



GENIUS/GILDA Tutorial, Catania, 24-25.05.2004

Enabling Grids for
E-science in Europe

www.eu-egee.org

GENIUS and EnginFrame

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EGEE NA4 Generic Applications coordinator



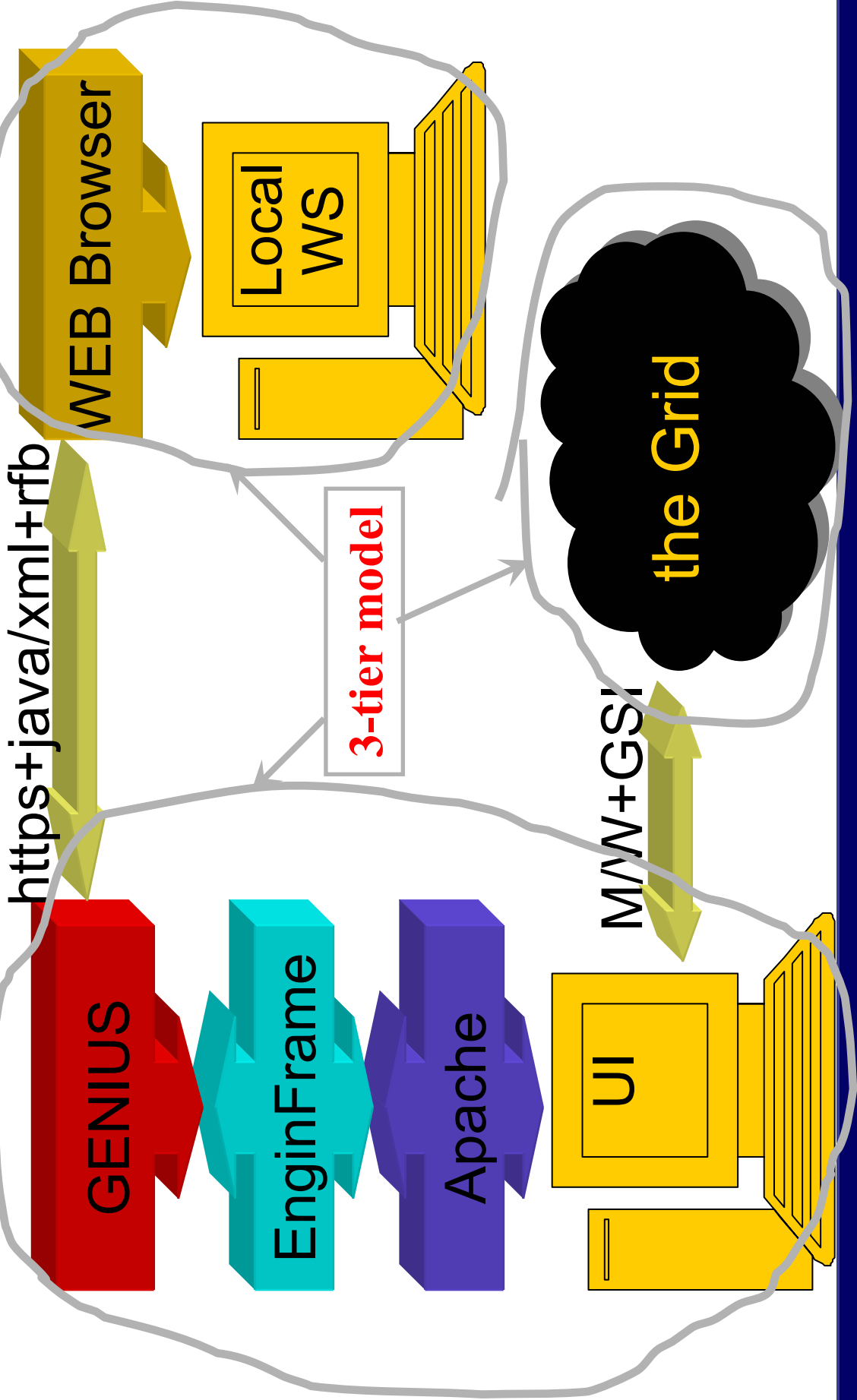
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- Introduction about EnginFrame
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- GENIUS installation and configuration
- An example of EnginFrame service
- FAQs and answers



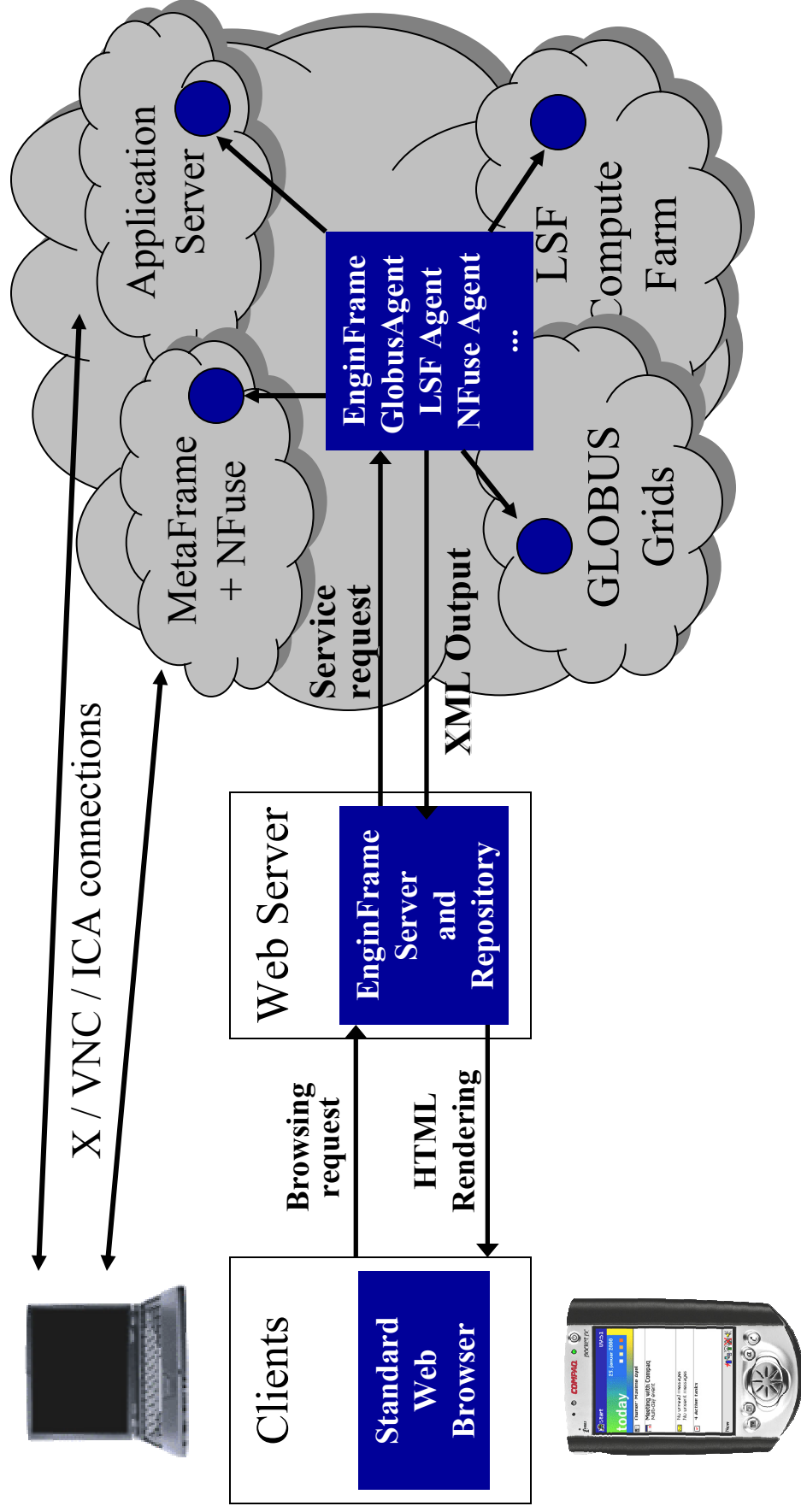
GENIUS: how it works



Enginframe in brief

- 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



Industrial Grid Portals

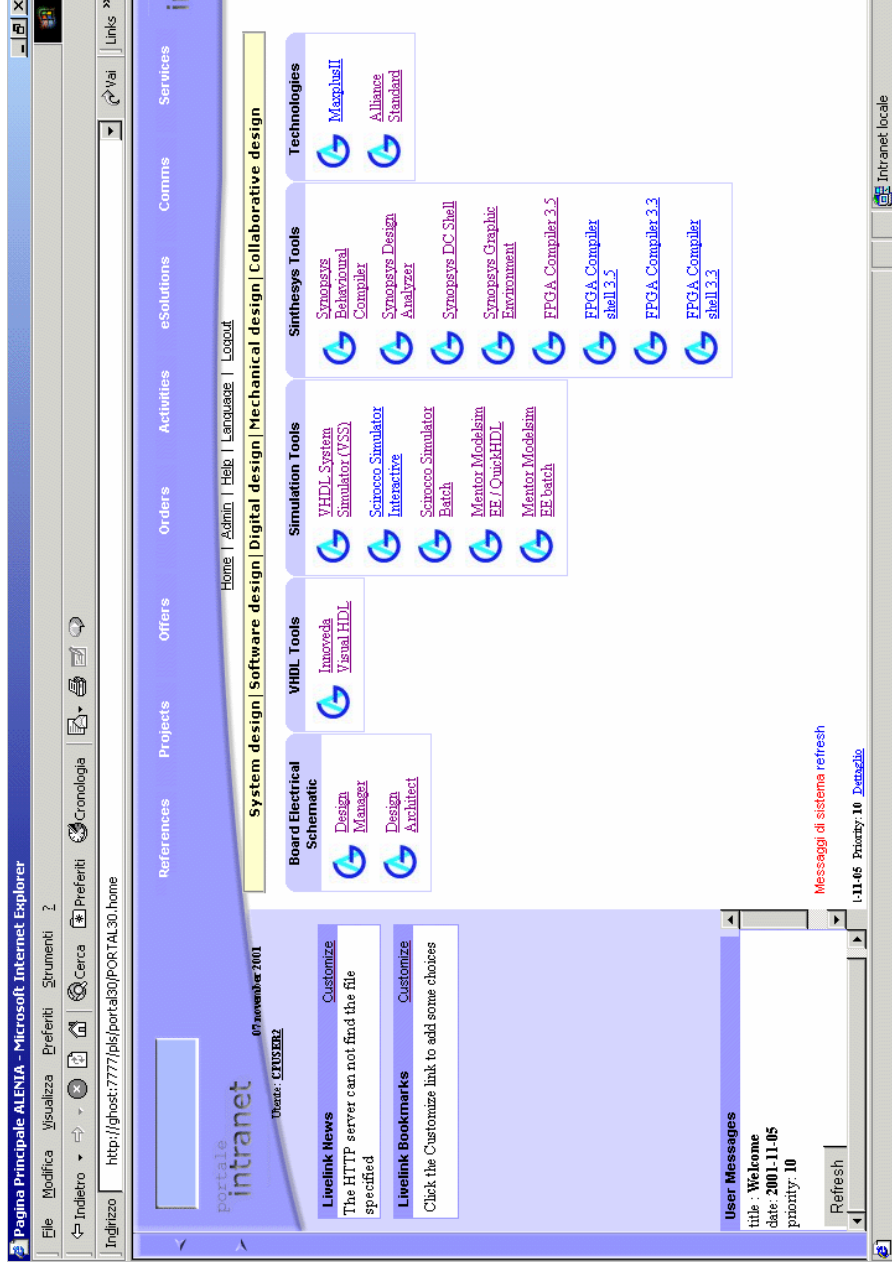
The screenshot shows a Microsoft Internet Explorer browser window displaying three different industrial grid portals. The top portal is the Ferrari DataGate, featuring the Ferrari logo and a 'Service offerings' section with links for 'List Incoming Files', 'List Outgoing Files', and 'Submit file'. The middle portal is the Fiat CAE Portal, which includes a 'Data Manager' section for 'LSDYNA' with fields for JOB, DESCRIPTION, INPUT FILE, QUEUE, SELECTION, N. CPU (MAX. 8), MEMORY, and VERSION, along with 'RESTART FILE', 'ADDITIONAL OPTIONS', and a 'SUBMIT JOB' button. The bottom portal is the Audi Corporate ASP, titled 'AudiPamcrash_preprocessed', with a navigation menu (stage, models, service, facts, news) and a form for project details including 'Projektname', 'Berechnungsfall', and 'Input Deck', along with checkboxes for file management and a 'Pamcrash Version' dropdown.

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



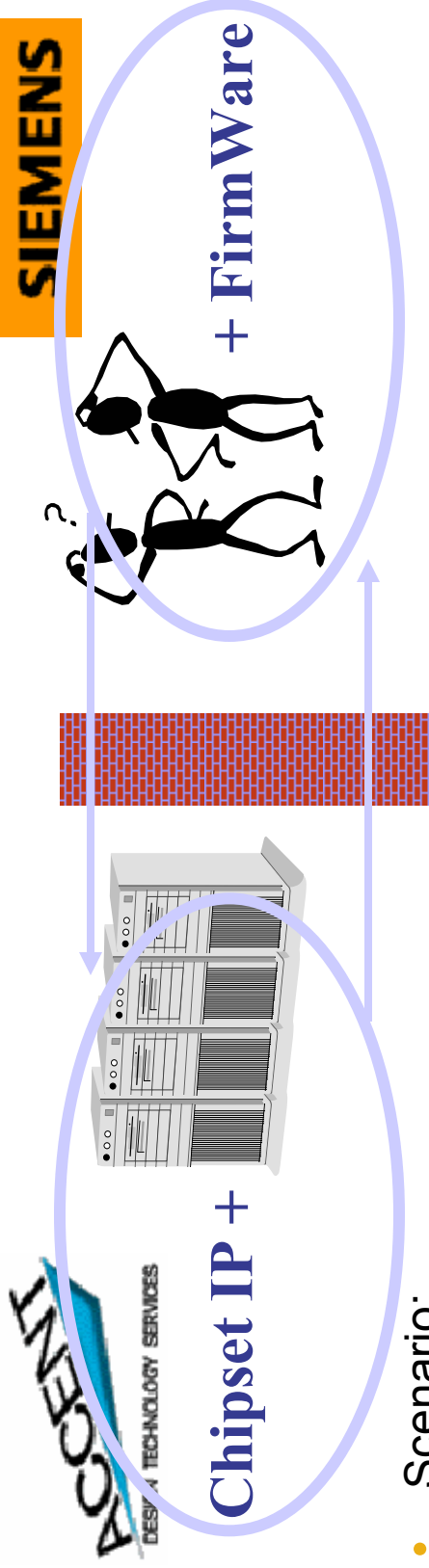
The screenshot shows a web browser window displaying the EnginFrame portal. The browser title is "Pagina Principale ALENIA - Microsoft Internet Explorer". The address bar shows "http://ghost:7777/pls/porta30/PORTAL30.home". The page features a navigation menu with categories: Home, Admin, Help, Language, Logout, References, Projects, Offers, Orders, Activities, eSolutions, Comms, and Services. The main content area is titled "System design | Software design | Digital design | Mechanical design | Collaborative design". It is organized into several tool categories, each with a grid of icons and links: Board Electrical Schematic (Design Manager, Design Architect), VHDL Tools (Innoceda VisualHDL), Simulation Tools (VHDL System Simulator (VSS), Synopco Simulator Interactive, Synopco Simulator Batch, Mentor Modelsim EE / QuickHDL, Mentor Modelsim EE batch), Synthesis Tools (Synopsys Behavioral Compiler, Synopsys Design Analyzer, Synopsys DC Shell, Synopsys Graphical Environment, FPGA Compiler 3.2, FPGA Compiler shell 3.2, FPGA Compiler shell 3.3), and Technologies (Maxphell, Alliance Standard). On the left, there are "LiveLink News" and "LiveLink Bookmarks" sections. At the bottom, a "User Messages" box displays a welcome message dated 2001-11-05 with a priority of 10. A status bar at the bottom right indicates "Messaggi di sistema refresh" and "11:45 Priority: 10 Dettaglio".

Centralized eDesign Services

EnginFrame benefits

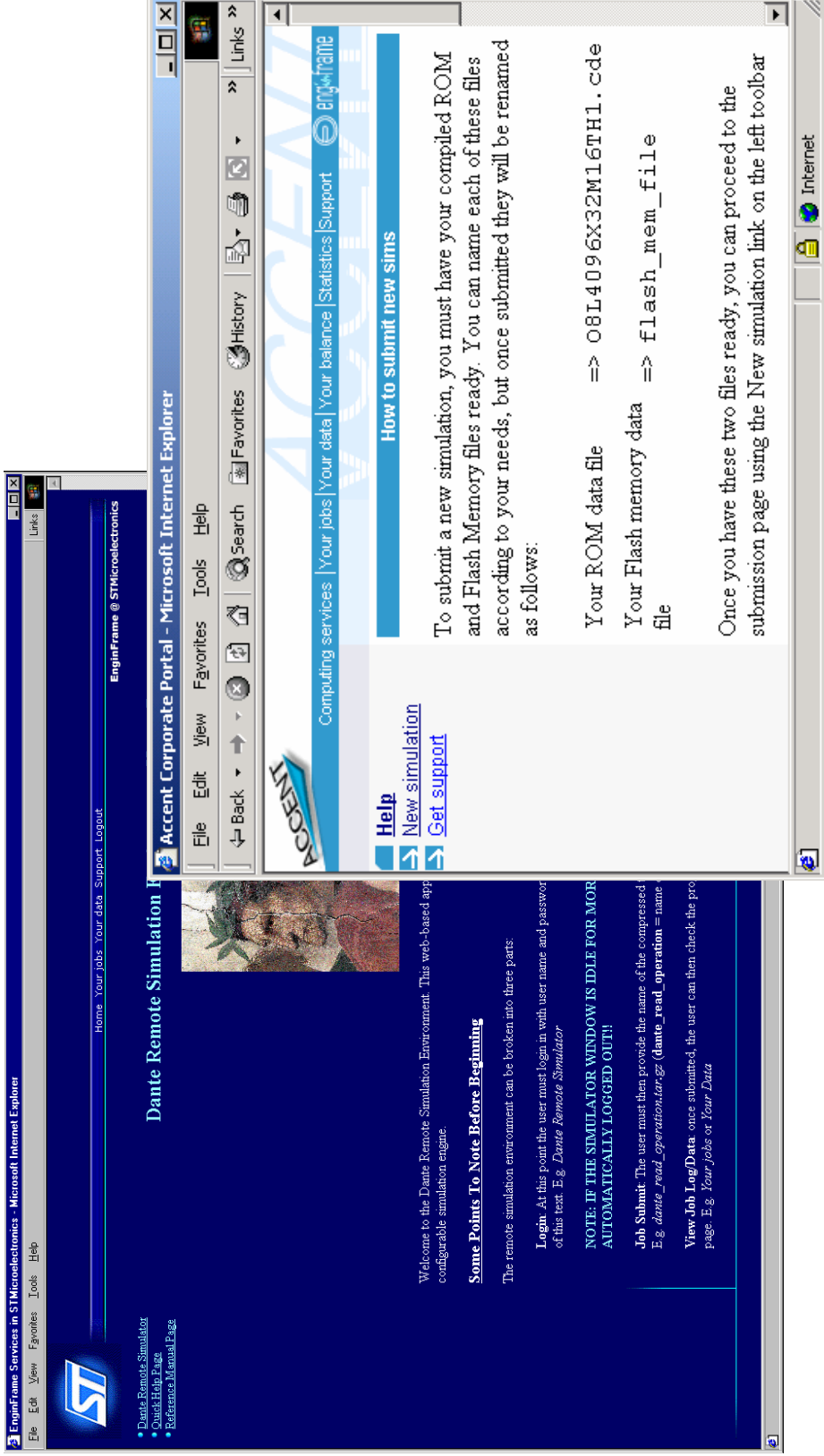
-  IT assets and project methodology **consolidation**
-  Enhanced **collaboration** with remote sites and partners
Intellectual Property protection
-  Automatic and transparent enforcement of company **policies**
-  Wealth of properly focused information for management
-  Ease **deployment** of new 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



Black-box for Firmware simulation

EnginFrame benefits

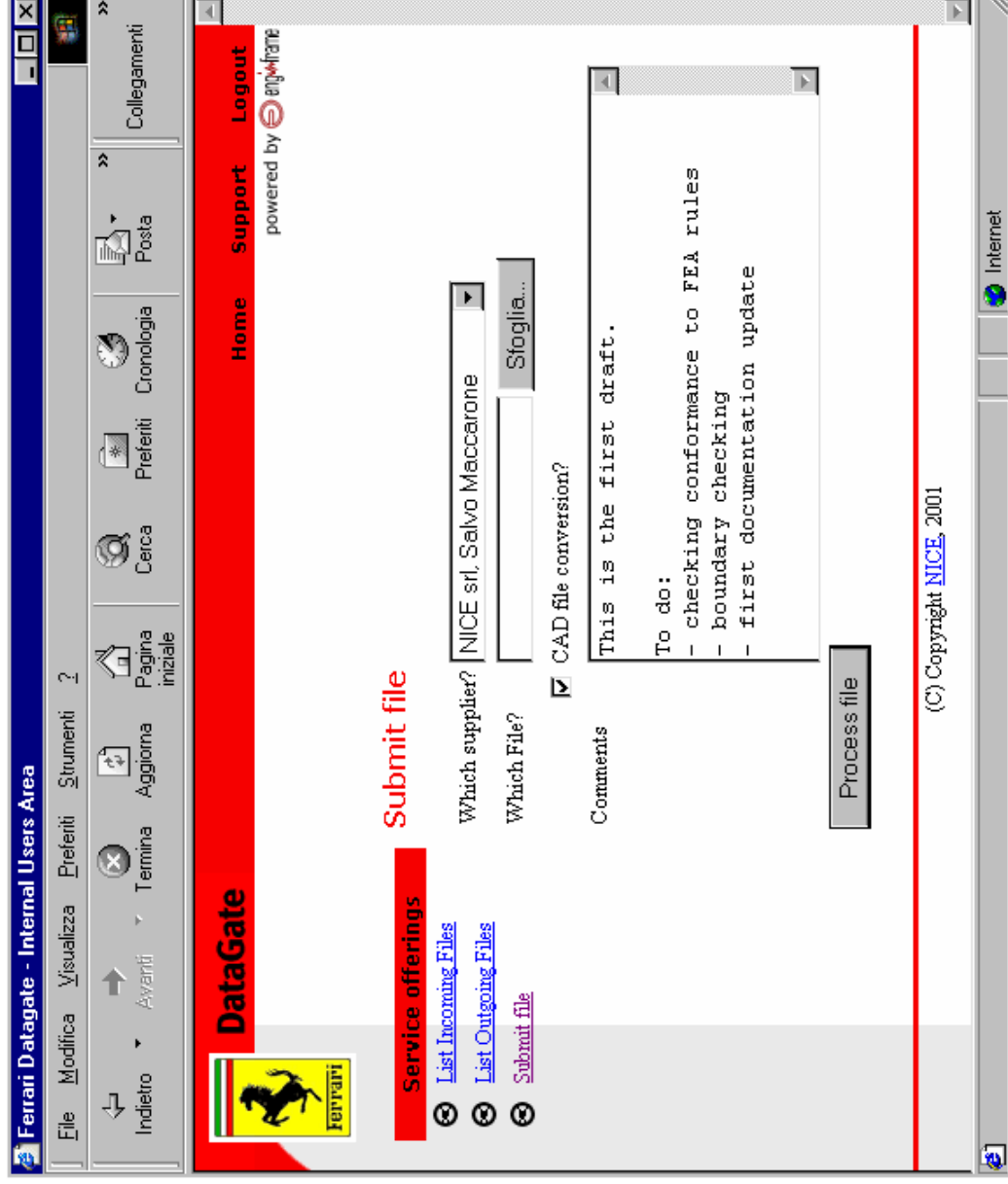
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Case Study: Data Exchange





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



EnginFrame benefits

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Typical GENIUS installation (1/3)

- 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)

- `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/infgrid/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)

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

Service Example

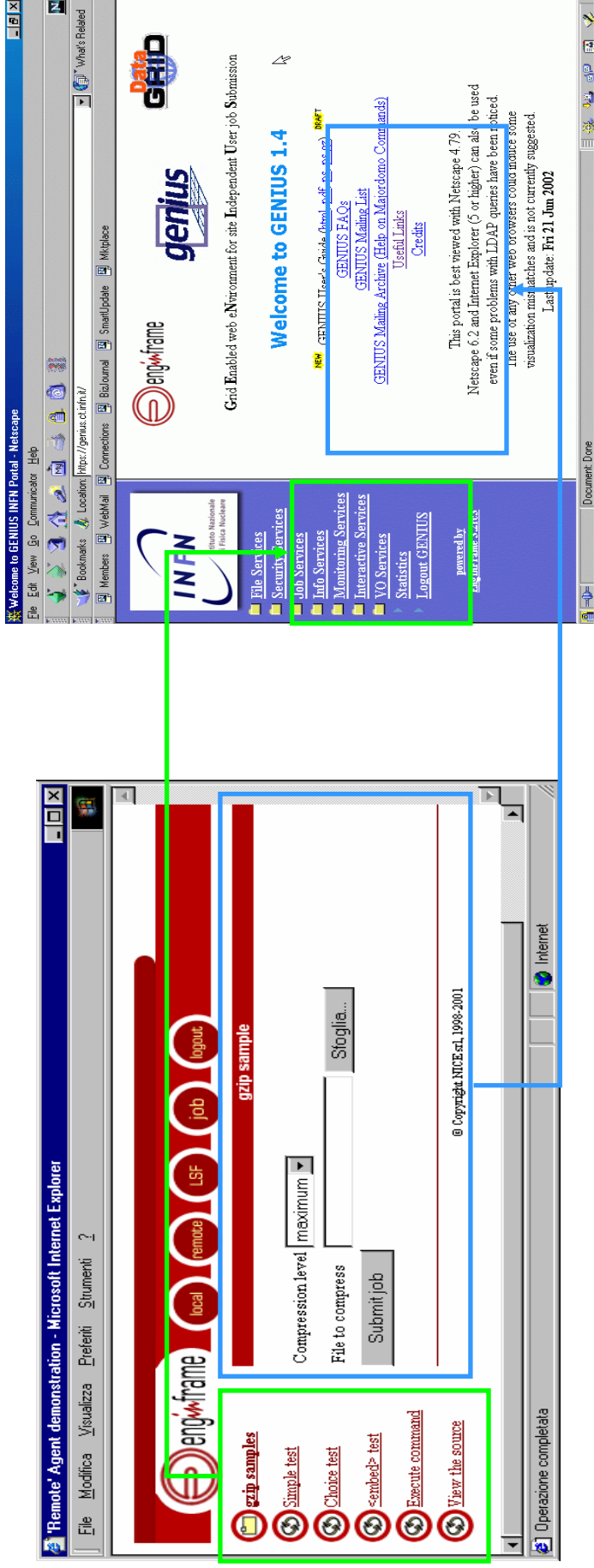
```
<ef:service id="gzip">  
  <ef:name>gzip sample</ef:name>  
  <ei:option id="level" label="Compression level" type="list">  
    <ef:option id="9">maximum</ef:option>  
    <ef:option id="4">medium</ef:option>  
    <ef:option id="0">none</ef:option>  
  </ei:option>  
  <ef:option id="FILE" label="File 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\"  
  <ei:result type="text/xml"/></ei:action>  
</ef:service>
```



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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)

- **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)

- **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.