

EU-IndiaGrid Project Workshop

16-18 April 2007

C-DAC Bangalore

The EU-IndiaGrid Project Joining European and Indian grids for e-science

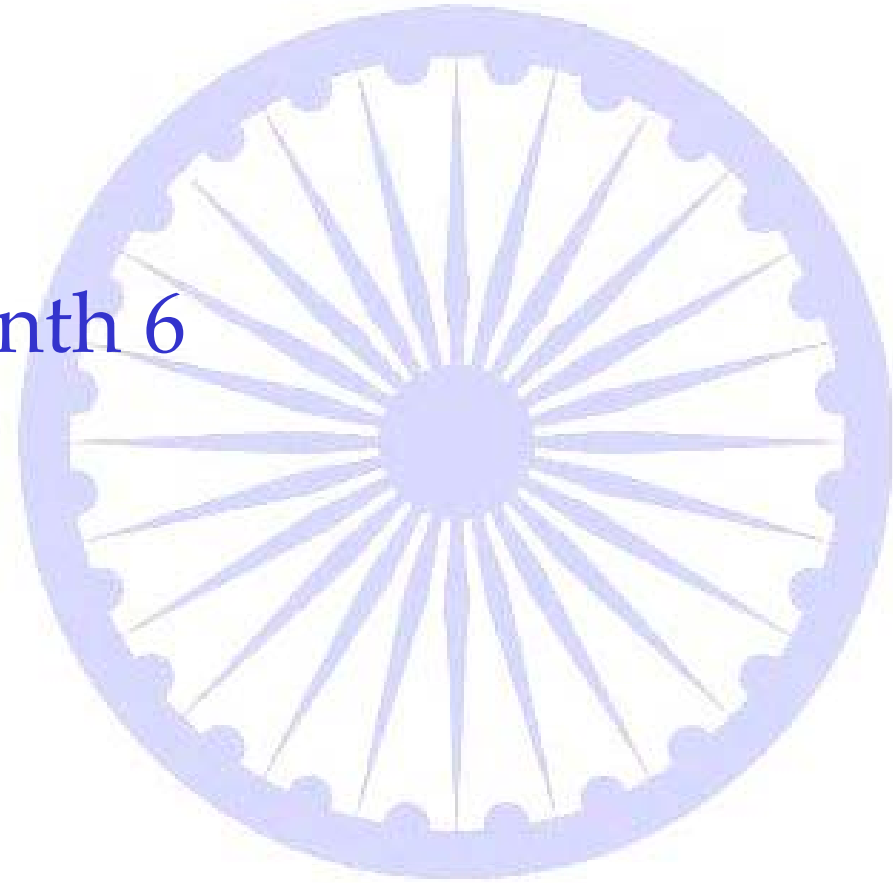
Stefano Cozzini

EU-IndiaGrid Technical Manager
CNR/INFN Democritos and ICTP



Outline

- Project overview
- Project status @ month 6
- What next



Eu-Indiagrid Project Goals

- To support the interconnection and interoperability of the prominent European Grid infrastructure (EGEE) with the Indian Grid infrastructure (Garuda National Grid Initiative, DAE-Grid) for the benefit of eScience applications;
- To identify and aggregate research, scientific and industrial communities which may benefit from the use of Grid technology resulting in an eScience Network Community
- To promote the use of advanced Grid technologies within the created Network Community relying on pilot applications in Biology and High Energy Physics Material Science, Earth and Atmospheric Sciences and specific outreach and dissemination activities
- To disseminate European EGEE Grid technology achievements in India and leverage on Indian Grid experiences and skills.

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PARTICIPANTS

EUROPE

- Italian National Institute of Nuclear Physics, INFN (project coordinator),
- Metaware SpA,
- Italian Academic and Research Network (GARR)
- Cambridge University

INTERNATIONAL

- **Abdus Salam International Centre for Theoretical Physics (ICTP)**

INDIA

- Indian Education and Research Network (ERNET),
- University of Pune,
- SAHA Institute of Nuclear Physics, Kolkata,
- Centre for Development of Advanced Computing (C-DAC),
- Bhabha Atomic Research Centre, Mumbai
- TATA Institute for Fundamental Research (Mumbai)
National Centre for Biological Sciences (Bangalore)

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Project Effort

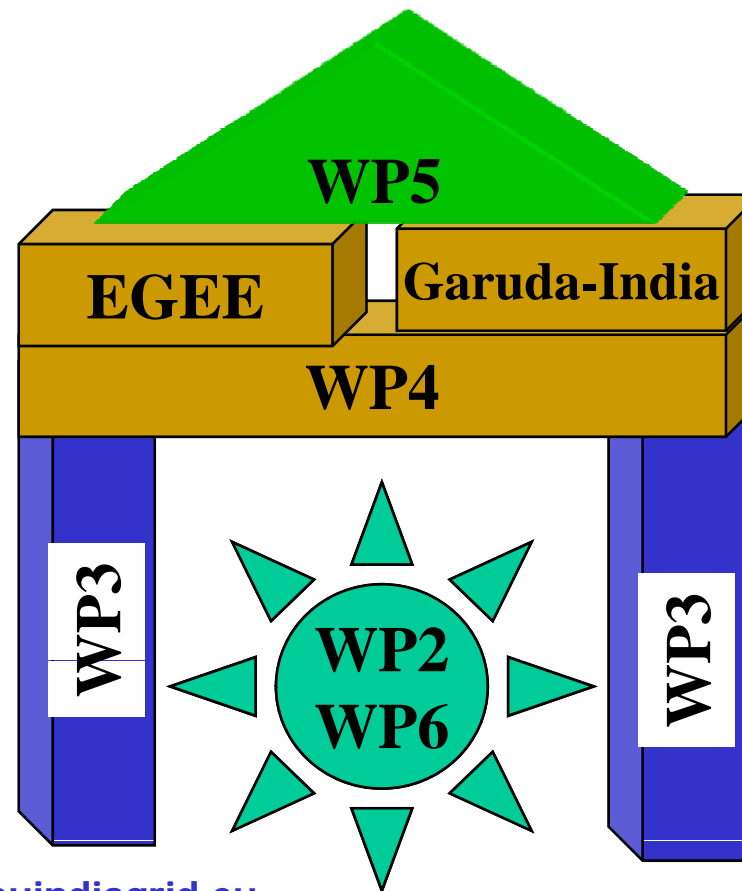
- BUDGET:
 - 1208 k-EUR total fund
 - 1015.9 k-EUR from European Commission
- Person months
 - 353.3 PM total
 - 226.4 PM funded from European Commission
- Project start: October 2006
- Duration: 24 months

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WORKPACKAGES

WP2	Building an eScience Network Community
WP3	Network Planning & Support
WP4	Pilot grid infrastructure operational support
WP5	Applications
WP6	Dissemination & Networking Events



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Project Status @ month 6

- First Project Workshop, focused on High Energy Physics Applications
 - Mumbai December 1-4 2006 jointly organized with the WLCG Tier2 in Asia Workshop
 - Over 100 registered participants
- Boost for all project activities
 - Building an eScience Network Community
 - Network Planning & Support
 - Pilot grid infrastructure operational support
 - Applications
 - Dissemination

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WP2-Building an eScience Network Community

- Contacts & collaborations already established at the Project Workshop and at the EU-IndiaGrid session during the Belief Conference in December
- Identify targets
 - 1400 contacts, active grid users from India & Europe
 - beyond the four application areas directly addressed
- Focus on building the Indian Community of contacts
 - (keeping an eye on EU-India Collaborations)



Over 250 members from about 200 Institutions registered through the EU-IndiaGrid portal in a one-month period

- All Registered members inserted in the EU-IndiaGrid DB and required to fill a questionnaire
- **Targeted Workshop in Bangalore NOW**

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WP3-Network Planning & Support

- Analysis of the network status EU-India and within India to ensure adequate access to the intercontinental network
 - GEANT-ERNET Milan-Mumbai 45 Mb/s link opened in October
 - 50 Research laboratories and educational institutes situated in 17 major Indian cities are interconnected within the GARUDA National Grid Initiative through ERNET
 - total backbone throughput of 2.43 Gb/s. 22 Institutes are connected at 100 Mb/s and 22 Institutes at 10 Mb/s

WP3-Network Planning & Support

- Issues & actions
 - GARUDA-Grid sites not connected to the GEANT-ERNET link @ project month 3
 - Ensured access of GARUDA-Grid to GEANT interconnecting two routers at ERNET PoP in Mumbai hosted by C-DAC
 - Insufficient bandwidth to access some sites
 - Upgraded the link C-DAC Mumbai to GARUDA from 10 Mb/s to 100 Mb/s
 - Need for an upgrade of the intercontinental link once the applications will exploit the grid infrastructure
 - Support actions targeted at upgrading the intercontinental link

WP4-Pilot grid infrastructure operational support

- Key points
 - Certification Authority
 - Creation of a pilot testbed
 - Interoperability

WP4-Pilot grid infrastructure operational support

- Cooperation with Academia Sinica (Regional Operation Centre for Asia) allowed:
 - To established Registration Authorities at each site in order to ensure immediate grid access worldwide to Indian users
 - Set the necessary steps for an Internationally recognized Indian Certification Authority (Responsibility taken by C-DAC)

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the eyes of the Grid

is monitoring



Geo view Site view VO view

Help About

GridICE >> Site::ALL

General
Gris
Host
Job
Charts
Network
XML

Overview Computing Management

Site ▼	Region	GK#	Q#	RunJob	WaitJob	Computing Resources					Storage Resources			MH#
						JobLoad	Power	WN#	CPU#	CPUload	Available	Total	%	
IN-DAE-VECC-01	AsiaPacific	1	3	0	108	4%	0	12	24	0%	-	-	-	2
INDIACMS-TIFR	AsiaPacific	-	-	-	-	-	-	-	-	-	55.8 GB	66 GB	16%	-
INFN-CAGLIARI	Italy	1	6	24	322	75%	21K	14	28	19%	887.9 GB	938.1 GB	5%	19
INFN-CAGLIARI-EUINDIA	Italy	1	1	0	4444	-	-	-	-	-	-	-	-	-
INFN-CATANIA	Italy	1	10	194	0	84%	302K	81	216	80%	18.4 TB	21.2 TB	13%	94
INFN-CNAF	Italy	2	8	18	14	100%	10K	5	10	100%	531.8 GB	1.7 TB	69%	12
INFN-LNL-2	Italy	1	7	99	0	47%	298K	78	204	51%	8.4 TB	12.5 TB	32%	109
INFN-PADOVA	Italy	2	18	95	0	43%	97K	38	112	54%	3.8 TB	5.1 TB	26%	51
UKI-SOUTHGRID-CAM-HEP	UKI	1	5434	707190	143660	-	-	-	-	-	4.1 TB	6.6 TB	19%	-
TOTAL: 9	3	3	10	5487	707620	59%	729K	228	594	51%	36.1 TB	48.1 TB	29%	287

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GridICE Homepage

WP4-Pilot grid infrastructure operational support: Interoperability

- India has two main grid infrastructures:
 - The Garuda National Grid Initiative
 - The Department of Atomic Energy (DAE) Grid
- Issues and actions deeply discussed at the Project Workshop and in successive meetings
 - Pilot testbed based on gLite
 - Middleware Access Driver under study to address interoperability between GARUDA and gLite (cooperation between C-DAC and Madras Institute of Technology)

WP5-Applications

- Good progress for all the four application areas directly addressed by the project
- Boost from 1st Project Workshop and follow-up meetings especially for High Energy and Condensed Matter Physics, Earth and Atmospheric Sciences applications

WP6-Dissemination

- Promotion material
 - Several hundreds contacts reached through participation to Conferences
 - Thousands contacts reached through press releases
- Website
 - Almost 300 contacts from about 200 Institutions registered in the EU-IndiaGrid Community through the portal
- Training events
 - 1st training event during the EU-IndiaGrid – WLCG Mumbai Workshop
 - Training Event in Sri Lanka

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Next Steps

- Towards strengthening and enlarging the collaboration
- Towards Indian National Certification Authority recognized internationally
- Toward an EU-IndiaGrid testbed involving all sites
- Towards an operational service for Applications
- Towards GARUDA-gLite interoperability

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Future Events

- **September - Pune - Project Workshop** focused to Condensed Matter Physics, Earth and Atmospheric Sciences applications and Training Event
- **December - Bangalore – Project Conference** in conjunction with the 3rd IEEE International Conference on eScience and Grid Computing

EU-IndiaGrid - Joining European and Indian grids for e-science

Thank You

