World Meteorological Organization

REGIONAL ASSOCIATION VI (EUROPE)

Seventeenth Session

Geneva, 7 to 9 February 2018

RA VI-17/INF. 4.2(5)

Submitted by:
Secretary-General
6.II.2018

INTERNAL MATTERS OF THE ASSOCIATION

2016–2025 Strategy of the European National Meteorological and Hydrological Services Towards a network of European NMHSs: collaboration & complementarity

2016–2025 Strategy of the European National Meteorological and Hydrological Services

Towards a network of European NMHSs:

collaboration & complementarity

May 2016

The signatories of this document declare that they support the strategic direction of the European NMHSs for the 2016-2025 period as described in this document, which is NOT legally binding.

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RMI, Belgium: _____ *Date Signed:* 31/5/2016

NIMH, Bulgaria: _____ *Date Signed:* 26.01.2017

DMHZ, Croatia: _____ *Date Signed:* 31.5.2016

CYMET, Cyprus: _____ *Date Signed:* 24.8.2016

CMHI, Czech: _____ *Date Signed:* 31.5.2016

DMI, Denmark: _____ *Date Signed:* 31.5.2016

ESTEA, Estonia: _____ *Date Signed:* 31.05.16

FMI, Finland: _____ *Date Signed:* 31.5.2016

Météo-France, France: Olivier GUPTA _____ *Date Signed:* 31 mai 2016

DWD, Germany: _____ *Date Signed:* 31.5.2016

HNMS, Greece: Date Signed: 26-10-2016.

OMSZ, Hungary: Date Signed: 31/05/2016

IMO, Iceland: Date Signed: 31/05/2016

Met Éireann, Ireland: Date Signed: 31/5/2016

ItAF-ReMet, Italy: Date Signed: 09/02/2017

LEGMC, Latvia: Date Signed: 20/08/2016

LHMS, Lithuania: Date Signed: 2017 02 21

MeteoLux, Luxemburg: Date Signed: 05.07.2016

IHMS, Montenegro: Date Signed: 26.01.2017.

KNMI, Netherlands: Date Signed: 31-5-16

MAMO, Malta: Date Signed: 31/5/16

Met Norway, Norway: Date Signed: 31/5-2016

IMGW-PIB, Poland: Date Signed: 31.05.2016

IPMA, Portugal: Date Signed: 31.05.2016

SHMSM, Rep. of Moldova: Date Signed: 25.01.17

RHMSS, Rep. of Serbia: Date Signed: 31.05.2016.

NMAR, Romania: Date Signed: 31.05.2016

SMHU, Slovak Rep.: Date Signed: 31/05/2016

ALSO
~~SEA~~, Slovenia: Date Signed: 31.5.2016

AEMet, Spain: Date Signed: 31.5.2016

SMHI, Sweden: Date Signed: 31/5 2016

MeteoSwiss, Switzerland: Date Signed: 31.5.2016

HMS, the former Yugoslav Republic of Macedonia:

Date Signed: 19.07.2016

Met Office, UK: Date Signed: 31 May 2016

Content

1. Mission statement

The National Meteorological (and Hydrological) Services – NMHSs - in Europe serve society by collecting and providing independent and authoritative information and services on the weather, the climate and related geophysical phenomena including long-term observation of relevant parameters. In doing so the NMHSs reduce risks for life and property against natural disasters, and thus contribute to a safe, sustainable and economically viable world.
In order to achieve these goals NMHSs combine and utilize

- an extensive and consistent infrastructure for observation and IT (including supercomputing) that is maintained throughout Europe;
- world class scientific and technological research conducted and used for providing the most-advanced weather and climate services, in particular for the European domain; and
- well experienced 24/7 operational services, dedicated to provide timely and accurate authoritative warnings for society.

2. Vision 2025

In the year 2025 a collaborative network of NMHSs has been formed in which individual NMHSs make use of their complementary strengths and the shared organisations EUMETSAT, ECMWF, EUMETNET and ECOMET in order to best serve society in a manner that maximises value. Complementarities between NMHSs have been developed. Some weather and climate services are provided collectively. However, at the same time, competition ensures that European meteorology stays at the forefront of innovation worldwide. The NMHSs network thus serves as the European reference, worldwide source of best-practices for weather and climate information in the European geographical domain.

Moreover, by 2025 public-private partnerships have enabled the development of dedicated innovative services.

Finally, through ambassadorships, actionable advices and alerts, big data and the growth of citizen science, the public awareness of the role of NMHSs has increased. As a result public appreciation of NMHS services is equally large.

3. High-level principles

The formation of a collaborative network of NMHSs in Europe[1] requires the introduction of a set of high-level principles to guide and streamline this development. These high-level principles are listed below:

1. Each NMHS has its own unique mandate by its government. As each country in Europe has its own distinct administrative procedures and governance structures, the local NMHS is best placed to liaise with its national administration. Hence, the European network of NMHSs is based on the recognition of the unique and indispensable role of each participating NMHS in each European partner state, and the fact that this NMHS is taking care of the national meteorological and climatological services in its country, recognising the importance of maintaining a clear responsibility for national datasets and 'authoritative voice' in issuing warnings and forecasts.

[1] in the context of this strategy paper the European network of NMHSs is defined by the current membership of EUMETNET (31 NMHSs are full member and 4 NMHSs are co-operating member).

2. It is the role of NMHSs, individually and collectively, to deliver products and services to end users and to increase the user community. Especially, when safety and crisis management is involved, it is important that NMHSs take part in decision support processes. Not only by providing data and products but also by providing expert knowledge for the development and operation of decision support systems.
3. As public organisations the NMHSs, individually and collectively, are committed to provide services based on the principles of affordability and best value for money.
4. Following the principle of subsidiarity, as agreed within the EU[2], existing capabilities inside NMHSs should be used as much as possible, unless common services are more effective. At the same time, unnecessary duplications should be avoided.
5. The European shared meteorological organisations (EUMETSAT, ECMWF, EUMETNET and ECOMET) fulfil selected, common needs including the provision of high quality data, products and services that the European NMHSs community cannot provide in such a cost-effective way (again, following the principle of subsidiarity).
6. The European network recognizes the necessity and value of worldwide collaboration in meteorology. This collaboration is, besides the need to become more cost-efficient, driven by the fact that improved service levels (and improved public safety) worldwide is beneficial for the European NMHSs as well.

4. Strategic choices

The coalition of NMHSs in Europe has made the following strategic choices in order to make the vision 2025 – as described above – a reality.

1. *European network organisation.* The NMHSs in Europe will form a strong network organisation based on collaboration and complementarity, but not excluding any duplication as this may trigger competition in some domains. For the network organisation to be successful it will have to meet the following boundary conditions:
    - It is based on mutual *trust*, *obligation* and *recognition*. To this aim, there have to be places to have regular discussions in a frank and open way.
    - It stimulates *sharing of facilities* and *cost effective operations*, while – at the same time – it is maintaining essential redundancies and promoting the sharing of scarce know-how. The domains where complementarity is a necessity and the domains where redundancy has added value need to be clearly identified and decided upon.
    - It recognises and accepts the need to retain strategically important capabilities at a national level.
    - It stimulates *regional* and/or *sub-group* activities, i.e. it allows for different types of collaboration on different topics organized in a transparent and logical way and – if applicable – in a competitive fashion.
    - An *organising entity* is needed that facilitates new forms of collaboration among the NMHSs as described above. Preferably, an existing legal entity such as EUMETNET is transformed such that it can take on this new role both in facilitating/arranging necessary cooperation between its Members

[2] It is the principle whereby the EU does not take action (except in the areas that fall within its exclusive competence), unless it is more effective than action taken at national, regional or local level (see http://eur-lex.europa.eu/summary/glossary/subsidiarity.html).

to achieve the common goals and in representing its Members towards European or other partners/authorities/institutions.

2. *Shared European meteorological organisations*. Europe is fortunate in having two top-level meteorological infrastructures, ECMWF and EUMETSAT, available. These intergovernmental organisations provide services (for all Member States) that satisfy commonly held requirements across the Member States that cannot be served at a national level due the their specialist nature or affordability challenges. Moreover, the European NMHSs have organised themselves in networks like EUMETNET and ECOMET with the aim to cooperate in relevant domains. As the shared meteorological organisations and the NMHSs are both serving society, the activities of the shared meteorological organisations and NMHSs need to be coordinated. Hence, the following strategic choices are made (which is further detailed in section 5):
    - EUMETSAT and ECMWF have a leading role in top-quality research and (cost) effective services.
    - New shared services are only initiated when needed.
    - Products of the shared meteorological organisations should be delivered to end-users in European countries through the NMHSs; Exceptions can be agreed provided that these do not undermine the national role of the NMHSs.

3. *NMHSs*. In order to arrive at a safer Europe in 2025 the NMHSs need to improve and innovate their services continuously. This leads (amongst others) to the following choices and developments:
    - Transform weather rooms into multi-hazard early warning centres (thus also making existing 24/7 weather room operations more cost-effective).
    - Develop the use and understanding of probabilistic forecasting.
    - Include handling perspectives into NMHS advices, i.e. impact-based warnings need to be issued (which are formulated in consultation with the national and regional civil protection agencies and other relevant public bodies).
    - Climate services. The knowledge on climate change and on its consequences, available at the NMHSs, needs to be transformed in practical tools that can be used by third parties.
    - In response to the anticipated growth of the private meteorology sector, the distinct roles of the European NMHSs with respect to data collection, model development, research, warnings and alerts need to be established, while at the same time collaboration with the private sector is stimulated.

    Most of these choices and developments require a strong interaction with and support of external stakeholders of other sectors and communities (geophysical, environmental, climate adaption, transport, energy, etc.). This interaction is mostly needed on a national level but more and more also on a European level. A role in this of the shared European organisations (not only within the meteorological sector) is to be foreseen.

4. *Innovation*. The improvement of meteorological services requires a permanent R&D effort. Important developments are foreseen in the traditional domains of NWP (see 7.) and satellite data but also in new domains like the internet of things (mobile phones, cars and private weather stations as new monitoring tools), big data (coupling with traffic data, for instance, or other large data sets). These new

domains bring both opportunities and threats that will require a rapid response of the international meteorological community. Multi-national research teams – possibly including the relevant university teams – are formed to lead this innovation process. In order to acquire third party funding for such innovations, groups of NMHSs will submit proposals to EU research programmes such as H2020. The potential role of EUMETNET in this field needs to be strengthened, both in collaboration with the Commission to establish suitable priorities and/or in supporting Members to respond to future calls.

5. *Monitoring & observation network*. The NMHSs are actively collaborating in this domain and this collaboration will be continued without interruption. This is largely organised through EUMETNET (ground based and air borne) and EUMETSAT (satellite based). The collaboration in this domain among the NMHSs can be further strengthened – in line with the ambitions described above – by making the following choices:
    - Ensure consistency of the European observation network in terms of location of stations, density, standardization of protocols and interfaces, quality control, data-exchange, etc. thus enabling interoperability.
    - Organize (preferably regionally) collective procurement and maintenance of equipment when possible. Examples include market scans, shared lists of requirements, instrument testing and evaluation procedures.

6. *IT systems (including computing and data-communication and -storage technology) and software tools*. In view of the large costs of High Performance Computing (HPC) and the significant increase of data volumes in terms of source (satellite, NWP, big data, etc.), dissemination and storage, collaboration among the NMHSs and the shared European organisations is called for. The following strategic choices need to be made in this framework:
    - Combine the HPC needs and required storage capacity by forming regional and additional shared Computing & Data Centres.
    - Avoid duplication of data and model outputs being stored in several distinct local, regional or European data centres by making use of mutualized data stores and ICT infrastructures (e.g. cloud technologies). The use of Service Level Agreements (SLA) can be used to handle the costs aspect of data storage and dissemination, also in case of open data.
    - Where appropriate utilize cost efficient of-the-shelf products, in order for NMHSs to focus on domain specific developments.
    - Where such products are not available develop common platforms and software tools – complying with international standards if available – for data handling.

7. *Numerical Weather Prediction models*. In order to support the continuous improvement of the NWP models that are used by the NMHSs community in Europe, it is essential that several distinct models are available. This stimulates advanced developments. Also the synergies between weather and climate numerical models contribute to NWP development work. Coordination of LAM activities in Europe is very much needed to achieve a more cost-efficient NWP infrastructure. EUMETNET and ECMWF are the obvious organisations to facilitate more LAM coordination and cooperation within Europe. E.g. the short-range numerical weather calculations of ECMWF are made available to NMHSs for the purpose of setting high quality boundary conditions to their LAM models. In

addition, it may well be appropriate to also make use of existing well-tuned short-range LAM calculations produced by various (clusters of) NMHSs in Europe. The sharing of short-range numerical weather forecasts from the various available sources should be facilitated by the NMHSs network in order to enable the production of short-range ensembles.
It requires a continuous and substantial innovative effort to meet the challenges of NWP development in the future.

8. *Open data*. The European PSI and INSPIRE directives are the starting point for (new) legislation in each European country. Hence, data produced by NMHSs should – in principle and in accordance with the Oslo Declaration as agreed by the European NMHSs – in due time all be labelled as open data. Therefore, the NMHSs community is committed to an open data policy also for ECMWF and EUMETSAT data but admits that solutions need to be found for loss of revenues from data-delivery which are presently being used for covering costs of infrastructures. Moreover, the resulting national legislation shows differences from country to country – especially to the extent that exceptions are allowed. At the same time the NMHSs network will benefit from uniform rules on this subject, as this will facilitate collaboration. For those reasons the following open-data principles are proposed:
    - Despite these remaining differences, the NMHSs are striving for their data to be used as widely as possible in order to realize our vision of a safer and better world.
    - ECOMET will play a central role in the cross cutting topic of open data policy of the European public meteorological sector, especially being a common vehicle of the European NMHSs for communication with the EU and the (growing) private sector.
    - Each NMHS is bound by legislation and regulations of its home country when transferring data to the public or third parties. This implies that (minor) differences between partners of the NMHSs network will remain, and must be respected.
    - While working within the spirit of open data some – fair – revenues are not excluded. These include e.g. service level charges for 3rd parties requiring high and reliable throughput, expenses needed for the extraction and retrieval of historical data records, and costs required for making (open) composite products based on data from different NMHSs.
    - Although EU directives do not necessarily apply to intergovernmental organisations such as ECMWF and EUMETSAT, it is recommended to gradually introduce the same open data policy for these organisations as well, so as to promote the widest possible use of their data. This is also consistent with the Copernicus data policy set up by the EU. It is important that an open data policy will not take away the incentive of countries to stay or become a member state of ECMWF and EUMETSAT.

5. Shared European meteorological organisations

As was pointed out in section 4.2, ECMWF and EUMETSAT are very important intergovernmental organisations for Europe in general and the network of European NMHSs in particular. These shared organisations provide products and services that individual NMHSs usually cannot provide and – moreover - on a world-class level. EUMETNET and ECOMET are Economic Interest Groupings (EIGs) in which the NMHSs –

rather than the countries – collaborate. In particular, EUMETNET may be an essential organisation to support the NMHSs network that is called for in the 2025 vision. At the same time it is important to describe the desired role of each of these organisations in the NMHSs community in the coming decade, as they form a unique and strong backbone for NMHSs collaboration in Europe.
At the outset the most important observation is that strategic plans developed by ECMWF, EUMETSAT, EUMETNET or ECOMET individually, should be consistent with the vision for 2025 of the European NMHSs network and the associated strategic choices described in this document. In other words, the mission, vision and strategic choices of the European NMHSs community, should serve as a framework for the individual strategies of these organisations. Below some specific remarks are made for EUMETSAT, ECMWF and EUMETNET. The EUMETNET section includes also ECOMET.

1. *EUMETSAT*. A comprehensive meteorological satellite program is an essential infrastructure of the European NMHSs network. Operational satellites are not being built by individual NMHSs and therefore represent an excellent example of the unique added value of European collaboration. EUMETSAT has a clear focus and well-structured multi-annual program of operational geostationary and polar orbiting earth observation satellites. Its strategic program fits well into the boundary conditions for the shared European infrastructures as outlined before. Three subjects require further attention in the coming years:
    - EUMETSAT needs to stay an user-driven organisation that provides best value for money for the member states. As EUMETSAT relies on ESA for the development of the space segment of its programmes, industrial involvement is needed for the construction of the various instruments. However, in the definition and development of the EUMETSAT space segment user requirements should in all cases prevail over industrial interests of member states.
    - In view of the common interest and utility (for all member states) of the high precision ocean altimetry missions it is recommended that the sustainability of optional programmes is to be discussed.
    - EUMETSAT should continue to stimulate ECMWF, NMHSs and NWP consortia to use EUMETSAT data in a more optimal way by assimilating more satellite data in the models. Moreover, NMHSs should integrate the use of satellite observations with ground-based and airborne observations when developing observation strategies. New challenges and opportunities with regard to satellite data-assimilation occur with the availability of the next generation EUMETSAT satellites (MTG and EPS-SG) and certainly also with the evolving data needs of the new generation NWP models (especially, short range limited area models).

2. *ECMWF* was established to create a world leading center to tackle the commonly held grand challenge of extending the predictive skill of weather forecasts in the medium range timeframe. Today the same primary mission remains, with the present forecasting skill that is good up to 7 days, reaching out to two weeks and the desire to extend this to the 3 to 4 weeks. It also provides a number of other related services which the members have agreed are best done centrally. Over the years the Centre has developed an NWP model that is the best worldwide for medium-range weather forecasts. Two subjects require attention in the coming years:

- *Medium-range forecasts.* ECMWF should continue to work with a strong focus on the primary service for which the organisation was created – the provision of world leading medium-range weather forecasting products.
- *Third party programmes:* Activities, like the Copernicus Services, should provide added value to the core activities of ECMWF.

3. *EUMETNET/ECOMET.* As opposed to EUMETSAT and ECMWF, EUMETNET and ECOMET are Economic Interest Groupings (EIG). As EUMETNET is the existing collaboration of European NMHSs the strategic choice is made to develop EUMETNET into the *future organizing entity* of the European NMHSs network. This has several consequences:
   - The governance of EUMETNET has to be reconsidered in view of the established new vision on the role of EUMETNET. The required flexibility implies that it should be possible for different subsets of NMHSs to work together under the EUMETNET umbrella.
   - EUMETNET will have to operate as a *trusted collaborative framework*, where NMHS representatives can meet and set-up new efficient ways of collaboration. This requires an entirely different way of organizing meetings as the aim is to find ad-hoc groupings on specific topics rather than unanimous decisions.
   - The EUMETNET leadership has to develop a new role as facilitator of the aforementioned trusted collaborative framework. This may take – for instance – the form of small 3-4 person committees bringing potential partners together.
   - In view of the developments at the European level (such as the EU Copernicus Programme, aviation, the growth of private meteorological sector, etc.), it is important that the NMHSs network (with its organising entity EUMETNET) can be found and identified as such by the relevant policy makers and stakeholders. The purpose is to make EUMETNET visible and recognizable as a "common doorstep" to and for the NMHSs network. This requires to raise the EUMETNET profile in Brussels. Moreover, one person needs to serve as figure head of the NMHSs network (and EUMETNET) in Brussels. In addition, all EUMETMET members have the responsibility to communicate the interests of the EUMETNET community to the outside.
   - The existing EUMETNET programmes can in principle be continued provided that the remarks made in section 4.5 (with regard to monitoring and observations) are taken into account.
   - The increased role of EUMETNET, as described in this strategy paper, motivates an extension of the Secretariat. However, the EUMETNET Secretariat must be first reviewed in its current performance and functionality before this can be realized.

With regard to ECOMET: As a regulator of handling costs and fees - whilst open data are becoming increasingly more common - the scope of ECOMET will be reduced. Nevertheless, as a vehicle of communication with the (growing) private sector the role of ECOMET remains important. In the long term, however, it is recommended to merge EUMETNET and ECOMET into one organisation to enforce the visibility of the European NMHSs community to the outside world. This merge will also create efficiency for the members of both organisations. The legal aspects of this merge

with respect to the EU regulations (e.g. with regard to cartel forming) need to be considered.

With regard to aviation matters: Although AVIMET is a working group of EUMETNET, developments in the aviation meteorology are such (especially in Europe) that this subject needs special attention. Aviation meteorology is confronted with two key developments: (i) the move towards a Single European Sky, in which not only air traffic controllers, but aviation meteorology service providers (MET-ANSPs) will collaborate more closely, and (ii) the NMHSs community might well be challenged by the European Commission who is considering the opening of the aviation meteorology market for commercial weather providers. The best answer to these developments is to ensure that the NMHSs/MET-ANSPs are providing economic aviation meteorological services of the highest quality and to ensure that MET information is optimally used by all aviation stakeholders. In order to reach this goal the AVIMET Task Team on Future Aviation Service Provision (TT-FASP) has made a number of recommendations. Based on these recommendations it is proposed here:

- to develop a pan-European set of consistent, common, accurate, harmonized and user-tailored set of meteorological data, which are easily accessible and have to be used by all MET-ANSPs;
- moreover, that EUMETNET represents the NMHSs community in European aviation activities. This may require a change in the decision making process of EUMETNET in order to be able to react swiftly to EU developments.

The changes in EUMETNET as proposed in this section are consistent with those proposed by AVIMET. Also in aviation meteorology subgroupings and different forms of collaboration will be needed.

6. Network & outside relations

The network of NMHSs in Europe will collaborate more closely than in the past. Such a network does not act in isolation, but is also in contact with other relevant organisations that have not been mentioned so far: several EU Directorates in Brussels, WMO and its regional associations and the commercial weather providers. In this section some observations are presented regarding these outside relations.

- *Europe*. The potential role of EUMETNET within the EU requires the strengthening of upstream representation activities on European R&D priorities and policy orientations. As a result this will provide opportunities for collaboration between NMHSs in EU research programs. For the same reason EUMETNET must reinforce its pro-active engagement with selected DG's and EU bodies, particularly in areas where centralized services are envisaged (Climate Services, Disaster Risk management, Aviation, etc.). Demonstrating the efficiency and effectiveness of NMHSs working together through EUMETNET is probably the best way to convince European authorities that some form of centralised services, which would also meet the needs of individual Member States, can be achieved through the collaboration of the NMHSs.
- *WMO*. All European NMHSs within the proposed network organisation are located in member states of Region VI (RAVI) of WMO. As RAVI is larger than the envisioned size of the NMHSs network and has a different scope, the two organisations should maintain in close contact. As far as WMO and relations to countries outside Europe are concerned, EUMETNET supports WMO programmes in RAVI. The need for coordination of EUMETNET and RAVI activities is

recognised. E.g. EUMETNET, as NMHSs network, could coordinate the implementation of WIGOS in the RAVI area.

- *Commercial weather providers*. Within Europe the turnover of the commercial weather providers is rapidly increasing. In order to strengthen the entire weather and climate sector within Europe, it is important to establish transparent relations between providers and NMHSs. While the NMHSs are the source of authorized (open) data, knowledge development, warnings and alerts, and serve other public organisations, the providers (including commercial divisions of NMHSs) serve the private market. By working together in these distinct roles, the entire sector may profit. By setting up public-private partnerships, for instance, both the NMHSs and the providers will benefit. Such partnerships are encouraged. ECOMET and/or EUMETNET will continue or ensure the role as common vehicle of the European NMHSs for communication with the private sector on a European level.

Appendix A: Summary of the NMHSs 2016-2025 strategy

List of strategic choices and related recommendations and attention points

1. The NMHSs in Europe will form a strong *collaborative* network organisation.
   Recommendation: EUMETNET is the preferred *organising entity* that facilitates new forms of collaboration among the NMHSs and representation of the NMHSs towards European partners/authorities/institutions.
   Attention points:
   - The network must be based on mutual *trust*, *obligation* and *recognition*.
   - The domains, where complementarity is a necessity and/or where redundancy or competition has added value, need to be clearly identified and decided upon.
   - The need to retain strategically important capabilities at a national level is accepted.
2. The *shared European meteorological organisations* EUMETSAT and ECMWF have a leading role in top-quality and (cost)effective research and services.
   Attention points:
   - New shared services are only initiated when effective (principle of subsidiarity).
   - Products of the shared meteorological organisations should be delivered to end-users in European countries through the NMHSs (exceptions can be agreed provided that these do not undermine the national role of the NMHSs).
3. In order to arrive at a safer Europe in 2025 the NMHSs need to *improve and innovate their services* continuously.
   Recommendations:
   - Transform weather rooms into multi-hazard early warning centers.
   - Develop the use and understanding of probabilistic forecasting.
   - Include handling perspectives into advices of NMHSs.
   - Develop climate services to be used by third parties.
   - Establish together with the private meteorology sector distinct roles of the European NMHSs with respect to data collection, model development, research, warnings and alerts, while at the same time develop public-private partnerships.

   Attention point: Strong interaction with stakeholders outside the MET community (both on a national and European level) is needed.
4. A permanent *R&D effort* is required both in the traditional MET domains (NWP and satellite data) and in new domains like Internet of Things and Big Data.
   Recommendation: Form multi-national research teams, incl. universities, and make use of third party funding (H2020, SESAR, etc.).
   Attention point: The potential role of EUMETNET in this field needs to be strengthened.
5. The NMHSs collaboration on *monitoring and observations*, in Europe largely organized through EUMETNET (ground based and airborne) and EUMETSAT (satellite based), will be continued without interruption.
   Recommendations:
   - Ensure consistency of the European observation network to enable interoperability.
   - Organize collective procurement and maintenance of equipment.
6. Forced by increased IT costs and data volumes the NMHSs and the shared European organisations will collaborate on sharing IT systems for HPC and data storage. Regional and additional shared computing & data centers may be required.
7. The availability of several distinct NWP models for short-range forecasting on a European scale remains needed.

Attention points:

- The coordination of short-range NWP activities within Europe is needed to achieve a more cost-efficient infrastructure.
- The synergy between climate and weather models needs to be used.
- The sharing of short-range numerical weather forecasts from the various available sources should be facilitated by the NMHSs network in order to enable the production of short-range ensembles.

8. In the long term the NMHSs community is committed to an open data policy also for ECMWF and EUMETSAT data.

Attention points:

- Solutions need to be found for loss of revenues from data-delivery which are presently being used for covering costs of the public meteorological infrastructures.
- The situation differs from country to country both financially and legally.
- Open data policy does not exclude revenues to cover costs of extra services.

Specific recommendations and attention points

EUMETSAT related

- EUMETSAT needs to stay a user-oriented organisation that provides best value for money for the member states.
- The sustainability of optional programmes needs to be discussed.
- The use of satellite data by NMHSs en NWP centers/consortia must be increased and optimized.

ECMWF related

- ECMWF should continue to work with a strong focus on the provision of world leading medium-range weather forecasting products.
- Third party activities, like the Copernicus Services, should provide added value to the core activities of ECMWF.

EUMETNET related

- The governance of EUMETNET and possibly the EIG Agreement have to be reconsidered in view of the established new vision on the role of EUMETNET.
- The required flexibility implies that it should be possible for different subsets of NMHSs to work together under the EUMETNET umbrella.
- The purpose is to make EUMETNET visible and recognizable as a "common doorstep" to and for the NMHSs network. This requires to raise the EUMETNET profile in Brussels.
- The existing EUMETNET programmes can in principle be continued.
- In view of the increased role of EUMETNET the size and role of the Secretariat needs to be reviewed.
- In view of the expected key developments with regard to aviation meteorology it remains important that EUMETNET (AVIMET) represents the NMHSs community in European aviation activities.

ECOMET related

- Being a vehicle of communication with the (growing) private sector and EU authorities the role of ECOMET remains important.

- In the long term, however, it is recommended to merge EUMETNET and ECOMET into one organisation to enforce the visibility of the European NMHSs community to the outside world. This merge will also create efficiency for the members of both organisations.

WMO related

- A better coordination of EUMETNET and RAVI activities is needed.

Appendix B: Risks and challenges

The NMHSs have defined an overarching vision on the European meteorological sector in 2025 and a strategy for the NMHSs community to realise this vision. It is useful to first identify the risks to be expected before actions on the implementation of the strategy are taken.

Potential risks:

- The vision, principles and strategic choices may not be fully supported by all NMHSs.
- The mutual trust is essential for the success of a collaborative network. The friction between collaboration and competition is a potential source of mistrust among the NMHSs and therefore also for a possible failure of the collaborative network.
- The developments in the meteorological sector may differ from as now foreseen in the 2025 vision and accordingly the chosen strategy may need to be updated. One example can be that future EU anti-cartel legislation may prohibit the NMHSs to operate under the umbrella of a cooperative organisation like EUMETNET (e.g. with the purpose to protect the position of the private sector).
- The current EUMETNET governance and EIG Agreement may hamper the implementation of the chosen strategy.

Challenges:

- To create among all NMHSs full commitment to the chosen strategy.
- To build mutual trust unconditionally at the members of the collaborative network. For this the attitude of the NMHSs, accepting each other's specific role in the cooperation, is important. Moreover, accepting the principle of give and take and acting accordingly is a must.
- To develop an action plan with the purpose to implement the NMHSs strategy. Some flexibility in this plan is needed to adjust for possible unforeseen developments in the European meteorological sector.
- To adjust the governance and possibly the membership of EUMETNET in order to meet the targets of the strategy. The current EIG Agreement that expires by September 30th, 2019 may also need adjustments.