

**EDGeS**

# Integrating BOINC-based DGs with EGEE

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The EDGeS project receives Community research  
funding



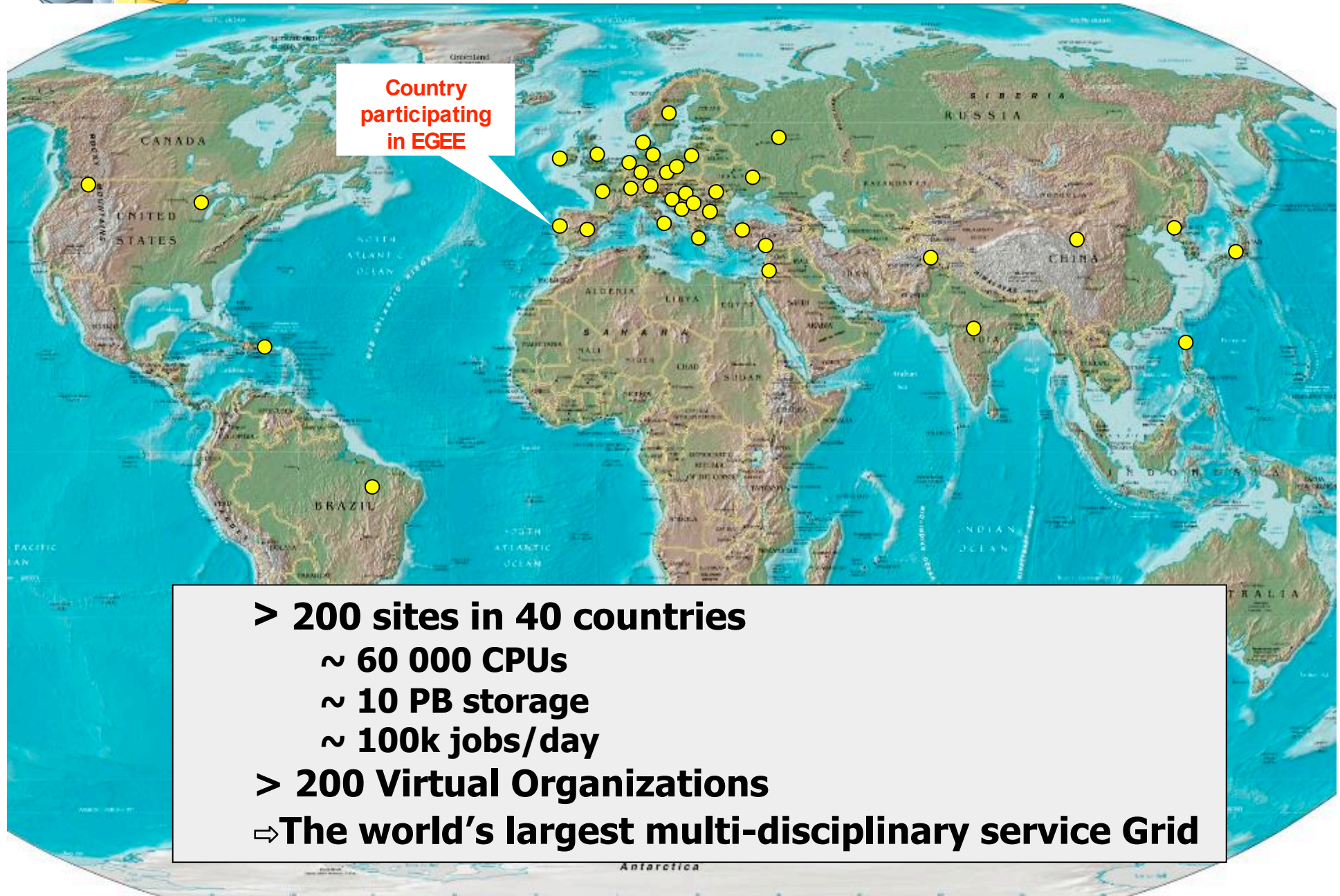


# The problem we address

- We have service grids (SG):
  - Guaranteed service based on clusters but
  - Relatively small number of processors (1K -50K)
  - Many users with many applications but misuse the resources
    - Most of the applications are parameter sweep applications that better fit to desktop grids
    - Take away the cluster resources from MPI type applications
- We have desktop (volunteer) grids (DG):
  - No guaranteed service but
  - Large number of processors (100K – 1M)
  - Few applications: 1-3 applications per desktop grid



# EGEE Infrastructure



- > **200 sites in 40 countries**
  - ~ 60 000 CPUs
  - ~ 10 PB storage
  - ~ 100k jobs/day
- > **200 Virtual Organizations**
- ⇒ **The world's largest multi-disciplinary service Grid**



# Enabling Desktop Grids for e-Science (EDGeS)

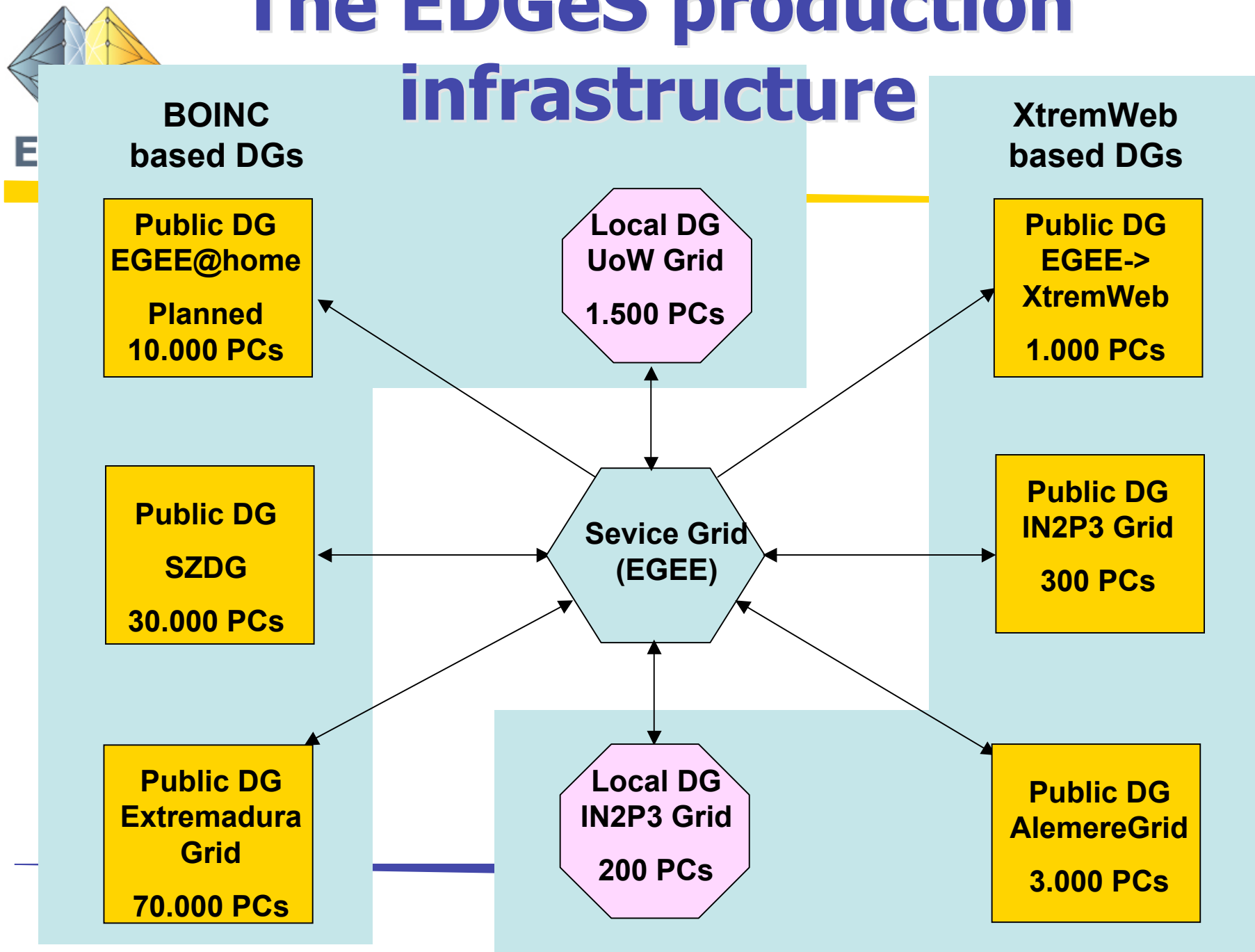
- New FP7 project started on the 1<sup>st</sup> of January 2008
- Goals of the project:
  - To integrate **Service Grids and Desktop Grids** to attract new scientific communities that needs very large number of computing resources (100K-1M processors)
  - To enable the **seamless usage** of the integrated SG-DG infrastructure, i.e. the user does not need to be aware if the application is executed in SG or DG
  - To provide a **Grid application development environment**
  - To provide **application repository** and **broker** for the seamless execution of applications in the SG-DG system



# Project partners

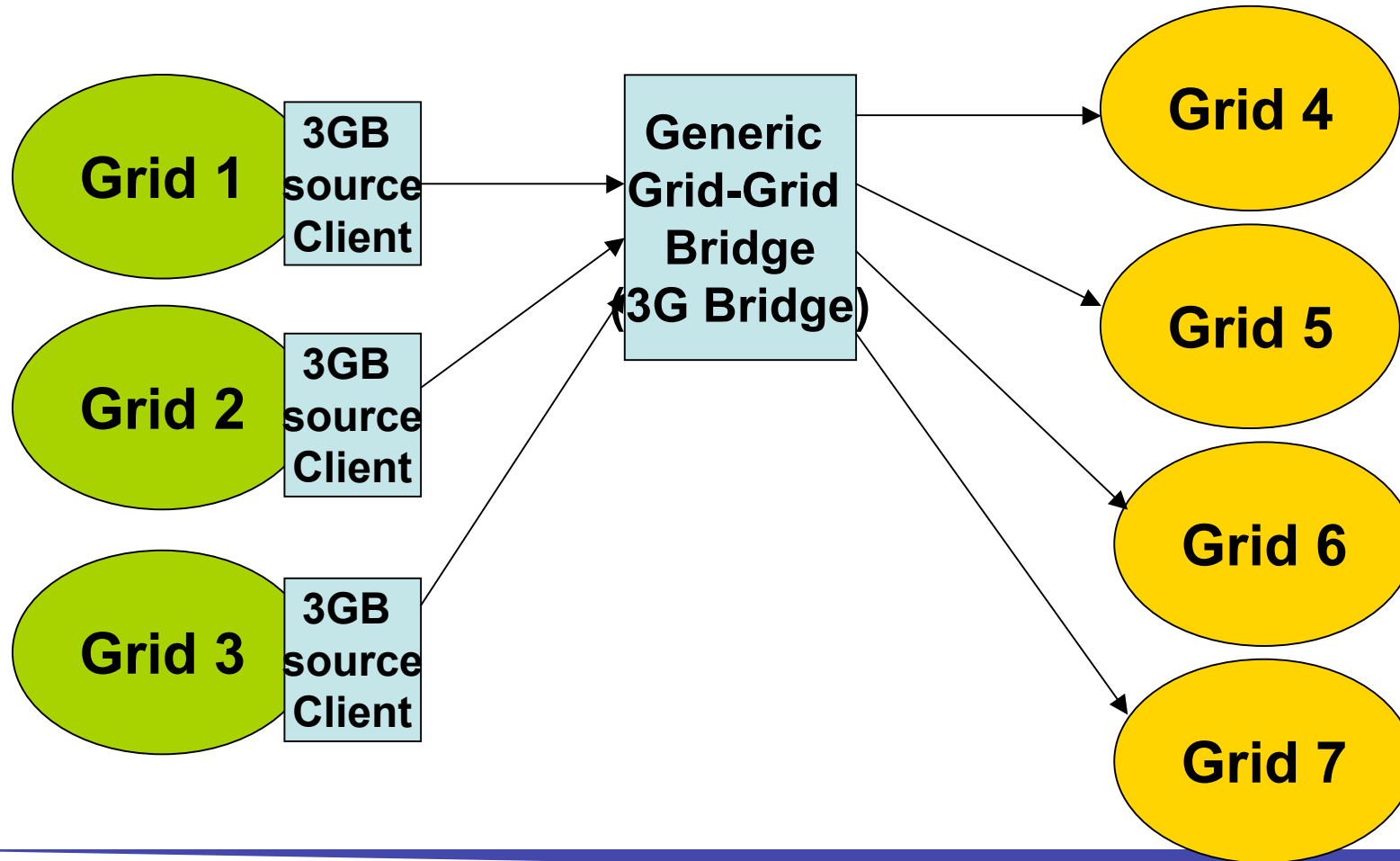
Partic. No.	Participant name	Participant short name	Country
1	Computer and Automation Research Institute of the Hungarian Academy of Sciences	MTA SZTAKI	Hungary
2	Centro de Investigaciones Energéticas Medio Ambientales y Tecnológicas	CIEMAT	Spain
3	Foundation for the Development of Science and Technology in Extremadura	Fundecyt	Spain
4	The French National Institute for Research in Computer Science and Control	INRIA	France
5	University of Westminster	UoW	UK
6	Cardiff University	CU	UK
7	Faculty of Sciences and Technology of the University of Coimbra	FCTUC	Portugal
8	Stichting AlmereGrid	AlmereGrid	The Netherlands
9	Centre National de la Recherche Scientifique - Institut National de Physique Nucleaire et de Physique des Hautes Energies	IN2P3	France

# The EDGeS production infrastructure



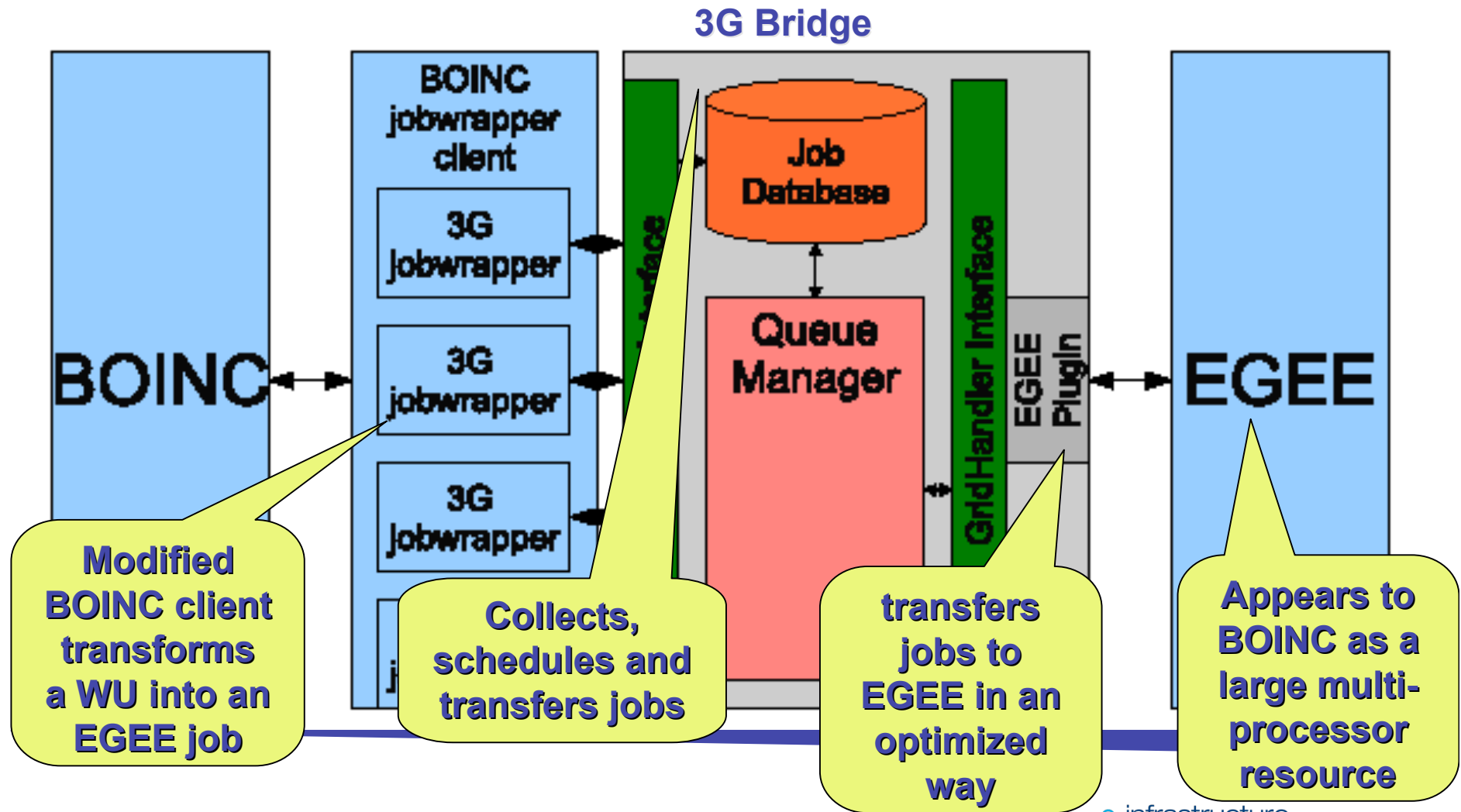


# The proposed DG-SG architecture





# BOINC->EGEE bridge based on 3G Bridge





# BOINC to EGEE direction

**BOINC  
based DGs**

**Local DG  
UoW Grid  
1.500 PCs**

**Public DG  
SZDG  
30.000 PCs**

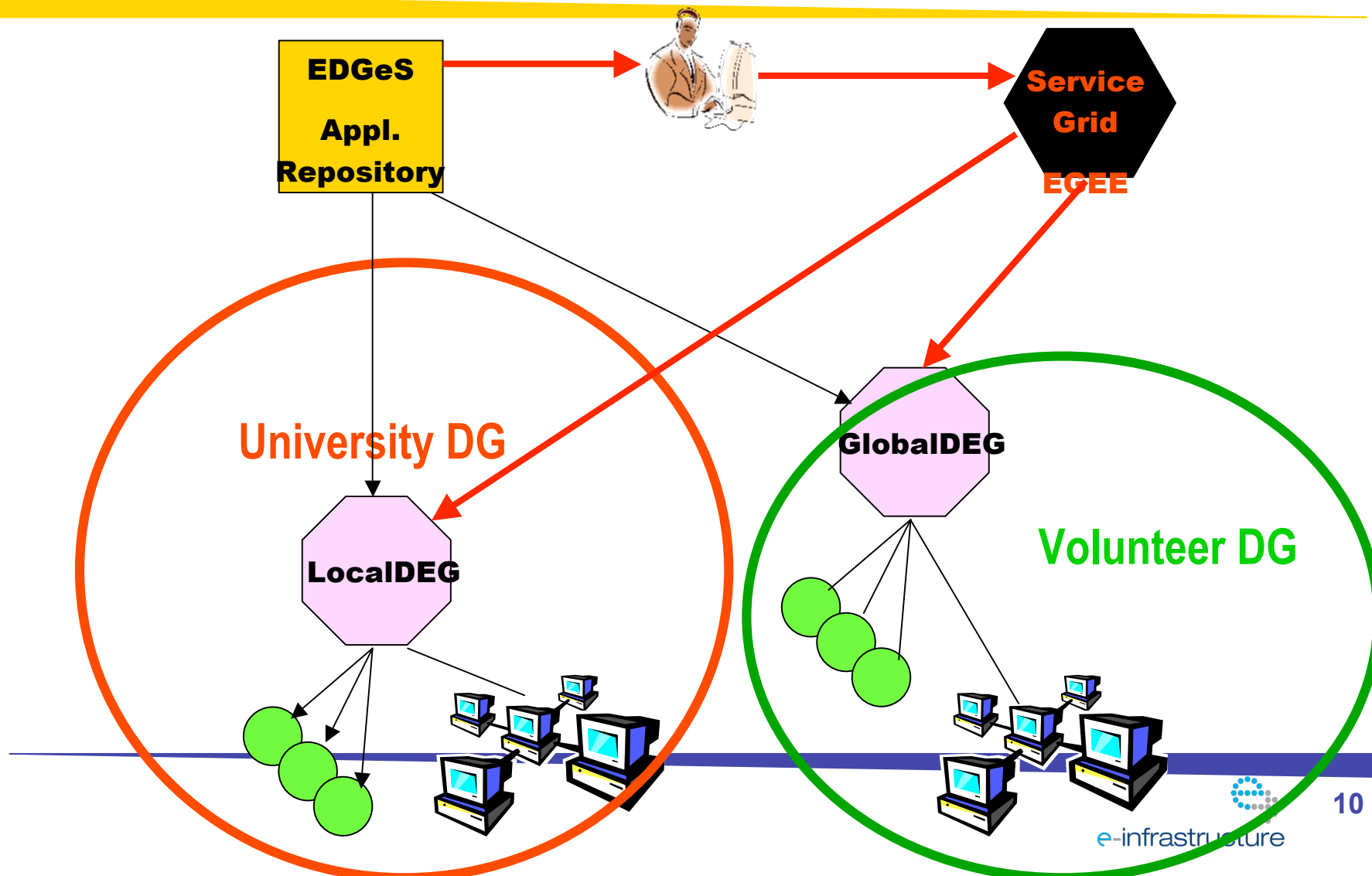
**Public DG  
Extremadura  
Grid  
70.000 PCs**

**Service Grid  
(EGEE)**

- EGEE supports the connected DGs whenever it has available spare resources
- No changes at the BOINC servers
- The solution has already been tested by SETI@home and SZTAKI Desktop Grid
- Production version by the end of September

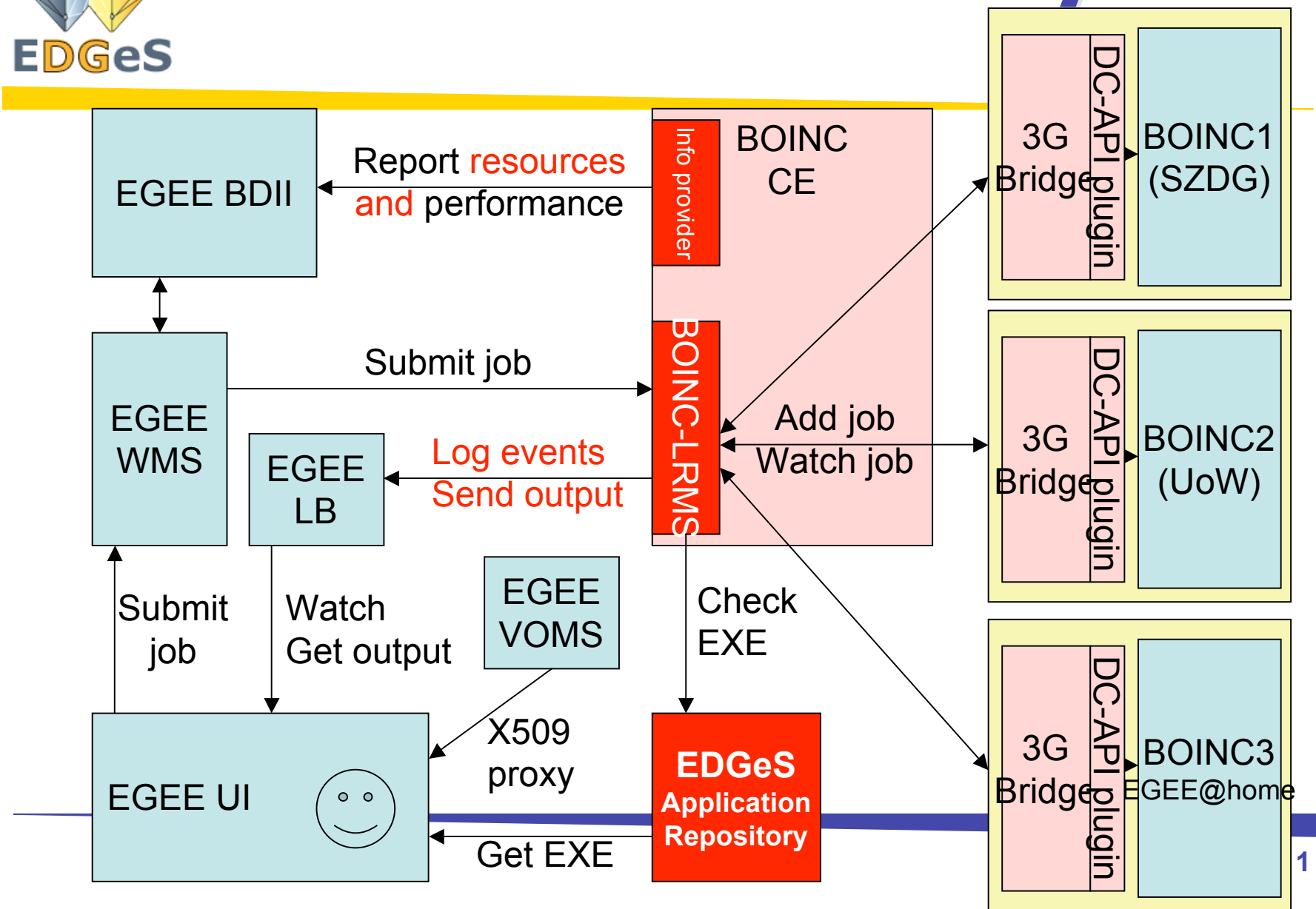


# EGEE User access to various grids



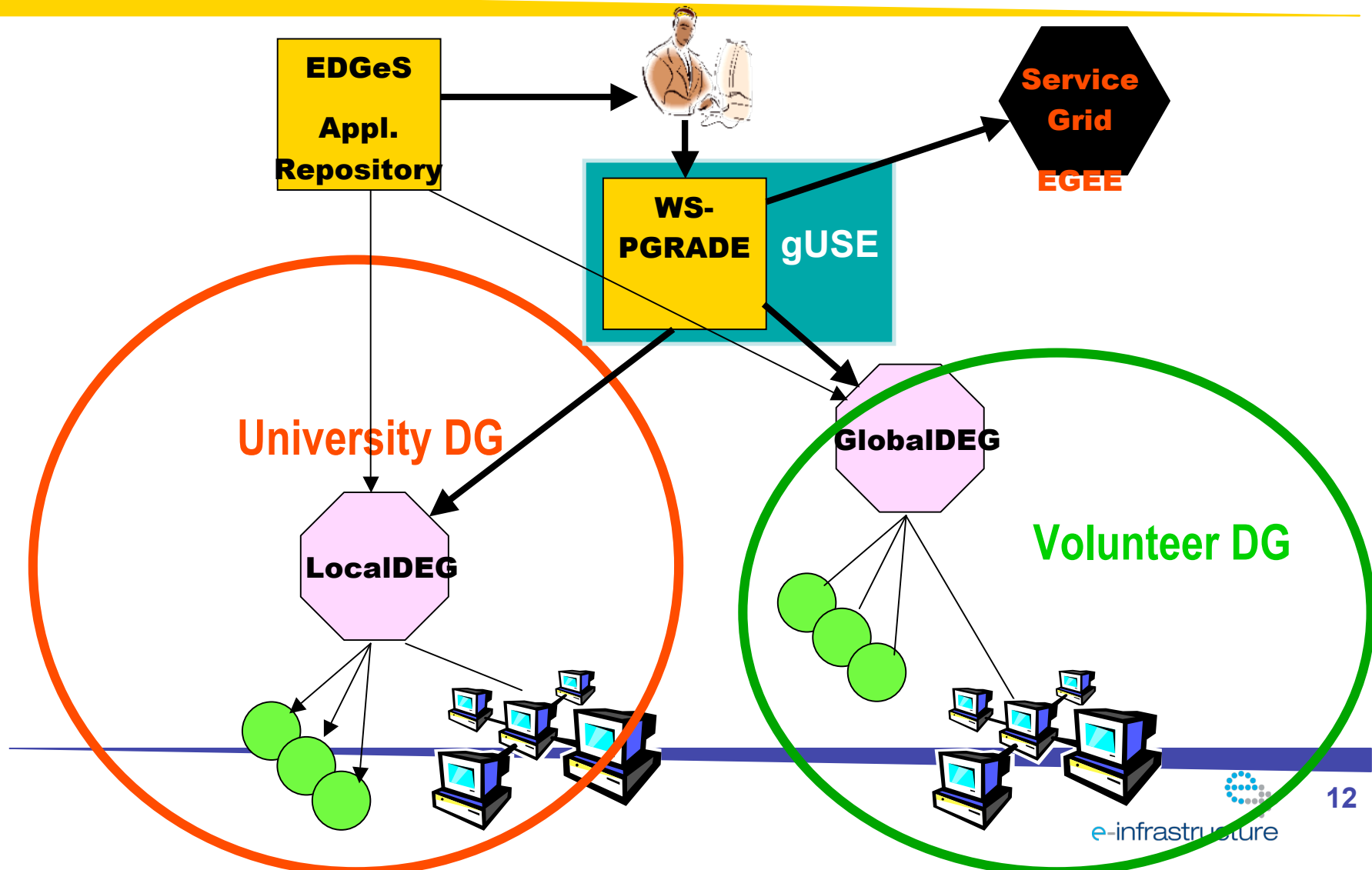


# EGEE VO → BOINC system

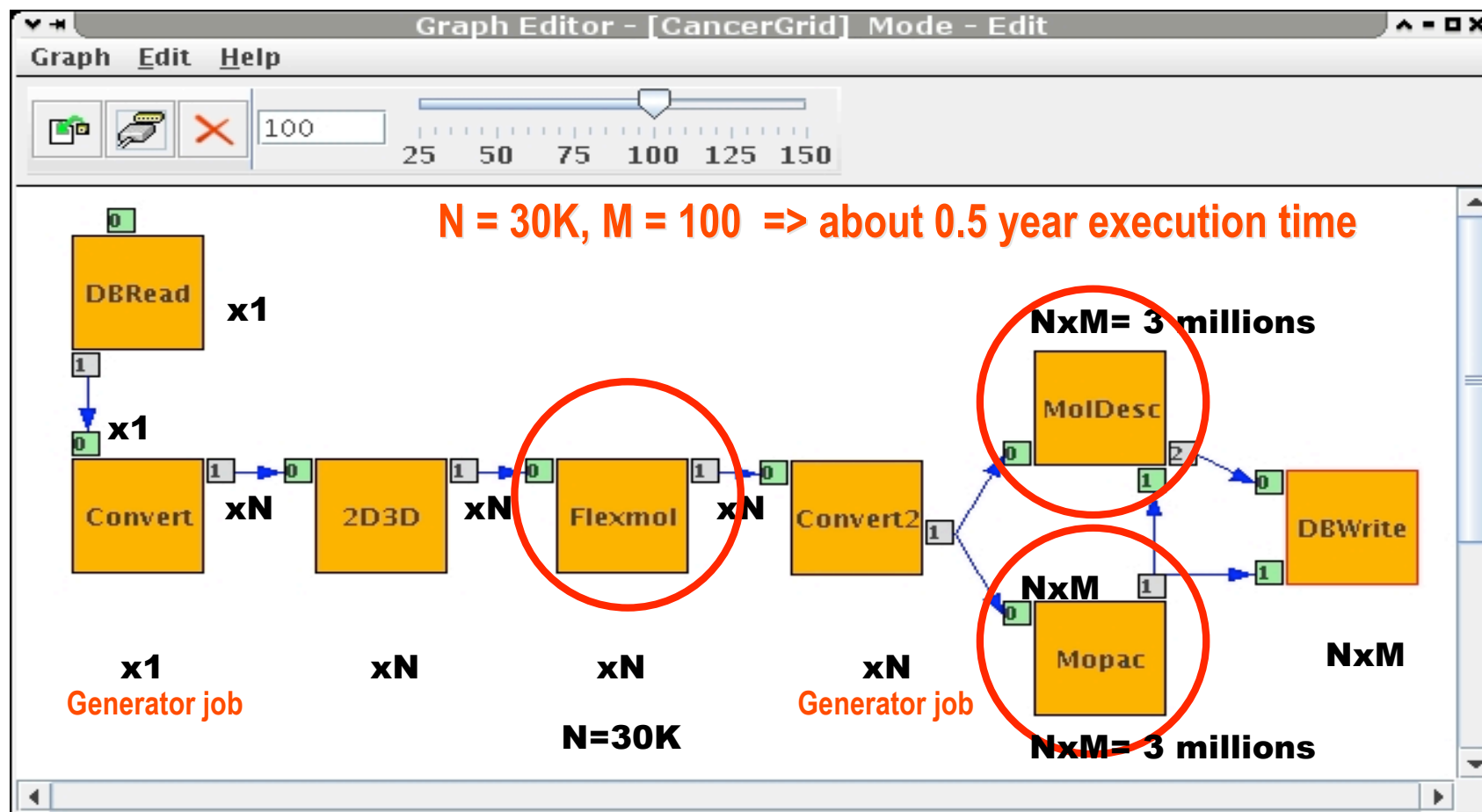




# User access to various grids at workflow level



# An example: CancerGrid workflow





# User communities

- Another goal of EDGeS
  - To identify user communities that need such large computational infrastructure
  - To support these communities in porting their application to EDGeS
- 14 identified communities:
  - BioInfoGrid, e-Health, Fusion, computational chemists, etc.
  - 4 new partners
- Establishing **EDGeS User Forum**
- 5 identified companies
  - 3 new partners
- Establishing **EDGeS Industry Forum**



# Conclusions

- BOINC -> EGEE bridge
  - is prototyped
  - Production version by end of September
- EGEE -> BOINC bridge
  - Is under development
  - Prototype by end of September
  - Production version by end of December
- We are looking for BOINC projects/DGs that would like to join the EDGeS infrastructure
- BOINC projects' advantages by joining:
  - Extra resources from EGEE
  - Larger publicity by EGEE
- More information on EDGeS:

<http://www.edges-grid.eu/>