

GRID projects for the Mediterranean and China

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Extending GRIDs outside EU

- EU has largely invested in GRID technology in the past 4 years and is planning to invest similarly in FP7.
- Few countries outside EU and USA are anyway actively involved in the deployment of a (national) GRID infrastructure.
- A World Wide GRID infrastructure is the natural objective of this technology and will enhance the potential benefits for all the applications in 2 main ways:
 - Fostering new international groups/applications
 - Enabling new kind of collaborative solutions

EGEE Infrastructure



-  Operations Management Centre
-  Core Infrastructure Centre
-  Regional Operations Centre

Mediterranean & China

- Mediterranean area is of particular interest due to the neighborhood of such countries to many EU countries and many initiatives are already active (EUMEDIS, etc.) → EUMEDGRID

EUMEDGRID
empowering eScience across the Mediterranean

- China is one of the fastest growing economies in the world with a specific program for GRID (CNGRID). → EUChinaGRID



- EUMEDGRID aims to provide specific support actions to assist the participation of the states of the Mediterranean region in the pan-European and worldwide Grid initiatives, thus expanding and supporting the European Research Area (ERA) in the region.
- The core of the EUMEDGRID approach is to establish a human network in the eScience area, enlarge and train this community, and establish a pilot Grid infrastructure supporting proof of concept regional applications.
- The reference GRID Infrastructure in Europe will be EGEE a 2 years project funded by the EU and started in April 2004.
- EUMEDGRID will build upon and exploit the infrastructure provided by the Gigabit Pan-European Research & Education Network (GEANT) and the Mediterranean Research and Education Networking (EUMEDCONNECT) initiative in the region.

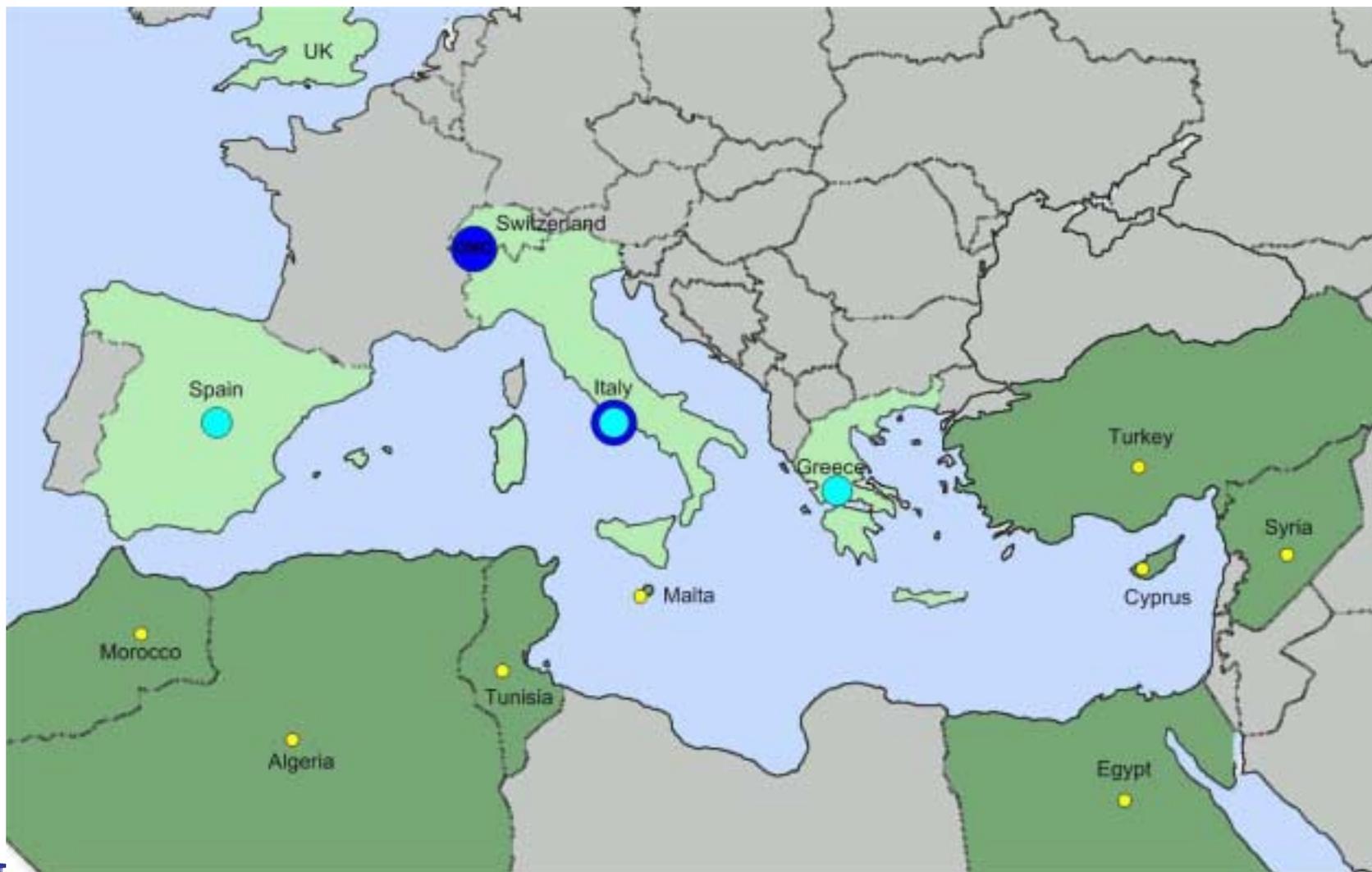
Participants

<i>Participant number</i>	<i>Participant name</i>
1	INFN (Italy) Coordinator
2	CERN (Switzerland)
3	CYNET (Cyprus)
4	DANTE (UK)
5	GARR (Italy)
6	GRNET (Greece)
7	RED.ES (Spain)
8	University of Malta (Malta)
9	CERIST (Algeria)
10	CNRST (Morocco)
11	EUN (Egypt)
12	HIASST (Syria)
13	RNRST (Tunisia)
14	TUBITAK - ULAKBIM (Turkey)

EUMEDGRID WP's

- WP1: Project administrative and technical management
- WP2: Requirement capture and analysis
- WP3: Pilot infrastructure deployment and operations
- WP4: Applications support
 - EGEE supported applications
 - Regional applications
 - New applications
- WP5: Training and dissemination
- 24 Months duration

EUMEDGRID Infrastructure

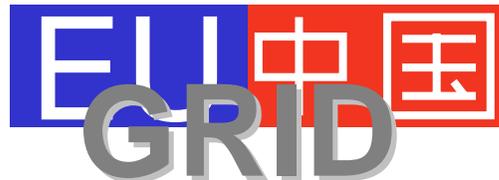


EUMEDConnect

Country	Name of NREN	International Research Connectivity (in Mbps)	Status
Algeria	CERIST	45	In service ¹
Cyprus	CYNET	45	In service
Egypt	EUN	34	In service
Israel	IUCC	310	In service
Malta	University of Malta	20	In service
Jordan	UniCo	45	Planned ²
Morocco	CNRST	34	In service
Syria	HIASST	8	Planned ²
Tunisia	RFR	45	In service
Turkey	ULAKBIM	155	In service

EUChinaGRID : Interoperability and Integration of Grids between Europe and China

- EUChinaGRID will make a step forward creating a pilot intercontinental Grid infrastructure which will promote new collaborations in eScience between Europe and China.
- The project can be regarded as the “first step” towards a larger EU-ASIA initiative which will include, but is not limited to: India, Taiwan, Korea.



Participants

1	Istituto Nazionale di Fisica Nucleare (IT) (coordinator)
2	European Organisation for Nuclear Research CERN (CH)
3	Dipartimento di Biologia - Università di Roma Tre (IT)
4	Consortium GARR (IT)
5	Greek Research & Technology Network (GR)
6	Jagiellonian University, Cracow (PL)
7	School of Computer Science and Engineering – Beihang University Beijing (CN)
8	Computer Network Information Center, Chinese Academy of Sciences – Beijing (CN)
9	Institute of High Energy Physics, Beijing (CN)
10	Peking University – Beijing (CN)

EUChinaGRID WP's

- WP1 – Management
- WP2 – Network provisioning
- WP3 – Pilot infrastructure
- WP4 – Applications
 - EGEE applications (LHC, Bio, etc.)
 - ARGO-YBJ and Gamma Ray Bursts
 - Never Born Proteins
- WP5 – Dissemination and Training
- 24 Months duration

ARGO – YBJ Laboratory



Unique High Altitude Cosmic Ray Laboratory (4300 m a.s.l., Tibet, P.R. China), 90 km North to Lhasa.

Chinese-Italian collaboration.

The Experiment data rate to be transferred is 250 TB/Year requiring a steady transfer rate of the order of 100 Mbps to Beijing and from



there to Italy.

Never Born Proteins

- The number of natural proteins on Earth, although apparently large, is only a tiny fraction of the possible ones:
 - with 20 different co-monomers (the 20 different natural amino-acids), a polypeptide chain with 60 residues ($n=60$) can exist in 20^{60} different chain structures.
 - In nature, we have around 10^{13-14} different proteins, so that the ratio between the possible and the actual number is staggeringly large.
- This means that there is an astronomically large number of proteins that have never been seen on Earth - an incredibly large number of “never born proteins” (NBP).
- In particular, the present research in the field is based on a computational approach to study a large library of NBP (10^9 protein sequences) to the aim of clarifying the structural principles that characterize them and of selecting a reasonable number of sequences which can potentially give rise to stably folded proteins.

Conclutions

- We think that “exporting” GRID technology to other countries is a key activity to reach a World Wide Grid.
- Mediterranean Countries and China are the more promising areas and 2 separate SSA projects have been presented to EU.
- Other/larger geographical coverage is possible: ASIA, South America.