DEGISCO

Desktop Grids For International Scientific Collaboration

The first year of DEGISCO: hybrid infrastructure and new applications based on BOINC

Hannover, 18/08/2011

Robert Lovas, MTA SZTAKI - Project coordinator

DEGISCO is supported by the FP7 Capacities Programme under contract nr RI-261561.

DEGISCO
Desktop Grids for International Scientific Collaboration

Project acronym:
DEGISCO
Contract n°: RI-261561
Project type: CSA-SA
Start date: 01/06/2010
Duration: 24 months
Funding from the EC:
800.000 €
Total funded effort
in person-month: 320
Web site: http://degisco.eu
Coordinator:
Dr. Robert Lovas
email: rlovas@sztaki.hu

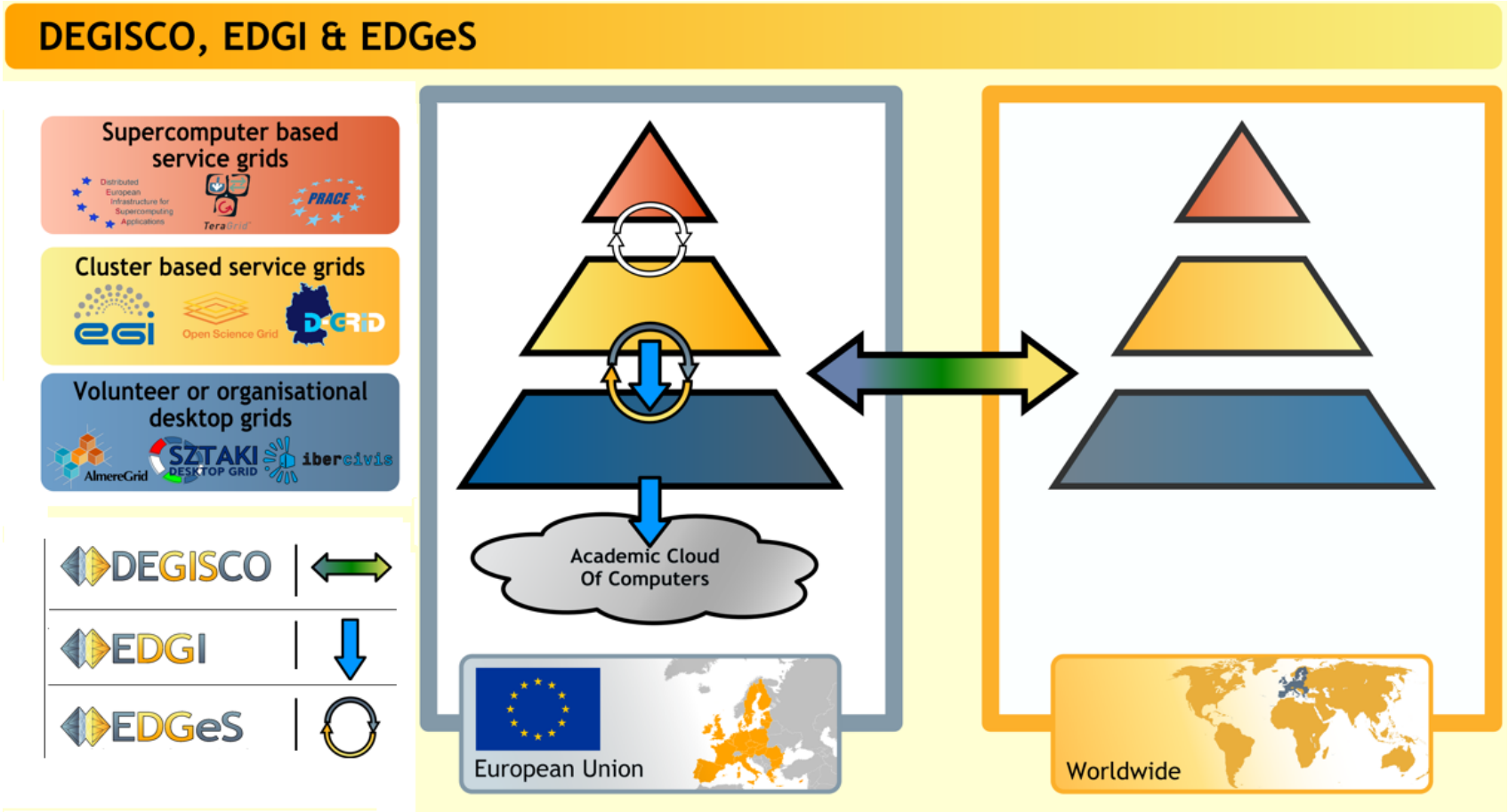
*Expand European DCIs into non-EU **partner countries** by supporting the creation of **new Desktop Grids** for e-Science in those countries and in Europe and by **connecting** them to the DCI using the 3G Bridge technology. **Support applications** on this expanded infrastructure, **disseminate**, promote and provide **training** about this expanded infrastructure and its usage.*

A recent blog item from the BOINC forum

Author	Message
David Anderson Volunteer moderator Project administrator  Send message Joined: 10 Sep 05 Posts: 460	Message 39005 - Posted: 17 Jul 2011 | 4:56:12 UTC Since 2008, the Einstein@OSG project from Caltech has used grid resources on the Open Science Grid and on the German D-Grid to supply about 150,000 CPU hours daily to the Einstein@Home project. _____ ID: *39005* | Reply Quote

Open Science Grid + D-GRID → Einstein@home

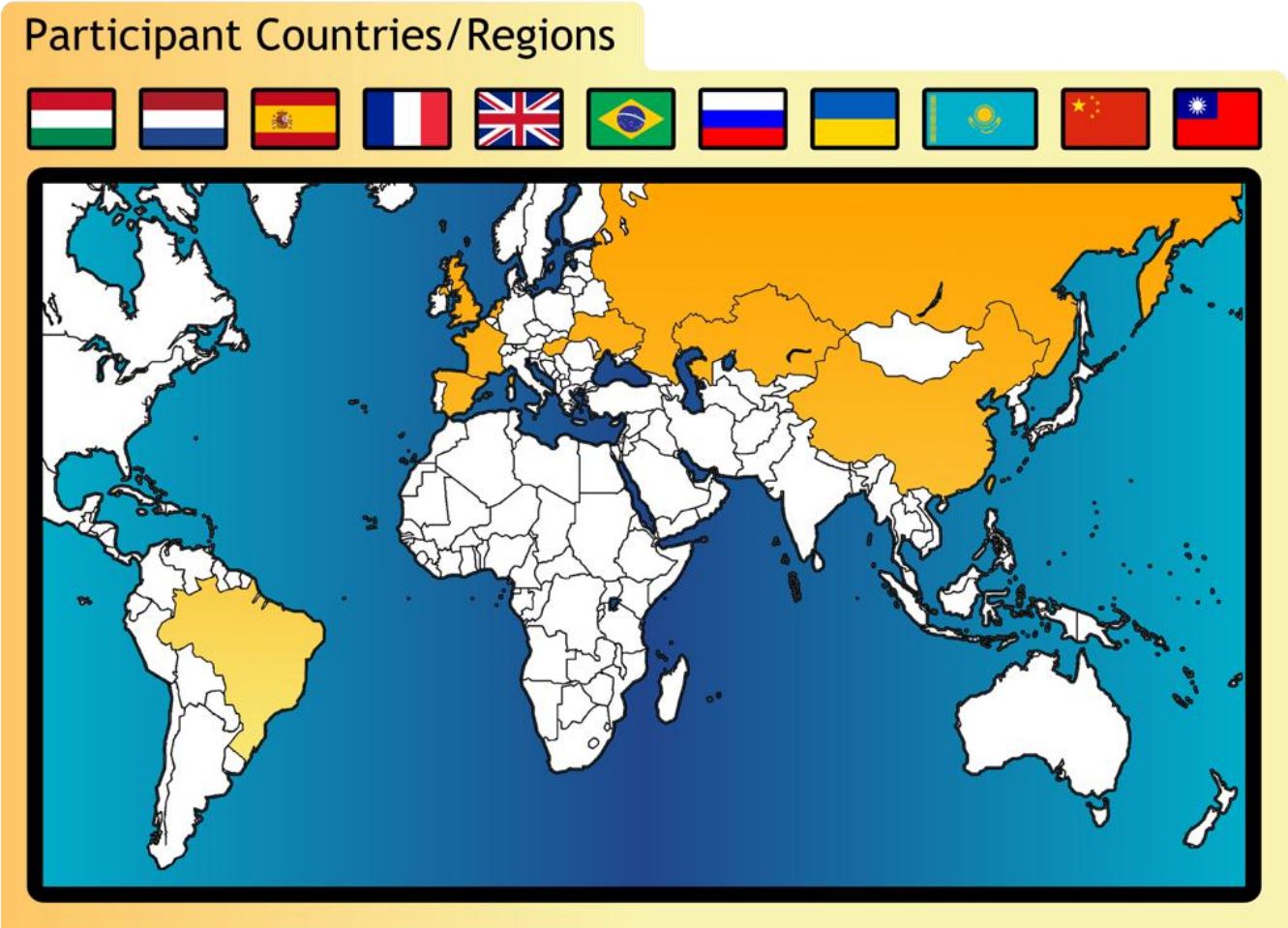
Relation of projects / Ecosystem



DEGISCO partners

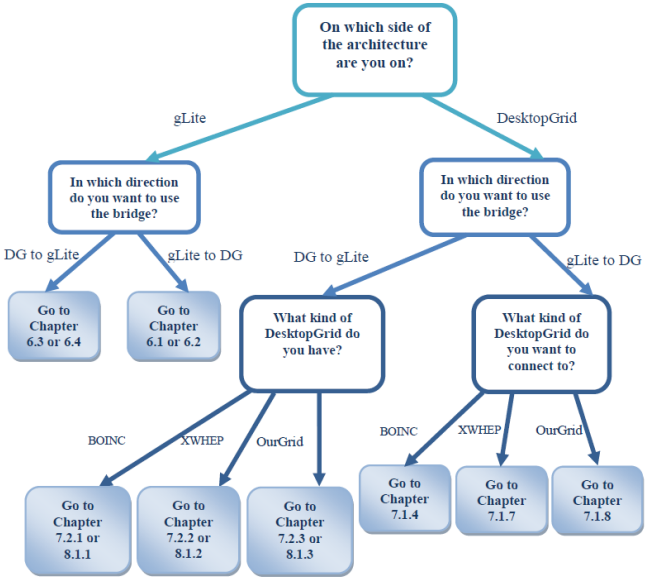
	Participant organisation name	Short name	Country/Region	Expertise
1	Magyar Tudományos Akadémia Számítastechnikai és Automatizálási Kutatóintézet	MTA SZTAKI	Hungary	Desktop Grids, Service grids, project management
2	Centre National de la Recherche Scientifique	CNRS	France	XtremWeb, gLite
3	Universidad de Zaragoza Insituto de Biocomputación y Física de Sistemas Complejos	UNIZAR-Ibercivis	Spain	Spanish Desktop Grid federation, Grid operation, applications, dissemination
4	Stichting AlmereGrid	AlmereGrid	The Netherlands	Desktop Grids, Dissemination
5	The University of Westminster	UoW	United Kingdom	Application support, Grid operation
6	Academia Sinica Grid Computing	ASGC	Taiwan	Local IT expertise/users
7	Institute for Systems Analysis Russian Academy of Sciences	ISA RAS	Russian Federation	Local/Regional IT expertise/users
8	G.V. Kurdyumov Institute for Metal Physics	IMP	Ukraine	Local/Regional IT expertise/users
9	JSC Kazakh-British Technical University	KBTU	Kazakhstan	Local IT expertise/users
10	Universidade Federal de Campina Grande	UFCG	Brazil	Regional Desktop Grid expertise/users
11	School of Computer Huazhong University of Science and Technology	HUST	China	Local/Regional IT expertise/users
12	Atos Origin S.A.	ATOS Origin	Spain	Business use of grids

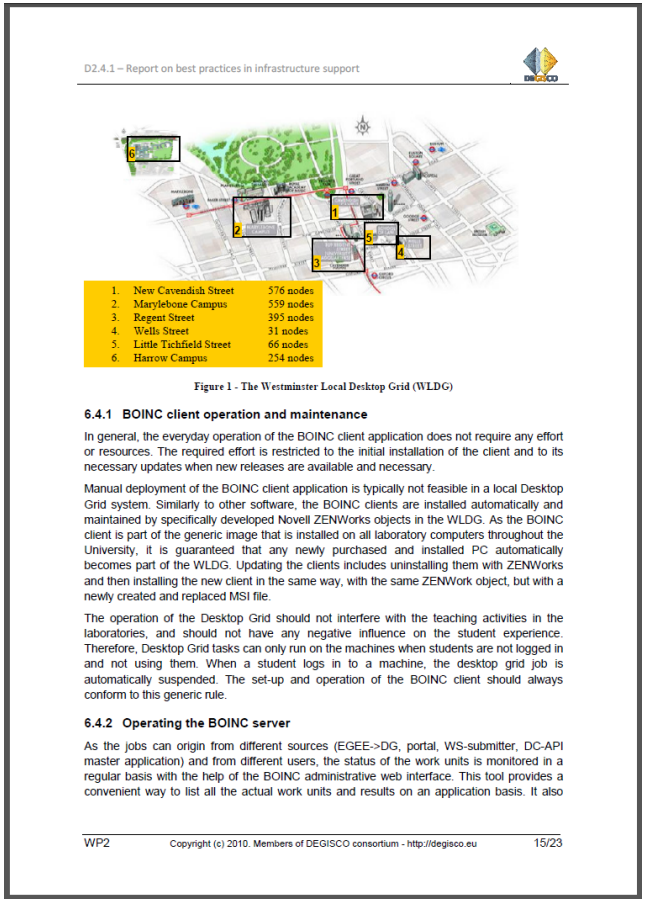
Worldwide coverage



Achievements (first year)

- International Desktop Grid Federation launched (with EDGI)
- Guide for Grid operators
- Best practices in application porting and support
- Best practices in infrastructure operation





D2.4.1 – Report on best practices in infrastructure support

1.	New Cavendish Street	576 nodes
2.	Marylebone Campus	559 nodes
3.	Regent Street	395 nodes
4.	Wells Street	31 nodes
5.	Little Tichfield Street	66 nodes
6.	Harrow Campus	254 nodes

Figure 1 - The Westminster Local Desktop Grid (WLDG)

6.4.1 BOINC client operation and maintenance

In general, the everyday operation of the BOINC client application does not require any effort or resources. The required effort is restricted to the initial installation of the client and to its necessary updates when new releases are available and necessary.

Manual deployment of the BOINC client application is typically not feasible in a local Desktop Grid system. Similarly to other software, the BOINC clients are installed automatically and maintained by specifically developed Novell ZENWorks objects in the WLDG. As the BOINC client is part of the generic image that is installed on all laboratory computers throughout the University, it is guaranteed that any newly purchased and installed PC automatically becomes part of the WLDG. Updating the clients includes uninstalling them with ZENWorks and then installing the new client in the same way, with the same ZENWork object, but with a newly created and replaced MSI file.

The operation of the Desktop Grid should not interfere with the teaching activities in the laboratories, and should not have any negative influence on the student experience. Therefore, Desktop Grid tasks can only run on the machines when students are not logged in and not using them. When a student logs in to a machine, the desktop grid job is automatically suspended. The set-up and operation of the BOINC client should always conform to this generic rule.

6.4.2 Operating the BOINC server

As the jobs can origin from different sources (EGEE->DG, portal, WS-submitter, DC-API master application) and from different users, the status of the work units is monitored in a regular basis with the help of the BOINC administrative web interface. This tool provides a convenient way to list all the actual work units and results on an application basis. It also

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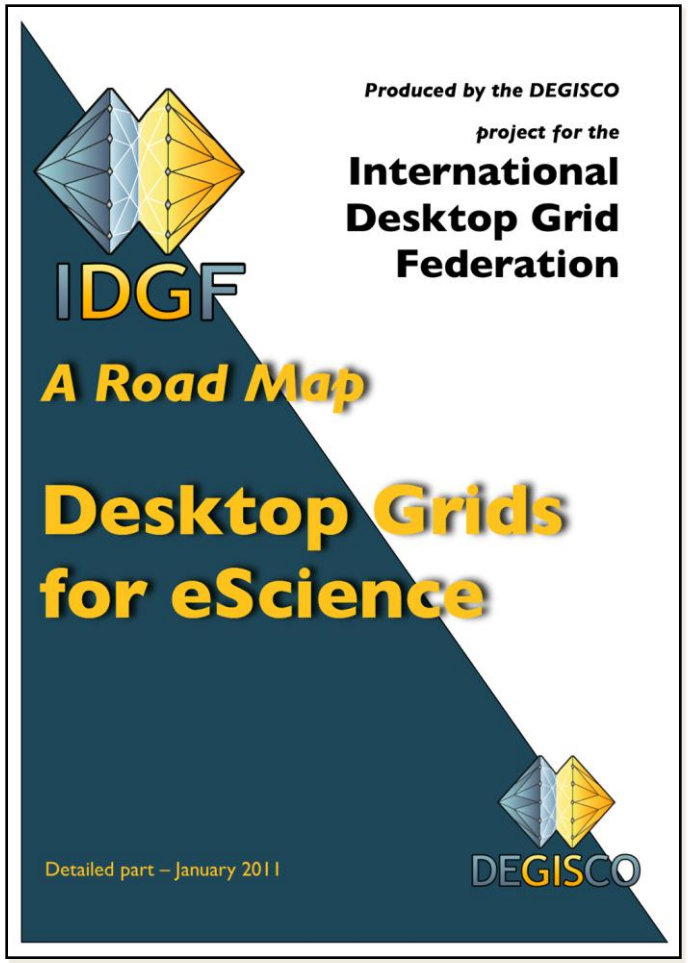
Achievements (first year)

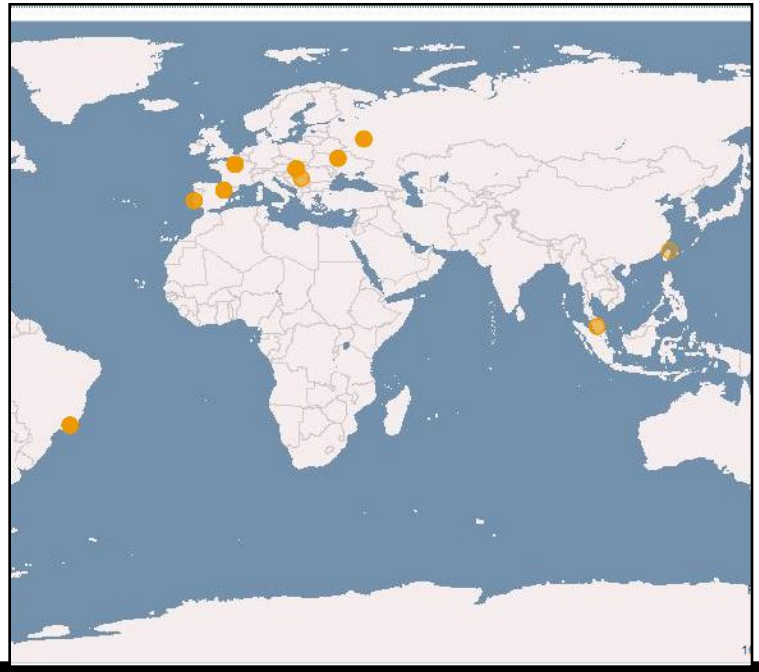
- Collaboration with other projects and initiatives
  - EPIKH, ERINA+, …
  - MoU template is available
- Roadmap and recommendations
- **Production, test, development, validation infrastructures**
- **15 new applications**
- **Hierarchical helpdesks**



Hybrid infrastructure with over 180.000 computers from Desktop Grids and over 2000 CPUs in Desktop Grid VO

Infrastructure type			DG	DG type	3G Bridge Connection	Registered hosts
DEGISCO	EDGeS legacy	Production	EDGES@home	BOINC	SG→DG	12 149
			EDGES@home	XWHEP	SG→DG	750
			SZDG	BOINC	Both	87 666
			Ibercivis	BOINC	DG→SG	41 727
			UoW Local DG	BOINC	Both	1 881
			LAL	XWHEP	Both	1 000
			LRI public	XWHEP	Both	-
			AlmereGrid	BOINC	DG→SG	4 535
			AlmereGrid	XWHEP	SG→DG	10
			Fundecyt RTE DG	BOINC	-	-
	NEW		ASGC DG	BOINC	SG→DG	1 062
			IMP (SLINCA@Home)	BOINC	DG->SG	1 626
			UFCG	OurGrid	Both	270
			ISA-RAS (Optima@Home)	BOINC	DG->SG	135
			Yoyo@Home	BOINC	DG->SG	34 550
		Test	HUST	XWHEP	DG->SG	<10
			ISA-RAS	BOINC	stand alone	<10
			KBTU	BOINC	SG->DG	70
		Development	SZDGr	BOINC	DG->SG	<10
			IMP	BOINC	stand alone	<10
			ISA-RAS	BOINC	stand alone	<10
		Validation	KBTU	BOINC	SG->DG	<10
	EDGeS legacy		UNIZAR-IBERCIVIS	BOINC	SG->DG	<10
Total						187 560

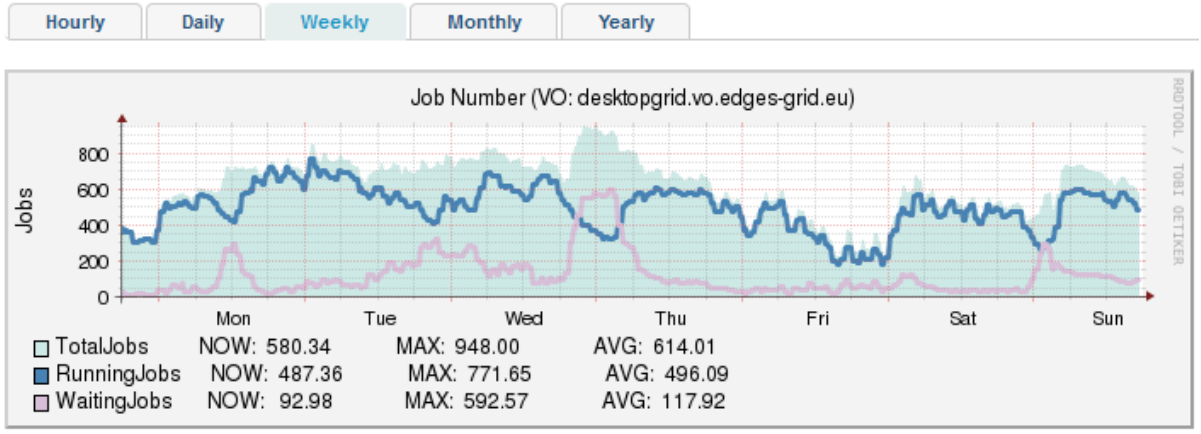
SG sites in the VO:

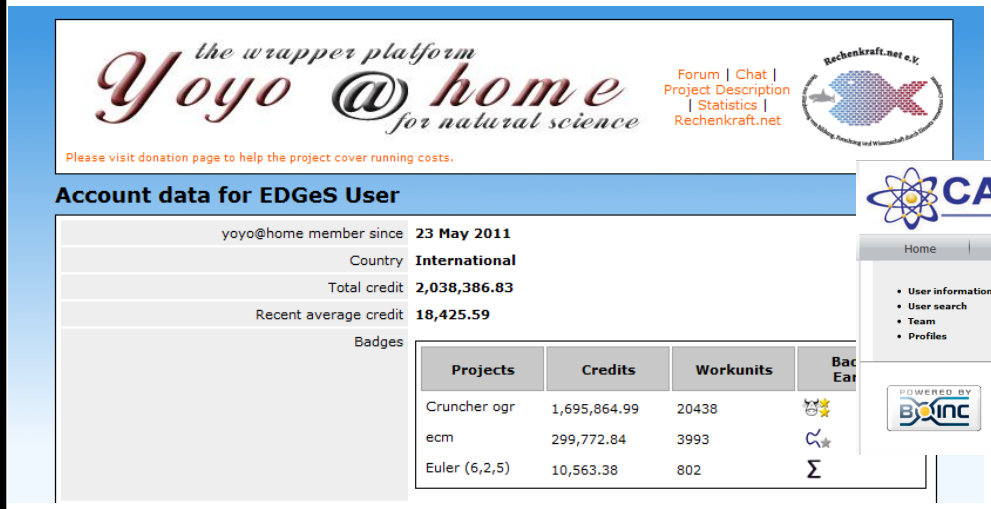


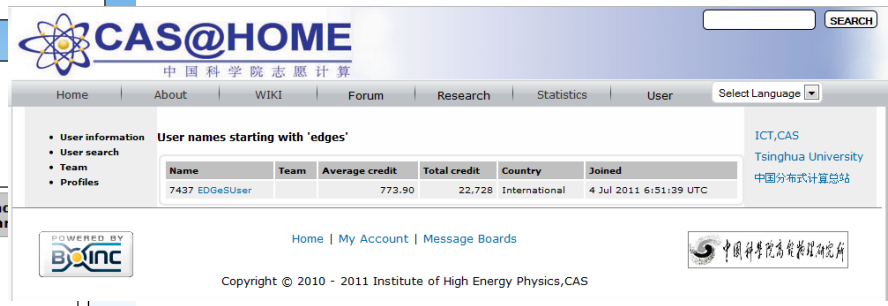
Desktop Grid VO – internal view

Name	CPUs			Online Storage Space (GB)		Grid Jobs		
	Physical	Logical	SI2000	TotalSize	UsedSize	Total	Running	Waiting
AEGIS01-IPB-SCL	176	704	1,689,600	0	0%	716	101%	0%
BIFI	64	384	523,392	492	15%	16	4%	0%
GRIF	1,602	7,411	15,590,608	110,122	40%	22,068	168%	43%
MY-UPM-BIRUNI-01	86	344	4,851,088	0	0%	2	0%	100%
NCG-INGRID-PT	312	1,248	2,131,584	428	0%	3,312	200%	24%
RU-ISA-CGTDC	4	16	0	315	5%	25	100%	36%
SZTAKI	14	34	44,288	1,099	6%	21	44%	28%
TW-eScience	2	8	21,520	136	10%	30	237%	1481516%
UA-KNU	24	80	164,000	2,164	20%	19	0%	100%
UFCG-LSD	8	1	1,323	986	5%	0	0%	0%
UFRJ-IF	62	244	478,012	12,691	94%	1,114	1%	79892%
Total	2,354	10,474	25,495,415	128,433	57,371	27,323	15,806	1,344,849

New supported, external BOINC based volunteer projects







SLinCA@home

SLinCA@Home

About SLinCA@Home

SLinCA (Scaling Laws in Cluster Aggregation) is a research project that uses Internet-connected computers to do research in field of materails science. You can participate by downloading and running a free program on your computer.

SLinCA is based at G.V.Kurdyumov Institute for Metal Physics (National Academy of Sciences of Ukraine - NASU).

Project Description, Wiki, FAQ, and other sections are under construction, but some info can be found in

- Wikipedia, the free encydopedia;
- our publications.

SLinCA@Home is supported by our partners: DEGISCO, IDGF, and Distributed Computing team 'Ukraine'.

Join SLinCA@Home

- Llegiu les regles i normes nostres
- This project uses BOINC. If you're already running BOINC, select Attach to Project. If not, download BOINC.
- When prompted, enter **http://dg.imp.kiev.ua/slinca/**
- If you're running a command-line or pre-5.0 version of BOINC, create an account first.
- If you have any problems, get help here.

Technical Details

- Number of registered users: **1943**.
- Number of *active* users: **394**.
- Number of hosts: **808**.

Usuari del Dia

koll
Czechoslovak 1963
Mi, Computer, BOINC, Geocaching, Photo, Bicycle, Breadbaker, ...

News

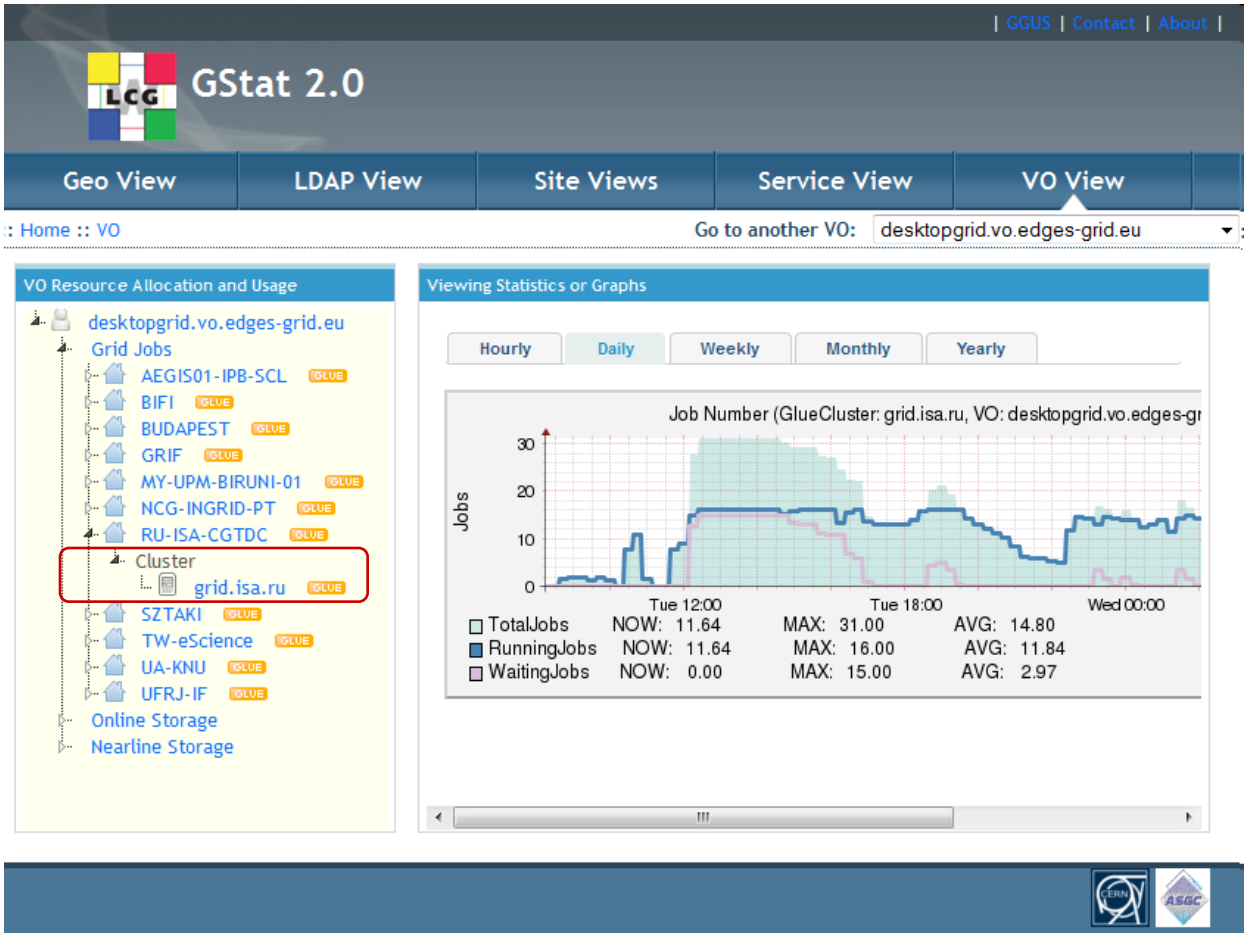
Temporary withdrawal of large (>~2GB for RAM) tasks - only smaller ones are available now.
April 13, 2011, 08:05 GMT
During the last weekend it has become clear that our big workunits (~ 2GB for RAM) were run in a very inefficient way: we have got results from Linux-machines only. Details can found at our forum pages. So we decided to cancel them and return to them after more effective optimization and elimination of some bugs. But we are grateful to those who managed to perform these large workunits successfully - they will be used by us! Many thanks to re_SET, varador, Saenger, zombie67, DEATH, and many others who sent us their reports, observations and suggestions! These condusions and corrections have become possible only due to your help!

Our project Desktop Grid (DG) is connected to global Service Grid (SG) now!
April 11, 2011, 06:28 GMT
We are glad to announce that SLinCA@Home became the part of a global distributed computation infrastructure at production level thanks to the successful collaboration in the frame of the EU funded DEGISCO project and the EDGeS 3G Bridge technology from MTA SZTAKI. With this step, our scientific applications at SLinCA@Home Desktop Grid are executed now not only on the volunteers' home computers equipped by BOINC, but also on servers and dusters of Service Grid sites operated by HPC and Grid centers world-wide, which joined the International Desktop Grid Federation and offer capacities to numerous Desktop Grids. Please, see statistics for 'EDGES user'.

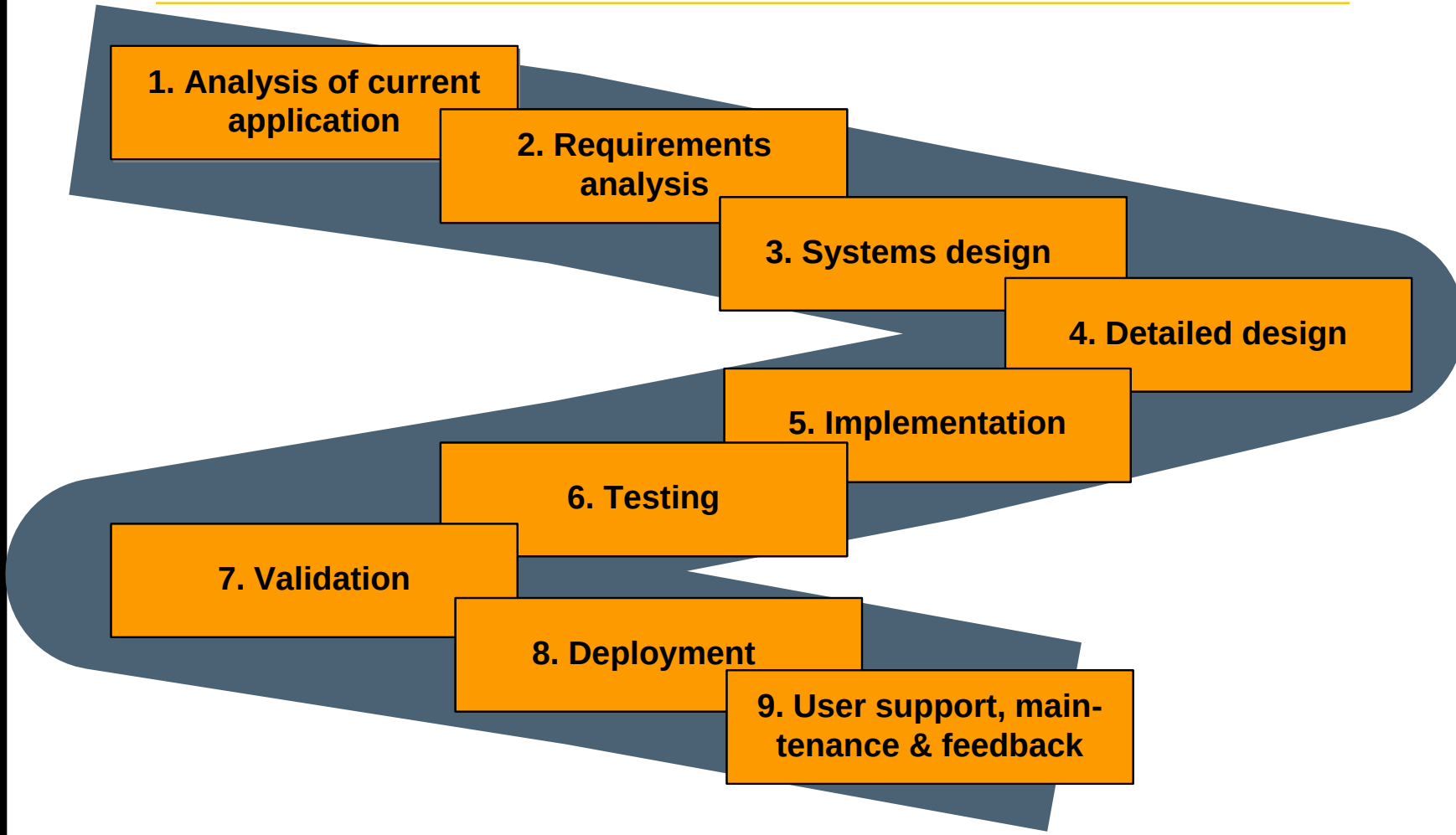
SERVER STATUS: We restarted the project and cleaned database from faulty workunits.
April 8, 2011, 11:43 GMT
During this week we collected responses from various Windows-users (Vista, 7, XP64) about malfunction of our 32-bit Windows-dients of our 'lodci'-applications. Today we fixed this bug in Windows-clients of applications (where conflicts were

New Service Grids connected

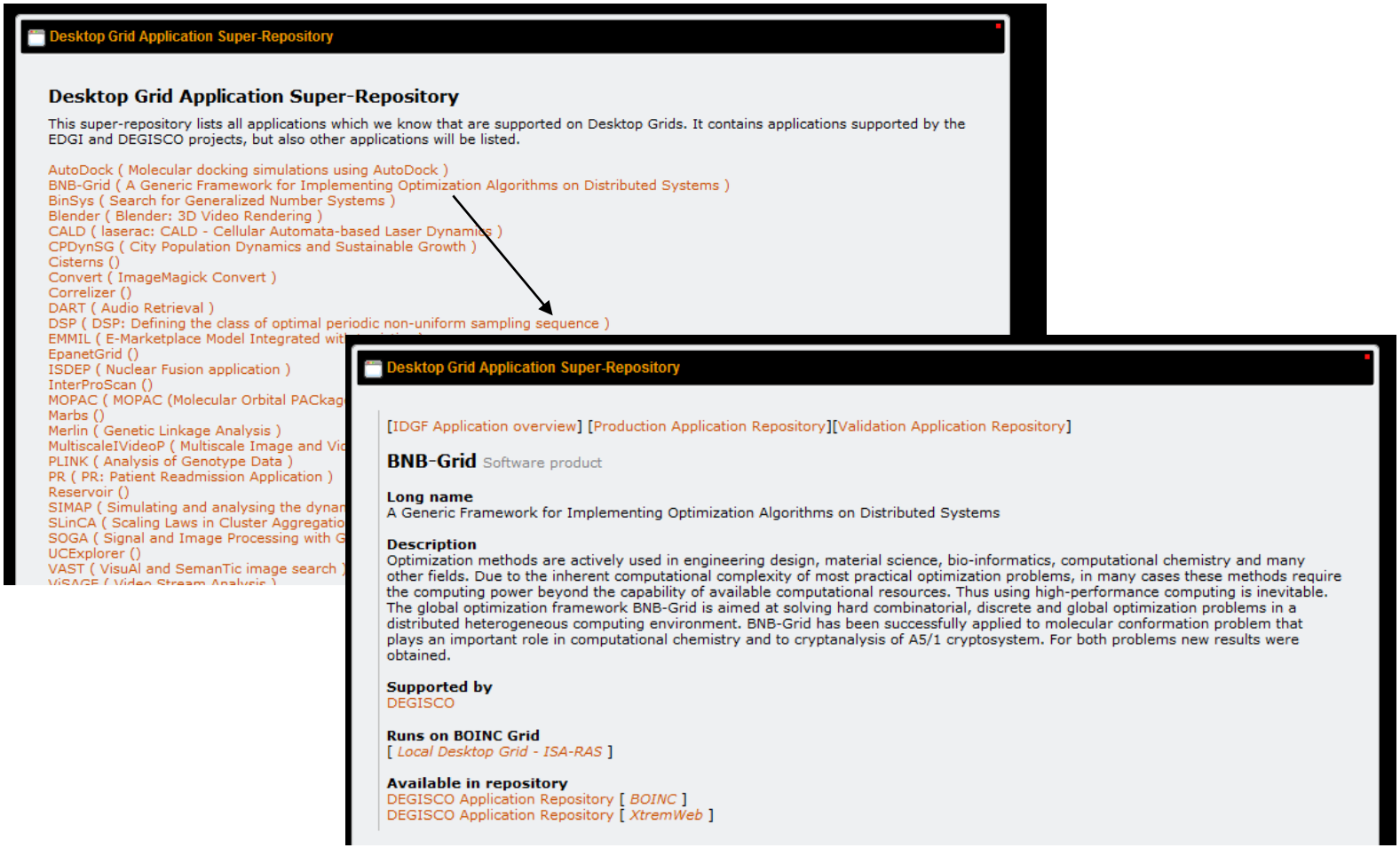
Russian Data Intensive Grid site added



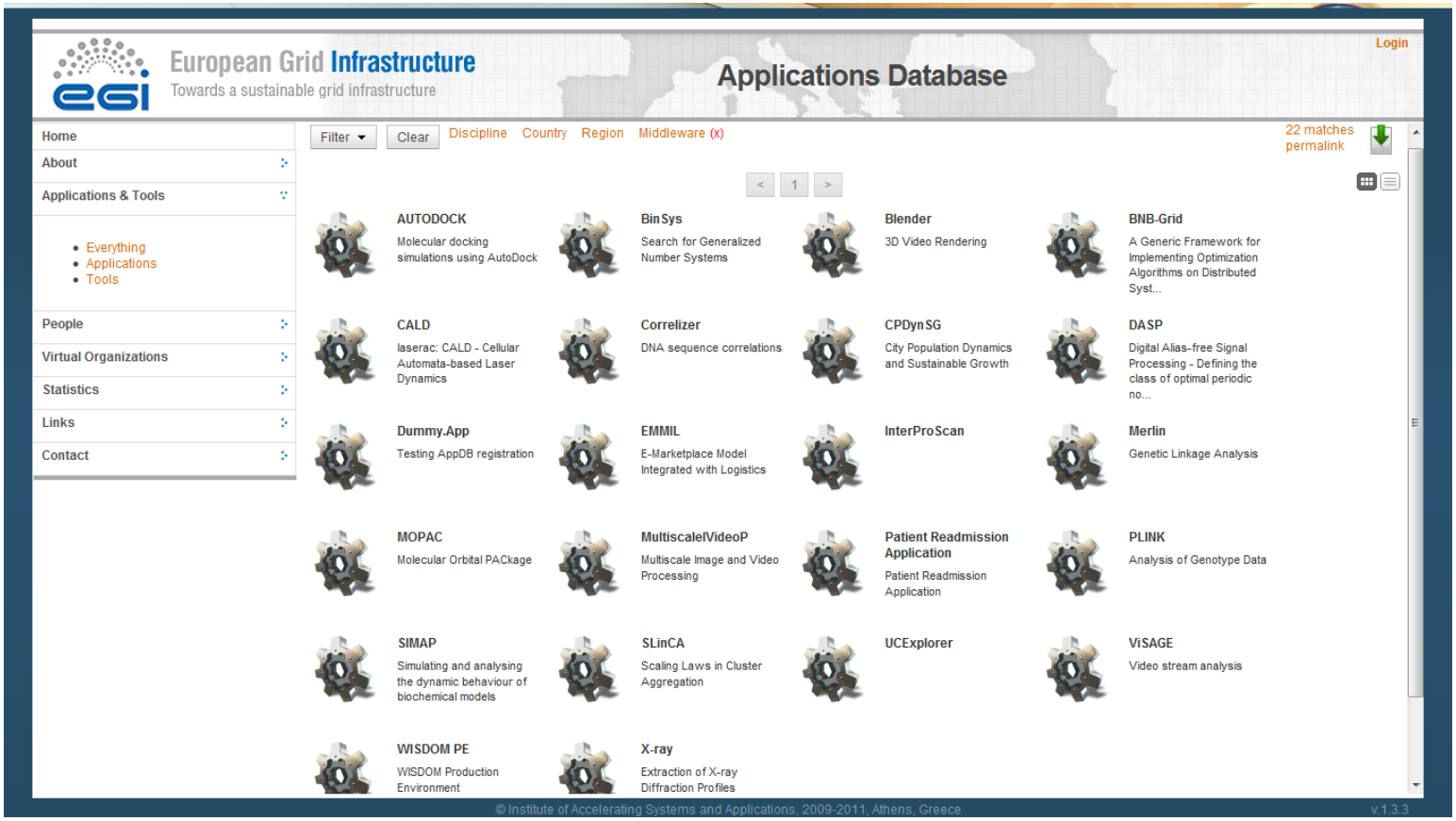
IDGF - Application Development Methodology



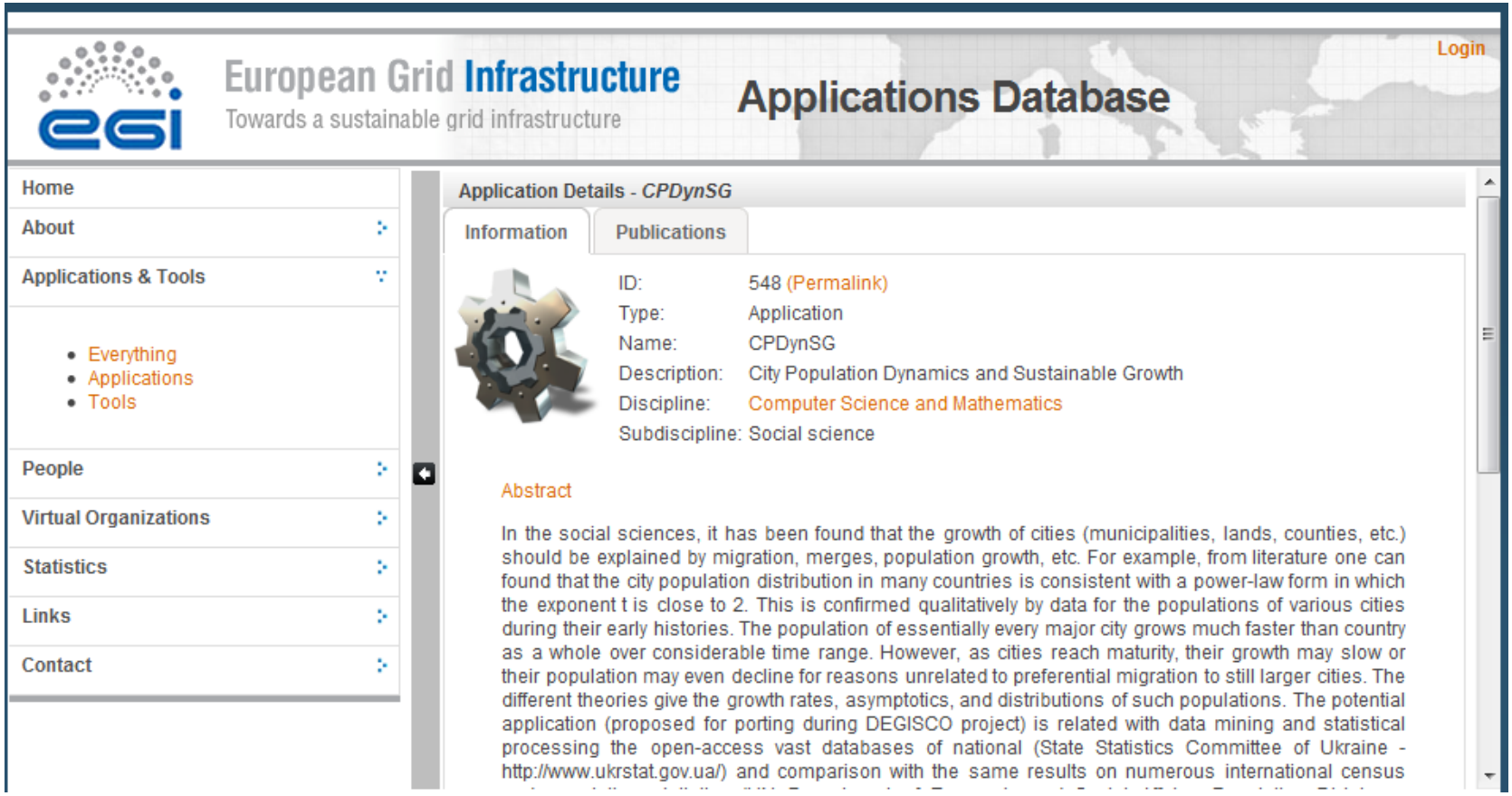
DG Application super-repository



Ported applications available @ EGI AppDB



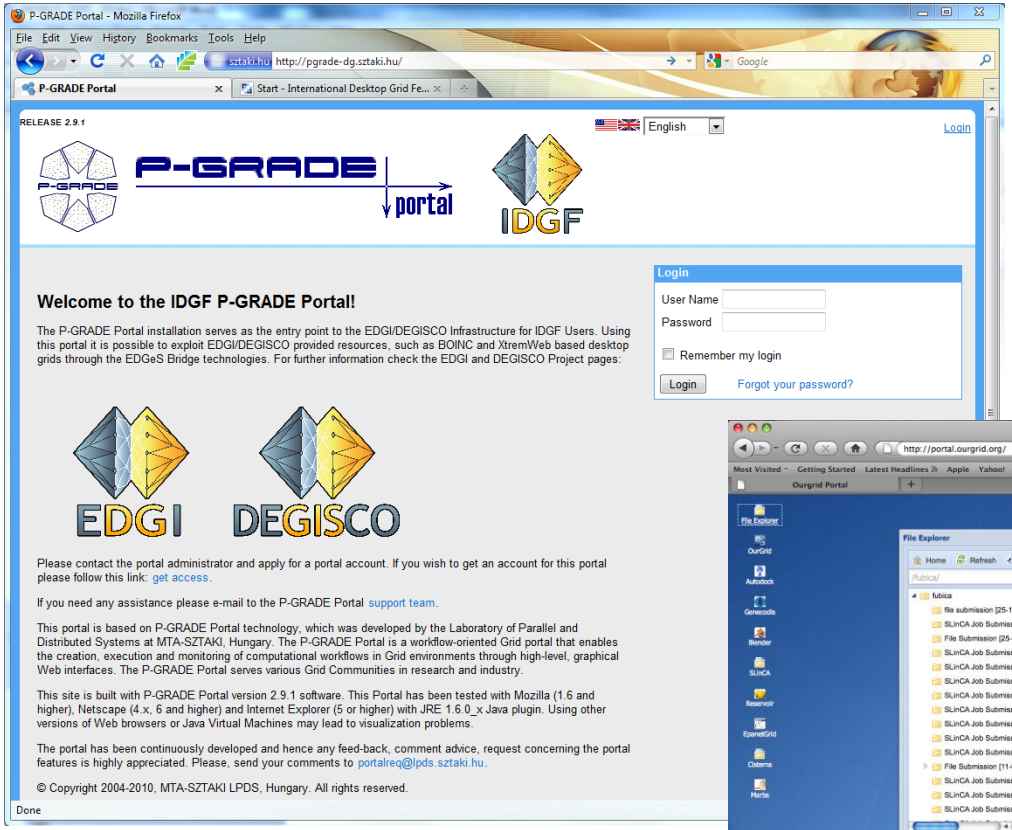
Applications from ICPC partners

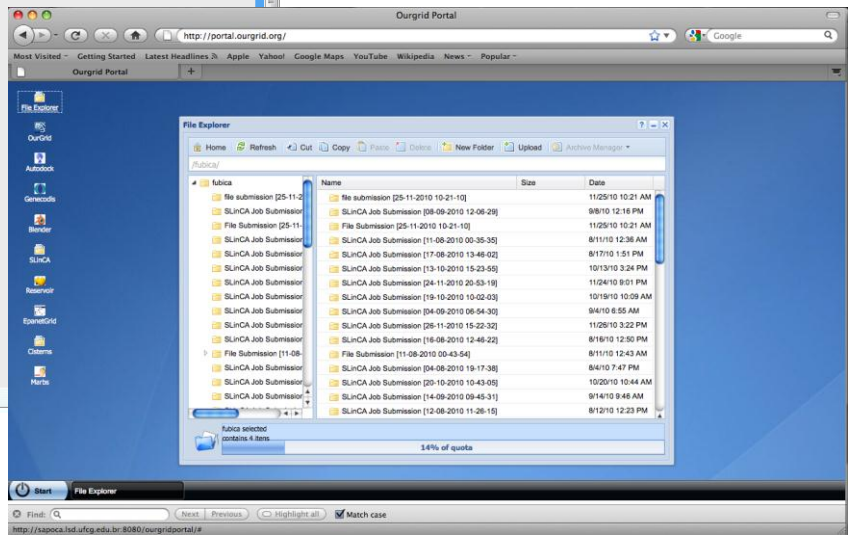


Support activity

- Hierarchical
- Global support
- Expert groups
- Ticketing & Fora

Scientific gateways (workflows / jobs)





Founding members of IDGF

Huazhong University of Science & Technology

New non-EU
IDGF member organisations

				
Institut Teknologi Bandung (ITB)	Institute of Computational Technologies - Siberian Branch of the Russian Academy of Sciences	Universiti Putra Malaysia	Vladimer Chavchanidze Institute of Cybernetics of the Georgian Technical University	**Higher Institute of Applied Sciences and Technology**

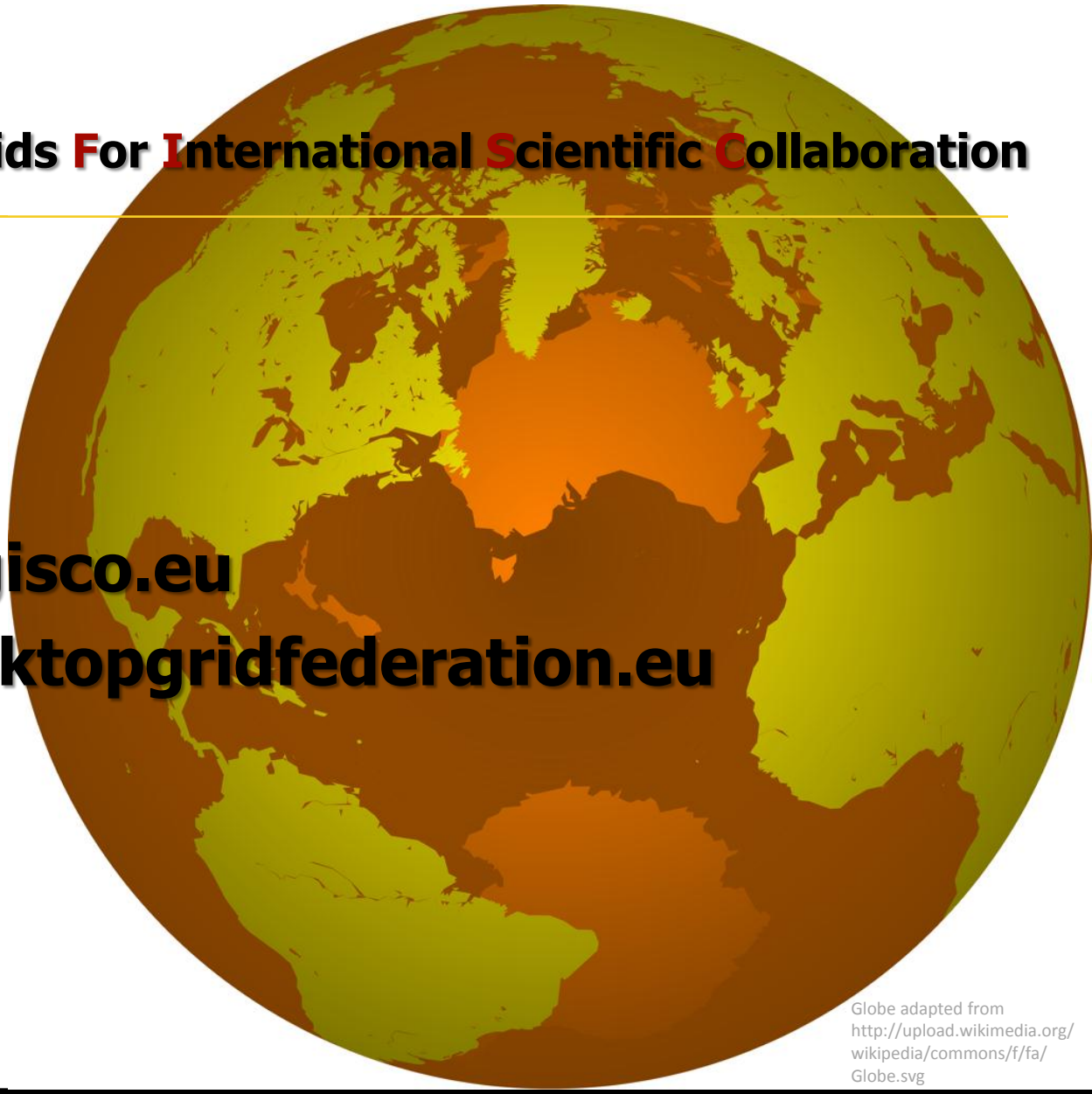
Collaboration opportunities

- Join the International Desktop Grid Federation (individual or institute)
- Sign Memorandum of Understanding between your (national) projects and the DEGISCO project
- Learn at and contribute to IDGF and DEGISCO events
- Be adaptor of recommendations, best practices and roadmaps
- Support and consultancy: deployment and maintenance of new (volunteer) Desktop Grids worldwide
- **Join the infrastructure with your BOINC project and benefit from the unused capacities of other grids**
- Application porting support for scientists (outside of the EU – EDGI is responsible for the EU developers)
- Support for dissemination and outreach of results and plans

- *More information on benefits ➔ Peter Kacsuk's presentation*

DEGISCO

Desktop Grids For International Scientific Collaboration



http://degisco.eu

http://desktopgridfederation.eu

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