

WORLD METEOROLOGICAL ORGANIZATION

VIRTUAL LABORATORY MANAGEMENT GROUP

FOURTH SESSION

LANGEN, GERMANY

1-2 SEPTEMBER 2008

FINAL REPORT





Front row (left to right): Adamou Garba, Leonardo Peres, Fan Hong.
Second row: Andy Kwarteng , Joseph Kagenyi, Vilma Castro, Anthony Mostek
Third row: Kazuyoshi Yoshimatsu , Akihiro Shimizu, Volker Gaertner, Luiz Machado
Fourth row: Winifred Jordaan, Zhu Xiaoxiang
Back: Zhenhui Wang, Jérôme Lafeuille, Humaid Al Badi, Roger Deslandes, James Purdom

1. Introduction

Dr Hans Bauer, Director of the DWD BMTZ Training School warmly welcomed participants to the fourth meeting of the VLMG (see Annex I).

The Co-chairs, Dr Volker Gaertner from EUMETSAT and Dr Luiz Machado from INPE/CPTEC, welcomed the participants.

2. Adoption of agenda

The agenda was unanimously adopted (see Annex II).

It was agreed that Dr Gaertner would chair the morning session, comprising Agenda Items 1-4 inclusive, and Dr Machado would chair the afternoon session, comprising all remaining agenda items. The following day would be a joint session with ET-SAT and ET-SUP and would be chaired by the ET-SAT and ET-SUP Chairs.

3. Review of VLMG actions since VLMG-3

VLMG-4 reviewed the List of Actions since the last meeting of the VLMG. Most actions had been closed, however, the following open items were addressed:

Old action 3.3 – concerning the translation of HPTE lectures in French.

New Action 4.1 - EUMETSAT to place a contract with EAMAC, Niamey to produce the French versions of all four HPTE lectures. Deadline: 31 December 2008.

Old action 3.4 – concerning the co-sponsorship of the Centre of Excellence (CoE) Oman by India

VLMG noted that ISRO was in the process of establishing a CoE in India and intended to become a supporting satellite operator for both Oman and the CoE in India.

Old Action 3.5 – concerning the expectations/requirements placed upon the CoEs.

VLMG stressed the need to bring the physical infrastructure of the VL network up to a universally agreed minimum standard that is necessary for the effective delivery of training.

New Action 4.2 - WMO Secretariat, in consultation with the VLMG Co-chairs, Tony Mostek and the OPAG-IOS Chair, to send a letter to all CoE Principals and sponsoring satellite agencies informing them of the updated VL strategy document, the related expectations, and calling upon their commitment to implement this strategy. Deadline: 15 December 2008.

Old Action 3.14 – concerning the preparation and distribution of the HPTE DVDs.

New Action 4.3 - EUMETSAT to finalize the editing of the HPTE DVDs in English, Spanish and Portuguese languages and provide 200 (to be confirmed) copies to WMO SPO for onward distribution to VL network participants and WMO Members. Deadline: 31 December 2008.

4. Review of CoE activities since VLMG-3 and future plans (Reports from each Centre of Excellence)

Documents VLMG-4 3.1 to 3.13 inclusive were presented by the respective CoEs to VLMG-4.

Please refer to the documents themselves for details:

- VLMG-4 3.1 CMATC, China
- VLMG-4 3.2 INPE, CPTEC and INMET, Brazil
- VLMG-4 3.3 EAMAC, Niamey
- VLMG-4 3.4 EUMETSAT
- VLMG-4 3.5 SAWS, South Africa
- VLMG-4 3.6 CIMH, Barbados
- VLMG-4 3.7 DGMAN and SQU, OMAN
- VLMG-4 3.8 IMTR, Nairobi
- VLMG-4 3.9 University of Costa Rica
- VLMG-4 3.10 JMA, Japan
- VLMG-4 3.11 NOAA and CIRA, USA
- VLMG-4 3.12 BMTC, Australia
- VLMG-4 3.13 ROSHYDROMET, Russia

The following actions and recommendations arose from the discussions of each report and were noted by VLMG-4.

CMA

New Action 4.4 - CMA to inform VLMG about the VL-related roles of the Beijing and Nanjing Training Centres. Deadline: end of November 2008.

New Action 4.5 - CMA to investigate possibilities to translate the four HPTE lectures into Chinese. Deadline: 31 December 2009.

SAWS

Recommendation 4.1 - VLMG to confirm to ET-SUP that the training centre in Pretoria (SAWS) fully meets the requirements of a VL CoE, and to invite ET-SUP to recommend to CGMS accordingly.

IMTR

New Action 4.6 - IMTR (Kenya) to report to the next virtual meeting in March 2009 on the status of its VL training laboratory.

ROSHYDROMET

New Action 4.7 - ROSHYDROMET to complete the exchange of correspondence with WMO SPO relating to the establishment of a CoE in the Russian Federation (Moscow and St Petersburg). In this exchange, Russian Federation to clarify the VL-related roles of the Moscow and St Petersburg Training Centres. Deadline: end November 2008.

5. Training Strategy

VLMG-4 carried out an in-depth review of discussion document VLMG-4/Document 4 - Training Strategy. Recommendations on the structure of the document and the need for a separated implementation plan and several textural enhancements were implemented by the Secretary overnight so that a revised document could be reviewed by the ET-SUP meeting. It was agreed that a drafting group would work on the document further in order to prepare a draft for the forthcoming ET-SUP, and the CGMS meeting in November 2008, with a view to submit a final document to CBS in March 2009.

VLMG established a Task Team to prepare the VL strategy document for ET-SUP and CGMS, on the basis of the VLMG-4 discussion document and proposals for changes coming from the VLMG-4 meeting. This group comprises: Gordon Bridge, Roger Deslandes, Adamou Garba, Hong Fan, Jerome Lafeuille, Tony Mostek, and Jim Purdom.

New Action 4.8 - Initial draft of Strategy document by 5 September 2008. Further refinements, as necessary by full Task Team, by email by 15 October 2008.

(Note: The resulting VL strategy document, as revised by VLMG-4, ET-SUP-4 and finalized by this Task Team, is attached as Annex III. The associated draft action plan including 12 tasks is attached as Annex IV.)

6. Relevant developments in the training area

VLMG-4 agreed that this agenda topic had been adequately addressed in the various reports from the CoEs (see Agenda item 4).

7. Development of the Virtual Resources Library (VRL)

Following the consideration of this topic within the context of the VL Strategy discussions, the VLMG agreed that key factors affecting the success of a more centralized VRL related to long term continuity, maintenance, quality control of content, and ease of access by all potential user groups. This required resources, both human and financial. With such requirements, VLMG proposed that the COMET Environmental Satellite Resource Centre (ESRC) could be investigated as a potential future host of the VRL. VLMG agreed that a small Task Team should assess whether the functionality of the VRL could be transferred to the ESRC structure.

To this end, VLMG established a VRL Task Team comprising Gordon Bridge, Vilma Castro, Joseph Kagenyi, Andy Kwarteng, Tony Mostek, Leonardo Peres and Zhenhui Wang.

8. Regional Focus Groups (RFG)

VLMG recalled the implementation and activities of the various RFGs as presented in the reports from the CoEs. The Group appreciated Tony Mostek's contribution as the Central America RFG discussion facilitator and his setting up of the RFG web page to support the regular discussions, the exchange of imagery and support to training in the region. VLMG agreed that similar web sites and capabilities should be set up in the other CoE regions. It was agreed that Tony Mostek should contact the other RFG focal points to initiate this process.

JMA informed the meeting that it could contribute SATAID to an RFG and was willing to take part in regional weather discussions.

New Action 4.9 - EUMETSAT to collect the RFG focal point details (or potential contact points from CMA) and to inform Tony Mostek and VLMG accordingly. Deadline: 1 October 2008.

(Note: See also related action in revised Strategy document (Task No. 4)).

CMA informed the meeting that it regularly carried out internal satellite meteorology “weather” briefings with its regional offices. CMA agreed to study the possibility of arranging periodic (say, approximately once per month) satellite meteorology training sessions, in English, for neighbouring countries.

New Action 4.10 - CMA to report back, at the next online meeting of VLMG, on its investigation of possible periodic training sessions for neighbouring countries. Deadline: March 2009.

9. VL web page

VLMG agreed that the “centralized” concept for a VL web site was the preferred option and this should, additionally, act as an effective information portal. VLMG agreed that a small team should recommend a format for the centralized web site. The RFG web sites would have a common look and feel. It was suggested that good starting points would be the EUMETSAT and JMA VL web sites.

Recommendation 4.2 - VLMG unanimously agreed that for a real breakthrough in advancing the capabilities of the VL, there should be a full time expert dedicated to progressing VL activities. This expert would be sponsored by one or more satellite agencies and should be prepared to serve for periods of time either collocated with a satellite operator or with one of the CoEs.

New Action 4.11 - VRL Task Team members) plus JMA, to propose a format for the centralized WMO VL web site/portal and for a common look and feel web site for the CoE/RFGs. VLMG proposed to use the EUMETSAT and JMA VL web sites as a starting point. Deadline: end 2009.

10. Future training events

VLMG noted several training events that were planned for the coming year in various WMO Regions. WMO could publish a list of such events on its web site. VLMG noted with appreciation the increased use of new tools to support such events, e.g. Moodle, VisitView, CENTRA, webropol (evaluation tool), etc. VLMG also recommended that more effort should be placed in trying to link VL training events with GEO workshops, conferences, etc. Furthermore within the VL there should be a system that “stores” training course resources and makes them available for re-use and translation into other languages.

VLMG recommended the creation of a joint-satellite operator training event addressing the polar-orbiting satellite data, products and services, and involving CMA, EUMETSAT, JMA, NOAA and Roshydromet in the preparation. The event would also demonstrate complementarity of the polar systems with GEO systems. The event would be created for

re-use and translation; it would be run in several regions as a Regional Training Event (RTE). The programme of these RTEs would have many common features, but would be individualized to address with particular emphasis the regional requirements expressed by the RFGs. EUMETSAT agreed to take the lead on this activity.

VLMG also identified the need to have a discussion on the evaluation of training events and the need to formalize the reporting from the COEs on their training events, topics covered, syllabi, participant lists, etc.

New Action 4.12 - EUMETSAT to coordinate the setting up of a joint satellite operator training course on polar orbiting EO satellites to be held towards the end of 2009.

New Action 4.13 – EUMETSAT to propose a template for the annual reports from CoEs on their activities.

11. Organization of future CoE discussions

VLMG-4 noted that this topic had been fully addressed in earlier agenda items.

12. Review of actions and recommendations

VLMG-4 reviewed and agreed the List of Actions and Recommendations as presented in Annex V.

13. Conclusions

13.1 Next meetings

Recommendation 4.3 - VLMG-4 agreed that VLMG meetings should be longer than one day, and there should be intermediate virtual meetings. Next virtual VLMG meeting (CENTRA, hosted by EUMETSAT, or GoToMeeting, hosted by NOAA) planned for March 2009. Next regular VLMG meeting will be hosted by CMA in September 2009.

13.2 Participation in ET-SAT/SUP joint session on 2 September 2008

VLMG-4 members were invited to attend the joint ET-SAT and ET-SUP plenary presentations on 2 September 2008.

ANNEX I

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ANNEX II

AGENDA

DAY 1: VLMG MATTERS
(Start time: 08h30)

1. Introduction
2. Adoption of agenda
3. Review of VLMG actions since VLMG-3
4. Review of CoE activities since VLMG-3 and future plans
(Reports from each Centre of Excellence)
Coffee break
5. Training Strategy
6. Relevant developments in the training area
7. Development of the Virtual Resources Library
Lunch break
8. Regional focus groups
9. Virtual Laboratory web page
Coffee break
10. Future training events
11. Organization of future CoEs discussions
12. Review of actions and recommendations
13. Conclusions

**DAY 2: JOINT MEETING WITH ET-SAT/SUP PLENARY SESSION
(Start time: 09h00)**

1. ORGANIZATION OF THE SESSION
2. CHAIRMEN'S REPORTS
3. ITEMS OF INTEREST FROM RELEVANT WMO MEETINGS INCLUDING CONSULTATIVE MEETINGS, EXECUTIVE COUNCIL, AS WELL AS CGMS, CEOS AND GEO MEETINGS
4. PRODUCT AVAILABILITY AND USER INFORMATION
5. NEW VISION OF THE SPACE-BASED COMPONENT of THE GOS
6. R&D TO OPERATIONS TRANSITION STRATEGY
7. RESPONSE TO NEW USER REQUIREMENTS
8. REGIONAL/SPECIALIZED SATELLITE CENTRES
9. SPACE WEATHER

FIVE-YEAR STRATEGY FOR THE CGMS VIRTUAL LABORATORY FOR EDUCATION AND TRAINING IN SATELLITE METEOROLOGY

1. INTRODUCTION

1.1 Scope and definition

The CGMS Virtual Laboratory for Education and Training in Satellite Meteorology (VL) was established to help improve the world wide utilization of satellite data and products by WMO Members.

The CGMS Virtual Laboratory (VL) is a global network of specialized training centres, named “Centres of Excellence in Satellite Meteorology (CoE)”, that are supported by one or more CGMS satellite operators. These CoE, often co-located with WMO Regional Training Centres (RTC), are established in the various WMO Regions to meet user needs for increased skills and knowledge in using satellite data within their Region. Each CoE is responsible for conducting training activities and normally supports one or more Regional Focus Groups involving NMHSs from its region.

1.2 High-level goals

Current top-level goals of the VL are:

- i) To provide high quality and up-to-date training and supporting resources on current and future meteorological and other environmental satellite systems, data, products and applications;
- ii) To enable the Centres of Excellence to facilitate and foster research and the development of socio-economic applications at the local level by the NMHS through the provision of effective training and links to relevant science groups.

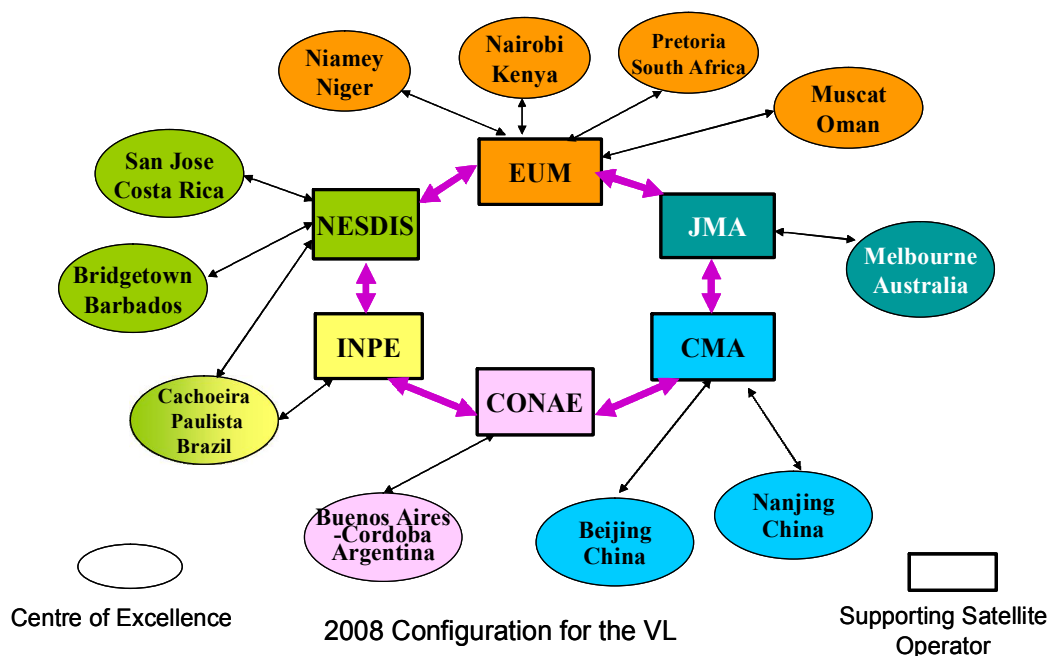
The VL activity aims at achieving these top-level goals through providing access to:

- Case study material and near real time data,
- Training and educational resources, and
- Software and expertise on how to best utilize satellite data and products.

1.3 Current status

At the present time, the VL is a collaboration between CMA, EUMETSAT, INPE, JMA and NOAA, as concerns the satellite operators; and nine CoEs that are located in Argentina, Australia, Barbados, Brazil, China, Costa Rica, Kenya, Niger, and Oman.

The figure below shows the various linkages within the VL between CoEs and their supporting satellite operators in September 2008. The continuing growth in the VL community is seen with the recent additions of INPE/CPTEC in Brazil; CMATC in Beijing, China; SAWS in South Africa; CONAE, SMN and UBA in Argentina.



1.4 Evolving user needs

In the coming years there will be significant changes in the user community requiring training, the way teaching and learning is carried out and the subject matter of the training. There will be significant advances in e-learning technology and increased availability of high speed low cost communications across the globe. Increased satellite capabilities will lead to new data and product application areas, over and above the traditional weather forecasting, which will become increasingly important. For example, the ability to measure precisely and understand climate change and its impact is now a global priority.

As more NMHSs take advantage of automated services, weather forecasters will require regular training to provide an expanded set of products that meet the needs of a wider range of users including for instance environmental scientists, software engineers and developers of new user-driven services. It is clear that with new satellite technologies, advanced training will become an imperative to ensure full utilization of this valuable resource.

1.5 New strategy

Building upon the experiences and successes of the VL over recent years, and taking into account the evolving user needs, this document presents a five-year strategy for the VL. It is complemented by a plan for implementing this strategy.

2. STRATEGIC OBJECTIVES FOR THE VL

2.1 Target users

The VL will aim at providing training and training resources for NMHS staff, noting that this includes a diversity of profiles from core synoptic weather forecasting to a wide range of applications to related fields, as the activity of NMHSs tends to expand.

2.2 Training areas

First of all, the VL will provide training that exploits the full potential of satellite data and products from both operational *and* several R&D satellites and, in so doing, prepare the various user communities for the next generation of space-borne Earth observing systems.

Secondly, and bearing in mind the ongoing establishment of various elements of the GEOSS and the emphasis now being placed upon GEO capacity building efforts, especially for the developing countries, VL training activities may in the future consider the training needs of some other GEO Societal Benefit Areas in addition to Weather and Climate: Agriculture, Biodiversity, [Disasters](#), Ecosystems, [Energy](#), Health and [Water](#).

The training programmes of the CoEs and satellite operators comply with the principles and recommendations described in the satellite meteorology component of WMO publication 258 “Guidelines for the Education and Training of Personnel in Meteorology and Operational Hydrology”. This document places major emphasis on the training of trainers and sets the standard for competence training. Therefore, VL training activities will have to closely follow any evolution in WMO publication No. 258 to meet new training needs.

Building upon the currently available expertise within the VL network, training activities should first focus upon the following topics:

- (i) Satellite Remote Sensing
 - Satellite capabilities
 - Spectral bands and their applications
 - Cloud analysis and image interpretation
 - Microwave applications
 - Products – Precipitation, Winds, Soundings, etc.
 - Resolution, calibration, product quality
- (ii) Meteorology
 - Severe convective systems
 - Heavy rain and floods
 - Winter storms
 - Tropical storms
 - Impact on transportation (land, aviation, water, space, etc.)
- (iii) Climate
 - Inter-calibration issues
 - Radiation budget
 - Ocean and cryosphere
 - Aerosols and ozone
- (iv) Hydrometeorological and other natural disasters

- Fire, wind, etc.

Where satellite observations are of benefit, and there is a user requirement, then the focus of VL activities could be widened to support training related to:

- (v) Ocean applications
- (vi) Land applications
- (vii) Hydrology and water management
- (viii) Atmospheric chemistry, air quality
- (ix) Environmental quality

Applications and Service-based training will increasingly involve the use of satellite data *in combination* with other data sets such as weather radar, NWP, lightning, precipitation, land information, etc., and may well be carried out in partnership with other Institutes where the relevant expertise exists.

2.3 The Virtual Resource Library

The Virtual Resource Library (VRL) is a key asset of the VL. A key goal is to ensure that this valuable repository of training resources is secured, maintained and configured in such a way that effectively supports both the contribution and use of resources. To this end, it is proposed that the VRL should be accessible through a centralized Web portal. The host of such a portal must have experience in maintaining and managing such a system. Examples of such sites might be the Environmental Satellite Resource Centre (ESRC) hosted by COMET and the CEOS Educational Resources Portal maintained by EUMETSAT.

2.4 Role of the CoE

Each CoE is responsible for conducting international training activities, in one or more WMO working languages, for the benefit of NMHSs from its Region, along the lines of the Virtual Laboratory.

For that purpose, and considering the expanding training needs within the regions, the CoE is expected to survey and maintain a list of training requirements for its Region, to organize and run training events, to develop and maintain proficiency in providing online training using tools such as VISITView, and to establish and support one or more Regional Focus Groups holding regular online sessions.

The CoE, through a nominated focal point and an alternate, will maintain coordination with the VL Management Group and provide the Co-chairs with a brief annual report outlining the relevant past training activities, the priority training needs for the region, their plans to meet these needs in the coming twelve months, their overall situation and other information as appropriate.

2.5 Regional Focus Groups

For the VL to realize its potential and become a global provider of training, each CoE will need to establish and/or strengthen the Regional Focus Groups (RFG).

The RFG is a virtual meeting that is convened by the CoE on a regular basis through online sessions, using VisitView or equivalent tools, in order to maintain an active

sharing of experience and know-how within the Region in between training events. The primary scope of RFG sessions can be to hold weather briefings. It also allows highlighting significant recent situations to keep abreast of new developments, and to ask and answer questions. Through this mechanism, the CoEs play an important networking role and help build a strong community of practice.

2.6 Tools and techniques

A key component of the advanced training will be greater use of blended learning, a training concept successfully implemented in recent years by a number of training centres. Blended learning combines online and traditional methods for training and is a very cost effective means of expanding the access to training materials while preserving many of the benefits of traditional training approaches. Its wider use should be regarded as a key goal of the VL. Conferencing and audio/video-supported training tools are now emerging and these developments will be assessed and incorporated by VL partners in their training programmes, as appropriate.

The course management system, [Moodle](#), and distance learning tools like CENTRA are being adopted among the VL partners. The progression to new “tools” for use by trainers is important to the growth of the VL.

The quality of Internet connectivity is very important to support the use of video, voice and other high quality training tools in the VL environment. To provide effective training, CoEs need to have an Internet connection with a **minimum** data rate of 1 Mbs **specifically dedicated** to CoE training activities. Such a data rate is the absolute minimum needed. Status of Internet connection needs to be included in the CoE annual reports to VLMG every September.

2.7 Feedback mechanism

Increasingly, it is necessary to demonstrate the tangible benefits coming from human and financial resource investments in training. In particular, how training leads to an improvement in services provided by the NHMS. The VL will develop systematic feedback and reporting mechanisms that will lead to continuous improvement ensuring that this key objective is met.

2.8 Outreach

Past enquiries indicate that many users are not yet fully aware of the resources that the VL can provide. Information actions shall be considered to raise the awareness of WMO Members through the VL web site; and at the regional level through the Centres of Excellence, the WMO Regional Associations and the Regional Rapporteurs for the Space Programme.

3. SECURING AND ENHANCING THE VL NETWORK

To implement the VL strategy in the coming years, the following three fundamentals of the VL have to be fully supported by the partners:

- ❖ Commitment = by all the partners to put effort and resources into the VL;

- ❖ Cooperation = building relationships, e.g. via the set up of Regional Focus Groups;
- ❖ Collaboration = jointly developing, delivering and exchanging training resources.

3.1 Commitment

As noted earlier, the long-term effectiveness of the VL relies on the long-term commitment of the CoEs and the satellite operators to meet training requirements coming from their various user communities. In turn, the effectiveness and success of the CoEs is highly dependent on five factors; the support from their sponsoring satellite operator, the support from local management, the availability of trained personnel, the quality of the training technical infrastructure, and political stability.

3.2 Expansion of CoEs

While the VL has existed for less than a decade, both its growth and positive impact have been dramatic. This was recognized by the WMO Congress. We expect the growth of the VL to continue with sponsorship from additional satellite agencies and inclusion of more CoEs. This growth should ensure that all countries in a particular Region can benefit from VL training activities and that training can be provided in all WMO official languages. These additional CoEs will facilitate intercontinental cooperation in training and the development and exchange of training resources in additional languages, as well as provide a risk reduction measure should a nearby CoE need assistance.

3.3 Partnership

The Eumetcal Project of EUMETNET is addressing the meteorological training needs of much of WMO Region VI (RA VI). It is reasonable to consider that the VL network could take advantage of Eumetcal satellite related training activities in RA VI. The expansion of the VL network in this manner will be carried out in partnership with established European Training Centres and others in RA VI such as Russian Federation with its WMO Training Centres in Moscow and St. Petersburg.

3.4 Coordination

Taking into account the dynamic expansion of the VL in terms of new CoEs, future Regional Focus Groups, wider scope of applications covered, and larger audiences, there is a clear need for strong project coordination. Given the decentralized nature of the VL, this can only be efficiently achieved if coordination is ensured by a dedicated person assigned to this function.

4. IMPLEMENTATION PLAN

An Implementation Plan should be developed for the five-year period and include tasks, actions, responsables, deadline and deliverables, directly related to the strategic goals mentioned above. Progress in the implementation should be monitored on a yearly basis by the Virtual Laboratory Management Group (VLMG) and the Plan updated as appropriate.

ANNEX IV

VIRTUAL LABORATORY IMPLEMENTATION PLAN FOR 2009 TO 2012 (DRAFT, SEPTEMBER 2008)

Task	Ref. to strategy	Action	Responsibility	Deadline for action	Deliverable(s)
1. The CoEs will strive to have more people actively involved in the development, review and incorporation of local training material within the VRL.	2.2	Refer to Action 3. CoEs to report on the level of effort available for the development, review and incorporation of local training material.	CoEs	Report progress to VLMG meeting, Sept 2009.	Part of new style of annual report to VLMG
2. Establish centralized VRL portal with unified web access to its content, and long-term commitments for hosting, managing and quality controlling its resources.	2.3	VRL Task Team to evaluate possibilities to transfer the current (distributed) elements of the VRL to a centralized site, for example, the ESRC, hosted by COMET and CEOS. Report to VLMG.	VRL Task Team	Initial report to VLMG by 15 March 2009. Report to ET/SUP- Next Sept 2009.	Recommendation and demonstration for evaluation by VLMG (virtual) meeting.
3. Standardized annual reporting from CoEs to VLMG.	2.4	To prepare a template for the CoE annual reports to VLMG.	VLMG Chairs and Tony Mostek	For discussion at virtual VLMG in March 2009.	Document template for reports to VLMG from CoEs
4. Improving the inter-regional effectiveness of training events through the global coordination of the Regional Focus Groups (RFG).	2.5	All CoEs to provide their RFG focal point to VLMG. Participate in regularly scheduled RFG coordination meetings.	All CoEs and VLMG and satellite operators	1 October 2008 for the focal points.	1 st coordination meeting of RFG in December 2008.
5. Bringing the physical infrastructure of the VL network up to a universally agreed minimum standard that is necessary for the effective delivery of training.	2.6	WMO Secretariat, in consultation with VLMG Co-Chairs, Tony Mostek and OPAG Chair, to send a letter to all CoE Principals and sponsoring satellite agencies informing them of the updated VL strategy document,	WMO Sect, VLMG and CoEs and the satellite operators	Preparation and mailing of letter by 15 December 2008.	Updated infrastructure achieved by end 2009.

Task	Ref. to strategy	Action	Responsibility	Deadline for action	Deliverable(s)
		the related expectations, and calling upon their commitment to implement this strategy.			
6. CoEs and Regional Focus Groups will manage their own training activities and information exchange systems, within the context of an agreed Course Management System, such as Moodle.	2.6	Refer to Action 4 above. RFG focal points to become familiar with and regularly use course management tool Moodle.	CoEs, RFGs and supporting satellite operators	Report progress to VLMG meeting, Sept 2009.	CoEs and their RFG become familiar with use of Moodle.
7. Effort should be spent on trying to achieve VISITview and CENTRA lessons, webcasts, or similar, with audio capability, either for real-time presentation, or recorded for later re-use and/or translation.	2.6	CoEs and supporting satellite operators to carry out training event covering the use of training tools such as VISITview, CENTRA lessons, webcasts, or similar with audio capability, either for real-time presentation, or recorded for later re-use and/or translation.	CoEs and supporting satellite operators	Report successful completion of training to VLMG in Sept 2009.	CoEs and their RFG receive at least one training course in the use of VISITview CENTRA lessons, webcasts, or similar with audio capability.
8. Periodic review of VL.	2.7	Conduct periodic reviews of the VL performance and achievements against goals. Look for remedies and enhancements, as appropriate.	ET-SUP-Next	Every 2 years commencing 2008.	ET-SUP provides report for use at CGMS and CBS.
9. VL Outreach – inform all WMO Members about the existence of the VL and its capabilities.	2.8	Create flyer on the VL and its VRL for the WMO SP web site, the CoE web sites, distribution by the Space Programme Office plus other methods as appropriate.	EUMETSAT , INPE, NOAA, Costa Rica CoE & WMO Sect	1 Feb 2009 in time for WMO CBS (initial distribution)*	Digital flyer in multiple formats

Task	Ref. to strategy	Action	Responsibility	Deadline for action	Deliverable(s)
10. Each Regional Focus Group should have its own (common design and functionality) web pages which should include a schedule of Regional Focus Group Meetings with application areas being addressed through training. These pages will be linked to the centralized VL web site.	2.8	Web site Task Team to recommend format for common design and functionality of RFG web sites.	Web site Task Team	October 2009.	Document and demonstration for consideration by VLMG
11. Completion and approval of the VL Strategy by time of the WMO CBS in 2009.	3.1	After finalization by the VL Strategy Task Team, and approval by VLMG, the VL Strategy and Implementation Plan shall be submitted for approval to CGMS-36 as a WMO Document, then to for CBS-XIV.	Strategy Task Team for final draft to VLMG. WMO Secretariat for final doc to CGMS and to CBS.	1 October 2008 (WMO doc for CGMS)	Approved 5-year VL Strategy and Implementation Plan
12. Enhancing and securing the network of the VL, to include new CoEs and addressing the needs of other WMO Regions not currently well covered.	3.2	VLMG to evaluate the need and feasibility of enhancing and securing the network through the analysis of annual CoE reports.	VLMG and CoEs through regular meeting agenda item.	Next regular meeting of VLMG in Sept 2009	Evaluation of CoE reports sent to ET-SUP-Next and CGMS.
13. Noting the need to maintain a centralised VL web site and tremendous growth in VL activities as noted by WMO Congress, additional human resources (fulltime VL Support Officer) are essential.	3.4	Chair OPAG to bring to the attention of CGMS-36 for implementation. VLMG to supply supporting information to OPAG Chair. The central VL web site will be dynamically maintained by this Officer	Chair OPAG and VLMG	VLMG by 4 Sept 2008. OPAG Chair by November 2008 (CGMS meeting).	Job description, recruitment and placement of VL Technical Support Officer.

Task	Ref. to strategy	Action	Responsibility	Deadline for action	Deliverable(s)
		who will also act as a comprehensive focal point for all VL activities.			

LIST OF ACTIONS AND RECOMMENDATIONS FROM VLMG-4

Action 4.1 - EUMETSAT to place a contract with EAMAC, Niamey to produce the French versions of all four HPTE lectures. Deadline: 31 December 2008.

Action 4.2 - WMO Secretariat, in consultation with the VLMG Co-chairs, Tony Mostek and the OPAG-IOIS Chair, to send a letter to all CoE Principals and sponsoring satellite agencies informing them of the updated VL strategy document, the related expectations, and calling upon their commitment to implement this strategy. Deadline: 15 December 2008.

Action 4.3 - EUMETSAT to finalize the editing of the HPTE DVDs in English, Spanish and Portuguese languages and provide 200 (to be confirmed) copies to WMO SPO for onward distribution to VL network participants and WMO Members. Deadline: 31 December 2008.

Action 4.4 - CMA to inform VLMG about the VL-related roles of the Beijing and Nanjing Training Centres. Deadline: end of November 2008.

Action 4.5 - CMA to investigate possibilities to translate the four HPTE lectures into Chinese. Deadline: 31 December 2009.

Action 4.6 - IMTR (Kenya) to report to the next virtual meeting in March 2009 on the status of its VL training laboratory.

Action 4.7 - ROSHYDROMET to complete the exchange of correspondence with WMO SPO relating to the establishment of a CoE in the Russian Federation (Moscow and St Petersburg). In this exchange, Russian Federation to clarify the VL-related roles of the Moscow and St Petersburg Training Centres. Deadline: end November 2008.

Action 4.8 - Initial draft of Strategy document by 5 September 2008. Further refinements, as necessary by full Task Team, by email by 15 October 2008.

Action 4.9 - EUMETSAT to collect the RFG focal point details (or potential contact points from CMA) and to inform Tony Mostek and VLMG accordingly. Deadline: 1 October 2008.

Action 4.10 - CMA to report back, at the next online meeting of VLMG, on its investigation of possible periodic training sessions for neighbouring countries. Deadline: March 2009.

Action 4.11 - VRL Task Team members) plus JMA, to propose a format for the centralized WMO VL web site/portal and for a common look and feel web site for the CoE/RFGs. VLMG proposed to use the EUMETSAT and JMA VL web sites as a starting point. Deadline: end 2009.

Action 4.12 - EUMETSAT to coordinate the setting up of a joint satellite operator training course on polar orbiting EO satellites to be held towards the end of 2009.

Action 4.13 – EUMETSAT to propose a template for the annual reports from CoEs on their activities.

Recommendation 4.1 - VLMG to confirm to ET-SUP that the training centre in Pretoria (SAWS) fully meets the requirements of a VL CoE, and to invite ET-SUP to recommend to CGMS accordingly.

Recommendation 4.2 - VLMG unanimously agreed that for a real breakthrough in advancing the capabilities of the VL, there should be a full time expert dedicated to progressing VL activities. This expert would be sponsored by one or more satellite agencies and should be prepared to serve for periods of time either collocated with a satellite operator or with one of the CoEs.

Recommendation 4.3 - VLMG-4 agreed that VLMG meetings should be longer than one day, and there should be intermediate virtual meetings. Next virtual VLMG meeting (CENTRA, hosted by EUMETSAT, or GoToMeeting, hosted by NOAA) planned for March 2009. Next regular VLMG meeting will be hosted by CMA in September 2009.
