

# PRISM Support Initiative



## PRISM work plan 2006-2007

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## Executive summary

This document summarize PRISM activities since January 2006 and proposes a work plan for August 2006 to July 2007 to the PRISM Steering Board. Most of the activity since February 2006, when the SB last met, was focused on the set up of the new structure, now organised around a few “PRISM Areas of Expertise” (PAE). Beside the on-going development work, several meetings, workshops and presentations to the community were held. Several highly successful meetings helped make progress on key aspect, e.g. metadata. The objectives for the next year are described in 51 tasks which include: ensuring community contribution to the PAEs, the official release of OASIS4, contributing to the planned FP7 funded modelling activities. Total planned effort amounts to about 8 py/y from 11 institutionsq.

## 1 PRISM work plan 2006/2007

Following the PRISM Steering Board (SB) meeting that took place last February in Hamburg, the PRISM activities were reorganised around a few “PRISM Areas of Expertise” (PAE), having the following remits:

- promotion and, if needed, development of software tools for Earth System Modelling;
- encouragement and organisation of related network of experts, including technology watch;
- promotion and participation in the definition of community standards where needed;
- coordination with 1) other PRISM areas of expertise 2) related international activities.

The four agreed PRISM areas of expertise, which workplan for the next year are found in this document, are:

1. Code coupling and I/O (see section 2)
2. Integration and modelling environments (see section 3)
3. Data processing, visualisation and management (see section 4)
4. Metadata (see section 5)

A “Computing issues” PAE was also proposed and its approval by the SB is subject to a more detailed work plan now proposed in section 6.

Each workplan includes a short report on the work done during the last year, the tasks planned for the coming year with detailed commitment per partner and per task. The mission of tool development to support Earth system research remains the principal motive of PRISM and special emphasis is given on this aspect. A summary of the commitments per PAE and per partner is given in Appendix A. The letter inviting the community to contribute to the PAEs is given in Appendix B.

## 2 PAE Code coupling and I/O

*Leader: S. Valcke, CERFACS*

### 2.1 Scope

The main objectives of the Coupling and I/O PAE are to maintain and support the OASIS3 coupler, continue the development of the OASIS4 coupler and release its first full public version.

### 2.2 Current status and achievements

The OASIS3 and OASIS4 couplers are software allowing synchronized exchanges of coupling information between numerical codes representing different components of the climate system.

#### OASIS3

OASIS3 is the direct evolution of the OASIS coupler developed since more than 10 years at CERFACS. At run-time, OASIS3 acts as a separate mono process executable, which performs the 2D interpolations of the coupling fields exchanged between the component models, and as a library linked to the component models, the OASIS3 PRISM Model Interface Library (OASIS3 PSMILe), which supports MPI-based parallel communication between parallel component models and OASIS3 main process and file I/O.

During the last year, many groups started to use OASIS3: CERFACS (France), IPSL (France), the French Operational Oceanography project MERCATOR, MPI-M&D (Germany), CGAM (UK), KNMI (Netherlands), CSC (Finland), DMI (Denmark), INGV (Italy), ENEA (Italy), IFM-Geomar (Germany), Environment Canada, China Meteorological Administration, ICCES (China), U. of Tasmania, BMRC (Australia),... User support was therefore provided to those groups, and this extensive use lead to improvements and bug fixes in OASIS3 sources that will be included in the next official release. An OASIS3 coupling interface was also provided for the OPA9/NEMO ocean model from LOCEAN in collaboration with IFM-GEOMAR (Germany).

#### OASIS4

The development of a new fully parallel coupler, OASIS4, was also started during the PRISM FP5 project. At run-time, the OASIS4 PSMILe, linked to the component models, performs fully parallel MPI-based exchanges of coupling data including automatic repartitioning, either directly or via additional Transformer processes, and file I/O using the GFDL mpp\_io library; the OASIS4 Transformer performs, also in a fully parallel mode, 2D or 3D interpolation of the coupling fields.

During the last year, OASIS4 started to be used into real applications by the GEMS community (ECMWF, Météo-France, and KNMI) for 3D coupling between atmospheric dynamic and atmospheric chemistry models, SMHI for ocean-atmosphere regional coupling, and to the UK MetOffice for global ocean-atmosphere coupling.

Active user support was provided to those groups, considered as beta-testers. Many bug fixes were provided and the following tasks were achieved:

- Support of Gaussian Reduced and non-geographical grids
- Reorganisation of the sources in the PRISM Standard Directory Structure and adaptation to the PRISM Standard Compiling Environment (SCE) including for a “toy” example (toyoa4)
- Bug fixes for the interpolation functionality
- Support and validation of applications running more than one component concurrently.
- Installation of a CVS server for source development at CERFACS

- Revised structure for the XML configuration files
- Presentation at the EGU meeting 2006.

### 2.3 Plan for development (2006 - 2007)

#### For OASIS3

- T1 - The main tasks for OASIS3 in the next year will be to provide active support to the users, and to release the next official version for which some delay occurred and that is now planned for August 2006. In general, the development efforts will be devoted to OASIS4.

#### For OASIS4:

The high-priority developments that we intend to complete for the delivery, after the current beta-testing phase, of the first public release planned for beginning 2007 are:

- T2 - Full implementation of OASIS3 interpolations, including in particular the 2D conservative remapping, and extensive validation of the schemes already implemented
- T3 - Full implementation of the parallel global search for the interpolation
- T4 - Improvement of Transformer efficiency
- T5 - Improvement of error messages and debugging info (this will be added in the code on demand based on users' feedback)
- T6 - Improvement of documentation

During the target period 2006-2007, we also plan to:

- T7 - Evaluate OASIS4 functionalities needed for the realization of the CICLE project but not yet included, and plan their implementation. In the CICLE project, funded by the French "Agence Nationale de la Recherche", OASIS4 will be used: at IPSL to assemble a fully parallel coupled model based on LMDZ, OPA9/NEMO, the IPSL land surface scheme ORCHIDEE, and the atmospheric chemistry model INCA; and at CNRM to realize a 4-model coupling between a regional atmosphere model, ALADIN-Climat, a regional mediterranean configuration of the OPA ocean model, the global atmosphere model ARPEGE-Climat, and the global ocean model OPA.
- T8 - Validate/implement 2D1D combinations with "linear" or "nearest-neighbour" in the vertical.
- T9 - Develop PSMILe API routine for component model access to more XML configuration info.
- T10 - Test UK Met Office FCM environment for compiling.
- T11 - Provide active user support, including the set-up of an FAQ.
- T12 - Incorporate OASIS4 in operational modelling applications (GEMS project and ocean atmosphere coupling for seasonal forecasting at ECMWF in particular) and other beta-testing applications.
- T13- During the target period, probably in late spring, we also plan to organize a workshop to compare in detail the different technical approaches used in code coupling, for example with the PALM coupler, in the UK Met Office FLUME project, in the US ESMF project, in the Bespoke Framework Generator (BFG) from U. of Manchester.

### 2.4 People involved

- CCRLE (R. Redler, H. Ritzdorf): 80% of one person (T2, T3, T5, T6, T8, T11, T12, T13)
- CERFACS (S. Valcke): 50% of one person (T1, T2, T5, T6, T7, T9, T11, T12, T13)
- CNRS (one engineer): 90% of one person (T2, T4, T7, T8, T9, T10, T11, T13)
- ECMWF (K. Mogensen, J. Flemming) : 10% of one person (T12)

- UK MetOffice (A. Treshansky, R. Hill): 30% of one person (T12)
- NEC HPCE (T. Schoenemeyer): 15% of one person (T4, T11)
- SGI (R. Vogelsang): T1 and T11 (support and bug fixing for mpp\_io)

## 3 PAE Integration & modelling environments

*Leader: M. Carter, Met Office*

### 3.1 Scope

- source version control for central repositories and for software development (including model development);
- job configuration - how to set up and define a coupled integration;
- compilation - controlling the creation of the executable for the job;
- job running - a framework that will control the execution of a coupled integration;
- integration with archive systems - how the data from your model will get into your archive system

In conjunction with other PAEs, this PAE coordinates technology reviews, providing advice and direction.

### 3.2 Current status and achievements

#### Standard Compiling Environment (SCE)

- Transformation of model source code directories.

The SCE relies on a certain structure of the directory tree the model is stored in. A shell-script has been written by M&D that transforms to and from this structure.

- Analysis of non-standard source code.

The tools provided by the SCE rely on some standards for the files containing source code and their names. Scripts have been written by M&D that analyse model source code for violation of these standards and (optional) modifies the files and their names to comply with the standard.

#### Standard Running Environment (SRE)

- Major revision of SRE.

The scripts generated in the SRE to execute a model have been revised in response to a number of user requirements. The toolkit is more modularized and contains more functionality (e.g. date transformation). The resulting scripts could thereby be halved in length while being more flexible.

#### SCE and SRE

- Linux WS 'generic' option.

In response to user requirement, an option for scripts relying on the operating/architecture names rather than the node names is provided by M&D. This is realized for Linux WS. SunOS is being developed.

#### Repository

- Conversion from CVS to Subversion repository.

The PRISM source code repository was downloaded from the cvs server 'bedano' in Manno (CSCS) and converted into a svn repository keeping the full update history. The licensed model codes (all except toyclim) were eliminated from the repository. An Apache web server was set up (cooperation with MPI-Met and its IT service group) and an access model was implemented giving unrestricted read access to certain directory branches and read/write access to authenticated and authorized users.

A new 'preliminary' tagged release 2-4-1 (prism\_2-4 + revised SCE/SRE) was checked into the repository.

## FCM

- FCM system has been evaluated by ECMWF and is seen as potentially useful. Incorporation into the ECMWF environment may be considered for future sub-projects. However, it is still unclear how to deal with ODB database compilers and their respective generation.
- The Met Office FCM team demonstrated the usefulness of FCM on OASIS and IPSL model prior to and during a workshop held at the Met Office. These codes presented new challenges to FCM which were quickly overcome.

## Integration

- ECMWF have incorporated the OASIS4 coupler into the data assimilation setup at ECMWF as part of the GEMS project. This activity is ongoing and the experience in integrating this PRISM tool into a complex setup such as ECMWF's data assimilation will be shared with the PRISM community.
- M&D have supported the GEMS project. The Mozart3 (atmospheric chemistry transport) model was installed on a local Linux WS and coupled (using oasis3) to run with a data reading pseudo model. Mozart3 was enabled to use a local communicator defined by the PSMILE library in order to make it fit to run on the ECMWF IBM machines where MPI-2 is not installed. The oasis3 interface was replaced by an oasis4 interface for the exchange of one 3D and one 2D fields. Meetings were attended.
- M&D is actively involved in the COSMOS initiative through integrating the COSMOS models into the SCE/SRE. This will also include model distribution (in the SCE/SRE) and user support. A prominent activity will be the improvement of the automatic WDCC DB filling with model output diagnostic files and inclusion of additional model-describing meta data. This activity involves cooperation with the GO-ESSP NMM meta data workgroup. Meetings were attended.
- M&D supports the user of the DKRZ, in particular using the SCE/SRE with the DKRZ machines and in the use of the WDCC. A workshop was attended.
- M&D have adapted the Remo regional model to SCE/SRE.

## User Interfaces

- At ECMWF, the work on the prepOASIS user interface has been progressed, but further development is currently stopped due to GEMS commitments.
- SMS and prepIFS have been presented at the EGS in a poster session and demonstration movies have been created to illustrate the power of corporate infrastructure tools, but no further activities are planned until interest is shown by the community.
- The ECMWF Council decided on 6-7 July 2006 that MARS and SMS software will be made available as open source at handling charge only. The MARS software may therefore be another candidate tool that promotes standards in meteorological data access and manipulation, and a small workshop on MARS could be useful. MARS software is likely to be of interest only to major NWP sites due to its complexity.

### 3.3 Plan for development (2006 - 2007)

1. Standard Compiling Environment (SCE)
  - T1 - improvement and extension of user interface

- T2 - generation of model meta-data xml files and filling in during download and compile time. One of the meta-data xml files will be based on the NMM meta data model for code-base and model configuration (cooperation with PAE-MetaData).
- T3 - implementation of discrimination between local and central installations of the SCE (as discussed in the 'Specification Phase' of the PRISM project (not realized because there were no requirements)

## 2. Standard Running Environment (SRE)

- T4 - continuation of filling of model meta data xml files with the information available at run time. The xml files will after that be presented to the user for further input and will be used to include searchable experiment and model configuration information in the CERA database model as well as information for reproduction of models and their output. (Cooperation with PAE-MetaData)
- T5 - implementation of a graphical experiment monitoring option into the SRE (Cooperation with PAE-Data)
- T6 - prototyping a grid enabling of selected tasks of the SRE(e.g. pre-processing for regional models)

## 3. SCE and SRE

- T7 - generic SunOS version
- T8 - prism\_2-5 release and update of manuals

## 4. GUI

- T9 - Work on the OASIS4 GUI (prepOASIS4) to simplify the OASIS4 XML configuration and its use. Support is offered to people interested in testing the use of the prepOASIS4 user interface.
- T10 - testing PrepOasis for use with the CERA database model meta data inclusion

## 5. Repository

- T11 - administration
- T12 - script for download of consistent source/script (1model/1platform)

## 6. COSMOS

- T13 - continued collaboration (SCE/SRE, WDCC and meta data)

## 7. FCM

- T14 - FCM evaluation with new codes. Various groups will evaluate new codes in FCM which will be further developed as resources allow.

### 3.4 People involved

- ECMWF (C. Larsson) : 20% (T9 and T10)
- ECMWF (N. Wedi/a new applicant) : 20% (General)
- CERFACS (S. Valcke) : 10% (T9)
- IPSL (M-A. Fouljols) : 10% (T14)
- CNRS (Engineer) : 10% (T14)
- Met Office (FCM and UM teams) : 50% (T14)
- MPI M&D (Stephanie Legutke, Heiner Widman H.Schneider) : 55% (T1-T8, T10)
- Met Office (Mick Carter) : 5% (Lead)

## 4 PAE Data processing, visualisation and management

*Leader: M. Lautenschlager, M&D/MPI-M*

### 4.1 Scope

The main objectives of the Data Management PAE are to support the existing data processing packages CDO and CDAT, to improve the SRE with respect to data management and to maintain the CERA-2 datamodel.

### 4.2 Current status and achievements

#### Data processing packages CDO and CDAT

The data processing packages CDAT (Climate Data Analysis Tools) which is maintained and developed by PCMDI and CDO (Climate data Operators) which is maintained and developed by MPI-M will be inferred and tested with respect to PRISM data processing requirements (cooperation with User's Group) and with respect to PRISM Tool requirements. The maintenance is still located at the package developing institutes.

#### Standard Run Environment (SRE)

The SRE is planned to be improved by modelling experiment monitoring and database filling for metadata and model output data. A prototype of the experiment monitoring has been developed by the former EU-project PRISM but it has yet not been implemented in the SRE.

#### CERA-2 Datamodel

The CERA-2 datamodel has been developed for a complete description of geo-referenced climate (model output) data. The datamodel contains information for detection, browse and use of data. With respect to recent discussions and developments it needs improvements for the integration of new types metadata. Special emphasis is given on numerical model describing metadata and metadata for the specification of irregular grids.

### 4.3 Plan for development (2006 - 2007)

#### 1. For CDO and CDAT:

- T1 - Support of CDAT (5% FTE)
- T2 - Support of CDO (10% FTE)
- (T3 - Verification of CDAT and CDO with respect to PRISM Tool requirements; no FTE, for future activities )

#### 2. For SRE:

- T4 - SRE integration of experiment monitoring (cooperation with PAE "Environments") (5% FTE)
- (T5 - CERA database filling of SCE/SRE metadata output (XML files for model describing metadata and for model output describing metadata) (cooperation with PAEs "Environments" and "Metadata"; no FTE, for future activities)
- (T6 - Interface for automatic database storage of model output data (4D - 3D - 2D time series) (cooperation with PAE "Environments"; no FTE, for future activities)

### 3. For CERA-2:

- T7 - Integration of numerical model describing metadata in CERA-2 (10% FTE)
- T8 - Integration of specification of irregular grids (10% FTE)

### 4. Collaboration with PAE-Metadata

- T9 - Collaboration with PAE-Metadata: A certain amount of work will spend in the cooperation with the PAE "Matadata" with respect to define and to develop specification of irregular grids and numerical model describing metadata. Special emphasis will be given on the integration of these metadata developments into the CERA-2 datamodel (10% FTE)

## 4.4 People involved

- MPI/M&D (Frank Toussaint): 20% of one FTE (T7, T8)
- MPI/M&D (Stephanie Legutke): 10% of one FTE (T9)
- MPI/M&D (Jrg Wegner): 15% of one FTE (T2, T4)
- IPSL (Jean-Yves Peterschmitt): 5% of one FTE (T1)

## 5 PAE Metadata

*Leader : L.Steenman-Clark, NCAS-CGAM, University of Reading*

### 5.1 Scope

The objectives of the metadata PAE are to develop and coordinate issues relating to metadata for Earth System Modelling in collaboration with other national and international projects. By providing a forum for the discussion of metadata issues and by participating in metadata meetings of similar communities we can develop, document and disseminate Earth System Modelling metadata schema as well as tools for producing, checking and displaying metadata.

### 5.2 Current Status and achievements

Metadata has in the last few years become a 'hot topic' with new schemas and ideas to promote the interchangeability of Earth system models or modelling components as well as data. The achievement of this PRISM PAE has been to hold a series of successful meetings which have provided a forum for the PRISM community metadata needs and requirements as well as helping in the development of metadata schemas being developed outside PRISM.

Metadata for Earth System Modelling was a component or the main point of discussion at

- the PRISM community meeting in Toulouse, November 2005
- the PRISM metadata meeting in Exeter, May 2006
- AGU, Vienna, April 2006
- GO-ESSP, LLNL, USA, June 2006

The main purpose of discussion this year has been the standardisation of key areas of metadata needed for Earth System Modelling

- numerical grid metadata, being developed by Balaji at GFDL, USA
- numerical model metadata, being developed at University of Reading
- CF metadata for netcdf data, being developed by an international team and now managed by PCMDI and BADC.

Coupling frameworks such as PRISM, ESMF, FLUME and GENIE are working to integrate these emerging standards and are key to ensuring that these emerging standard schemas meet requirements and needs of the Earth System Modelling community. The World Climate Data Centre at MPI, Hamburg, is also working to integrate standard metadata schemas into their data metadata schemas and catalogues.

A major success of this initial year of the metadata PAE has been fostering the communication and interaction of the different communities in PRISM needing metadata and developing what is now a strong and vibrant forum for discussion and the exchange of ideas.

### 5.3 Plan for Development (2006-2007)

- T1: Numerical Grid metadata  
Work with Balaji on the development of this standard. Implement the standard in other metadata schema, eg OASIS, NMM, CERA, CF. Provide tools for constructing and visualising the numerical grids from the metadata. Interact with the broad Earth System Modelling community to ensure that this schema is widely adopted.
- T2: Numerical Model Metadata (NMM)

Continue to refine and develop the schema. Interact with PRISM, CERA, FLUME, CURATOR to ensure that NMM meets requirements. Develop standard vocabularies for terms and attributes in collaboration with other communities.

- T3: CF metadata

Participate in discussion of CF development, such as standard names. Ensure the availability of CF checker. Work to keep tools and software up to date with the CF standards.

- T4: Further definition of metadata for coupling and IO model interface

## 5.4 People involved

- University of Reading (L. Steenman-Clark) 40% (T1, T2, T4)
- University of Reading (K. Bouton) 60% (T1, T2)
- University of Reading (R. Hatcher) 60% (T2, T3)
- CERFACS (S. Valcke) 10% (T4)
- MPI, Hamburg (M. Lautenschlager, S. Legutke) 10% (T2, T3)
- UKMO (M. Carter, A Treshansky) 20% (T2, T3, T4)

## 6 Proposed PAE on Computing issues

*Proposed leaders: M.-A. Foujols, IPSL and R. Redler, NEC-CCRLE*

### 6.1 Scope

Experience has shown that a large variety of technical aspects related to computing are highly important for Earth system modelling. These techniques are in constant flow and evolve with new hardware becoming available. While computer vendors have to be kept informed about requirements emerging from the climate modelling community Earth system modellers still have to be informed about computing issues to preview difficulties and evolutions. PRISM can play a role in that aspect through a PAE devoted to those technology trends.

Possible technical topics are :

- file IO and data storage
- algorithmic development
- portable software to fit the needs of parallel and vector systems

### 6.2 Plan of development for 2006 - 2007

To start an action in this particular field, we (Rene and Marie-Alice with limited time) propose to first establish a group of people that are willing to contribute with their expertise.

This will first be done via mailing list and a sharing of relevant information on the PRISM web site. In particular the activities will cover:

- sharing of knowledge from the work on the Earth Simulator
- establish links with DEISA (possibly via ECMWF)
- information about important conferences and workshops

Depending on the number of volunteers and the input we will get from this group we will propose a revised or extended list of tasks next year.

### 6.3 People currently involved

- IPSL (M.-A. Foujols): 10%
- NEC-CCRLE (R. Redler): 10%

## 7 Coordination activities

*Lead: E. Guilyardi, IPSL/CNRS and S. Valcke, CERFACS*

### 7.1 Scope

The PRISM core group, chaired by the PRISM coordinators, has the following role:

- General coordination of the PAEs,
- Detection and resolution of conflicts between PAEs,
- Internal communication (web, wiki, virtual meetings,...),
- Coordination of common funding activities,
- Community outreach, coordination with related international projects.

### 7.2 Current status and achievements

The coordinators are so far quite pleased with the core group/PAE structure which proves both flexible (hence allowing smoother management) and more efficient towards the community goals, as expressed during the 2005 community survey. Monthly telephone conferences of the core group were held in which general issues are discussed. More specific telephone conferences were also held to make progress on a given point with an ad-hoc work group. Several general presentations of PRISM were given (see web site for list). As part of community outreach activities, an Earth system modelling session was organised for EGU 2006 in Vienna by R. Budich and R. Redler. The web site was entirely re-designed to address the new structure.

Links with US colleagues (ESMF and Curator projects) were strengthened at the working level, with particular work on grid metadata. A position paper on Software Infrastructure for Earth System modelling is being written in collaboration with ESMF for WCRP's Modelling Panel (WMP). Thanks to the funding of the GENIEfy project, working level collaboration began with the GENIE team in the UK.

Funding wise, two national projects directly involving PRISM were funded: CICLE by ANR in France (18 pm at CERFACS, 50% funded) and GENIEfy by NERC/eScience in the UK (24 pm in CGAM).

### 7.3 Plans for 2006 - 2007

- T1 - PAEs general coordination
- T2 - Internal communication, including wiki management
- T3 - Community outreach (including WEB site management), development of user group
- T4 - Position paper for WMP (with ESMF)
- T5 - Explore FP7 and national funding opportunities

### 7.4 People involved

- CERFACS (S. Valcke): 20% (T1, T2, T3, T4)
- CNRS (E. Guilyardi): 20% (T1, T2, T3, T4, T5)
- NCAS/CGAM (R. Hatcher, K. Bouton): 10% (T2, T3)
- MPI-M (R. Budich): 10% (T3)

## Appendix A - Commitments summary

The following table summarizes the commitments per partners and per PAE in person.year per year. For details about individual PAEs tasks, see sections above.

	Coupling and I/O	Environments	Data	Metadata	Computing	Coordination	Total
Num. of tasks	13	14	9	5	5	5	51
CERFACS	0.5	0.1		0.1		0.2	0.9
CNRS	0.9	0.1				0.2	1.2
ECMWF	0.1	0.4					0.5
IPSL		0.1	0.05		0.1		0.25
Met Office	0.3	0.55		0.2			1.05
MPI-M						0.1	0.1
MPI/M&D		0.55	0.45	0.1			1.1
NCAS/CGAM				1.6		0.1	1.7
NEC-CCRLE	0.8				0.1		0.9
NEC-HPCE	0.15						0.15
SGI	0.05						0.05
<b>Total</b>	<b>2.8</b>	<b>1.8</b>	<b>0.5</b>	<b>2.0</b>	<b>0.2</b>	<b>0.6</b>	<b>7.9</b>

## Appendix B - New PRISM Areas of Expertise: call for contribution - July 2006

Dear Colleagues,

After 5 years of successful operations, PRISM provides the Earth System Modelling (ESM) community with a forum to promote shared software infrastructure tools and best practice. Today, we would like to invite the ESM community to reinforce their contribution in PRISM.

The ever increasing complexity of Earth System Models and computing facilities puts a heavy technical burden on the research teams developing them. The goal of PRISM is to help share the development, maintenance and support of standards and state-of-the-art software tools to assemble, run, and analyse the results of Earth System Models based on component models (ocean, atmosphere, land surface, etc..) developed in the different climate research centres in Europe and elsewhere.

PRISM was initially funded as a project under the European Union's Framework Programme V (2001-2004) and its long term support is now ensured by multi-institute funding via the PRISM Support Initiative (PSI). More information about PRISM can be found on <http://prism.enes.org>.

Following the recommendations of the community review performed in 2005, PRISM is now organised as a distributed network of experts who contribute to five "PRISM Areas of Expertise" (PAE), listed below. Each PAE has the following remit:

- promotion and, if needed, development of software tools for Earth System Modelling;
- organisation of related network of experts, including technology watch;
- promotion and participation in the definition of community standards where needed;
- coordination with other PRISM Areas of Expertise related international activities.

1. Code coupling and I/O (S. Valcke, CERFACS):

This PAE develops, maintains and supports tools for coupling climate modelling component codes, ensures a technology watch on coupling tools developed outside PRISM, and maintains strong relations with the different projects involving code coupling in climate modelling internationally (e.g. ESMF, GENIE, FLUME, etc.).

2. Integration and modelling environments (M. Carter, Met Office):

This PAE coordinates technology reviews providing direction for further development, particularly noting developments in other PAEs and in related projects such as ESMF, FLUME and GENIE, in the following areas: version control, code extraction and compilation, job configuration, job running, integration with archive systems.

3. Data processing, visualisation and management (M. Lautenschlager, MPI-M&D):

This PAE, also covering data networking and federated archive architecture, interacts strongly with the PAE "Integration and modelling environments" to incorporate data management in the compiling and running environments, and also with the PAE "Metadata" for the automatic description of experiments, models, and numerical grids.

4. Meta-data (L. Steenman-Clark, NCAS/CGAM, Univ. Reading)

The goals of this PAE are to identify metadata requirements for PRISM, work towards the formulation of metadata standards, in collaboration with other Earth System Modelling projects, and stimulate discussion and interaction with the PRISM and broader ESM community to ensure that metadata provision meets the current and future needs of the ESM community.

5. Computing issues (R. Redler, NEC-CCRLE & M.-A. Foujols, IPSL)

This PAE promotes the exchanges in the community to identify open questions on computing related to Earth System Modelling and to stimulate discussion between users, computing centres and vendors. Furthermore this PAE provide means to reflect on a way towards Petacomputing in Earth System Modelling and on the lessons we can learn from using the Earth Simulator and similar large systems.

We therefore would like to invite the wider Earth System Modelling community (ESM developers and users, IT experts, ...) to contribute their expertise to these PAEs. If you are interested in the activities of one or more PAEs or if you have questions on PRISM, please feel free to contact us and/or the relevant PAE leader(s). It will be a pleasure for us to welcome you in PRISM!

Please, forward this message to colleagues with potential interest.

With best regards,

The PRISM coordinators, Sophie Valcke and Eric Guilyardi

