



Co-ordination & Harmonisation of Advanced e-Infrastructures

Examples of collaboration:
EUMEDGRID-Support and CHAIN
Federico Ruggieri, INFN – Project Director

INDICATE Technical Workshop
Catania, 20 April 2012

Research Infrastructures – Grant Agreement n. 260011



e-infrastructure



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



Project summary information

- 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



CYNET



INFN, GARR,
COMETA



CERIST



EUN



IUGAZA



CNRS-IDG
HealthGrid



JUNET_



TÜBİTAK,
ULAKBİM



CNRST_



HIAST



TRUST-IT



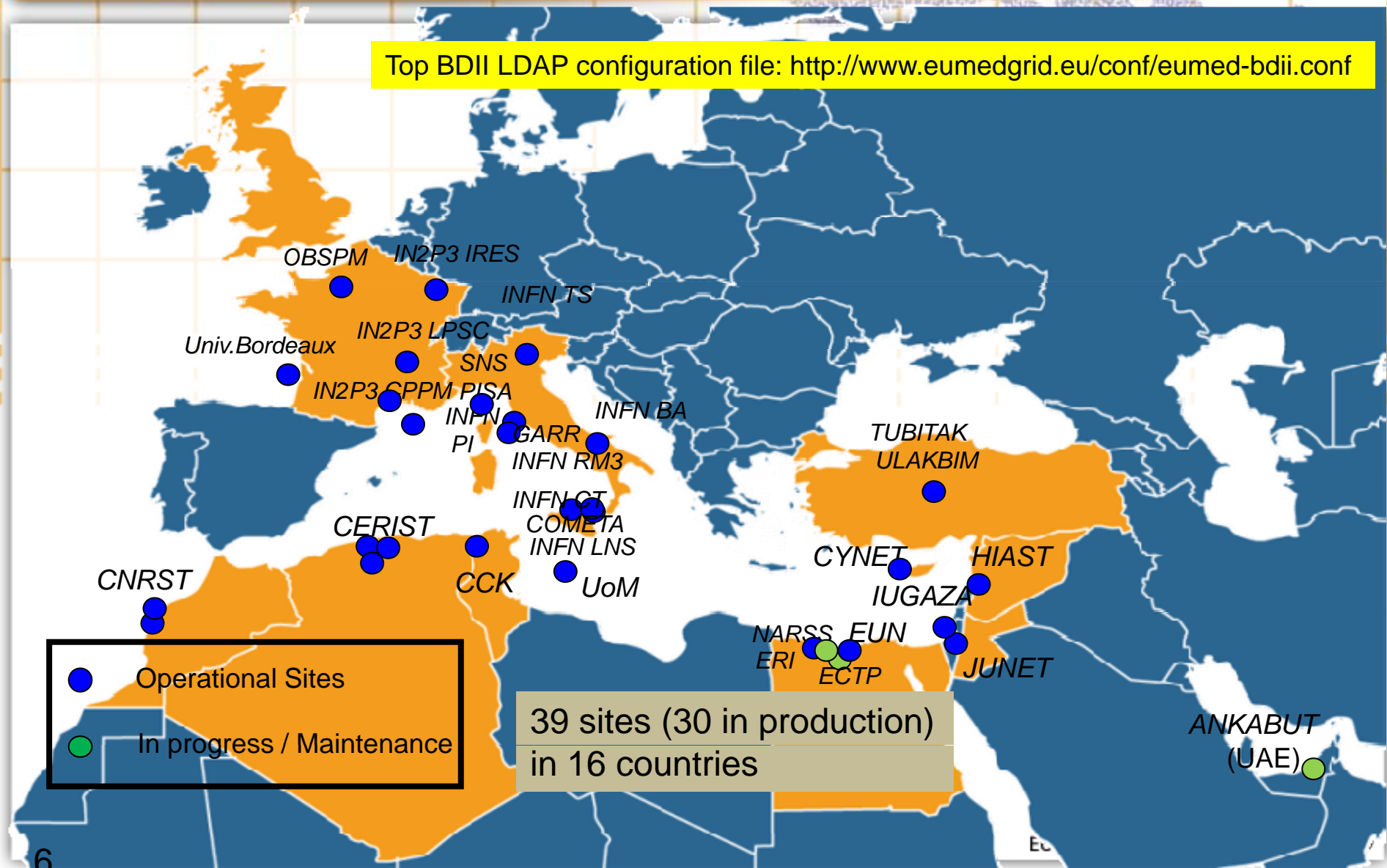
University of Malta

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

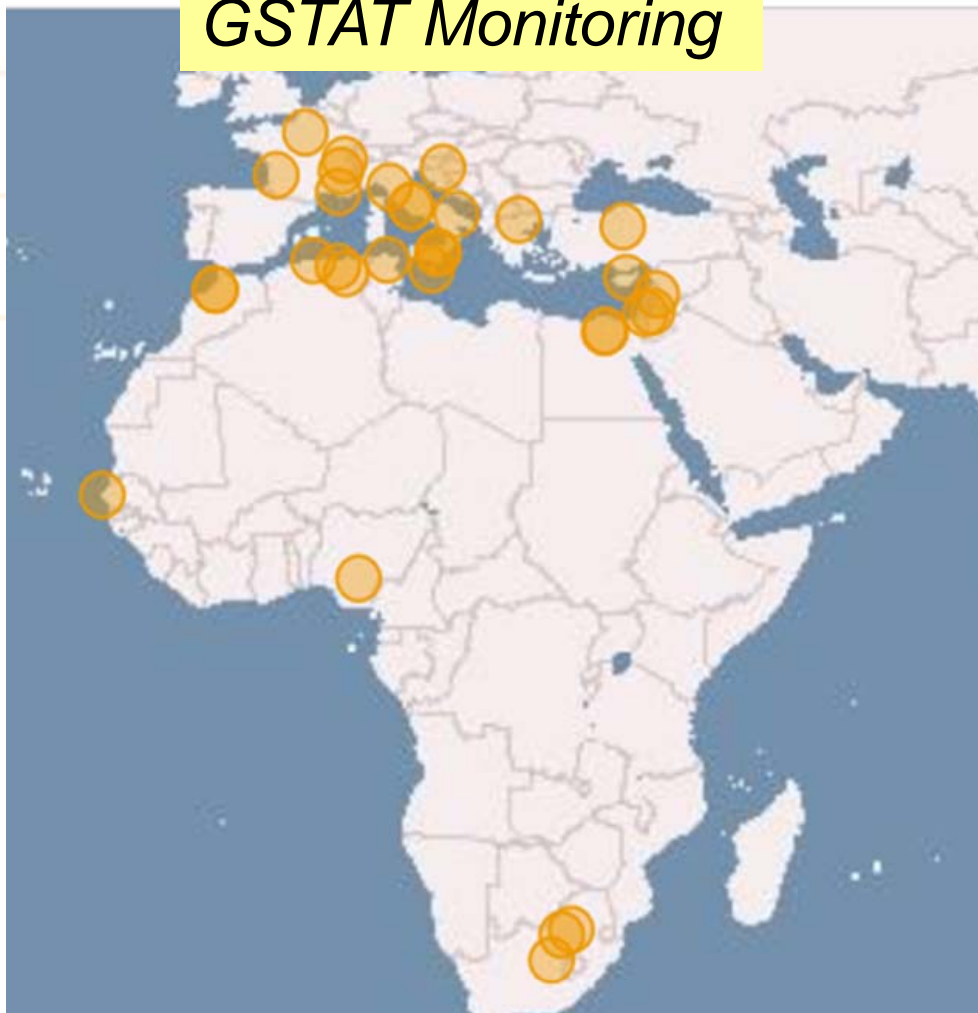
Sites map in the Mediterranean countries

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



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

4000+ core processors computing
power

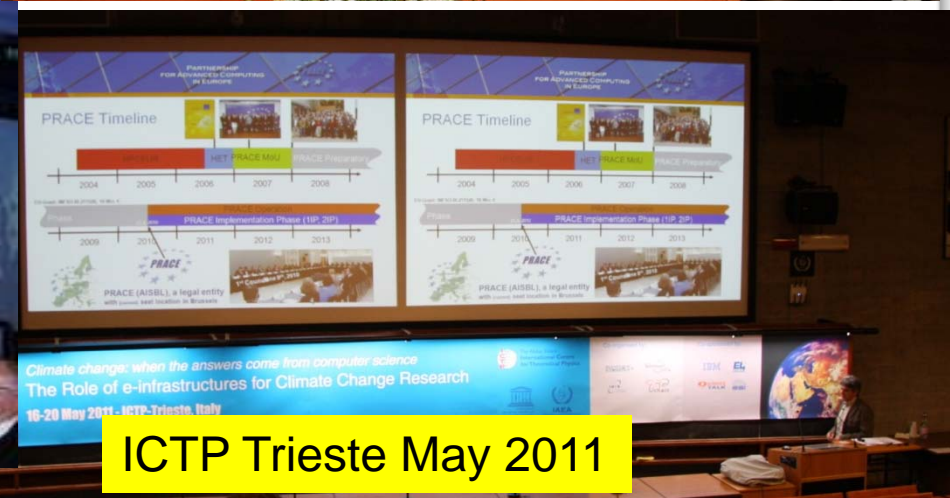
600+ Terabytes storage capacity

<http://gstat.eumedgrid.eu>

- **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**



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

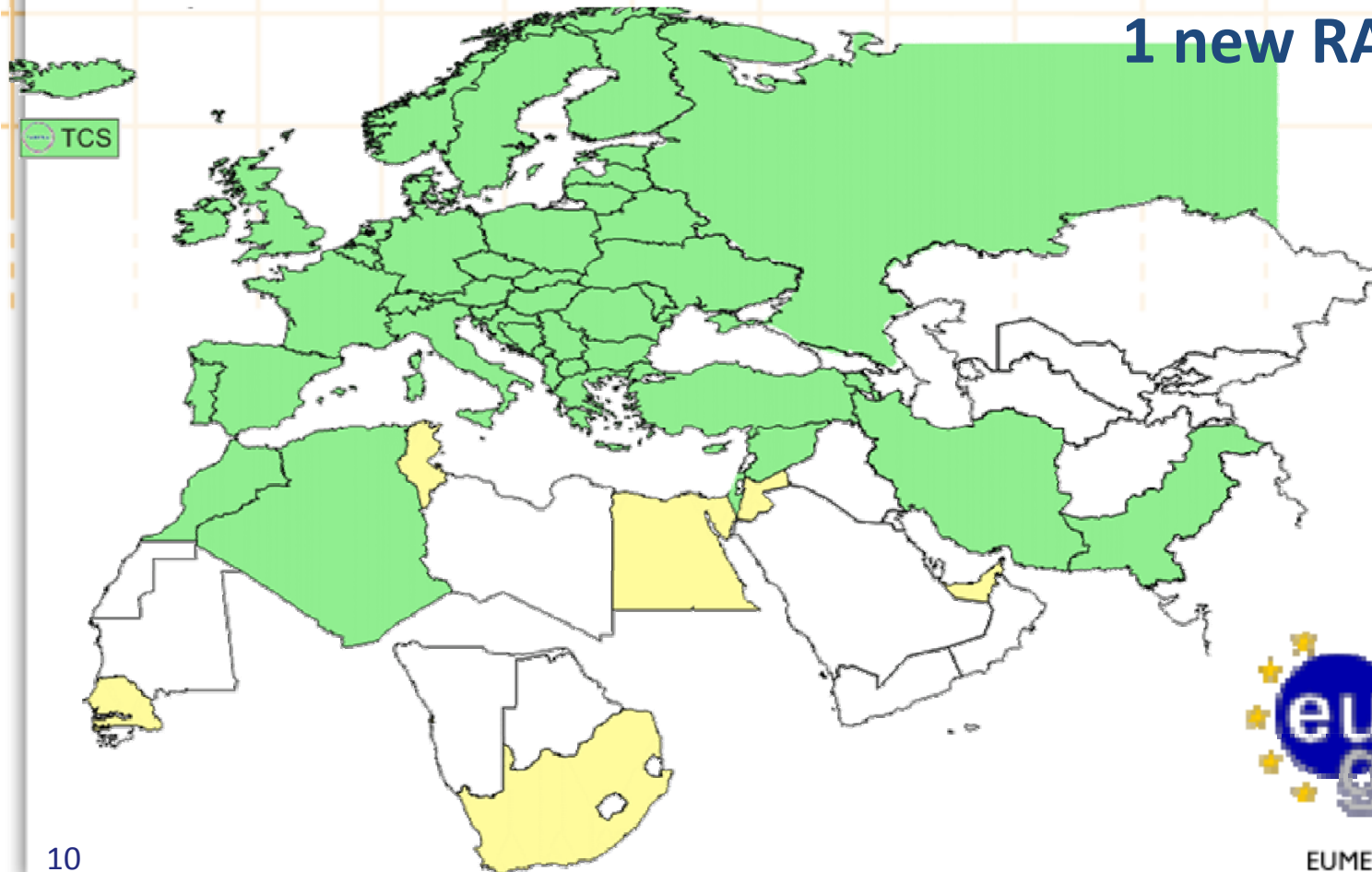


Certification Authorities (WP4)

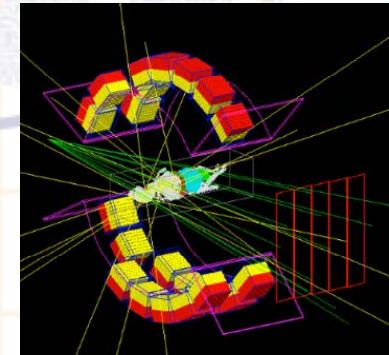
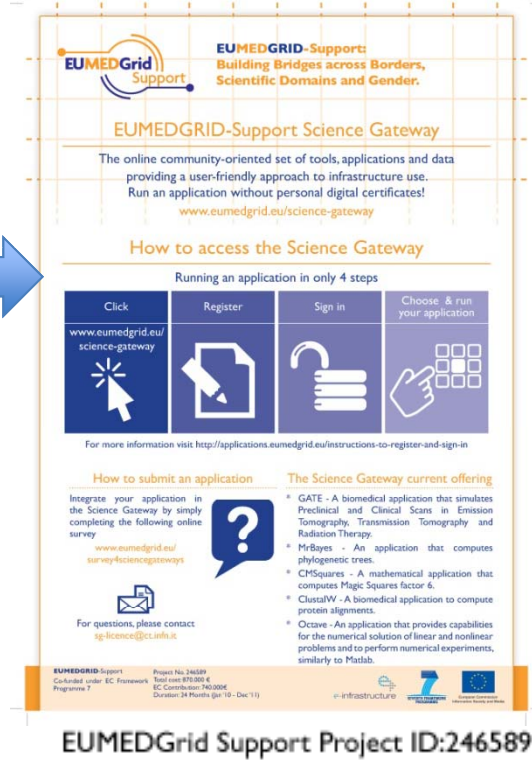
3 countries fully accredited (Algeria, Jordan, Syria)

4 under accreditation (Tunisia, Egypt, UAE, South Africa)

1 new RA in Lebanon



- 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.

EUMEDGRID-Support
Building Bridges across Borders,
Scientific Domains and Gender.

EUMEDGRID-Support Science Gateway

The online community-oriented set of tools, applications and data providing a user-friendly approach to infrastructure use.
Run an application without personal digital certificates!
www.eumedgrid.eu/science-gateway

How to access the Science Gateway

Running an application in only 4 steps

Click www.eumedgrid.eu/science-gateway	Register	Sign in	Choose & run your application
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For more information visit: <http://applications.eumedgrid.eu/instructions-to-register-and-sign-in>

How to submit an application
Integrate your application in the Science Gateway by simply completing the following online survey
www.eumedgrid.eu/survey/sciencegateway

For questions, please contact sp.licence@clustal.w2

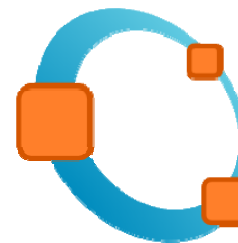
The Science Gateway current offering

- GATE - A biomedical application that simulates Preclinical and Clinical Scans in Emission Tomography, Transmission Tomography and Radiation Therapy.
- MrBayes - An application that computes phylogenetic trees.
- CMSquares - A mathematical application that computes Magic Squares factor 6.
- ClustaW - A biomedical application to compute protein alignments.
- Ocrave - An application that provides capabilities for the numerical solution of linear and nonlinear problems and to perform numerical experiments, similarly to Matlab.

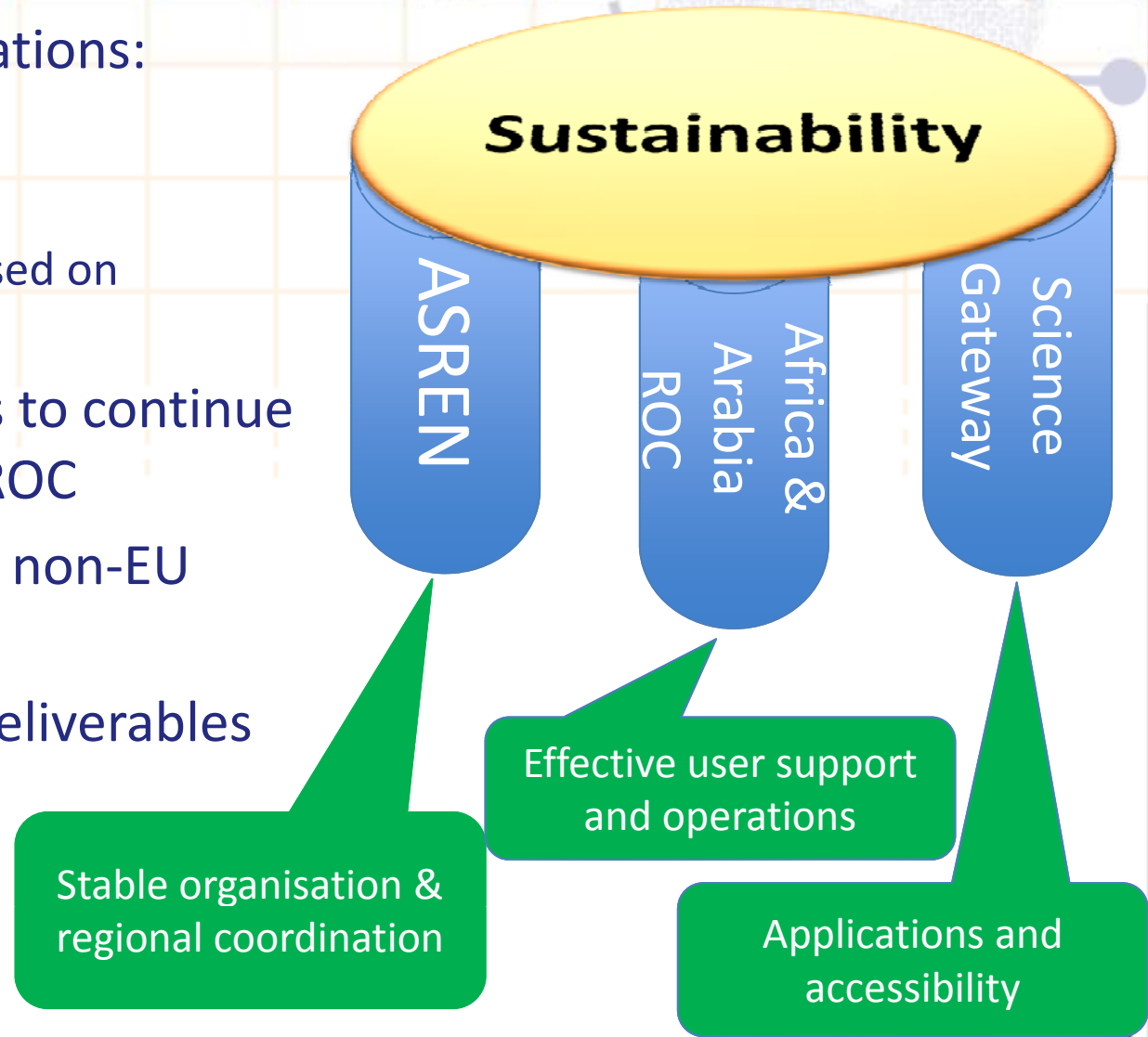
EUMEDGRID-Support Project No. 24659
Co-funded under EC Framework 7
Total cost: €70,000 €
EC Contribution: 50,000 €
Duration: 24 Months (01-10 - Dec 11)

infrastructure

EUMEDGrid Support Project ID:246589

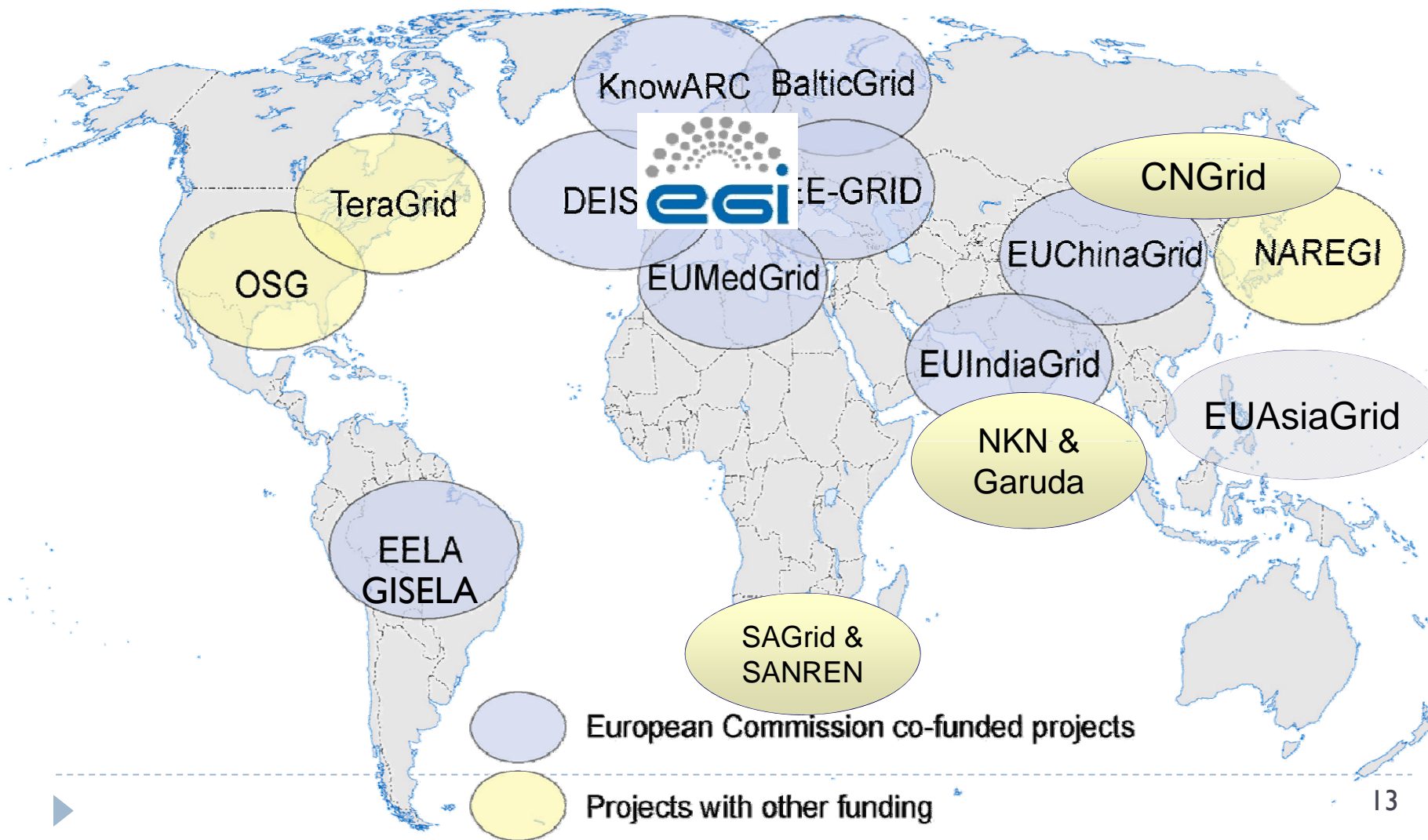


- Sustainability foundations:
 - ASREN
 - Africa & Arabia ROC
 - Science Gateway based on standards
- Amman declarations to continue the support of the ROC
- Services migrated to non-EU Countries
- Main documents: Deliverables D4.1b and D3.2





Regional Grid infrastructures





CHAIN: global coverage





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.)





Project information

- ▶ 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

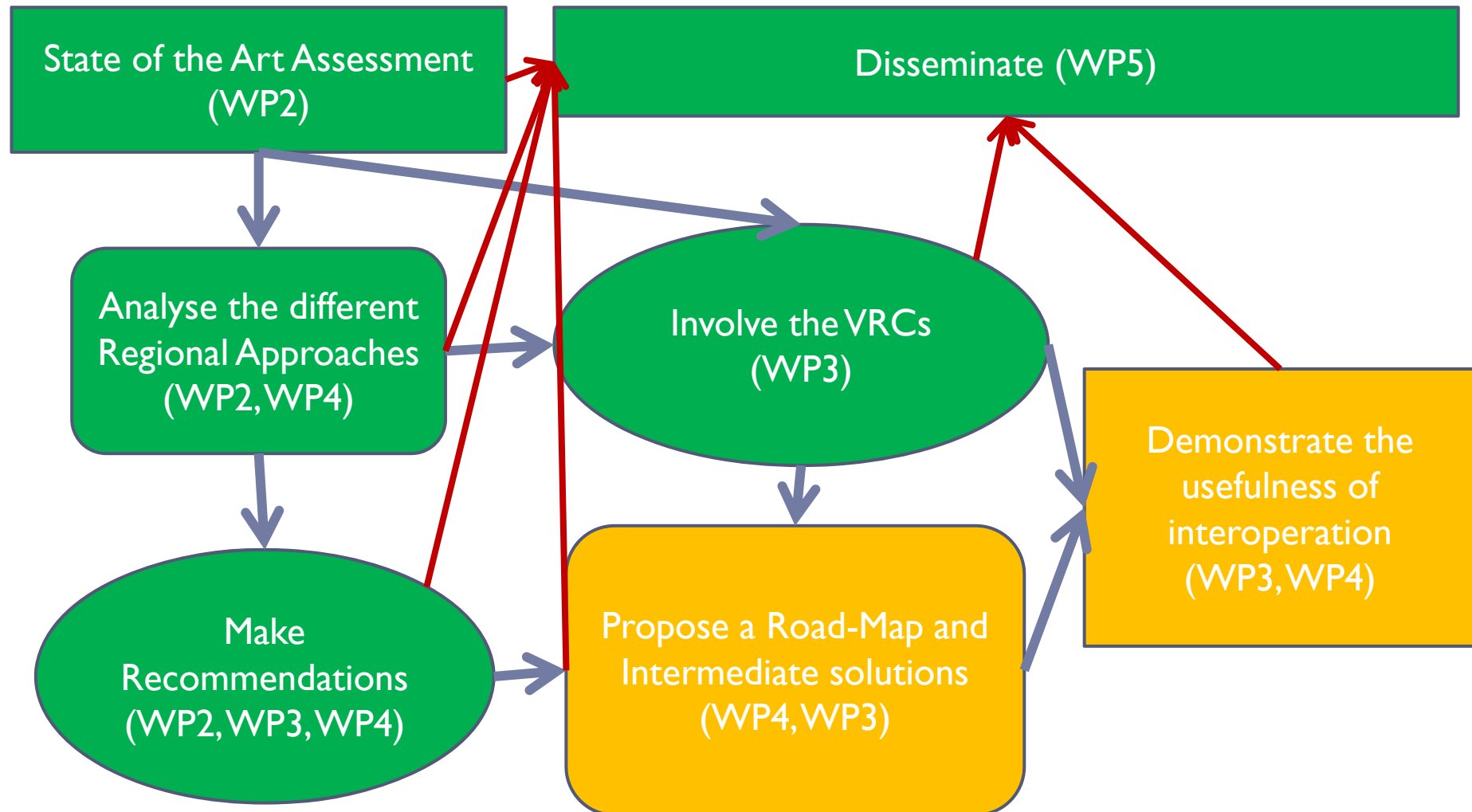




Project strategic vision

- ▶ 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







State of the art analysis (WP2)

- ▶ Analysis of existing NGL literature and related questionnaires
- ▶ Creation of the regional and NGL 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

A screenshot of a web-based questionnaire titled "National questionnaire" for "User support services". The form is divided into several sections, each with a red header. The first section asks "Does your country have application support / porting team?" with radio button options for "Yes (Please specify and describe)", "No", and "Use another's (Please specify and describe)", and a text box for comments. The second section asks "Does your country have a User support team?" with similar options and a comment box. The third section asks "Is there a non-disciplinary or generic (catch-all) Virtual Organisation (VO)?" with similar options and a comment box. The fourth section asks "Please list the training approaches that you use:" and has a large text area for input. At the bottom right, the number "19" is displayed. At the very bottom, there are navigation buttons: "Exit and clear survey", "Resume later", and "<< Previous Next >>". A progress bar at the top right shows "0%" completion.



Knowledge base (WP2, WP5)

Welcome Home Project Area Knowledge Base Applications Events News Multimedia Contact

Country View Site View Table View www.chain-project/knowledge-base

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 Home

A world map where continents are color-coded: North America is light blue, South America is light green, Africa is orange, Europe and Asia are light purple, and Australia is dark green. The map is displayed in a 'Country View' format.

20

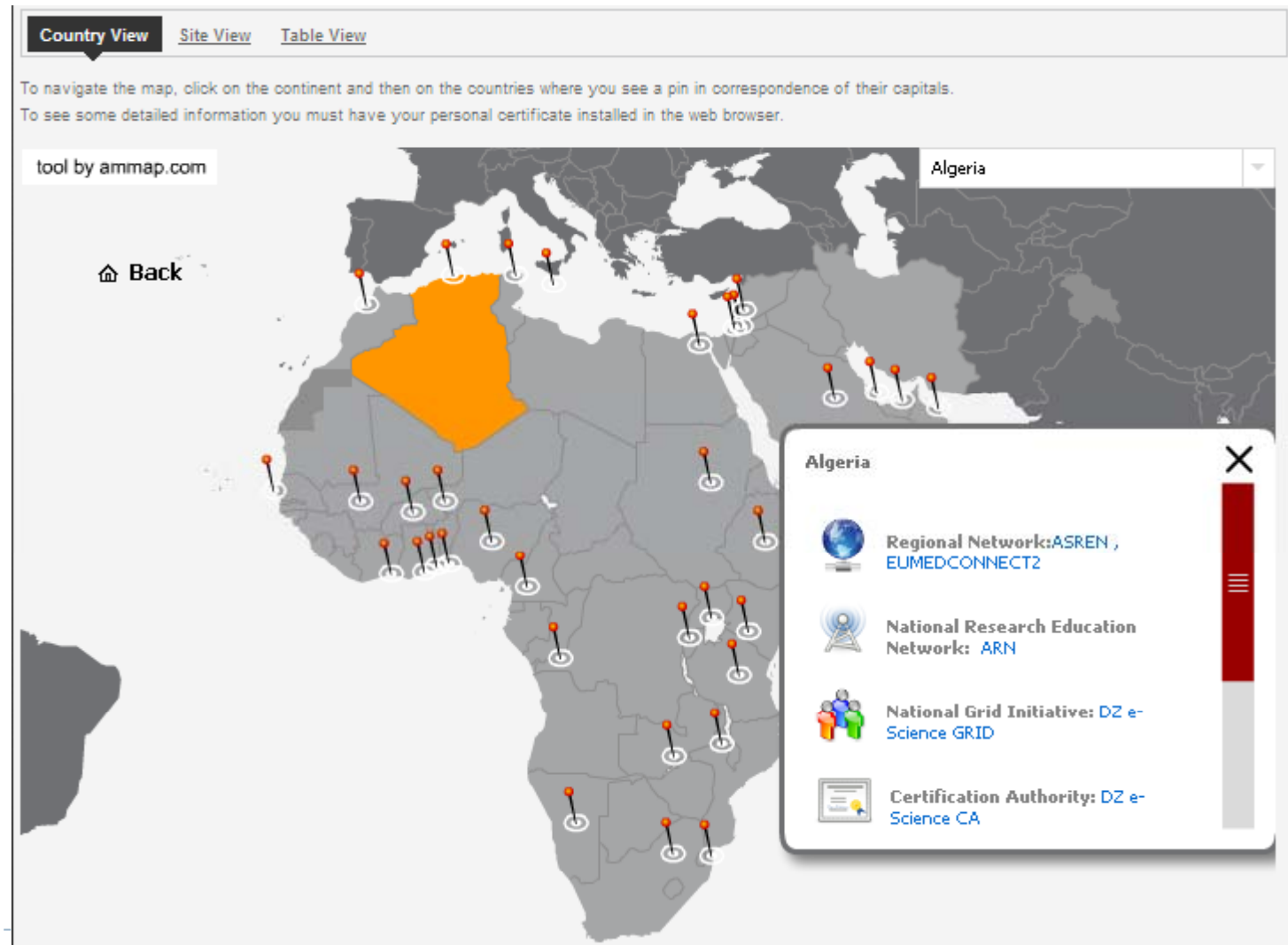
Country View Site View Table View

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

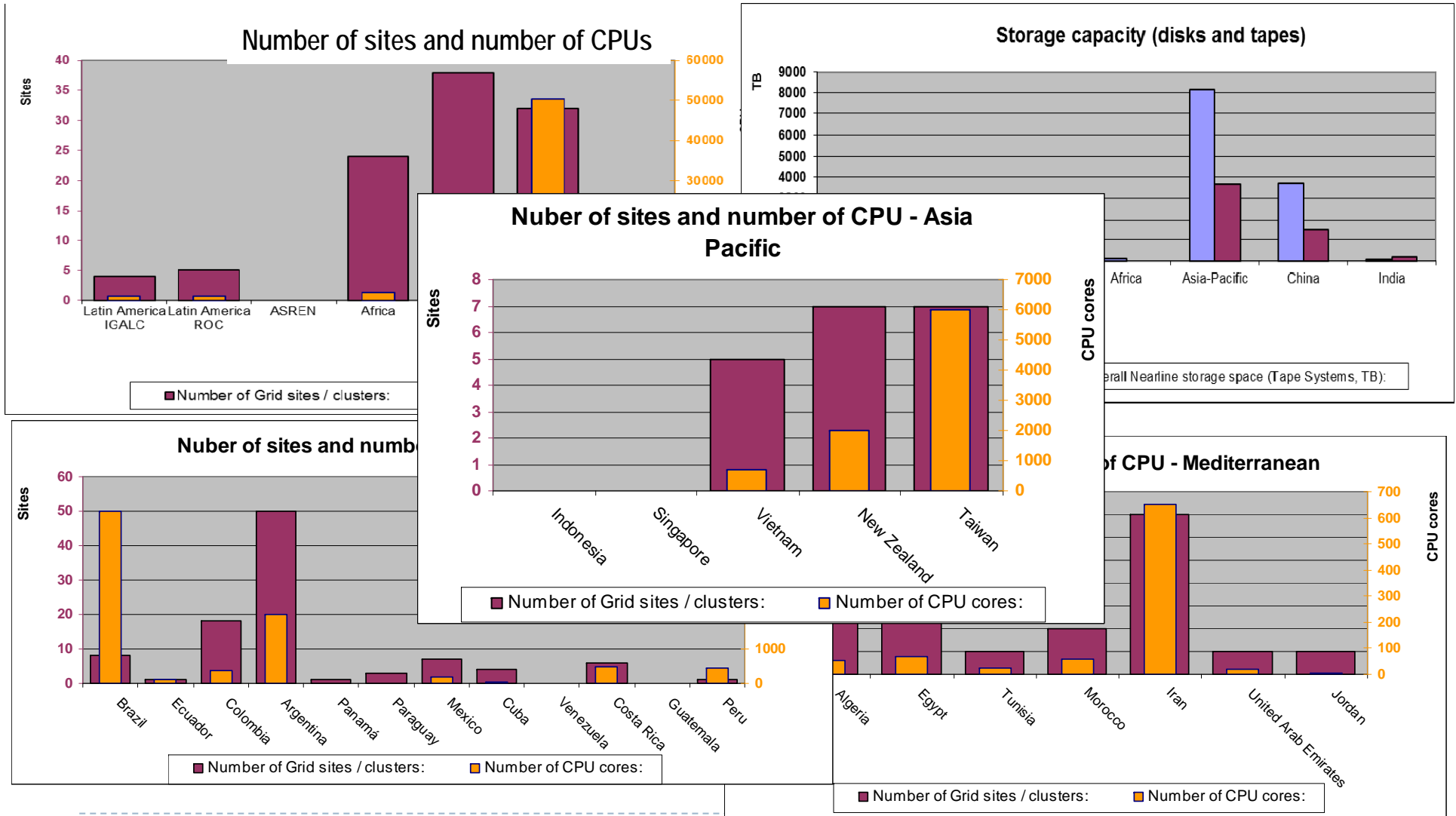
Back

A map of Africa is shown with numerous red pins indicating capital cities. The country of Algeria is highlighted in orange. A popup window for Algeria is open, displaying the following information:

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



Data analysis (WP4, WP2)





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)



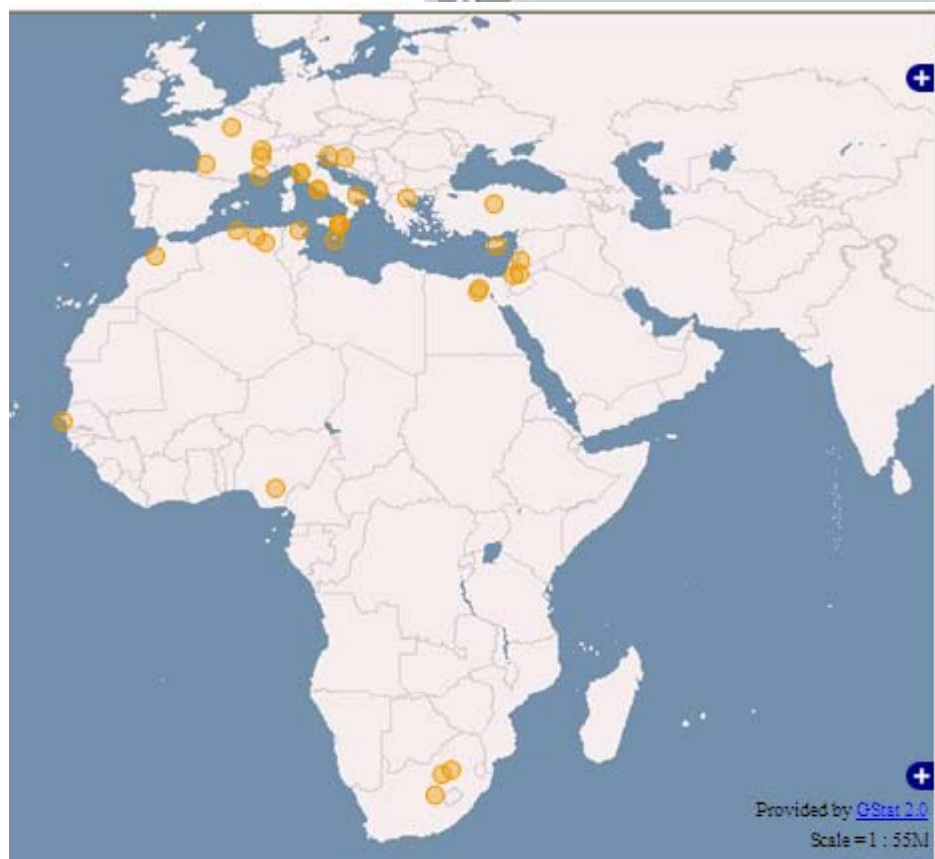
Africa & Arabia ROC (WP2, WP4)

<http://roc.africa-grid.org>

Africa & Arabia ROC
Regional Operation Center



Home | User Pages | Site Manager Pages | Virtual Organisations | Grid Services | Monitors | User Support



en by Roberto Barbera

C for short) has been created as a coordination and support point for all relating and challenging endeavour of creating a common Grid infrastructure

. They are listed on the right frame of this page.

> the Africa ROC and those sites belonging to other ROCs but participating roles, referring to sites, to get more information on their status. please visit the pages of this site and/or feel free to contact us.

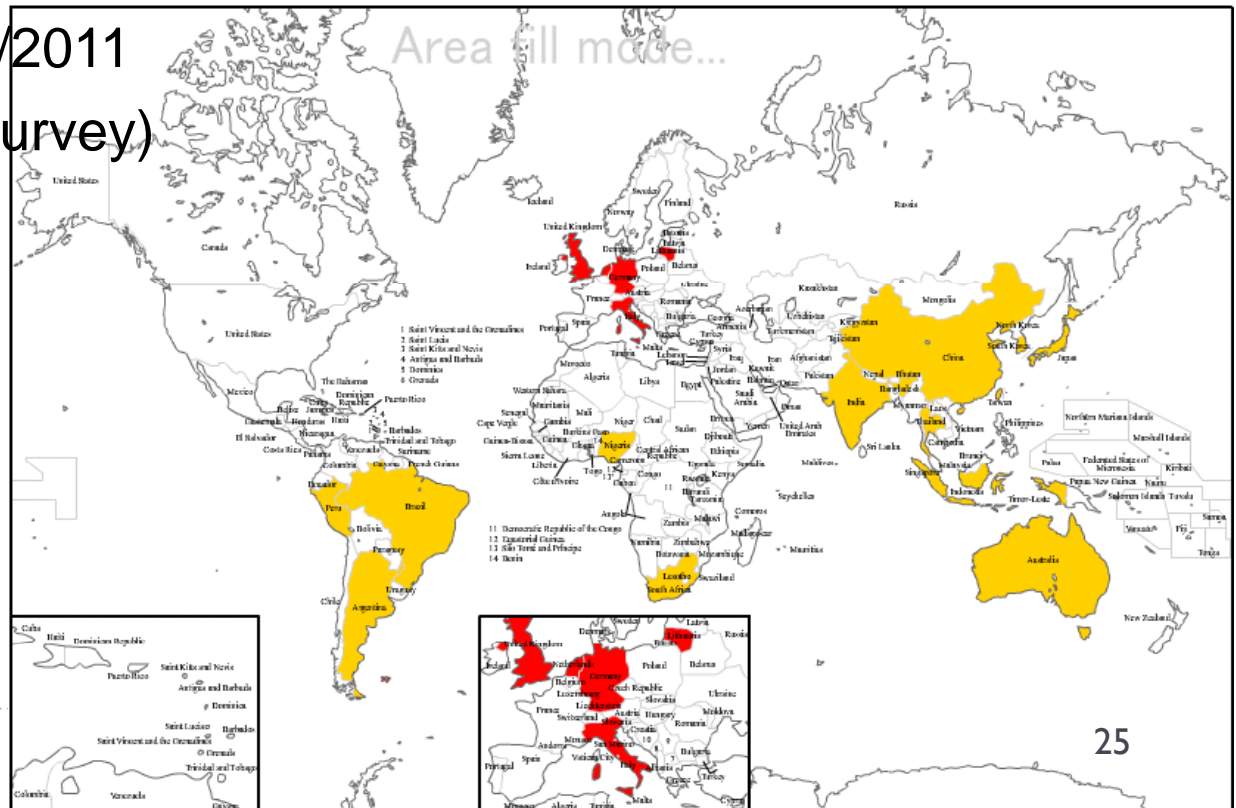
- Supporting Projects/Initiatives**
- ASREN
 - CHAIN
 - EPIKH
 - EUMEDGRID-SUPPORT
 - SAGRID



- ▶ 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>

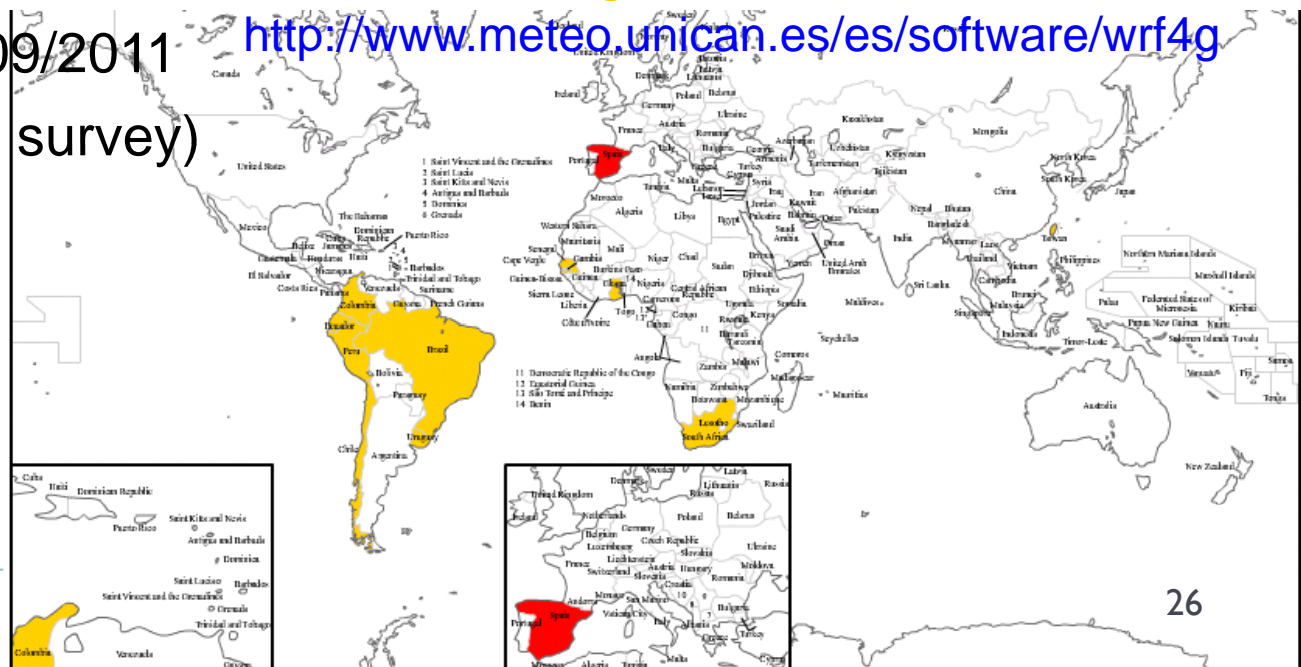




Identified VRC (2)

- ▶ 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 <http://www.meteo.unican.es/es/software/wrf4g>
- ▶ New contacts (WP2 survey)

- ▶ Burundi
- ▶ China
- ▶ Costa Rica
- ▶ Cuba



- ▶ 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



<http://darwin.uvigo.es/>



Identified VRC (4)

- ▶ LSGC

LSGC

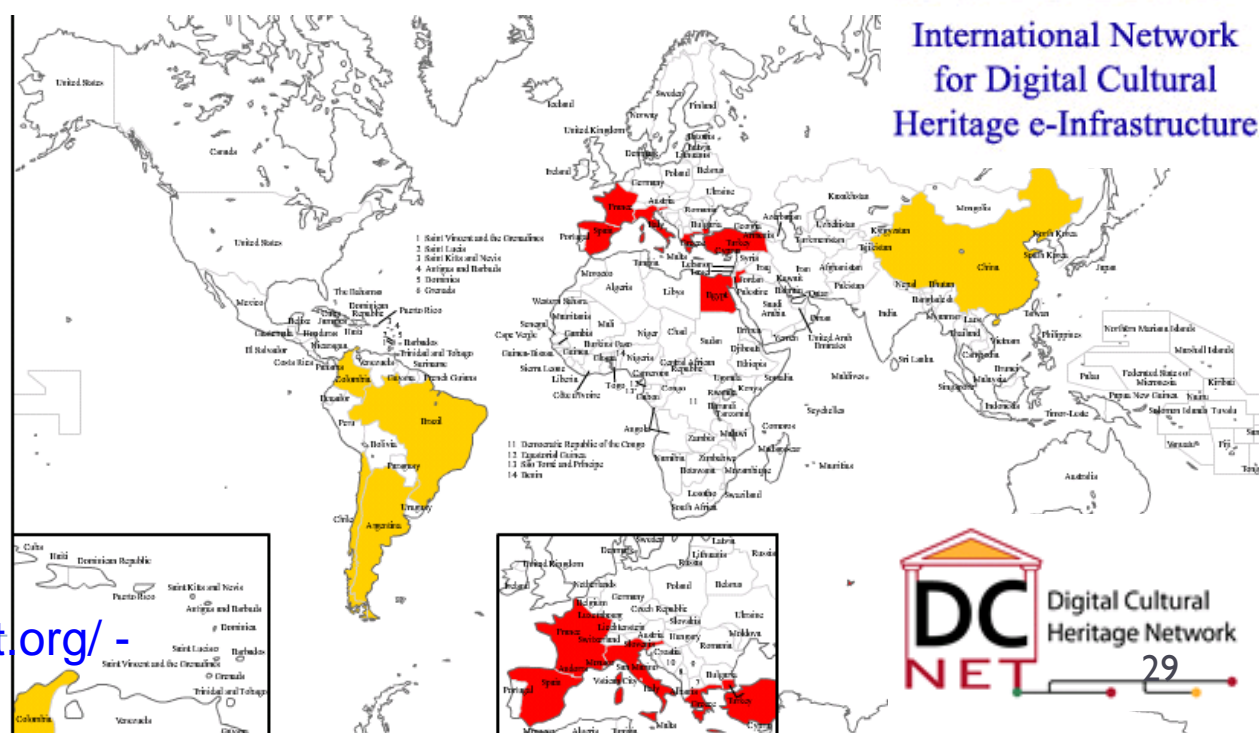
- ▶ MoU signed during EGI CF 2012
- ▶ One of the biggest Grid users, HEP excluded. According to EGI accounting portal, during last year, there were jobs running in these Regions:
 - ▶ Asia Pacific
 - ▶ Europe
 - ▶ Canada
 - ▶ Latin America (IGALC & ROC_LA)
 - ▶ Russia



- ▶ 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

- ▶ <http://www.indicate-project.org/> -
- ▶ <http://www.dc-net.org/>



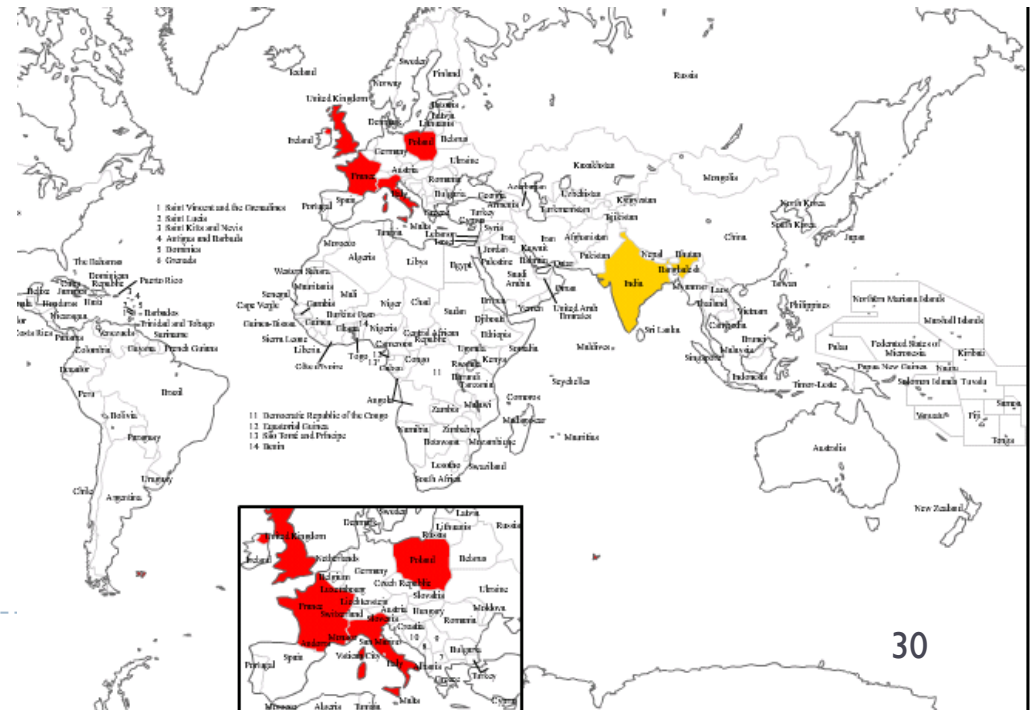


Identified VRC (6)

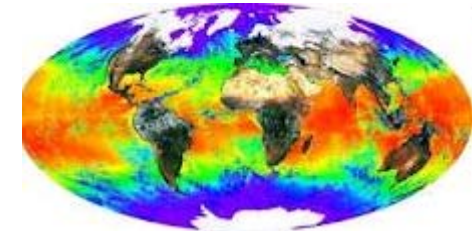
- ▶ Coordinator: Dr. Fulvio Galeazzi - GARR
- ▶ Design, implement, and validate a GRID-based e-Infrastructure building upon neuGRID and relying on the Pan-European backbone GEANT and the NRENs. Over this e-Infrastructure, a service will be provided for the computer-aided extraction of diagnostic markers for Alzheimer's disease and schizophrenia from medical images
- ▶ DECIDE partners in red
- ▶ MoU signed in April 2012



▶ (<http://www.eu-decide.eu>)



- ▶ 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



Identified VRC (8)

- ▶ SuperB

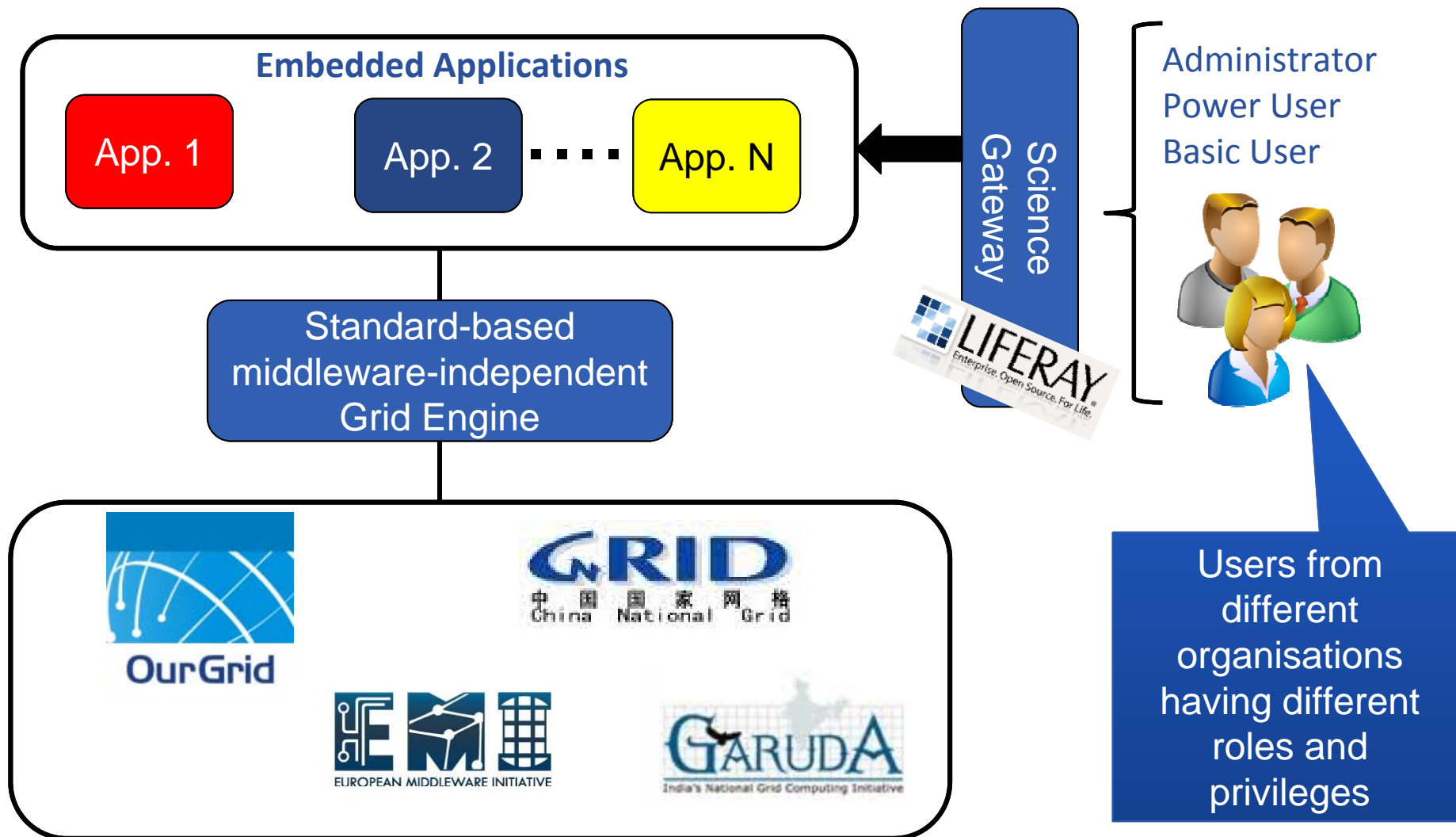


- ▶ SuperB will be a heavy flavour accelerator that will provide complementary information to LHC, looking at rare decays with a very high luminosity electron-positron asymmetric collider
- ▶ Potential contacts world-wide by means of LHC collaborations
 - ▶ Continuous contacts with them
 - ▶ MoU in preparation





Access: the Science Gateway model (WP3, WP4)





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.





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Thank you

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