



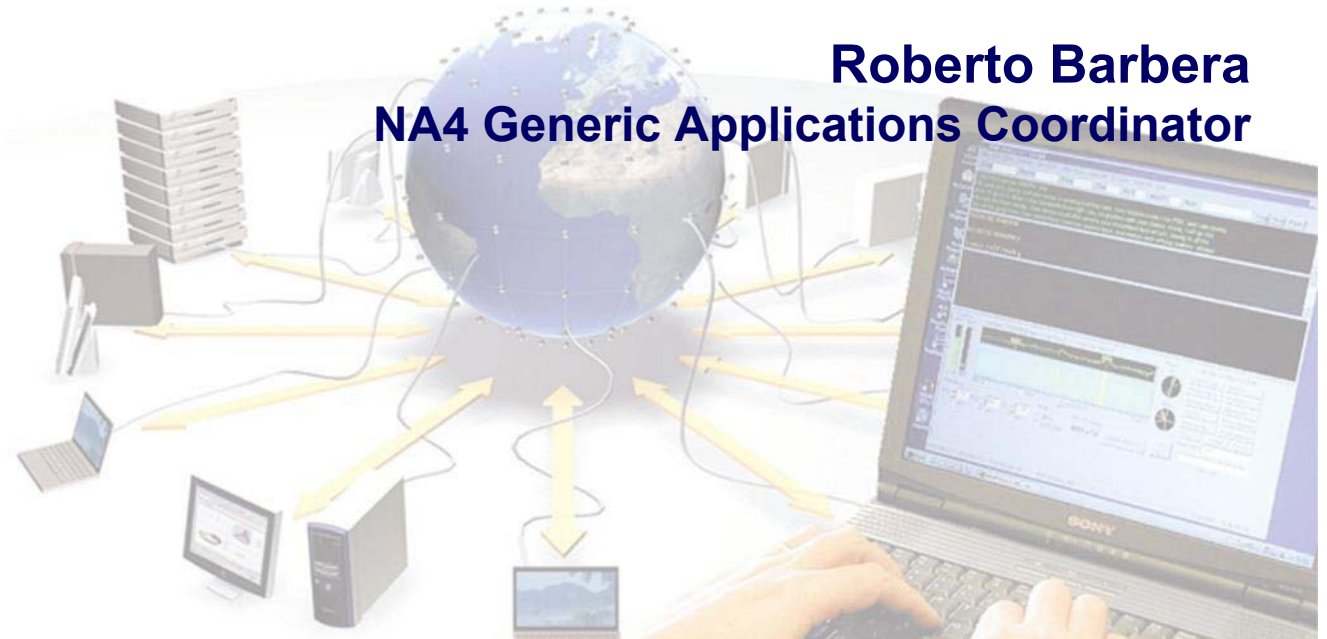
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E-science in Europe

www.eu-egee.org

NA4 Meeting, CERN, 13.10.2004

Status of NA4 Generic Applications

Roberto Barbera
NA4 Generic Applications Coordinator

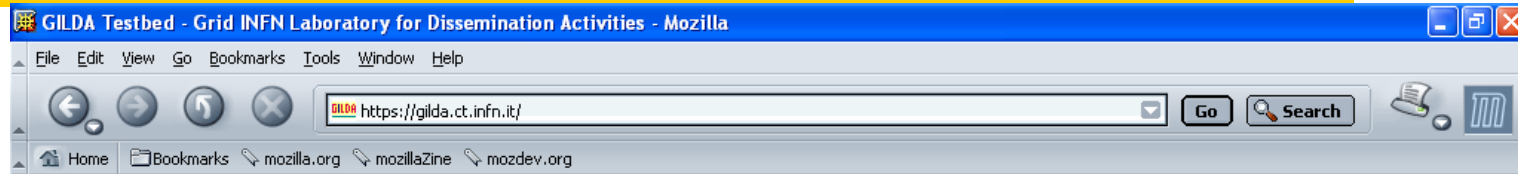


EGEE is a project funded by the European Union under contract IST-2003-508833

- Status of GILDA
- New demonstrative applications in GILDA
- Status of “official” Generic Applications
- How to move from GILDA to EGEE-0
- Summary



The present GILDA Testbed (<https://gilda.ct.infn.it/testbed.html>)



- Grid tutorials
- Video tutorials ★
- Instructions for users
- Instructions for sites ★
- Useful links

- Sponsors
- Usage Statistics



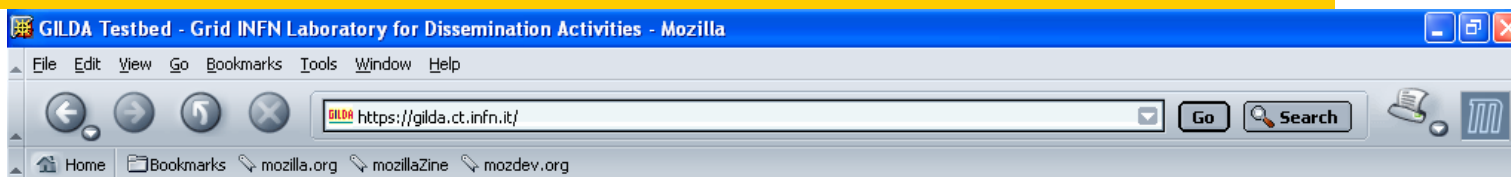
Grid services

This is a table of the general Grid Services nodes running.

The present GILDA sponsors



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GILDA is sponsored by:

- Grid tutorials
- Video tutorials
- Instructions for users
- Instructions for sites
- Useful links
- Sponsors
- Usage Statistics



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The GILDA Tutorials/Demonstrations (<https://gilda.ct.infn.it/tutorials.html>)

- Catania, 4-8 October 2004, [home page](#), [agenda](#)
- Vilnius, 5-6 October 2004, [agenda](#)
- London, 6 October 2004
- Madrid, 6-7 October 2004, [agenda](#)
- Heidelberg, 11-14 October 2004
- CERN, 16 October 2004
- Prague, 26 October 2004, [home page](#)
- Warsaw, 4-6 November 2004, [home page](#), [agenda](#)
- The Hague, 15-17 November 2004
- Merida, 15-19 November 2004
- Bochum, 7-10 December 2004
- Istanbul, 9-10 December 2004
- Prague, 13 December 2004

The GILDA Video Tutorials (<https://gilda.ct.infn.it/video.html>)

- How to join GILDA
- Certificate: conversion and manipulation
- The GILDA Grid Demonstrator
- **The GILDA Grid Tutor: how to install it**
- The GILDA Grid Tutor: how to use it

NEW !



New functionalities of GILDA

- Complete support for MPI jobs
- Complete support for DAG jobs
 - DAG UI: grid-demo1.ct.infn.it
 - DAG RB: grid007.ct.infn.it
 - CMS example demonstrated at the last EDG Review successfully reproduced
 - Integration of DAG's in TRIANA re-started
- SciLab (<http://www.scilab.org>, a MathLab clone) installed on all sites and successfully tested
- GEANT4 installed on all sites and successfully tested
- GNU G95 Fortran 90/95 compiler (<http://www.g95.org>) under test in Catania. Will be available on all sites in a few days along with a series of working examples
- Complete support for DGAS accounting system foreseen in a few weeks

MPI jobs: site configuration recipe (valid for PBS as LRM)

- Edit `/etc/ssh/sshd_config` and add the following lines at the end:
HostbasedAuthentication yes
IgnoreUserKnownHosts yes
IgnoreRhosts yes
- Copy the file `/etc/ssh/shosts.equiv` from CE on all WN's.
- On the CE generate an updated version of `/etc/ssh/ssh_known_hosts` by running `/opt/edg/sbin/edg-pbs-knownhosts`.
- Copy that file into all your WN's.
- Restart the server with: `/sbin/service sshd restart`

MPI jobs: JDL example

(see <http://grid-it.cnaf.infn.it/index.php?mpihowto&type=1>)

```
Type = "Job";  
JobType = "MPICH";  
NodeNumber = 4;  
Executable = "MPItest.sh";  
Arguments = "cpi 4";  
StdOutput = "test.out";  
StdError = "test.err";  
InputSandbox = {"MPItest.sh", "cpi"};  
OutputSandbox = {"test.err", "test.out", "executable.out"};  
Requirements = other.GlueCEInfoLRMSType == "PBS" ||  
    other.GlueCEInfoLRMSType == "LSF";
```

MPI jobs: execution script example (1/2)

(see <http://grid-it.cnaf.infn.it/index.php?mpihowto&type=1>)

```
#!/bin/sh
# this parameter is the binary to be executed
EXE=$1
# this parameter is the number of CPU's to be reserved for parallel execution
CPU_NEEDED=$2
# prints the name of the master node
echo "Running on: $HOSTNAME"
echo "*****"
if [ -f "$PWD/.BrokerInfo" ] ; then
TEST_LSF=`edg-brokerinfo getCE | cut -d/ -f2 | grep lsf`
else
TEST_LSF=`ps -ef | grep sbatchd | grep -v grep`
fi
if [ "x$TEST_LSF" = "x" ] ; then
# prints the name of the file containing the nodes allocated for parallel execution
echo "PBS Nodefile: $PBS_NODEFILE"
# print the names of the nodes allocated for parallel execution
cat $PBS_NODEFILE
echo "*****"
HOST_NODEFILE=$PBS_NODEFILE
else
# print the names of the nodes allocated for parallel execution
echo "LSF Hosts: $LSB_HOSTS"
# loops over the nodes allocated for parallel execution
HOST_NODEFILE=`pwd`/lsf_nodefile.$$
for host in ${LSB_HOSTS}
do
echo $host >> ${HOST_NODEFILE}
done
fi
```

MPI jobs: execution script example (2/2)

(see <http://grid-it.cnaf.infn.it/index.php?mpihowto&type=1>)

```
echo "*****"
# prints the working directory on the master node
echo "Current dir: $PWD"
echo "*****"
for i in `cat $HOST_NODEFILE` ; do
echo "Mirroring via SSH to $i"
# creates the working directories on all the nodes allocated for parallel execution
ssh $i mkdir -p `pwd`
# copies the needed files on all the nodes allocated for parallel execution
/usr/bin/scp -rp ./ * $i: `pwd`
# checks that all files are present on all the nodes allocated for parallel execution
echo `pwd`
ssh $i ls `pwd`
# sets the permissions of the files
ssh $i chmod 755 `pwd`/$EXE
ssh $i ls -alR `pwd`
echo "@@@@@@@@@@@@@@@@@@"
done
# execute the parallel job with mpirun
echo "*****"
echo "Executing $EXE"
chmod 755 $EXE
ls -l
mpirun -np $CPU_NEEDED -machinefile $HOST_NODEFILE `pwd`/$EXE > executable.out
echo "*****"
```

New demonstrative applications on GILDA

- GATE (demonstrated at the last GEANT4 Workshop by Lydia Maigne)
- MPI examples
- Raster-3D (chemical application: 3D modelling/rendering of molecules)
- SciLab examples (general application: data presentation using SciLab, the MathLab clone)
- GEANT4 examples (general application: examples of GEANT4 applications)

MPI example

Welcome to the GENIUS INFN GRID Portal - Mozilla

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https://grid-demo.ct.infn.it/ Go Search

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Grid Enabled web eNvironment for site Independent User job Submission

```
Process 0 of 2 on testbed010.cnaf.infn.it  
pi is approximately 3.1415926544231318, Error is 0.0000000008333387  
wall clock time = 10.010470  
Process 1 of 2 on grid011f.cnaf.infn.it
```

Other Job Services
up
▶ Job Submission
▶ Job Queue
▶ Job Data
▶ Clean Job Queue

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[LCG-2](#)
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Raster-3D example

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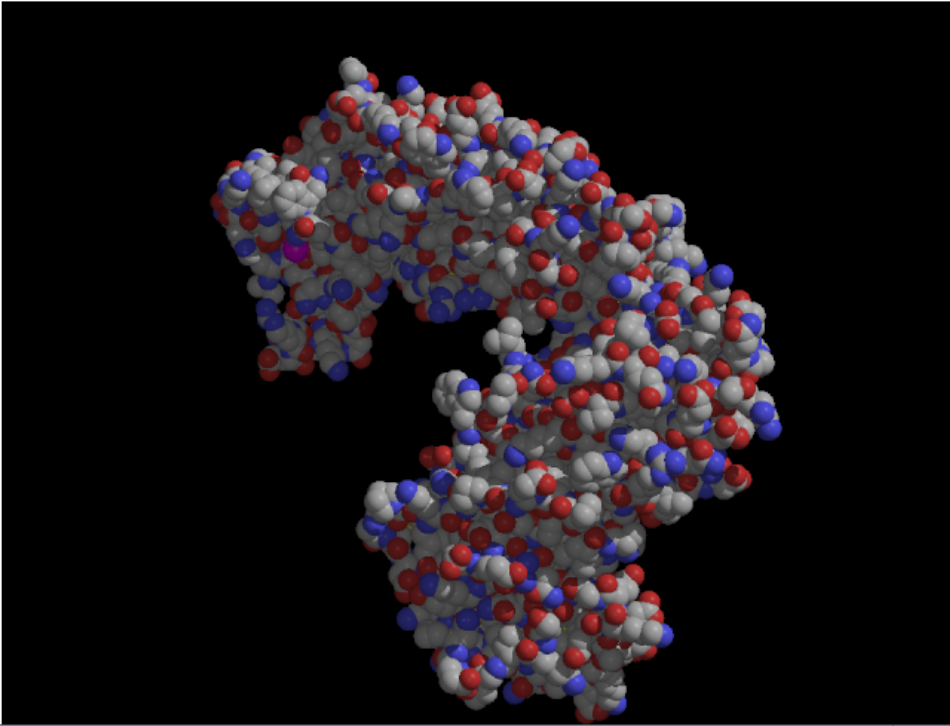
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Raster-3D

- up
- Generate a Raster Image
- Show Raster Queue
- Raster Job Data
- Clean Raster Queue

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SciLab example

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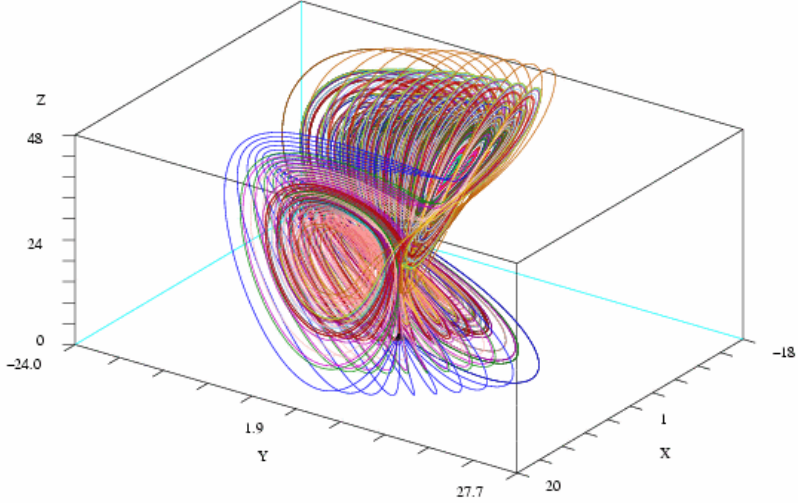
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SCILAB

up

- Select Scilab macro
- Show Scilab Queue
- Scilab Job Data
- Clean Scilab Queue

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The 3D plot shows a complex, multi-colored trajectory in a 3D coordinate system. The axes are labeled X, Y, and Z. The Z-axis ranges from 0 to 48, the Y-axis from -24.0 to 27.7, and the X-axis from -18 to 20. The trajectory is a dense, multi-colored loop, suggesting a complex, possibly chaotic, system.

Done

GEANT4 example

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File Edit View Go Bookmarks Tools Window Help

https://grid-demo.ct.infn.it/ Go Search

Home Bookmarks mozilla.org mozillaZine mozdev.org

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Grid Enabled web eNvironment for site Independent User job Submission

RB: gilda VO: gilda RLS: GILDA Logout

Destroy

hits.out.txt
g4_00.wrl

Directory contents - 20041012 130557 eX81nsM 7L0v.119Cvffr4A

C:\Documents and Settings\barbera\Impostazioni locali\Temp\g4_00.wrl - Microso...

File Modifica Visualizza Preferiti Strumenti ?

Indietro Cerca Preferiti Multimedia

Indirizzo C:\Documents and Settings\barbera\Impostazioni locali\Temp\g4_00.wrl Vai Collegamenti

Google Search Web blocked AutoFill Options

Operazione completata Risorse del computer

powered by
EnginFrame 3.2
compliant with
LCG-2
GRID.IT

Status of Generic Applications (Earth Science)



External presentation

Status of Generic Applications (Computational Chemistry)

Scientific area	Computational chemistry
Contact	Antonio Laganà, Dipartimento di Chimica, University of Perugia, Italy, lag@unipg.it
VO manager	Oswaldo Gervasi, osvaldo@unipg.it
VO services	VO administration, Resource Broker and Replica Location Service located at CNAF
Application(s) deployed	“A priori” atomic and molecular simulations.
Status on GILDA	First cluster in Perugia added to GILDA next week. First brainstorming meeting scheduled for october 18-19 at CNAF.
Status on EGEE-0	
Main requirements	Deployment of licensed software on the grid infrastructure. Commercial software will initially be deployed on the Perugia cluster.
Main issues related to deployment	

Status of Generic Applications (Astroparticle Physics)

Scientific area	Astro-particle Physics
Contact	Harald Kornmayer, FZK, Germany, harald.kornmayer@iwr.fzk.de
VO manager	Harald Kornmayer, KZK, Germany, harald.kornmayer@iwr.fzk.de
VO services	VO administration, Resource Broker and Replica Location Service located at SARA
Application(s) deployed	MAGIC telescope Montecarlo simulations
Status on GILDA	Realisation of RPM(s) of Magic Montecarlo in progress.
Status on EGEE-0	
Number of nodes accessible on EGEE infrastructure	
Desired infrastructure usage	
Main requirements	
Main issues related to deployment	

Move from GILDA to EGEE-0 (UI points to another default RB)

- In the file `/var/obj/conf/server/source/` of your LCFGng server add the needed information in the lines:

```
#ifdef UI_RESBROKER  
#undef UI_RESBROKER  
#define UI_RESBROKER  
#endif
```

< RB to point to >

.....

.....

```
#ifdef UI_LOGBOOK  
#undef UI_LOGBOOK  
#define UI_LOGBOOK  
>:7846  
#endif
```

[https://< RB to point to](https://< RB to point to >)

Move from GILDA to EGEE-0 (allow a new VO to run on a site – step 1)

- In the file site-cfg.h on your LCFGng server add the needed information in the lines:

```
#define SE_VO_<vo name>
```

```
.....
```

```
#define SA_PATH_<vo name>      <vo name>
```

```
.....
```

```
#define WN_AREA_<vo name>      /opt/exp_software/<vo name>
```

Move from GILDA to EGEE-0 (allow a new VO to run on a site – step 2)

- In the file ComputingElement-cfg.h on your LCFGng server add the needed information in the lines:

```
#ifdef SE_VO_<vo name>
EXTRA(ceinfo.SUPPORTEDVOS)          <vo name>
#endif

.....
#ifdef SE_VO_<vo name>
EXTRA(dirperm.ents)                  <vo name>sgmce
dirperm.path_<vo name>sgmce          SW_PATH/<vo name>
dirperm.owner_<vo name>sgmce         <vo name>sgm:<vo name>
dirperm.perm_<vo name>sgmce          0775
dirperm.type_<vo name>sgmce          d
#endif
```

Move from GILDA to EGEE-0 (allow a new VO to run on a site – step 3)

- In the files:
 - ComputingElement-novoms-cfg.h
 - StorageElementClassic-cfg.h
 - StorageElement-cfg.h

on your LCFGng server add the needed information in the line:

```
#include "poolaccounts-<vo name>-cfg.h"
```

where poolaccounts-<vo name>-cfg.h looks like

```
#ifdef SE_VO_<vo name>
EXTRA(poolaccounts.usernames) <vo name>sgm <vo name>001 \
                                <vo name>002 .....<vo name>100
EXTRA(poolaccounts.nolock)      <vo name>sgm
#endif
```

Move from GILDA to EGEE-0 (allow a new VO to run on a site – step 4)

- In the file flatfiles-dirs-SECLASSIC-cfg.h on your LCFGng server add the needed information in the lines:

```
#ifdef SE_VO_<vo name>
EXTRA(dirperm.ents)           <vo name>
dirperm.path_<vo name>       SE_FILE_CACHE_AREA/<vo name>
dirperm.owner_<vo name>      root:<vo name>
dirperm.perm_<vo name>       0775
dirperm.type_<vo name>       d
#endif
```


Move from GILDA to EGEE-0 (allow a new VO to run on a site – step 5)

In the file `lcginfo-seclassic-cfg.h` on your LCFGng server add the needed information in the lines:

```
#ifdef SE_VO_<vo name>
#define PATH_<vo name>          <vo name>:SA_PATH_<vo name>
#define PATH_DYN_<vo name>     <vo name>:CE_CLOSE_SE_MOUNTPOINT/SA_PATH_<vo name>
#else
#define PATH_<vo name>
#define PATH_DYN_<vo name>
#endif
.....
#ifdef SE_DYNAMIC_CLASSIC
+lcginfo.args_classic SE_HOSTNAME PATH_DYN_ALICE PATH_DYN_ATLAS PATH_DYN_CMS PATH_DYN_LHCB
  PATH_DYN_DTEAM PATH_DYN_<vo name>
#endif
.....
EXTRA(lcginfo.value_GlueSARoot)          PATH_<vo name>
EXTRA(lcginfo.names_GlueSAAccessControlBaseRule)  <vo name>
EXTRA(lcginfo.names_GlueSAPolicyFileLifeTime)     <vo name>
.....
#ifdef SE_VO_<vo name>
lcginfo.prefix_GlueSAAccessControlBaseRule_<vo name>  PATH_<vo name>
lcginfo.value_GlueSAAccessControlBaseRule_<vo name>    <vo name>
lcginfo.prefix_GlueSAPolicyFileLifeTime_<vo name>      PATH_<vo name>
lcginfo.value_GlueSAPolicyFileLifeTime_<vo name>      permanent
#endif
```

Move from GILDA to EGEE-0 (allow a new VO to run on a site – step 6)

- In the file mkgridmap-cfg.h on your LCFGng server add the needed information in the lines:

```
#ifdef SE_VO_<vo name>
EXTRA(mkgridmap.groups)    <vo name>
mkgridmap.uri_gilda      ldap://<vo server name>:<vo server
port>/ou=<vo name ou>,o=<vo name o>,c=<vo name c>
mkgridmap.user_<vo name>  .<vo name>
#endif
```

Example: ldap://grid-vo.cnaf.infn.it:10389/ou=Testbed-gilda,o=gilda,c=it

Move from GILDA to EGEE-0 (allow a new VO to run on a site – step 7)

- In the file se-cfg.h on your LCFGng server add the needed information in the lines:

```
#ifdef SE_VO_<vo name>  
EXTRA(se.vos)      <vo name>  
#endif
```

Move from GILDA to EGEE-0 (allow a new VO to run on a site – step 8)

- In the file seinfo-cfg.h on your LCFGng server add the needed information in the lines:

```
#ifdef SE_VO_<vo name>
EXTRA(seinfo.vos)                <vo name>
seinfo.SARoot_<vo name>         <vo name>:/<vo name>
seinfo.SAPolicyMaxFileSize_<vo name> 10000
seinfo.SAPolicyMinFileSize_<vo name> 1
seinfo.SAPolicyMaxData_<vo name>    1000000
seinfo.SAPolicyMaxNumFiles_<vo name> 10000
seinfo.SAPolicyMaxPinDuration_<vo name> 10000
#endif
```

Move from GILDA to EGEE-0 (allow a new VO to run on a site – step 9)

- In the file user-edguser-cfg.h on your LCFGng server add the needed information in the lines:

```
#ifdef SE_VO_<vo name>  
EXTRA(auth.usersuppgroups_edguser) <vo name>  
#endif
```

Move from GILDA to EGEE-0 (allow a new VO to run on a site – step 10)

- In the file voenv-cfg.h on your LCFGng server add the needed information in the lines:

```
#ifdef SE_VO_<vo name>
EXTRA(voenv.vo)           <vo name>
voenv.swroot_<vo name>  /opt/<vo name>
#endif
```

Move from GILDA to EGEE-0 (allow a new VO to run on a site – step 11)

- In the file vomswmgr-dirs-cfg.h on your LCFGng server add the needed information in the lines:

```
#ifdef SE_VO_<vo name>
EXTRA(dirperm.ents)           <vo name>sgm
dirperm.path_<vo name>sgm    INFO_PATH/<vo name>
dirperm.owner_<vo name>sgm   <vo name>sgm:<vo name>
dirperm.perm_<vo name>sgm    0755
dirperm.type_<vo name>sgm    d
#endif
```

Summary

- GILDA testbed is expanding and it is now an inter-continental facility
- Some applications' requirements in terms of commercial software (MathLab, F90) are being addressed in GILDA using free/open source clones (SciLab, G95)
- The portfolio of demonstrative applications is growing every day and can stand very nice and complex demonstrations
- Official Generic Applications are doing well and they are on track for the First Review
- The technical procedure to move from GILDA to EGEE-0 is very simple. Accepting a new VO on a given site takes just a few minutes (just 12 steps to the Heaven ☺)
- We envisage to deploy the accepted Generic Applications on EGEE-0 by the end of the year (to be in time with DNA4.3.1)