Project Status Review

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Introduction

- Difficult to review a project of this size and complexity in one day
- Assume all details in the deliverables and periodic reports
- Need to stick to the agenda firmly and hold questions till the end of presentations
- Decision to present the project from the applications angle
- Coherent with the original mission of demonstrator and test bed for high performance research networks (RN Geant)
- Innovative middleware and fabric developments presented in a practical demo

Project Objectives

- Enable data intensive sciences by providing world wide Grid test beds to large distributed scientific organisations (referred to as Virtual Organisations or VOs)
- Major involvement of CERN and the particle physics community in the conception of the project and in the establishment of the consortium (motivated by the LHC project)
- Problems and objectives shared by Earth Observation and Biology

Project Objectives

- To build on the emerging Grid technology to develop a sustainable computing model for effective share of computing resources and data
- Specific project objectives:
  - Middleware for fabric & Grid management (mostly funded by the EU)
  - Large scale testbed (mostly funded by the partners)
  - Production quality demonstrations (partially funded by the EU)
- To collaborate with and complement other European and US projects (i.e. of RN/Geant)
- Contribute to Open Standards and international bodies:
  - Co-founder of Global GRID Forum and host of GGF1 and GGF3
  - Industry and Research Forum for dissemination of project results

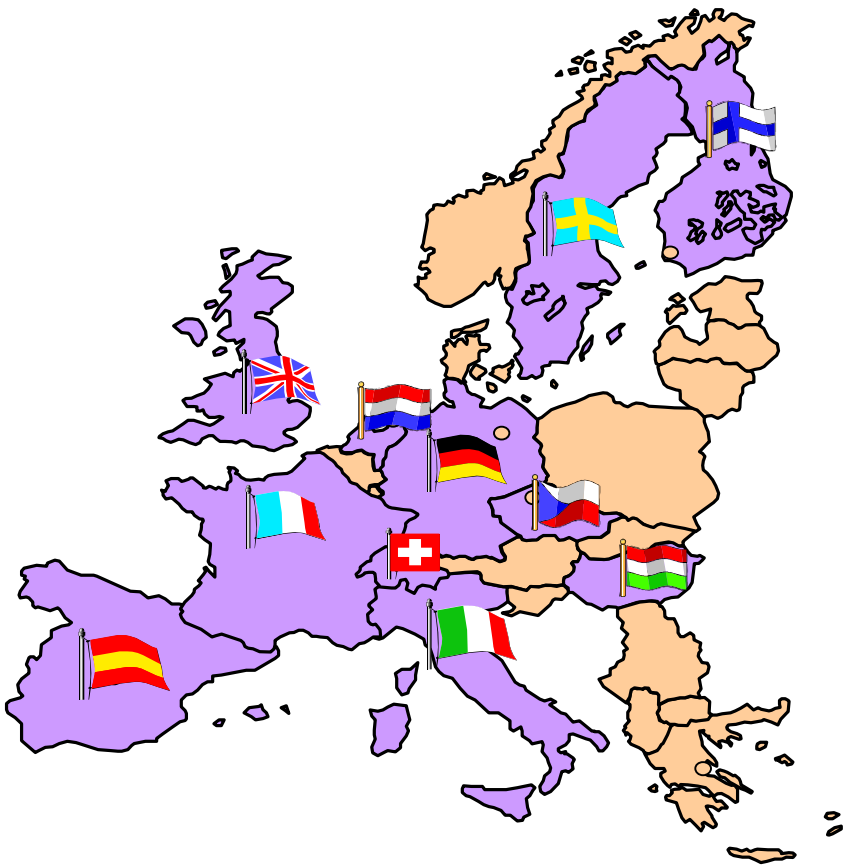
Main Partners

- CERN – International (Switzerland/France)
- CNRS - France
- ESA/ESRIN – International (Italy)
- INFN - Italy
- NIKHEF – The Netherlands
- PPARC - UK

Assistant Partners

Industrial Partners

- Datamat (Italy)
- IBM-UK (UK)
- CS-SI (France)



Research and Academic Institutes

- CESNET (Czech Republic)
- Commissariat à l'énergie atomique (CEA) – France
- Computer and Automation Research Institute, Hungarian Academy of Sciences (MTA SZTAKI)
- Consiglio Nazionale delle Ricerche (Italy)
- Helsinki Institute of Physics – Finland
- Institut de Fisica d'Altes Energies (IFAE) - Spain
- Istituto Trentino di Cultura (IRST) – Italy
- Konrad-Zuse-Zentrum für Informationstechnik Berlin - Germany
- Royal Netherlands Meteorological Institute (KNMI)
- Ruprecht-Karls-Universität Heidelberg - Germany
- Stichting Academisch Rekencentrum Amsterdam (SARA) – Netherlands
- Swedish Research Council - Sweden

Project Schedule

- Project started on 1/1/2001
- TestBed 0 (early 2001)
  - International test bed 0 infrastructure deployed
    - Globus 1 only - no EDG middleware
- TestBed 1 (now)
  - First release of EU DataGrid software to defined users within the project:
    - HEP experiments (WP 8), Earth Observation (WP 9), Biomedical applications (WP 10)
- **Project Review by EU: March 1st 2002**
- TestBed 2 (September-October 2002)
  - Builds on TestBed 1 to extend facilities of DataGrid
- TestBed 3 (March 2003) & 4 (September 2003)
- Project end on 31-12-2003

Highlights

- The project is up and running!
  - All 21 partners are now contributing at contractual level
  - Project administrative and managerial structure established with minimum resources
- All EU deliverables (40, >2000 pages) submitted in time for the review according to the contract technical annex
- First test bed delivered with real production demos

Major achievements

- Core middleware group developed innovative S/W also exported to US (GDMP and resource broker)
- Excellent collaboration with US Globus and Condor developments
- Close collaboration with similar US activities (PPDG, GriPhyN/iVDGL)
- Large community of enthusiastic, dedicated scientists (mostly unfunded)
- End users involved in all stages of the project (requirements definition, architecture, S/W integration, deployment, validation and tests)
- Unfunded staff effort about twice the EU funded (voluntary participation from Portugal, Ireland, Russia & Denmark both in M/W and in the test bed)

more achievements, continued…

- Good relations to industry (I&R Forum and WP11)
- Seed funds for national Grid projects, coordinator and initiator of other projects (DataTAG, CrossGrid, GridSTART, security proposal)
- Initiator and active participant in GGF, Intergrid, EIROForum Grid WG, OCDE interest to start a WG, exploratory work in Asian Pacific and South America
  - PM in GGF GFAC, 2 members in GGF WGSG, 2 GGF WG chairs
  - 2 GGF WGs and 1 GGF research group being proposed on networking by WP7
- Pioneering role (EU Grid flagship project): first opportunity to work on Grid for ESA with fostering effect of internal Grid activity
- Prototype use of national RNs for Grid deployment (building Grids of Grids)

more achievements, continued…

- Collaboration with Geant/Dante (WP7 and DataTAG)
  - Collaboration agreement established in June 2001
  - Technical Proposal:
    - Test equipment located in three GEANT PoPs
    - Analysis of TCP performance over a wide area high-speed network
    - Demonstration of high-throughput data flows over long time scales
    - Pilot of the IP Premium service including end-to-end tests with biology use-case applications (WP10)
    - Exploration of use of reliable multicast for file replication
  - Better understanding of how high-speed infrastructures react to traffic load
  - Support in the definition of TCP-based services
  - Integration and sharing of the existing GEANT monitoring with end-to-end DataGRID network monitoring data

Issues

- Overall under funded project relative to the size, goals and number of partners
  - New technology, 21 partners and diversity of applications and communities (CS, PP, EO and Bio)
- CERN (and some other partners) original funding assumptions no longer valid:
  - Project office under staffed and below minimum operating budget: one project secretary, one technical coordinator and one quality engineer marginally funded (0 travel budget and personnel cost higher than expected)
- Overall the project within budget, but ½ of partners overspent travel and 2 largely overspent first year budget
- Almost completely unfunded resources for test bed equipment, networking and security

Budget

Partners	Cost basis	Original Plan Y1	Spent	Deviation	Original Plan Y2	Actual plan	Deviation	Original Plan Y3	Actual plan	Deviation	EU ceiling	Total planned	Deviation
CERN		494,597	403,855	-18%	588,221	617,658	5%	513,761	566,642	10%	1,596,579	1,588,155	-0.53%
CERN coord.		130,666	88,484	-32%	120,055	137,668	15%	119,372	143,941	21%	370,093	370,093	0.00%
Total CERN	AC	625,263	492,339	-21%	708,276	755,326	7%	633,133	710,583	12%	1,966,672	1,958,248	-0.43%
ITC-irst	FC	204,341	155,987	-24%	177,841	177,841	0%	166,241	166,241	0%	548,423	500,069	-8.82%
UH	AC	90,624	13,775	-85%	91,820	91,820	0%	93,394	93,394	0%	275,838	198,989	-27.86%
VR	AC	124,844	0		123,466	177,600	44%	123,636	192,000	55%	371,946	369,600	-0.63%
ZIB	AC	90,156	76,487	-15%	93,156	93,156	0%	93,156	93,156	0%	276,468	262,799	-4.94%
EVG HEI UNI	AC	90,156	57,303	-36%	93,156	93,156	0%	93,156	93,156	0%	276,468	243,615	-11.88%
CNRS	FF	557,095	503,371	-10%	628,223	658,223	5%	637,464	661,118	4%	1,822,782	1,822,712	0.00%
CSSI	FF	330,200	355,655	8%	330,200	330,200	0%	330,400	304,945	-8%	990,800	990,800	0.00%
CEA	FC	120,529	62,284	-48%	122,754	122,754	0%	125,209	125,209	0%	368,492	310,247	-15.81%
IFAE	AC	64,392	70,740	10%	64,392	35,160	-45%	0	22,884		128,784	128,784	0.00%
ESA	AC	206,452	333,789	62%	254,873	254,873	0%	183,675	56,338	-69%	645,000	645,000	0.00%
INFN	AC	319,189	256,610	-20%	300,592	352,425	17%	300,592	308,810	3%	920,373	917,844	-0.27%
DATAMAT	FF	303,258	283,936	-6%	351,948	346,122	-2%	284,812	310,962	9%	940,018	941,020	0.11%
CNR	FF	179,673	202,080	12%	179,673	179,673	0%	181,673	159,266	-12%	541,019	541,019	0.00%
CESNET	FF	91,312	97,615	7%	91,312	91,312	0%	91,412	85,109	-7%	274,036	274,036	0.00%
FOM	AC	77,136	68,349	-11%	69,919	118,506	69%	71,125	71,592	1%	218,180	258,447	18.46%
KNMI	FC	119,310	133,161	12%	119,556	119,556	0%	79,008	65,157	-18%	317,874	317,874	0.00%
SARA	FC	142,600	152,071	7%	111,392	111,392	0%	93,244	83,773	-10%	347,236	347,236	0.00%
PPARC	AC	396,916	126,525	-68%	386,404	578,492	50%	414,005	460,828	11%	1,197,325	1,165,845	-2.63%
MTA SZTAKI	FF	177,700	187,504	6%	188,735	188,735	0%	197,087	176,283	-11%	563,522	552,522	-1.95%
IBM	FC	154,436	187,282	21%	158,858	158,858	0%	163,415	130,569	-20%	476,709	476,709	0.00%
Total		**4,465,582**	**3,816,861**	**-15%**	**4,646,546**	**5,035,180**	**8%**	**4,355,837**	**4,371,373**	**0%**	**13,467,965**	**13,223,414**	**-1.82%**

Future Plans (Technical)

- Expand and consolidate testbed operations
  - need to improve the distribution, maintenance and support process, also understand what operating a Grid means
- Evolve architecture and software on the basis of TestBed usage and feedback from users (consider converging to a common document with PPDG/GriPhyN, understand possible impact of OGSA)
  - Closer integration of the software components
  - Improve software infrastructure toolset and test suites
- Prepare for second test bed by autumn 2002
- Enhance synergy with US via DataTAG-iVDGL and InterGrid
- Promote early standards adoption with participation to GGF and other international bodies
- Address project limitations by launching additional EU projects (Security)

Future Plans (Administrative/Financial)

- Restructure coordination budget (convert overheads in travel, convert part of I&R Forum in Project Office administrative staff)
- Merge project management and project office with DataTAG and integrate dissemination and technical coordination with GridSTART
  - Economy of scale, synergy of activity
- Explore new unfunded resources: PP LCG, national Grids (UK e-Science, INFN Grid, French research Grid (eToile), etc.)
- Prepare larger follow-up proposal for FP6