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SMHI

Meteorologisk institutt

ILMATIETEEN LAITOS
METEOROLOGISKA INSTITUTET
FINNISH METEOROLOGICAL INSTITUTE

Agreement governing Operational co-operation on Numerical Weather Production

has been concluded by

The Swedish Meteorological and Hydrological Institute (SMHI),

The Norwegian Meteorological Institute (MET Norway)
and
The Finnish Meteorological Institute (FMI)

11-October-2018, Upplands Väsby

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The Agreement is signed in three copies; one for each party.

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1 Definition of terms and abbreviations

Common production:	The common process by the parties from pre-processing of observations to verification of the NWP-model output
Steering Group:	The Steering Group is the main governing body of the collaboration
MetCoOp Group:	The MetCoOp Group carries out the daily operational activities and development projects. It has manpower from SMHI, MET Norway and FMI and the work is planned annually
Operations Manager:	The Operations Manager is the head of the MetCoOp Group, manages the MetCoOp operations and is responsible for an appropriate co-operation with the Development Manager. The Operations Manager reports to the Steering Group
Development Manager:	The Development Manager is responsible for the development in MetCoOp and reports to the Operations Manager
NWP:	Numerical Weather Prediction
HPC:	High Performance Computing
EPS:	Ensemble Prediction System

2 Purpose/scope

The NWP production is an essential part of the daily production at SMHI, MET Norway and FMI. The purpose of the agreement is to establish, maintain and develop a joint operational NWP production with a common goal for all parties within their scope of activity. This agreement, with appendices, covers the maintenance and development of the joint NWP production. The agreement rests on the "Hamburg exemption rule" which is also included in art. 12, no. 4 in the revised procurement Directive (2014/24/EU).

The joint NWP production involves significant investments from the organisations and implies long term obligations. The HARMONIE model is the backbone in MetCoOp's operational weather prediction, and the operational setup should be based on its Canonical System Configuration (CSC). MetCoOp is an operational implementation of the model development in the HIRLAM-ALADIN consortium, and together these two represent a value chain from research to operations. In MetCoOp applied research efforts focus on topics that need an extra push in order to become operational. The duration (Sec. 7) of this agreement reflects the long term operational obligations involved.

The primary goal of the collaboration is to provide its participants with a redundant state-of-the-art operational short- and very short-range NWP system. The joint NWP production shall be a driving force in high resolution short- and very short-range forecasting. The different aspects of the co-operation should reflect this goal.

The objectives of the joint production are to provide:
- high quality high-resolution NWP forecasts, for Norway, Sweden, Finland and the adjacent areas.
- a redundant NWP production with enhanced and more secure operational availability for the MetCoOp members
- better forecasts than any other operationally available forecasts for this area

- 99.9% availability and 99.5% timeliness of the forecasts
- efficiency in energy measured by net energy usage of the NWP production system and power usage efficiency (PUE) of the computing facility
- state of the art NWP competence to enable an efficient, transparent and expedient procurement process for the HPC and other relevant HPC services

Achievable model resolution (horizontal and vertical), the number of ensemble members and/or model runs, will depend on both available computer resources as well as technical and scientific development of the HARMONIE CSC. The responsibility for the production is shared between the parties and the parties share the risk involved in the production. The joint NWP production should also facilitate closer collaboration between SMHI, MET Norway and FMI in other areas of common interest, such as pre- and post-processing software, forecast production tools and operational infrastructure in general. MetCoOp is an example of extensive operational NWP cooperation in Europe.

This cooperation shall encompass the areas of work associated with NWP production, and should thus not in itself influence the balance between internal and outsourced or purchased activities.

A common and redundant production will combine the resources, making the NWP production more efficient and secure. Synergies should be found in the implementation of new versions and their extensive testing.

3 Governance of the relationship

3.1 Steering Group

The collaboration shall be governed by a Steering Group. The Steering Group shall meet with the Director Generals when it is deemed necessary, minimum once a year. Terms-of-Reference of Steering group is described in Appendix 1.

3.2 MetCoOp Group

The MetCoOp collaboration is organized in an operational part and a development part, and together they form the MetCoOp Group. The Operations Manager is the head of the operations and the Development Manager is the head of the ongoing development in the collaboration. These positions alternate on a tri-annual basis between the parties. The Operations Manager is the head of the MetCoOp Group and manages the operations and reports to the MetCoOp Steering Group.

The operational part ensures smooth production of NWP with all associated data flows and dependencies in and out. This is a continuous activity with a 24/7 requirement and sufficient redundancy mechanisms. As an activity the operations are open ended in time.

The operational part consists of people from each of the participating institutes, and the Operations Manager shall have the overall authority of the work by these persons. The Operations Manager shall be responsible for the planned activities in the MetCoOp Group, including monitoring the resources. Responsibilities include the daily tasks and any irregular work with the NWP production chain. The responsibilities of the operational part shall have priority for the members of the group and the members shall have access to the systems and

applications of the parties that can be considered necessary for the performance of the responsibilities of the MetCoOp Group. This right to access may be temporarily extended to consultants involved in the project by decision of the Operations Manager.

The development part covers improvements in the model system configuration. Tight collaboration between HIRLAM-ALADIN research and MetCoOp operational environments is important to efficiently transfer new developments and results to operations. The Development part covers improvements in the MetCoOp model system configuration through development projects that focus on aspects of the model system (CSC) which need some extra push to become operational and/or are unique to the geographical domain. MetCoOp provide input and operational experience to the long-term research and development of the CSC, responsibilities of the HIRLAM-ALADIN consortium. Model configuration and infrastructure changes, development projects and the baseline verifications scores are decided by the MetCoOp Steering Group. These decisions may, when appropriate, be delegated to the Operations manager.

ToR for Operation Manager is described in Appendix 2, and ToR for Development Manager in Appendix 3.

3.3 Language

The working language of the collaboration is English.

3.4 Master servant liability

Nothing in this agreement shall be construed or interpreted as if the responsibility or liability for the staff is transferred from one party to the other. The employer shall retain the responsibility and liability for their employees regardless of how the contribution of man hours into this collaboration is arranged.

4 Financial provisions - pricing provisions

4.1 The main cost sharing principle

The contribution is based on man hours, and not in labor cost. The parties shall work to balance the contributions of man hours and to avoid any transfer of money due to any irregularities of contributed hours. The baseline is an equal contribution.The main cost-sharing principle shall be that running costs shall be individually carried, given that they are not substantially disproportionate.

Additional costs decided by the Parties shall be handled by money transfer if necessary.

4.2 HPC investments

Scheduling of the investments in HPC facilities are negotiated and agreed in Appendix 4.

4.3 Currency

Each of the parties will be in charge of their accounting, and the accounts should be held in their own currency. The balance between the accounts shall be settled by end of each year using the currency rates of December 15th from the Swedish Riksbank.

5 Addition of new parties

SMHI, MET Norway and FMI are positive to the addition of new parties to the collaboration. The decision on adding new parties is taken by the Director Generals.

If new parties are added, the agreement will be updated accordingly.

6 Intellectual Property Rights and Data policy

6.1 National models

Any production of a national model will not affect the Intellectual Property Rights (IPR) for these models.

6.2 Data policy for the joint NWP production

Each one of the participants in the cooperation can use the data generated in the common NWP production according to its national policies.

The collaboration on NWP production means that some model output is common to SMHI, MET Norway and FMI, and the organisations will have common ownership and IPR to these products which the parties can exploit independently from each other.

The raw model output is licensed separately under the organisations licenses, meaning no common data policy is required.

6.3 National observations

SMHI, MET Norway and FMI all have obligations related to national observations. These obligations include quality control, archiving and distribution of the data. There will also be a number of national or other observations which are not part of the free international distribution and which may have restriction on their use. Such data or derived products available to any of the institutes and which have a potential to be used in the joint NWP production shall be available to the MetCoOp collaboration on the joint production and development. The parties shall respect the restrictions on those data thus the availability for joint production does not have any implications on the redistribution of the observational data.

6.4 Access to the common model data

It must be ensured that all external parties and the commercial arms of SMHI, MET Norway and FMI get access to the common model data at the same time as third parties in order to secure a level playing field.

7 Duration

This contract shall run indefinite, and cannot be cancelled during the first five-year period.

The five-year period shall not prevent or prolong the ongoing UWC project. Cancellation of the contract must be made in writing giving a two years notice.

8 Duty of confidentiality

Information which is shared between the parties in this collaboration shall be treated according to the information acts for the public sector in the respective country. The national regulations in Norway will apply for MET Norway, the Swedish regulations will apply for SMHI and the Finnish regulation will apply for FMI.

9 Changes to the contents of the agreement

Any changes to this agreement shall be approved in writing by the Director Generals. Preparations of as well as any changes to the appendices shall be prepared by the Operations Manager and shall be approved in writing by the Steering Group.

10 Dispute

10.1 Negotiations

Should a dispute arise between the parties concerning the interpretation or the legal effects of the Agreement, the parties shall first seek to resolve such dispute through negotiations within the Steering Group.

If the negotiations within the Steering Group do not succeed, the Director Generals from each party and shall seek to resolve the dispute.

If such negotiations do not succeed within ten (10) working days, or a different period agreed by the parties, either party may request that the dispute be submitted to a mediator.

10.2 Mediation

The parties shall appoint a mediator, who shall hold such qualifications as the parties believe to be the most appropriate in the light of the Agreement. The parties agree to accept the solution proposed by the mediator. The solution shall thereby be binding for the parties.

The detailed approach for these efforts shall be determined by the mediator, in consultation with the parties.

11 Appendices

	Appendices to the agreement	Version	Date	Revised by
1	ToR Steering Group	1.0	11-Oct-2018	J. Kaurola
2	ToR Operations Manager	1.0	11-Oct-2018	J. Kaurola
3	ToR Development Manager	1.0	11-Oct-2018	J. Kaurola
4	HPC investments and cost sharing	1.0	11-Oct-2018	J. Kaurola

List of files:
1. ToR_MetCoOp_Steering_Group.docx
2. ToR_MetCoOp_Operations_Manager.docx
3. ToR_MetCoOp_Development_Manager.docx
4. HPC_investments.docx

Steering Group, Terms of Reference (ToR)

Members

The Steering Group (SG) consists of two members from each participating NMS. Each organisation appoints their members. At least one of the members from each organisation should be a head of department, reporting to the Director General of the organisation. The chair of the Steering Group shall alternate between the parties. The Steering Group is led by the Party who is not holding the manager position of either the Operations or Development Group. The Director General of the Party that will take on the chairmanship of the Steering Group should nominate a person at least one month before the period of the chairmanship starts.

Tasks

The Steering Group is responsible for:

- Following up the structure for daily management of the collaboration
- Appointing MetCoOp Operations Manager and Development Manager
- Deciding on changes to the common production chain, model configuration(s) and infrastructure, and the baseline verifications scores
- Deciding the development projects and operational activities in a yearly plan, and the corresponding level of annual manpower
- Receiving reports of the work from the Operations and Development Managers
- Handling default matters and any corrective actions, i.e. in breach of contract or when obligations are not fulfilled
- Conducting annual review of the collaboration
- Deciding on appropriate common strategies
- Suggesting appropriate extensions to the contents of the collaboration
- Developing principles for use of the infrastructure for other purposes than common production
- Deciding on investments in infrastructure
- Allocating resources to support procurement process
- Approving all major procurements made in this collaboration

Organization/Governance

The SG reports directly to the Director Generals of the parties

Working arrangements

Decisions of the Steering Group shall be taken by consensus. If consensus cannot be reached the matter is decided by the Director Generals of the parties.

The SG will have physical meetings, videoconferences and written correspondence as needed.

Development Manager, Terms of Reference (ToR)

The Development Manager (DM) is appointed by the MetCoOp Steering Group (SG) for a period of three years. The position is 50 % of a full time position. The DM is authorized by the SG to be the head of the development in the collaboration.

The DM will perform functions including, but not limited to:

- Participate in the daily and weekly running of the MetCoOp group together with the Operations Manager
- Creating and maintaining an annual development plan for the NWP system
- Monitoring progress according to the approved plan
- Monitoring the accuracy of the NWP system through regular verification
- Ensuring the necessary communication internally in the organization is carried out
- Preparing progress reports to the SG on a regular basis
- Interacting and communicating with external partners in the context of NWP development (such as the HIRLAM-ALADIN consortium)
- Preparation of change records and notifications

Reporting

The DM reports directly to the Operations Manager

Financing

Expenses for the DM are financed in-kind by his/hers the host NMS.

Operations Manager, Terms of Reference (ToR)

The Operations Manager (OM) is appointed by the MetCoOp Steering Group (SG) for a period of three years. The position is 50 % of a full time position. The OM is authorized by the SG to conduct the day to day management of the MetCoOp operations. The OM is responsible for overseeing and managing the cost, schedule, performance, requirements and other aspects of the work.

The OM will perform functions including, but not limited to:

- Leading the MetCoOp Group
- Creating and maintaining an annual maintenance and development plan for ICT systems
- Monitoring progress according to the approved plan
- Monitoring operational efficiency of the MetCoOp production system
- Regularly advising the SG on the progress of the collaboration, and apprising the SG of significant issues and problems as they arise
- Preparing progress reports to the SG on a regular basis
- Interacting and communicating with external partners
- Ensuring the necessary communication internally in the organization is carried out
- Ensuring necessary propagation of change notifications to downstream users and partners
- Collecting data and preparation of status concerning economy and number of hours expended

Reporting

The OM reports directly to the SG.

Financing

Expenses for the OM are financed in-kind by his/hers host NMS.

Appendix: HPC investments and cost sharing

HPC contributions

The collaborating parties have agreed to use their combined HPC-resources in this cooperation. The parties have agreed to have a two site solution with one facility in Sweden (Linköping/Norköping) and one facility in Finland (Helsinki) in order to operate their common model and the EPS. MET Norway and SMHI have entered into a partnership contracts with Linköping University, National Supercomputer Centre (NSC) in Linköping.

The parties shall cover all costs related to their respective facility as well as costs for HPC investments. These two operational facilities are the parties' main contributions to the MetCoOp cooperation.

This combined HPC facility will be used for the parties' common NWP runs. The facility in Linköping/Norköping will also be used for MET Norway's and SMHI's national models (including backup) and research. The facility in Helsinki will also be used for FMI's national models and research.

Common cost

Costs that are related to the common interest of the NWP runs and that could not be attributed to either one of the operational facilities separately shall be considered as Common cost. Common costs shall be split between the parties in three equal shares. These costs, if they are defined as Common costs, should preferably be agreed in a yearly budget.

HPC procurement

The procurement of the HPC facilities shall be coordinated and the parties will endeavour to have systems that aims to fulfill the requirements for the common production.

The Parties will produce a common procurement strategy and a project plan with common milestones. Scheduling of the investments in HPC facilities are initiated and negotiated by the MetCoOp Steering Group.