



Enabling Grids for E-scienceE

Configuring new services in GENIUS

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First gLite tutorial on GILDA
Catania, 13-15.06.2005

www.eu-egee.org



- Introduction
- Architecture and Implementation:
 - The GENIUS hourglass model
 - Genius : How it works
 - Genius Services (view Alberto's talk)
 - Genius Installation
 - FAQs
- New service examples



- Grid computing vision brings the idea that enormous and heterogeneous computing resources, distributed world-wide and “linked” by large bandwidth networks, can be connected by an intelligent series of services (**the Grid middleware**) and behave as a single machine.
- Within this paradigm, an easy way to access and share computing resources is to provide large communities (**VO**) where scientists and researchers could work together to solve complex problems.
- Grids must provide a **secure** access to distributed resources which must be presented in terms of applications and not of complex protocols.

- Actually the services provided by the grid-middleware are currently exposed through **Command Line Interfaces (CLI)**
- As solution to overcome this problem the Italian **INFN** Grid Project and the Italian web technology company **NICE S.r.l.** start a collaboration (beginning of 2002) which bring to the develop of the **GENIUS Grid Portal**
- Thanks to **GENIUS** scientists and researchers can execute and monitor their applications on the Grid just using a simple web browser.

- It can be accessed from everywhere and by “everything” (desktop, laptop, PDA, cell phone).
- It can keep the same user interface to several back-ends.
- It must be redundantly “secure” at all levels:
 - 1) secure for web transactions
 - 2) secure for user credentials
 - 3) secure for user authentication
 - 4) secure at VO/VOMS level.

A grid portal: why and how (2)

- All available grid services must be incorporated in a logic way, just “one mouse click away”.
- Layout used is very easy to understand and user friendly.



GENIUS®

(Grid Enabled web eNvironment for
site Independent User job Submission)

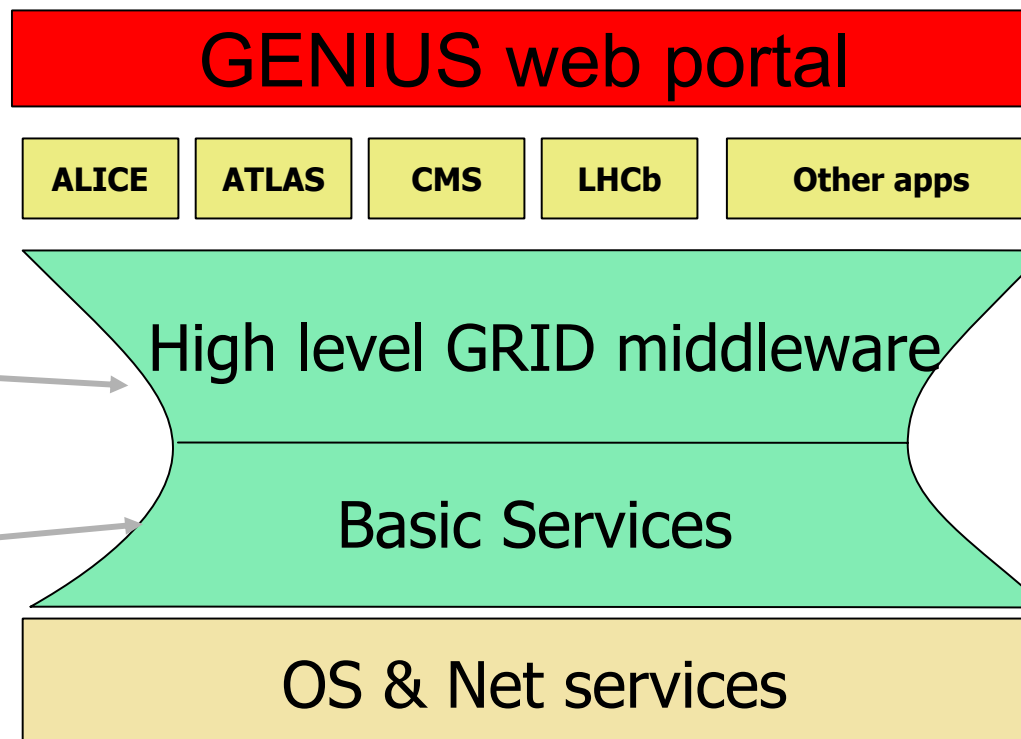
[<https://genius.ct.infn.it>]

INFN/NICE collaboration

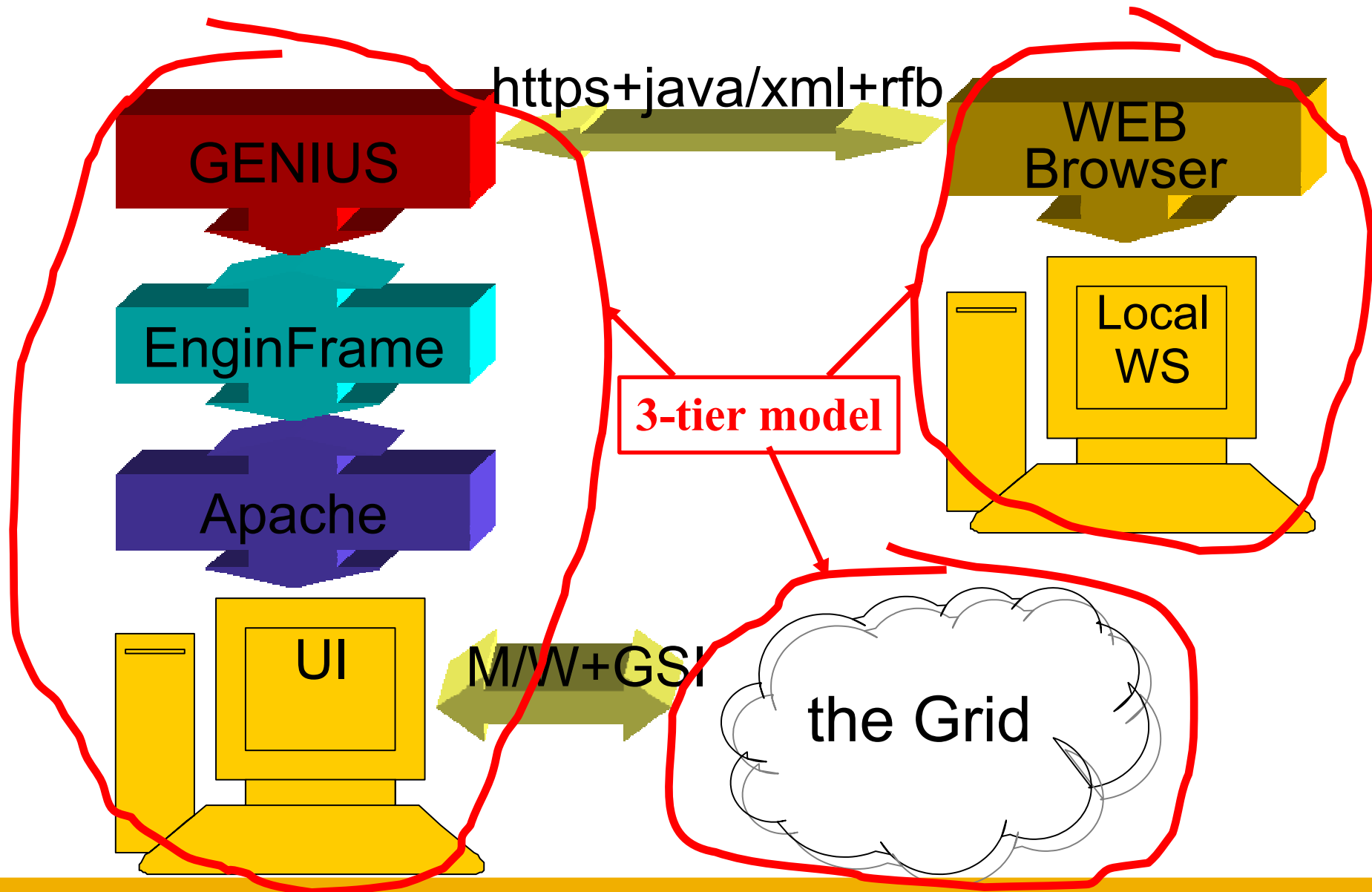
Applications'
specific layer

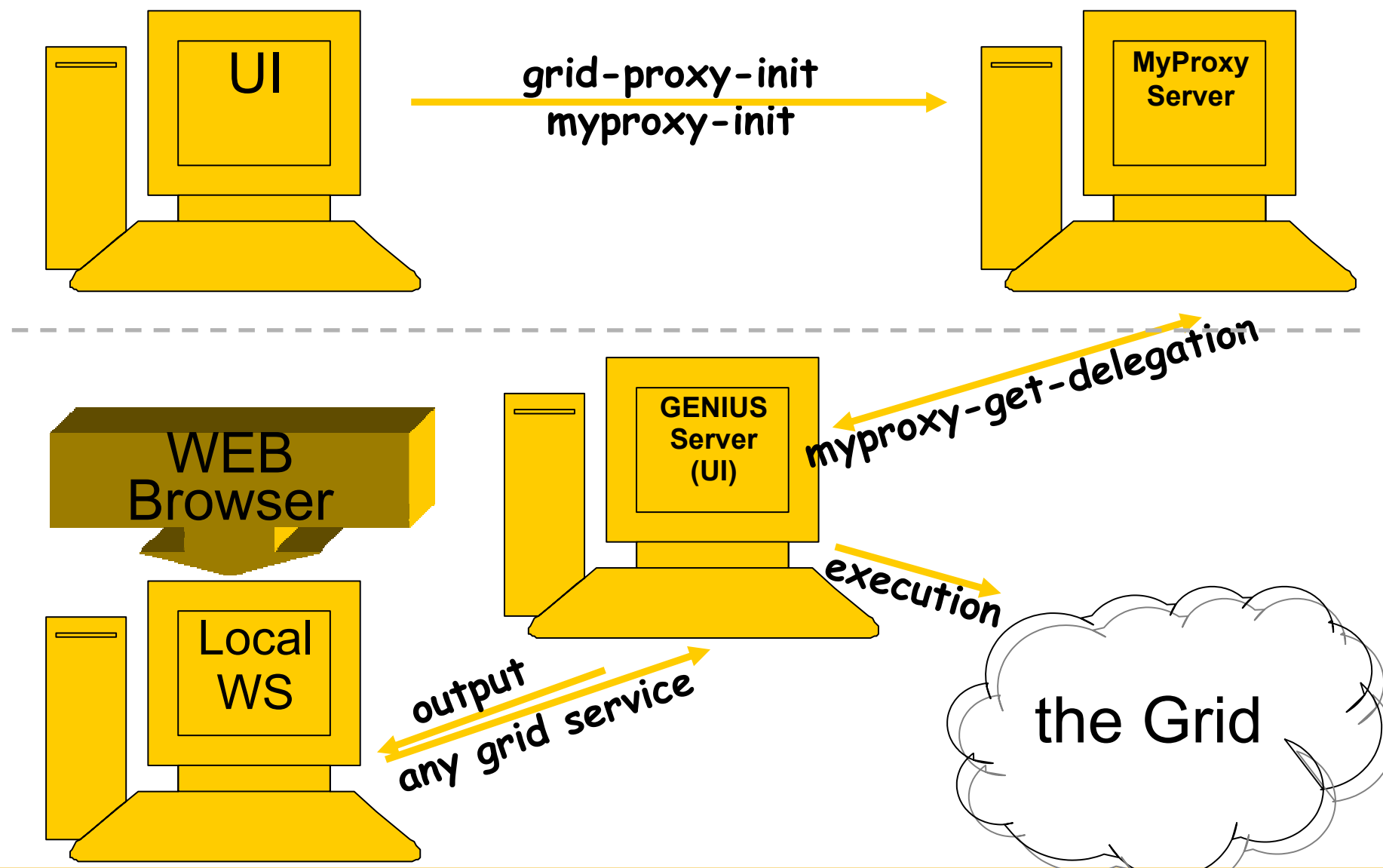
LCG-
2.4.0/gLite
architecture

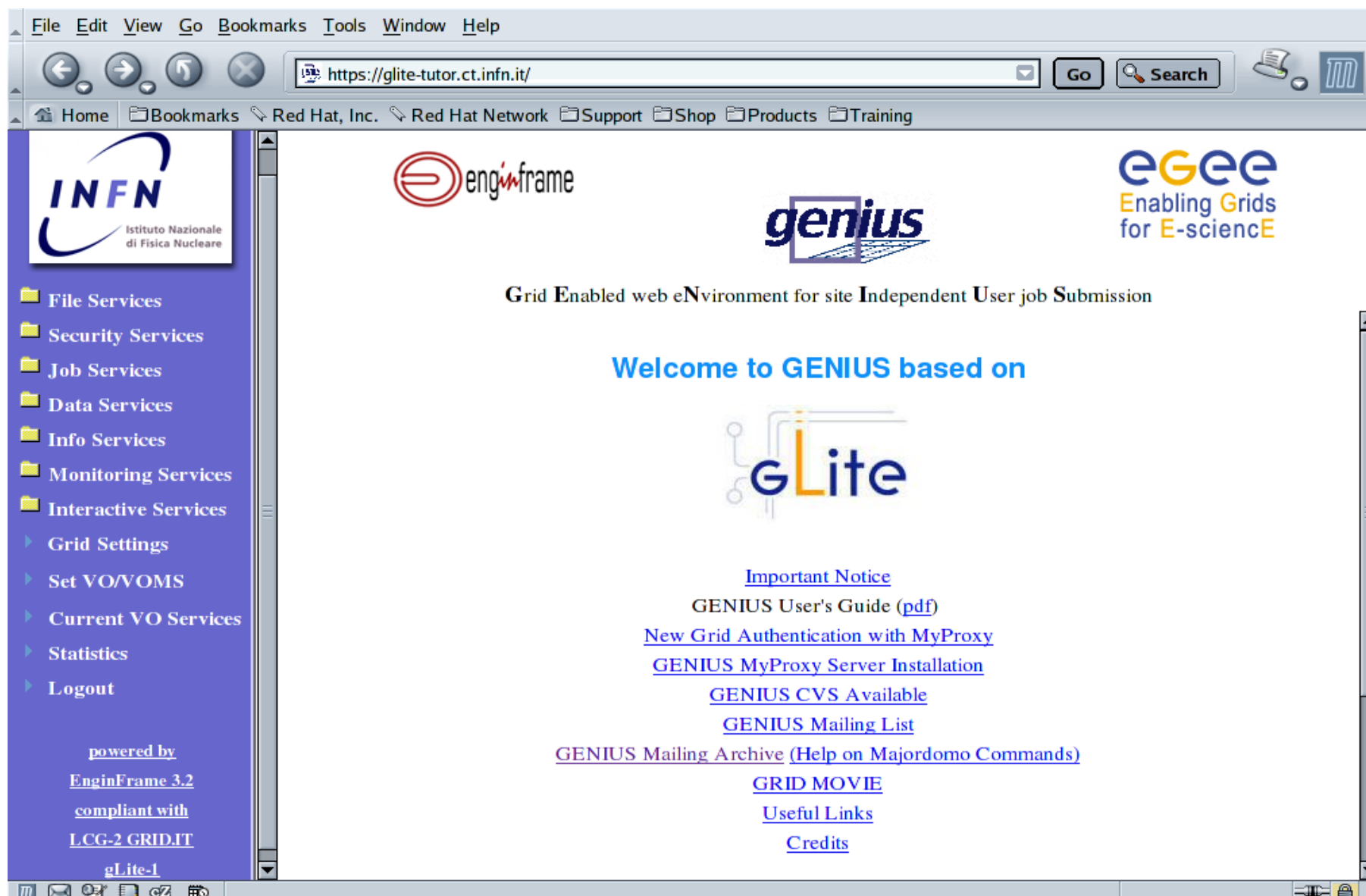
GLOBUS
toolkit



GENIUS: how it works







File Edit View Go Bookmarks Tools Window Help

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INFN
Istituto Nazionale
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enginframe

genius

eGEE
Enabling Grids
for E-science

Grid Enabled web eNvironment for site Independent User job Submission

Welcome to GENIUS based on

gLite

[Important Notice](#)
[GENIUS User's Guide \(pdf\)](#)
[New Grid Authentication with MyProxy](#)
[GENIUS MyProxy Server Installation](#)
[GENIUS CVS Available](#)
[GENIUS Mailing List](#)
[GENIUS Mailing Archive \(Help on Majordomo Commands\)](#)
[GRID MOVIE](#)
[Useful Links](#)
[Credits](#)

File Services
 Security Services
 Job Services
 Data Services
 Info Services
 Monitoring Services
 Interactive Services
 ▶ Grid Settings
 ▶ Set VO/VOMS
 ▶ Current VO Services
 ▶ Statistics
 ▶ Logout

powered by
[EnginFrame 3.2](#)
 compliant with
[LCG-2 GRID.IT](#)
[gLite-1](#)

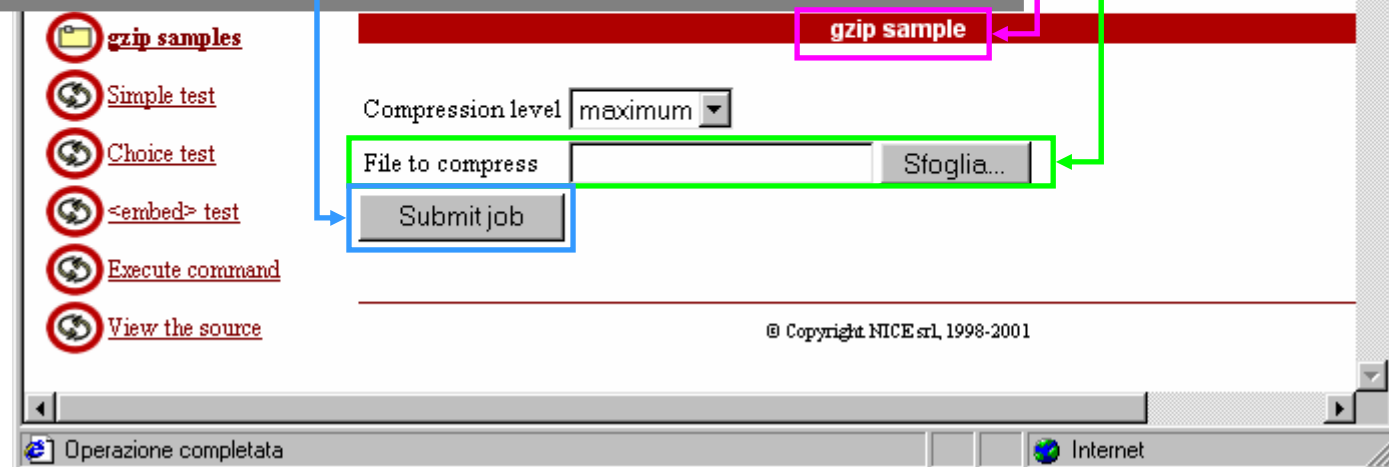
- To install GENIUS on an User Interface machine you need a server certificate (in order to sign https connection) and a EnginFrame license
- The eadmin user must be present in the system
- GENIUS is downloaded from a SSH CVS server
- GENIUS should be installed under **/opt/genius**

- **Install UI Server certificate under**
`/opt/genius/apache/conf`
- **GENIUS installs with `/opt/genius/genius_install.sh` (just one command!)**
- **GENIUS starts/stops with the command**
`/etc/rc.d/init.d/genius start|stop`

- **Configuration files**
 - **/opt/genius/etc**
- **XML files**
 - **/opt/genius/apache/htdocs**
- **Action procedures (shell scripts, etc.)**
 - **/opt/genius/ef/plugins/infngrid/bin**

Service Examples (1)

```
<ef:service id="gzip">
  <ef:name>gzip sample</ef:name>
  <ef:option id="level" label="Compression level" type="list">
    <ef:option id="9">maximum</ef:option>
    <ef:option id="4">medium</ef:option>
    <ef:option id="0">none</ef:option>
  </ef:option>
  <ef:option id="FILE" label="File to compress" type="file"/>
  <ef:action id="submit" label="Submit job">
    EF_SPOOLER_NAME="gzip $file"
    export EF_SPOOLER_NAME
    ${EF_ROOT}/plugins/lsf/bin/bsub -o output.txt gzip -$level \"$FILE\"
  <ef:result type="text/xml"/></ef:action>
</ef:service>
```



gzip samples

Simple test

Choice test

<embed> test

Execute command

View the source

gzip sample

Compression level maximum

File to compress Sfoglia...

Submit job

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Operazione completata Internet

```
<ef:service id="test-service-1" authority="globus">
  <ef:name>Test Service 1</ef:name>
  <ef:action id="submit" label="Test Service 1">
    /usr/bin/env
  <ef:result type="text/plain"/>
</ef:action>
</ef:service>
```

RB: gilda	VO: gilda	Catalog: GILDA	Your Data	Logout
MANPATH=/home/larocca/man:/usr/sue/man:/usr/local/man:/cern/man:/opt/alice/alroot/4.01.00/man NNTPSERVER=news.cern.ch HOSTNAME=gilda-tutor.ct.infn.it HPX_TTY= TERM=xterm SHELL=/bin/bash GRID_PROXY_FILE=/tmp/x509up_u512 HOST=gilda-tutor.ct.infn.it EF_AGENT=gilda.grid CURRENT_PATH=/opt/genius/apache/htdocs/gilda/ HISTSIZE=1000 CATALINA_HOME=/var/lib/tomcat5 SAVEHIST=500 GLOBUS_LOCATION=/opt/globus ALICE_TARGET=Linux PERL5LIB=/opt/glite/lib/perl5:/opt/gpt/lib/perl HPX_OS_MINOR=4 YP=NO OLDPWD=/home/larocca USERPATH=/home/larocca/bin:/home/larocca/scripts:/usr/sue/bin:/usr/local/bin:/usr/local/bin/X11:/usr/bin:/bin:/usr/bin/X11:/cern/pro/bin X509_CERT_DIR=/etc/grid-security/certificates GLITE_VMS_LOCATION=/opt/glite OS=Linux HPX_INITIALE=1 GLITE_LOCATION_USER=/home/larocca/.glite HPX_CELL=cern.ch GLITE_LOCATION_LOG=/var/log/glite PRINT_CMD=xprint REQUEST_URL=https://gilda-tutor.ct.infn.it/gilda/gilda.grid.xml				

```
<ef:service id="test-service-2" authority="globus">
  <ef:name>Test Service 2</ef:name>
  <ef:action id="submit" label="Test Service 2">
    $EF_ROOT/plugins/infngrid/bin/gilda/gildagrid.sh
    test-service-2
  <ef:result type="text/html"/>
</ef:action>
</ef:service>
```



```
test_service_2 ()  
{  
    echo "<html><body>"  
    echo "Hello World!"  
    echo "</body></html>"  
}
```

```
<ef:service id="test-service-3" authority="globus">
  <ef:name>Test Service 3</ef:name>
  <ef:action id="submit" label="Test Service 3">
    $EF_ROOT/plugins/infnggrid/bin/gilda/gildagrid.sh
    test-service-3
  <ef:result type="text/plain"/>
</ef:action>
</ef:service>
```

test_service_3 ()

```
{
    ls -l /home/$EF_USER
}
```

RB: gilda			VO: gilda			Catalog: GILDA		
total 71004								
-rw-r--r--	1	larocca users	1372	Jun	8	14:56	alroot.jdl	
-rw-r--r--	1	larocca users	75896	May	26	2004	arial.ttf	
-rw-r--r--	1	larocca users	260	Jun	1	2004	ball.ini	
-rw-r--r--	1	larocca users	427	Jun	1	2004	ball.jdl	
-rw-rw-r--	1	larocca users	538	Jun	1	2004	ball.pov	
-rw-r--r--	1	larocca users	2855012	May	13	2004	beam10.tar.gz	
-rw-r--r--	1	larocca users	2856451	May	26	2004	beam20.tar.gz	
-rwxr-xr-x	1	larocca users	3431212	Oct	1	2004	Brachy	
-rw-r--r--	1	larocca users	543	Oct	1	2004	Brachy.jdl	
-rw-r--r--	1	larocca users	1711	Oct	19	2004	bubble.f90	
-rw-rw-rw-	1	larocca users	33	Sep	16	2004	buildandrun.sh	
-rw-r--r--	1	larocca users	2364	Sep	30	2003	Butterfly_Valve.pov	
drwxrwxr-x	3	larocca users	4096	Nov	25	2004	Cern	
-rw-r--r--	1	larocca users	5335	Sep	30	2003	CITY_INC	
-rw-r--r--	1	larocca users	7363	Sep	30	2003	CITY_MCR	
drwxr-xr-x	6	larocca users	4096	Jun	6	16:01	codesa3d_code	
-rw-r--r--	1	larocca users	13603	Apr	14	2004	Config_4_01_00.C	
-rw-r--r--	1	larocca users	13544	Apr	14	2004	Config.C	
-rw-r--r--	1	larocca users	263	May	7	2004	con_rod1.ini	
-rw-r--r--	1	larocca users	463	May	7	2004	con_rod1.jdl	
-rw-r--r--	1	larocca users	7880	May	7	2004	con_rod1.pov	
-rwxrwxr--	1	larocca users	337541	Sep	28	2004	cpi	
-rw-r--r--	1	larocca users	276	May	21	2004	c_sample.c	
-rw-r--r--	1	larocca users	348	May	21	2004	c_sample.jdl	
-rw-r--r--	1	larocca users	485	Apr	23	2004	csound_hwl.jdl	
-rw-r--r--	1	larocca users	408	Mar	10	2004	csound.jdl	
-rw-r--r--	1	larocca users	2633	Sep	24	2003	csound.orc	
-rw-r--r--	1	larocca users	2491	Sep	24	2003	csound.sco	
-rw-----	1	larocca users	1316	Apr	21	2004	cubo.pov	
-rw-r--r--	1	larocca users	5816	Sep	30	2003	DEFAULT.OBJ	
-rw-r--r--	1	larocca users	1951	Sep	30	2003	defcity.pov	
-rw-r--r--	1	larocca users	415	Apr	21	2004	dentools2.jdl	
-rw-r--r--	1	larocca users	436	Apr	21	2004	dentools3.jdl	
-rw-r--r--	1	larocca users	1158	Oct	2	2003	dentools.jdl	
-rwxr-xr-x	1	larocca users	9831093	Oct	1	2004	DMX	
-rw-r--r--	1	larocca users	522	Oct	1	2004	DMX.jdl	
-rw-r--r--	1	larocca users	4731	Sep	30	2003	dna.pov	
-rwxrwxrwx	1	larocca users	109440	Jun	4	11:34	Easter	
-rw-r--r--	1	larocca users	2858	Oct	19	2004	Easter.f90	
-rw-r--r--	1	larocca users	757	Oct	19	2004	Easter.jdl	
-rw-r--r--	1	larocca users	33226	Jun	13	10:18	edglog.log	
drwxrwxr-x	2	larocca users	4096	Jun	6	16:00	egeode	
-rw-r--r--	1	larocca users	7341116	Apr	21	2004	Etna.dem	
-rw-r--r--	1	larocca users	268	May	21	2004	example1.jdl	
-rw-r--r--	1	larocca users	257	May	21	2004	example2.jdl	
-rwxr-xr-x	1	larocca users	2165032	Oct	1	2004	exampleN01	
-rw-r--r--	1	larocca users	559	Oct	1	2004	ExampleN01.jdl	

```

<ef:service id="test-service-4" authority="globus">
  <ef:name>Test Service 4</ef:name>
  <ef:info> Please, select a name for the following list, and
  than click on the button.<br/> </ef:info>
  <ef:option id="GILDA_NAME" label="Choose your First
  Name" type="list">
    <ef:option id="XX">XXXYYYZZZ</ef:option>
  </ef:option>
  <ef:action id="submit" label="Test Service 4">
    $EF_ROOT/plugins/infnggrid/bin/gilda/gildagrid.sh test-
    service-4
  <ef:result type="text/html"/>
  </ef:action>
</ef:service>

```

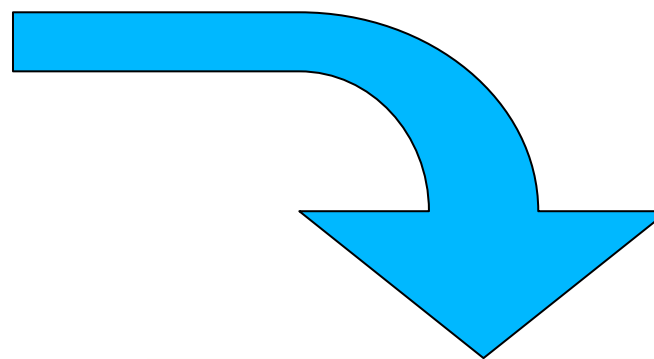
```
test_service_4 ()  
{  
  echo "<html><body><pre>"  
  echo "<img src=\"../images/glite_side.jpg\"/><br/>"  
  echo "Hello ${GILDA_NAME} and welcome to the  
    <H4>gLite Tutorial on GILDA.</H4>  
  echo "Catania, 13th-15th, June 2005"  
  echo "</pre></body></html>"  
}
```

Please, select a name for the following list, and then click on the button.

Choose your First Name

Test Service 4

- Marco Fargetta
- Kostas Koumantaros
- Ruediger Berlich
- Fabrizio Messina
- David Fergusson
- Barbara Martelli
- Elisabetta Vilucchi
- Riccardo Murri
- Victor Mendoza
- Yubiryn Ramirez
- Marc Lob
- Simone Campana
- Patrica Mendez Lorenzo
- Stephan Kinderman
- Silvio Pardi
- Angelo Leto
- Dora Magaudda
- Angelo Zaia
- Giuseppe Iellamo
- Marco Scarpa



Hello Marco F. and welcome to the
gLite Tutorial on GILDA.

Catania, 13th-15th, June 2005

```

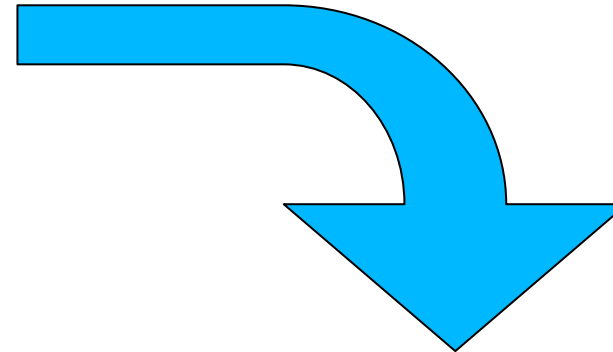
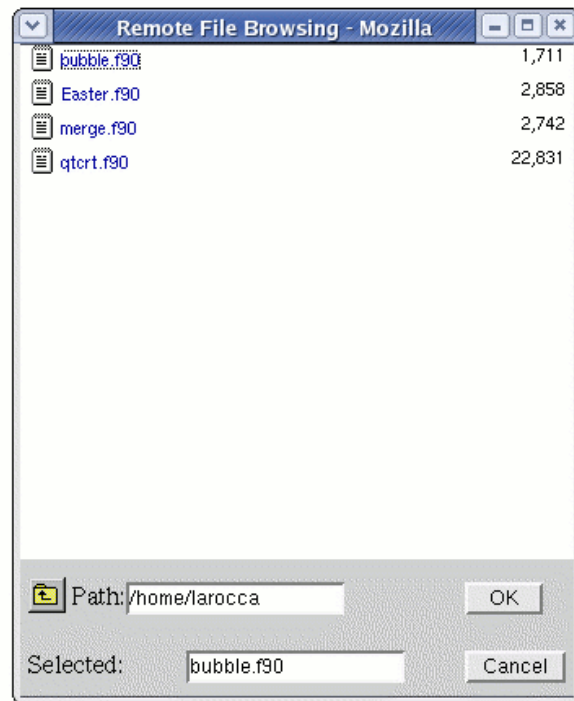
<ef:service id="test-service-5" authority="globus">
  <ef:name>Test Service 5</ef:name>
  <ef:info>    Please, select a Fortran file to compile
and than click on Compile.<br/>
  </ef:info>
  <ef:option id="COMPILEFILE" label="Choose your
File Name" type="rfb" target="*.f90@infngrid"/>
  <ef:action id="submit" label="Compile">
    $EF_ROOT/plugins/infngrid/bin/gilda/gildagrid.sh test-
service-5
  <ef:result type="text/plain"/>
  </ef:action>
</ef:service>

```

```
test_service_5 ()  
{  
    echo "Compiling the following file...${COMPILEFILE}"  
    FILEOBJECT=`echo ${COMPILEFILE} | awk -F'.' '{print  
    $1}`  
    /usr/bin/g95 -o ${FILEOBJECT} ${COMPILEFILE}  
    chmod 777 ${FILEOBJECT}  
    echo "..Execution of the file."  
    exec ${FILEOBJECT}  
}
```


Please, select a Fortran file to compile and then click on Compile.

Choose your File Name



Compiling the following file... /home/larocca/bubble.f90
 ..Execution of the file.

Initial table A:

7	3	66	3	-5	22	-77	2	36	-12
---	---	----	---	----	----	-----	---	----	-----

Sorted table A:

-77	-12	-5	2	3	3	7	22	36	66
-----	-----	----	---	---	---	---	----	----	----

- **Q: I want to use GENIUS. Do I have to pay for it ?**
- **A: No. GENIUS is “open source” and the underlying portal framework EnginFrame is free for education and research communities.**

- **Q: I want to use GENIUS. Do I need any software running on my laptop ?**
- **A: No client software needs to be installed apart from the web browser. GENIUS can really be accessed from everywhere.**

- **Q: Do I have to be afraid about cached password sent over the web ?**
- **A: Access passwords are securely “streamed” only when needed and then destroyed. Only temporary sessions are possible.**

- **Q: Can new authentication methods implemented into GENIUS ?**
- **A: Of course. Kerberos V is a good example. EnginFrame is compliant with Kerberos authentication and GENIUS with AFS.**

- **Q: I want to add a new VO to GENIUS and customize new services for that VO. How can I do that ?**
- **A: A new VO can be added to GENIUS in just minutes. New VO specific services can be added just modifying only two files: an XML file and a shell script.**
- **Q: Can I use GENIUS to interface other m/w's ?**
- **A: Yes. Although GENIUS is currently based on the LCG/gLite middleware, it can be very easily interfaced to others.**
- **Q: How can I start downloading/using GENIUS ?**
- **A: Go to the reference site <https://genius.ct.infn.it>, click on "GENIUS CVS available" and follow the instructions.**