Enabling Grids for E-science in Europe

www.eu-egee.org

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GENIUS and EnginFrame

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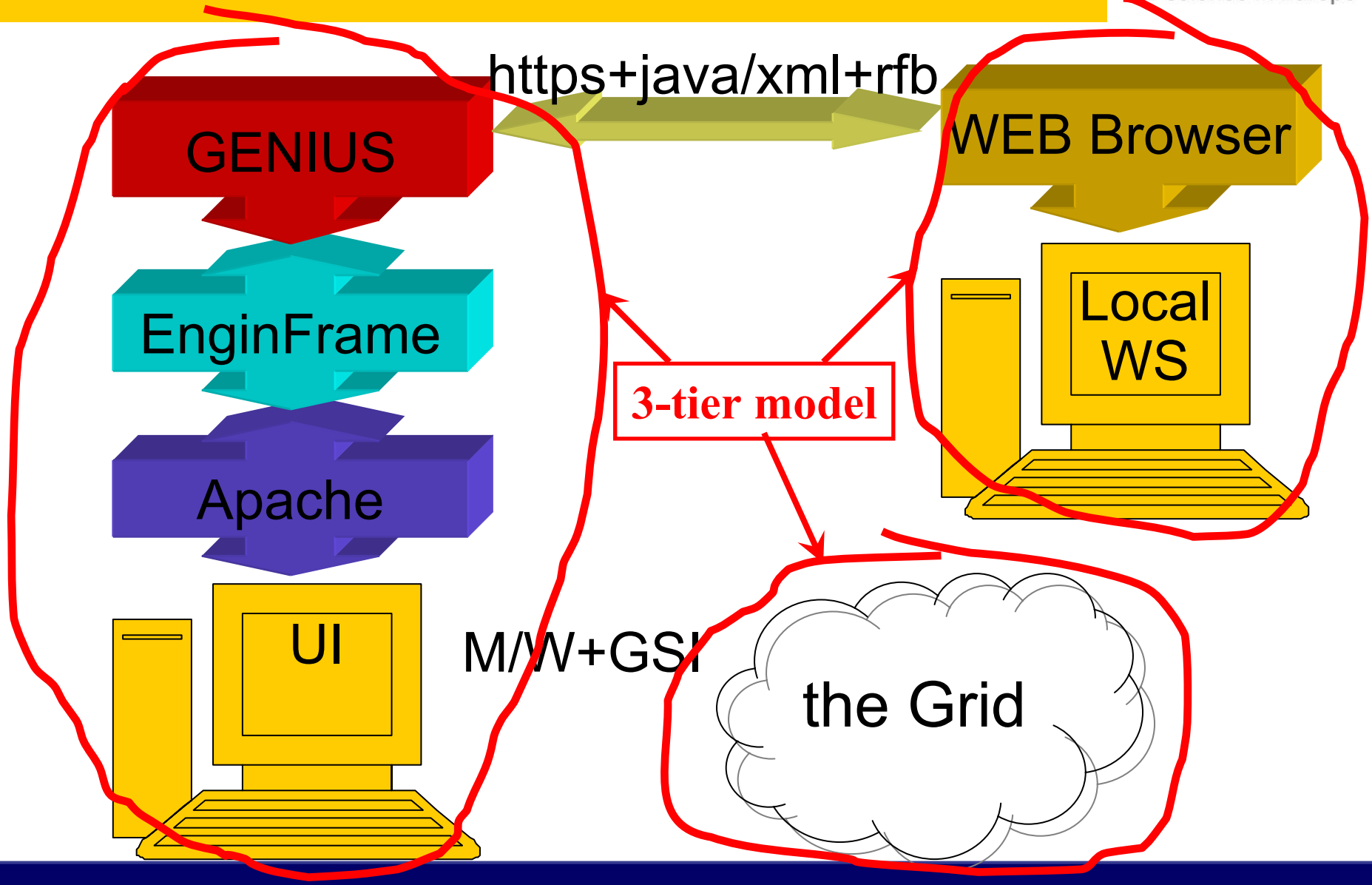
Contents

Enabling Grids for E-science in Europe

- Introduction about EnginFrame
- EnginFrame examples
- GENIUS installation and configuration
- An example of EnginFrame service
- FAQs and answers

GENIUS: how it works



Enginframe in brief

Enabling Grids for E-science in Europe

- Standards-based GRID portal framework
  - Java, Tomcat/JServ, Apache, XML/XSL → GridML
- Solves back-end integration problems
  - **Visual rendering** for most Grid objects
    - jobs, job arrays, hosts, services, databases, etc.
  - **Multiple Grid & Cluster technologies** support
    - EDG, Globus, LSF, SGE, Condor (soon)
  - **Authentication delegation** (GSI,MyProxy, AFS, NIS, NT, Kerberos V, ...)
  - **Data management**: UL/DL + remote (multi-) file browsing
  - **Integration** with interactive apps
- **End-user oriented focus**!
  - application integration

3-Tier Computing Portal with EnginFrame

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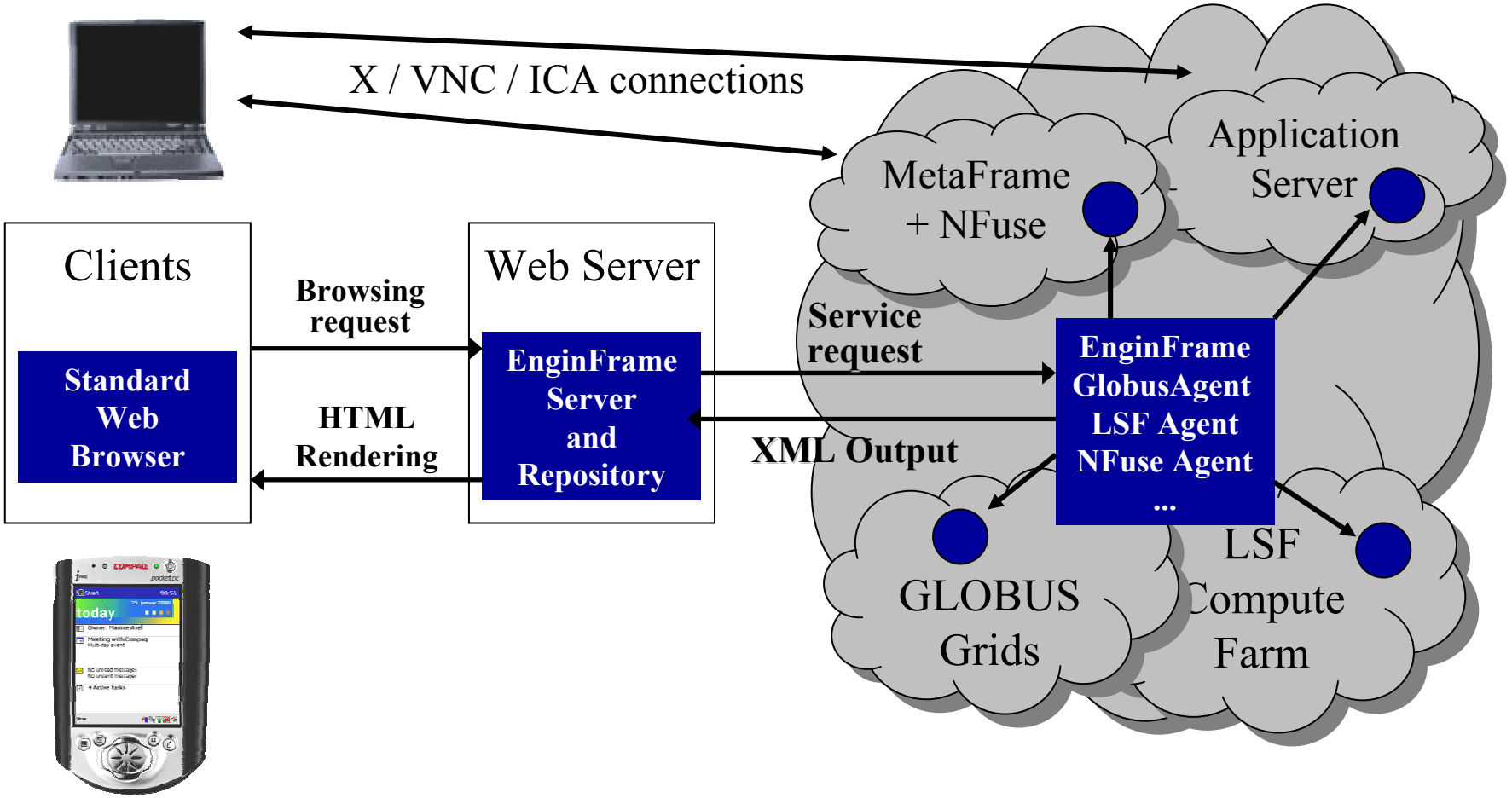

Industrial Grid Portals

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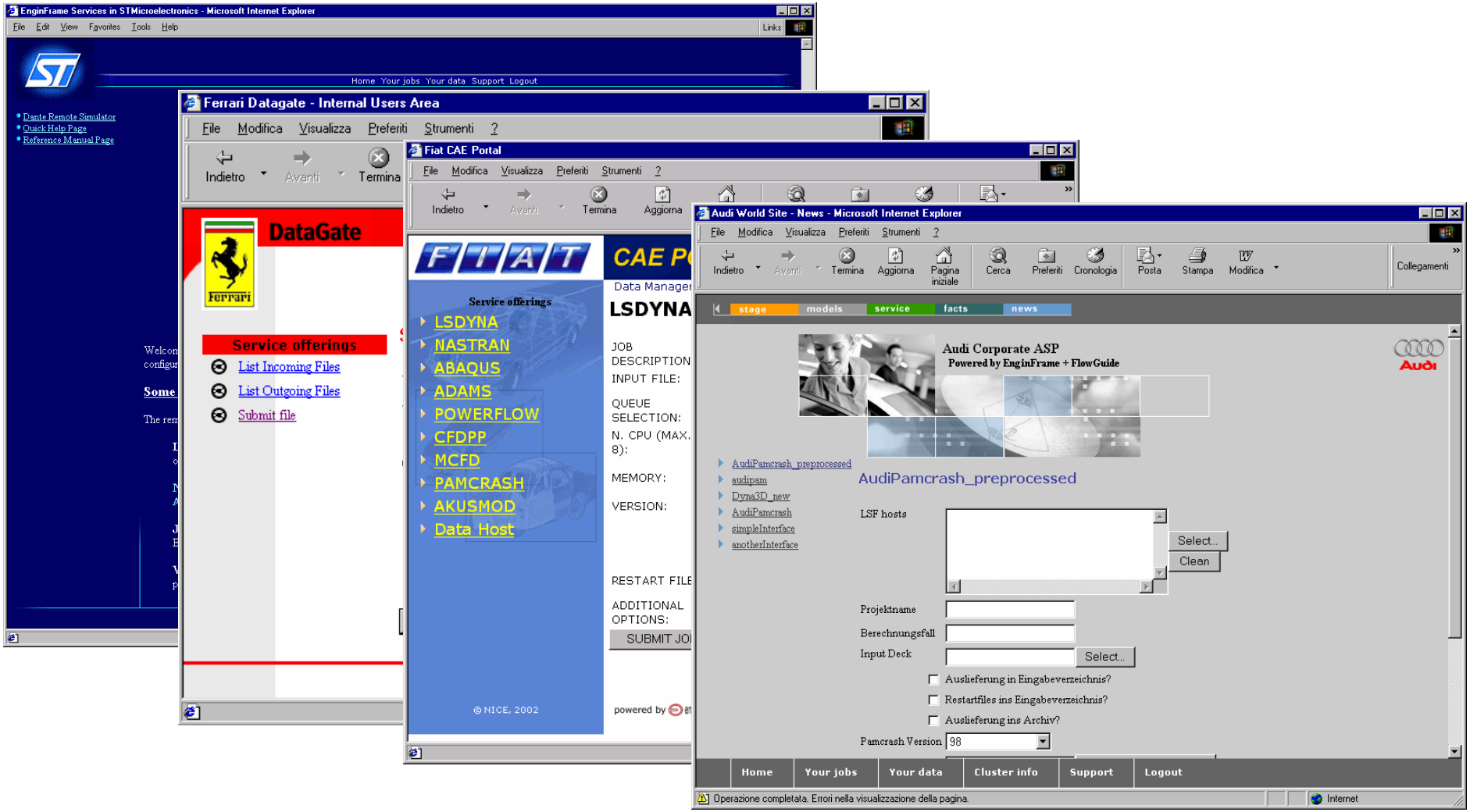


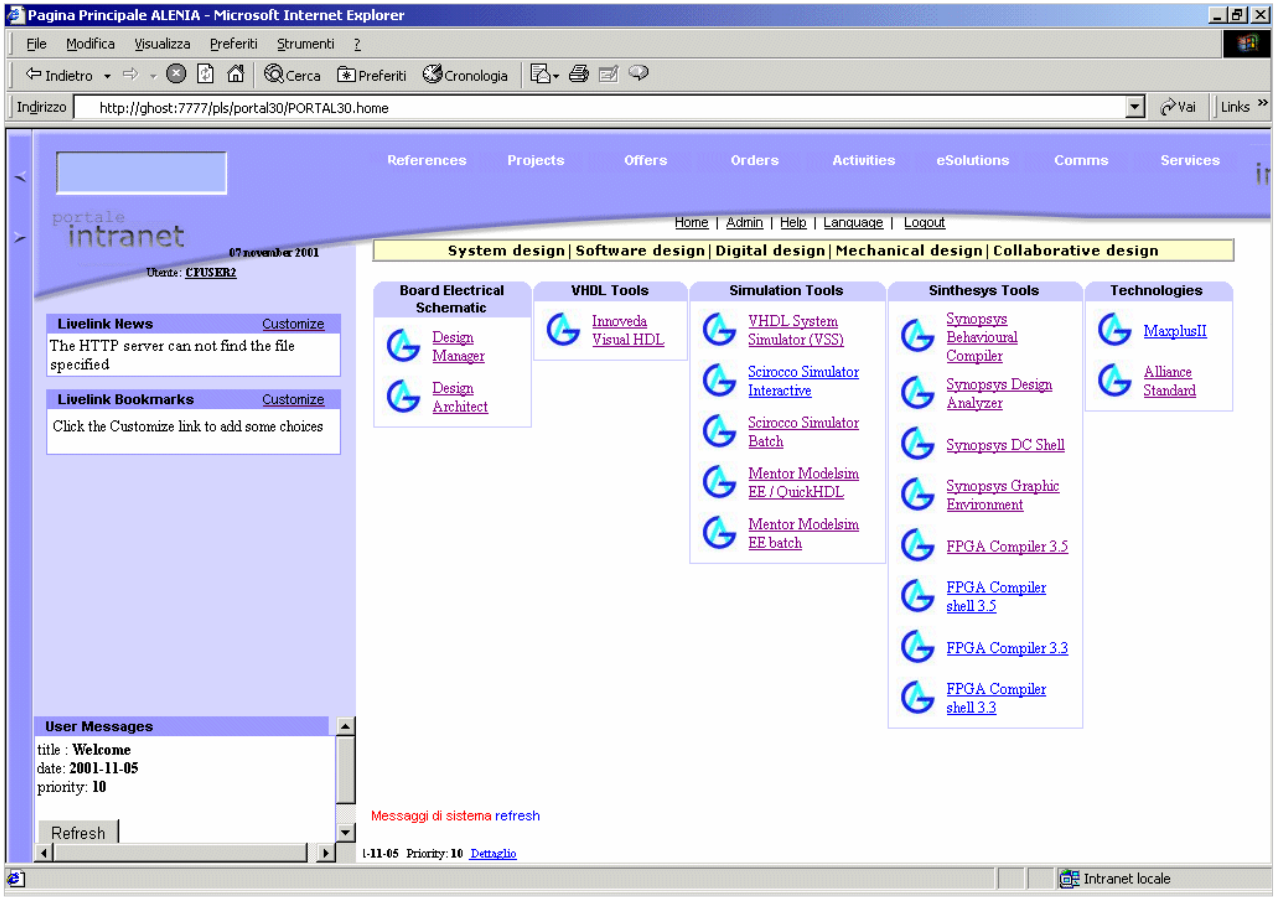
Black-box Grid solutions

Case study: Consolidation

Company in the Defense sector

- Different companies have merged into one
- Sites and customers spread over WAN
- Projects need common **coordination and collaboration**
  - No common design methodology
  - Duplicated licenses across different sites
  - Insufficient local resources
  - Limited communication

Solution: EnginFrame



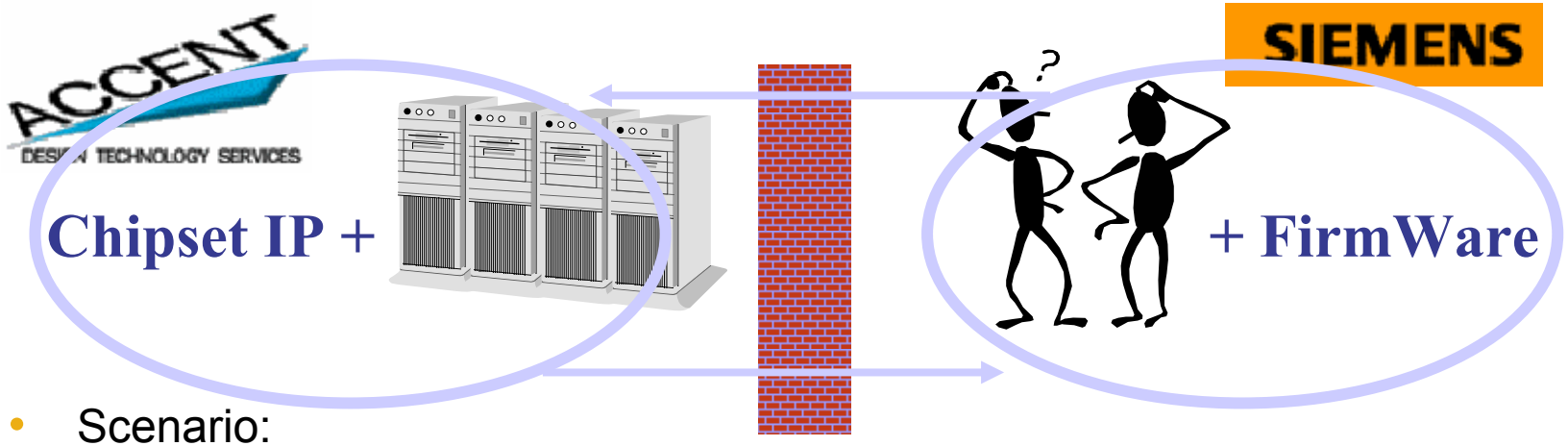
Centralized eDesign Services

EnginFrame benefits

Enabling Grids for E-science in Europe

- IT assets and project methodology **consolidation**
- Enhanced **collaboration** with remote sites and partners
- **Intellectual Property protection**
  - Automatic and transparent enforcement of company **policies**
- Wealth of properly focused information for management
- Ease **deployment** of new software and methodologies
- **Rapid migration** to the Computing Portal paradigm from a typical engineering environment
  - Enhance resource **Manageability** for System and Application managers
  - Enable smooth NT-UNIX-appliance **integration**
- **Complexity reduction** for Grid environments

Case Study: Intellectual Property



- Scenario:
  - Accent is designing a chipset for Siemens
  - Siemens needs to test the firmware & software for this chipset
- Problem:
  - Intellectual Property cannot be disclosed

Solution: EnginFrame

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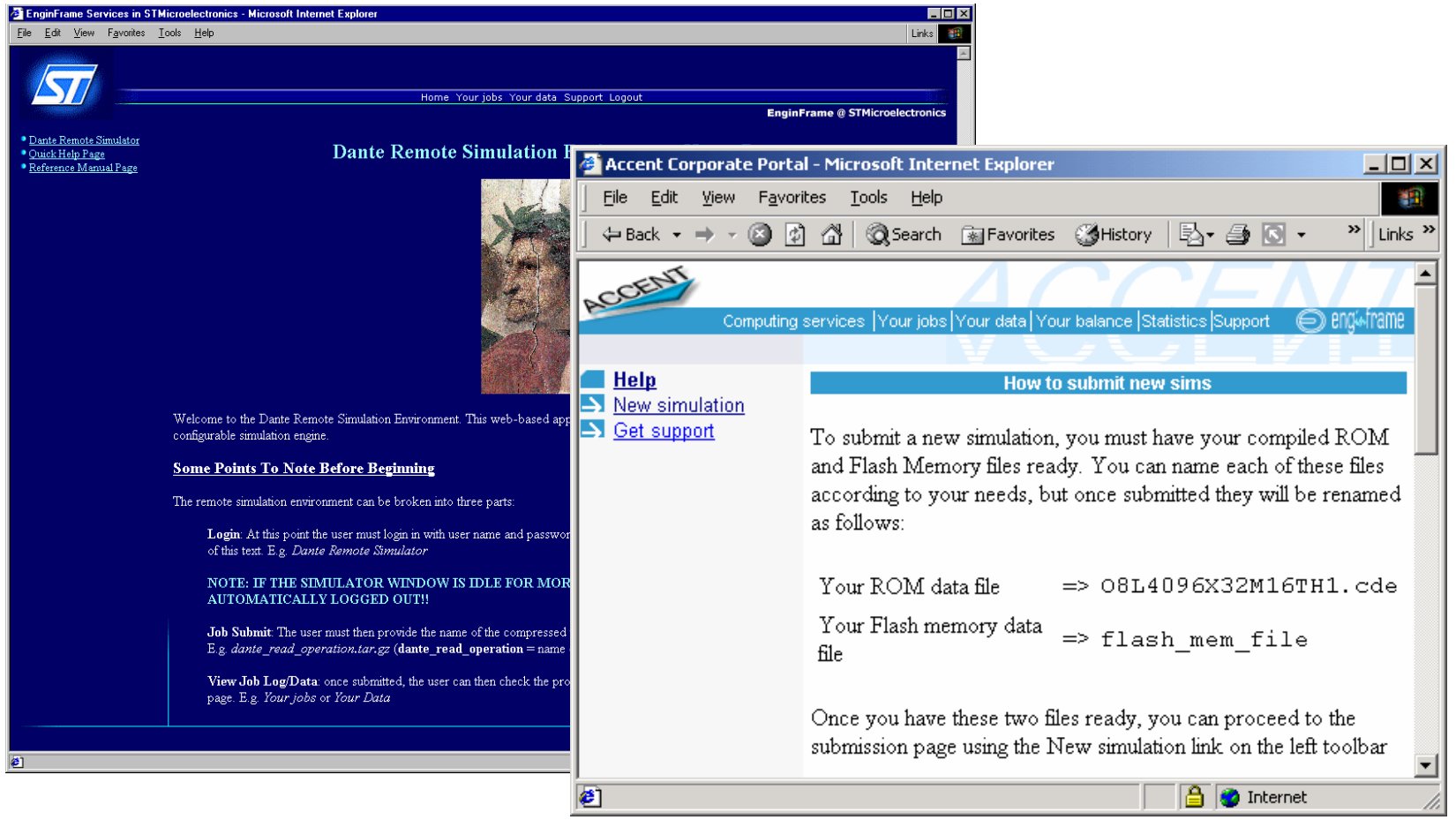

Black-box for Firmware simulation

EnginFrame benefits

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Case Study: Data Exchange

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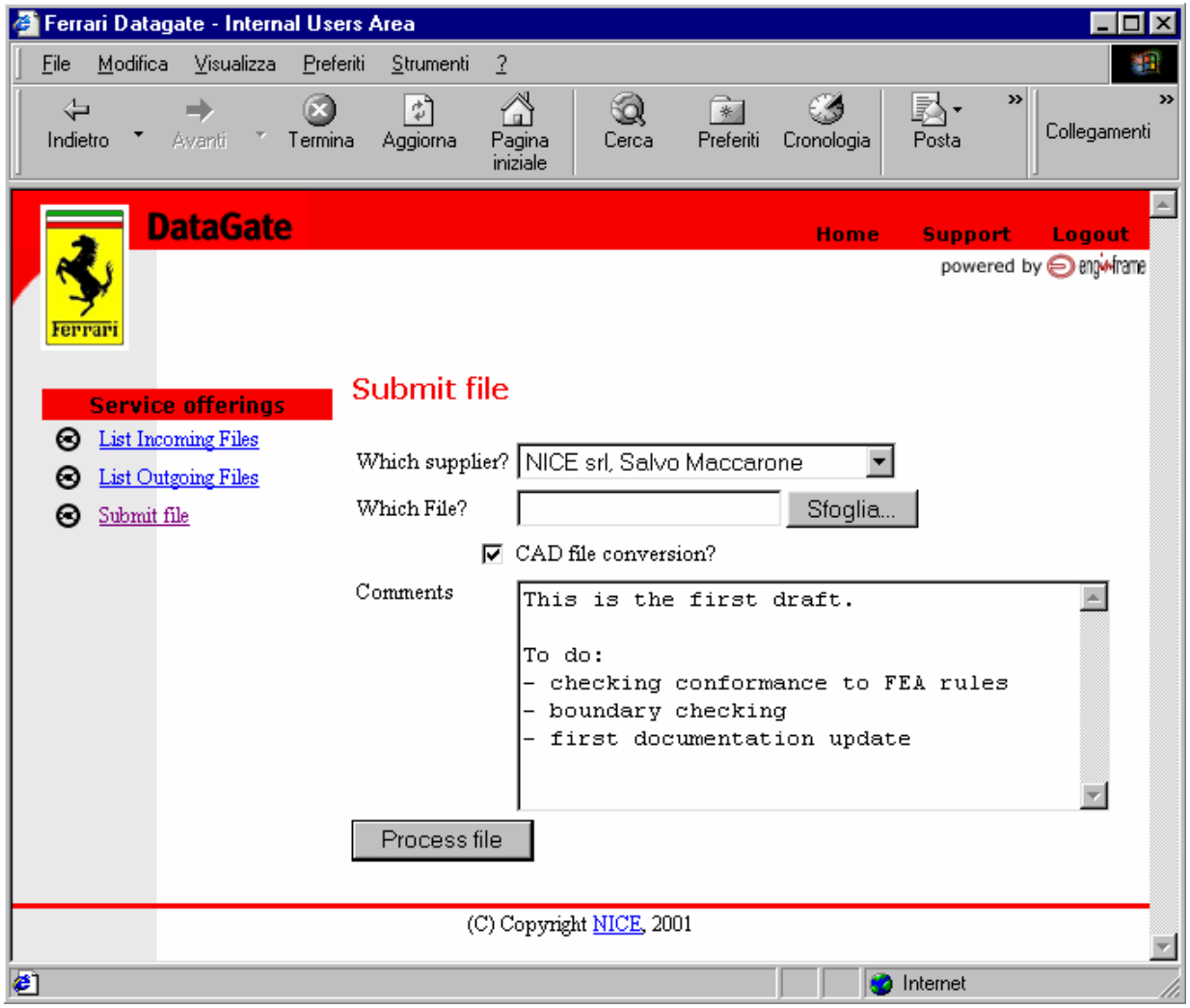
Collaboration problem in the supply chain

- Many suppliers with different supported 3D models
- Complex operations to convert files
- Management not comfortable with uncontrolled data exchange
- User friendliness

Solution: EnginFrame DataGate



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Typical GENIUS installation (1/3)

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

Typical GENIUS installation (2/3)

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- ls –l /opt/genius

```
drwxr-xr-x    2 root     root        4096 Apr 15 13:19 CVS
drwxr-xr-x    8 nobody   nobody      4096 Apr 15 13:19 JSDK2.0
drwxr-xr-x   18 root     root        4096 Apr 15 13:20 apache
drwxr-xr-x    3 root     root        4096 May  3 16:47 bin
drwxr-xr-x   17 root     root        4096 Apr 15 13:20 ef
lrwxrwxrwx    1 root     root          36 Apr 15 13:21 etc -> /opt/genius/ef/plugins/infngrid/etc/
-rwxr-xr-x    1 root     root        4512 Oct 14  2003 genius_install.sh
drwxr-xr-x    4 root     root        4096 Apr 15 13:20 include
drwxr-xr-x    9 root     root        4096 Apr 15 13:20 j2sdk1.4.0_01
lrwxrwxrwx    1 root     root          13 Apr 15 13:21 jdk -> j2sdk1.4.0_01
lrwxrwxrwx    1 root     root           7 Apr 15 13:21 jsdk -> JSDK2.0
drwxr-xr-x    4 root     root        4096 Apr 15 13:20 lib
drwxr-xr-x    5 root     root        4096 Apr 15 13:20 man
drwxr-xr-x    7 root     root        4096 Apr 15 13:20 mrtg
drwxr-xr-x    9 root     root        4096 Apr 15 13:20 openldap
drwxr-xr-x    8 root     root        4096 Apr 15 13:20 openssl
drwxr-xr-x    4 root     root        4096 May  5 11:10 vnc
```

Typical GENIUS installation (3/3)

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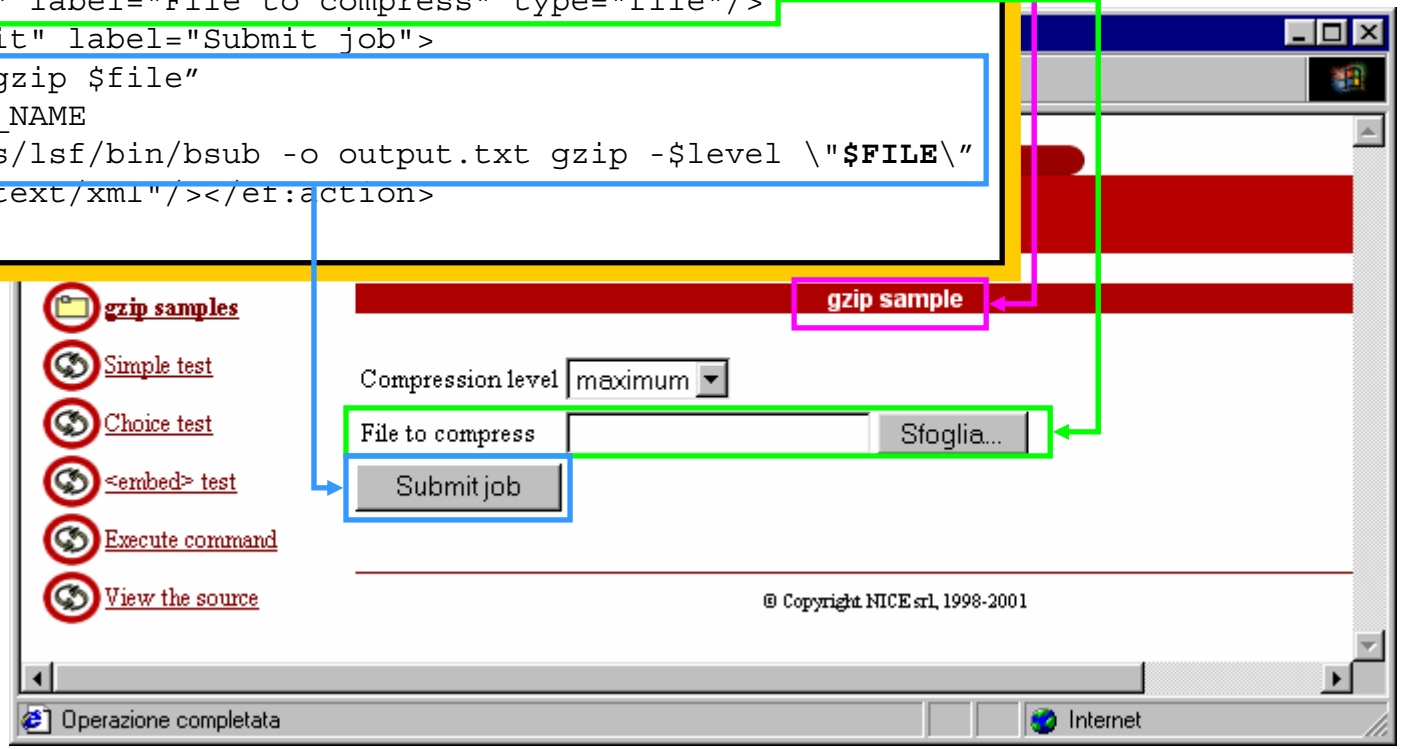
- Configuration files
  - /opt/genius/etc
- XML files
  - /opt/genius/apache/htdocs
- Action procedures (shell scripts, etc.)
  - /opt/genius/ef/plugins/infngrid/bin
- Third-party binaries (PHP4, OpenSSL, TightVNC, expect, …)
  - /opt/genius/bin

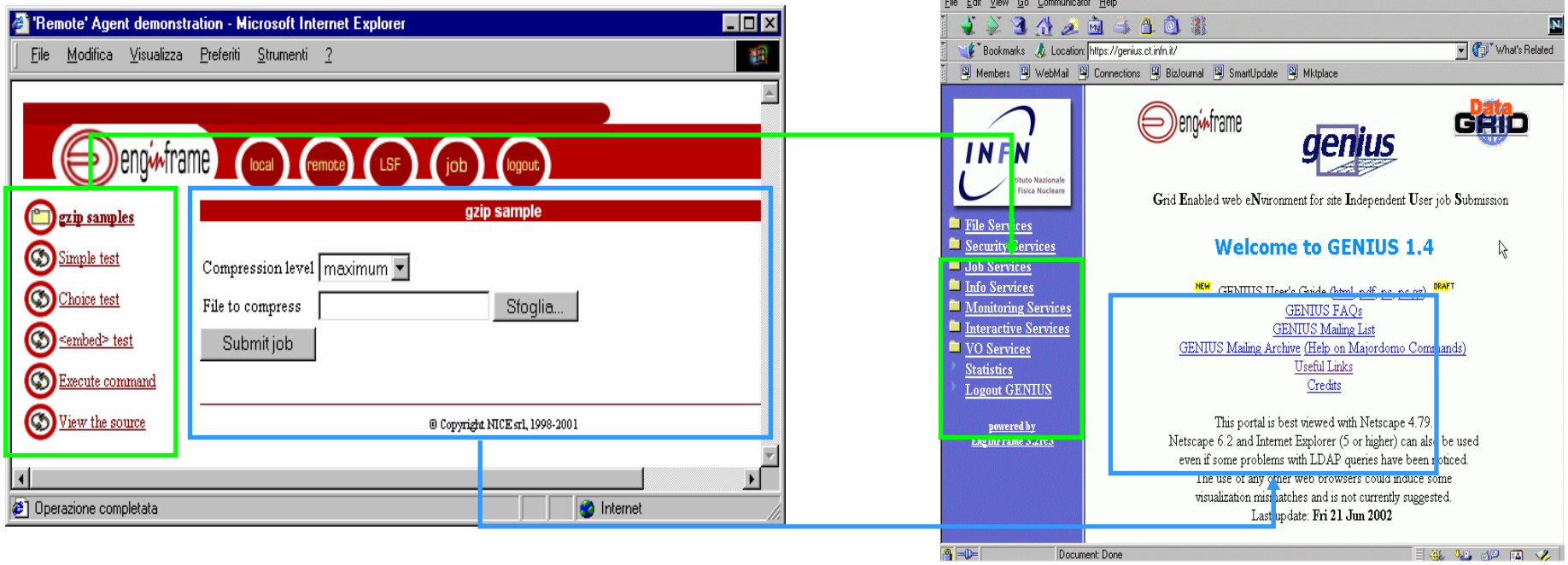
Service Example

```
<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>
```



Choosing the right layout

- One very effective method is to select one existing page from your Intranet/Internet site
- You need to identify a page where you can figure out the space for the service navigation bar and the service content area



FAQ's…and answers (1/2)

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- **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.

FAQ's…and answers (2/2)

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- **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 DataGrid middleware(w/ and w/o GLUE extensions), it can be very easily interfaced to others. A direct interface to the Globus Toolkit already exists and another one to Condor is in progress.

- **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.