Italian Strategy in IST for Grids, Supercomputing and e-Infrastructures

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The Italian Grid: some history

- At the end of 1999 in Italy, the National Institute of Nuclear Physics (INFN) select Grids as the promising enabling technology for e-Science.
- INFN Grid is approved in February 2000 (30 M€ budget)
  - Focus is on the development of an e-Infrastructure for High Energy Physics (LHC), but includes between the original goals the promotion of Grids in other fields: Sciences, Industry, Business and Services (Hospitals, Administrations, Schools)
- Followed by an initial ~30M€ line of budget dedicated by MIUR to Grid R&D and related e-Infrastructures developments. Major projects funded:
  - Grid.IT, National project, 3 years 12 M€ (2002-05)
    - R&D on next generation tools: Programming environ., Information Sys.
    - National production e-Infrastructure for Italian Scientific Institutions
  - S-PACI National project 3 years 4 M€ (2002-05)
    - The Grid infrastructure in the South of Italy
  - Egrid National project 3 years 3 M€ (2003-06)
    - The Grid for finance
  - LIBI and LITBIO 3 years 7 M€ (2004-2007)
    - The Grid Laboratory for Bioinformatics
- Recently further 32 M€ for Grids and Supercomp. in the South (PON) and other lines of budget for Open Source Support (FAR), etc.
The National Strategy for Science

- The development of all components of a national Grid infrastructure has been pursued since the beginning
  - Fostering the development of the Grid middleware and international integration through European funded projects
    - DataGrid, DataTAG, EGEE, GridCC, Diligent, DEISA, CoreGrid, Gridcoord...
  - Leveraging from CERN managerial expertise and other National Initiatives
  - Fostering since the beginning EU level collaboration
- Promoting the international collaborations (with Japan, US Globus, Condor, grid projects like iVDGL, PPDG and GGF...) to allow worldwide interoperability and the creation of International Standards
  - Service Oriented Architecture, SRM, GLUE schema, Accounting, ...
- ...but also supporting national developments of M/W in those areas not or badly covered by EU projects (INFN Grid, FIRB Grid.it...) e.g. Portals (Genius and GILDA), Monitoring (GridICE), Data Management (Storm), Security (VOMS), Policies (G-Pbox), Accounting (DGAS) Services, Parallel Programming Environments (Assist)
- and the collaboration with Industry: Datamat, Nice, Engineering, Eurotech, ...
- The national e-Science Grid infrastructure is now a reality constantly used by HEP, Astrophysic, Biology, Computational Chemistry, Geophysics, Earth Observation and expanding, thanks to new MIUR funds
- ...well integrated at international level through EU EGEE, DEISA ...
- e-Infrastructures are believed to be a general enabling factor for EU Science and ERA
Grid.IT Production Grid: Operations Portal

- User documentation
- Site managers documentation
- Software repository
- Monitoring
- Trouble tickets system
- Knowledge base

Welcome to the IFNN Production Grid for Scientific Applications

INFN-GRID is a research project which features solutions and innovations in methodologies and technologies for the implementation and widespread use of large-scale platforms and grids. We participate to several National and International research projects on Grid Computing.

We’re coordinating our objectives with the strategies of the European Community to build the Next Generation Grid.

Our efforts are evaluated in terms of our grid capability to solve very critical, real problems in the medium-long term. The best standards in ICT are assumed as the technological starting point (e.g. OOP, Web services, Globus), over which new technologies are studied and built.

Read the latest news from October 31, 2003

http://grid-it.cnaf.infn.it

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The Italian EU Initiative for e-Infrastructures

- Rome 12/2003: The eIRG, The e-Infrastructure Reflection Group
- Italian Presidency initiative of Ministers Moratti and Possa on “e-Infrastructures (Internet and Grids) - The new foundation for knowledge-based Societies”
- Workshop organized by MIUR and INFN in collaboration with the EU Commission following Greece initiative
- The eIRG is an EU level framework for
  - defining administrative- and policy-level mechanisms and rules
  - long term roadmap and guidelines for EU and National Grid and e-Infrastructure programs
- eIRG representatives appointed by all EU Science Ministers
- Coordinated by a “troika” of Current, Past and future Presidency
- Very active and effective work carried out since then
  - White Paper and FP7 Opportunity List ready to be delivered
The strategy towards innovation and general Grid exploitation: c-OMEGA

- Leverage the large integration and standardization effort of international and national Grid research projects like EDG, LCG, EGEE, AVO, INFN Grid, Grid.it... to make available to Italian industries and customers a coherent platform of baseline Open Source interoperable "Grid Services"
  - e-Science Institutions: HEP, Biology, Astrophysics, Geophysics and Climate....
  - early developers for commercial usage

- Guaranteed evolution, support and adherence to international standards allowing industries to overcome their limited size and investment capabilities

- The Consortium for the Open Mw Enabling Grid Applications (c-OMEGA)
  - is in advanced negotiation with Government (Funds reserved)
  - initial participation include all major Italian Research Institutions
    - 5-6 largest Italian Software Companies and ~15 SMEs
    - the Italian Computing Consortia
    - several Service Institutions: Health, Government, Banks

- Main goal of c-OMEGA is to support, via the Grid technology, the innovation and knowledge exploitation process in the society
  - delivering and certifying a platform of Grid Services
  - supporting pilot pre-competitive exploitation by Industry and Business

- and to foster the creation of an European Federation with similar goals to support early adoption of the technology in commercial vertical solutions
Final recommendations

- For what it concerns IST, Italy proposes to find a convergency and to provide adequate financing in FP7 to the following priority areas:
  - 1) Nanoelectronics and embedded systems to be eventually developed within a Joint Technology Initiative
  - 2) Software and Grids with reference to:
    - a) GRID middleware including the development of innovative services of industrial level quality with increasing functionalities and adhering to International Standards
    - b) deployment of Computing and Communication based e-infrastructures as enabling platforms for Research, Industry and Services
      - The National grids infrastructures have their own economic reward in increasing Science and Society competitiveness and will be supported at national level.
      - Funding policies for EU-wide general Research e-Infrastructures as EGEE and DEISA need to be continued.
    - c) Open Source Baseline Systems and Software repositories upon which public and industrial subjects can find a convergence to raise awarness on Grid technological achievements and to create and support baseline standard platforms allowing medium size industries to develop advanced commercial solutions for citizens, industries and services
      - Italy supports the creation of a European Federation of middleware repositories such as c-OMEGA
    - d) Digital Libraries bringing to citizens, Industries and Services all the available knowledge
  - 3) Bio-medical-informatics collecting the Industrial and Research world expertise to provide an adequate effort to progress towards the integration of Medical Informatics with Bioinformatics
  - 4) EUREKA initiatives covering multiple aspects of some ICT areas.