egee

Enabling Grids for E-sciencE

gLite
Lightweight Middleware for Grid Computing

The GENIUS Grid portal

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INFN Catania - Italy

First Latin American Workshop for Grid Administrators

21-25 November 2005

www.eu-egee.org

Information Society

Enabling Grids for E-sciencE

- **Grid computing vision brings the idea that enormous and heterogeneous computing resources and mass storage systems, distribuited world-wide and "linked" by large bandwidth networks, can be connected by an <u>intelligent series of services</u> (the Grid middleware) and behave as a single machine.**

- **Within this paradigm, an easy way to access and share computing resources should be provided to large communities (VO) where scientists and researchers could work together to solve complex problem.**

- **Grids must provide a secure access to distribuited resources which must be presented in term 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**

- **GENIUS stands for Grid Enabled web eNvironment for site Independent User job Submission**

- **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 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.**

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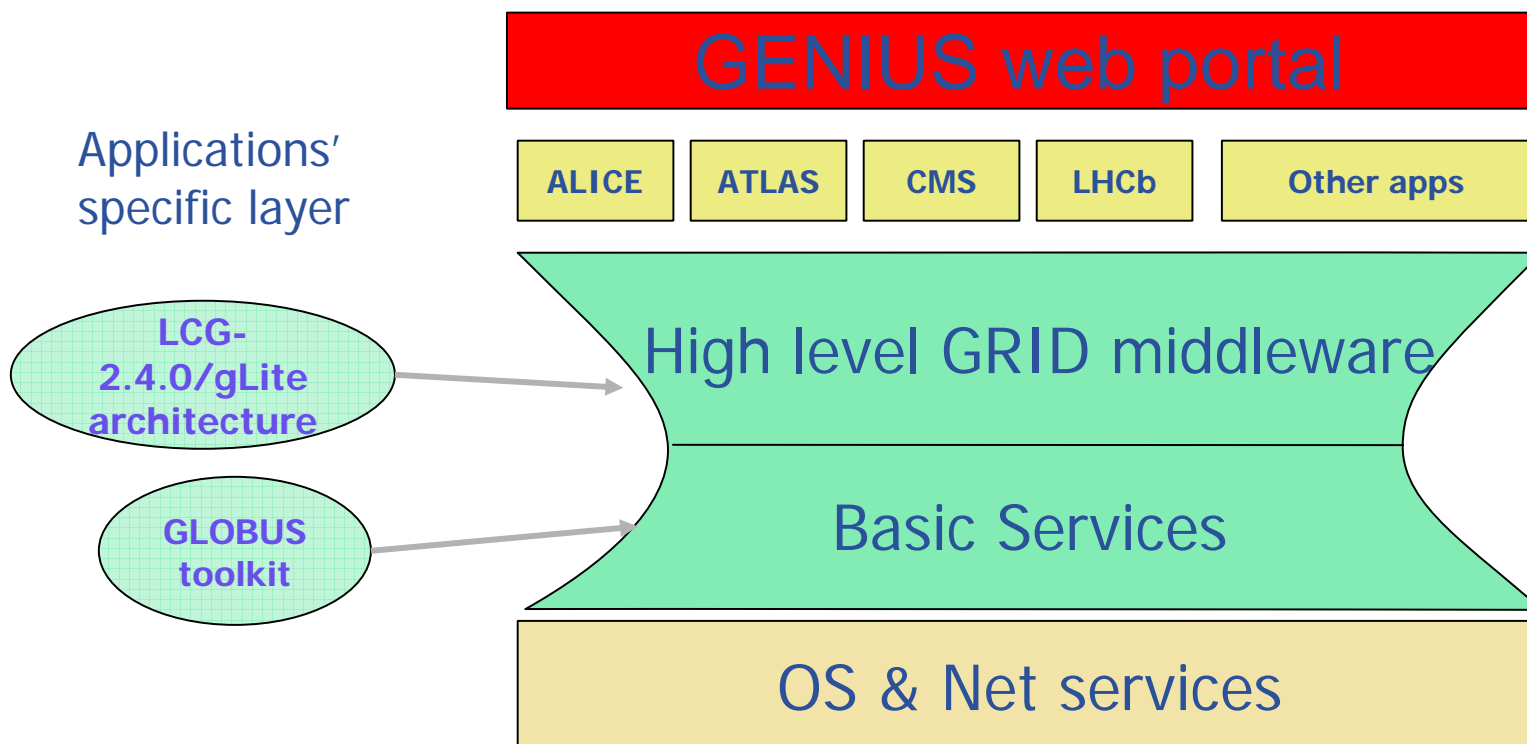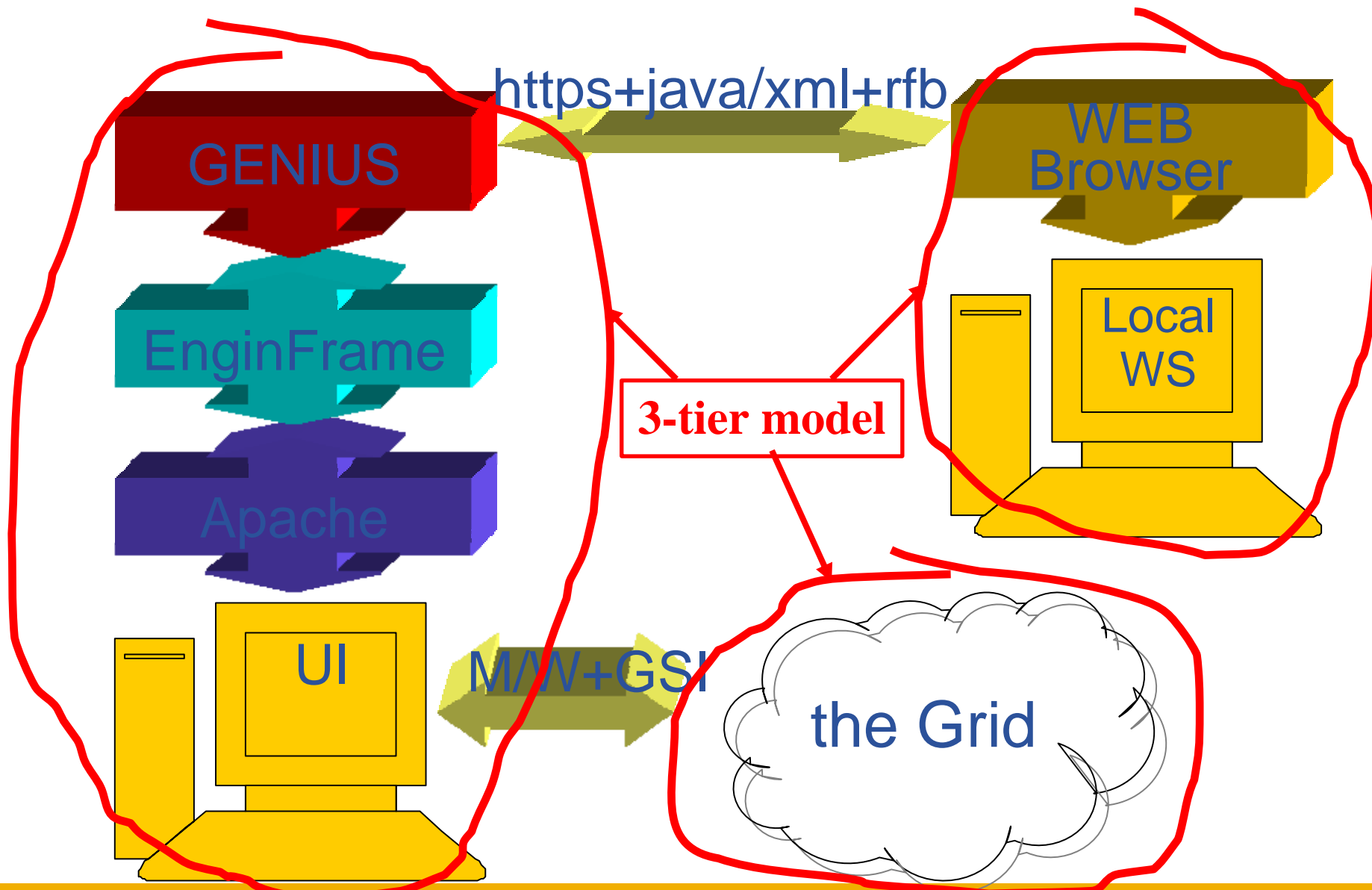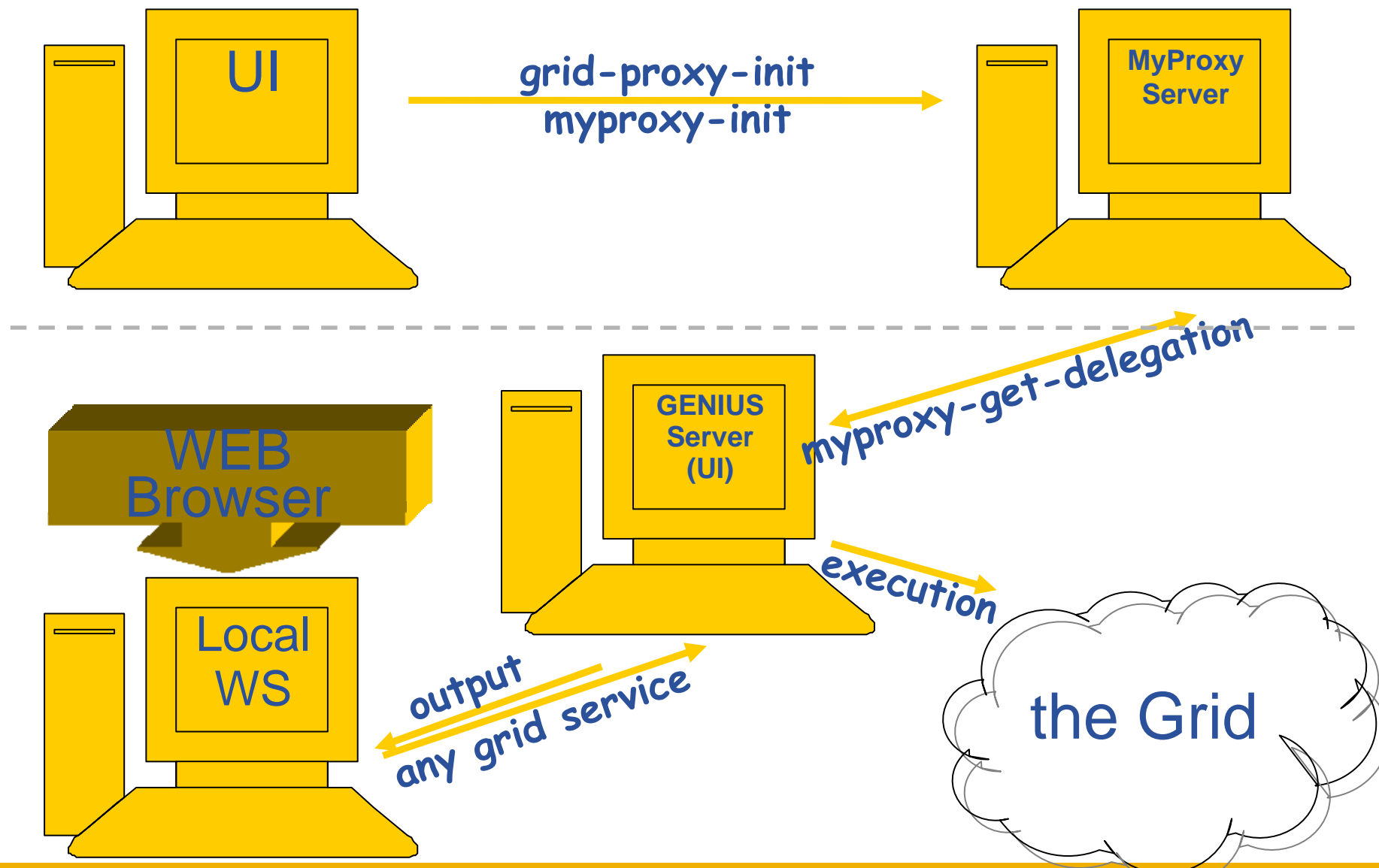- **Layout used is very easy to understand and user friendly.**

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GENIUS®

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

[**https://genius.ct.infn.it**]

INFN/NICE collaboration

Applications'
specific layer

GENIUS web portal

| ALICE | ATLAS | CMS | LHCb | Other apps |

LCG-2.4.0/gLite architecture

High level GRID middleware

GLOBUS toolkit

Basic Services

OS & Net services

https+java/xml+rfb

GENIUS

WEB Browser

EnginFrame

Local WS

Apache

3-tier model

UI

M/W+GSI

the Grid

UI

grid-proxy-init
myproxy-init

MyProxy Server

WEB Browser

GENIUS Server (UI)

myproxy-get-delegation

Local WS

execution

output

any grid service

the Grid

Genius Demo

- **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.**

Genius Installation

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- **LCG/gLite User Interface**
  - Genius needs to be installed in the same machine of a LCG or gLite User Interface

- **CVS account on geniuscvs.ct.infn.it**
  - Genius binary and configuration files can be easily downloaded from the above CVS. You need to request an account sending an email to alberto.falzone@ct.infn.it putting in CC roberto.barbera@ct.infn.it where you specify your personal data and the Virtual Organization you belong to. You will receive the username and the password of your account on the GENIUS CVS server.

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- **Server certificate**
  - Request a host cerficate to you Certification Authority

- **EnginFrame EGEE license**
  - Genius is built on top of EnginFrame framework. EnginFrame licences are free for non-profit member of EGEE project using LCG or gLite middleware.
  - You can request a EF license filling up the form at the following URL:
    - http://www.enginframe.com/license/egee.html

- **Log in as root in the UI you chose to install Genius too**
- **Change directory to /opt.**
  - Genius must be installed under /opt
- **Set the environment variable CVS_RSH with the command**
  - export CVS_RSH=ssh
- **Check out GENIUS with the command**
  - cvs -d :ext:<username>@geniuscvs.ct.infn.it:/usr/local/cvsroot checkout -d genius genius-sl

  where <username> is the one requested previously. The directory /opt/genius will automatically be created. The command above download the most current version of GENIUS

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- **Create the user efadmin in your User Interface machine**
  - useradd efadmin

- **Run the installation script with the command**
  - /opt/genius/genius_install.sh

  This script must be executed only once

- **Copy your server certificate file to /opt/genius/apache/conf/ssl.crt/<hostname>.crt and your server key file to /opt/genius/apache/conf/ssl.key/<hostname>.key**

- **Copy the EnginFrame license file license.ef you get by e-mail after the registration to /opt/genius/ef/license/**

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- **Edit the file /opt/genius/apache/conf/httpd.conf and replace yourservercertificate.crt with <hostname>.crt and yourserverkey.key with <hostname>.key.**

- **Edit the file /opt/genius/etc/genius.conf and set the variables SERVER_CERT_FILE and SERVER_KEY_FILE to the correct file names for your machine with all the absolute path.**

- **Start all the GENIUS services issuing the command**
  - /etc/rc.d/init.d/genius start

- **Now, you can access the URL https://yourhost.yourdomain through your web browser and you should see the GENIUS home page.**