Examples of collaboration: EUMEDGRID-Support and CHAIN
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INDICATE Technical Workshop
Catania, 20 April 2012

Research Infrastructures – Grant Agreement n. 260011
Outline

- EUMEDGRID General information
- The Grid Infrastructure in the Mediterranean
- The CHAIN vision
- State of the art analysis
- Data analysis and recommendations
- Virtual Research Communities
- Interoperation & Interoperability
- Conclusions
Support Action co-funded by European Commission under: Capacities specific program - Research Infrastructures - FP7-INFRASTRUCTURES-2009-1

- Project ID 246589
- Duration: 24 months
- Started: 1st January 2010
- Total Cost: in excess of 840,000 €
- EU contribution: 740,000 €
Project Partners

14 Partners + 2 Third Parties from 13 Countries

[Partners & Third Parties]

- CCK
- CERIST
- CNRS-IDG HealthGrid
- CNRST_
- CYNET
- EUN
- JUNET_
- HIAST
- INFN, GARR, COMETA
- IUGAZA
- TÜBİTAK, ULAKBIM
- TRUST-IT
- University of Malta
Objectives & Strategic Actions

• Support the consolidation and expansion of the EUMEDGRID infrastructure with a special emphasis on sustainability.

• Bottom-Up approach:
  – Create a two-level network of Competence Centres
  – Involve new user communities
  – Cooperate with other projects and initiatives relevant for the Mediterranean
  – Create critical mass to exploit the available resources and build consensus

• Top-Down approach:
  – High-level policy Dissemination
  – Involve institutions and ministries to include eInfrastructures in the political agenda
  – Foster the creation of a regional organisation able to coordinate and manage the eInfrastructures in the area
Sites map in the Mediterranean countries

Top BDII LDAP configuration file: http://www.eumedgrid.eu/conf/eumed-bdii.conf

39 sites (30 in production) in 16 countries
Overview of the current EUMEDGRID infrastructure

**GSTAT Monitoring**

- 39 sites in 16 countries
- 30 sites are currently in production for eumed VO
- 42 Computing Elements in 14 countries
- 22 Storage Elements in 11 countries

http://gstat.eumedgrid.eu

- 4000+ core processors computing power
- 600+ Terabytes storage capacity
Africa & Arabia ROC
http://roc.africa-grid.org

- Main tool for providing support and managing operations for the EUMEDGRID Infrastructure in Africa, the Med and Arab countries
- Team of shifting personnel provided by partners acting as Regional Operation Centre for the EUMEDGRID infrastructure
- Joint effort by EUMEDGRID-Support (WP3, WP4), EPIKH, CHAIN, SAGrid, ASREN
- Single web entry point to many services:
  - XGUS User Support System
  - GOCDB
  - NAGIOS
  - HLRmon/DGAS
  - SmokePing
  - RTM
  - GSTAT
  - Dashboard
Events

- Disseminating towards:
- Scientists and Technical people
- High-level policy makers
- Stakeholders
- General public

Beirut, Lebanon October 2011

ICTP Trieste May 2011

Minister of Higher Education
Certification Authorities (WP4)

3 countries fully accredited (Algeria, Jordan, Syria)
4 under accreditation (Tunisia, Egypt, UAE, South Africa)
1 new RA in Lebanon
Applications

- 26 Applications listed in the application database
- 6 already integrated in the Science Gateway
- The User Forum (5 new applications) was also relevant to invite users to show-up and had a very good success (proceedings to be printed)
- The new approach of Science Gateway provides a good opportunity:
  - Strategy designed in the CHAIN project and adopted by other projects (e.g. GISELA, DECIDE, INDICATE)
  - Leaflet on Science Gateway
  - Survey to propose new applications
- The deliverable D2.4b chapter 1 and the final report provide figures and statistics.
• Sustainability foundations:
  – ASREN
  – Africa & Arabia ROC
  – Science Gateway based on standards
• Amman declarations to continue the support of the ROC
• Services migrated to non-EU Countries
• Main documents: Deliverables D4.1b and D3.2

Applications and accessibility
Effective user support and operations
Stable organisation & regional coordination
Regional Grid infrastructures

- CNGrid
- NKN
- EUAsiaGrid
- Garuda
- GISELA
- SAGrid & SANREN
- EUChinaGrid
- NAREGI
- EUIndiaGrid
- EUMedGrid
- DEIS
- Knowarc
- BalticGrid

European Commission co-funded projects

Projects with other funding
CHAIN: global coverage

Coordination & Harmonisation of Advanced eInfrastructures
Project 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 eInfrastructures.
- Validate this model, as a proof-of-principle, by supporting the extension and consolidation of worldwide Virtual Research Communities.
- Explore and propose concrete steps forward towards the coordination with other projects and initiatives (e.g. EGI.eu, EUMEDGRID-Support, EUIndiaGrid2, LinkSCEEM2, NKN & Garuda, etc.).
Grant Agreement for a total EC contribution of 1.1 M€
Total cost: about 1.9 M€
Start Date: 1st December 2010 - Duration 24 Months
Partners:
1) INFN (Italy - Coordinator)
2) CESNET (Czech Rep.)
3) CIEMAT (Spain)
4) GRNET (Greece)
5) IHEP (China)
6) UBUNTUNET (Africa)
7) CLARA (Latin America)
8) PSA (India)
9) ASREN (Med./Middle East/Gulf) Since 1 August 2011
A world-wide Distributed Computing Infrastructure can address big scientific challenges that are not manageable with departmental computing systems.

Virtual Research Communities can transparently access different kind of resources: scientific applications and tools, Data Repositories, down to CPUs and Disks. The vision is that of VRCs sharing resources ubiquitously across different administrative domains.

Regional e-Infrastructures should be made interoperable among each other. CHAIN is committed to promote and validate a proof-of-concept that addresses this.
Project workplan

State of the Art Assessment (WP2)

- Analyse the different Regional Approaches (WP2, WP4)
- Make Recommendations (WP2, WP3, WP4)

Disseminate (WP5)

- Involve the VRCs (WP3)
- Propose a Road-Map and Intermediate solutions (WP4, WP3)

Demonstrate the usefulness of interoperation (WP3, WP4)

Recommendations (WP2, WP3, WP4)
State of the art analysis (WP2)

- Analysis of existing NGI literature and related questionnaires
- Creation of the regional and NGI questionnaires
- Questionnaires being implemented and published online
- Collection of contact points from all continents
- Questionnaire is kept open and collection of contact points from all continents is continued
- Questionnaire data provided through the CHAIN Knowledge Base
Knowledge base (WP2, WP5)

www.chain-project/knowledge-base
Country view

To navigate the map, click on the continent and then on the countries where you see a pin in correspondence of their capitals. To see some detailed information you must have your personal certificate installed in the web browser.

tool by ammap.com

Algeria

Regional Network: ASREN, EUMEDCONNECT2
National Research Education Network: ARN
National Grid Initiative: DZ e-Science GRID
Certification Authority: DZ e-Science CA

Back
Data analysis (WP4, WP2)

Number of sites and number of CPUs

- Asia/Pacific:
  - Sites: 5
  - CPU cores: 6, 7, 8

- Mediterranean:
  - Sites: 8
  - CPU cores: 1, 2

- Latin America:
  - Sites: 6
  - CPU cores: 5

Storage capacity (disks and tapes)

- Africa: 9000 TB
- Asia-Pacific: 7000 TB
- China: 6000 TB
- India: 5000 TB

Number of Grid sites / clusters:

- Algeria: 22
- Egypt: 10
- Tunisia: 20
- Morocco: 30
- Iran: 40
- United Arab Emirates: 50
- Jordan: 60
- Brazil: 100
- Ecuador: 200
- Colombia: 300
- Argentina: 400
- Panama: 500
- Paraguay: 600
- Mexico: 700
- Cuba: 800
- Venezuela: 900
- Costa Rica: 1000
- Guatemala: 1100
- Peru: 1200

Number of CPU cores:

- Algeria: 22
- Egypt: 10
- Tunisia: 20
- Morocco: 30
- Iran: 40
- United Arab Emirates: 50
- Jordan: 60
- Brazil: 100
- Ecuador: 200
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WP2 Recommendations

74 Detailed recommendations classified by:

- Short (1 year), Medium (3 years) and Long term (5 years)
- High, Medium, Low priority
- National Grid Initiatives (9):
  - General (5); Regional (4)
- Interoperations (14):
  - General (1), ROC (3), User Support (1), Monitoring (3), Security (2), Core Services (2); Middleware (2)
- Interoperability (2): General (1), Input/Output (1)
- Virtual Research Communities’ perspective: General (2)
- Regional planning (47):
  - Africa (9), Asia Pacific (6), Central Asia (5), China (7), India (4), Latin America (5), Mediterranean & Arab Countries (11)
Africa & Arabia ROC (WP2, WP4)

http://roc.africa-grid.org

Supporting Projects/Initiatives
- ASREN
- CHAIN
- EPIKH
- EUMEDGRID-SUPPORT
- SAGRID

South African National Grid

Arab States Research and Education Network
Coordinator: Dr. Alexandre M.J.J. Bonvin – Universiteit Utrecht

Structural biology, making use of NMR (Nuclear Magnetic Resonance), SAXS (Small Angle X-ray Scattering), computational modelling or other related techniques to study biomolecules

We-NMR partners in red, collaborations in orange

MoU signed on 21/09/2011

New contacts (WP2 survey)
- Burundi
- Costa Rica

http://www.wenmr.eu
Identified VRC (2)

- Coordinator: Dr. Antonio Cofiño – Universidad de Cantabria
- Meteorology and other Earth Science related areas willing to enhance their forecasting techniques on Idealized Simulations, Regional and Global Applications, Parameterization and Data Assimilation or Forecast and Hurricane Research
- Dissemination within CORDEX project
- WRF4G partners in red, collaborations in orange
- MoU signed on 19/09/2011
- New contacts (WP2 survey)
  - Burundi
  - China
  - Costa Rica
  - Cuba

http://www.meteo.unican.es/es/software/wrf4g
Coordinator: Dr. David Posada – Universidad de Vigo

Evolutionary biology for the statistical selection of best-fit models of nucleotide substitution and amino acid replacement for a given set of aligned sequences (molecular systematics, phylogenetics, phylogenomics, molecular evolution and/or bioinformatics)

jModelTest & ProtTest registered users

- Modeltest ~ 30.000
- jModelTest ~ 11.000
- Prottest ~ 5.000

MoU signed on 21/02/2012

New sequential and distributed computing versions available on SG and being tested

New contacts (WP2 survey): Burundi, Costa Rica, Democratic Republic of Congo, Ethiopia, Nigeria, Panama, Sudan, Taiwan
LSGC

- MoU signed during EGI CF 2012

- One of the biggest Grid users, HEP excluded. According to EGI accounting portal, during last year, there were jobs running in these Regions:
  - Asia Pacific
  - Europe
  - Canada
  - Latin America (IGALC & ROC_LA)
  - Russia
Coordinator: Dr. Rossella Caffo – ICCU/Ministero per i Beni e le Attività Culturali

These initiatives are working on coordination of policy and best practice regarding the use of e-Infrastructures for digital cultural heritage

INDICATE / DC-NET partners in red, collaborations in orange

MoU signed during EGI CF 2012

This VRC offers much different requirements than those from traditional R&D communities

New contacts to integrate a digital repository in Panama by means of the INDICATE e-Culture Science Gateway

Coordinator: Dr. Fulvio Galeazzi - GARR

Design, implement, and validate a GRID-based e-Infrastructure building upon neuGRID and relying on the Pan-European backbone GEANT and the NRENs. Over this e-Infrastructure, a service will be provided for the computer-aided extraction of diagnostic markers for Alzheimer's disease and schizophrenia from medical images.

DECIDE partners in red

MoU signed in April 2012

(http://www.eu-decide.eu)
Identified VRC (7)

- Climate Change
  - Conf. Role of e-Infrastructures in Climate Change

- List of interested people and projects
  - 4 projects identified
  - 20 contacts
  - WRF4G is being promoted inside the VRC
    - New development: CAM4G → Strategy to be also used in other models
      - Adaptation of GridWay to SAGA (near future)
  - Seismology groups identified in LA, India and Italy
SuperB

SuperB will be a heavy flavour accelerator that will provide complementary information to LHC, looking at rare decays with a very high luminosity electron-positron asymmetric collider.

Potential contacts world-wide by means of LHC collaborations:
- Continuous contacts with them
- MoU in preparation
Access: the Science Gateway model (WP3, WP4)

- Embedded Applications: App. 1, App. 2, App. N
- Standard-based middleware-independent Grid Engine
- Science Gateway

Users from different organisations having different roles and privileges
- Administrator
- Power User
- Basic User
Conclusions

- CHAIN project has successfully agreed with other regional projects on the SG approach.
- The first test using SG to access different infrastructures has been very encouraging.
- A final test/demo is foreseen at the EGI TF 2012 in Prague in September with possibly other middlewares.
Co-ordination & Harmonisation of Advanced e-Infrastructures

Thank you

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