Applications in the EELA Project

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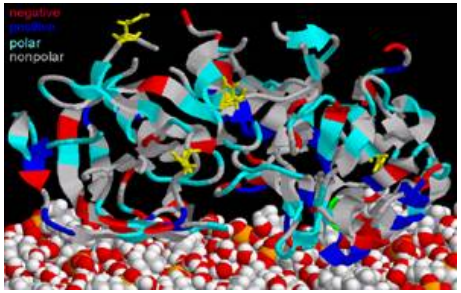
www.eu-eela.org

Information Society and Media

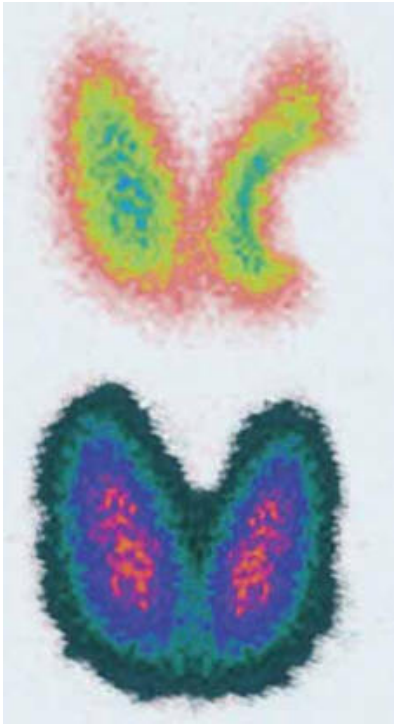
Biomed

Task 3.1

- **EELA Biomedical Applications Fall into *Three Categories***
  - Bioinformatics Applications
    - *BLAST in Grids.*
    - *Phylogeny.*
  - Computational Biochemical Processes
    - *Wide in-Silico Docking on Malaria (WISDOM).*
  - Biomedical Models
    - *GEANT4 Application for Tomographic Emission (GATE)*

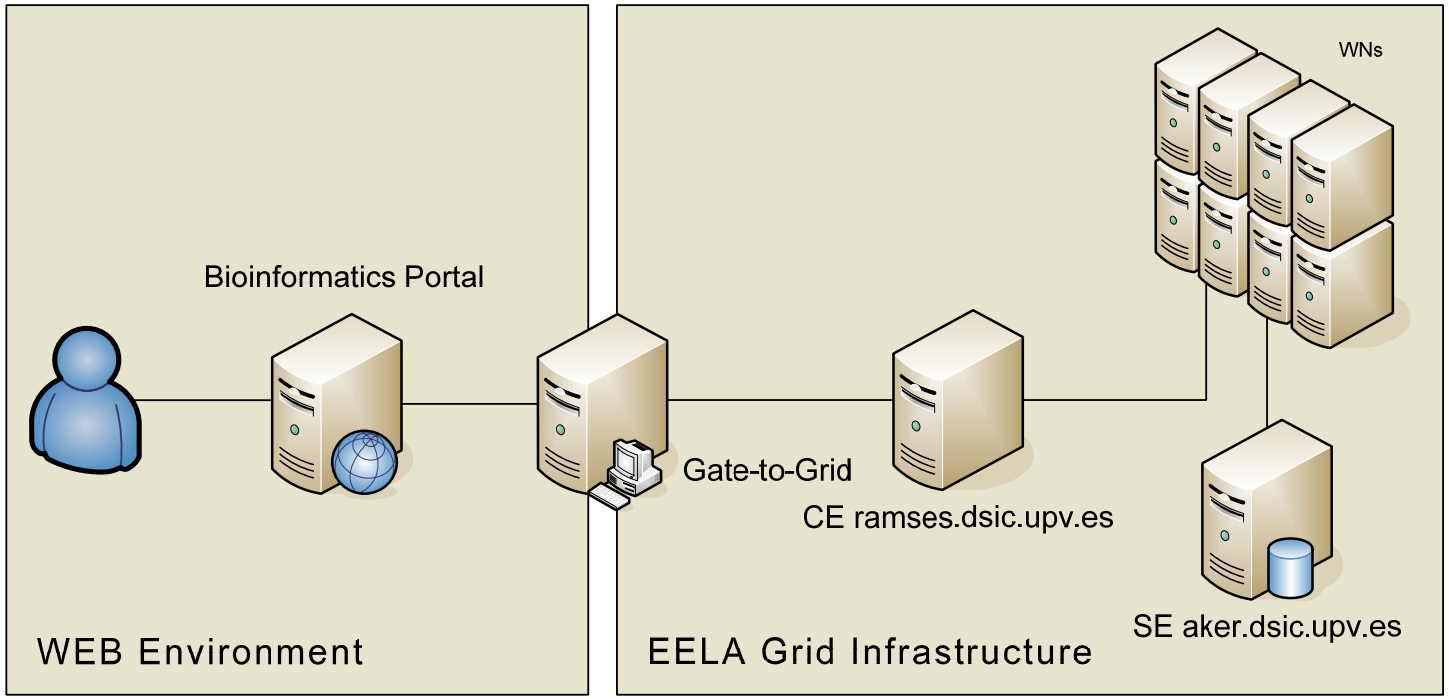


- **The Interest of the LA Community is leaded by CUBAENERGÍA**
  - It is Focused Towards *Two Main Oncological Problems:*
    - Thyroid Cancer.
    - Treatment of Metastasis with P^{32}.
  - 9 centers in Cuba are Interested (*5 Hospitals* and *4 Oncological Centers and Institutions*)
- **Installed in several EELA sites**



- **WISDOM has been *installed in the UPV and CIEMAT* and can be executed on the *whole EELA* Grid infrastructure.**
  - UPV already participated as *Docking Operator* in the previous data challenge on Malaria.
- ***An Experiment is Being Prepared Jointly by UPV and ULA*.**
  - Targets will be presented in *Plasmodium vivax Malaria*
- ***Next Steps will be*:**
  - Set ULA as Docking Operator and more EELA partners as Donor of Resources in the Docking Data Challenge.
  - Inclusion of *New Targets* in New Data Challenges.

- Users ***Access the Service*** Through a ***Web Portal***.
- Access to the EELA Grid is Performed Through the ***Gate-to-Grid***.
- Gate-to-Grid is an EELA Grid Node Which Provides a ***WSRF-Based Web Interface***.
- Main interest leaded by ULA



- ***Installed on ULA Computers***.
- **Tests Have Been Performed Successfully on a *Dataset of Around 3000 Sequences of the Plasmodium Falciparum*.**
- **Integration in the *Bioinformatics Portal* is Completed.**

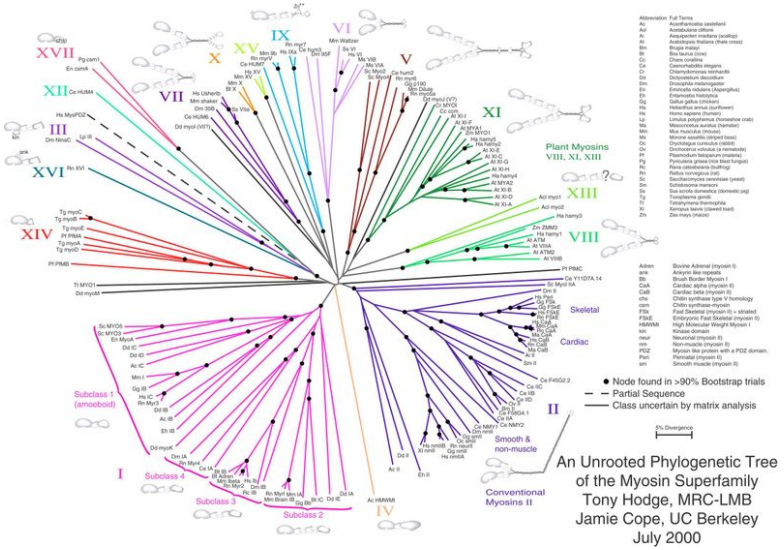
Phylogeny

- A ***Phylogeny*** **is a** ***Reconstruction*** **of the** ***Evolutionary History*** **of a** ***Group of Organisms*****.**

- ***Applications:*** **Gene Function Prediction, Drug Discovery and Conservation Biology.**

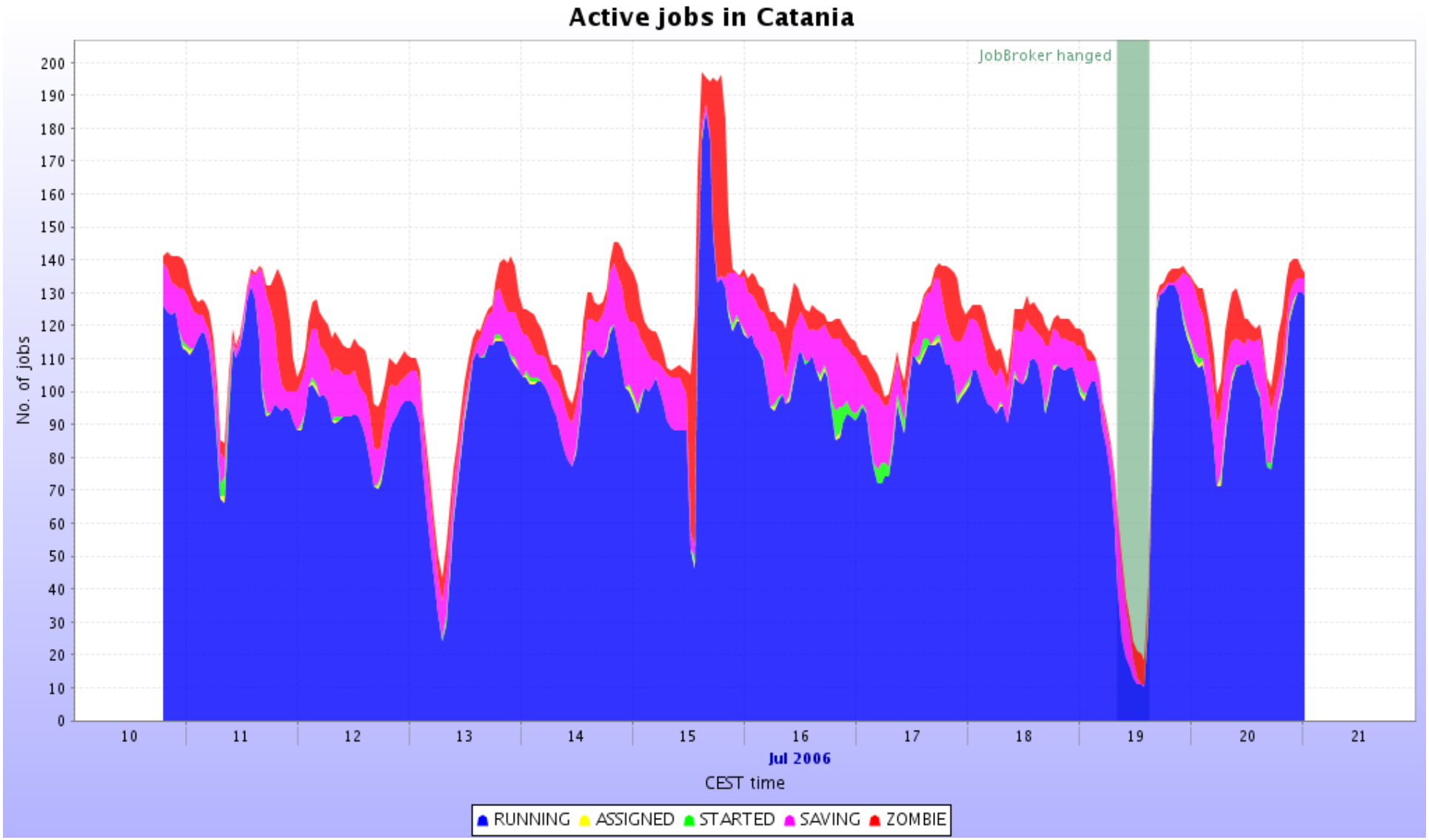
- **Interest of the LA Community**
  - ULA is Leading the Interest in the LA.
  - A Grid Service Will be Developed to
    Run a Parallel Version of MrBayes
    from the Bioinformatics Portal.

- **Demo in EGEE06**



HEP

- **Applications of interest to EELA partners and other communities in Latin America**
  - Initial applications
    - ALICE: Heavy ion physics at LHC
      - *Catania, CIEMAT, and UNAM*
    - LHCb: B physics at LHC
      - *Catania, CIEMAT and UFRJ*
  - Other LHC applications
    - ATLAS (General purpose)
      - *CIEMAT, UFRJ, UNLP and UTFSM*
    - CMS (General purpose)
      - *CIEMAT, has LA participants in EELA member countries, but no EELA partner from LA*
  - New projects
    - Pierre Auger Observatory
      - *UFRJ, UNAM, and UNLP, others in EGEE or partner projects*


Active jobs in Catania
JobBroker hanged
No. of jobs
200
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180
170
160
150
140
130
120
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10
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11
12
13
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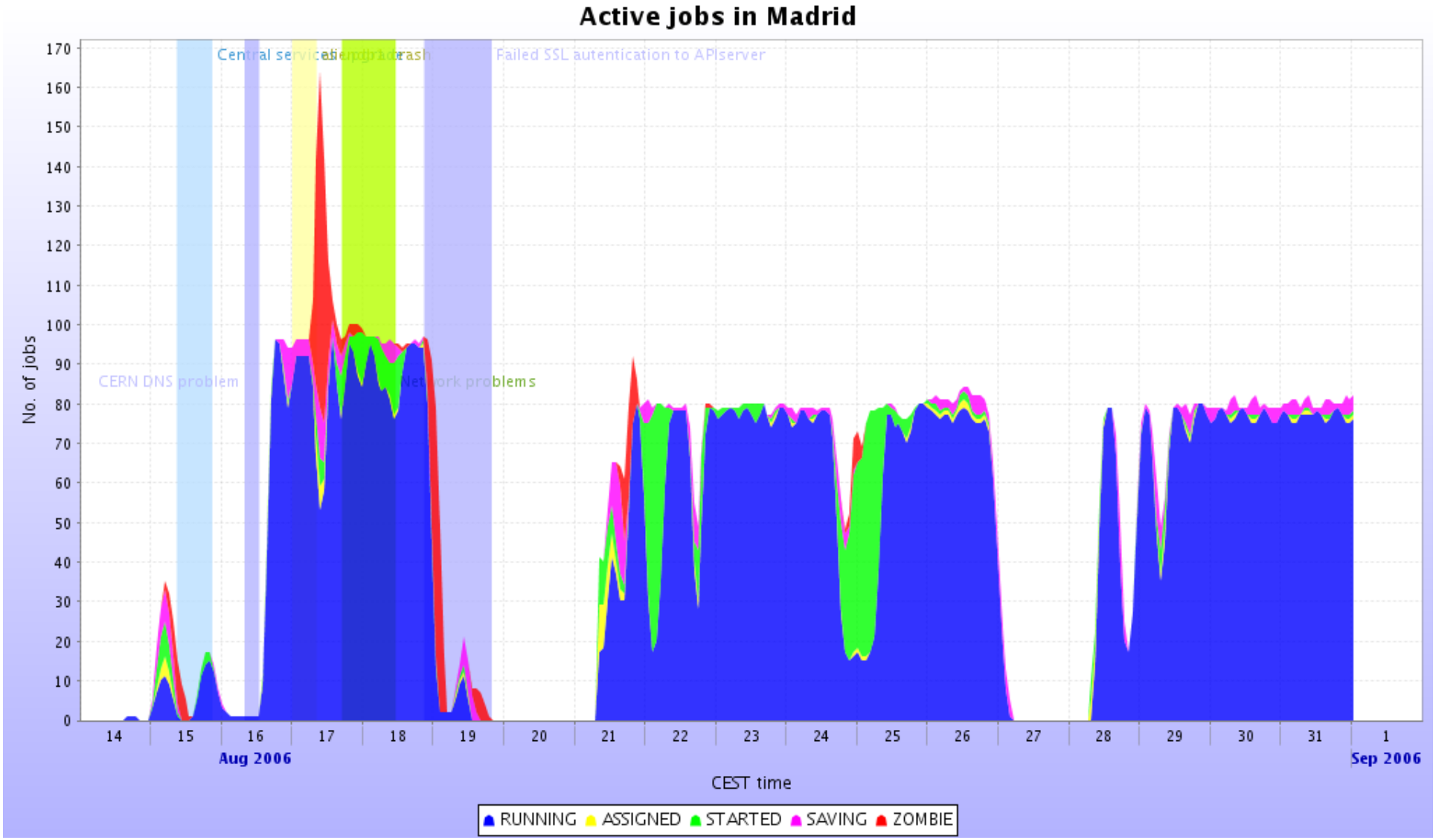
21
Jul 2006
CEST time
RUNNING
ASSIGNED
STARTED
SAVING
ZOMBIE


Active jobs in Madrid
Central se
Failed SSL autentication to APIserver
CERN DNS problem
Network problems
No. of jobs
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Aug 2006
Sep 2006
CEST time
RUNNING
ASSIGNED
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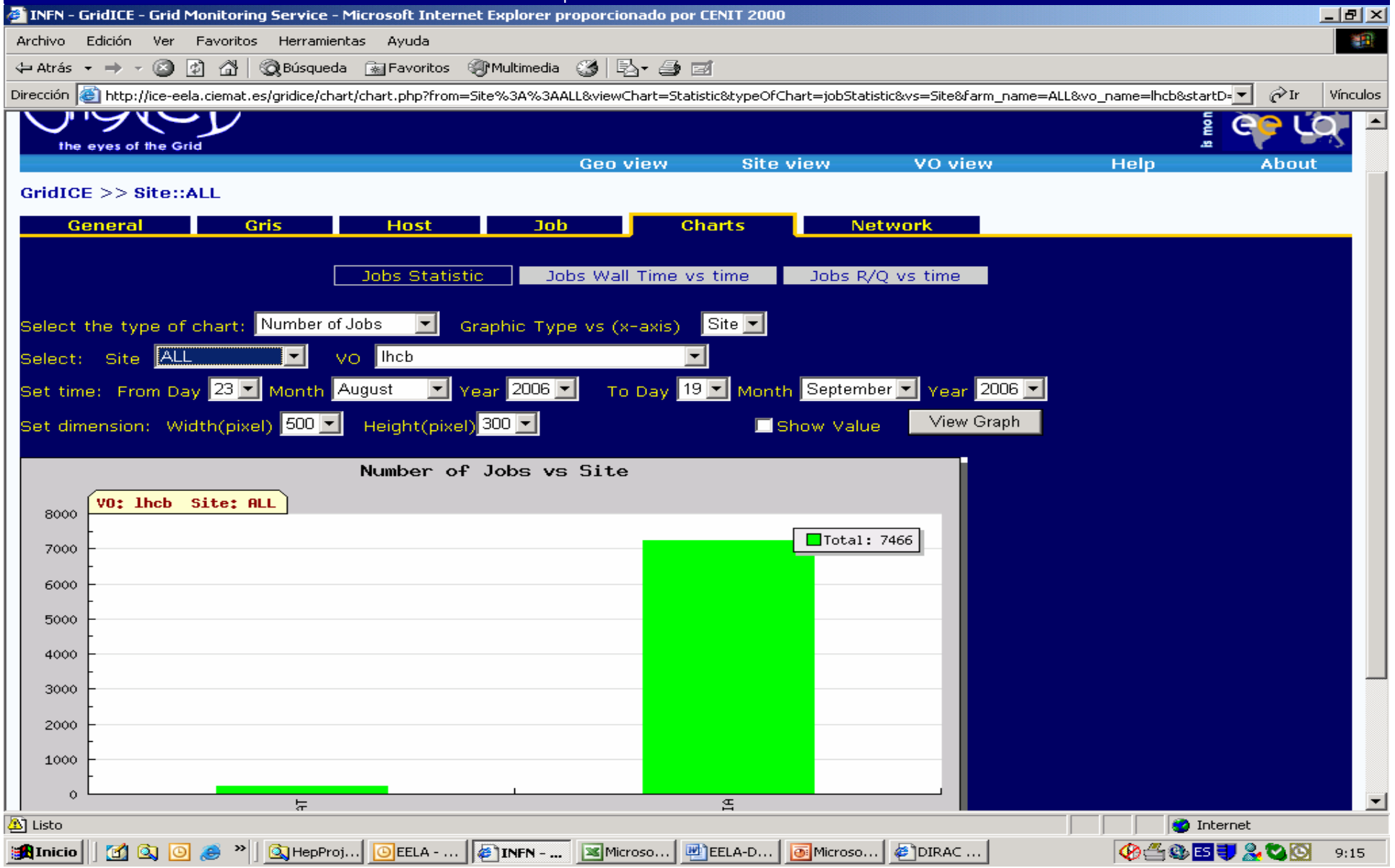
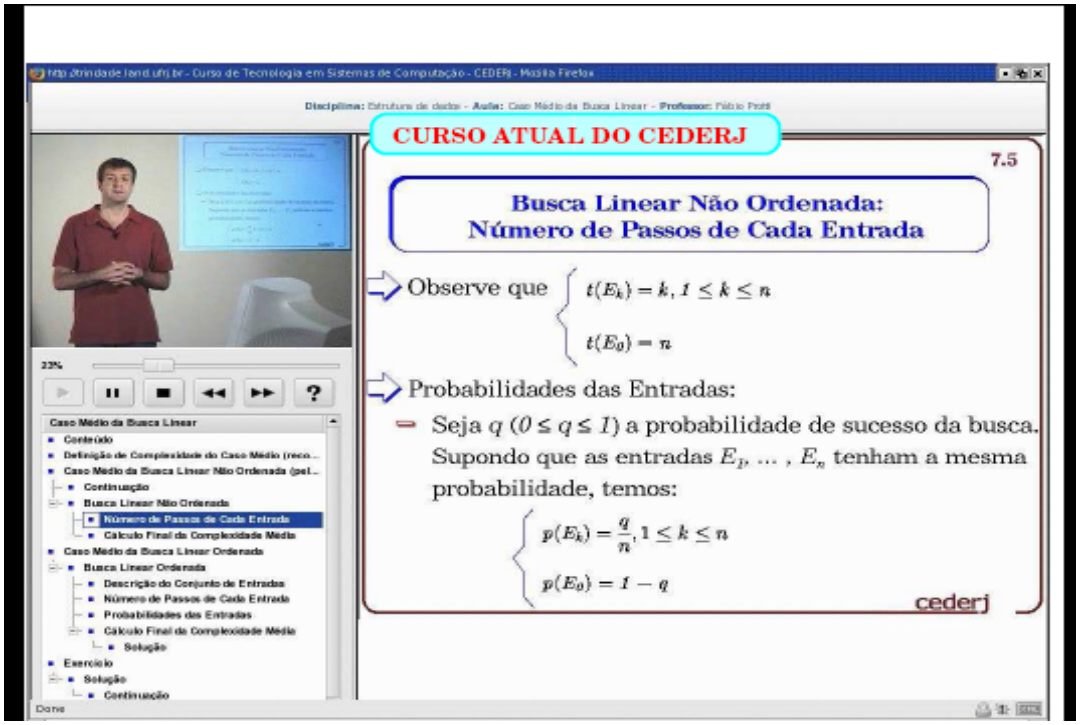
SAVING
ZOMBIE


INFN - GridICE - Grid Monitoring Service - Microsoft Internet Explorer proporcionado por CENIT 2000
Archivo Edición Ver Favoritos Herramientas Ayuda
Atrás Búsqueda Favoritos Multimedia
Dirección http://ice-eela.ciemat.es/gridice/chart/chart.php?from=Site%3A%3AALL&viewChart=Statistic&typeOfChart=jobStatistic&vs=Site&farm_name=ALL&vo_name=lhcb&startD
Ir Vínculos
the eyes of the Grid
Geo view
Site view
VO view
Help
About
GridICE >> Site::ALL
General
Gris
Host
Job
Charts
Network
Jobs Statistic
Jobs Wall Time vs time
Jobs R/Q vs time
Select the type of chart: Number of Jobs
Graphic Type vs (x-axis) Site
Select: Site ALL
VO lhcb
Set time: From Day 23 Month August Year 2006
To Day 19 Month September Year 2006
Set dimension: Width(pixel) 500 Height(pixel) 300
Show Value
View Graph
Number of Jobs vs Site
VO: lhcb Site: ALL
Total: 7466
8000
7000
6000
5000
4000
3000
2000
1000
0
Listo
Internet
Inicio
HepProj...
EELA - ...
INFN - ...
Microso...
EELA-D...
Microso...
DIRAC ...
9:15

e-Learning

- Storage servers will be running on the storage elements
- Multimedia server will continue to manage requests
- Video streams continue to be sent to clients (UDP)
- Backup of classes stored on the grid
- RIO server will be a cache of classes
- Integration with the remote lab



- **Planed Services**

  - Access to distributed computer enhanced instrumentation
  - Remote access to simulation and modelation capabilities with high performance computing support
  - Interactive visualization
  - Distributed data analysis with access to data base systems
  - Experiment repository system.

Food Engineering

NMR

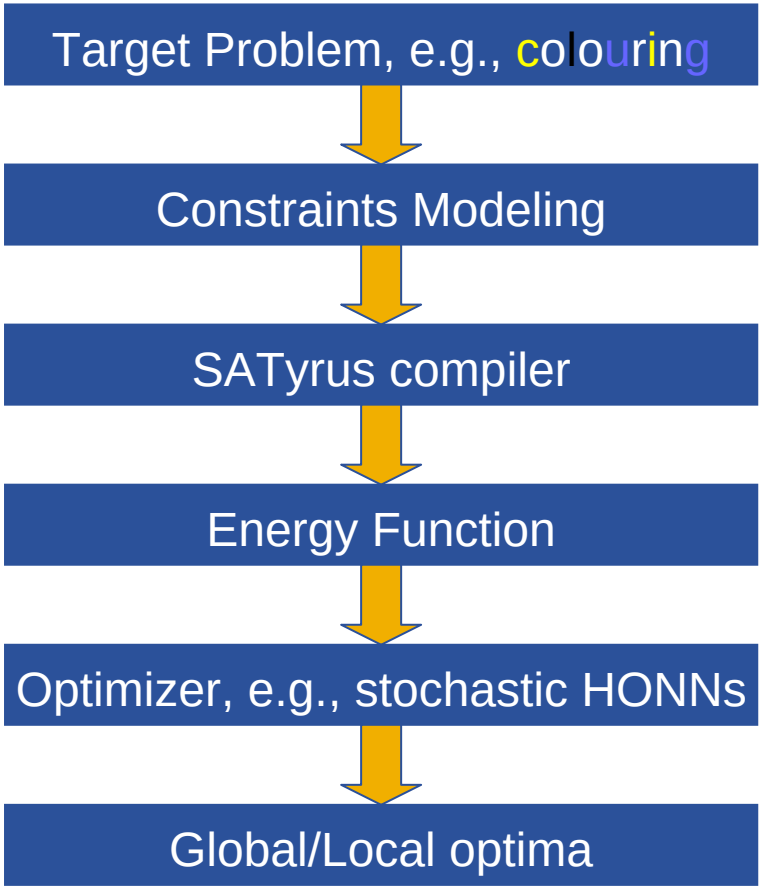
Electrophoresis

cns_solve

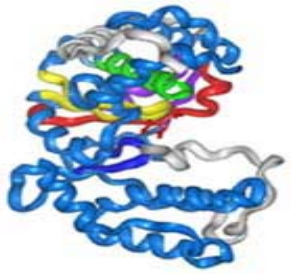
SATyrus

SATyrus:

- SATisfiability-based, neuro-symbolic architecture;
- Exact formulation synthesizer.
- Airport Management (surface)



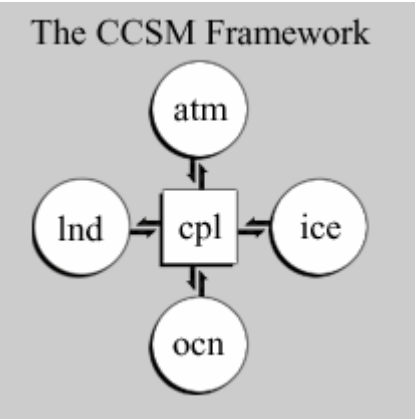
- **Use of Inductive Logic Programming to extract relevant knowledge from structured data**



Climate

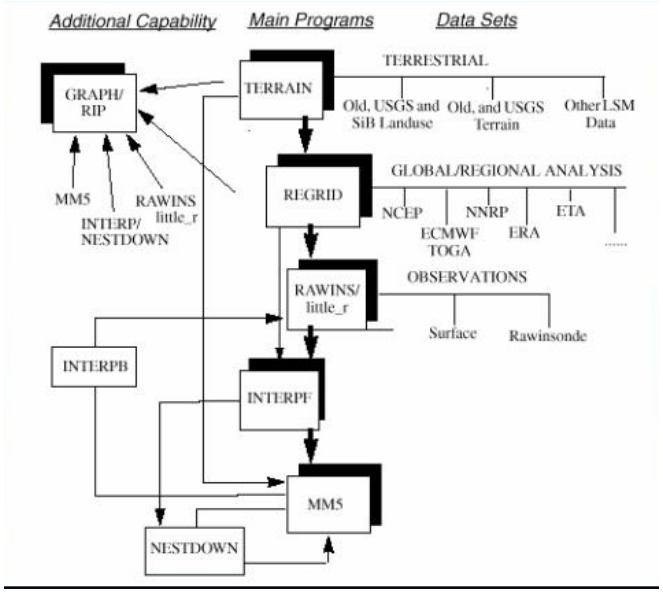
CAM/CCM3

- Global Climate Atmospheric Model.
- This model simulates the evolution of the climate globally at a resolution of 100-300 km, starting with the present sea surface temperature conditions and producing the atmospheric evolution (temperature, humidity, etc.) for a prescribed future period.
- Open source model widely use for climate simulations, including climate change.
- SENAMHI



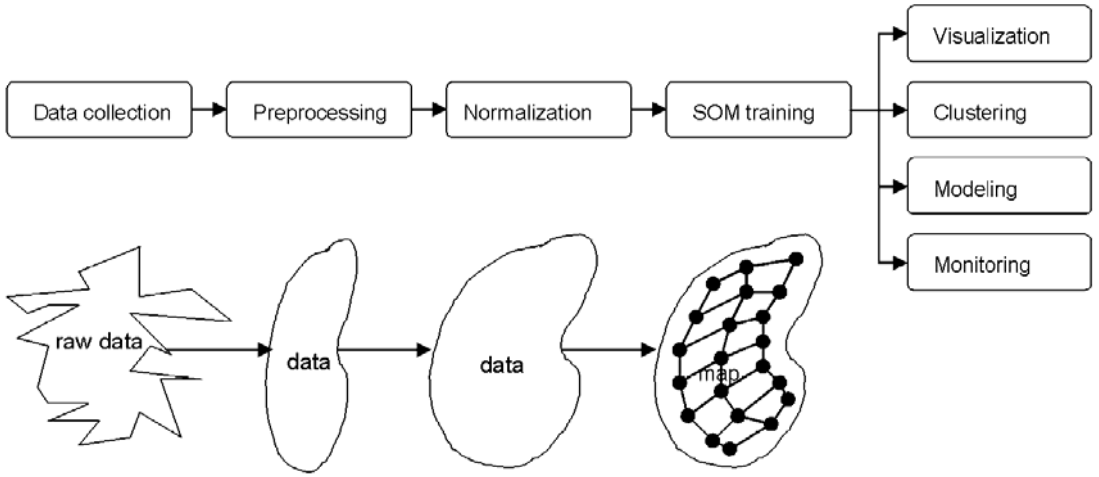
MM5

- Regional atmospheric model.
- This regional model runs over a reduced area and takes as boundary conditions the output of a global circulation model, producing a high-resolution (1-10 km) simulation of the atmospheric evolution.
- Open source model widely use for weather forecast.
- UdeC



SOM

- Data minig clustering algorithm.
- The parallel code for this data-mining algorithm was developed in the CROSSGRID project using MPI. It finds homogeneous clusters within data and organizes them according to their neighborhood relationships.
- The application to climate maps atmospheric configurations to find weather types
- UniCan



CAM+MM5+SOM

- They will be run separately be each partner on their own site

- After that, they will be run in the Grid in a cascade way:

CAM → MM5 → SOM

Task 3.3 Future Plans

A Grid School will be a must for these applications!

EGRIS1

Itacuruça (Brazil) 04-16/12/2006

Other Applications

Volcano Sonifications

Volcano Sonifications

- Domenico Vicinanza (CERN)
- Currently no definitive method to predict the eruption of a volcano has been discovered or implemented (yet)
- The calculations have been performed in the EELA e-Infrastructure by INFN & CERN

Thanks for your attention!