Practical:
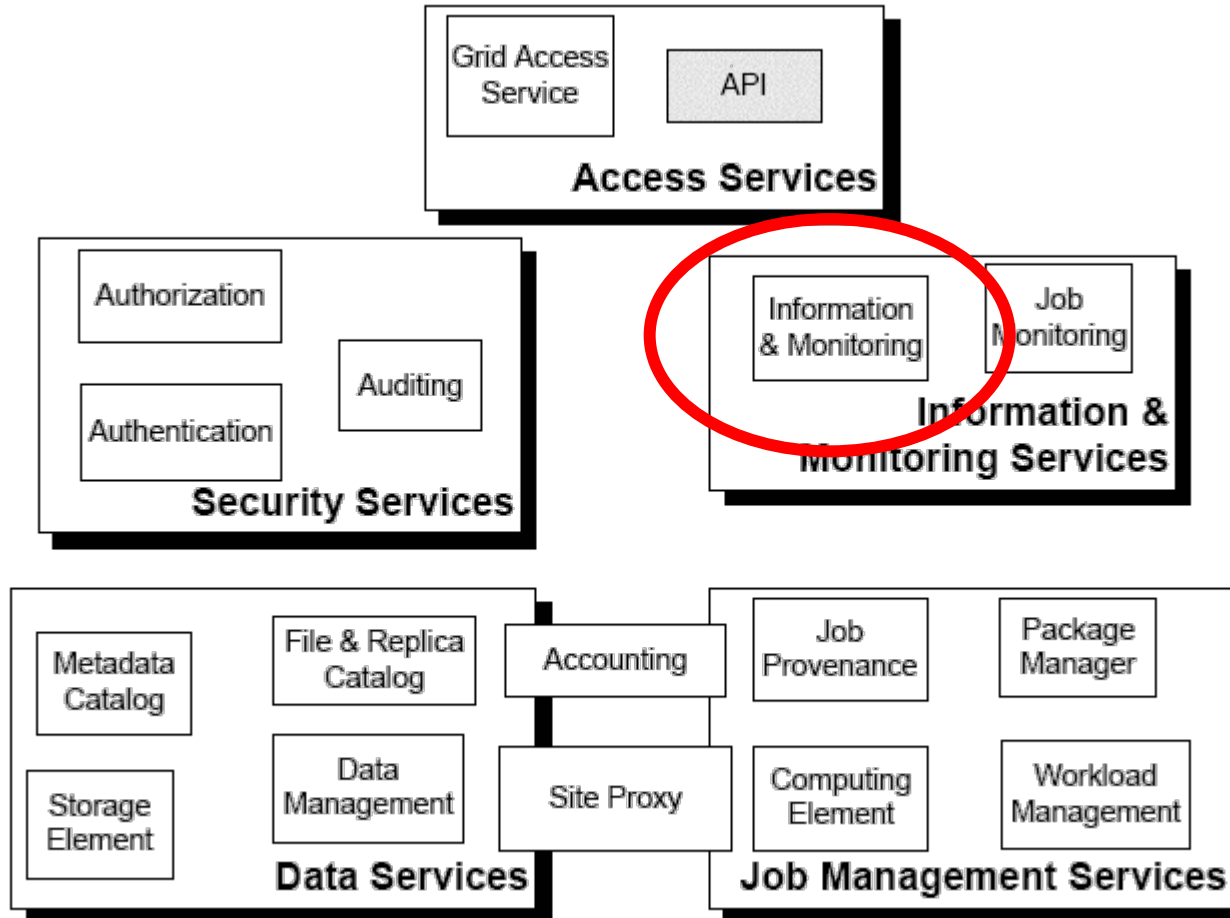# The Information Systems

Information Society

Uses of the Information System

If you are a user

Retrieve information about
• Grid resources and status
• Resources that can run your job
• Status of your jobs

If you are a middleware develop

Workload Management System:
Matching job requirements and
Grid resources

Monitoring Services:
Retrieving information about Grid
Resources status and availability

If you are site manager or service

You "generate" the information for example relative to your site or to a given service

Enabling Grids for E-sciencE

- **The data published in the Information System (IS) conforms to the GLUE (Grid Laboratory for a Uniform Environment) Schema. The GLUE Schema aims to define a common conceptual data model to be used for Grid resources.**
**http://infnforge.cnaf.infn.it/glueinfomodel/**

- **The BDII (Berkeley DB Information Index),** based on an updated version of the Monitoring and Discovery Service (MDS), from Globus, is adopted as main provider of the Information Service.

Enabling Grids for E-sciencE

- **BDII Information System**
  - *main Information System for the current production grid*
  - **Two sets of commands:**
    - **lcg-infosites: simple, meets most needs**
    - **lcg-info**: supports more complex queries

lcg-infosites

Enabling Grids for E-sciencE

- **a user or a service can query**
  - the BDII (usual mode)
  - LDAP servers on each site
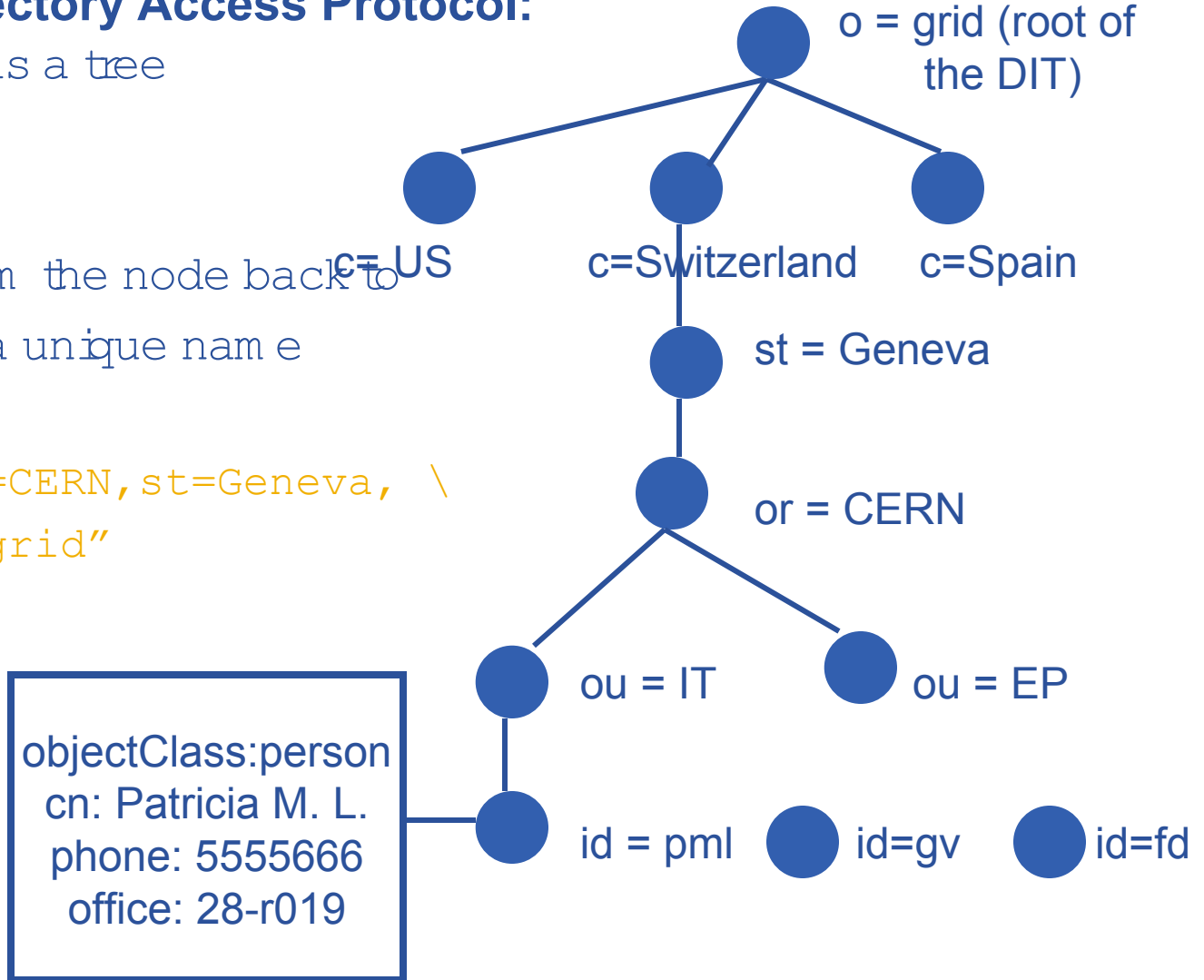
![egee logo] Enabling Grids for E-sciencE
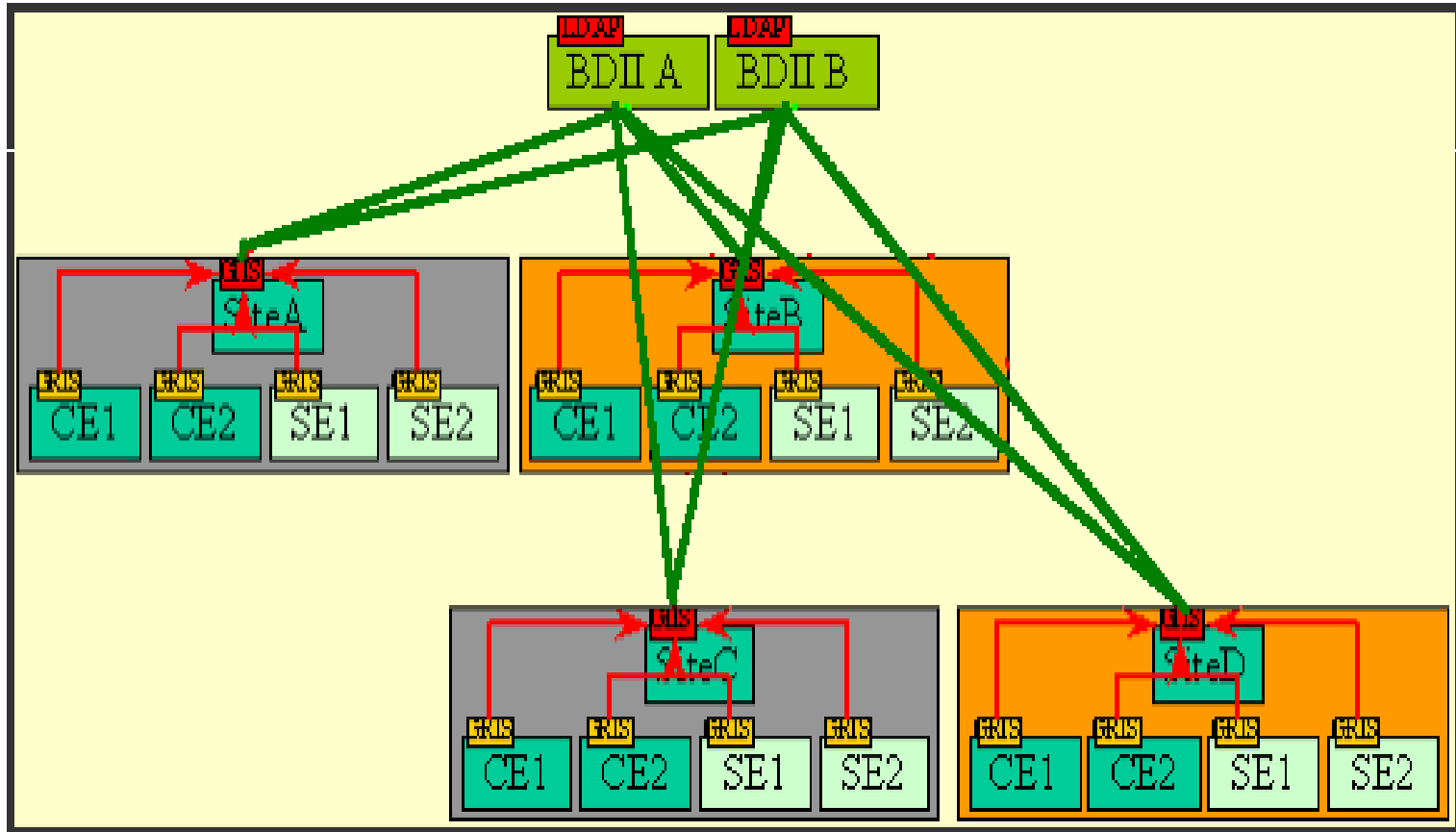
► **Lightweight Directory Access Protocol:**
structures data as a tree

►

Following a path from the node back to
the root of the DIT, a unique name
is built (the DN):
"`id=pml,ou=IT,or=CERN,st=Geneva, \`
`c=Switzerland,o=grid`"

o = grid (root of the DIT)

c= US   c=Switzerland   c=Spain

st = Geneva

or = CERN

ou = IT   ou = EP

objectClass:person
cn: Patricia M. L.
phone: 5555666
office: 28-r019

id = pml   id=gv   id=fd

- **The lcg-infosites command can be used as an easy way to retrieve information on Grid resources for most use cases.**

USAGE: lcg-infosites --vo <vo name> options -v <verbose level> --is <BDII to query>

eGee

Enabling Grids for E-sciencE

ce	The information related to number of CPUs, running jobs, waiting jobs and names of the CEs are provided. All these data group all VOs together. With "-v 1" only the names of the queues will be printed while with "-v 2" The RAM Memory together with the operating system and its version and the processor included in each CE are printed.
se	The names of the SEs supported by the user's VO together with the kind of Storage System,the used and available space will be printed. With "-v 1" only the names of the SEs will be printed.
closeSE	The names of the CEs where the user's VO is allowed to run together with their corresponding closest SEs are provided.
lfc	Name of the lfc Catalog for the user's VO.
tag	The names of the tags relative to the software installed in site is printed together with the corresponding CE.
all	It groups together the information provided by ce, se, lrc and rmc.
is	If not specified the BDII defined in default by the variable LCG GFAL INFOSYS will be queries. However the user may want to query any other BDII without redefining this environment variable. This is possible specifying this argument followed by the name of the BDII which the user wants to query. All options admits this argument.

Enabling Grids for E-sciencE

- **This introduces use of the commands to access the information system**

- **You will be exploring the GILDA grid, seeing what computing elements and storage elements exist.**

- **Please go to the link from this practical.**

Enabling Grids for E-sciencE

--list-attrs	Prints a list of the attributes that can be queried.
--list-ce	Lists the CEs which satisfy a query, or all the CEs if no query is given.
--list-se	Lists the SEs which satisfy a query, or all the SEs if no query is given.
--query	Restricts the output to the CEs (SEs) which satisfy the given query.
--bdii	Allows to specify a BDII in the form :. If not given, the value of the environmental variable LCG_GFAL_INFOSYS is used. If that is not defined, the command returns an error.
--sed	Print the output in a "sed-friendly" format.
--attrs	Specifies the attributes whose values should be printed.
--vo	Restricts the output to CEs or SEs where the given VO is authorized. Mandatory when VO-dependent attributes are queried upon.

Enabling Grids for E-sciencE

$ lcg-info --list-attrs

Attribute name	Glue object class	Glue attribute name
MaxTime	GlueCE	GlueCEPolicyMaxWallClockTime
CEStatus	GlueCE	GlueCEStateStatus
TotalJobs	GlueCE	GlueCEStateTotalJobs
CEVOs	GlueCE	GlueCEAccessControlBaseRule
TotalCPUs	GlueCE	GlueCEInfoTotalCPUs
FreeCPUs	GlueCE	GlueCEStateFreeCPUs
CE	GlueCE	GlueCEUniqueID
WaitingJobs	GlueCE	GlueCEStateWaitingJobs
RunningJobs	GlueCE	GlueCEStateRunningJobs
CloseCE	GlueCESEBindGroup	GlueCESEBindGroupCEUniqueID
CloseSE	GlueCESEBindGroup	GlueCESEBindGroupSEUniqueID
SEVOs	GlueSA	GlueSAAccessControlBaseRule
UsedSpace	GlueSA	GlueSAStateUsedSpace
AvailableSpace	GlueSA	GlueSAStateAvailableSpace
Type	GlueSE	GlueSEType
SE	GlueSE	GlueSEUniqueID
Protocol	GlueSEAccessProtocol	GlueSEAccessProtocolType
ArchType	GlueSL	GlueSLArchitectureType
Processor	GlueSubCluster	GlueHostProcessorModel
OS	GlueSubCluster	GlueHostOperatingSystemName
Cluster	GlueSubCluster	GlueSubClusterUniqueID
Tag	GlueSubCluster	GlueHostApplicationSoftwareRunTimeEnvironment
Memory	GlueSubCluster	GlueHostMainMemoryRAMSize

HANDS ON

eGee

List all the CE(s) that can run MPICH, giving the number of free CPUs and the tags of installed software

$ lcg-info --vo gilda --list-ce --query 'Tag=MPICH' --attrs 'FreeCPUs,Tag'

- Careful here!

- No space allowed here!

```
-…..
 CE: grid-ce.bio.dist.unige.it:2119/jobmanager-lcgpbs-long
  - FreeCPUs          6
  - Tag            LCG-2
                 LCG-2_1_0
                 LCG-2_1_1
….
```

HANDS ON

Enabling Grids for E-sciencE

- **Two examples of monitoring systems**

- **http://gridportal.hep.ph.ic.ac.uk/rtm/ (Not using EGEE middleware directly – its an additional service deployed by the visible sites)**

- **http://infnforge.cnaf.infn.it/gridice/index.php/Main/GridI**

  - Select a URL for GILDA
    - VO view (menu)
    - Select GILDA (column, far left)
    - Charts
  - Try also for LCG