

Memorandum of Understanding III

among the National (Hydro-) Meteorological Services of Central and South Eastern Europe
for the RC LACE
(Regional Cooperation for Limited Area Modelling for Central Europe)
Programme

1. Introduction

The National (Hydro-) Meteorological Services of Austria, Croatia, the Czech Republic, Hungary, Romania, Slovakia and Slovenia, the Members of the RC LACE group, hereafter referred to as “Members”, represented by their directors/general directors:

a) recognizing

- the great importance of the regional co-operation in the field of meso-scale numerical weather modelling in Central and South Eastern Europe,
- the spirit of collaborative projects shared for use in operational forecasting, bringing substantial economic and social benefit to Members,
- the promotion of regional co-operation by World Meteorological Organization, in particular in the field of high impact weather;

b) considering

- the now well established mutual co-operation among Members in the field of mesoscale numerical weather prediction in Central and South Eastern Europe,
- the mutually beneficial continuation of collaboration with Météo France and other ALADIN partners,
- objectives and membership in ALADIN Programme,
- cooperation with the HIRLAM Programme;

c) valuating

- the networking of scientists existing around the NWP applications in Central and South Eastern Europe,
- the top-end technical achievements already dedicated to high-level forecasting products;

d) desiring

- to facilitate research and development activities of RC LACE on the Limited Area Model ALADIN for the Central and South East European region in order to contribute maintaining its quality and associated know-how at world-top level,
- to technically cooperate for reaching a good level of operational applications of ALADIN at Members’ services;

Have reached the following understanding:

2. Objectives

- To continue participating to a common NWP endeavour of all Members with the basic aim to acquire and consolidate a long-term oriented “NWP culture” starting from data monitoring and/or treatment up to response through modelling efforts to forecasters’ critics and/or requirements.

- To guarantee a quality and reliability of outputs superior to that of the coupling model and similar on average (but better on specific points of interest) to that of other LAM systems inside the EUMETNET/SRNWP network.
- To perform research and development mainly around the problems of their operational applications, with the aim to continuously improve the quality of products, measured by appropriate statistical scores as well as by the capacity to forecast severe weather events.
- To continue giving high priority to specifically NWP-oriented training, either in multi-national programmes, or in bilateral actions or through the Members' involvement in fostering specific training actions for the whole RC LACE community.
- To contribute to advanced research efforts in coordination with other ALADIN and HIRLAM Partners.
- To enhance cooperation with research institutions and universities and participate in associated interdisciplinary applications.
- To participate to the maintenance of the ALADIN software and tools.
- To progress towards assimilation of specific meso-scale data at high resolution.
- To actively participate in relevant EUMETNET Programmes.
- To establish and follow procedures of exchanging as much as feasible observational data useful for the purpose of meso-scale data assimilation, verification, very short range prediction, nowcasting, and high impact weather warnings.
- To work in common on any technical project with intention to diminish the costs involved in reaching the above-stated objectives.

3. Council

- RC LACE Council consists of the Directors of each Member. Council is the overall authority of RC LACE. Council is chaired by its President, assisted by Vice President, elected among the Directors, for the period of two years, with one possible re-election. The terms of references for President and Vice President are appended (Annex 1).
- Council shall meet in ordinary session twice a year. It may meet in extraordinary session at the request of either the President or 1/3 of the Members.
- Council determines the policy of RC LACE, approves its budget, supervises the execution of the programme. Council takes decisions on the strategic goals of the programme based on documents and reports of the executive and advisory bodies of RC LACE and independent reviewers.
- Council considers for approval any important document of RC LACE, like Strategy, Scientific Plan, progress reports, RC LACE Steering Committee (LSC) reports, Account of Incomes & Expenses Reports and Contracts.
- Council could demand the actions and advises from LSC and Management Group (MG) on matters of interest.
- Council takes the decisions on the MG appointments.
- Council determines RC LACE membership issue and the relation with international projects and organisations.

- Council decisions shall be taken by consensus of all Members on any budgetary issue and on any possible amendment to the present Memorandum of Understanding. Council decisions on other matters shall be taken by a simple majority of all Members. A vote by correspondence, requiring a simple majority of all Members, may be used to take decisions on minor issues.
- A representative of Météo-France, Programme Manager (PM), Chairperson of LSC and other experts invited by President of Council may participate at Council meetings but have no voting right.

4. Management Group

Management Group is the executive body of RC LACE and comprises Programme Manager (PM), ALADIN-LACE System Coordinator (ASC), Data Manager (DM) and Area Leaders for at least data assimilation, dynamics, physics and predictability. Programme Manager is the chief executive officer of RC LACE. The Terms of References of the Management Group members are appended (Annex 2). The Management Group is appointed by Council for three years with the possibility of two-year prolongation of the appointment.

5. Steering Committee

RC LACE Steering Committee (LSC) is the advisory body of RC LACE and it consists of a representative from each Member and a representative from Météo-France (without a right to vote). One representative of the other ALADIN partners and HIRLAM are also taking part in the LSC meetings as observer. The LSC representatives are delegated by Members. The LSC members should not be at the same time Management Group member. The LSC Chairperson is elected within the LSC members by a simple majority and for a period of two years with one possible re-election. LSC shall evaluate all suggestions and ideas related to NWP issues and it shall meet twice a year, at least one month before the Council meeting. The Management Group should participate at the LSC meetings (without a right to vote). LSC shall report to Council. The Terms of References of LSC are appended (Annex 3).

6. Organization of work

RC LACE common work and actions are dedicated to the research and development, implementation and operational deliverable actions. Members contribute to the common work by sharing knowledge, experience, technical resources and manpower.

The common research and development activities shall be topic oriented. The topics shall in greatest possible extent follow the ALADIN scientific programme and they shall fall into main areas, at least: dynamics & coupling, physics & surface, data assimilation and EPS & predictability.

The work is realized in a “top-down” manner:

- Following the Strategy, RC LACE objectives are defined and executed via Scientific plans. Projects are the primary means to reach the objectives defined in the Strategy and Scientific plans.

- Scientific plan defines the Projects, R&D actions and support activities for a two-year period. Scientific plan is adjusted to ALADIN and HIRLAM common plans and actions. Scientific plan considers the achievements and tools developed by ALADIN and HIRLAM Partners and ensure the activities for the implementation at RC LACE environment. Modifications to the Scientific Plan can be made by the request of the LSC Members and ALADIN Partners.
- The Projects focus the research and development efforts, which are on the one hand delivering operational applications, and on the other hand initiating new important research and development activities. The Projects are proposed and led by Area Leaders, and monitored and evaluated by LSC.
- The description of the Projects contains at least the following most important information: leader, duration, main objectives; the deliverables; the necessary tasks (work) to achieve the objectives; the necessary resources (computer, manpower etc.) to obtain the deliverables; the split of tasks between the Members; the commitments from the concerned LACE members.
- Each Project is accepted by the Council at which time the national commitments are clearly stated and formally approved. Each Project is voluntarily attributed to one Member, thus becoming a Project Responsible Centre for the Project by providing the basic environment necessary for completing the Project.
- There are also Projects (cross-cutting issues) where more Area Leaders are concerned and the activities between these Projects are strongly coordinated by the Management group, especially by the Programme Manager.
- Beside the work on Projects, other research and development activities with longer-term goals, given by the strategic plan are performed. These activities are under the direct control of the Area Leaders.
- The list of the Projects is defined according to the RC LACE priorities proposed by Members and Management Group and evaluated by LSC.
- Scientific plan is fulfilled by NWP teams and Management Group, either locally and/or in the form of research stays.
- Management Group is responsible for the execution of Scientific plan, by leading and coordinating the Projects, and their deliverables. Management Group supervises the common operational, technical and scientific work and provides the solutions for the ongoing actions.
- Management Group monitors the progress of the Projects with the emphasis on the product deliverables for all Members.
- Management Group assists Project Responsible Centre and provides the working plan for the staff resources allocated to the Project. Management Group coordinates the need for the working power and ensures resources for the mobility of manpower.
- Management Group proposes the plan of research stays, which might be individual or they may be organised as so-called research group stays, when participants meet at a common place and work jointly on the Project. The Project tasks and R&D actions shall be opened to anyone within ALADIN Partners, SRNWP partners, research institutions and universities.
- The financing of the stays shall be coordinated by Programme Manager according to the approved proposals. Upon the payment documents issued by Programme Manager, the final approval of these payments shall be made by President of the Council.
- Project Responsible Centre ensures the committed working power and technical environment for the execution of tasks planned in the Project, during the Project duration.
- Management Group can ask Project Responsible Centre for the status-report of the NWP environment and working power dedicated to Project.

- Project Responsible Centre takes all possible measures to ensure the use of the most recent version of the ALADIN library. In this activity Members shall be partly assisted by ALADIN-LACE System Coordinator and Programme Manager.
- Execution of the Scientific plan is reported by MG and evaluated by LSC twice a year. Overall status on the progress of RC LACE shall be reported to the Council by LS C also twice a year.
- Reports and documents are available on RC LACE web pages.
- Deliverables are shared in the most efficient manner via secured media, taking into account the proprietary rights of the Members and ALADIN partners.

7. Budget

- The following regular costs shall be shared among Members:
 - a) Travel cost for research stays and research group stays.
 - b) Travel cost for common trainings and actions.
 - c) Salary supplement or prime of Programme Manager.
 - d) Salary supplement or prime of Area Leaders.
 - e) Salary supplement or prime of ALADIN/LACE System Coordinator and Data Manager.
 - f) Meetings and Travel cost for LSC Chairperson.
 - g) Meetings and travel cost of the Management Group, including ASC phasing stays at Météo-France.
 - h) Financial obligations to ALADIN Programme, defined by ALADIN MoU.
 - i) Miscellaneous costs as agreed by the Council.
- Other common RC LACE actions could be financed upon the Council decision.
- The annual contributions of Members shall be paid to the “RC LACE Budget account” established at ZAMG. The contributions shall be paid according to the arrangement approved by the Council. The used currency shall be Euro.
- The Budget shall be drawn by Programme Manager every year, considered by LSC and approved by the Council. The scale of Members’ contributions shall be based on the official Gross National Income (GNI) figures, where no Member shall contribute by more than 50% share to the Budget. The initial scale of contributions is appended (Annex 4) and it shall be updated every three years.
- The Account of Incomes & Expenses Report shall be presented to Council by Programme Manager at each Council meeting.

8. Commitments of Members

- The Members financially contribute to RC LACE based upon the financial rules and scale of contributions approved annually by RC LACE Council.
- The Members take part at the Council and LSC and provide manpower to Management Group.
- The Members contribute in manpower and technical resources to the scientific, development, technical and administrative activities of RC LACE based upon the decisions made by the Council.
- Based on the RC LACE Scientific plan the Members contribute to the Projects.

- The Members host the Projects through the frame of Project Responsible Centre for common RC LACE deliverables. The Members will contribute to the Project Responsible Centre with manpower and technical resources..
- The Members ensure the technical and administrative help for RC LACE staff and actions with the aim to harmonise the quality of the applications "from the top". This requires in particular good updating of the ALADIN versions, common verification applications and exchange of local data whenever necessary.

9. Entry into force, duration and amendments

The RC LACE MoU-III will take effect upon signature of all the Members on January the 1st 2008 and be of five year duration, ending on December the 31st 2012. The MoU duration can be extended by the decision of the Council taking into account the constraints by the ALADIN MoU. Amendments will take the effect following the decision of the Council.

10. Adhesion/Denunciation

Any intention from an additional NM(H)S to join RC LACE shall be considered by the Council on case-by-case basis and in conformity with ALADIN MoU. Similarly, any intention of a Member to withdraw from RC LACE shall be considered by the Council.

RC LACE programme may at any time be terminated by the Council decision with at least two years notice.

Signatures

Director of ZAMG, Austria

.....
Dr. Fritz Neuwirth

Director of DHMZ, Croatia

.....
Mr Ivan Čačić

Director of ČHMÚ, Czech Republic

.....
Dr. Ivan Obrušník

President of OMSZ, Hungary

.....
Dr. Zoltan Dunkel

General Director of Administratia
Nationala de Meteorologie, Romania

.....
Dr. Ion Sandu

Director General of SHMÚ, Slovak Republic

.....
Ing. Ján Kucharčík

Director of Meteorological Office,
ARSO, Slovenia

.....
Dr Klemen Bergant

Signed on
9 November 2007 in Ljubljana.

Annex 1: Terms of References of RC LACE President and Vice President

RC LACE President and Vice President are elected among the members of the Council.

The duties of President are:

- Chairing the Council session.
- Organizing the Council session together with PM and local host.
- Representing the Members and taking all correspondence with international organizations and NM(H)S.
- Representing RC LACE at any written document like contracts and invoices.
- Monitoring the work of Programme Manager.
- Ensuring the contacts between Council and RC LACE executive and advisory bodies.

RC LACE Vice President deputizes RC LACE President in case of necessity.

Annex 2: Terms of References of the Management Group

ToR of Programme Manager:

Programme Manager (PM) is a full-time position. PM acts under the responsibility of the Council. In the period between the Council sessions PM acts under the responsibility of the Council President. PM is the head of the Management Group. The duties of PM are:

- PM is responsible to the Council for the execution of the RC LACE Programme.
- PM is responsible for the preparation of Scientific Plan in harmonisation with the Management Group based on the advices from LSC.
- PM is responsible to coordinate the work plans and actions of RC LACE Management Group.
- PM is responsible to coordinate the implementation of the Project deliverables at Member services.
- PM is responsible for resource planning and coordination together with the Management Group.
- PM is responsible to organise individual and /or research group stays together with the Management Group.
- PM is coordinating Projects that are not related to a single area and not coordinated by a single Area leader.
- PM is responsible for the elaboration of solutions for existing problems.
- PM contributes to the preparation of longer term scientific and/or technical strategies of the RC LACE Programme.
- PM organises the sessions of the Council and will provide reports to the Council about the RC LACE programme execution.
- PM prepares the Annual Budget and will survey contributions and expenses.
- PM seeks for additional funding with special emphasis on the EU funds.
- PM is responsible for running the administration of the RC LACE Programme.
- PM is the contact point in the relations between RC LACE and the Numerical Weather Prediction Partners.
- PM is responsible for representing the RC LACE programme at Numerical Weather Prediction meetings or will deputise this responsibility among other Management Group members.

ToR of Area Leader

RC LACE Area Leader (AL) is a three-quarter-time position. AL acts under the responsibility of Programme Manager. The duties of the Area Leader are:

- AL is responsible for the preparation of the Scientific Plan together with the Programme Manager.
- AL proposes Projects and defines scientific, technical and organizational background for the Projects.
- AL can be responsible for one or several Projects at the same time.
- AL is responsible for coordinating the scientific work belonging to his/her area of research, for supervising RC LACE scientists working on associated topics and for performing a scientific watch on relevant issues, all this in order to accomplish the Scientific Plan and contribute to steer its evolution.
- AL has the responsibility of presenting progress reports on these tasks to RC LACE Steering Committee.
- AL leads Projects and coordinates a dedicated manpower and other means necessary for the fulfilment of the Projects.
- AL is responsible for the execution of the Projects and delivering the results.
- AL designs, organizes and leads other research activities, which are not organised in a Project form.
- AL is responsible to organise the individual and/or research group stays in co-operation with the Programme Manager.
- AL is responsible for the applicability of the R & D results in ALADIN. In coordination with ALADIN-LACE System Coordinator the AL will be responsible for implementation of the relevant developments to the ALADIN library.
- AL participates in inter-consortia coordination activities

ToR of ALADIN-LACE System Coordinator

ALADIN System Coordinator (ASC) is a half time position. ASC acts under the responsibility of Programme Manager. The duties of the ASC are:

- ASC is responsible to phase the agreed part of the developed code to the reference ALADIN library. To ensure effectiveness of the phasing ASC should stay at CNRM/Météo-France close to and with some overlap with the main phasing period. The length of these stays should be harmonized with Météo-France and they should not take more than 3 months per year.
- ASC is responsible to collect the validated code developments done by the scientists under organization of RC LACE and verify that the coding standards of IFS/ARPEGE/ALADIN are respected.
- ASC is responsible to advise other members about structural changes in the code of higher cycles of the library.
- ASC is responsible to provide support during porting of new developments for each Member in a balanced way controlled by Programme Manager.
- ASC may visit some LACE centres regarding the phasing issues under the Programme Manager supervision. The ASC travel expenses at such short missions would be paid by host institutes, under the common rules.
- ASC is entitled to refuse the phasing to the principal ALADIN library of such pieces of the code which are too far from the coding standards or developed on too obsolete library cycles. ASC should advise the developer of the code how to proceed in such a case.
- ASC is responsible to maintain the WWW page of LACE.

ToR of Data Manager

RC LACE Data Manager (DM) is a half time position. DM acts under the responsibility of Programme Manager. The duties of the DM are:

- DM is responsible for common planning and technical work with data covered by the Data Assimilation actions and projects.
- DM is responsible for the verification issues within the RC LACE Programme.
- DM duties are adjusted to research achievements and needs in Data Assimilation.
- DM leads the activities related to the organisation of observational databases.
- DM assists in installation of data assimilation suites at the members.
- DM ensures the technical background of the observational data exchange.

Annex 3: Terms of References of RC LACE Steering Committee

ToR of RC LACE Steering Committee:

The responsibilities RC LACE Steering Committee (LSC) are as follows:

- Evaluation of all the aspects of Programme activities.
- Propose Strategy and present it to the Council for approval.
- Evaluate Scientific plan and advise Management Group in planning process.
- Evaluate Project proposals according to the Strategy and priorities of the Members.
- Evaluate the progress of Projects and possibly advise the modification or termination of Project.
- Evaluation of voluntary contributions through local R&D activities.
- To prepare report about quality of the RC LACE Programme that is presented by LSC Chairman during the Council session.
- To verify the execution of commitments to the ALADIN Programme.
- LSC shall meet twice per year and act as the main forum that would evaluate all suggestions and ideas related to the NWP issues of the RC LACE Programme.
- LSC may invite some experts out of RC LACE and ALADIN community to LSC meetings in order to present NWP related achievements.
- LSC is coordinating common scientific actions with the HIRLAM programme.

ToR of RC LACE Steering Committee Chairman:

The responsibilities of RC LACE Steering Committee (LSC) Chairman are as follows:

- To organise and chair the LSC sessions.
- In periods between LSC sessions to follow the work of the Management Group.
- In periods between LSC sessions to distribute and coordinate the expertise work of LSC members.
- To report the quality and progress of the RC LACE Programme to Council.

Annex 4: Table of Scales of Budget Contributions

Scales of Contributions (figures based on 2003,2004,2005 GNI averages);

source: World Bank: Development Indicators database

Member	Scale (%)
Austria	43,69
Croatia	5,10
Czech Republic	15,57
Hungary	14,10
Romania	10,83
Slovakia	5,83
Slovenia	4,88
Total	100,00

List of Acronyms

ALADIN	Air Limitée Adaptation Dynamique développement International (limited area model developed within the international co-operation)
AL	Area Leader
ALARO	ALADIN-AROME intermediate configuration (sub-programme of the ALADIN Consortium)
AROME	Applications of Research to Operations at Mesoscale
ARPEGE	Action Recherche Petite Echelle Grande Echelle (global model with variable resolution mesh used in Météo-France and developed in collaboration with European Centre for Medium range Weather Forecasts as a part of the Integrated Forecasting System)
ASC	ALADIN-LACE System Coordinator
CNRM	Centre National de Recherches Météorologiques
DM	Data Manager
ECMWF	European Centre for Medium range Weather Forecasts
EUMETNET	EUropean METeorological NETwork
GNI	Gross National Income
HIRLAM	High Resolution Limited Area Model
IFS	Integrated Forecasting System (global model used in European Centre for Medium Range Weather Forecast)
LACE	Limited Area modelling for Central Europe
LAM	Limited Area Model
LBC	Lateral Boundary Conditions
LSC	LACE Steering Committee
MoU	Memorandum of Understanding
NM(H)S	National Meteorological and Hydrological Service
NWP	Numerical Weather Prediction
OECD	Organization for Economical Co-operation and Development
PM	Programme Manager
R&D	Research and Development
RC LACE	Regional Co-operation for Limited Area modelling in Central Europe
SRNWP	Short Range Numerical Weather Prediction (co-operation network within EUMETNET)
ToR	Terms of References
ZAMG	Zentralanstalt für Meteorologie und Geodynamik