

WORLD METEOROLOGICAL ORGANIZATION

**EXECUTIVE COUNCIL
PANEL OF EXPERTS ON EDUCATION AND TRAINING**

TWENTY-SEVENTH SESSION

Florence, Italy

14 – 18 MARCH 2016

FINAL REPORT WITH RECOMMENDATIONS



WMO General Regulations

Regulation 42

Recommendations of working groups shall have no status within the Organization until they have been approved by the responsible constituent body. In the case of joint working groups the recommendations must be concurred with by the presidents of the constituent bodies concerned before being submitted to the designated constituent body.

Regulation 43

In the case of a recommendation made by a working group between sessions of the responsible constituent body, either in a session of a working group or by correspondence, the president of the body may, as an exceptional measure, approve the recommendation of behalf of the constituent body when the matter is, in his opinion, urgent and does not appear to imply new obligations for Members. He may then submit this recommendation for adoption by the Executive Council or to the President of the Organization for action in accordance with Regulation 9(5).

Executive Summary

The twenty-seventh session of the WMO Executive Council Panel of Experts on Education and Training (the Panel) was held in Florence, Italy, from 14 to 18 March 2016.

The Panel addressed a number of topical and longer term issues related to the development of the WMO Global Campus, the WMO Fellowship Programme, a proposal for the thirteenth WMO Education and Training Symposium and competency frameworks as well as more normative activities such as reviews of WMO Regional Training Centres (RTC), review of the near final draft of the RTC Directors Handbook and an editorial update to the RTC component of the WMO Technical Regulations. Nineteen discussion papers with a combined total of more than 50 decisions were addressed during the week. Out of this material two resolutions and four decisions have been prepared for consideration by the sixty-eighth session of the WMO Executive Council with further decisions and resolutions to come in 2017 and 2018 from the other items identified during the week as requiring further action by the Panel.

At a strategic level the Panel firmly embraced the WMO Global Campus initiative and have set in place a working group to facilitate a full blown proposal for EC to consider in 2018.

At a tactical level the Panel has recommended that EC: approve the Panel undertaking an impact evaluation of the WMO Fellowship Programme to strength the business case for the WMO Fellowship Programme and help position it to take advantage of any extra-budgetary opportunities through mechanisms such as CREWS or the Green Climate Fund; agreed to hold the thirteenth WMO Education and Training Symposium in 2017 to ensure full community consultation on many of the key aspects of the WMO Global Campus components (determining the quality of courses and resources, the catalogue of courses / resources, guiding principles for the development of the WMO Global Campus, further developments in the implementation and use of the WMO competency frameworks, discussion around a proposal for a Basic Instruction Package – Climate Services (BIP-CS), aligning education and training resources and opportunities with the WMO High Priority areas, and, to discuss measures on determining the impact of training); approved recommendations for updating the RTC component of the WMO Technical Regulations to bring them in-line with the style guide for Technical Regulations; and, approved the Chair of the EC Panel of Experts being able to determine the mode of inspection of RTCs using a risk based approach and taking into account input from the relevant regional association, the host country and the Secretary-General).

At an operational level the Panel has recommended EC: reconfirm the IBIMET-CNR in Florence as a WMO Regional Training Centre; and, request CBS to extend the WIS metadata profile to allow education and training resources to be incorporated in WIS.

The Panel agreed on a work plan for the next inter-sessional period including the review schedule and nominal leads for RTC reviews for 2016, 2017 and 2018.

These decisions and the work programme emanating from this session are expected to assist Members by:

- Demonstrating the potential value of the WMO Global Campus to better address their ETR needs;
 - Providing better monitoring of progress and increased focus for the ETRP;
 - Enhancing the networking of Regional Training Centres;
 - Promoting and applying distance learning to address needs of Members;
 - Fostering the further development of national training programmes;
 - Enhancing the capacity of Members through increased fellowship opportunities;
 - Ensuring that decisions on education and training activities and approaches are aligned with existing and emerging Members' ETR needs.
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Figure 1. Members of the Twenty-seventh Session of the Executive Council Panel of Experts on Education and Training

Back row: (L – R) Ms V. Grasso, Mr F. Sabatini, Mr V. Tarchiani, Mr A. Ortolani, Col. P. Capizzi, Ms S. Aura, Dr E. Aguilar (partially hidden), Dr R. Jeffries, Dr D. Farrell, Dr P. Parrish, Dr W. Jordaan, Dr R. Riddaway, Mr D. Reboux

Front row: (L – R) Mr C. Webster, Ms A. Semple, Ms F. Caporossi, Ms Y. Burnet, Dr M. Mamaeva, Col. S. Cau (Permanent Representative of Italy with WMO), Dr A. Raschi, Dr D. Grimes (Chair), Mr J. Wilson, Dr J. Milton, Dr C. Campetella, Dr Z. Dong

Unable to attend Session: Dr Z. Liu, CHy rep

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Report of the 27th session of the EC Panel of Experts on Education and Training, Florence, Italy 14 to 18 March 2016

Agenda item 1 Organization of the Session

1.1 Opening of the session

1. The Chair, Dr David Grimes, opened the session at 09.30 welcoming the Panel members (see Annex I - [List of Participants](#)) and thanking Col Cau, the Permanent Representative of Italy with WMO, and Dr Antoni Raschi, Director of the IBIMET-CNR facility for offering to host this session of the Panel.

2. Dr Grimes noted that the Panel had a full week of work that would address the full range of the Panel's Terms of Reference. He further noted that much of the work would be around foundation components of the WMO Global Campus addressing assessing the quality of education and training, the WMO Global Campus Catalogue of courses and resources, the metadata for the courses and resources, progress with the aviation and climate services demonstration projects as well as more normative aspects of the Panel's work such as RTC reviews and their processes, update to the WMO Technical Regulations and the review of the draft RTC Directors Handbook. Dr Grimes thanked the Secretariat and the Panel members for the quality and general timeliness of the background documents. Dr Grimes noted his appreciation for the decision orientated nature of the documents (as opposed to the more normative reporting documents from the past) and that this was in keeping with the direction that the WMO Bureau had recommended all constituent bodies follow in this financial period. Dr Grimes concluded his opening remarks noting he was looking forward to a busy productive meeting.

3. Col Cau also welcomed the Panel and WMO Secretariat to Italy and recalled that Italy was an active participant in WMO activities serving on many Technical Commissions and Expert Groups. Col Cau noted that the meteorological community in Italy was very active and were pursuing a national accreditation for meteorologists. Col Cau further noted that WMO publication No. 1083 was recently been translated into Italian. Col Cau finished his introductory comments noting that Italy had its head in the Alps, feet in Africa and heart in the Mediterranean and thus it served many peoples and climate regimes.

4. Dr Raschi, Director of the RTC, recalled the history of the RTC and its activities in serving RA VI and I countries, particularly in the field of agrometeorology and climate. Dr Raschi acknowledged that for some years the RTC was inactive due to changes of personnel and financial pressures but he was very pleased with the support shown by WMO in the last two years and the Members responses to the courses offered by the RTC in that time.

5. Mr Jeff Wilson, Director of the WMO Education and Training Office thanked Col Cau and Dr Raschi and his staff, particularly Dr Marina Baldi, Dr Vieri Tariachi and Ms Francesca Caporossi for their assistance in the planning and logistics for this session. Mr Wilson further thanked the Panel members and staff of the ETR Office for their work in preparing for the session and having most of the documents available for the Panel's review at least a week before the session.

1.2 Adoption of the agenda

6. The Chair invited comments and questions regarding the draft agenda and receiving none the agenda was adopted along with the provisional work programme noting that this may adjust depending upon the discussions during the week, see Annex II [Agenda & Workplan](#)

1.3 Action items from the twenty-sixth Panel session

7. The Panel reviewed progress with the actions items from the 26th session of the Panel (Annex III - [Action items from the 26th Panel session](#)) and noted that with the exception of action item 6 related to

capability profiles from the 25th session of the Panel, all items were either completed or would be further progressed during this Panel session. Regarding the outstanding agenda item on capability profiles the Panel reiterated its interest in addressing this action and Dr Richard Jeffries and Dr Robert Riddaway offered to collect and collate some examples of good practise from public service and other organizations around the globe and work with the WMO ETR Office to make them available from the WMO ETR website before the end of 2016. The Panel noted the importance and usefulness of the capability frameworks and their compatibility with the WMO competency frameworks whilst recalling that the requirements for middle and senior managers in NMSs would be set at the national level according to the needs and priorities of each country. Thus the capability profiles should be seen in an advisory rather than a regulatory role and may help guide the development and running of HRD workshops and courses.

Agenda item 2 Major Outcomes from Congress, Executive Council

8. The Panel recalled that since it had last met Executive Council had met twice and Congress once. In addition, a number of other major meetings with implications for WMO and its Members had also been held (SIDS meeting in Samoa, COP 21 in Paris, the Sendai Conference on DRR and the UN discussions on the 2030 Sustainable Development goals). The Panel recognized that for WMO and its Members to play their part in the activities associated with these later meetings there would be new and expanded challenges and opportunities for the WMO Education and Training Programme. See Annex IV - ETR related decisions from Cg-17 and EC

9. The Panel noted that EC-66 in 2014 had agreed to the Panel recommendations regarding an update to the WMO RTC section of Volume I of the WMO Technical Regulations as well as the feasibility study for the WMO Global Campus. The Panel further noted that Congress in 2015 (Cg-17) had agreed to the extension of the WMO Global Campus feasibility study and that it be built around three key demonstration activities (WMO Global Campus catalogue of courses and resources and initiatives to improve the availability of courses in multiple languages to support aviation and climate services).

10. The Panel reflected on some of the ETR challenges and opportunities associated with the seven high priority areas identified by Cg-17 for this financial period and how the Panel would need to consider them in their ongoing deliberations.

11. The Chair briefed the Panel on the outcomes of the WMO Bureau meeting in January 2016 where changes to the EC documentation were agreed and how these changes will impact upon the way the decisions of the Panel will be taken to EC-68. The Chair also briefed the Panel on the discussions held by the EC Working Group on Strategic and Operational Planning and the expectation of much better linkage between the various elements of the WMO planning process for 2020 to 2023 (development of strategic plan and operational plan and the accompanying budget). The Chair challenged the Panel to ensure that their deliberations were action orientated and would lead to improvements for Members from the WMO Education and Training Programme.

Agenda item 3 Exchange of views on the WMO Education and Training Programme

12. Perhaps the best vision for the ETRP comes from Resolution 14 / EC-66 where the Council decided *“that the Education and Training Programme needs to remain dynamic and nimble, and adopt approaches that will allow Members to address the(ir) continually evolving requirements.”* Council further decided *“that these approaches must*

(1) Support the further development of education and training capabilities at a national level, particularly in developing and least developed countries, small island developing States and landlocked countries;

(2) *Maximize access to education and training opportunities and resources for all Members, independent of geographic location, development status and language;*

(3) *Learn from and be guided by best practises within the wider education and training community;*

(4) *Be forward-looking and flexible;*

13. The Panel noted that at the global level the challenge is how to assist at least 200,000 staff develop and maintain the necessary skills and knowledge to produce and deliver the required services. The challenge has two parts:

- Setting, monitoring and updating the minimum qualification and competency requirements and their associated guidance documentation; and,
- Promoting, facilitating, providing education and training opportunities and assistance to training institutions and staff of Member NMHS

The first part potentially impacts upon the staff of all NMS's whilst the second part is particularly addressed to the staff of NMSs in developing and least developed countries (including small island developing states and member island territories). The challenge in terms of training numbers is reduced if the assistance to the education and training of staff involved in administrative functions is focused only on the senior level staff in particular themes. Using this approach the Panel noted that the education and training challenge reduces to less than 20,000 staff in total but encompassing of the order of 140 countries. It should be noted that many, but not all, of these countries have some national education and training capability in areas linked to observations, monitoring, traditional forecasting and equipment maintenance and calibration. The challenge is how these national institutions can be sustained to provide education and training to small numbers of learners as the requirements become more complex and technology based.

14. The Panel recalled that the WMO Global Campus is the mechanism that is proposed to better meet Member needs by having the ETR community work in a coordinated and collaborative manner. The greater numbers of learners and potential pool of developers and learning facilitators should produce efficiencies and provide a mechanism to assist the large and the small training centres as well as provide more opportunity for improving the overall quality and consistency of the learning. The Panel identified that it will need to answer key questions such as

- Will the WMO Global Campus allow the ETRP to be "*dynamic and nimble*"?
- Will it be possible to change the culture within the ETR community so that collaboration and cooperation become the *modus-operandi* for dealing with new education and training initiatives?
- Can the WMO Global Campus address the cultural, IT and communication capability variation across Members, multi-lingual and geographic challenges?
- Is it feasible to embark upon the WMO Global Campus in the current resource allocation within the WMO Secretariat and what the Members can provide through additional extra-budgetary resources and in-kind efforts?
- Is there an alternative to the WMO Global Campus given the wide range of global, regional, national, social and cultural drivers?

15. The Panel were advised that the outgoing Director of the WMO Education and Training Office, Mr Wilson believes that it will not be possible to meet the objectives of the ETRP in the manner requested by EC, to the level required by the Members if the ETR community do not embrace and implement the underlying concepts of collaboration and cooperation and working as one being proposed through the WMO Global Campus. Mr Wilson indicated that the focus of the increased collaboration and cooperation has to be on increasing the amount and type of learning opportunities available to NMS personnel using online learning as well as face-to-face, informal learning and

mentoring and coaching approaches. The vocational learning must be competency based. Mr Wilson further stated that if the community do not agree to work together on their common problems the current capability gap in the NMS staffing will continue to increase and this will inevitably lead to staffing challenges in many NMSs. The Panel noted that it will not be an easy or straight forward transition for the ETR community to work as one however the discussions, decisions and recommendations from this session of the Panel will have a big impact on the future direction for the WMO ETRP.

Agenda Item 4 Identification of Human Resource Development Requirements

4.1 WMO Regional Training Centres

4.1.1 Status of RTCs

16. The Panel reviewed the report detailing the 2014 and 2015 (Table 2 has some of reported data) activities of RTCs. The Secretariat advised the Panel that this version of the questionnaire had been developed following discussions at the last Panel session plus discussions with the RTC Directors during the RTC Directors workshop in Langen Germany in March 2015. The Panel recalled that the data was being collected for several audiences: for use by the presidents of regional associations and their management group for planning activities and monitoring that the key ETR needs of the region were being addressed, also for monitoring of the RTCs in their region to allow pro-active correction in case an RTC appeared to be dormant; use by the Panel for monitoring individual RTCs as well as the activity and overall scope of the RTC network; and, use by individual RTCs to see what other RTCs were doing.

17. The Panel noted that as this was the first time that the data had been collected and reported in this manner it was difficult to assess what the data actually meant in terms of change of activity and status of the network as a whole. Whilst Figure 2 suggests an improvement in overall numbers, the RTC Directors on the Panel noted that it was possible for the different institutions to provide different responses for the same questions. Some institutions included people doing meteorology units but majoring in other courses whilst others only focused on people majoring in meteorology. The Panel also questioned the gender statistics and why only the gender of the foreign students was captured. The Panel noted with pleasure the increased use of distance learning in terms of RTCs offering it and numbers of people served.

18. Notwithstanding the above comments the Panel noted that the data shows seven RTC components did not submit reports for either 2014 or 2015. These include Angola, Indonesia (Bandung, Water Research), Niger (neither EAMAC nor AGRHYMET, although these institutions were reviewed in 2014 and reconfirmed in 2015), Nigeria (University component), Philippines (University of the Philippines), and Venezuela. Angola and Venezuela have not submitted annual reports in the last 9 years. Several new RTCs or RTC components are not included in the report, although Brazil, which was reconfirmed in 2015 as a newly constituted RTC, did provide a preliminary report. Three RTC components reported in 2015, but not 2014. These included Iraq, Nigeria (MRTI), and Russian Federation (Moscow Technical School). These three institutions provided only 7 additional international students. The Panel noted that based on these results and the revised RTC criteria it would be expected that RA II (as the first regional association to meet in this financial period) may need to consider delaying recommendations to reconfirm the RTCs in Iran, Iraq and Uzbekistan and request India to ensure that the reports from all components of the RTC in India are provided in the future.

Country	City	RTC Component	2015				Foreign students	
			Local Participants	Foreign Participants	Degree-level Courses	Short Courses	Male	Female
Algeria	Oran	IHFR	401	64	3	0	50	14
Angola	Luanda	INAMET						

Argentina	Buenos Aires	UBA	339	15	3	2	8	7
Argentina	Buenos Aires	SMN	344	16	3	8	13	3
Barbados	Bridgetown	CIMH	76	129	5	4	68	61
Brazil	CVEM	UFPA	N/A	87	32	0		
China	Nanjing	NUIST		303	16	13	239	95
China	Beijing	CMATC	66	104	1	5	71	33
Costa Rica	San Jose	UCR	72	13	3	8	5	8
Egypt	Cairo	EMA	573	20	2	18	15	5
India	Pune	MTI	311	53	6	4	43	10
India	Delhi	IMD						
India	Pune	NWA	48	34	0	2	19	15
India	Roorkee	IITR						
Indonesia	Bandung	RCWR						
Indonesia	Jakarta	BMKG	671	75	8	12	57	18
Iran, Islamic Republic of	Tehran	IRIMO	284	1	2	8	0	1
Iraq	Baghdad	IMO	103	0	0	9	0	0
Israel	Bet Dagan	PTCAM	2	49	0	2	34	15
Italy	Florence	IBIMET	4	19	0	1	11	8
Kenya	Nairobi	IMTR	14	117	2	9	104	14
Kenya	Nairobi	UONBI	241	35	10	0	19	16
Madagascar	Antananarivo	ESPA	159	17	12	0	13	4
Madagascar	Antananarivo	ENEAM	112	8	5	0	5	3
Niger**	Niamey	EAMAC						
Niger**	Niamey	AGRHYMET						
Nigeria	Lagos	MRTI	260	7	4	3		
Nigeria	Akure	FUTA	604	39	2	17	34	5
Peru	Lima	UNALM	225	27	1	2		
Philippines	Quezon City	PAGASA	559	58	1	18	45	13
Philippines	Quezon City	UP						
Qatar	Doha	QAC	6	10	6	0	9	1
Republic of Korea	Seoul	KMA						
Russian Federation	Moscow	ATI	265	39	0	5	10	29
Russian Federation	Saint Petersburg	RSHU	3547	379	23	9	176	199
Russian Federation	Moscow	MGMTEH	197	0	1	0	0	0
South Africa	Pretoria	SAWS	101	73	6	7	60	13
Turkey*	Ankara	TSMS	0	0	0	0	0	0
Uzbekistan	Tashkent	THMPC	-	2	1	0	2	0
Venezuela, Bolivarian Republic of	Caracas	UCV						
Totals			9584	1793	158	166	1110	590
							65.3%	34.7%

Table 1. Summary information on RTC status for 2015. Red shading means no report received. Yellow means one foreign student or no foreign students, grey for new RTCs who would not be expected to report in 2015.

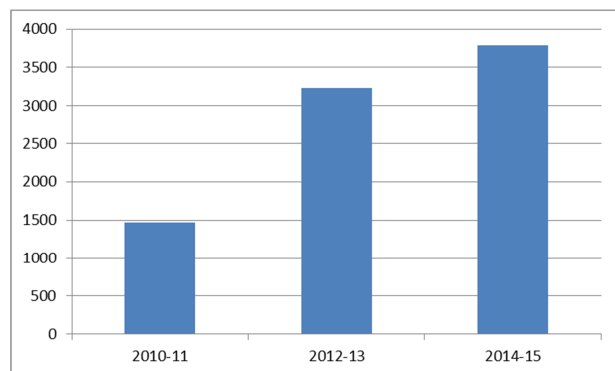


Figure 2. Total international students training in the RTC network per bienieum, 2010/2011, 2012/2013 and 2014/2015

19. In addition to the above comments the Panel noted that the data, as it was presented, only addressed the quantity of the training, not the quality and impact of the training. The Panel acknowledged that during its 26th session it had focused on identifying quantity as a bulk measure of the performance of the RTC network and had not requested information on quality. The Panel further

acknowledged that collecting statistics on the quality, or whether the courses were fit for purpose, was not easy but was important feedback for the institutions, the regional associations, the ETR Office and the Panel. A working group (see Annex XIII [Table of ETR Panel teams and working groups](#)) was formed to further progress this topic and the RTC criteria were slightly modified to better account for this, see Agenda Item 4.1.2 in this report.

Reconfirmation of the RTC in Florence

20. The Panel recalled that at its last session the decision was taken to recommend to EC-66 that the reconfirmation of the RTC in Florence be deferred until EC-68 to allow the RTC to demonstrate its commitment to running courses for RA VI and RA I participants. The Panel noted with pleasure that the RTC had run a number of courses in 2014 and 2015, had participated in the ETR Symposium, the RTC Directors meeting, had collaborated with Italy and Spain in the delivery of courses and was effectively using distance learning in its pre and post course work. Additionally the Panel were informed that IBIMET-CNR, with the support of WMO, had been successful in obtaining a grant of some euro 800,000 from the Italian Ministry of Foreign Affairs that would allow it to run four courses addressing agriculture and climate services for countries in West Africa. The courses would include the AGRHYMET component of the RTC in Niger. The Panel agreed to recommend to EC-68 that the RTC hosted by IBIMET-CNR in Florence, Italy be reconfirmed as an RTC. Future reconfirmation decisions will follow the normal RA VI cycle.

4.1.2 Review of RTC reconfirmation arrangements

21. The Panel reviewed the discussion document prepared by the Secretariat on this matter, noting the recommended changes to the section in Vol I of the WMO Technical Regulations related to the designation and reconfirmation of WMO Regional Training Centres. The Panel were advised that the recommended changes were required for the text to conform to the style guide for Technical Regulations. The Panel reviewed the proposed changes and recommended they be taken to EC-68 for decision on updating the Technical Regulations.

22. In addition, noting the discussion in Agenda Item 4.1.1 the Panel made a small adjustment to the text of the second dot point in the section addressing “Assessing learning and evaluating the learning service”. The second bullet now reads “*The RTC component has processes for measuring the effectiveness and quality of the learning service, including obtaining feedback from stakeholders learners.*” This change broadens the required evaluation to include measurement of impacts of the education and training intervention(s).

23. Whilst reviewing the designation and reconfirmation process the Panel recalled its earlier discussions about the potential for taking a risk based approach to the inspection of RTCs. The Panel noted that in the last two years small variations in the inspection process for designation and reconfirmation had already been practised. For the review of the RTC in Niger it was not possible for a Panel member to physically participate so the inspection was carried out by Dr Parrish, Chief of the Training Activities Division with the assistance of Mr Gomez from the WMO Office for Western and Northern Africa. For the recognition of the RTC in Korea the whole Panel participated in the inspection whilst Mr Caponi from the Hydrology Branch within the WMO Secretariat carried out the assessment of the proposed RTC component in Roorkee, India.

24. Whilst recalling that the RTC physical inspection and side meetings are very useful for the RTC and should be continued if at all possible, the Panel noted that with the growing number of RTCs and RTC components it was prudent to be more selective about which RTCs should undergo the full physical inspection by the Panel. By taking a more risk based approach and incorporating visits by Secretariat staff, Panel members and other experts over a period of time it would be possible to have an ongoing dialogue with an RTC regarding its courses, facilities, staffing and offerings. The Panel thus decided to request EC to allow the Chair of the Panel to decide whether every RTC review would also require a physical inspection from a Panel member. As each RTC is reviewed at least one every eight years the Panel further recommended that a physical inspection by a Panel member should occur for at least

every second review. The decision by the Panel Chair should take into account the proposed timings, the availability of resources (people and finances) to carry out the inspection, the status and any issues or challenges associated with the previous RTC review, the views of the Secretary-General, Permanent Representative of the host country and president of the relevant regional association. The Panel noted that it was important to inspect high functioning RTCs as well as low functioning or dormant RTCs as the representation value of an inspection visit should not be overlooked.

25. In reviewing the RTC self-assessment questionnaire the Panel expressed some concern regarding the option of an RTC being able to select partially meets as a category. The Panel then recalled that the self-assessment questionnaire was only one part of the RTC review mechanism and that once every eight years an external review team used the self-assessment questionnaire and the provided evidence for each question as part of their overall briefing for the review. Thus the exact categories and wording of the self-assessment questionnaire were more for the RTC itself to gauge how they believed they met the RTC criteria and to help them prepare for the review. It was up to the external review team to work out what areas in particular to focus on during the review and possible physical inspection. A working group (Annex XIII - [Table of ETR Panel teams and working groups](#)) was created to refine the self-assessment questionnaire and ensure it complemented the RTC Criteria in the WMO Technical Regulations.

4.1.3 Review Programme of RTCs for 2016, 2017 and 2018.

26. The Panel discussed the RTC review programme for the period 2016 to 2018 and nominated leads for each of the reviews assuming that the risk based approach for physical inspections will be approved by EC-68. Annex V - [RTC review programme for 2016 to 2018 inclusive](#).

4.2 WMO Global Campus

4.2.1 WMO Global Campus feasibility study – overview

27. Ms Aileen Semple, seconded expert from the UK Met Office, provided the Panel with a review of the major activities related to the WMO Global Campus since the last Panel session: the UK Met Office supported the WMO Global Campus concept by seconding Ms Semple to assist the WMO Secretariat in its development; EC-66 agreed to a feasibility study; an October 2014 meeting of many RTC Directors and heads of training further clarified the scope, role and rationale for a WMO Global Campus and proposed a range of additional activities; a WMO Global Campus steering committee was created with Ms Semple supporting the work of the Steering Committee; the RTC Directors in March 2015 supported the concept, further refined the vision and purpose and suggested three high level activities (WMO Global Campus catalogue of courses / resources / resource people, course(s) for aeronautical meteorologists, and course(s) for climate services personnel) to help demonstrate the potential and explore issues related to working collaboratively; Cg-17 endorsed the WMO Global Campus concept and the three proposed high level activities requesting that a full proposal be presented to Cg-18; a number of meetings to define and refine the functionality of a WMO Global Campus catalogue of courses / resources and resource personnel and types of metadata that would be required to create the catalogue; a working group investigated three options for prototyping a WMO Global Campus catalogue; an extensive survey of available aeronautical meteorological courses was undertaken; a workshop was held with the experts from the Commission for Climatology to refine the draft climate services personnel competency framework and explore the range and suitability of resource material and courses to support the competency framework and general climate services education, including discussion on a Basic Instruction Package for Climate Services.

28. The Panel thanked Ms Semple for her commitment and enthusiasm for the WMO Global Campus concept and the work that she had led in the last two years. The Panel also thanked the members of the WMO Global Campus Steering Committee for their work but recommended that the Steering Committee be disbanded and that a Panel Working Group be formed to take on this role. The Panel Chair accepted the recommendation. All Panel members, excluding the Chair, volunteered to be part of the Working Group with Co-Chairs Dr David Farrell and Dr Richard Jeffries. The Working Group agreed to meet online monthly to progress its work. Annex VI details [The Terms of Reference for the Working Group](#)

29. During the session the Working Group reviewed the draft work plan (Annex VII [WMO Global Campus proposed work programme](#)) for the next four years with the view of having a near complete proposal for discussion at the next Panel session and then a full proposal for Cg-18 in May 2019. To assist the Panel in its WMO Global Campus activities and provide transparency to the wider WMO community the Panel discussed a set of Guiding Principles (Annex VIII [WMO Global Campus Guiding Principles](#)). The Panel requested that its WMO Global Campus working group further refined these for approval during the intersessional period. The Panel further noted that as the WMO Global Campus concept matured it would be necessary to review and further update these principles.

4.2.2 WMO Global Campus catalogue of courses and resources

30. The Panel reviewed the three options proposed as prototypes for the WMO Global Campus Catalogue of courses / resources and resource personnel using information from the various consultations and discussions held with the wider ETR community on this topic. The three options were: an example based around the MOODLE system; an example based around the EUMETSAT / WMO Virtual Laboratory training calendar (essentially a MySQL database with web interface); and, the potential for building something based around the WIS system and its metadata.

31. The Panel noted that whilst the WIS option provided long term possibilities, in the short term (next twelve months) it was not suitable. Regarding the other two options Dr Farrell volunteered to take the MOODLE option and incorporate it into the CIMH MOODLE system and provide graduate level staff to maintain and extend the system for the next four years. The Panel were advised that EUMETSAT were not able to offer any tailoring to their calendar system to extend their underlying database or search fields to meet the WMO Global Campus requirements. Noting that both the MOODLE and the EUMETSAT / VL Calendar options met many of the requirements, the Panel thanked Dr Farrell for his very generous offer and agreed to proceed with the MOODLE version in the short term whilst further investigations are made regarding WIS as a long term option. To allow the further exploration of the WIS options the Panel recommended that EC-68 request CBS to investigate the option of extending the WIS metadata profile to include specific training related information.

32. The Chair observed that the development of the WMO Global Campus catalogue of courses and resources was similar to that of the WIS system. The role of the Panel was to develop the concept and the regulatory process between now and 2019 with the full implementation to come at the Member level after that. Thus the demonstration process using MOODLE as a first option allows the testing of the concept and the regulatory requirements. Issues such as who can contribute and how in the longer term can be explored during this demonstration phase. In the first instance the contributors will be those groups already active in the ETR community supporting Members such as the RTCs, the NMHS training institutions, groups such as EUMETCAL, COMET and the WMO Virtual Laboratory.

33. The WMO Global Campus Catalogue of courses and resources will only be as good as the underlying metadata. The Panel noted the fine balance between collecting sufficient metadata to be useful for the end user and the workload on the contributing institutions in providing the metadata. The Panel drew upon the extensive community consultations and discussions on this topic in agreeing the first version of the metadata profile to be used with the MOODLE based system (Annex IX [WMO Global Campus metadata profile](#)). The Panel requested the Co-Chairs of the WMO Global Campus working group to ensure to provide easy mechanisms for the community to contribute, update and maintain the metadata for their courses and resources.

34. The Panel considered the proposal for contributors of metadata to the WMO Global Campus catalogue to sign a disclaimer that would allow their metadata to be edited or removed if it was found not to be accurate or suitable. Whilst noting in-principle agreement with such a requirement the Panel opted not to implement it at this stage.

4.2.3 WMO Global Campus demonstration activity – aeronautical meteorology

35. The Panel reviewed the information collected by Dr Wilfried Jacobs and Dr Winifred Jordaan from RTCs and other training institutions regarding the availability of education and training for aeronautical meteorological forecasters, particularly to address the 1 December 2016 BIP-M related qualification provision.

36. In the ensuing discussion several Panel members advised the Panel that it appears that many Directors of NMSs in their region were either not aware of the approaching implementation date of 1 December 2016, or they were choosing to ignore it or did not understand that they would need to check that any Class II forecasting courses taken by existing aeronautical meteorological forecasters met the BIP-M requirements. The RTC Directors on the Panel noted that they were getting very few requests for assistance or courses on this topic.

37. The Panel recalled that the WMO Secretary-General had written to all Members in January 2015 and January 2016 advising them of the 1 December 2016 implementation date and providing advice on steps that could be taken to obtain the necessary documentation. The Panel noted that a survey from the ETR Office in 2013 and 2014 indicated that there were less than 10,000 aeronautical meteorological forecasters around the globe and at that stage it appeared that less than 10% of them would not meet the qualifications requirements. However detailed inspection of the data showed that this would mean that more than 30 countries would have less than 70% of their aeronautical meteorological forecasters meet the qualification provisions on the implementation date. The Panel further noted that the January 2016 letter requested Members to provide further information on this topic.

38. Mr Chris Webster, Co-Chair of the Commission for Aeronautical Meteorology Expert Team on Education, Training and Competency advised the Panel of the work his team were doing on the competency and qualification issues and their work with the ETR Office.

39. In summing up this agenda item the Chair noted that it appeared there exists appropriate aeronautical meteorological course offerings but uptake of these is to be encouraged. The Chair thus offered to work with the President of CAeM to draft a letter to Members reminding them of the assistance that the RTC's could bring to bear. (Note: a letter was sent to Members on 31 May 2016).

4.2.4 WMO Global Campus demonstration activity – climate services

40. Dr Enric Aguillar and Dr Patrick Parrish briefed the Panel on the work being undertaken to develop a competency framework for climate services and the associated education and training resources and materials to support this. The Panel were advised that a key meeting was the WMO Curriculum Development Workshop held in Israel in November 2015 that brought together climate services practitioners with the WMO Education and Training Community. During the workshop the draft climate services competency framework and statements were reviewed and resources to support their development were identified. Additionally the group were encouraged to look at collaborative development or extension of existing programmes such as the Meteo France Foundations of Climate Services course, the University of Reading Statistics in Applied Climatology course and the NOAA climate services toolkit.

41. The Panel reiterated its recommendation that CCI get the competency framework and associated courses and resources in place before formally proposing a Basic Instruction Package for Climate Services (BIP-CS). This would ensure that all countries are able contribute to, and benefit from, the activities and opportunities associated with the Global Framework for Climate Services and allow for further discussion with the higher education institutes about the options for developing new courses or tailoring existing ones to support a BIP-CS. The Panel noted that next time WMO Publication No. 1083 is updated could provide an opportunity to consider a BIP-CS. The Panel further noted that as Climate Services are only part of the role of a Climatologist, casting the Basic Package as Climate Services may help avoid a long discussion related to the definition of a climatologist.

4.2.5 WMO Global Campus – demonstrating quality

42. The Panel noted that quality has always been an issue in the ETR community. The Panel recalled some of its previous discussions that addressed quality. These ranged from the introduction of 8 yearly reviews of WMO Regional Training Centres in the late 1990's, to the introduction of the various competency and qualification frameworks and the discussion around the recommendation for all training institutions to follow ISO standard 29990:2010(E) if there was no applicable national accreditation or certification scheme. The Panel observed that even the discussions in this session related to the RTC Directors Handbook and the revision of the provisions in the Technical Regulations related to RTCs addressed aspects of quality.

43. The Panel thus observed that the question of quality is multi-faceted and could be framed around 3 broad categories: the *organization*, the *processes* used, and the *product* or event itself. The Panel further recalled the complexity of international, WMO and national schemes and standards that could be applied to the discussion of quality in education and training. The Panel noted that when considering quality it should be done with the view of "is this fit for purpose" rather than "is this perfect".

44. The Panel identified twelve criteria that could be used to frame the discussion and determination of quality in education and training.

Quality criteria related to the "*Product*"

1. Description of learning content and its links to qualifications or competency frameworks
2. Expected Learning Outcomes
3. Learning activities used to achieve outcomes
4. Awards (Diplomas, Certificates) associated with the Course or offering
5. How Learning is assessed

Quality criteria related to the "*Processes*"

6. How the training system is managed
7. How Learning Needs are determined
8. How materials are kept up to date and relevant

Quality criteria related to the "*Organisation*"

9. How trainers are hired, trained, monitored and evaluated
10. How the Facilities, resources and technology infrastructure are managed
11. How training is monitored, evaluated and improved
12. Application process including how the trainee is selected

45. The Panel further noted the link between quality and that of the WMO Global Campus catalogue and metadata discussion and the need to keep the activities coordinated thus the metadata fields offered some possibilities for exposing the quality of the courses / resources as well as the underlying processes and organization quality factors.

46. Recalling its observation of quality being linked to "*fit for purpose*" the Panel noted the value of user feedback such as that used by the popular travel and hotel websites and suggested that its WMO Global Campus working group bear this in mind whilst further developing the WMO Global Campus Catalogue of courses and resources. The Panel also noted that its WMO Global Campus Working Group will also need to examine whether the metadata or course / resource materials being proposed by various institutions will need to undergo any sort of review prior to the metadata being published, this could be seen as an editorial board function but balancing the scope of such a board and the available long term resources will be a challenge.

4.2.6 Other aspects of the WMO Global Campus Feasibility Study

47. The Panel considered the discussion document provided by the Secretariat addressing other aspects of the WMO Global Campus including elements requested by EC-66, the potential for demonstration projects in areas related to Multi-Hazard Early Warning (MEHWS) / Disaster Risk

Reduction (DRR), intellectual property rights and resources required to take the WMO Global Campus forward.

48. Regarding intellectual property rights (IPR) the Panel observed that the WMO Global Campus catalogue of courses and resources only collected and displayed metadata related to the courses and resources and thus the IPR for the material would remain with the group(s) delivering the courses or resources. The Panel noted its preference for institutions to make their material available as Open Educational Resources (OER) with the accompanying IPR requirements but acknowledged that this may not be possible for all institutions.

49. Following an active discussion across the wide range of topics the Chair summarized the outcomes as: focus on the three key demonstration projects agreed by Cg-17 (catalogue of courses / resources, courses to support aeronautical meteorological personnel and climate services personnel in multiple languages); use the time between now and 2019 to better clarify the potential models for running and operating the WMO Global Campus and their resource implications from WMO either under regular budget or extra-budget; use the three demonstration projects to address as many of the components of the EC-66 feasibility study as possible; only take on new demonstration projects if they come with the necessary financial and human resources and they will not adversely impact upon the working group's ability to deliver on the three agreed demonstration projects; and, use the next two years to determine how you will measure the initial and ongoing success of the WMO Global Campus.

4.3 WMO Fellowship Programme

50. Dr Yinka Adebayo, Chief of the Education and Fellowship Division of the WMO Education and Training Office briefed the Panel on the rationale and processes used within the Secretariat to advertise, promote, select and place WMO fellows at institutions around the globe. Tables 2 to 4 provide summary statistics of the fellowship awards for all types (long term, short term and group training) from all funding sources for the period 2012 to 2015.

51. Dr Adebayo underlined the importance of the Fellowship Programme to many LDCs and SIDS who otherwise could not attract and hold university educated staff. Dr Adebayo also provided the Panel with information about the resource mobilization that had occurred to supplement the funds typically available under the WMO Regular Budget.

	I	II	III	IV	V	VI	Total
2012	42	10	8	11	4	1	76
2013	83	11	10	11	7	3	125
2014	66	20	5	14	19	4	128
2015	94	17	14	19	7	1	152
Total	285	58	37	55	37	9	481

Table 2 Total number of fellowships awarded for long, short term and group training, by region for 2012 to 2015, from all funding sources.

	Female	Male	Total	Female %
2012	22	54	76	29%
2013	28	97	125	23%
2014	29	99	128	23%
2015	27	125	152	18%
Grand Total	106	375	481	22%

Table 1 Number of fellowships awarded by gender for long term, short term and group training, by year, from all funding sources. The number of women applying is typically much less than men. Gender is one of the selection criteria and preference is given to female candidates.

	Host Country	Fellows		Host Country	Fellows
1	China	87	14	Japan	6
2	United States*	87	15	Australia	5
3	Kenya	72	16	Korea, Republic of	5
4	Barbados	31	17	Madagascar	4
5	Morocco	29	18	Brazil	2
6	United Kingdom	26	19	Egypt	2
7	India	25	20	Germany	2
8	Switzerland**	22	21	Nigeria	2
9	Russian Federation	21	22	Peru	2
10	Philippines	15	23	Uzbekistan	2
11	Algeria	12	24	Bulgaria	1
12	Netherlands	11	25	Burkina Faso	1
13	France	7	26	Niger	1
14	Japan	6	27	Portugal	1
Total for all host countries		481			
*NOAA attachments					
**Familiarization visits					
Table 4. Countries where fellows were placed during 2012 to 2015. For all award types from all funding sources. The US figure would be higher if the fellows for the Pacific Desk were included. As WMO does not provide logistic support to this Desk they have not been included.					

52. The Panel noted that as a result of Dr Adebayo's efforts partially or fully funded opportunities for WMO fellows were now available in universities in China and Korea where the institutions provided significant financial and academic support to the fellows. In addition it appears that KOICA, the overseas aid section of the Korean Government will offer up to another 15 places at a different university in Korea. If this does eventuate this will reflect an increase of at least 30% to the long term placements opportunities for WMO fellows making Korea second only to China in support to WMO long term fellows. Dr Adebayo also emphasized the importance of tracking the progress of WMO fellows once they had completed their studies and the work the division were undertaking to promote alumni activities.

53. The Panel noted that the Fellowship Programme had annual allotment of around CHF 800,000 a year from the WMO Regular Budget with more than CHF 500,00 additional funds from extra-budgetary sources from Canada, Norway, Switzerland, the United Kingdom of Great Britain and Northern Ireland, and the United States of America. The funds from Canada, Norway and Switzerland are for specific projects and periods of time whilst the funds from the UK and the USA are more regular.

54. The Panel noted with interest the breadth and depth of the WMO Fellowship activities and the importance of the programme to many WMO members. Noting its importance, the potential for further funding opportunities under the Green Climate Fund and other funding instruments the Panel decided to recommend to EC that an impact evaluation of the WMO Fellowship Programme be undertaken to firmly establish the business case for investments in the WMO Fellowship Programme and attempt to quantify the value of the programme to members. The proposed Terms of Reference for the Impact Evaluation are at Annex X [Terms of Reference for Impact Evaluation of the WMO Fellowship Programme](#)

4.4 Issues raised by WMO Technical Departments

55. The Panel reviewed the document prepared by the Secretariat for this agenda item. The Panel noted their appreciation for the coordination and proposed contact points with the various programmes but in the ensuing discussion indicated that just setting up contact points on the Panel to contact points in the various technical commission and regional association management groups was too passive. The Panel further noted that in preparing this documentation the various technical departments within the Secretariat had provided very little input despite repeated requests and work from the Education and Training Office. The Panel observed that all of the WMO High Priority areas would need education and training support but the level of demand for ETR interventions or the level of resourcing (funding, training materials and skill training of instructors) was not apparent. The Panel Chair offered to write to the presidents of the technical commissions and the regional associations as President of WMO suggesting that an agenda item on their ETR needs be included in the January 2017 joint meeting between the presidents of technical commissions and the presidents of regional associations [Note: This letter was sent in May 2016]. A discussion of this nature would be timely in the lead up to EC-69 which will commence the broad planning for the budget preparation for the 2020 to 2023 financial period.

4.5 Update on status of competency frameworks

56. The Panel noted the report regarding the status of competence standards in the various WMO Technical Commissions (summarized in Table 5). The Panel observed that a lot of progress is being made in the key areas. The Panel were advised that CCI has a very mature competency framework for climate services personnel that may be approved by EC-68. The Panel observed that the general forecaster competence standards (part of the PWS suite) are especially important as they are the link between the qualifications as described within the BIP-M and the specialist competence standards in areas such as Aeronautical Meteorology and Marine Meteorology.

57. The Panel recalled that only the Aeronautical Meteorology Forecasters (AMF) and Aeronautical Meteorological Observers (AMO) competency frameworks are implemented as Standards. All others are at the level of Recommended Practise.

Competency Framework audience (and oversight body)	Status, or date it came into force	Guidance material and Implementation Notes
Aeronautical Meteorological Forecasters (CAEM)	1 Dec 2013	To be incorporated into WMO-No. 732 Implementation is underway for both training and competency assessment
Aeronautical Meteorological Observers (CAEM)	1 Dec 2013	To be incorporated into WMO-No. 732 Implementation is underway for both training and competency assessment
Marine Weather Forecasters (JCOMM)	Approved by Cg-17 for implementation after 1 January 2016	Guidance material to be developed WMO Marine Meteorology and Oceanography programme, through JCOMM, exploring implementation actions through the establishment of its new regional centers, including competency assessment of personnel, and incorporation into planned training on observations and wave forecasting.
Training Providers	Approved by EC-	Guidance within WMO-No. 1114

(EC Panel of Experts on ETR)	65. Implementation date essentially 1 July 2014.	Being implemented through regional WMO Courses for Trainers and revised RTC criteria.
WIS ICT personnel (CBS)	Approved by Cg-17 for implementation after 1 July 2015	To be incorporated in WIS manual (in publication) Still seeking to have the framework utilized directly by training providers, although clear links can be identified already. Need to consider embedding some of the WIS competencies as underlying skills in all services areas involved in issuing products and services, perhaps as enabling skills. Will be coordinating with Climate Services Competencies Framework development as an initial demonstration of how this can work.
Climate Services personnel (CCI)	Still in draft form, will go to CCI-MG early in 2016 and intended for EC-68	Competency framework implementation underway, reviewed and tested during the WMO Curriculum Development Workshop for Climate Services in Israel in November 2015.
Public Weather Forecasters (CBS)	Approved by CBS and Cg-17 but need to go to EC-68 as they were incomplete for incorporation into Vol 1 of WMO-No.49. For implementation on 1 December 2017.	A resolution will go to EC-68 for the framework to be included in appropriate manuals. CBS will begin providing guidelines for competency assessment of personnel, operational implementation guidelines, and training guidelines.
Tropical Cyclone Programmes (RSMCs and RAs)	Approved by Regional Associations (not all in place)	The competency frameworks are being developed by region, and in some cases, sub-region. Many already are being used to guide training events and operations. The intent will be to look for common competencies to be included in the WMO Technical Regulations
Observing (CIMO)	Still in draft form	Moving toward approval by CIMO Management Group and then by EC or next Congress.
Calibration (CIMO)	Still in draft form	""
Maintenance (CIMO)	Still in draft form	""

Table 1. Status of the various competency frameworks under development in the WMO Technical Commissions, as of March 2016

Guide on competency of personnel

58. The Panel recalled that EC-66 stated that they should have a role in ensuring consistency between the various WMO competency standards being developed. EC-66 requested "that the ETR Panel take a lead role in developing a Guide to assist the technical commissions and Members in the development and assessment of competency standards in the various fields." The development of the Guide is also motivated by the need to assist Members in their implementation of the frameworks. The Panel identified that potential audiences for this guide will include WMO Technical Commissions and the Expert Teams they form to develop and update competency frameworks, training providers (including RTCs) who will need to use the frameworks to guide their training plans and course designs, and NMSs

and other Member organizations who will use the competency frameworks to guide their service provision and, in particular, their use in quality management systems.

59. The Panel reviewed the proposed high level chapter structure and contents of the Guide (Table 6). In addition to the production of the Guide, the Panel noted that the ETR Office are providing direct consultation with many RTCs on implementation of competency frameworks and competency-based training practises as well as providing training on competency-based training practises to many other Member training providers through the annual WMO Online Course for Trainers and WMO Training Development Workshop, which rotates between regions.

Overview and scope of the Guide

Part One: Developing and Implementing Competency Frameworks

1. The purpose of competency frameworks
 - Motivation for competency frameworks, what are competencies, relation to qualifications, types of competencies defined by organizations (technical, transferrable/enabling skills, core), applications for competency frameworks
2. Developing competency frameworks
 - The recommended structure of WMO competency frameworks, common challenges and pitfalls in development, who is involved in their development, typical drafting and approval processes, publication process (Note: this chapter should be both specific to WMO and adaptable to national frameworks)
 - Incorporating enabling skills (e.g., using satellite data, NWP data, radar, statistical tools, etc.)
 - Relevant WMO publications (Technical Regulations, WMO Manuals and Guides) as well as ISO and ICAO
3. Implementing competency frameworks: Competency-based training
 - Determining learning needs, defining learning outcomes (including consideration of level of performance required), choosing learning solutions, designing learning activities, designing learning assessments, describing and advertising training, documenting training achievement and record keeping, example competency-based courses.
4. Implementing competency frameworks: Competency assessment
 - Principles of assessment (validity, authenticity), evidence of competence, forms of competency assessment (observation, portfolio, testing, simulation, third-party reports, etc.); assessment tools; qualifications, roles and practises of assessors; competency management, example competency assessment systems
5. Customizing competency frameworks for implementation
 - Adapting frameworks for national or regional needs (e.g., removing or adding second-level information, setting performance conditions and required levels of performance), merging framework implementation based on organizational structure (e.g., merging PWS and Aeronautical competency assessment)

Part Two: WMO Competency Frameworks

6. Enabling skills frameworks
 - This section will describe existing and potential enabling skills frameworks and how they should be incorporated into the competency frameworks by Members and training providers to specify in more detail the skills required for job performance
7. Competency Framework for PWS Forecasters and Advisors
 - For each of the frameworks, we provide top-level competencies and secondary-level

information, and links to associated guidance publications.

8. Aeronautical Meteorological Personnel Competency Standards
9. Competency Requirements for Education and Training Providers
10. Competency Requirements for Operating and Exploiting the WMO Information System (WIS)
11. Competency Requirements for Marine Weather Forecasters
12. Climate Services Competencies
13. Competency Frameworks for Instrumentation, Calibration, Meteorological Observations, and Observing Programme and Network Management
14. Glossary

Table 3. Proposed structure and contents of the Guide on competency of personnel

Inclusion of enabling skills in the WMO competency frameworks

60. The Panel noted that enabling skills in use of specific data and products have been identified as critical for describing more precisely the performance requirements and learning needs of meteorological forecasting personnel. As these are not service driven competencies, rather they are tool or data driven it is not appropriate to include them as Recommended Practises in Volume 1 of WMO No. 49. The Panel proposed to include them in the Guide on competency of personnel. The Panel recalled that there are two mature enabling skill frameworks, one dealing with the use of satellite data and products and the second NWP data and products, both for meteorological forecasters. The Panel were advised that a framework for the use of radar data and products should commence development during 2016.

4.6 WMO-No. 1083, update required?

61. The Panel noted the document prepared by the WMO Secretariat about the need for editorial changes in WMO Publication-No. 1083 due to the change in title discussed during Cg-17 (title would change from Manual to a Guide). The Panel recalled that as WMO No. 1083 did not introduce any new requirements or recommended practises over what was already included in Vol 1 of WMO-No.49 it was technically a Guide not a Manual within the WMO Technical Regulation framework. The Panel supported the changes identified in the document prepared by the Secretariat and following a short discussion decided that the next session of the Panel should further discuss when to undertake a more extensive review of WMO-No. 1083.

62. The Panel noted that including this as an agenda item in the next session of the Panel would allow further consideration of how the job roles of meteorologists were changing with the development of impact based forecasting, decision support meteorologists, introduction of climate services, changes in the provision of aviation services and thus whether the underlying education for meteorologists would also need to adapt or the adaptation would occur in the competency layers above the basic qualification. The Panel further noted that any changes to the BIP-M would need to be carefully considered due to the link with Aeronautical Meteorological Forecaster qualification requirements, the large numbers of personnel this could affect, the disproportionate impact that any changes could have on LDCs and developing countries and the diversity of meteorological services and service providers globally. On the other hand many of the meteorological services in the developed countries were already looking at how to change the basic education and training for their staff in order to support the

new service requirements when decreasing funding required shortening training duration or finding more efficient training and staffing mechanisms.

4.7 WMO Education and Training Symposium

63. The Panel discussed the merits of holding the quadrennial WMO Education and Training Symposium (SYMET) in 2017 as foreseen in the 2016 to 2017 WMO Operational Plan. The Panel noted that the notional funding identified for the Symposium was based upon the ZNG + 7% scenario. The Panel further noted that the expenditure for the previous two SYMETs was of the order of CHF 150,000. Whilst recognising the key role that SYMET plays in bringing the ETR Community together once every four years the Panel wished to ensure that the case for holding SYMET was well argued and other options for use of the funds notionally allocated for SYMET were considered.

64. SYMET is held once in a financial period and typically costs of the order of CHF 150,000 with the majority of the costs covering travel support for participants from developing and least developed countries and small island developing states (particularly those hosting RTCs) and interpretation to support discussions in English, French, Russian and Spanish. The last two Symposia have used commercial (non UN) interpretation companies to keep costs down, cover the full period and associated side meetings and provide more flexible delivery (plenary, workshops, small group discussions and one-on-one interpretation). The local hosts for the last two Symposia have also been able to offer low cost accommodation options using their own facilities which has thus allowed an increased number of participants for the same investment.

65. The Panel recognised that since the first SYMET was held in 1970 other opportunities for bringing parts of the WMO ETR community together have developed, principally the CALMET, and CALMET online, conference / workshops. The Panel further recognized that communications advances make it possible to hold discussions and workshops online. The Panel observed that if SYMET were not held it would be possible to redirect funding towards other areas in ETR such as supporting developments in the WMO Global Campus demonstration activities, increased support for Members to attend training courses offered by RTCs, assisting RTCs and other training centres restructure their training programmes around the WMO competency frameworks, increasing the number of languages covered by ETR publications and investing in ETR development in emerging areas such as DRR, WIGOS and further support for HR development. The Panel noted that whilst there was some overlap between the audiences for CALMET and SYMET, CALMET was aimed at the middle to senior level developers and trainers whilst SYMET audience were the senior managers in the ETR community. Further-more the WMO supported participation in CALMET was quite low, typically three to four participants from RTCs and thus CALMET did not bring the full WMO ETR community together. The Panel further noted that SYMET was still the only opportunity to bring the senior leaders of the WMO ETR community together to examine, discuss and debate current and emerging issues for the ETR community to address the needs of Members.

66. Following consideration of the options for redirecting SYMET funds and the benefits of holding SYMET the Panel concluded that there was a strong case to put to EC-68 to hold SYMET in 2017. The outcomes and benefits for the ETR community and WMO Members of holding SYMET were identified as:

1. Increased alignment of training requirements with current and emerging WMO priorities and needs identified within the WMO strategic plan (current financial period and importantly planning for 2020 to 2023), and through its Technical Commissions and Regional Associations.
2. Validation and further refinement of activities within the WMO Global Campus assessment to be brought forward to Executive Council in 2018 for consideration for Congress in 2019.
3. Validation and further refinement of the quality assurance criteria considered during the twenty-seventh Panel session prior to them being presented to EC-70 in 2018.
4. To encourage collaboration between institutions aimed at supporting development of education and training activities within the ETR community that address Members needs.

67. The Panel also concluded that advantage should be taken of the communications technology to engage and prepare the SYMET participants prior to, during and post the Symposium thus also engaging those parts of the ETR community who cannot attend the face-to-face component.

68. A SYMET planning committee was identified and draft Terms of Reference developed, see Annex XI [Terms of Reference \(ToRs\) for SYMET Organising Committee](#).

4.8 Guide for RTC Directors

69. The Panel reviewed the draft publication (version 3.0) of "Guide For The Management And Operation Of WMO Regional Training Centres And Other Training Institutions". The Panel thanked Dr Riddaway and the drafting team for their valuable work in compiling this Guide. A small working group met during the session to review the publication and address questions raised by the drafting team. Following the report from the working group the Panel were satisfied that this draft publication would indeed address its proposed purpose and the Panel recommended that a final draft be prepared for the WMO President's approval on behalf of EC.

70. To allow a final draft to be completed the Panel created a small working group of Chris Webster, Winifred Jordaan, Didier Reboux, Richard Jeffries, Maria Mamaeva, David Farrell and Jennifer Milton to support Dr Riddaway. The Panel also suggested that Mr Roger Deslandes from Australia could offer good insight, examples and support based upon the work of the Australian Bureau of Meteorology Training Centre. One of the tasks for this drafting team was to see how to best incorporate the WMO Global Campus into the text. The Panel noted that the text had been carefully structured and written to address many of the underlying aspects of the WMO Global Campus without mentioning it by name. Whilst the WMO Global Campus had not been formally adopted by EC or Cg, given this publication is to support the RTC and other Training Centre Directors it would be beneficial to include explicit reference to the WMO Global Campus.

71. The Panel requested the working group and Dr Riddaway to have the final draft ready for publication by 1 September 2016. The Panel were advised that funding had been put aside in 2016 to cover the translation of this publication into French, Russian and Spanish.

4.9 Topics raised by the Panel

4.9.1 Weather Ready Nations

72. Dr Richard Jeffries briefed the Panel on the meeting hosted by the US National Weather Service and US AID on the Weather Ready Nations proposal in Geneva in February 2016. Dr Jeffries recalled that Cg-17 had welcomed the creation by WMO, the US National Weather Service and the US Agency for International Development (USAID) of the Weather-Ready Nations initiative. This initiative is a new programme to improve the understanding of high-impact weather, water, and climate events. Weather-Ready Nations initiative, relying on best practises developed in many countries, will address this by offering to combine and share countries' experiences in developing initiatives that shift toward an impact-based forecasting and warning systems. The Panel were advised that such systems inform people/client groups about what impact the weather will have on users, rather than just expected conditions. To facilitate the Weather Ready Nations initiative, USAID was sponsoring workshops and demonstration projects to demonstrate best practises in impact based forecasting. A scoping workshop with participants from countries who have developed such an approach or are on the way to such an approach was held in Geneva from 29 February to 1 March 2016.

73. Dr Jeffries advised the Panel that the February meeting brought together representatives from operations and training in Australia, Canada, Finland, France, the UK, the USA, MeteoSuisse and the WMO Secretariat to identify lessons learnt from their considerations in moving towards impact based forecasting or the provision of warning decision services. Dr Jeffries stated that the U.S. expects to work with the WMO Secretariat to sponsor a follow on workshop to identify potential demonstration projects and to facilitate three demonstration projects over the next 18 months. Under the new COMET Cooperative Agreement with NOAA Dr Jeffries further noted that COMET will be working more in the Capacity Development area and will help sponsor and facilitate the Weather Ready Nations initiative.

4.9.2 Potential changes to functionality in the MetEd website

74. At D/ETR's request Dr Jeffries briefed the Panel on the changes that were being considered by COMET for the MetEd website due to variations in US based funding streams. The biggest funding issues relate to the maintenance and development of the MetEd website and refresh of older material. Essentially COMET are looking at introducing value added services such as specific courses, certificates and some modules and, may begin charging for these services. One of the first "markets" will be laboratory based exercises for the US university community who are a major user of COMET modules but provide little or no direct funding to support MetEd.

75. At this stage the international community will not be directly affected as groups such as the Australian Bureau of Meteorology, EUMETSAT and the Meteorological Service of Canada have bilateral agreements with COMET for specific work areas and these arrangements require COMET to provide open access to the new modules. Additionally the US government, through the international office of the NWS, are providing COMET financial support for some international training activities and COMET have been innovative in being able to address some of the MetEd issues and module refresh issues using these funds.

76. The Panel noted the key role that COMET and the MetEd website play in the WMO Education and Training Community. The Panel further noted that WMO do not provide COMET any regular budget funds for the services provided to the international community via MetEd but have from time to time commissioned COMET to develop new modules or support RTCs or other training institutions to deliver some COMET modules as part of a course series. The Panel observed that any reduction in functionality of the MetEd website or restriction to modules would be detrimental to the WMO ETR Community.

77. The Chair remarked that it would be extremely unlikely for WMO to provide direct support to COMET through its regular budget, even as a fee for service payment, however there may be options for the wider community to provide direct or indirect support to COMET to ensure that the whole community were able to access the full functionality of the MetEd website and resources. The Panel requested that Dr Jeffries kept them informed of developments and considered opportunities for seeking additional support from the international community to allow MetEd to continue functioning.

Agenda Item 5 Planned activities and approaches to meet the development requirements for the 2016 to 2019 financial period

78. This agenda item was not explicitly dealt with given the focus on the WMO Global Campus and associated activities. The Panel noted the courses proposed by the WMO Regional Training Centres for 2016 covered all of the WMO High Priority areas and given the cyclic nature of the training programmes the Panel anticipated that many of these courses would be further repeated in 2017 and beyond. The Panel also appreciated the increasing use of online and distance learning being used by the RTCs and noted that this was consistent with the use of these approaches in the wider community. In overall terms the Panel reflected that the WMO Global Campus was the primary mechanism to address the expressed needs.

Agenda Item 6 Report on the Education and Training Office

79. Due to the extended discussion on key agenda items Panel members were invited to review the report on the activities of the WMO Education and Training Office contained in the session briefing documents and address questions to the Director of the Office.

Agenda Item 7 Date and Place of next session

80. The Chair noted that physical meetings of the EC Panel of Experts on Education and Training were anticipated to occur on a two yearly basis and thus funding should be available to hold the next session

in 2018. The Secretariat advised the Panel that the Secretary-General was keen to reduce the duration of meetings and increase their effectiveness and he had already invited D/ETR to reduce the next session of the Panel to three days. The Panel expressed concern about reducing the time they had available for a very busy and demanding session.

81. The Chair thanked the Panel members for their willingness to participate in online meetings to ensure that progress was made in each of the working groups prior to the next session of the Panel. The Chair further noted that it may be possible to hold a side meeting of the Panel during or immediately after the education and training symposium to assess the outcome of the SYMET for the Panel's work programme.

82. The Chair noted that EC-70 in 2018 would need to make decisions about what to take to Cg-18 in 2019 the next session of the Panel should be in February or March 2018. No offers for hosting the next session of the Panel had been received by the Secretariat or Panel chair prior to the closure of the session.

Agenda Item 8 Approval of session outcomes

83. The Panel reviewed the documents and decisions made during the session (Annex XII [Key decisions and recommendations from the 27th session of the EC Panel of Experts on ETR](#)) classifying them into decisions / resolutions for EC and those in the work programme for the Panel and the ETR Office in the inter-sessional period. The Chair requested the Secretariat to compile the report and make it available to Panel members and the ETR community prior to EC-68. Action items from this session are captured in Annex XII [Action items from the Twenty-Seventh session of the Panel](#). Annex XIII [Table of ETR Panel teams and working groups](#) details the membership of the various Panel working groups.

Agenda Item 9 Closure of Session

84. The Chair thanked Dr Antoni Raschi, Director of the RTC, for his support of, and interest in, this Panel session and requested Dr Raschi to convey the appreciation of the Chair and Panel members to the RTC staff as well as the Permanent Representative of Italy with WMO for their assistance with the session and arrangements.

85. The Chair also noted that this was the last Panel session that Mr Jeffrey Wilson would support as the Director of the WMO Education and Training Office. On his own behalf and that of the Panel the Chair thanked Mr Wilson for his enthusiasm, vision, drive and commitment to the WMO Education and Training community. The Chair wished Mr Wilson all the best in his retirement and hoped that he would still have some time to contribute to the community in the years ahead. In turn Mr Wilson advised the Panel that it had been a pleasure and privilege to be D/ETR and have the opportunity to work for and support the wider ETR community. Mr Wilson said that some of the most satisfying and rewarding work was associated with supporting the Panel as they set new directions and addressed challenges and opportunities in education and training since 2008.

86. The Chair closed the meeting at 15:15 thanking the Panel members for their hard work and dedication prior to, during and hopefully following the session.

Annex I. List of Participants

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Annex II. Agenda & Workplan

1. ORGANIZATION OF THE SESSION
 - 1.1 Opening of the session
 - 1.2 Approval of the agenda
 - 1.3 Program of work
2. MAJOR OUTCOMES OF EXECUTIVE COUNCIL and CONGRESS (EC-66 & 67 and Cg-17)
 - 2.1 Major outcomes from Congress
 - 2.2 Major outcomes from Executive Council
3. EXCHANGE OF VIEWS ON STATUS AND HOW TO IMPLEMENT THE GOALS AND OBJECTIVES OF THE WMO EDUCATION AND TRAINING PROGRAMME IN THIS FINANCIAL PERIOD
4. IDENTIFICATION OF WMO HUMAN RESOURCE DEVELOPMENT REQUIREMENTS
5. PLANNED TRAINING ACTIVITIES AND APPROACHES TO MEET THE DEVELOPMENT REQUIREMENTS for the 2016 to 2019 FINANCIAL PERIOD
6. REPORT ON THE EDUCATION AND TRAINING OFFICE
7. DATE AND PLACE OF NEXT SESSION
8. APPROVAL OF THE SESSION OUTCOMES
9. CLOSURE OF THE SESSION

TENTATIVE TIMETABLE *(25 November 2015)

14-18 Mar 16	09:00 - 10:00		10:30 - 12:30		14:00 - 15:30		16:00 - 17:00
14-Mar-Mon Opening	Registration (09:00 - 09:30) 1.1 Opening of the session 1.2 Approval of the Agenda 1.3 Program of work	Coffee Break	2. Major Outcomes of Congress and Executive Council	Lunch Break	3. Exchange of views on how to implement the goals and objectives of the WMO ETRP in this financial period	Coffee Break	4. Identification of WMO Human Resource Development Requirements
15-Mar-Tue	4. Identification of WMO Human Resource Development Requirements (cont)		4. Identification of WMO Human Resource Development Requirements (cont)		5. Planned training activities and approaches to meet the development requirements. (cont)		5. Planned training activities and approaches to meet the development requirements.
16-Mar-Wed	5. Planned training activities and approaches to meet the development requirements.		6. Report on the Education and Training Office		Working groups following up discussions from Agenda items 4 and 5		Visit to RTC and City Centre
17-Mar-Thur	Working groups following up discussions from Agenda items 4 and 5		Working groups following up discussions from Agenda items 4 and 5		Working groups following up discussions from Agenda items 4 and 5		Working groups following up discussions from Agenda items 4 and 5
18-Mar-Fri	Finalization of draft recommendations		7. Any other business		8. Approval of draft report		Distribution of airport transfer details

Annex III. Action items from the 26th Panel session

	Action	Who	When	Outcome
1	Complete Final report	D/ETR	Early to mid-May 14	Report completed, approved and circulated to the Panel by early June 2014
2	Complete EC-66 ETR paper	D/ETR	Late April 2014	Completed on time
3	Prepare RTC Handbook	D/ETR	Draft for review by Cg-17	Near final draft to be discussed at this Panel Session
4	Progress RTC inspections	C/TRA	As per schedule	Reviews for Niger, Israel and Italy completed. No progress with reviews of Algeria (requested deferment due to building works), Angola, Iran, Iraq, Nigeria and Venezuela (requested deferment due to restructuring of Met Service).
5	Develop material on Global Campus for EC-66, including suggested names for steering committee	Aileen Semple	Prior to EC-66	EC-66 agreed to the feasibility study. WMO Global Campus steering committee in place by late 2014 (see papers this session)
6	Prepare capability profiles	Ian Lisk with assistance D/ETR and Roger Deslandes	Prior to Cg-17	No progress made. Panel to consider whether to continue this action
7	Update the RTC activity report	C/TRA	End of 2014	Done and 2015 activities to be presented at this session
8	Continue collection and development of Member staffing profiles and capabilities	D/ETR	Ongoing	Continuing but less emphasis placed upon this task in 2015
9	Update action list for RTC future role and recommendations after EC-66	D/ETR and Chair	31 July 2014	The recommended criteria were approved by EC-66. New documentation has been prepared for reporting and self-assessment.
10	Set up WMO Global Campus steering committee and meetings after EC-66	Chair, D/ETR and Aileen Semple	31 July 2014	Done, see papers this session
11	Refine the ETR KPI's and survey questions with EC- WG on SOP and Strategic Planning Office	D/ETR, C/TRA and Chair	31 Dec 2014	Done
12	Coordinate with Technical Commissions	D/ETR and C/TRA	31 Dec 2014	Ongoing, Chapter 5 of Vol 1 of WMO-No 49 (Technical

	re competency structure and wording			Regulations) updated during Cg-17 to accommodate new competency frameworks
13	Coordinate with RAs and TCs to refine ETR needs and priorities	Panel members and Secretariat	Cg-17	Some progress but RAs and TCs can only supply high level priorities

Annex IV. ETR related decisions from Cg-17 and EC

Congress –Seventeen decisions related to ETR

Major topic area	
Competency framework approvals as Recommended Practises	Public Weather Services (5 roles) WMO Information System (WIS) Marine Forecaster
Technical Regulations	Changed the title of WMO 1083 from Manual to Guide to fit with standard practises Approved new layout and definitions for Chapter five of Part II of Volume 1 of WMO-No. 29 (Technical Regulations) to accommodate the new competency frameworks. (Resolution 8)
Governance	Approved the redrafted ETR Programme description proposed by the Panel in 2014 (Resolution 51) Agreed with the Regional Associations making a recommendation at each session on whether EC should reconfirm the RTCs in their Region.
Scope	Cg recognized the need for the RTCs to provide education and training in the high priority areas
RTC recognition and reconfirmation	Recognized new RTC in Korea and new component in India, reconfirmed RTCs in Niger and Brazil and extended reconfirmation of the RTCs in China, India and Uzbekistan to 31 December 2017, the RTCs in Indonesia, Israel, the Russian Federation and Turkey to 31 December 2018, and the RTC in Kenya to 31 December 2019. (Resolution 52)
WMO Global Campus feasibility study	Decided to continue the feasibility study to enable a fully developed proposal to be considered by Cg-18. EC to continue to monitor and review progress. (Resolution 53)
New Programmes	Created a new programme for Small Island Developing States and Member Island Territories. For 2016 to 2019 this is to be extra budgetary funded. (Resolution 54) Created a Capacity Development Programme as an overarching Programme for programmes such as the old Technical Cooperation Programme, LDC Programme, WMO Voluntary Contribution Programme, Regional Programme and the Education and Training Programme. Resource mobilization also falls under this programme. (Resolution 50)

Table 4. Cg-17 decisions

Past and future EC items for discussion and decision

	Key issues	Issues related to etrp
EC-66 June 2014	<i>Recommended revisions on how to frame the 2016 -2019 budget and strategic plan</i>	Guidance on the ETRP for 2016 to 2019 (Resolution 14) Revision of the EC Criteria for recognition and reconfirmation of RTCs (Resolution 15) WMO Global Campus feasibility study (Resolution 16) Terms of Reference for the EC Panel of Experts on ETR (Resolution 17) Reconfirmation of RTC Israel (Resolution 18), delay reconfirmation of RTC Italy (Resolution 19) Revision of the EC Criteria for Fellowships (Resolution 19)
EC-67 June 2015	<i>Approved overall budget allocation for 2016 and 2017, set processes in place for major review of constituent bodies and how business is done</i>	Selected the EC Panel of Experts for the 2016-2019 period with reserves in case of any retirements of members Turned the EC Working Group on Capacity Development into the EC Panel of Experts on Capacity Development. EC members still comprise a majority of the make up of this new Panel
EC-68 June 2016	<i>Consider first reports on restructuring and budget for remainder of this financial period</i>	Consider decisions from this session
EC-69 June 2017	<i>Set initial targets for 2020 to 2023 strategic plan and budget preparation</i>	Review progress with the WMO Global Campus, consider recommendations for RTC reconfirmations
EC-70 June 2018	<i>Consider first draft of the SG budget for 2020 to 2023. Decide on what is to be tabled for discussion by Cg-18 in 2019</i>	Consider whether the WMO Global Campus concept is mature enough to take to Cg for formal decision in 2019

Annex V. RTC review programme for 2016 to 2018 inclusive.

RTC Host	Intended Review Date	Convener	Status
Algeria	2016	Jean-Marc Bonnet, for Didier Reboux	Not scheduled
Nigeria	Early 2016	Winifred Jordaan	June, 2016
Islamic Republic of Iran	Early 2016	Maria Mamaeva	August, 2016
Argentina	Late 2016	Enric Aguilar	November, 2016
Barbados	Late 2016	Rich Jeffries	3 visits scheduled in 2016, during associated events
Costa Rica	Early 2017	Claudia Campetella	On hold until new RTC director is assigned
Philippines	Early 2017	Chris Webster (TBD)	Not scheduled
Iraq	2017	TBD	Not scheduled
Angola	2018	Stella Aura	Not scheduled
Egypt	2018	Didier Reboux	Not scheduled
Kenya	2018	TBD	Not scheduled
Madagascar	2018	TBD	Not scheduled

Annex VI. Terms of Reference for the Panel Working Group on the WMO Global Campus

EC Panel of Education and Training Working Group for the WMO Global Campus feasibility study

Terms of Reference

The EC Panel of Experts on Education and Training Working Group for the WMO Global Campus feasibility study will provide advice to and assist the Director of the WMO Education and Training Office in implementation and development of activities related to the feasibility study of the WMO Global Campus. The activities of the Working Group will be guided by Resolution 153 (Cg-17) – WMO Global Campus Feasibility Study.

Membership

Co-chairs: Dr David Farrell and Dr Richard Jeffries

Members: All Panel members except for the Chair

The Working Group will:

1. Advise and assist the Director of the ETR Office in the development and delivery of the key demonstration activities of a WMO Global Campus. In particular:
 - Take responsibility for the oversight and direction of the demonstration projects
 - Create flexible and dynamic expert groups to assist the institutions implementing the demonstration projects
 - Promote and help secure the resources necessary for the feasibility work
 - Prioritizing the feasibility work when necessary
 - Assist in identifying and resolving issues, risks and barriers

2. Help develop the full proposal and roadmap for the establishment and implementation of the WMO Global Campus to be considered at the next session of the Panel in early 2018. In particular:
 - Ensuring clarity and understanding for the concept through helping in communications and education of the ideas and plans
 - Drafting the benefits realization and evaluation work including evaluating results of specific feasibility items
 - Recommend quality assurance mechanisms and resources required for successful implementation and ongoing sustainability of the WMO Global Campus;

Annex VII. WMO Global Campus proposed work programme

	2016	2017	EC-70	2018	2019
CALENDAR, 2 Prototypes decided: Moodle initially, with WIS investigation	<ol style="list-style-type: none"> 1. MOODLE: CIMH will host the calendar with work starting 1 May 2016. 2. EC Panel Demo – all EC panel to have loaded courses onto the Calendar for this demo. 3. Operational Prototype by end of 2016 and will need a team to load and test. 4. EC Panel to write a user guide. 5. The Focus on loading aviation training 6. WIS: Request through EC for CBS to investigate calendaring 	<ol style="list-style-type: none"> 1. CMIH will maintain the Moodle calendar and members will add content to the calendar. 2. EC panel to work with CBS to define WIS calendar process and contribution governance. 3. Define catalogue in WIS (Think Catalogue) 	1. EC,	Catalogue –	
SUPPORT Members/ETRO/Panel					
CLIMATE SERVICES	<ol style="list-style-type: none"> 1. Gather Resources 2. Finalize Competencies 3. Develop BIP-CS 	<ol style="list-style-type: none"> 1. Mature Climate Services Actions 			
SUPPORT Members/ETRO/Panel					

COMMUNICATIONS	1. 6 – monthly newsletter 2. Benefit Stories of Calendar and All WMO Global Campus 3. Define Comms 4. Identify Challenges 5. Define feedback mechanism 6. Gather benefit stories for aviation training			
SUPPORT Members/ETRO/Panel				
SYMET		Calendar Target Audience/User Trng, CS?/Mechanisms of GC		
SUPPORT Members/ETRO/Panel				
QUALITY	1. Informal Editorial Board 2. See Calendar	1. Formal Editorial Board 2. See Calendar	1. Formal Editorial Board 2. See Calendar	1. Formal Editorial Board 2. See Calendar
SUPPORT Members/ETRO/Panel				
FUNDING NEEDED	1. Seek Funding for WIS Catalogue	Seek Funding	Seek Funding	Seek Funding

Annex VIII. WMO Global Campus Guiding Principles

Guiding principles for WMO RTC's and WMO affiliated Institutions working collaboratively on the WMO Global Campus feasibility Study

(Note: The Panel session did not fully resolve the guiding principles and they will be further discussed by the Panel's working group on the WMO Global Campus)

WMO RTC's and WMO affiliated Institutions:-

- Are encouraged to contribute
- Should bring value to collaborations and agree on equity in the collaboration
- Agree to share information about their offerings (note this could be commercial and non-commercial)
- Agree to treat each other fairly and with mutual respect
- Ensure any collaborative platform has community ownership and coordination
- Respect and abide by the copyright and intellectual property of others
- Can seek advice of the WMO Steering Committee in case of any barriers arising.
- Agree to meeting minimum WMO ETR standards and practises for offerings

Annex IX. WMO Global Campus metadata profile

1. Name
2. Description
3. Duration, including start and end dates
4. Location/Host
5. Delivery Institution (might be different to Location)
6. Region/area of applicability
7. Delivery Format
8. Delivery Language
9. Fees if applicable
10. Application deadline
11. Learning Content and links to qualifications or competency frameworks
12. Expected Learning Outcomes
13. Learning activities used to achieve outcomes
14. Awards (Diplomas, Certificates) associated with the Course
15. How Learning is assessed
16. Additional Quality Management processes used by the institution
17. Intended Audience
18. Pre requisites
19. Is offering part of a larger offering
20. Contact person
21. Link to the web

Ideally, the above items should be Viewable or Searchable from the calendar, i.e.

- Viewable, able to be viewed from a landing page of the calendar
- Searchable, able to be searched for using key words for example, on the searchable calendar

In addition, and noting the initial thoughts on **Quality Assurance**, the following items are to be considered for recommendation as discoverable items, i.e. able to be found for example perhaps through a link to the relevant areas of an institutions web site, or to a contact person or by details entered on item 16 or 20 above.

22. How the training system is managed

23. How Learning Needs are determined
24. How materials are kept up to date and relevant
25. How trainers are hired, trained, monitored and evaluated
26. How the Facilities, resources and technology infrastructure are managed
27. How training is monitored, evaluated and improved
28. Application process including how the trainee is selected

Annex X. Terms of Reference for Impact Evaluation of the WMO Fellowship Programme

Purpose of Review:

This review seeks to quantify the benefits accrued through fellowships to the Members, with the aim of making a case for enhanced delivery of the WMO Fellowship programme.

Outcomes:

Key outcomes of this initiative include, but are not limited to, seeking increased Fellowship opportunities to NMHSs in WMO Member States to improve their operations and contributions to current and future national development needs.

Outputs:

The report from this work is expected to highlight:

- (a) The historical performance of the Fellowship programme and quantify benefits derived by Member States;
- (b) Possible approaches for continuous tracking of the benefits derived from the Fellowship programme to Member States;
- (c) Risk reduction strategies that further enhance the benefits of the programme;
- (d) The present and future demands for geographically focused training with the goal of identifying changing focus and areas for training where significant benefits may be accrued;
- (e) Other possible areas of reporting including but not limited to:
 - (i) Strategies for increasing future Fellowship opportunities including where greater efficiencies may be derived;
 - (ii) Strategies for attracting additional resources to the Fellowship programme to further enhance its benefits to Members.

Specific Actions/Activities to be Conducted:

The assessment may utilize some or all of the following activities:

- (a) Review of the Terms of Reference of the Fellowship programme;
- (b) Review of existing annual reports and audit reports of the Fellowship programme;
- (c) Determining how the organizational risk factors of the applying agency are accounted for in the fellowship review process;
- (d) Review of the success of the fellows in terms of numbers of:
 - (i) Awardees who successfully complete Fellowships;
 - (ii) Awardees who achieve a high degree of success;
 - (iii) Fellows receiving multiple awards;
 - (iv) Fellows who do not complete programmes and the reasons for poor performance;
 - (v) Fellows who repeat the same programme;
- (e) Collecting data on the benefits of the Fellowship programme from selected Member States such as:
 - (i) Frequency of utilization of the Fellowships programme and in what areas;
 - (ii) Highlighting other mechanisms used to fund the building of capacity and competence;
 - (iii) Determining how the Fellows were utilized on return to their home country;
- (f) Questionnaire to RTCs regarding their use of the Fellowship programme to build the capability and competency of their staff, to determine the:
 - (i) Frequency of use of the Fellowship programme to build capacity and competence;
 - (ii) Areas where fellowships were utilized;
 - (iii) Retention of Fellows;
 - (iv) Other mechanisms used to fund the building of capacity and competence;

- (v) Whether apart from training, do Fellows contribute to other regional and national programmes that support the sustainable development agenda?
- (g) Questionnaire to RTCs about how to enhance the cost effectiveness of programmes and where possible how to reduce the cost of training, asking:
 - (i) Are Fellows entering programmes appropriately prepared;
 - (ii) How much of the training programmes are geared at foundation building to enable students to undergo the core training;
 - (iii) How much of the programme is dependent on the participation of Fellows, i.e., in the absence of Fellows would programmes have sufficient participation to make them cost-effective;
- (h) Development of a methodology based on a weighted points system to risk-rank the investment grade of Member States from the perspective of fellowships. The methodology should take into account:
 - (i) Frequency of usage of the Fellowships programme;
 - (ii) Average investment;
 - (iii) Success/failure rates of Fellows;
 - (iv) Retention of Fellows in the organization or the national/regional weather and climate enterprise;
 - up to 1 year, 1-5 years, 5-10 years, 10-15 years etc.

Methodology:

The Task Team to work with the ETR Office to further develop the Terms of Reference and detailed timelines given the requirement for a progress report in mid-2017 and a full report in 2018.

Annex XI. Terms of Reference (ToRs) for SYMET Organising Committee

Introduction

SYMET is a key activity in the WMO Education and Training Programme schedule of events as once every four years it brings together the senior personnel in the WMO Education and Training Community to discuss the key issues related to Education and Training in WMO Member countries. The theme and programme for the SYMET is traditionally developed by the EC Panel of Experts on Education and Training with input from the ETR Office. The Panel typically create a small international organising committee that can include non Panel members. The ToR for the organising committee are described below.

SYMET-13 International Organising Committee

Chair / Co-Chairs: ?? and ???

Members: Chris Webster, Winifred Jordaan, Jennifer Milton, Enric Aguillar, Claudia Campetella, Maria Mamaeva, Stella Aura, David Farrell

Ex Officio: D/ETR and C/TRA

Proposed working mechanism(s): The organising committee will work remotely using email, teleconference and shared documents as appropriate.

Actions to be addressed by the SYMET Organising Committee

- develop and refine the SYMET theme
- in-conjunction with the ETR Office develop a timeline for the planning and preparation of SYMET
- develop the detailed programme (plenary, small group discussion and workshops) and identify and brief lead speakers / facilitators
- assist in the promotion of and fund raising for SYMET
- review and select presenters / presenters
- provide input to the ETR Office on matters related to selection of host country, proposed dates and logistics
- Lead the day-to-day running of the SYMET through introducing speakers, leading and chairing sessions
- assist the ETR Office in the post SYMET evaluation
- assist the ETR Office if there is to be a SYMET publication

Annex XII. Action items from the Twenty-Seventh session of the Panel

Prepare discussion paper for the twenty-eighth Panel on the need for an extensive review of WMO-No. 1083 to take account of developments in the changing role of the meteorologist. (Agenda Item 4.6)

Panel Chair to write to presidents of technical commissions and regional associations suggesting that the January 2017 joint PRA / PTC session include an agenda item on the ETR needs of the RAs and TCs. Due by end of May 2016 (Agenda item 4.4) - Action completed May 2016

Panel Chair and president of CAeM to write to all Members advising them of the ability of their RTCs to help them address ETR needs associated with the qualification requirements for Aeronautical Meteorological Forecasters. Due by the end of May 2016. (Agenda Item 4.2.3) - Action completed May 2016

Dr Rich Jeffries and Dr Bob Riddaway to collect and compile examples of capability frameworks from around the world. The examples to be accessible from the ETR website before the end of 2016. (Agenda item 1.3)

Annex XIII. Table of ETR Panel teams and working groups

	WMO Global Campus WG	Quality working group	Impact evaluation of fellowship P	SYMET Organising Committee	Guide on competency of personnel	RTC questionnaire and statistics	HRD capability review	RTC Directors Handbook
End time for task	Ongoing	Ongoing	Until March 2018	Until end of 2017	End of 2017	End of 2017	Until end of 2016	End of September 2016
Mr David GRIMES Chairman,								
Ms Claudia CAMPETELLA	X			X	X			
Dr David FARRELL	X		X	X		X		X
Dr Jennifer MILTON	X	X		X	X			X
Dr Zhanghang DONG	X	X						
Dr Zhiyu LIU (could not attend)	X							
Mr Didier REBOUX	X		X					X
Ms Stella AURA	X		X	X				
Mr Christopher WEBSTER	X	X		X	X	X		X
Dr Maria MAMAEVA	X	X		X				X
Ms Winifred JORDAAN	X	X		X		X		X

Dr Enric AGUILAR ANFRONS	X	X		X	X	X		
Dr Richard JEFFRIES	X						X	X
Dr Robert William RIDDAWAY						X	X	X
Mr Roger Deslandes								X

Annex XIV. Key decisions and recommendations from the 27th session of the EC Panel of Experts on ETR

Overview of anticipated Panel decisions and highest place they will be recorded

EC

Invited to	Panel decisions	Resolution	Guidance	Background	INF	Panel	ETR O
02 (a) Take the major outcomes from Congress and Executive Council into consideration when taking decisions during this session.	Presented					X	
03 (a) Review progress with the action items from the 26th Panel session;	Done					X	
03 (b) Recommend next steps (who, what and when) with incomplete items;	Compendium of capability frameworks to be put together as web based resource. Rich Jeffries to work with ETRO and Bob Riddaway. Aiming for first draft by the end of the year					X	X
04 (a) Consider the alignment of the proposed actions outlined under Agenda item 4 with the overall ETRP objectives and Council's direction on how the ETRP should be operating;	Done						
04 (b) Make recommendations to Council for changes / adjustments to the ETRP particularly taking into account the available financial and human resources for this financial period.	need further work at next Panel session look at emerging ETR issues from PRA/PTC					X	X
05 (a) Review and comment upon statistics associated with RTC performance in 2014-2015	Done					X	

05 (b) Consider the information the Panel would like to see in future reports.	Modify to get more impact based assessment on the ETR carried out by RTCs						X
06 (a) Review and comment upon the revised procedures for RTC confirmation and reconfirmation	Done						X
06 (b) Review and comment upon the revised Self-Assessment form for RTC reconfirmation reviews	Done						X
06 (c) Review and comment upon the draft guidelines for Recognition and Reconfirmation of WMO Regional Training Centres	Recommend that EC agree for delegation of authority to Panel Chair to make decision regarding on or offsite visit. ETRO office to update the procedures accordingly. The RTC should provide input into the decision, not be the sole arbiter. Panel Chair to have discussion with the PR of host country if required		X				X
06 (d) Advise the ETR Office on the development of guidance and a reporting template for RTC external review teams.	Progress made but guidance needs further development. Goal to be completed end of 2016					X	X
07 (a) Recommend to EC-68 that the RTC in Italy to be reconfirmed as an RTC, following EC- 66 decision to delay reconfirmation.	Agreed to reconfirm		X				
07 (b) Review and update the schedule of RTC external reviews.	Completed						X
08 (a) Recognise that the WMO Global Campus feasibility study is progressing well	Agreed						
08 (b) Agree the proposed future work plan for the WMO Global Campus feasibility study	See 8c, discussed and to be further revised by the WG and provided to the Chair					X	

08 (c) Dissolve the current Steering Committee mechanism and create a Working Group for the WMO Global Campus under the auspices of the Panel	Done, WG under Rich and David F to take on this role. Report to Chair						
08 (d) Approve the Terms of Reference for the Working Group	Revised and agreed						
08 (e) Agree and promote the “Guiding Principles for Collaboration” for collaborative working under the WMO Global Campus	To be revised and finalized by end of April						X
08 (f) Contribute to resource mobilization efforts aimed at furthering the WMO Global Campus feasibility work	Promote the WMO Global Campus in the ETR and other networks						X
09 (a) Recommend which calendar prototype/s should be further developed to become operational by end of 2016	Agreed on MOODLE as operational prototype to be hosted by CIMH, further explore WIS as long term option. Request EC to task CBS to initiate integration of the calendar into WIS to be completed by the end of 2019 -		X				X
09 (b) Recommend to EC-68 that all institutions providing events for the WMO Global Campus calendar follow the metadata requirements outlined in this document	Too early for EC-68, consider for EC-69 in 2017 or 2018 if need to socialize with the ETR community						X
09 (c) Recommend to EC-68 that all institutions offering learning events to the calendar agree to a disclaimer that would allow the event entry to be modified or removed by the WMO Education and Training Office following consultation with the offering institution.	Too early for EC-68, consider for EC-69 in 2017 or 2018 if need to socialize with the ETR community						X

10 (a) PROVIDE FEEDBACK on the aviation courses and assessors available in WMO RTC's and WMO affiliated Training Institutions in line with the WMO Global Campus aims and Milestones: Aviation activities.	Done, Panel chair working with the P of CAeM to contact the PRAs to highlight the poor uptake of the available aviation training opportunities at the RTCs and other training institutions					X	X
10 (b) ASSIST with the compilation of all the offerings.	Ongoing					X	
10 (c) IDENTIFY potential new partners or options for increasing support.	Ongoing					X	X
10 (d) Offer RECOMMENDATIONS for future progress	Ongoing					X	
11 (a) Recommend additional steps forward for accomplishment of goals in this Global Campus Demonstration activity;	Need to focus on the three key demo projects from Cg-17. Additional activities possible with additional resources but focus must remain on the three priorities					X	
11 (b) Suggest contributions for the catalogue of ETR resources and activities for climate services;	Ongoing					X	
12 (a) Note that the WMO Global Campus feasibility work is further highlighting and raising the importance of quality assurance for education and training offerings	Agreed. ETR to promote in community and in EC side event						X
12 (b) Note the alignment of the key quality aspects suggested in this paper with ISO29990:2010(E), WMO-No. 1169 Guide for the Management and Operation of WMO Regional Training Centres and Other Training Institutions, and WMO-No 1114, Guidelines for Trainers in Meteorological, Hydrological and Climate Service	Agreed						

12 (c) Note that NMS training institutions who are not formally accredited within their national education system are requested to follow ISO Standard 29990:2010(E) as recommended by EC-64	Agreed						
12 (d) Recommend to EC-68 that institutions offering learning events to the WMO Global Campus are able to show and share the Quality Assurance items recommended in this paper	To be considered for EC-69 in 2017 or EC in 2018 if need to consult with community and socialize the outcomes					X	
12 (e) Further progress work on Quality Assurance either via the Panel's proposed WMO Global Campus Working Group or via a separate Team that would coordinate with the WMO Global Campus Working Group	Further development on quality assurance process and including considerations for the establishment and functioning of an editorial board mechanism					X	
13 (a) REVIEW activities and ENCOURAGE Members to consider what further collaborative efforts and resource can assist the WMO Global Campus feasibility study	Ongoing					X	
13 (b) RECOMMEND that and EC Panel Working Group consider further credit transfer and how to encourage increasing OER	To be further considered					X	
14 (a) Note progress in the implementation of fellowships programme;	Recommend to EC that the Panel undertake an impact evaluation with ToRs. Didier, David F and Stella to form nucleus of working group. Interim report to EC-69 in 2017	X				X	X
14 (b) Make suggestions on resource mobilization opportunities;	Ongoing					X	
14 (c) Make suggestions on additional placement options;	Ongoing					X	
14 (d) Make suggestions on how to keep former fellows together as Alumni of WMO Fellowships	to be part of the Review					X	

15 (a) Nominate Panel members as contact points with the various Commissions and other bodies to enhance liaison between the Panel and the various bodies;	David to write to PRA / PTC requesting them to bring to the January 2017 PRA / PTC meeting their views on emerging needs in ETR in their areas. D/ETR to draft letter for Chair by early May					X	X
16 (a) Comment upon the statuses of specific frameworks, and the progress in competency framework implementation in general, providing any recommendations for improvements in their development and implementation	Done						
16 (b) Review the draft outline of the requested Guide on Competency Frameworks for Personnel and approve or suggest additional content to be covered	Started, small steering committee, Chris, Enric, Jennifer and Claudia, Bob and Andrea Henderson to assist ETRO with this					X	X
16 (c) Make a recommendation on whether the enabling skills frameworks in development, as well as future additions, should be included in the Guide, and following approval by the relevant technical commission or oversight body, other WMO guidance material.	Agreed but keep small						
17 (a) Consider whether WMO-No.1083 should be reviewed;	Agreed, technical / editorial update only. Draft to be presented to EC-68		X				X
17 (b) Make recommendations to the Executive Council on a technical update to the RTC section of Vol 1 of WMO-No.49;	Agreed		X				X
18 (a) Recommend to EC-68 whether to hold SYMET-13 in 2017	Steering committee put together to develop the business case to be presented to EC-68		X			X	
18 (b) Recommend a theme and overall outcomes for SYMET-13	Established steering committee for preparation of SYMET, subject to EC decision					X	

18 (c) Recommend TOR for an international organizing committee for SYMET-13	Discussed if 18 a agreed				X	
19 (a) Provide feedback on the draft RTC Directors' Guide with emphasis on the extent to which It satisfies its intended purpose in terms of scope and content.	Done and support group identified. Aiming for publication in Sept 2016				X	
19 (b) Recommend to EC to endorse, subject to any further review, the draft for publication in English, French, Russian and Spanish.	Agreed, prepare and publish it for Sept. And brought to the attention of EC for approval					X
19 (c) Identify two or three Panel members to work with the ETR Office and author for final review.	Agreed				X	
19 (d) Request the ETR Office to proceed with publication subject to the agreement of the Panel Chair following advice from the small working group.	Agreed					X