

Latest results of the Grid Application Support Centre at MTA SZTAKI

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MTA SZTAKI

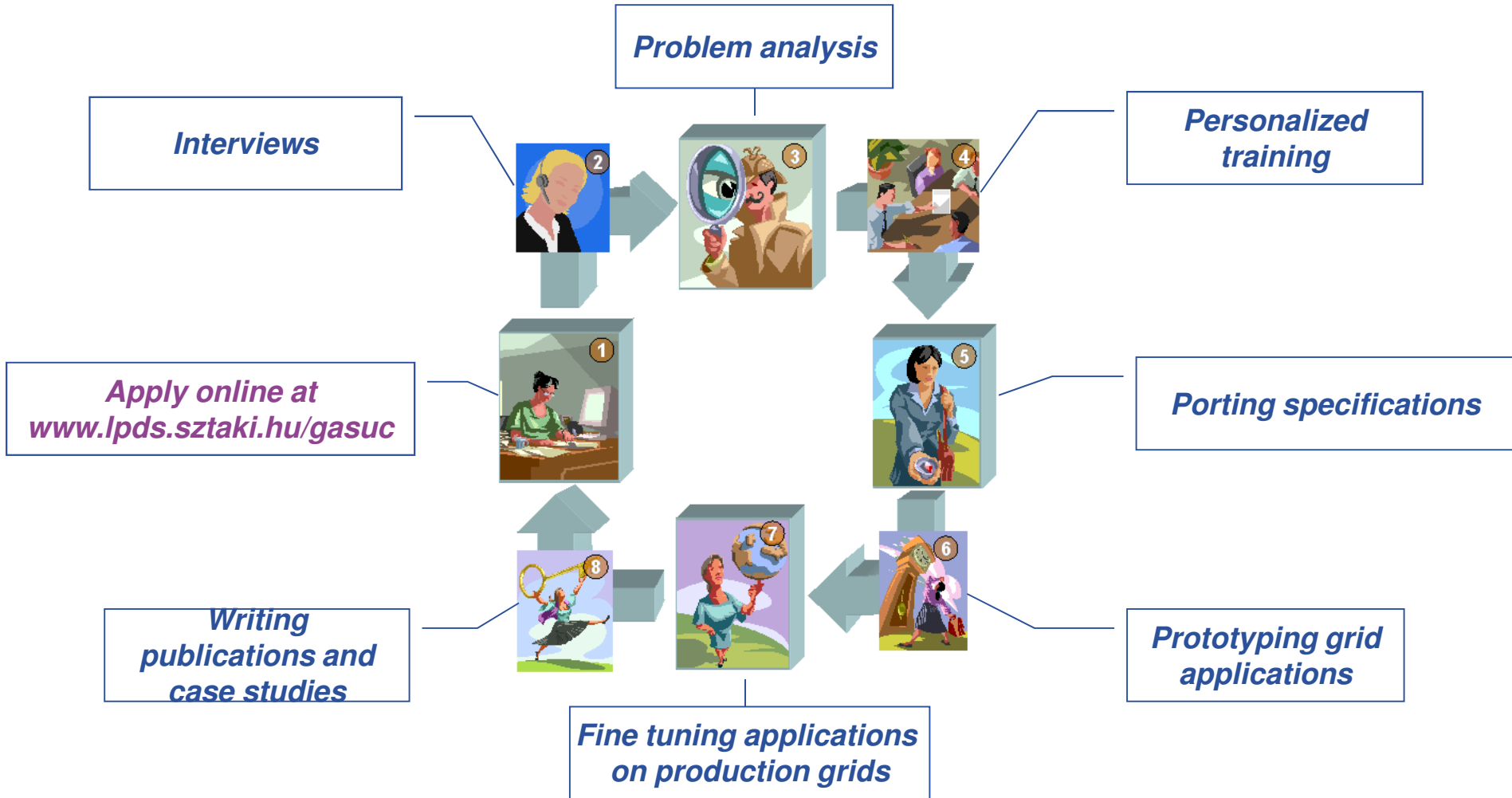
sipos@sztaki.hu

www.lpds.sztaki.hu/gasuc

GASuC

Grid Application Support Centre

- **MTA SZTAKI, Budapest**
 - Grid Application Support Center (GASuC)
 - <http://www.lpds.sztaki.hu/gasuc>
- **INFN, Catania**
 - GILDA Team
 - <https://gilda.ct.infn.it/>
- **UCM, Madrid**
 - Distributed Systems Architecture Research Group
 - <http://asds.dacya.ucm.es/doku.php?id=start>
- **CSIC, Santander**
 - Institute of Physics of Cantabria
 - <http://grid.ifca.es/>
- **ASGC, Taipei**
 - Academia Sinica Grid Computing
 - <http://grid.sinica.edu.tw/>
- **University of Melbourne, Melbourne**
 - Academia Sinica Grid Computing
 - <http://grid.sinica.edu.tw/>



Visit porting centre to make the cycle more effective!



The screenshot shows a web browser window titled "Grid Application Support Centre - Windows Internet Explorer". The address bar shows the URL "http://www.lpds.sztaki.hu/gasuc/". The browser's Favorites bar contains "Grid Application Support Centre".

The website content includes:

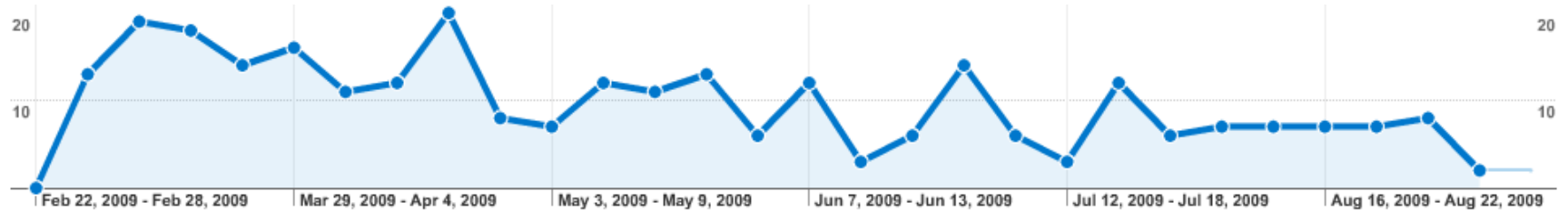
- Navigation:** "contacts" and "GASuC centre" buttons in the top right.
- Header:** "GASuC Grid Application Support Centre" logo and title.
- Left Sidebar:** A list of menu items: "General information", "Gridification process", "EGEE and GASuC", "Supported tools and technologies", "Application procedure", "Visiting GASuC", "Partners", "Success stories", "Current applications", "Financial support for your visit", and "In the press". Below the menu are the "egEE Enabling Grids for E-scienceE" logo and the "MTA SZTAKI" logo.
- Main Content Area:**
 - A "home" link in the top right.
 - A "NEWS" section with three entries:
 - 06/Jul/2009:** One of the most powerful tools for research, MATLAB, can now run on EGEE computing power. The EGEE Application Porting Group and MathWorks provides parallel computing on the Grid for MATLAB applications. Further information ->
 - 14/May/2009:** The EGEE and EDGeS projects organize a joint summer school on grid application support between 29th of June and 4th of July in Budapest. EGEE operates the largest service grid in Europe. EDGeS integrates service grids with PC based desktop grids. The subject of the summer school is to give insights to the grid technologies used by these projects (gLite, BOINC, XtremWeb and EDGeS) as well as to the tools and programming environments by which user can develop and run applications on this enhanced grid infrastructure. Further information and registration ->
 - 14/May/2009:** A new application has been ported to the EGEE Grid by the porting team of Madrid. The Spanish team successfully ported the SIESTA from the Computational chemistry domain to EGEE, the world largest computational grid. To read the details of the porting project and for additional porting stories please visit the "Success stories" section of our webpage.
 - A "news archive »" link.
 - What service do we offer?**

Porting legacy applications onto grid infrastructures is usually called "gridification". The Grid Application Support Centre (GASuC) provides assistance to current and future grid users and application developers during the application gridification process. GASuC helps identify and apply best patterns, practices, tools and infrastructures in order to get your code running on production grids as soon as possible.
 - Who are we?**

Grid researchers, grid tool builders and grid application developers from **MTA SZTAKI (Computer and Automation Research Institute of the Hungarian Academy of Sciences)** are involved in the GASuC activity. The GASuC team has long running experience in porting applications onto cluster and

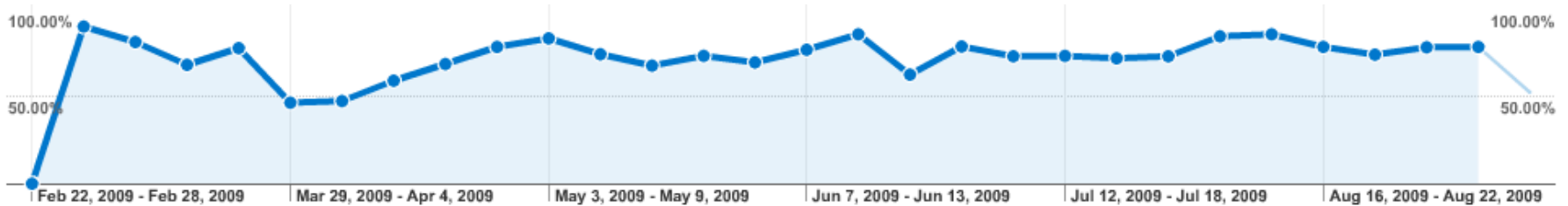
Visits per week:

(Total visits: 1005, Total page views: 2812)

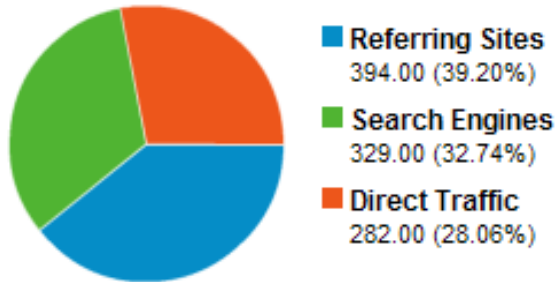


New visits per week:

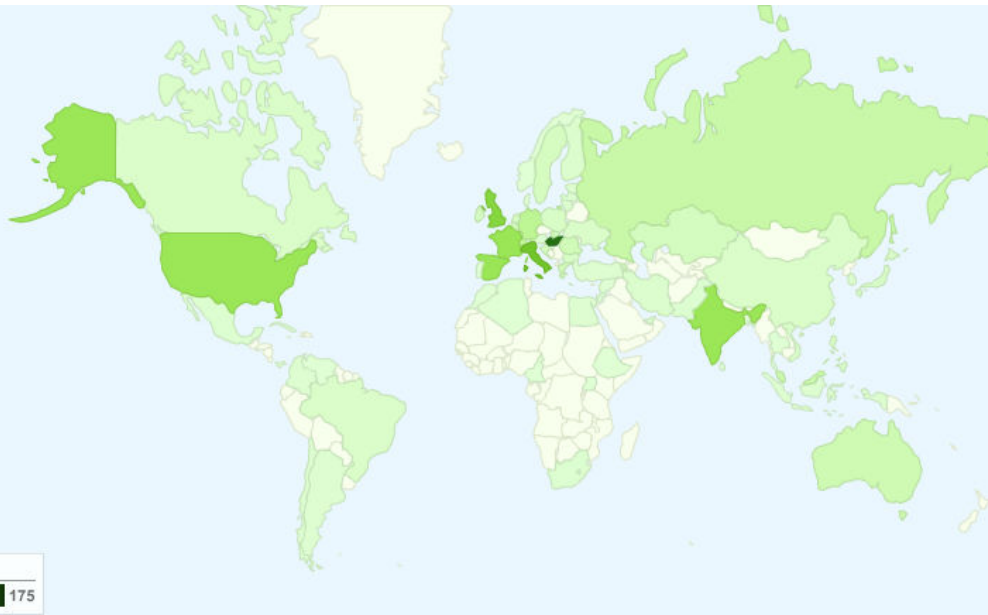
(~70% of total visits)



Visitors came from:



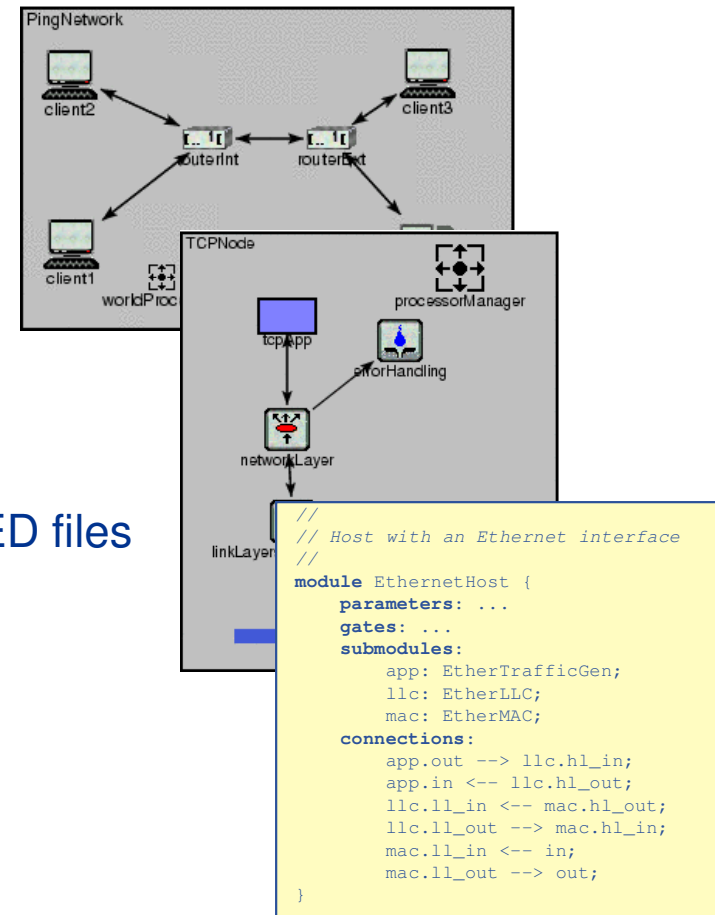
1.	project.eu-egee.org	60
2.	indico.cern.ch	58
3.	images.google.com	28
4.	cs.man.ac.uk	26
5.	isgtw.org	24
6.	mta.hu	23
7.	technical.eu-egee.org	20
8.	eu-egee.org	17
9.	edges-grid.eu	12
10.	images.google.co.uk	8



- USA 65
- India 65
- Russia 23

A generic simulation framework:

- For the simulation of **complex distributed systems**: distributed hardware and software architectures, communication networks, queuing networks, ...
 - An **open** environment
- **Dual licensing**:
 - Academic Public License
 - Commercial License
- **Vivid academic and commercial community**
 - www.omnetpp.org
- **OMNET developers**
 - define new modules (network endpoints) in NED files
 - define simulation parameters in INI file

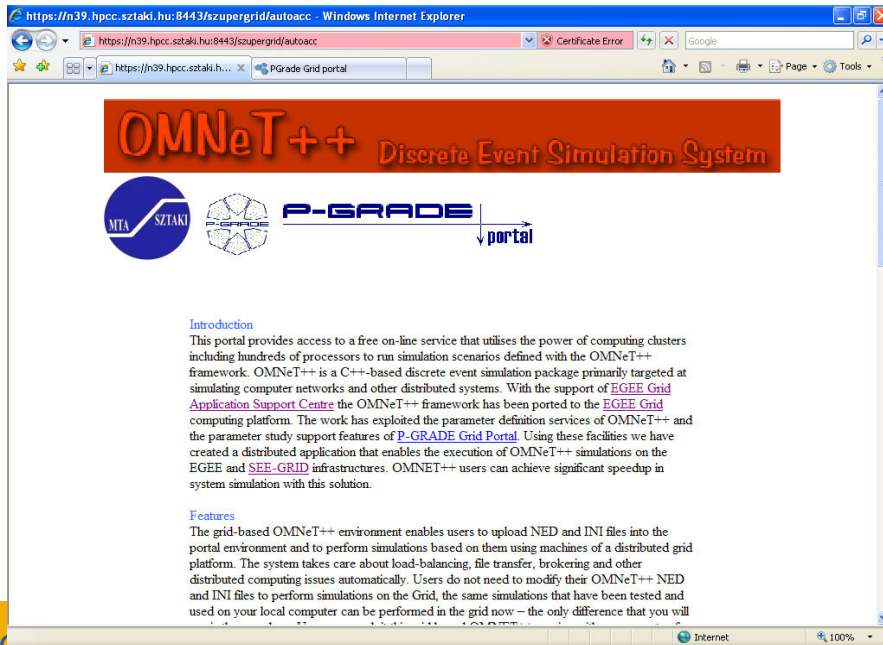


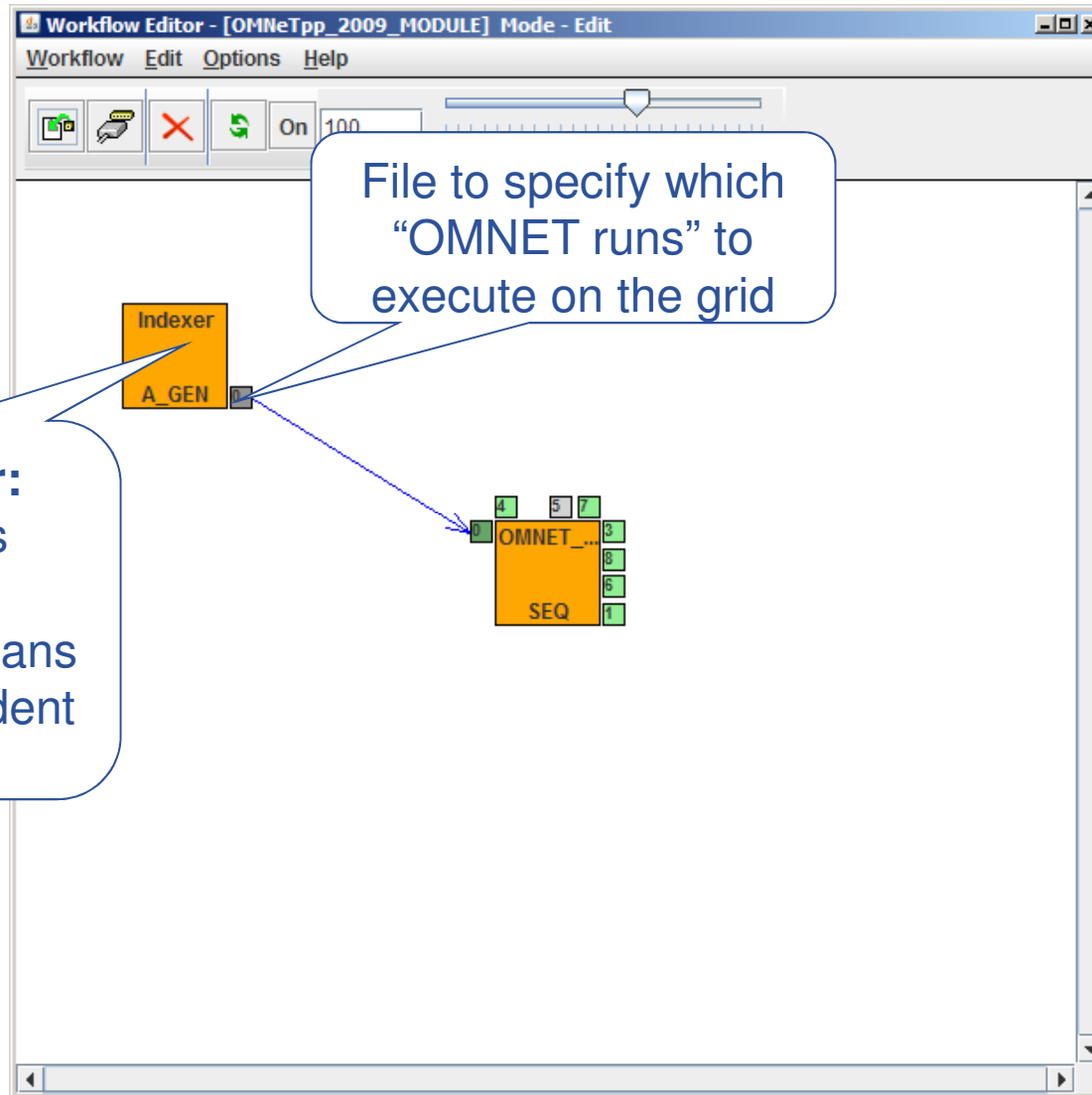
OMNET user portal

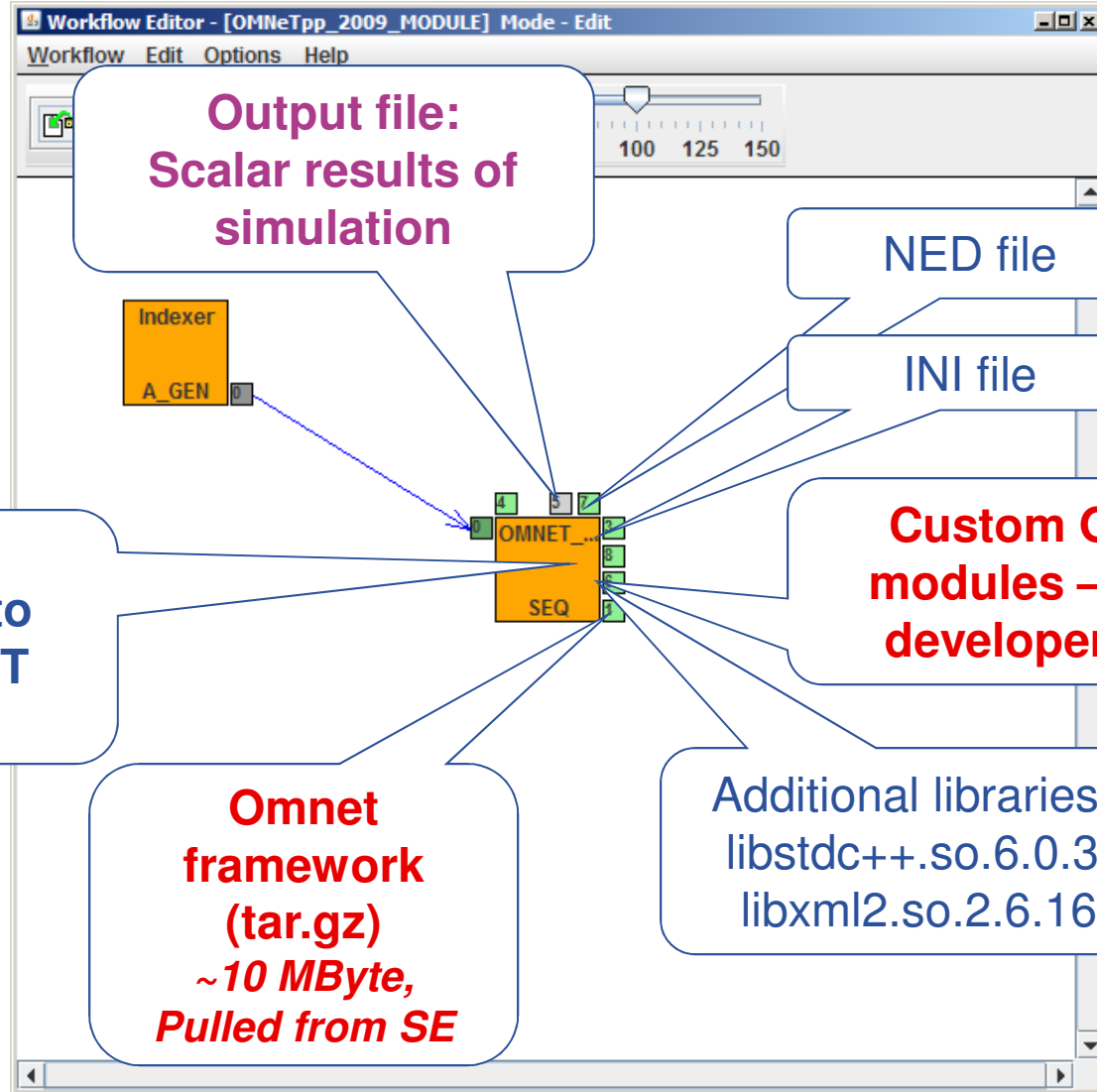
- Automated account cration. Account exists for 1 week
- Only INET and Queuing modules in NED files
 - No binary comes from end user
 - Portal performs grid operations with a robot certificate
- In production:
<https://pgrade-omnet.sztaki.hu>

OMNET developer portal

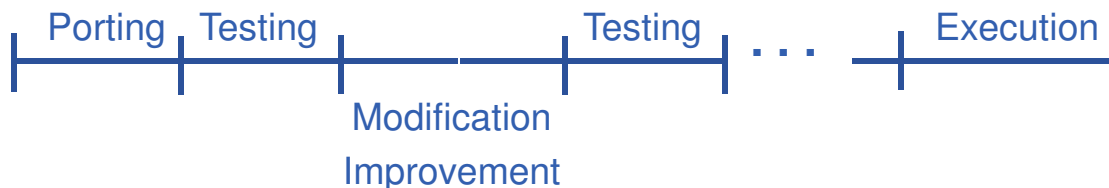
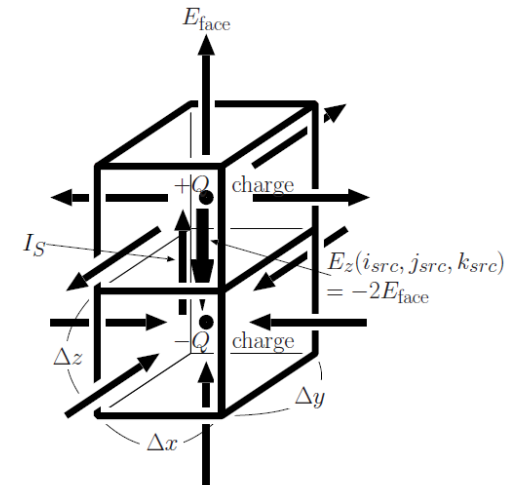
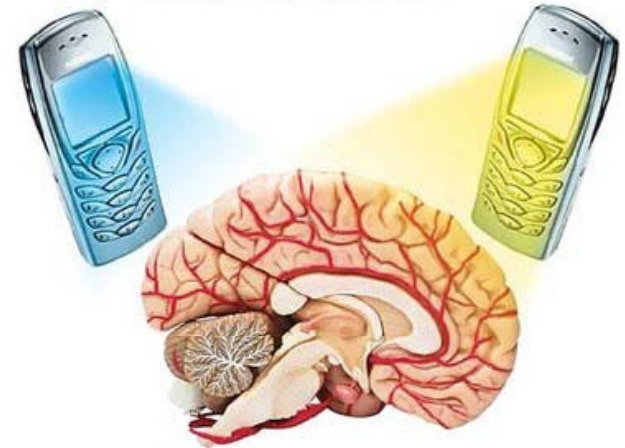
- Permanent user accounts
- Any NED file
 - Binaries come from end users
 - Grid operations with the users' personal certificates
- Under development

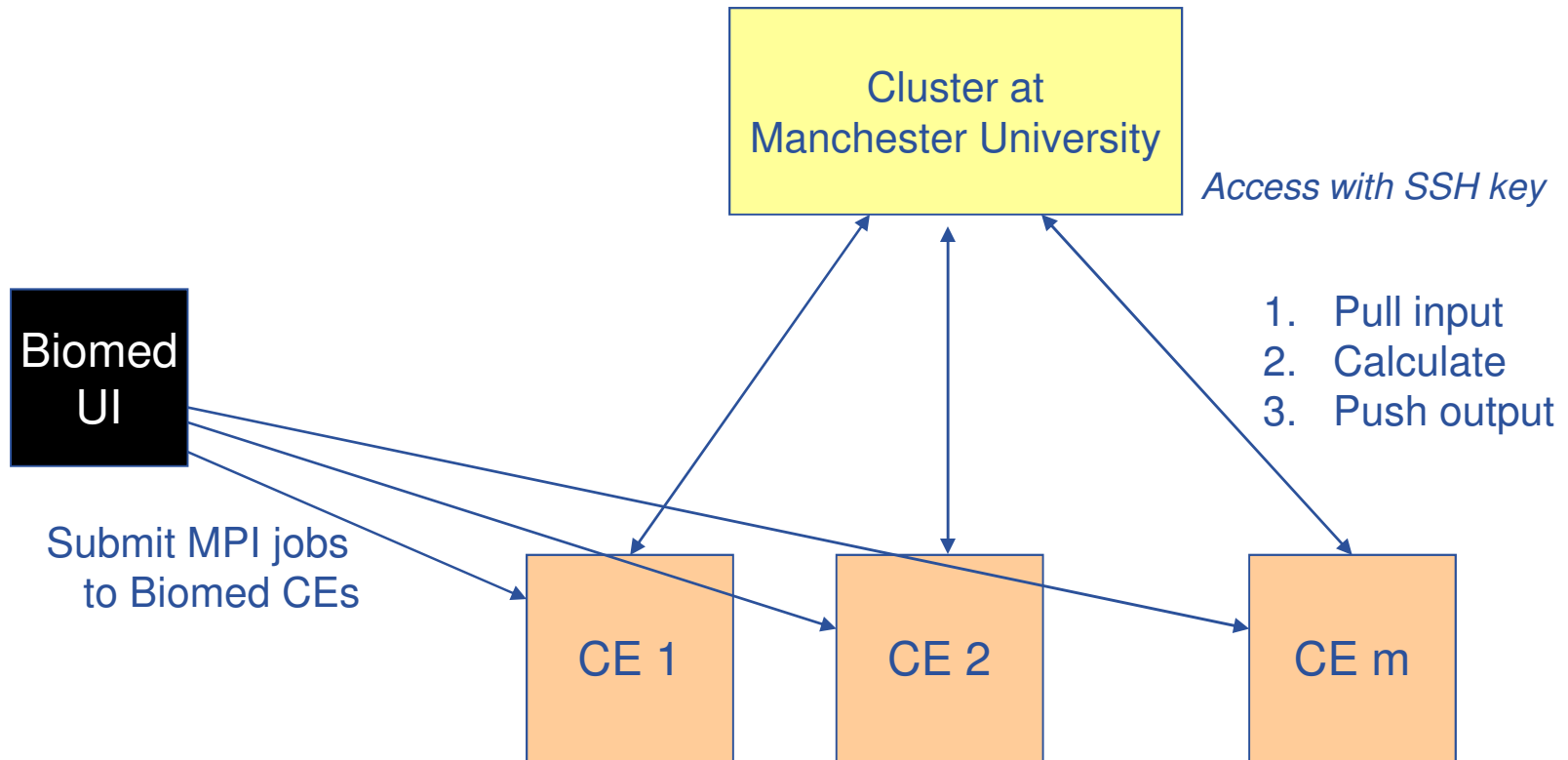






- Numerical modeling of ElectroMagnetic field distribution in human tissues
- 1-2 mm digital human phantom from MRI data
- Parameter-study execution with scripts
- Used VO: Biomed
- Difficulties:
 - Too few Biomed sites support MPI
 - MPI compilation for every site
 - Limited CPUtime for MPI processes
 - Too many files –link to SEs cannot survive the transfer session
 - GGUS tickets: 49293, 49106, 45066, 40091, 40090, 39569, 34265, 31564, 31563





Costen, F.; Berenger, J.-P.; Brown, A.K.: Comparison of FDTD hard source with FDTD soft source and accuracy assessment in Debye media
IEEE Transactions on Antennas and Propagation, Vol. 57, Issue 7, 2009, Pp. 2014-2022.

- **Most porting projects must produce a grid portal**
 - Web based access
 - Interface for non IT people
 - Automated recognition and handling of grid errors
- **Application specific module for P-GRADE Portal**
 - Provides an API on top of Gridsphere and P-GRADE core services
 - Only a few Java classes
 - Connect **any Web interface** to your grid applications
 - **No need to learn** P-GRADE and Gridsphere programming
- **Examples:**
 - OMNET simulation portals (1 novice, 1 advance)
 - Numerical Modeling of Mantle Convection portal
 - E-marketplace Model Integrated with Logistics

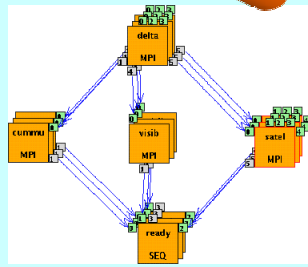
www.portal.p-grade.hu



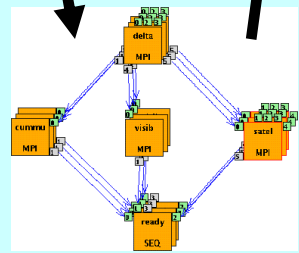
Parameters Results

**Application logic and
grid remains hidden**

Programming API

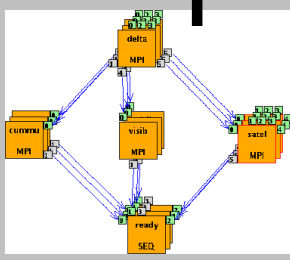


use



P-GRADE Portal
application module

publish



Fault tolerant grid execution
Certificate management
Grid file management
parameter sweeps
parameter sweep workflows

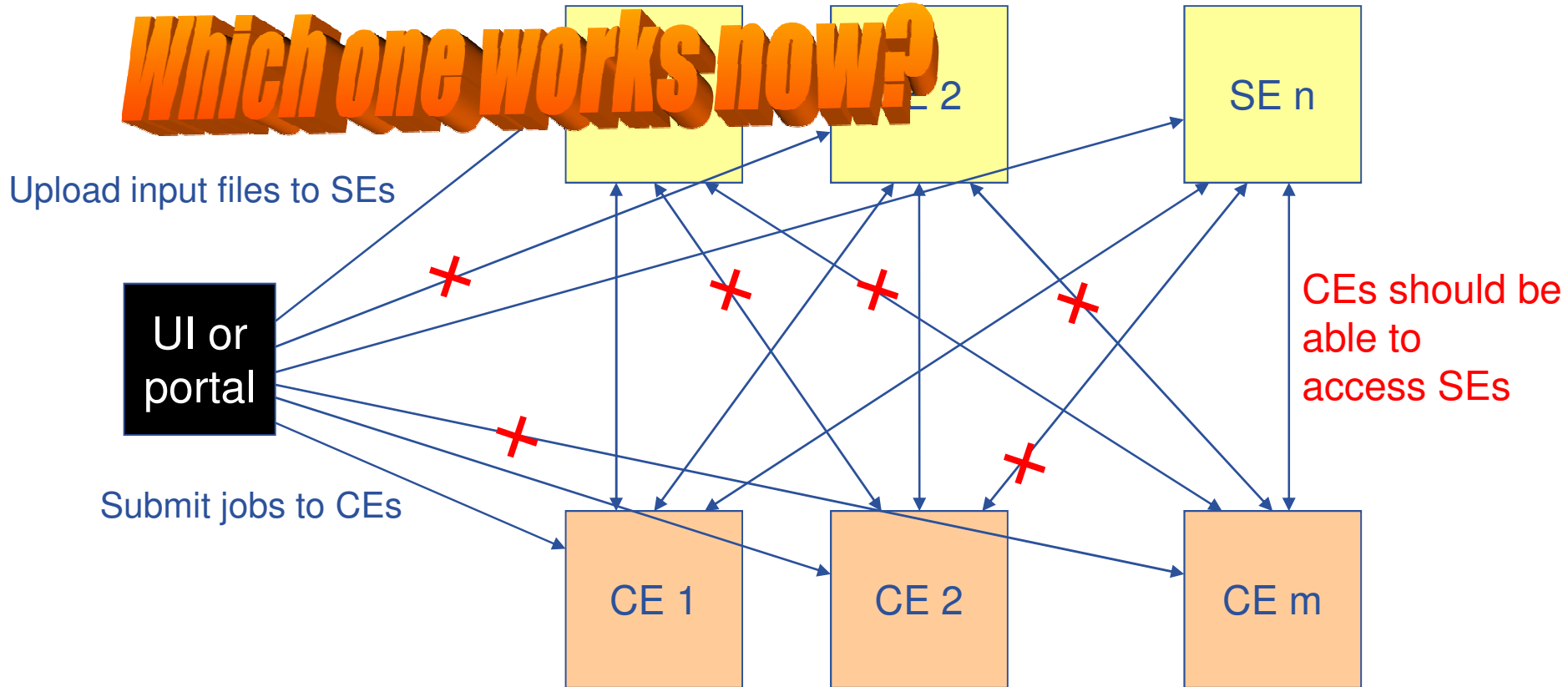
P-GRADE Portal 2.8

EGEE and Globus Grid services
(gLite WMS, LFC, ...; Globus GRAM, GridFTP, ...)



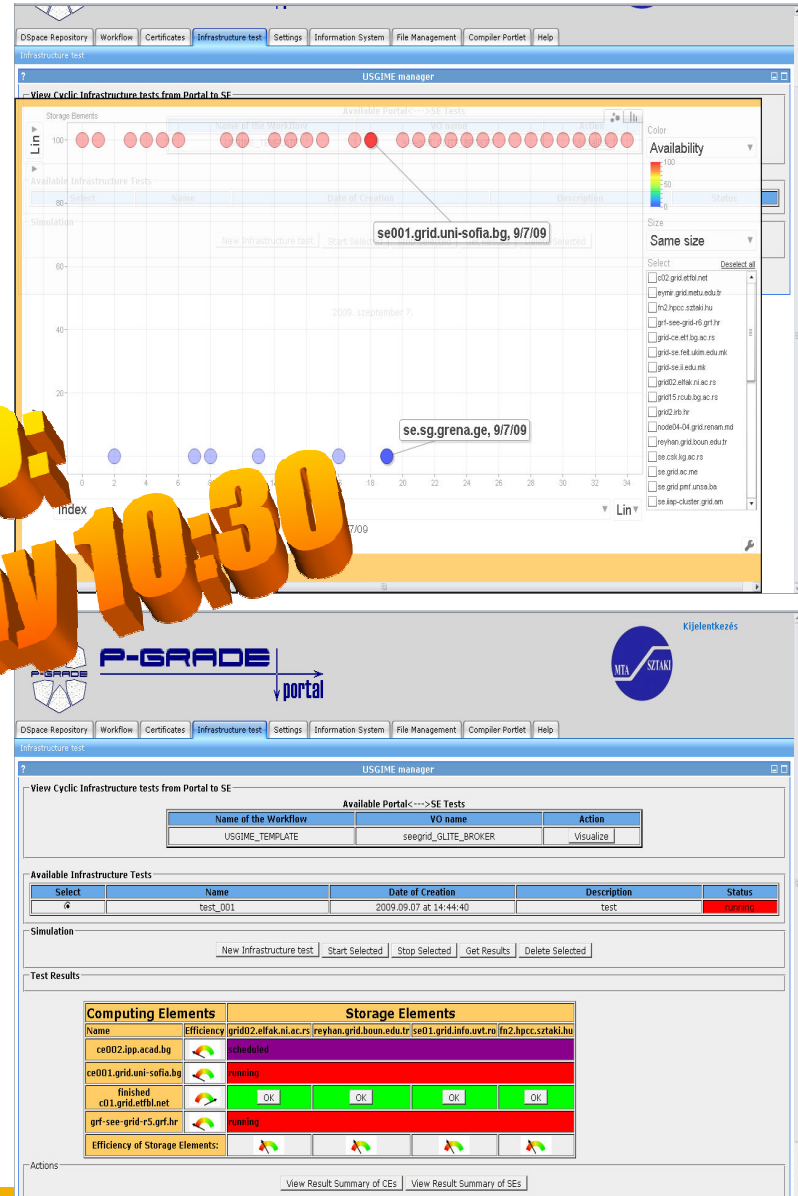
Some of these links are broken

Which one works now?



- Test the links between your UI and your SEs
 - With a robot certificate
- Test the links between your CEs and SEs
 - With your certificate
- Ready to used test infrastructure for SEE-GRID VO
 - <http://sourceforge.net/projects/pgportal/>
- Easy to customize for other VOs

Demo:
Wednesday 10:30



The screenshot shows the USGIME manager interface. The top part displays a grid of infrastructure tests with columns for Name, Date of Creation, and Description. A specific test, 'se001.grid.uni-sofia.bg, 9/7/09', is highlighted. Below this, a table lists available infrastructure tests, including 'test_001' with a status of 'running'. The bottom part of the interface shows a table of Computing Elements (CEs) and Storage Elements (SEs) with their respective efficiency and status. The CE table includes entries like 'ce002.lpp.acad.bg' (scheduled) and 'ce001.grid.uni-sofia.bg' (running). The SE table shows 'grid02.ellak.ni.ac.rs' and 'grid01.info.uvt.ro' with 'OK' status.

Select	Name	Date of Creation	Description	Status
<input type="checkbox"/>	test_001	2009.09.07 at 14:44:40	test	running

Computing Elements		Storage Elements			
Name	Efficiency	grid02.ellak.ni.ac.rs	reyhan.grid.boun.edu.tr	se01.grid.info.uvt.ro	fn2.hpcc.szaki.hu
ce002.lpp.acad.bg		cheduled			
ce001.grid.uni-sofia.bg		running			
finished		OK	OK	OK	OK
grf-see-grid-r5.grf.hr		running			
Efficiency of Storage Elements:					

- Applications enabled on EGEE with P-GRADE Portal

- Share, Annotate, Search, Import, Reuse, Download, Execute

Available:

- <https://pgrade-dspace.sztaki.hu/jspui/handle/dspace/43>
- In any P-GRADE Portal 2.8 installation



The screenshot shows a DSpace interface with the following elements:

- Header:** DSpace logo, "About DSpace Software" link, P-GRADE Workflow repository logo.
- Search:** "Search DSpace" box with a "Go" button and an "Advanced Search" link.
- Navigation:** "Home" link, "Browse" section with links for "Communities & Collections", "Issue Date", "Author", "Title", and "Subject".
- Sign on to:** "Receive email updates", "My DSpace authorized users", "Edit Profile", "Help", and "About DSpace" links.
- Item Details:**
 - Handle:** `dspace/95`
 - Title:** EMMIL E-commerce modell to integrate logistics
 - Authors:** [Hermann, Gabor](#)
 - Keywords:** EGEE, Seegrid, Full application
 - Issue Date:** 23-Jun-2009
 - Abstract:** The three job PS workflow simulates the core algorithm of the EMMIL integrated E-commerce marketplace modeller. The job "Generator" makes the preparation, the main bulk calculation (optimum search in a linear system) is distributed by the job "LP Solve" and the results are collected by the job "Price evaluation"
 - Description:** Detailed documentation can be found at: <http://www.sztaki.hu/~ghermann/Szemelyes/EMMIL/>
 - URI:** <http://n38.hpcc.sztaki.hu:8080/jspui/handle/dspace/95>
 - Appears in Collections:** [Application Workflows](#)
- Files in This Item:**

File	Description	Size	Format
EMMIL_I_10_10_10_6_gran_10_ini.zip		372.53 kB	Application Workflow View/Open
- Footer:** "Items in DSpace are protected by copyright, with all rights reserved, unless otherwise indicated." and "Internet" browser indicator.

- **SZTAKI porting team is active in**
 - international recognition of grid porting support
 - porting applications
 - OMNET++ discrete event simulation community
 - *Science Gateways for Discrete Event Simulation based on P-GRADE Portal
Wednesday 11:00 Science Gateways session*
 - Electro magnetic field distribution in human tissues
 - lowering barriers for developers and end users
 - *Further development of P-GRADE Portal for advance user support
Wednesday 10:30 DEMO*

- **Apply for assistance at www.lpds.sztaki.hu/gasuc**
 - Financial support to visit a porting centre

- **Application Porting Support SSC**
 - Currently developing, open to any NGI & institute
 - Further information:
 - SSC workshop on Friday
 - Your NGI representative and internal section of web.eu-egi.eu webpage
 - Gergely Sipos (sipos@sztaki.hu)

EGEE Application Porting Support Group

www.lpds.sztaki.hu/gasuc

Questions?