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Coordinating Computing, Network and Archiving activities within INAF

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Abstract. When INAF was reformed, it was decided to create a 'Computing, Network and Archives Service' within the Projects Department, in order to coordinate all computer-related activities and to properly harmonize management and development policies in the field. A 'Computing, Network and Archives Committee' was immediately nominated for the duration of one year to cope with the immediate needs. The Committee has the task of identifying and making operational strategies to coordinate activities in the areas of interest, improving service to all users, implementing synergies and economies, while guaranteeing a single INAF contact point for all external institutions working in the field.

1. The Computing, Networks and Archives Committee

In June 2004, a Computing, Networks and Archives Committee (CCRA) was nominated by the INAF President for the duration of one year, with the purpose of coordinating the organization of the Institute's activity in the field. The members of the Committee are the authors of this paper.

The CCRA tasks cover the following areas of interest: networks, system hardware and software, scientific software, scientific archives, administration software, supercomputing. Each of the CCRA members has taken responsibility for coordination of one, or more, of the above areas. The conclusions of other Committees, previously nominated to cover more restricted areas of interest, were carefully taken in consideration for the definition of the plan of work.

The Committee has had several meetings, face-to-face and via telecon, but most of its activities have been carried out via email and actions directly assigned to the individual members. For 2004, only a travel budget was assigned to CCRA by INAF; a full-fledged budget line was instead allocated for 2005, and this allowed the Committee to accomplish several important steps, reported in the following.

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Accomplishments – For the purpose of exchanging and disseminating information, a contract for a telecon facility was established, and a Web site (http://www.ccra.inaf.it/) was created and supported. To achieve coordination among the various INAF local structures, a dedicated group (GCSI) was created, composed of the various responsibles of the local information systems. The GCSI fostered the creation of several groups of interest, e.g. to define a common level for computing and information services in the various local structures and to estimate the necessary manpower, to evaluate and facilitate the feasibility of using open-source software, to distribute INAF standard software, etc.

Several informative surveys for the analysis of the hardware/software situation of the INAF structures were carried out: they include local parallel computing resources, local archive facilities, commercial software in use or desired, scientific software in use, etc. INAF-wide 'campus' agreements were made with Microsoft for its most commonly used packages, with RSI (for IDL) and with Oracle, allowing to purchase these commercial softwares for all INAF sites with considerable discounts. The servers for the INAF Administration computing system, and for the management of the *astro.it* email domain, were also purchased, with the support of the local staff (IRA and OABo, respectively).

As for the network, an agreement between INAF and GARR was negotiated and eventually signed by the Presidents of the two organizations. An evaluation of network naming issues was made, derived from the activity of a dedicated group, and the migration plan to the new domain (*inaf.it*) was endorsed. A monitoring activity on network traffic for INAF locations was initialized, in order to identify the sites most needing an increase in bandwidth.

Negotiations with CINECA for the renewal of the existing convention were started. Some contribution was also given to scope the participation of INAF in consortia for the creation of regional computing facilities, and to the preparation of the relevant conventions.

As for coordination activities, compatibility between the Grid projects involving INAF (Grid.it, DRACO and TriGrid) was monitored and fostered. Furthermore, initial discussions were carried out with the ASI Science Data Center (ASDC) to harmonize the respective archiving facilities.

At the international level, participation was guaranteed in the coordinating bodies of several initiatives aimed at the definition and maintenance of international standards: the European FITS Committee, the Executive Committee of the International Virtual Observatory Alliance, the 'Future Software Environments for Data Analysis' working group of the Opticon project. The INAF activity in the field of Grids, data archives and Virtual Observatory was rewarded by the participation in a proposal (VO-Tech) approved by the EU Framework Programme no.6.

2. The Computing, Networks and Archives Service

At this stage the preliminary phase of identifying the Institute's needs and initializing the needed actions to harmonize the various initiatives in the fields of interest of the future Service is coming to an end. These initiatives need now to be carried out in a coherent way, providing continuity to the coordination activities, providing support when needed, and including technological research in computer science to guarantee development.

In February 2005, the INAF Board formalized the creation of an Organizational Unit called Computing, Networks and Archives Service, which will be in charge of acting as a reference point for all the activities of the Institute in the field. Beyond the service itself, this includes also all of the research activities needed to develop tools and facilities to be eventually made available to the community at large as services. Coordination of national activities in the fields of archives (e.g. the Virtual Observatory) and distributed computing (e.g. Grids), and harmonization with the international initiatives in the respective fields have also been explicitly included among the Unit's tasks.

For this purpose, a plan of work is being prepared and will be presented to the INAF Board. The key point of the plan is a somewhat more detailed organization of the tasks to be carried out, taking into consideration the fact that new developments need to be tackled while maintaining an adequate level of coordination and, at the local level, of service to the community.

Core Team and Working Groups – In this framework, the creation of a core team of dedicated staff is considered as essential. This team should ideally be centralized in a single site, in order to take responsibilities similar to those CNAF has within INFN, but could possibly be distributed, if this better fits INAF needs. Its localization and size depend on budget constraints and organizational issues.

Several other groups are planned to be formed, mainly extending the groups already active. The groups will have a consultancy role, and will give proper suggestions to the steering group of the Unit, the CCRA. Among these groups, of particular importance and impact for the scientific community will be the one aiming at coordinating the availability and, whenever required, the development of scientific software. A first step is planned to be a national directory containing code developed within specific software environments (IRAF, IDL, Mathematica, etc.), which can be directly used by the community. But the real aim is to implement a real coordination, by encouraging collaborative work within specific areas of interest, considered within an international framework.

System activities – Another goal of the plan is to increase the coordination of the local system administrators; their work is often underestimated and professionally not rewarding. The plan will call for an increased role for the GCSI, where the exchange of ideas among personnel involved with system administration and with the rest of the INAF community will be encouraged and supported. Furthermore, the organization of workshops and specialized courses is planned.

An important issue to be solved for the benefit of the whole Institute is the computer support to administration. The Unit, through the local information services and also some central facility, expects to provide the support within its own competence, i.e. computer management, network availability, coordination on the procurement of hardware and some consultancy whenever a new software is built or purchased. The technical knowledge on the functioning and operation of the administrative software must obviously reside within the INAF administration.

Research activities – The coordination of existing and developing INAF archives within an Italian Virtual Observatory will also be a goal for the near future. In this direction, the current active participation of INAF staff in the international efforts in the field is a good guarantee for success. This topic can be considered as a research activity, since international VO standards are still being defined.

Similarly, it is still a research field the development of Grid services where a tight collaboration with INFN is active. This form of computing is complementary to the use of supercomputers, and can allow a whole class of computational problems to be solved by reusing appropriately the distributed computing power already available.

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