
Co-ordination & Harmonisation of Advanced e-INfrastructures

# Results from CHAIN

D4.1: Specificities of various regional e-Infrastructures

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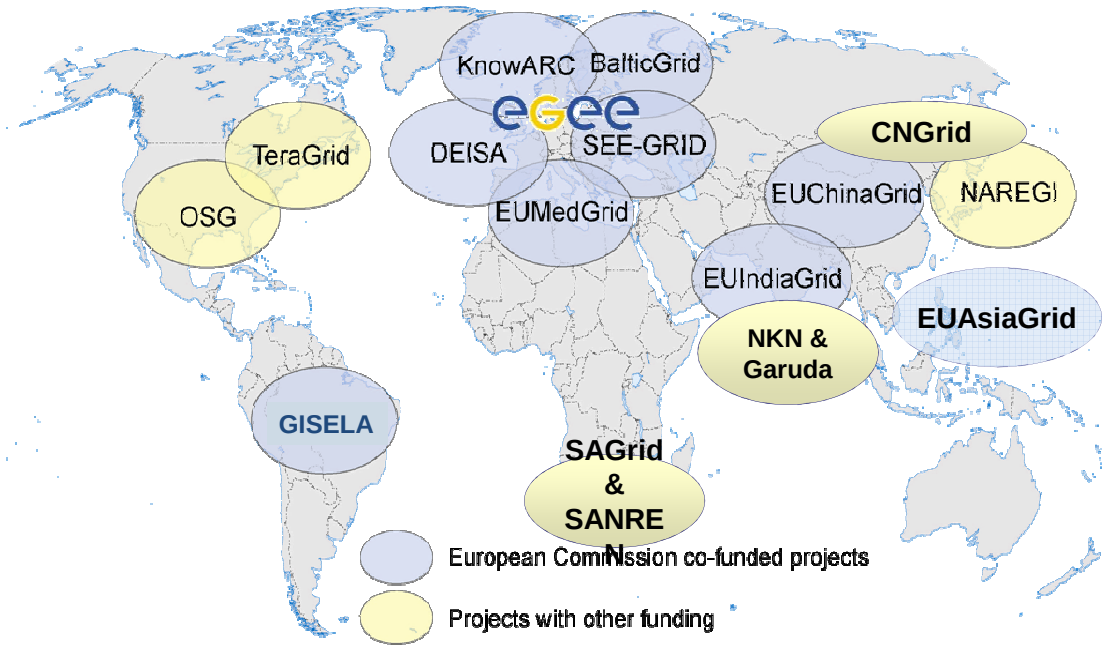
EGI TF, September 22, 2011




# CHAIN project

- 24 month project started on December 1st, 2010
  - 7 partners, representing also the world regions
  - *Coordination and Harmonization of Advanced eINfrastructures*
- Three major objectives:
  - Define a strategy and a model for external collaboration, in close collaboration with EGI.eu which will enable operational and organisation interfacing of EGI and external e-Infrastructures
  - Validate this model, as a proof-of-principle, by supporting the extension and consolidation of worldwide VRC
  - Explore and propose concrete steps forward towards the coordination with other projects and initiatives
- Five workpackages

# CHAIN project



# CHAIN project

# WP4

- Results presented here are in Deliverable D4.1 of WP4
- Study and propose a model for cooperation and interoperation among European and non-European e-Infrastructures
- Perform an organizational study that will take into account a regional "customisation" applied to a shared model for sustainability
- Request and collect feedbacks from qualified actors in the field of e-Infrastructures worldwide on the proposed model and produce a final version with a road-map for the follow-up of extensions to the European Grid Infrastructure

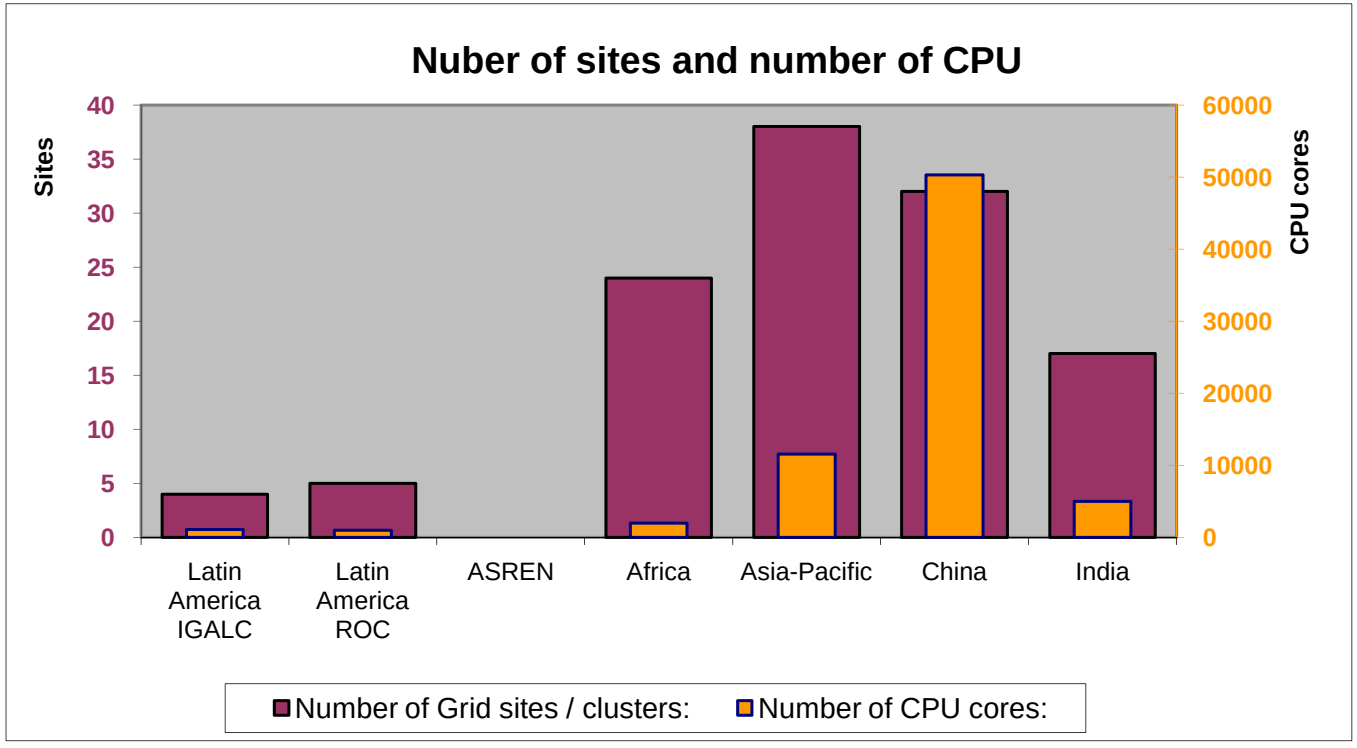
# Deliverable D4.1

- Title
  - *Specificities of the various regional e-Infrastructures*
- Purpose
  - provide insights into specificities of regional e-Infrastructures
  - with emphasis on Grid infrastructures
- Information sources
  - regional- and country-level questionnaire run by the project (D2.1)
    - Latin America, Mediterranean, Africa, Asia-Pacific
    - large sub-continental countries (China, India) treated as regions
  - project partners and country representatives asked independently
  - mostly regional input used, country level for crosscheck

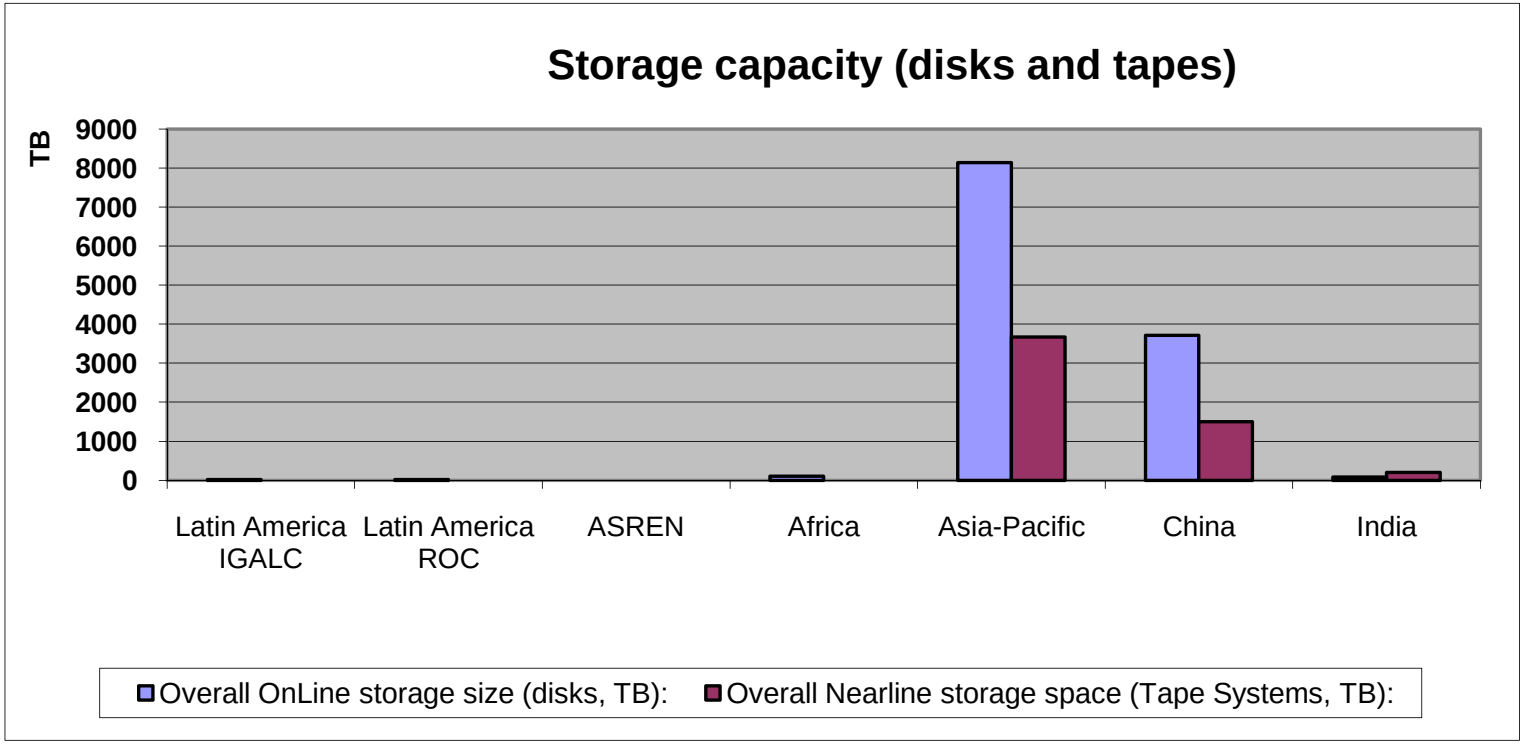
# The questionnaire

- Users and resources
  - number of users and prevailing user communities
  - hardware resources: number of sites, CPUs and storage
- Regional services
  - certification authority, user support, EGI core services, ...
- Relationship with EGI and others
- Network connectivity
- "Non-grid" computing resoureces
  - supercomputers, clouds, desktop grids
- Coordination and sustainability

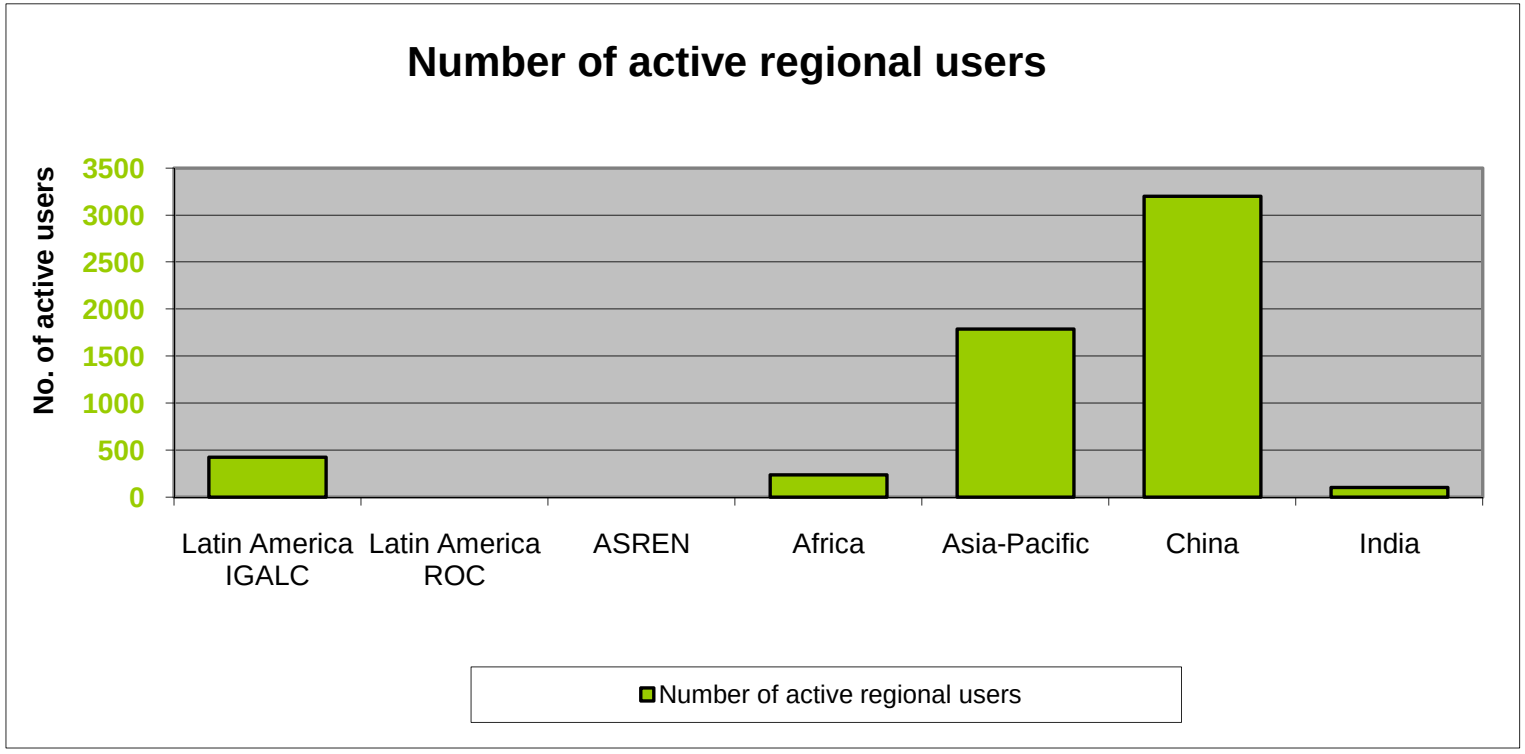
# Sites and CPU cores



# Storage resources



# Users


Number of active regional users
No. of active users
3500
3000
2500
2000
1500
1000
500
0
Latin America IGALC
Latin America ROC
ASREN
Africa
Asia-Pacific
China
India
Number of active regional users

# Applications

| TOP User Communities | | | | | | | |
|---|---|---|---|---|---|---|---|
| Community / Region | Latin America IGALC/ GISELA | Latin America ROC | Arab States | Africa | Asia-Pacific | China | India |
| High Energy Physics | ● | ● | | ● | ● | ● | |
| Life Science | ● | ● | | ● | ● | ● | |
| Material Sciences | | | | | | | ● |
| Astronomy & Astrophysics | | | | | | | |
| Comp. Chemistry | | | | | ● | | |
| Bioinformatics | | | | | | ● | ● |
| Earth Science | | ● | | ● | ● | | |
| Fusion | | | | | | | |
| Computer Science & Maths | | | | ● | ● | | |
| Einvironmental | | | | | ● | | |
| Social simulation | | | | | ● | | |
| Drug Discovery | | | | | | ● | |
| Meteorology | | | | | | ● | |
| CFD | | | | | | ● | ● |
| Engineering | | ● | | | | | |
| Multidisciplinary | ● | ● | | | | | |

# Core services

| Deployed EGI services | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Latin America IGALC/ GISELA | Latin America ROC | Arab States | Africa | Asia-Pacific | China | India |
| Virtual Organisation Membership Service (VOMS) | • | • | • | • | • | • | • |
| Workload Management System (WMS) | • | • | | • | • | • | |
| Berkley Database Information Index (BDII) | • | • | | • | • | | |
| LCG File Catalog (LFC) | • | • | | • | • | • | |
| File Transfer Service (FTS) | | | | | • | | |
| MyProxy | • | • | | • | • | • | • |

# Middleware

| Middleware support | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Latin America IGALC/ GISELA | Latin America ROC | Arab States | Africa | Asia-Pacific | China | India |
| **ARC** | | | | | | | |
| **UNICORE** | | | | | | | |
| **gLite** | • | • | | • | • | • | |
| **globus** | | | | | • | | • |
| **CNGrid GOS** | | | | | | • | |
| **CGSP** | | | | | | • | |
| **Other** | • | | | | | • | |

# Latin America

- supported by EELA and GISELA projects
- EGI-related infrastructure, two ROCs
- well-developed regional services
- organization established (IGALC), sustainability document available
- application: HEP, LS, astrophysics (Auger)

# Mediterranean, Middle-East and Gulf

- supported by EUMEDGRID project
- limited amount of hardware resources
- full set of EGI resources in Iran and Algeria only
- gLite, desktop computing (Tunisia), Globus (Jordan)
- EUMEDGRID countries developed NGIs, similar initiatives starting in others
- applications: HEP, LS, computer science, logistics

# Africa

- differences among regions
  - north – supported by EUMEDGRID
  - south (South Africa) – specific, SAGrid established, majority of resources
  - east – coordinated by Ubuntunet
  - west and central – starting bottom-up activities
- varying level of service deployment
- no strategy and sustainability documents
- applications: HEP, LS, computer science, mathematics, earth science

# Asia-Pacific

- 2nd largest amount of resources, majority in Taiwan
- long history of collaboration with EU Grid activities, direct participation in EGI-InSPIRE
- well established EGI-related infrastructure
- Globus and desktop grid computing
- APGI (no formal body yet), sustainability plans (EUAsiaGrid project)
- applications: HEP, LS, earth science

# China

- largest number of users and resources
- independent China Grid infrastructure, full set of services
- CNGrid middleware, connection with OSG
- WLCG site (gLite), China ROC recently
- HPC activities, cloud and desktop computing
- strong governmental support, no specific sustainability plans reported
- applications: HEP, LS, drug discovery, meteorology

# India

- Garuda Grid (NKN)
- Globus, limited interoperability with EGI
- supercomputing, no cloud or desktop grid reported
- strong governmental support, no specific sustainability plans reported
- applications: bioinformatics, material science, CFD

# Conclusions

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- very similar user communities
  - reported differences are rather artificial
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- significant differences in organizational structure
  - central governmental support: China, India
  - regional organization: Latin America, Mediterranean
  - loose organizational structure: Asia-Pacific, Africa

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- sustainability plans are result of EU co-funded projects