

Core D-Grid Infrastructure

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- D-Grid – project for a german national grid initiative
- Community grids + integration project
- Integration of developments from other projects (EGEE, UNICORE, Globus)
- Integration of developments from communities
- Establishment of a general grid environment for e-Science
 - Scalable, extensible, generic grid platform
 - Provision of software needed by communities
 - Installation of a reliable and sustainable infrastructure

→ **Core D-Grid**

Community grids / integration project

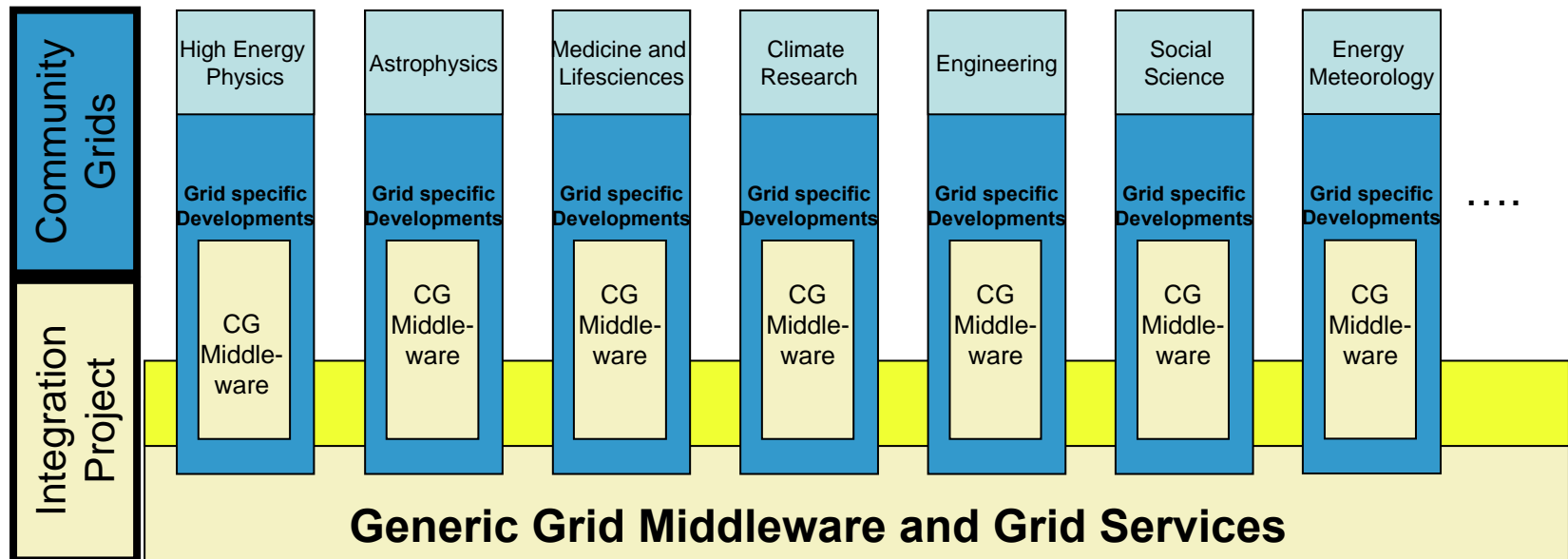
Today: 8 projects

- 7 community projects:

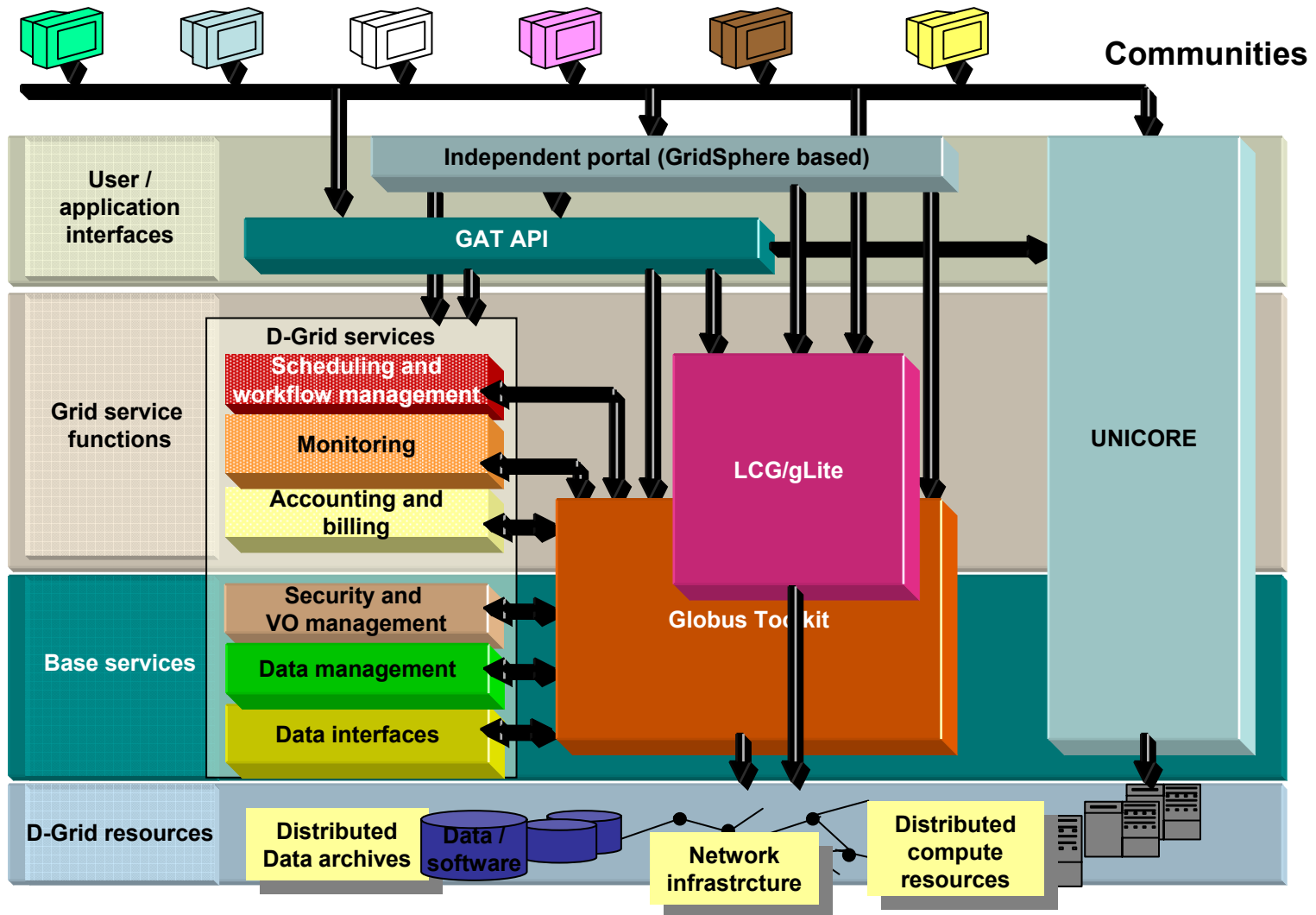
High Energy Physics, Astrophysics, Medicine and Lifesciences, Climate Research, Engineering, Social Science, Energy Meteorology

- D-Grid Integration Project (DGI)

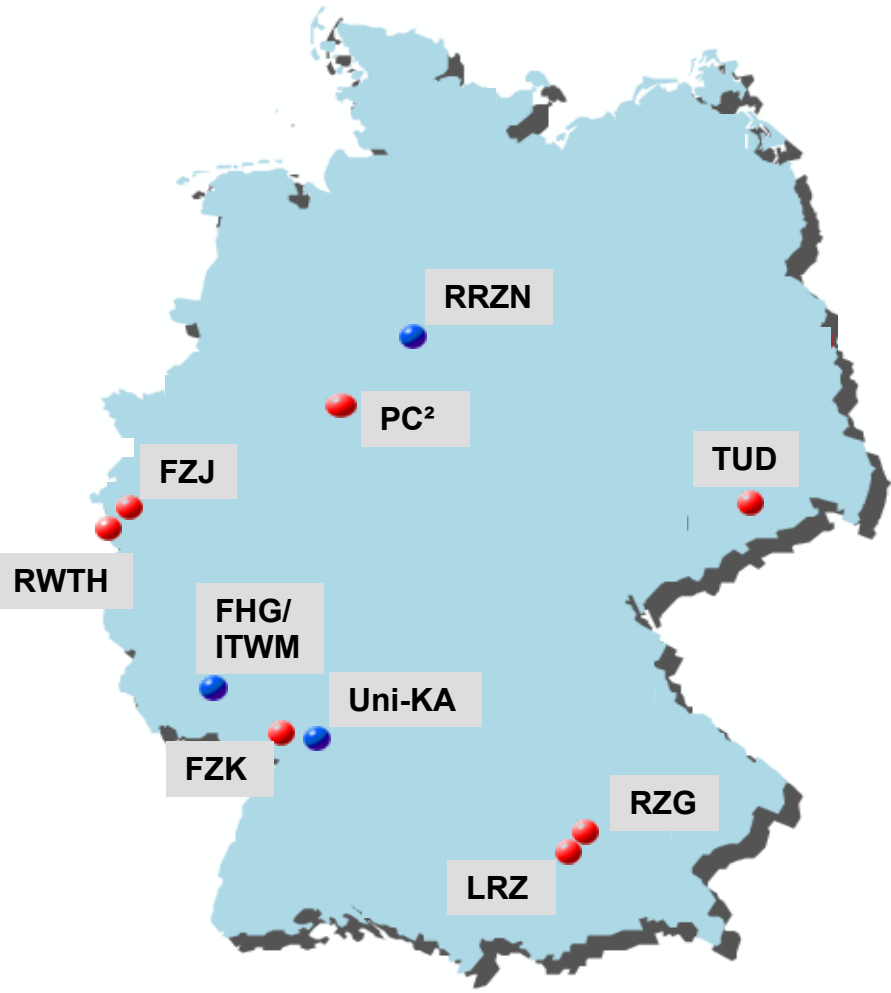
Establishment of a generally usable platform for e-Science



Structure of the D-Grid architecture



Partners of the Core D-Grid



Site	Resource	Amount
FZJ/ZAM	IBM Supercomputer with 8,5 TFlops STK data robot system with 2,8 PByte	32 CPUs 300 TByte
FZK/IWR	8 nodes Opteron 2x2.2 GHz 8 processors of a system NEC SX-5 1 p630 with 4 processors 1 SX-6i to do tests 2 nodes Opteron 2x2.2 GHz to do tests	100% 50% 50% 50% 50%
LRZ	SGI high performance system with 20 TFlop/s Intel IA32 and IA 64 Cluster, IBM p690, SunFire 80	5% 5% 5%
MPI/RZG	IBM supercomputer with 4,5 TFlops, PC cluster with 2 TFlops Data robot system with 8 PByte	32 CPUs 400 TByte
PC²	Cluster of 400 Xeon 64 Bit processors, high performance visualization and FPGAs	10%
RWTH/RZ	2 SunFire 6900 with 24 UltraSPARC IV each	100%
TU-Dresden/ZIH	SGI O2K(56 proc)/O3K(192 proc.) : T3E (64 proc): PC cluster with 30 processors, end off 2005: new system with 1000 proc.	10% 20% 20% 2%
Uni-H/RRZN	PC-Cluster mit 64 CPUs	assoc.
Uni-KA	PC-Pool	assoc.
FHG/ITWM		assoc.

Distribution of the extra investment

University Marburg
University Wuppertal
University Siegen
FZK Karlsruhe
Fraunhofer SCAI
DKRZ Hamburg
FZJ Jülich
Zuse Institute Berlin
University Dortmund
RRZN Hannover
LRZ München
HLRS Stuttgart
University Köln
DESY Hamburg
University Freiburg
ZIH Dresden
University Leipzig
GWDG Göttingen
ARI Heidelberg



- Grid certificates issued by DFN and GridKA
- Registration authorities at all partner sites
 - FZJ/ZAM, FZK/IWR, LRZ, RWTH/RZ, RZG/MPG, PC2, TUD/ZIH
 - All RAs of DFN
 - All RAs of GridKA
- User certificates from EUGridPMA / IGTF accepted

- D-Grid User Portal
 - <http://www.d-grid.de/userportal>
- D-Grid Provider Portal
 - <http://www.d-grid.de/providerportal>
- D-Grid general / projects
 - <http://www.d-grid.de>
- D-Grid infrastructure project
 - <http://dgi.d-grid.de>

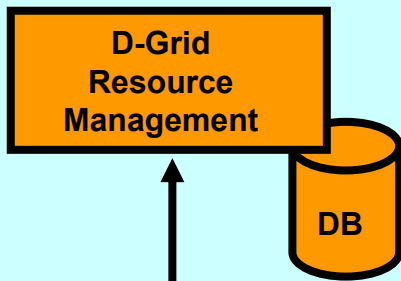
Services for resource providers

- Point of information
- Installation instructions for grid middleware and for the integration of the resources into the D-Grid infrastructure
- Operation of a platform for update information of the software packages
- Operation of different services for the infrastructure (resource, VO, and user management)
- PKI / AAI infrastructure for the usage of the resources
- Trouble ticket system
- Advice concerning network connectivity
- Information of the resource providers about potential security risks
- Training courses

- UNICORE
 - FhG, FZJ, FZK, LRZ, PC², RRZN, RWTH, RZG, ZIH
- Globus
 - FhG, FZJ, FZK, LRZ, PC², RRZN, RWTH, RZG, ZIH
- LCG/gLite
 - FZJ, FZK, LRZ, RRZN, RWTH, ZIH
- OGSA-DAI
 - FZK, ZIH
- dCache
 - FZJ

http://dispatch.fz-juelich.de:8814/D-Grid-Resource

Site of DGI operations



registration

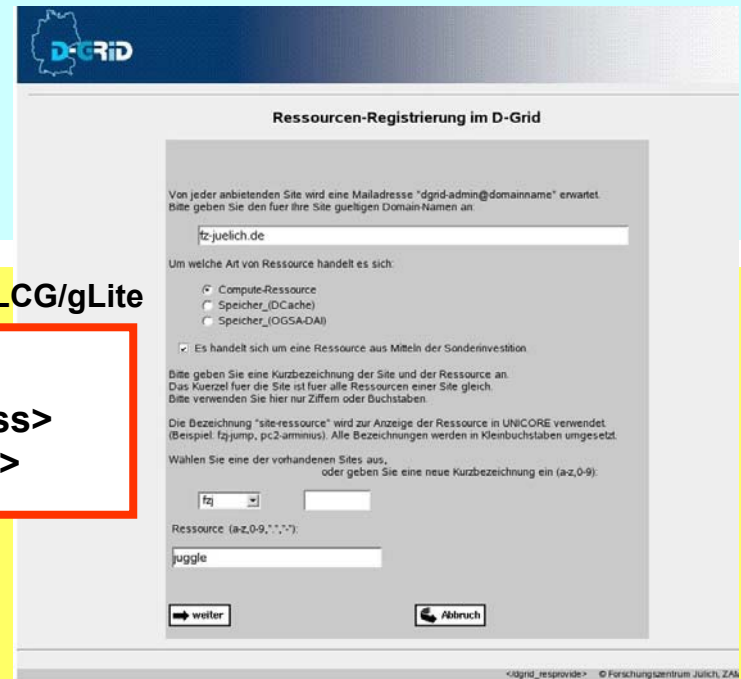


Resource administrator
 .../usercert.pem
 .../userkey.pem
 needed for access

UINICORE Globus LCG/gLite

New Resource
 site=<ssss>
 res=<rrrr>

.../hostcert.pem
 of each middleware
 head node



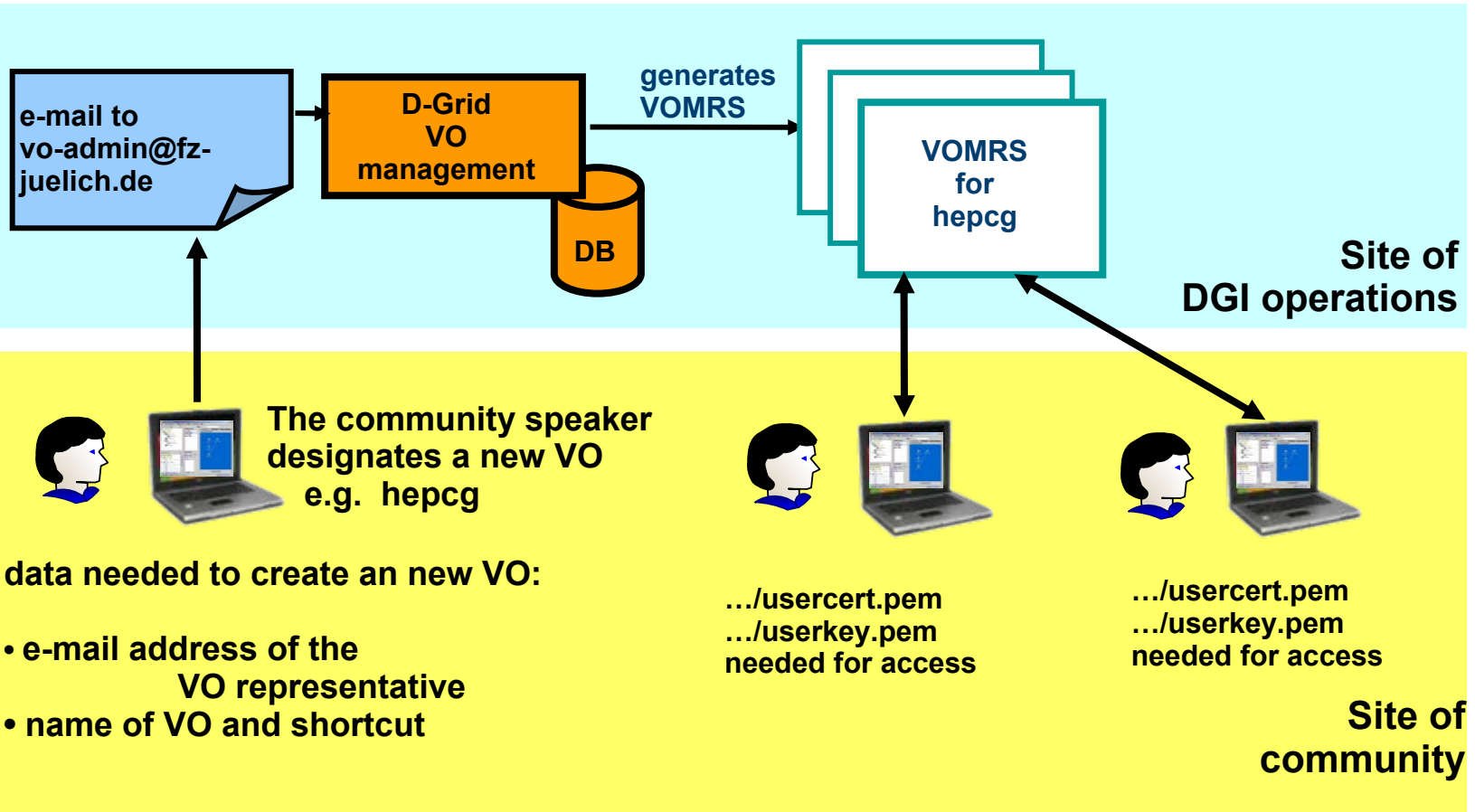
Site of community

- Point of information
- Information about certificates, membership in VOs, installation and usage of middleware clients
- Overview over resources, status of resources
- User support / trouble ticket system
- Tools for an easy utilization of the grid
 - PKI infrastructure, easily obtain a grid user certificate
 - Foundation of a new VO
 - Membership in an existing VO
- Using the resources via grid middleware client software
 - Usage of the user interfaces on the D-Grid resources
 - Installation of clients on own hardware
- Training courses

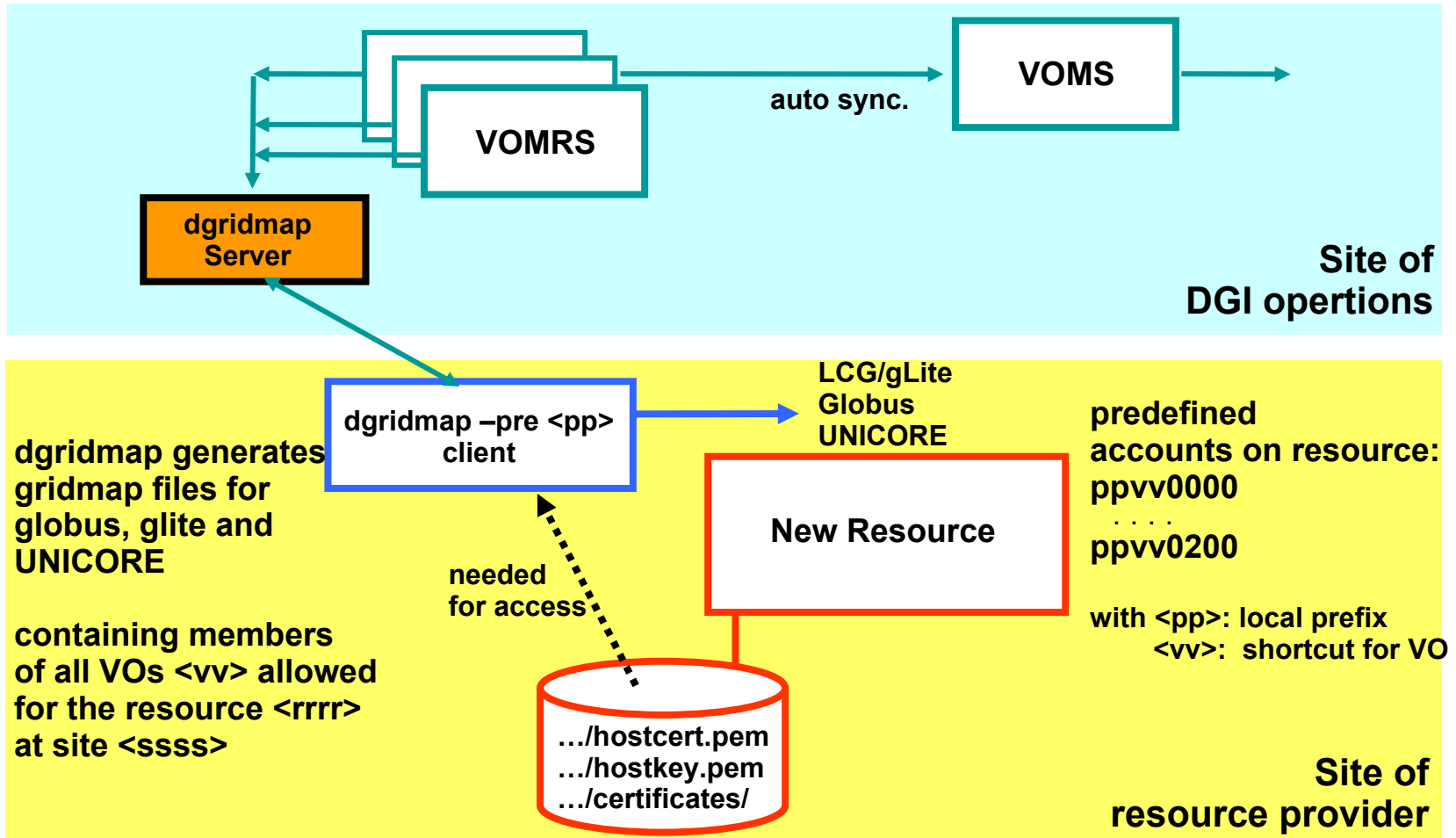
VO and User management

new VO, new member

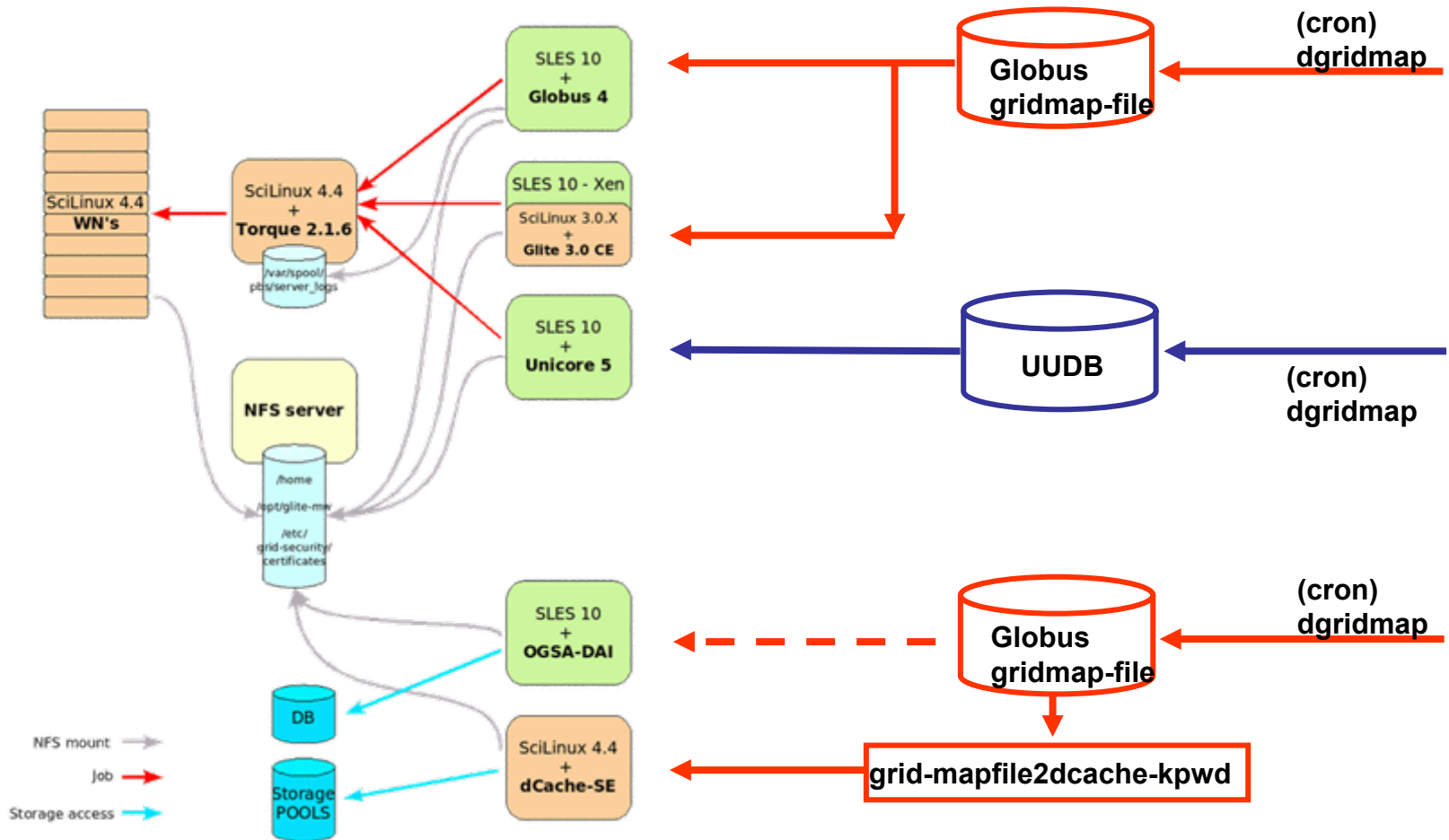
<http://dispatch.fz-juelich.de:8814/D-Grid-VO-Member>



VO and User management mapping users to accounts



VO and User management mapping users to accounts



- Web-MDS for Globus resources
- Geo-data / resource status
- Hierarchical structure site / resource

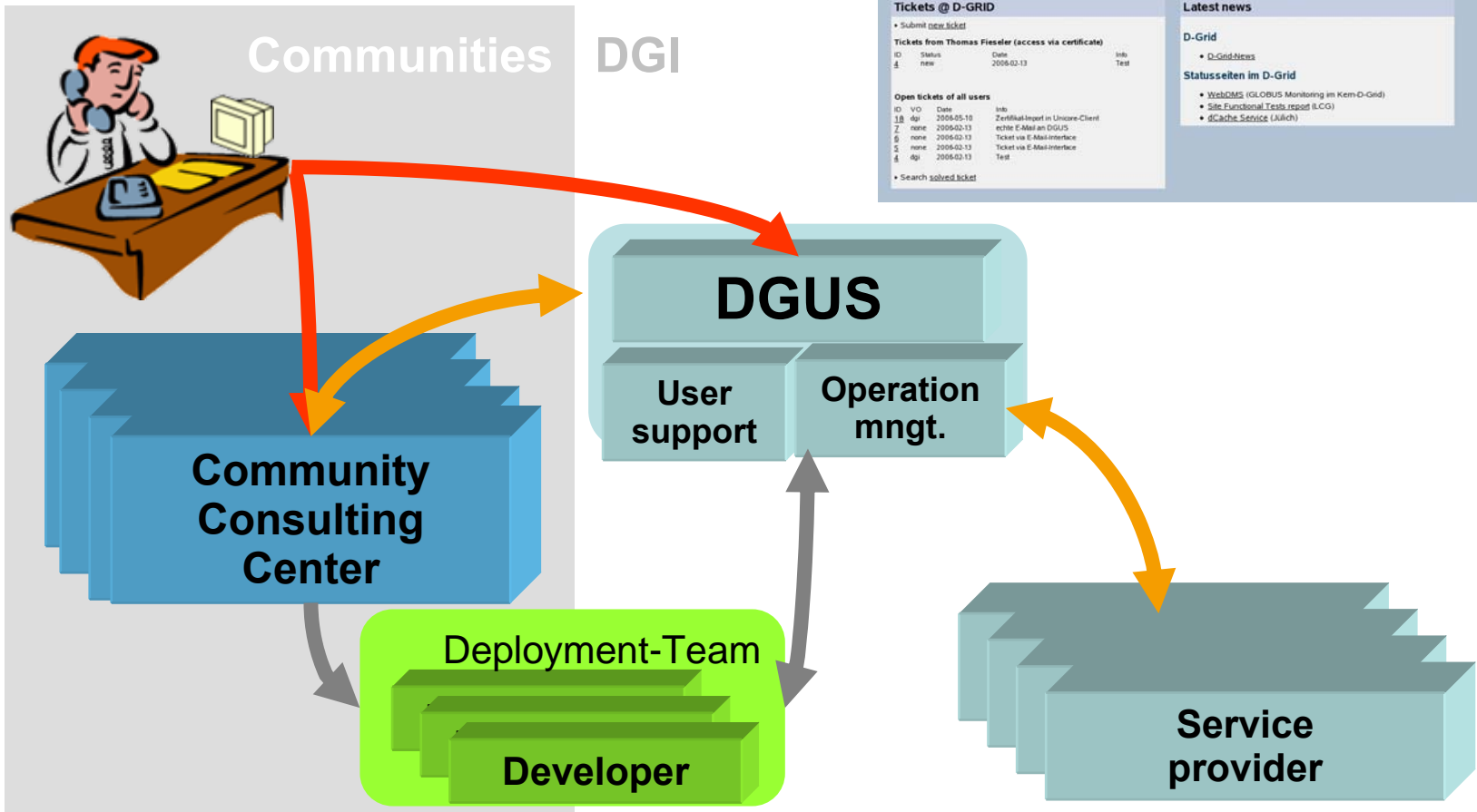
- LCG / gLite site functional tests

- UNICORE client monitoring window



Installation of a support infrastructure

D-Grid User Support



- More communities, sites, resources, VOs, users
- Integration of compilers, MPI etc., application software from communities
- Monitoring for all middleware systems
- Benchmarks, functional tests
- Integration of upcoming middleware systems (new versions of existing systems)
- Longterm, sustainable operation of the infrastructure
- Policies for using and providing grid resources

Forschungszentrum Jülich
in der Helmholtz-Gemeinschaft



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