



## A non-European view of using e- Infrastructures – Grid Computing in Latin America

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## EELA (Jan. 2006 – Dec. 2007)

- Build a bridge between consolidated **e-Infrastructure initiatives** in Europe and emerging ones in Latin American
- Create a collaboration network to deploy a **large portfolio of scientific applications** on a well supported Pilot Test-bed
- Care in parallel of the **training in grid technologies** and of the **knowledge dissemination and outreach**

## EELA-2 (Apr. 2008 – March. 2010)

- Provide an empowered **Grid Facility with versatile services** fulfilling application requirements
- Ensure production quality services
- Ensure the long term sustainability of the **e-Infrastructure beyond the term of the project**
- Expand the current EELA e-Infrastructure
- Look for new communities outside academia (**Industry and Business**)

## EELA (SSA under EU FP6)

*E*-infrastructure shared between Europe and Latin America

- EC support: 1.7 M€
- CIEMAT extra support: 0.4 M€
- 10 Countries (7 in LA) ←→
- 2 International Organisation: CLARA & CERN
- 20 Members (13 in LA) ←→

## EELA-2 (CP-CSA under EU FP7)

*E*-science grid facility for Europe and Latin America

- EC support: 2.1 M€
- CETA-CIEMAT extra funds: 0.3 M€
- 16 Countries (11 in LA)
- New countries: Colombia, Ecuador, Panama & Uruguay – France & Ireland
- 1 International Organisation (CLARA)
- 78 Members (62 in LA)
- 32 Institutions joined during the project lifetime (31 in LA)
- 13 JRUs (9 in LA) including 4 new JRUs (3 in LA)

**Objective 1:** Ensure the long-term sustainability of the e-Infrastructure inherited from EELA-2 in the Latin America and the Caribbean

**Objective 2:** Provide full support to the Virtual Research Communities spanning Latin America and Europe, using this e-Infrastructure.

## Work plan:

- Implement a sustainability model rooted on National Grid Initiatives (NGI), **in association with CLARA, Latin American NRENs and collaborating with EGI.**
- Provide the communities with the suited e-Infrastructure and Application-related Services required to improve the effectiveness of their research. This will address both:
  - ✓ **The former EELA-2 User Communities** whose research investigations are carried out at the Institution level or in small collaborations.
  - ✓ **The larger Virtual Research Communities** as Life & Earth Sciences, HEP

- 15 Countries (11 in Latin America)
- 19 Partners (14 in Latin America)
- 12 Third Parties (11 in Latin America)



Negotiation with Bolivia & Paraguay for possible collaboration



### Europe

- |          |                             |
|----------|-----------------------------|
| Italy    | INFN – Catania              |
| France   | CNRS, HLP                   |
| Portugal | U.PORTO                     |
| Spain    | CIEMAT (Coord. Institution) |

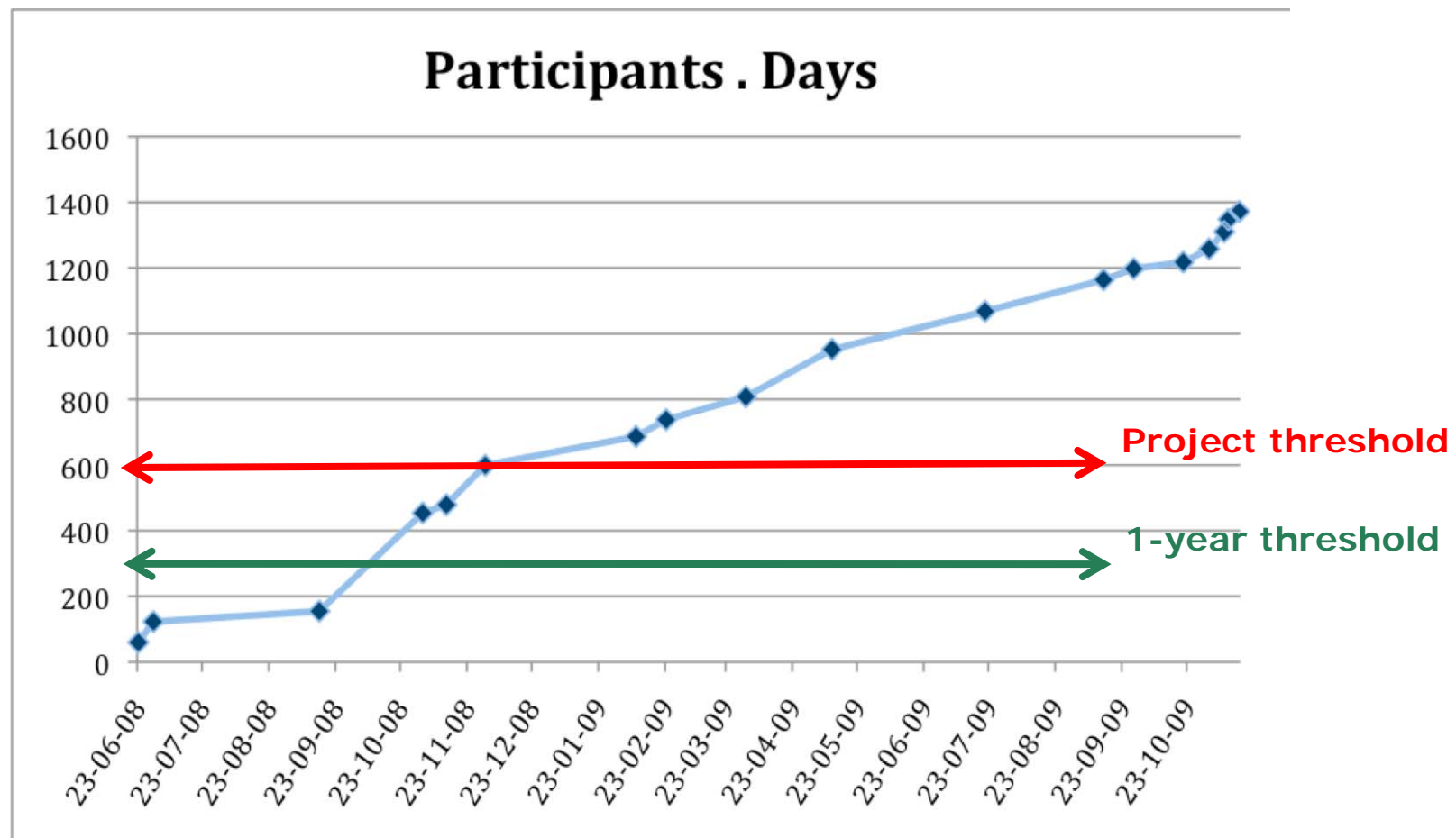
### Latin America and the Caribbean

- |               |             |
|---------------|-------------|
| Argentina     | INNOVA-T    |
| Brazil        | UFRJ, UFCG  |
| Chile         | REUNA       |
| Colombia      | UNIANDES    |
| Cuba          | CUBAENERGIA |
| Ecuador       | CEDIA       |
| International | CLARA       |
| Mexico        | CUDI, UNAM  |
| Panama        | CIDETYS     |
| Peru          | RAAP        |
| Uruguay       | UdelaR      |
| Venezuela     | ULA         |

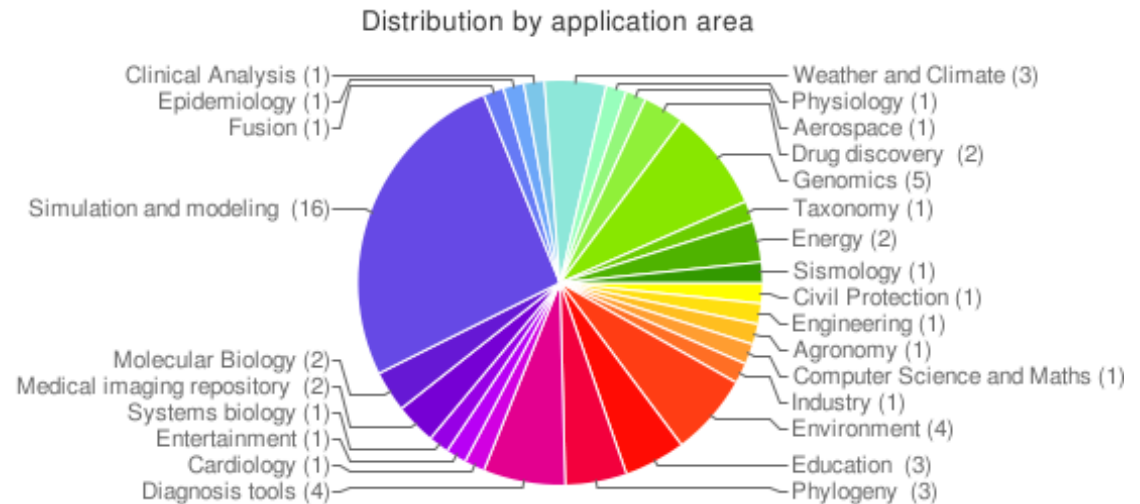
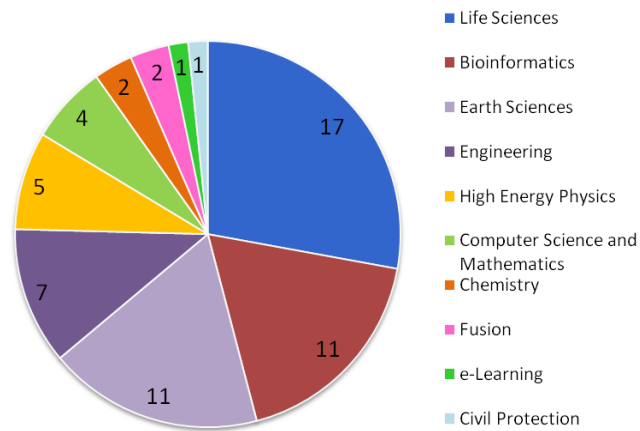
**5 LA NRENS as Partners**

Start date: 01/09/2010 - Project Duration: 24 months

Major investment in all kinds of training to guarantee the necessary amount and level of competences and thus assert the conditions of the long-term technical support of the Latin American e-Infrastructure



- **VRCs in GISELA** - <http://applications.gisela-grid.eu/home.php?l=10>
  - Portfolio of **71** Applications



- User Communities are typically **1-2** Institution group(s), **largely located in Latin America**, alone or collaborating with a few Institutions. Their use of the Infrastructure is to learn Grid technology to evaluate its potential for their future research.
- Several **large** VRCs from HEP (Auger, LHCb, ALICE, CMS, ATLAS) are also supported





**GVSS: Antibiotic resistant pathogenic micro-organism TG protein against 2M ligands library**

**gWRF: Climate studies**

- **Non-GISELA institutions are welcome to use the GISELA infrastructure for scientific purposes (mass production aiming at scientific results)**
  - A good exemple: During 1 month, 2 researchers from the Academia Sinica Grid Computing (Taiwan) were our *guests*

User	# Jobs	Normalised CPU.hours
Hsi-Kai Wang	36,98	23,884
Yun-Pin Sun	60	6,828

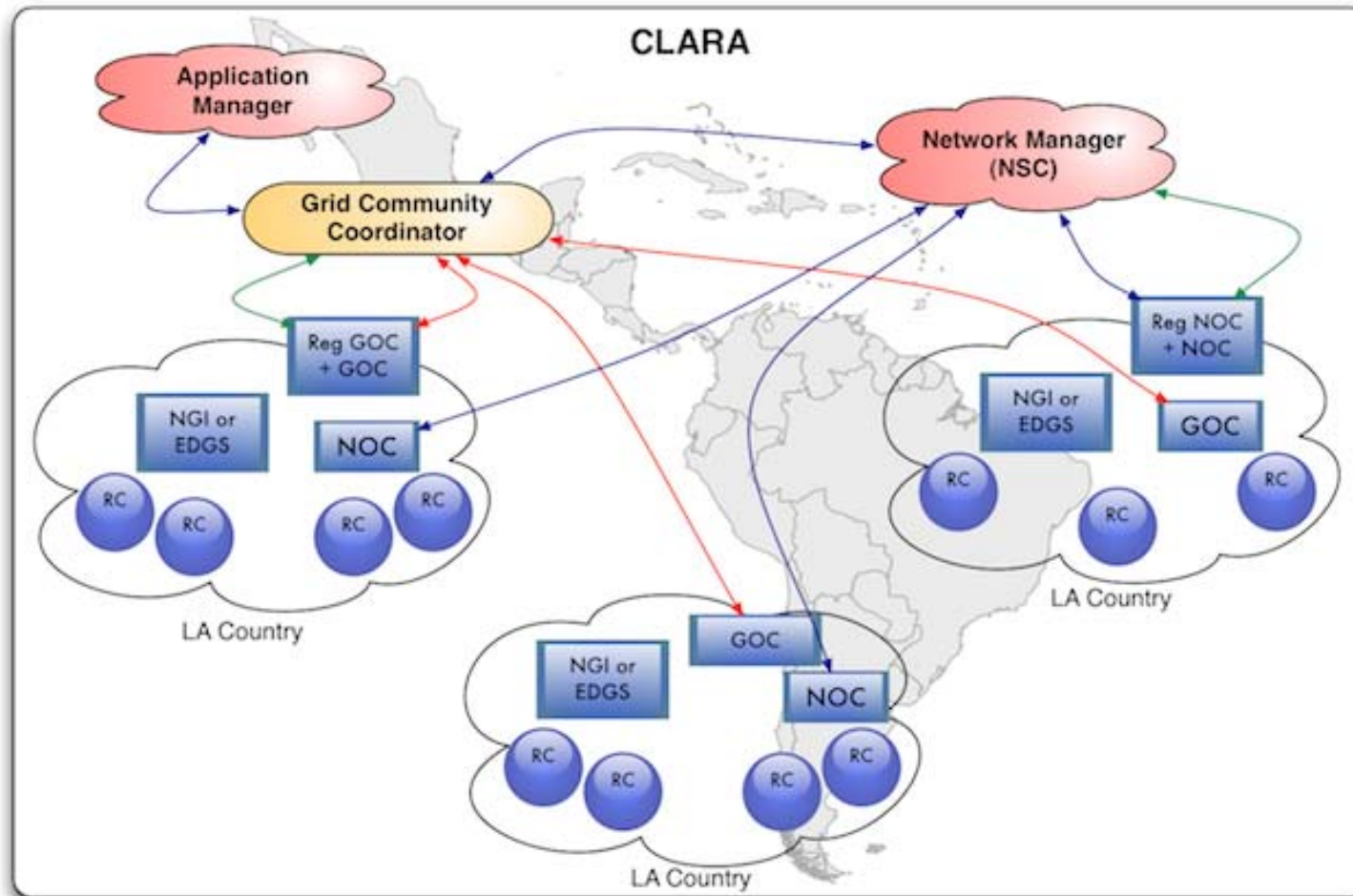


- **As everywhere, e-Science is a must in Latin America**
- **The HPC “solution” attracts rich institutions (and politicians...)**
- **Two Tier 1 are foreseen in LA (Brazil & Mexico) for HEP – CERN experiments**
- **Still blue sky ... without CLOUDS coming from the “North”**
- **GRID Computing launched / disseminated by EELA, EELA-2 and GISELA**
- **Still “curiosity” rather than “mass production”**
- **Main users: Life and Earth Sciences**
- **HEP in some few institutions in Argentina, Brazil, Chile, Colombia and Mexico**
- **Middlewares:**
  - gLite, OSG (Dedicated)
  - OurGrid (Volunteer), interoperable with gLite, thanks to GISELA
- **Non user-friendly middleware is an issue**
- **Interoperability would ease collaborations**

- **Critical mass of skilled people to install & operate RCs and to port applications on the GRID**
- **Industry & Business still reluctant**
- **Networks situation still heterogeneous in LA (different models, rich vs poor, skills)**
- **CLARA / redCLARA federating 15 NRENS and linked to DANTE / GÉANT2 through ALICE2**
- **GRID contributes to trigger collaborative research in LA and between LA & Europe (and Asia)**
- **As strong as possible interaction between GISELA and other EC-funded projects (EGI-inSPIRE, CHAIN, EPIKH, EU-IndiaGrid, EU-AsiaGrid, ERINA+, e-ScienceTalk, ....)**
- **GISELA consortium RCs already inserted into the EGI infrastructure**
  - Pros
    - Uniform of quality thresholds
    - Uniform tools (monitoring, accounting etc)

- **Resources are operated by various entities (NGIs, ROCs)**
  - IGALC is amongst them, funded by GISELA
  - Others are
    - ROC\_LA (collaborating with IGALC), mainly for HEP
    - IGI
    - IBERGRID
- **GISELA operates a project VO: [prod.vo.eu-eela.eu](http://prod.vo.eu-eela.eu)**
  - accommodates starter / small VRCs
  - accepted in all GISELA consortium Resource Centres
- **GISELA supports large / well established VRC VOs**
  - Consortium resources are allocated upon request
  - Recent examples: We-NMR, Pierre Auger Observatory
- **JRUs have been introduced in LA by GISELA. Some NGIs on the way (tough!!!)**
- **Long-term sustainability of infrastructures is one of the main GISELA concerns**
- **GISELA bets on NRENS & CLARA to guarantee long-term sustainability (see next slide)**

- The 3-layer CLARA-GISELA model as defined in the GISELA DoW:
  - <http://documents.gisela-grid.eu/record/32?ln=en>



- About 5-year efforts (EELA, EELA-2 and GISELA) should not be thrown away
- LA must guarantee the long-term sustainability of its e-Science, in collaboration with Europe
- Therefore the continuity of the EC support is of most importance
- “LA country – EC” bilateral agreements, with shared support, must be implemented (already done in Brazil)
- The NGI implementation task is (not only) in the hands of Projects with a short lifetime (2 years), but it should also be an EC concern since ...  
*A Director or a Head of Unit ... can interact with (and convince) a Minister of Science and Technology much more easily than a Project Coordinator...*