



**Draft Minutes**  
**2<sup>nd</sup> Joint HAC-PAC**  
**meeting**  
**Monday May 19, 2014**  
**Lisbon, Portugal**



HAC Participants : Jan BARKMEIJER (NL rep.), Claude FISCHER (FR rep.), Bent HANSEN SASS (DK rep.), Sylvain JOFFRE (HAC Chair and FI rep.), Heiner KORNICH (SE rep.), Jorn KRISTIANSEN (NO rep.), Ray McGRATH (IE rep.), Jeanette ONVLEE (HIRLAM PM), Bartolome ORFILA (ES rep.), Erland KÄLLÉN (ECWMF observer)

PAC Participants : Philippe BOUGEAULT (MF rep.), Radmila BROZKOVA (LACE rep.), Fatih BUYUKASABBASI (PAC Vice-Chair), Claude FISCHER (CSSI Chair), Daniel GELLENS (non-LACE non-MF rep.), Alain JOLY (MF rep.), Maria MONTEIRO (non-MF non-LACE rep.), Vladimir PASTIRCAK (LACE rep.), Patricia POTTIER (Secretary), Michael STAUDINGER (PAC Chair), Piet TERMONIA (ALADIN PM), Yong WANG (LACE PM)

Excused : Theodor F. HERVARSSON (HAC IS rep.), Adonas MAZEIKIS (HAC LT rep.), Andres LUHAMAA (EE rep.)

## **1. Opening and welcome**

The Director of the IPMA (Instituto Português do Mar e da Atmosfera i.e. Portuguese NMS) welcomes the participants to the 2<sup>nd</sup> HAC/PAC meeting. He underlines the importance of the ALADIN/HIRLAM cooperation and stresses the example of the common efforts of the AEMET (Spanish NMS, HIRLAM member) and the IPMA (ALADIN member) in their aim to develop homogeneous products across the Iberian peninsula.

As an alternate chairmanship of the joint HAC-PAC meetings was decided last year, PAC Chairperson opens this meeting and asks Patricia to take the secretariat of the meeting.

## **2. The following agenda is proposed and adopted :**

1. Opening and welcome
2. Adoption of agenda
3. Review of past meetings
  - outcomes of the ALADIN GA
  - outcomes of the HIRLAM HAC and Council
  - outcomes of the LACE Council
4. Presentations
  - HIRLAM
  - ALADIN
  - LACE
5. Round table discussion
6. Scalability project; workshop at ECMWF
7. A.O.B.
8. Date and place of the next meeting
- 9 Closing

### **3. Review of the past meetings**

- **outcomes of the ALADIN General Assembly**

Piet takes the floor and reports on the support from the ALADIN General Assembly (GA) to go towards a common governance, but not for the next MoUs. During its last meeting (November 2013), the GA also agreed on common meetings (HAC-PAC, HIRLAM Council-ALADIN GA) and encouraged to focus on actions that would bring convergence on system-maintenance to fruition. A Task Force was proposed (ALADIN, LACE and HIRLAM PMs, chairmen of the HAC, PAC and CSSI) to set clear directives for achieving a greater convergence in the renewal of the ALADIN and HIRLAM MoUs: it should identify which points should be addressed in the common parts, in the aim to write MoUs that optimize the collaboration while preparing a vision for a future merge.

The Task Force met in Brussels in February and proposed 3 aspects that should be dealt with in as common a manner as possible : data policy, design, maintenance and evolution of the code, quality assurance.

- **outcomes of the HIRLAM HAC and Council**

Jeanette takes over for HIRLAM and adds that the HIRLAM Council (HC) shares the same opinion as the GA (to go ahead towards a future merge and to regularly meet but to keep two separate governances for the next MoUs) and approves the creation of the proposed Task Force for the renewal of the ALADIN and HIRLAM MoUs.

- **outcomes of the LACE Council**

Yong comments that the LACE Council shares similar opinion and has expressed concerns, above all about the code maintenance and the manageability of a consortium with 26 members.

### **4. Presentations**

- **HIRLAM**

Jeanette presents the basic goal of the HIRLAM consortium: to provide, under the responsibility of the Management Group, a Reference System (RS) based on the latest full release of a HARMONIE cycle (RCR for Regular Cycle of Reference, currently cy38h1); the RS is jointly validated and run operationally by, at least, one member (currently DMI and MetCoOp).

Jeanette explains the general process of HARMONIE cycling: each HARMONIE cycle is based on a T-cycle from Toulouse; new elements are added to it and a HARMONIE H-cycle (local developments, data assimilation and use of observations, ..) is created; an alpha-release is set up and technically validated by the system group; after meteorological validation on all domains and testing of new options/model configurations, the beta-release is declared; a call for RCR centre(s) is launched; after testing by RCR centre(s) members, the cycle is finally released.

Operational cooperation is also in the scope of HIRLAM : GLAMEPS production; observation handling (in a different way from LACE that cooperates on their central infrastructure) with exchanges of expertise and tools in order to allow all members to use as many as possible relevant high-resolution observations with their own infrastructure; benchmarking and performance.

Though with admittedly limited manpower, HIRLAM also cooperates with downstream communities, such as regional climate modelling and atmospheric chemistry. The cooperation with

the SURFEX community (in a domain – surface modelling - where HIRLAM has little expertise) is working very well despite the longer issue on the future code performance as SURFEX evolves).

A common concern, that should be an area of common action, is about the model performance, the scalability and the transparency of the IFS/AAAH code. Number of actions are on-going. OOPS/COPE should solve some of these issues for the data assimilation part. In the forecast model, the new physics-dynamics interface could be an opportunity to clean up the steering routines. Main concern is the very few code experts available and thus, the necessity to use them carefully in the ALADIN/HIRLAM common plans.

Jeanette reports on the 4 main actions identified during the Brussels meeting of the MoUs renewal Task Force :

- to clarify the scope of the collaboration (to explicitly mention the topics of common ambition or under common responsibility) and what remains consortium-specific;
- to write down common formulations on aspects of data policy, code design, maintenance and evolution, quality assurance;
- to consider “guardian” role of code architects for the long-term evolution of the code framework;
- to align the strategic visions (to start with exchange of views in common GA/Council meeting in Dec 2014).

## • **ALADIN**

Piet reminds a few fundamental facts about ALADIN: Météo-France (MF) plays a very central role among the 16 ALADIN countries; the common Cycles (new code releases) with ECMWF, i.e. CY40, serve as basis to those common between MF and LAM partners (so called Toulouse cycles, i.e. CY40T1); every now and then (less frequent than for HIRLAM RS), Toulouse Cycles are selected to make Export versions that will be ported, installed, validated and possibly locally improved by developments (not yet in the common package) in the 15 countries outside MF. Three “bodies” are involved (no dedicated manpower funded by ALADIN) :

- The Committee for Scientific/System maintenance Issues (CSSI),
- IFS/ARPEGE coordination meeting (where ALADIN and HIRLAM are active as observers),
- ALADIN Coordination and Networking Activities (ACNA) and the Local Team Managers (LTMs).

In the ALADIN MoU, the ALADIN System is defined as the set of pre-processing, data assimilation, model and post-processing/verification software codes. These tools are shared by all Members and are available to each Member and acceding Member for producing and using the best possible operational mesoscale forecasts based on a configuration compatible with its available resources.

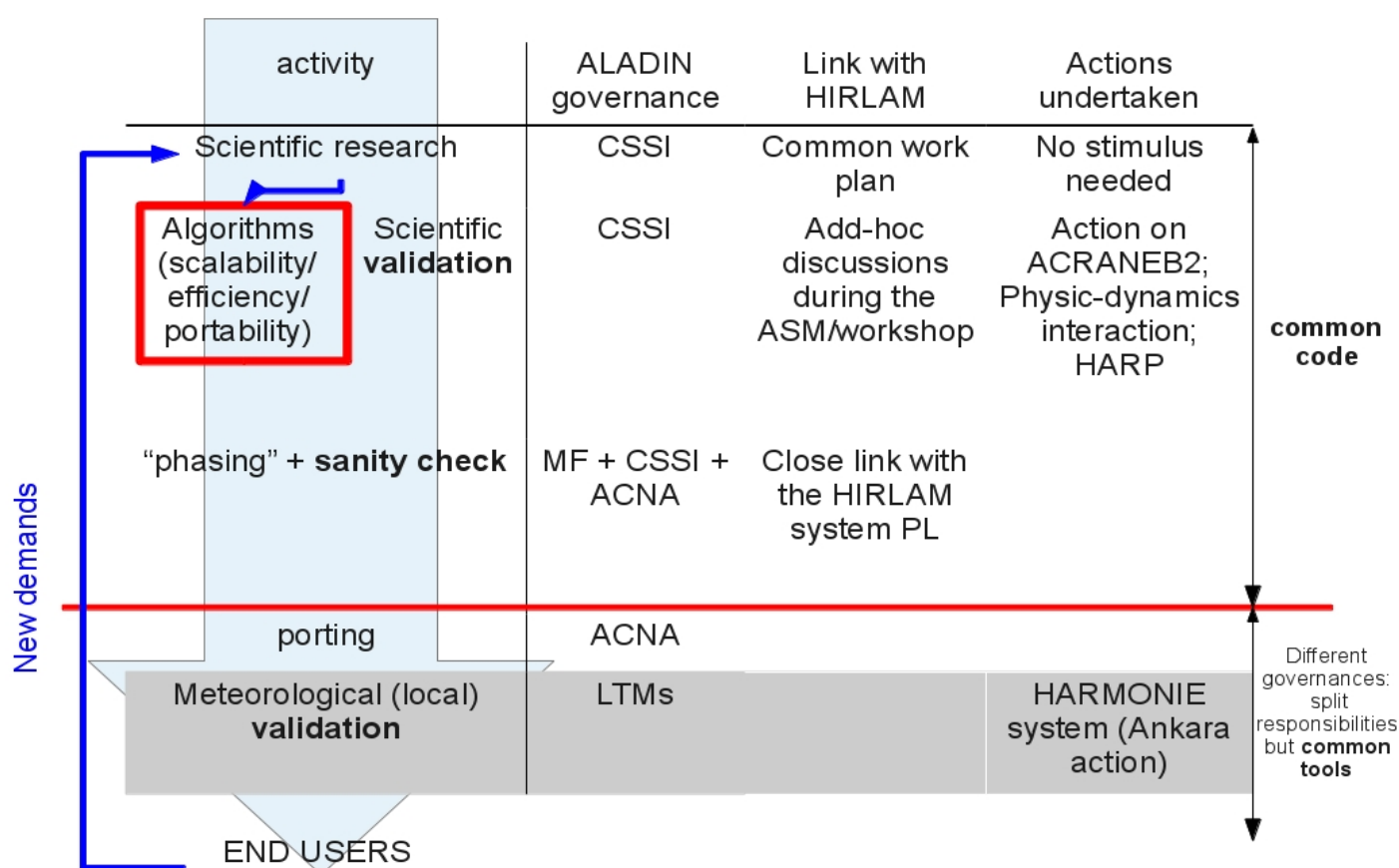
The Programme Manager shall supervise the definition and the evolution of the ALADIN System, with respect to the agreed plans and the collaboration activities (IFS/ARPEGE, HIRLAM, any further collaboration possibly undertaken by the Programme).

LACE MoU defines Area Leaders (equivalent to the HIRLAM Project Leaders) who are responsible for the applicability of the R & D results in ALADIN and, together with the ALADIN-LACE System Coordinator (ASC), are responsible for the implementation of the relevant developments to the ALADIN code library.

Piet presents a rough synthesis of how the ALADIN consortium goes from science to applications, underlining the similarities, the differences and the complementarities with HIRLAM practices and the actions already taken for a better common work. This synthesis (see the graphic below) could structure the future MoUs:

- With a special attention to be paid to scalability, efficiency and portability, the different scientific contributions are transferred into algorithms and scientifically validated (at CSSI level). Phasing, sanity checks and first scores of several model configurations and data assimilation (presently based on AROME-France and one MF/ALADIN overseas model) are done at MF, with the support of ALADIN phasers, CSSI and ACNA. Eventually, in a second step, each country does the local meteorological validation of the export version locally ported.
- The red line in the graphic materialises the limit between what is of common responsibility (above the red line: transversal work on the common code) and what is specific to each consortia or to each country (management of closer operational systems and their quality assurance).
- Algorithms is the crucial part, where we should invest more now to better incorporate the future contributions. It should be precisely defined in the next MoUs.

### *From science to operations summarized on 1 sheet*



Different tools exist for validation: APMT (ALADIN Performance Monitoring Tool), HARP (HIRLAM ALADIN R Package, for science), the HARMONIE system (validation of the cycles, platform to inter-compare). Common work on a common platform may enhance the cooperation on validation, even if the responsibilities are different.

Data handling would remain outside the common part. The OPLACE system (explained in more detail by Yong later) of LACE demonstrates that a sub group is capable of organizing the data handling embedded in a code collaboration.

The IFS/Arpège/Aladin/Alaro/Arome code ranges from global to convection permitting scale and is used more widely than just for Numerical Weather Prediction (reanalysis, climate). Having many scientists contributing to the common code increases its complexity; scalability, efficiency and portability must be taken into account when implementing the outcomes of the work plans in the code. The methodology (stepwise approach, follow-up meetings with web-conferences, meeting in Toulouse, care of cycles, ...) proved to work on recent examples (KNMI developments on turbulence, radiation scheme used in ALADIN/ALARO, ..) but we do need code architects, with a recognised responsibility and dedicated time to coordinate scientific efforts with the view to achieve a sound code design and an optimal implementation.

Piet proposes the above diagram to be the base of the redaction of the next MoUs.

Ben asks whether the code architect position would be funded by the consortia. Piet confirms, as the code architect would play a critical role between science and system. Jeanette adds that the code architect should be someone with long-term knowledge and perspective.

- **LACE**

Yong presents RC-LACE (Regional Cooperation for Limited Area Modelling in Central Europe) consortium, in complement to what Piet has previously said for all ALADIN: a Central European collaborative programme that pursues extensive scientific and technical collaboration in the field of very high resolution operational NWP for weather research, forecast and application. LACE is an independent consortium with its own structure (Council, Steering Committee, Program management program manager and Area Leaders) and its own budget (167k€ in 2014, with contributions based on GNP) but all members are in ALADIN.

Besides the scientific work, strongly done with other ALADIN colleagues, LACE has common operations : OPLACE (common Observation Pre-processing for LACE DA and Verification) and ALADIN-LAEF (Central European Limited-Area Ensemble Forecasting system, in cooperation with Turkey).

Concerning the ALADIN/HIRLAM merge, LACE Council prefers a stepwise approach and insists on the natural and urgent need for a convergence on system/maintenance; then, a number of actions could be envisaged which would enhance effective understanding and exchange on strategic issues and best practices between the consortia at the governance level, and which would make easier any future governance. Everyone should gain benefits from the merge.

## **5. Round table discussion**

After the presentations by PMs and a round table discussion, some statements and proposals are generally accepted :

- The present good scientific cooperation and the fact that we use the same code make cooperation on code maintenance and code design the natural next step for a broader cooperation.
- The size of a consortium gathering all ALADIN and HIRLAM NMSs (26) is an obstacle that could be overcome with a two-stage governance: a super-consortium of 26 members and,

downstream, sub-consortia whose role will be to organise, on top of the code collaboration, data exchange, operations on common code and quality assurance at their level.

- The exchange between the two levels should be organised and their scope defined: common or separate work with other communities (i.e. chemistry, climate, ...), external sources of code, convection-permitting EPS, ...
- In 6 years, a general agreement (common MoU) concerning code cooperation should be signed. Meanwhile, and this will be part of the next – still separate - MoUs, we will take steps towards a wider cooperation on maintenance and management of the code.
- ECMWF plays an important role in the code evolution: the code cooperation between ECMWF and ALADIN or HIRLAM will remain organised via the MF/ECMWF cooperation (ARPEGE/IFS).
- The code architect(s) is(are) proposed as the cornerstone of the code cooperation under the supervision of the MG and the CSSI (whose ToR should be reformulated in the MoUs).

The document prepared by Piet and Jeanette (see annex 1) and the above graphic (point 4. Aladin) are considered as a very good basis for the convergence roadmap.

Piet and Jeanette are asked to better describe the code architect(s) position : functions, manpower, relations with MF/ALADIN/HIRLAM/LACE, funding mechanism. They should also propose the necessary adaptations to the MoUs in order to introduce the agreed vision and implement the above proposals.

Yong points out the difference on data policy between HIRLAM and LACE, an extremely essential and critical issue for the ALADIN-HIRLAM merge.

Indeed, depending on national laws, some countries have a very open data policy, whereas other NMSs must make money from the data they sale. The current MoUs have only rules for commercial uses (not for free dissemination) of the products and only refer to data that are submitted to the INSPIRE directive. The borders between data and products, and between commercial use and free dissemination are not always similarly considered (i.e. products given for free on the internet but money made from the publicity on the website). INSPIRE is implemented by the various nations in different ways. ECOMET could provide a framework but not all ALADIN/HIRLAM countries are part of ECOMET.

Michael insists on the need to find a solution that looks ahead: Daniel proposes, according to what has been decided in EUMETNET, that, at least, all new products should be developed with a data policy.

The GA and the HC set up a Task Force to deal with the problem of data policy. The HAC-PAC asks the task force to continue to seek an acceptable compromise and look for possible options for a common position: the solution should be acceptable for every ALADIN/HIRLAM NMSs. It should take into consideration the importance of national legislation, the relation with existing data policy rules and the past and present collaborative code developments that yield the generation of NWP data. Informal talks with partners who have very open data policy should be held before the next GA-HC.

## **6. Scalability project; workshop at ECMWF**

A two-day Workshop on Scalability was held at ECMWF on 14-15 April 2014. A proposal to Horizon 2020 (the new EU funding programme for research and innovation running from 2014 to 2020) was considered, as a good opportunity to get some external funding to coordinate the work on code evolution in the context of new HPC architectures. Some possible partners were identified, not

only in the IFS/AAAH community but also within the climate community and the vendors. ECMWF plays a leading role in the preparation of the proposal to H2020.

**7. A.O.B.**

None.

**8. Date and place of the next meeting**

The 3rd joint HAC-PAC meeting will take place in Helsinki on 21 May 2015 in the afternoon.

**9. PAC Chairperson thanks the participants and closes the meeting at 17:00**





## **Annex 1 : Follow-up meeting on ALADIN-HIRLAM convergence, by P.Termonia & J.Onvlee**

Participants: S. Joffre (chair HAC), C. Fischer (chair CSSI), P. Termonia (PM/ALADIN), J. Onvlee (PM/HIRLAM)  
Excused: Y. Wang (PM/LACE)

In November 2012, the ALADIN General Assembly requested to investigate the options for a further (organizational) convergence or merger of the ALADIN and HIRLAM consortia. This was supported also by the HIRLAM Council. A task force was identified to carry out this investigation. The resulting report was discussed in the first common HAC/PAC meeting in May 2013, and subsequently in the HIRLAM Council, LACE Council and ALADIN GA. The general agreement in all these steering bodies was to move towards a common governance, but not yet for the next MoU's. To strengthen convergence at the organizational level, it was agreed to have common HAC/PAC and Assembly/Council meetings. Several actions were identified to have a stronger convergence on system/code design and maintenance, data policy, and quality assurance aspects. Concerns were raised in all three consortia on the efficiency and manageability of a "superconsortium" of 26 members. Nevertheless, several members of both the ALADIN GA and the HIRLAM Council advocated the necessity of the merge of the consortia on the long term, and the importance of sharing a long-term vision with similar objectives and more efficacious means to achieve them.

In November 2013, the ALADIN GA asked the Task Force to set clear directives for achieving a greater convergence in the renewal of the MoU's of ALADIN and HIRLAM, considering still two separate MoU's. The Task Force should identify which points should be addressed ...

In January 2014, the Task Force met in Brussels to assess the outcomes of the HAC/PAC and Assembly/Council meetings, and to address the request made by the ALADIN GA, in particular to:  
analyze the scopes of the ALADIN, HIRLAM and LACE MoU's  
articulate the different focuses on strategic goals and approaches of the three consortia  
and identify ways in which the collaboration between HIRLAM and ALADIN can be better expressed in their future MoU's.

Analysis of the three MoU's clearly shows the differences in scope and level of ambition of the three consortia. Basically, the ALADIN cooperation is concentrated around the common code, and does not extend towards more "downstream" aspects. Within LACE and HIRLAM, the cooperation is focused on a wider range of topics, including operational cooperation, observation exchange, common validation and monitoring, and system aspects. The task force members believe that, in the next MoU's for the three consortia it should be made very explicit which ambitions and associated responsibilities (specifically, code maintenance) are shared between the three consortia, and which ones are specific to each group. In the LACE MoU, this approach of defining both the "common with ALADIN" and "LACE-specific" aspects clearly and separately is already followed, and this may serve as an example in the formulation of the HIRLAM MoU.

Aspects that should be dealt with in the three MoU's in as common a manner as possible, are:  
data policy  
code design, maintenance and evolution  
quality assurance

There was an intensive discussion on how to deal with the organization of code design and implementation. The task force members recognized that an important role could be played here by a small number of "code architects", who have a recognized responsibility (and dedicated time) to coordinate scientific efforts with the view to achieve a sound code design.

For the longer term, there is a need for an alignment of the strategic visions of the consortia. A start can be made with a first exchange of views on this in the proposed common ALADIN GA- HIRLAM Council meeting at the end of 2014. A deeper strategy reflection would be helpful on emerging or increasingly relevant topics like

- the need for a vision on more downstream needs, e.g. aerosols
- code evolution in the context of new HPC architectures; coordination of our own efforts and the options of external funding
- how to optimize a mechanism for deciding the question "what goes into the code" for a community that partly falls outside of ALADIN and HIRLAM, specifically for Surfex.

A strategy meeting could be organized in the first half of 2015 or at the start of the next MoU's. The scope and timing of such a meeting should be specified by the PAC/HAC.