> |

| No. | Application | Contact | Formal version – web (date) | New draft version (date) | Comment |
|------------|--------------------|---------------------|------------------------------------|---------------------------------|---|
| | | | | | <p>A CAgM / JCOMM Task Team on the Weather, Climate and Fisheries met in 2013 and has not completed the review of requirements for the fisheries side of the Agricultural Meteorology Programme. Therefore these have not been included in this SoG but it is anticipated that the SoG will be updated once the fisheries review is completed. This review will probably not be completed until the last quarter of 2014.</p> <p>There was difficulty in organizing a CAgM group to address these issues in the past two years. The 16th Session of CAgM will take place from 10-15 April 2014 and a new Open Panel Structure of the CAgM will be proposed. A dedicated Task Team or Expert Team will be created to look at the observation issues in agricultural meteorology. A dedicated Point of Contact will be named from this Team to liaise directly with the IPET-OSDE.</p> <p>CAgM team will examine all of these outstanding issues. A revised requirements table and SoG for agricultural meteorology will be provided at the next session of IPET-OSDE. The Point of Contact will liaise with the WMO Secretariat involved in this process to ensure that the revision is done properly. A revision of these documents are proposed to take place by June 2015.</p> |
| 9 | Hydrology | Bruce Stewart (WMO) | July 2008 (Approved by ET-EGOS-4) | Feb. 2014 | <p>Revised SoG proposed by B. Stewart. Point of contact (Wolfgang Grabs, WMO Secretariat) retired; Bruce Stewart (WMO Secretariat, D/HWR) acting as Point of contact by default until new one is appointed.</p> <p>ET-EGOS-6 agreed that SoG required further review and updating by the CHy, and its Advisory Working Group (AWG), taking into account the following elements: (i) the Section “identification of gaps” needs to be completed; and (ii) the statement on S-Band Doppler radar needs to be addressed and written in a more generic way (following correspondence with Vaisala).</p> <p>The user requirements should be revised. Further comments were provided by the ET-EGOS Chair to the PoC in August 2011.</p> |
| 10 | Climate | GCOS | 2010 | Not | ET-EGOS-2 (July 2006) accepted as SOG the following documents: (i) GCOS |

| No. | Application | Contact | Formal version – web (date) | New draft version (date) | Comment |
|-----|--|----------------------------|---------------------------------------|--------------------------|--|
| | Monitoring | Secretariat | (GCOS IP) and 2011 (Sat. supplement) | available | <p>Report on the Adequacy of the global climate observing systems (GCOS-48, October 1998); (ii) GCOS Second Adequacy Report (GCOS-82, 2nd, April 2003) GCOS Implementation Plan (GCOS-92, October 2004); (iii) Satellite Supplement to the GCOS Implementation Plan (GCOS-107, September 2006); and (iv) Progress Report on the Implementation of the Global Observing System for Climate in Support of the UNFCCC 2004-2008 (GCOS-129, August 2009). The 2010 update of the GCOS-IP (GCOS-138) and the 2011 update of the satellite supplement (GCOS-154) are treated as updated elements of the SoG. ET-EGOS drafted a response to make sure the EGOS-IP reflects the GCOS IP-10. AOPV-XVI (2/2011) noted that revision would be necessitated in part from the updating of the Satellite Supplement but that there were other matters to be clarified. The AOPC Chair undertook to discuss these with other interested parties.</p> <p>GCOS initiated effort for producing a new progress report (target 08/2015), and implementation plan update (target Mid-2016).</p> |
| 11 | Climate Applications (other aspects - CCI) | William Wright (Australia) | May 2012 (approved by ET-EGOS-7) | Not available | <p>ET-EGOS-7 recalled that the SoG is a gap analysis and not a discussion about qualitative requirements. It requested the PoC to further update the SoG for Climate Applications (other aspects, CCI) to take into account the issues identified by the meeting. The Team also requested the PoC to provide quantitative requirements to the Database, and further update the SoG from that perspective.</p> <p>GFCS Implementation Plan, adopted by Cg. Ext(2012) should also be considered. ET-EGOS-7 encouraged GFCS to follow the WMO RRR in the view to eventually contribute to it.</p> <p>The SoG which was provided in 2012 remains valid until next CCI intersession period when CCI will appoint a Task Team on SoG and an Expert Team on Voluntarily Observing Networks.</p> |
| 12 | GTOS | Wenjian Zhang | No | No | Situation with regard to GTOS evolved. The Chairman of GTOS Steering |

| No. | Application | Contact | Formal version – web (date) | New draft version (date) | Comment |
|-----|---------------|---------------------|----------------------------------|--------------------------|--|
| | | (WMO Secretariat) | | | Committee resigned in March 2013, and the Director John Latham is not responsible anymore for GTOS since 2012. WMO is trying to resolve this issue with FAO, discussing new responsibilities and resources with FAO management. GCOS took over full responsibility for the TOPC. Point of contact is D/OBS of WMO (W. Zhang) |
| 13 | Space Weather | Terry Onsager (USA) | May 2012 (approved by ET-EGOS-7) | Not available | ET-EGOS-7 noted the excellent progress on the Space Weather SoG but gave no specific guidance regarding updating of the SoG. Since ET-EGOS-7, new UR were identified by ICT-SW and included in OSCAR. A systematic review of the definition and names of the space weather variables was undertaken and is still in progress. ICT-SW-4 agreed to include in the revised SOG a summary of new material which reviews capabilities and shortcomings in the provision of the newly required observations. |

Notes:

ET-EGOS-7 considered that the GCW could not be regarded as an Application Area. However, there are many sub-applications to be addressed in the GCW context, and the Team agreed to use the IGOS Cryosphere Theme document as a basis for addressing GCW requirements in the new EGOS-IP.

ET-EGOS-6 responded to the requirements of CBS-Ext.(2010) to ensure that any particular requirements of Polar Meteorology are captured through the ongoing RRR process. The Team agreed that the Global Cryosphere Watch (GCW) should not to be regarded as this stage as a specific Application Area. Instead, the Team requested the Points of Contact of all Application Areas to review the information provided by the Secretariat during the meeting (ET-EGOS-6 doc 8.3.2(10/3)) and revise their user requirements and SoGs if necessary. ET-EGOS-6 proposed to adopt the same approach than for GCOS, i.e. regarding a list of documents maintained by the GCW as Statement of Guidance. Such documents include for example the Integrated Global Observing Strategy (IGOS) Cryosphere Theme (“CryOS”) report.

Per ET-EGOS-5 recommendation, the Synoptic Meteorology Application Area has been merged into the Nowcasting and Very Short Range Forecasting Application Area.

ET-EGOS-5 suggested that the following applications should be addressed:

- (i.) Space Weather. Space weather events affect the meteorological infrastructure through their impact on environmental satellites,

navigation satellites (e.g. GPS) and space-based telecommunication systems; they also represent a potential hazard for aviation and some large ground-based facilities. Critical phenomena to be monitored include solar radiation storms, high-energy particle rain, ionospheric and geomagnetic storms, and radio black-out by X-ray photons. This requires permanent measurements in the area of e.g. Solar imagery, High- and Low-energy particle detection, and Electron density. Refining these observation requirements is a prerequisite towards the standardization of Space Weather instruments that WMO is now expected to support.;

- (ii.) GTOS requirements for understanding the global carbon cycle and related climate change issues. For consistent and comprehensive monitoring of the carbon cycle, ecosystems, forests and land dynamics in general, both long-term sustained observations of Essential Climate Variables as well as regionally-focussed, intermittent measurements of other variables (and their fluxes) for process-type studies are required. A comprehensive gap analysis of existing capabilities in relation to needs is yet to be undertaken. Such an analysis should build on the existing SoG for Climate Monitoring (ie. the GCOS Second Adequacy Report, the GCOS IP and its 2010 Update) as well as the status reports on the development of standards for terrestrial ECV (<http://www.fao.org/gtos/topcECV.html>).

ET-EGOS-5 recognized that many GTOS requirements are being already considered by GCOS, but not all of them. The Team requested the Secretariat to identify PoC who should be invited to identify those requirements that are not covered by GCOS (i.e. the non GCOS requirements of GTOS) (action: Secretariat; Mar 2010).

ET-EGOS-5 invited the Inter-programme Coordination Team on Space Weather (ICTSW) to address user requirements on space weather, and provide feedback to the ET-EGOS Chair on the list of relevant Applications.

Reference: Current versions of Statements of Guidance - <http://www.wmo.int/pages/prog/www/OSY/GOS-RRR.html#SOG>

APPENDIX C

DRAFT TEMPLATE FOR STATEMENTS OF GUIDANCE (SOGs)

The Statement of Guidance (SoG) for a WMO Application Area⁴ is a gap analysis; it provides an assessment of the adequacy of observations to fulfill the observational user requirements and suggests areas of progress towards improved use of space-based and surface-based observing systems. Only the most significant variables in a given Application Area are analyzed in the SoGs.

The aims of the SoG are:

- 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. The Statement of Guidance is essentially a gap analysis with recommendations on how to address the gaps. It also provides the means whereby Members, through the Technical Commissions, can check that their requirements have been correctly interpreted.
- to provide resource materials useful to WMO Members for dialogue with observing system 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.

The Statement of Guidance for an Application Area is one element of the Rolling Review of Requirements (RRR⁵) process. It is used by the Commission for Basic Systems to complete the RRR process and contribute to the "Vision for the GOS"⁶, and hence to the Implementation Plan for the Evolution of Global Observing Systems (EGOS-IP⁷).

The SoG is prepared by the Point of Contact (PoC) nominated for the considered Application Area. The PoC is responsible for coordinating the development of the SoG with his/her community. He/she shall submit the SoG and future updates to the Chair of the Commission for Basic Systems (CBS) Inter-Programme Expert Team on the Observing System Design and Evolution (IPET-OSDE) for his/her review and submission to the IPET-OSDE for discussion. SoGs are approved by the Chair of IPET-OSDE and/or the IPET-OSDE.

The SoG shall be structured as follows. The inclusion of annexes is discouraged.

4 <http://www.wmo.int/pages/prog/www/wigos/wir/application-areas.html>

5 <http://www.wmo.int/pages/prog/www/OSY/GOS-redesign.html>

6 <http://www.wmo.int/pages/prog/www/OSY/gos-vision.html>

7 <http://www.wmo.int/pages/prog/www/OSY/gos-vision.html#egos-ip>

STATEMENT OF GUIDANCE FOR [NAME OF APPLICATION AREA]

*(Point of contact: name of point of contact who prepared the SoG)
(Version number, approval status, and date)*

1. Introduction

[1/2 to 1 page]

This section shall briefly describe the Application Area and its possible sub-areas addressed in the document, and provide some information on the purpose and end users of those applications.

It also provides some general information on how the Application Area depends on observations.

2. Description of requirements

[1 to 2 pages]

As observational user requirements are not independent between Application Areas, duplication shall be avoided. This section shall therefore explain how the requirements of other Application Areas could be relevant to this Application Area; such requirements shall not be repeated in this SoG.

This section shall briefly describe the observational user requirements. They are listed by observed variable, and if needed by sub-application.

As the observational user requirements are described quantitatively and exhaustively in the User Requirements Database (i.e. OSCAR/Requirements⁸), the requirements listed in this section shall not duplicate the database, and therefore remain short and generic. It shall include a textual description of the issues that it is necessary to understand in order to interpret the numbers in the OSCAR/Requirements⁸.

3. Gap analysis

[n pages]

This section provides the results of the critical review and gap analysis for the most important variables to highlight where the main gaps exist. The critical review involves comparing the capabilities of the surface- and space-based observing systems with the quantitative observational user requirements from the OSCAR/Requirements⁸ database.

⁸ <http://www.wmo-sat.info/oscar/observingrequirements>

The process of preparing the gap analysis is necessarily more subjective than that of the critical review. Moreover, whilst a review attempts to provide a comprehensive summary, a Statement of Guidance 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. If impact studies have been conducted, the results of such studies should also be considered for the gap analysis.

As in section 2 above, duplication shall be avoided between Statements of Guidance when one Application Area depends on the requirements of another Application Area.

This section shall be organized by observed variable, and for each variable, and possibly for each sub-application, describe where there are gaps and how they might be addressed in order to have substantial impact on the Application Area.

The following terminology has been adopted in the SoGs.

- **"Marginal"** indicates minimum user requirements are being met,
- **"Acceptable"** indicates greater than minimum but less than maximum requirements (in the useful range) are being met, and
- **"Good"** means close to maximum requirements are being met.

4. Recommendations on how to address the gaps.

[1/2 to 1 page]

This section shall summarize the recommendations on how to address the gaps described in section 3 above. It may include a first section with some generic recommendations, followed by a second section listing the critical variables that are not adequately measured by current or planned systems are (in order of priority).

References

This section may include sources of additional relevant information concerning the Application Area and its requirements.