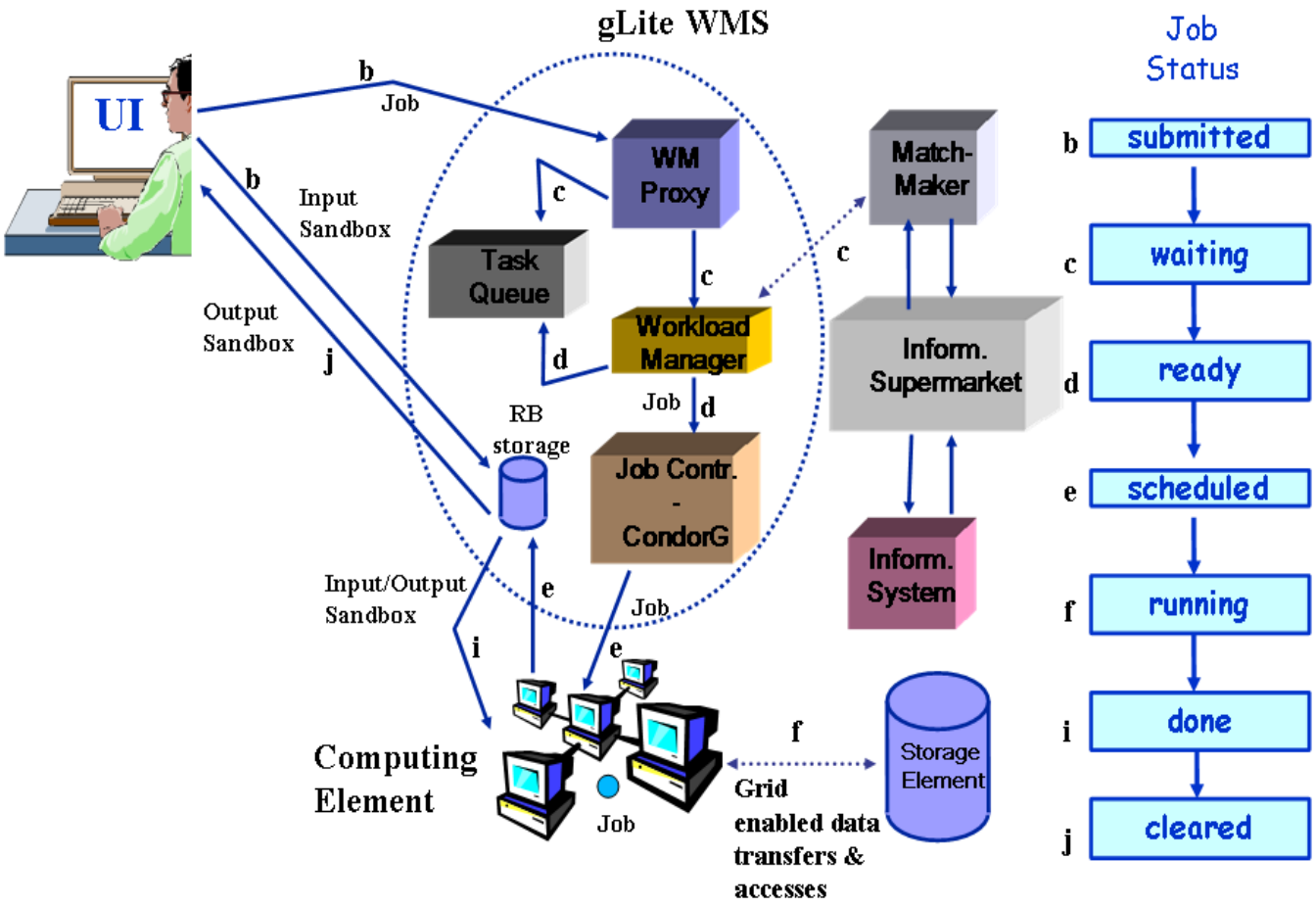
# VO2010
# Werkcollege 8


gLite WMS
UI
b
Job
b
Input
Sandbox
Output
Sandbox
j
WM
Proxy
c
Task
Queue
c
Workload
Manager
d
RB
storage
Job
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Input/Output
Sandbox
e
Job
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e
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Element
Job
f
Grid
enabled data
transfers &
accesses
Storage
Element
Match-
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c
Inform.
Supermarket
Inform.
System
Job
Status
b
submitted
c
waiting
d
ready
e
scheduled
f
running
i
done
j
cleared

# User Identity

- Users and resources are typically part of more than one VO,
- but don't want many passwords

- Users and resource get a *single authentication token* (identity certificate)
  - that works across virtual organisations
  - issued by a party trusted by all ("CA"),
  - recognised by many resource providers, users, and VOs
  - satisfy traceability and persistency requirement
  - in itself does not grant any access, but provides a unique binding between an identifier and the subject

- **This is called your *(identity) certificate***
- **It is a *cryptographically protected statement* by the CA**
- that you can use to prove your identity **in combination** with a ***private key*** and its ***passphrase***

# Single sign-on and delegation

- To authenticate with your certificate directly you would have to type a passphrase every time
- Also you need a way to send you *VOMS credentials* across

- In the Grid Security Infrastructure today, this is solved by *'proxy certificates'*
  - *a temporary key pair*
  - *in a temporary certificate signed by your 'long term' private key*
  - *valid for a limited time (default: 12 hours)*
  - *and itself not protected by a passphrase*

# Getting a VOMS proxy

- VOMS credential consists of a list of attributes
- short for Fully Qualified Attribute Name, is what VOMS uses to express membership and other authorization info
- Groups membership, roles and capabilities may be expressed in a format that bounds them together
  <group>/Role=[<role>][/Capability=<capability>]

```
[glite-tutor] /home/giorgio > voms-proxy-init --voms gilda

Your identity: /C=IT/O=GILDA/OU=Personal Certificate/L=INFN/CN=Emidio
   Giorgio/Email=emidio.giorgio@ct.infn.it
Enter GRID pass phrase: ******

Your proxy is valid until Mon Jan 30 23:35:51 2006
Creating temporary proxy.............................Done

Contacting  voms.ct.infn.it:15001 [/C=IT/O=GILDA/OU=Host/L=INFN
Catania/CN=voms.ct.infn.it/Email=emidio.giorgio@ct.infn.it] "gilda"

Creating proxy ..................................... Done
Your proxy is valid until Mon Jan 30 23:35:51 2006
```

# LFC

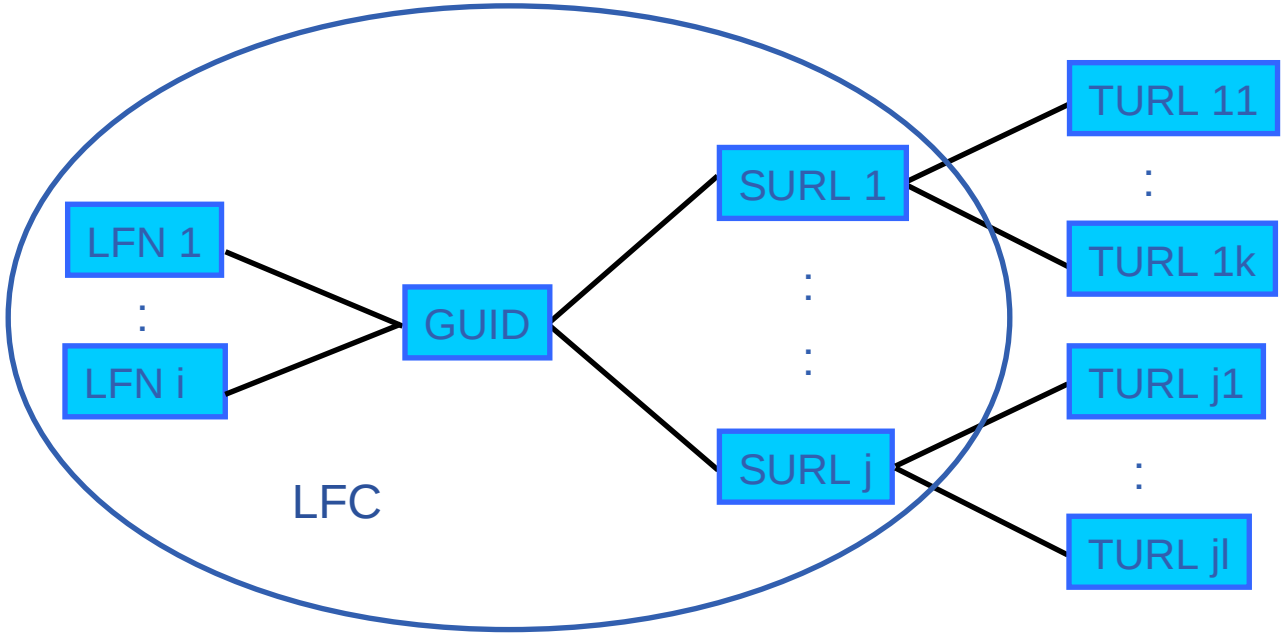
- LFC
  - Keeps track of the location of copies (replicas) of files on the Grid

# Name conventions

- Logical File Name (LFN)
  - An alias created by a user to refer to some item of data, e.g. "lfn:/grid/tutor/mydir/myfile"
  - Unix-like namespace
- Globally Unique Identifier (GUID)
  - A non-human-readable unique identifier for an item of data, e.g. "guid:f81d4fae-7dec-11d0-a765-00a0c91e6bf6"
- Site URL (SURL)
  - The location of an actual piece of data on a storage system, e.g. "srm://pcrd24.cern.ch/flatfiles/cms/output10_1"
- Transport URL (TURL)
  - Locator of a replica + access protocol: understood by a SE, e.g. "rfio://lxshare0209.cern.ch//data/alice/ntuples.dat"

# Naming conventions

- How do they fit together?
  - LFC holds the mapping LFN-GUID-SURL



## LFC interfaces

- Interaction with the WMS(RB)
  - The InputSandbox and OutputSandbox should only be used for small amounts of data. Large files should be on SEs
  - The RB can locate Grid files: allows for data-based match-making
  - Jdl file:
    - InputData = "lfn:/grid/tutor/MyFile";
      - The lfn's / guid's needed by the job as an input to the process
      - Tells RB to schedule job on CE close to SE holding the file
      - glite-brokerinfo getInputData returns list of files in InputData attribute
    - OutputSE=srm.grid.sara.nl";
      - location of a SE where the output data will be stored
    - DataAccessProtocol="gsiftp";
      - The list of protocols that the application is able to "speak" for accessing files listed in the InputData

# Data Management CLIs & APIs

## lcg-utils commands: Replica Management

| | |
|---|---|
| cg-cp | Copies a grid file to a local destination |
| cg-cr | Copies a file to a SE and registers the file in the catalog |
| cg-del | Delete one file |
| cg-rep | Replication between SEs and registration of the replica |
| cg-gt | Gets the TURL for a given SURL and transfer protocol |
| cg-sd | Sets file status to “Done” for a given SURL in a SRM request |

## lcg-utils commands: File Catalog Interaction

| | |
|---|---|
| cg-aa | Add an alias in LFC for a given GUID |
| cg-ra | Remove an alias in LFC for a given GUID |
| cg-rf | Registers in LFC a file placed in a SE |
| cg-uf | Unregisters in LFC a file placed in a SE |
| cg-la | Lists the alias for a given SURL, GUID or LFN |
| cg-lg | Get the GUID for a given LFN or SURL |
| cg-lr | Lists the replicas for a given GUID, SURL or LFN |

# Information system

- lcg-infosites
  - Example: finding an SE:

***> lcg-infosites --vo tutor se***

```
Avail Space(Kb) Used Space(Kb)  Type    SEs
----------------------------------------------------------
1320000000      n.a             n.a     gb-se-ams.els.sara.nl
1320000000      n.a             n.a     gb-se-wur.els.sara.nl
536868064       2848            n.a     se.grid.rug.nl
104856555       1044            n.a     srm.grid.sara.nl
```

  - Example: finding an LFC

***> lcg-infosites --vo tutor lfc***

lfc.grid.sara.nl

# Information system

- lcg-info

For more advanced searches:

For example, finding out where to put your files

```
>lcg-info --vo tutor --list-se --query='SE=srm.grid.sara.nl' --attrs=Path

- SE: srm.grid.sara.nl
  - Path                /pnfs/grid.sara.nl/data/tutor
```