Co-ordination & Harmonisation of Advanced e-INfrastructures

CHAIN: Model for cooperation between European and non-European e-Infrastructures

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CHAIN project

- 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
- Basic data
  - 24 month project started December 1st, 2010
  - 7 partners, some of them representing world regions
  - *Coordination and Harmonization of Advanced eINfrastructures*

CHAIN project

Information gathering

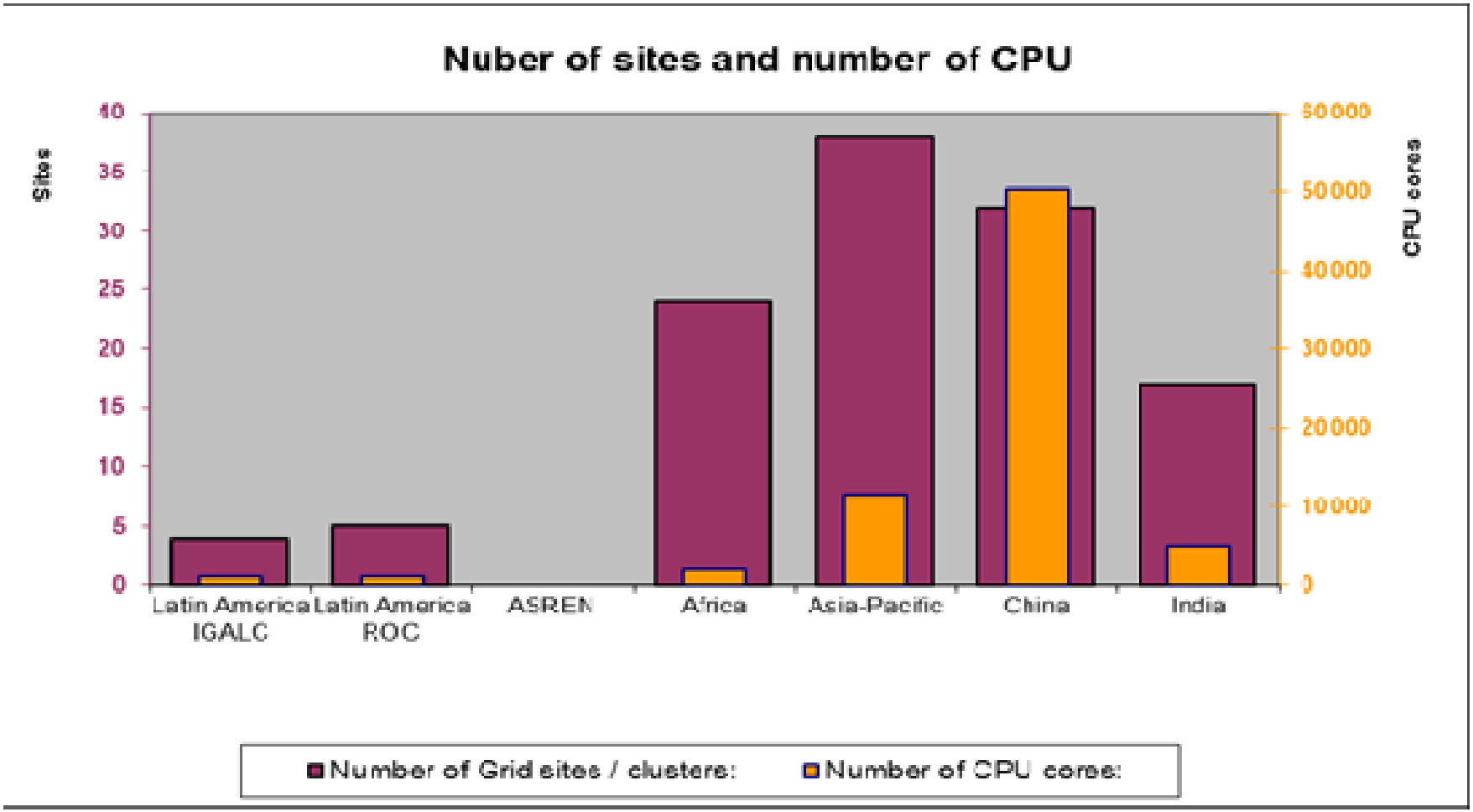
- First project objective
  - Define a strategy and a model for external collaboration, in close collaboration with EGI.eu which will enable operational and organisation interfacing of EGI and external e-Infrastructures

  Primary responsibility of workpackages 2 and 4
- Regional and country level questionnaire
  - Structure described in the Deliverable D2.1 *State of the art questionnaire*
  - Project partners and country representatives directly asked
- Results presented in two Deliverables
  - D4.1: *Specificities of the various regional e-Infrastructures*
  - D2.2: *Interoperability and interoperation guidelines*

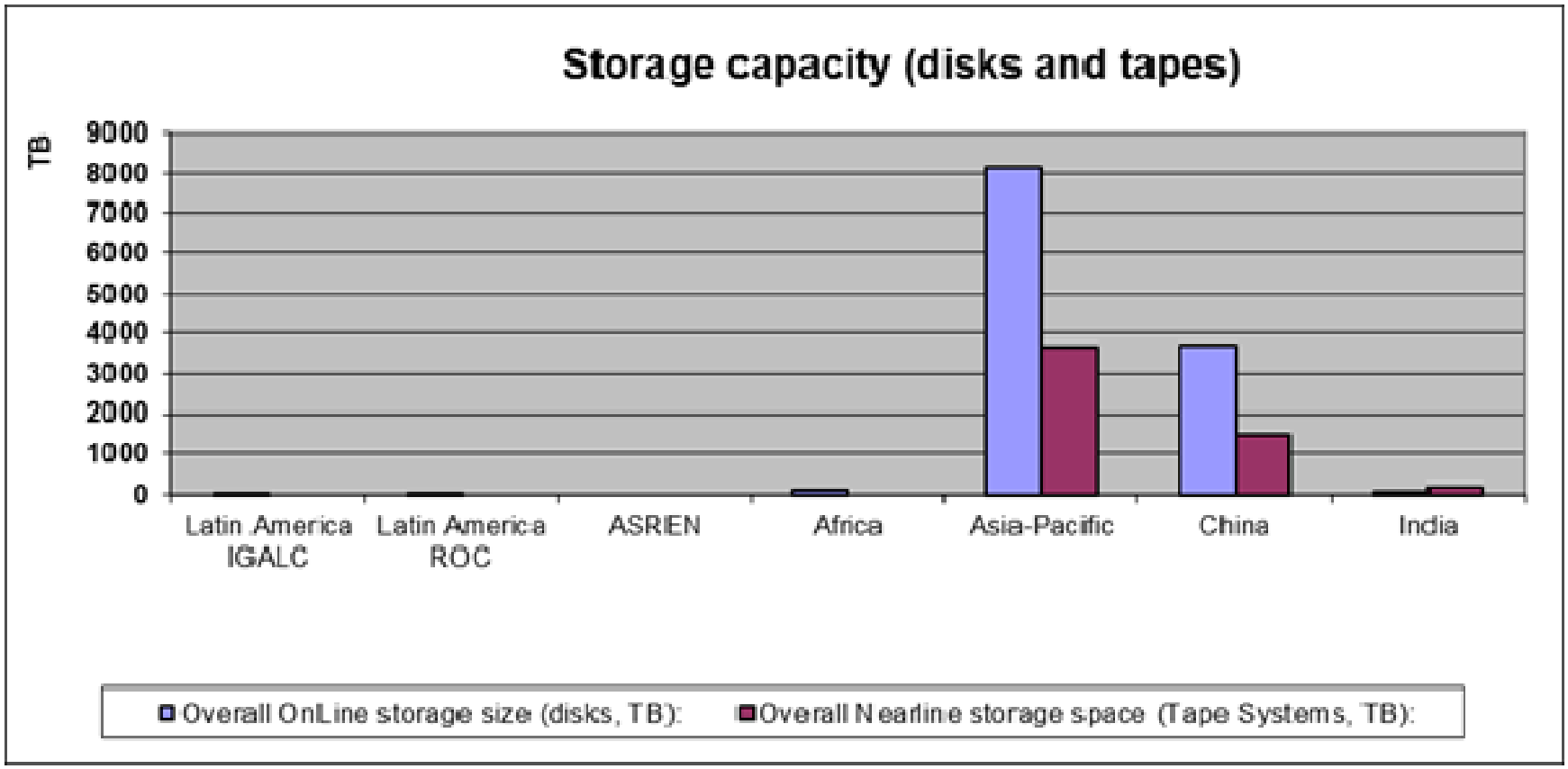
Infrastructures and middleware

Middleware	Infrastructure	Regions
UMD	EGI	Europe, Latin America, Africa, South East Asia Pacific
GOS	CNGrid	China
GARUDA	GARUDA	India
OurGrid	The OurGrid Community	Brazil

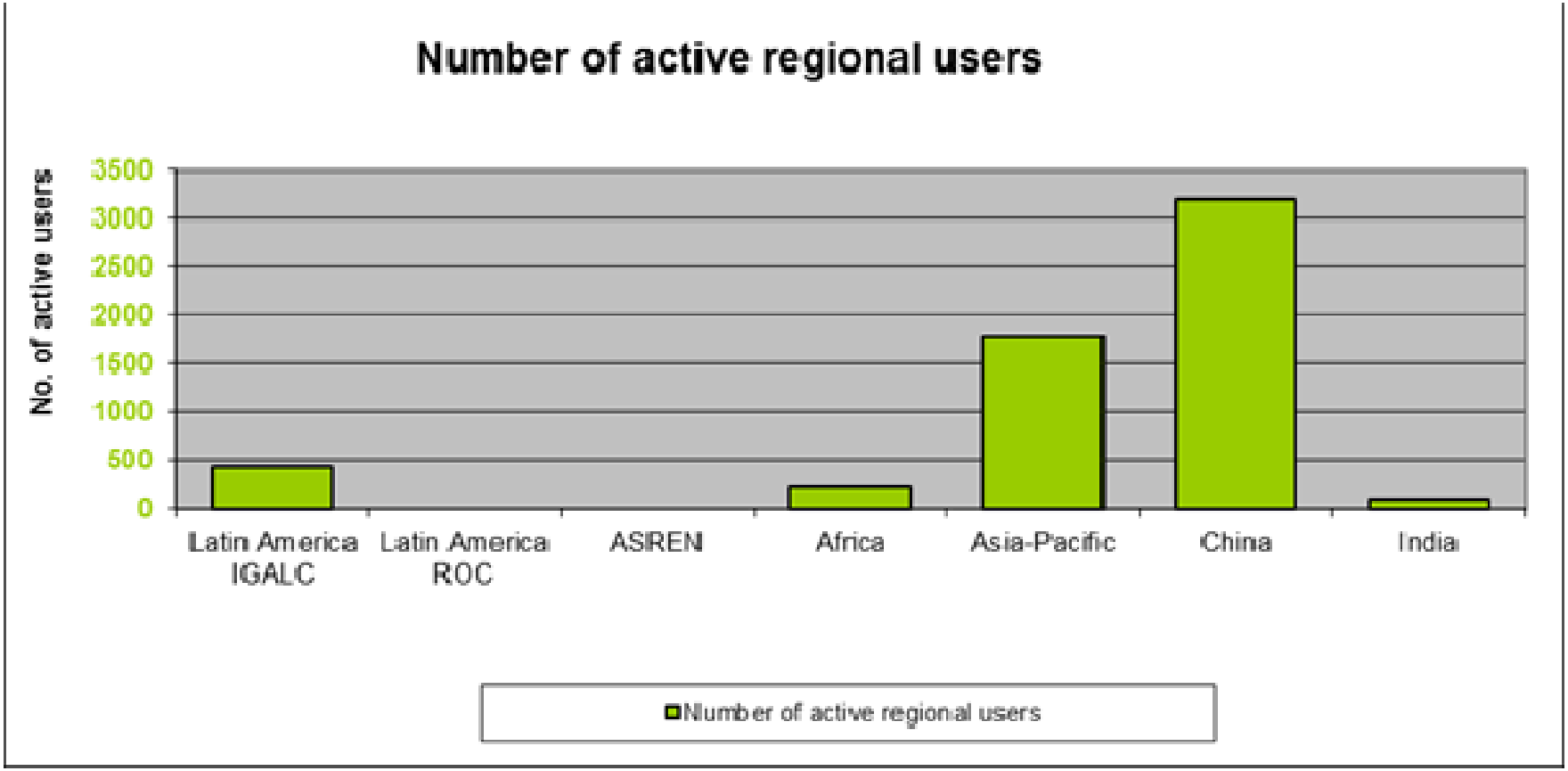
Sites and CPU cores



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
ASIREN
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	•	•					

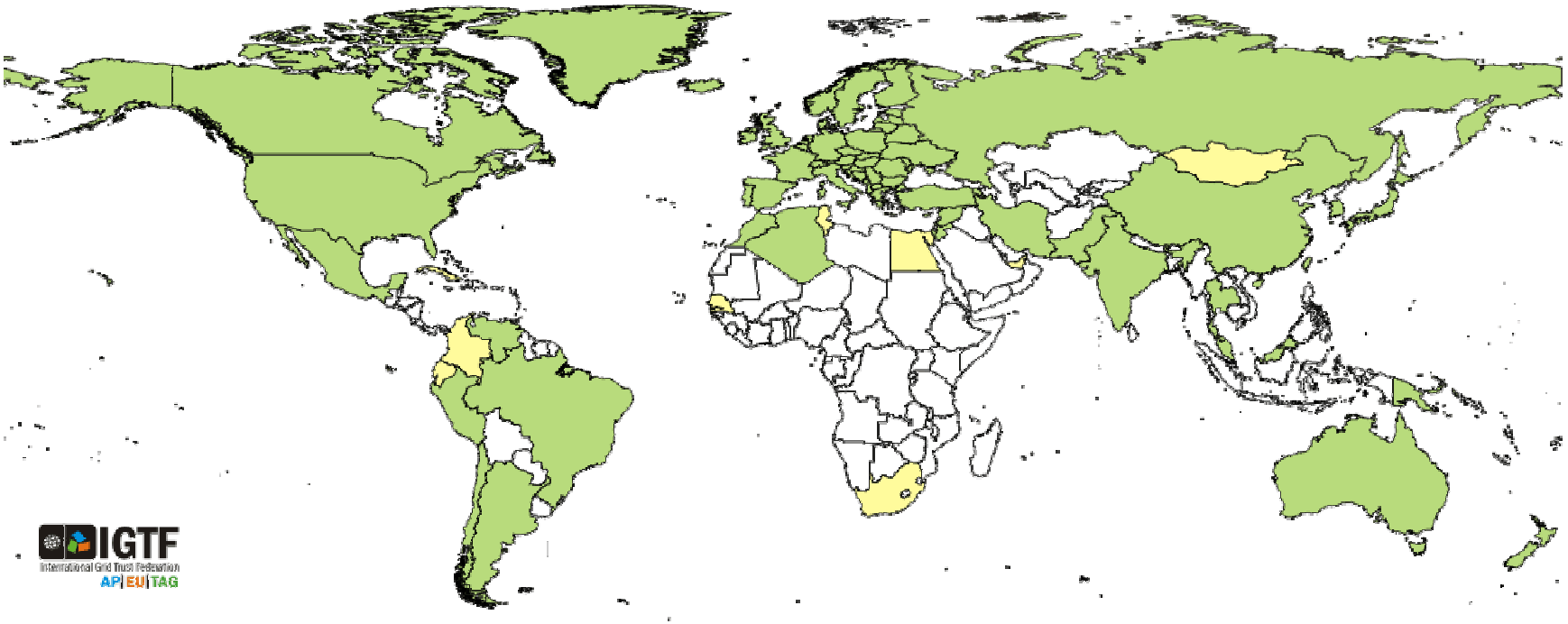
Core services

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	•	•		•	•	•	•

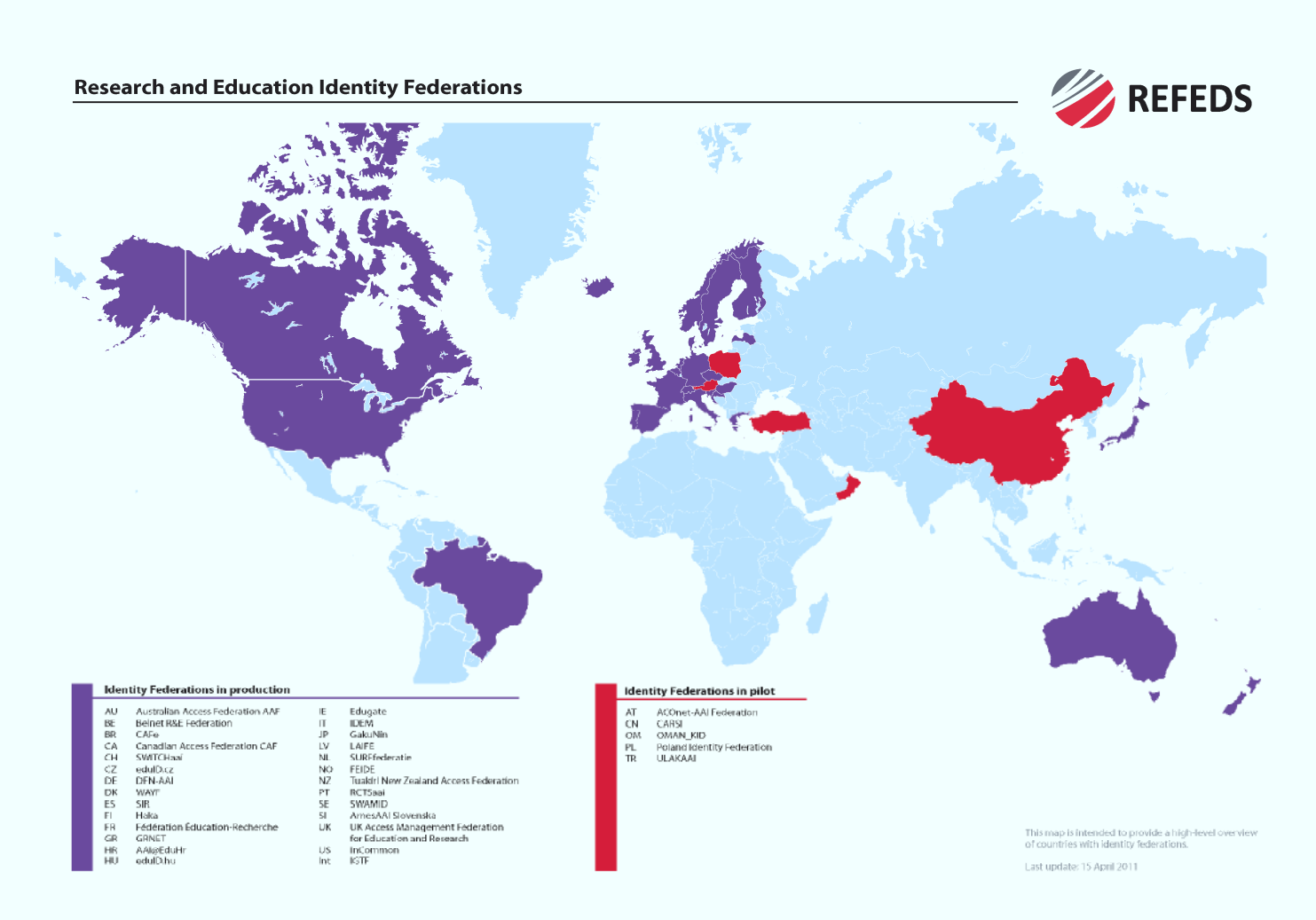
Middleware

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

Certification authorities



Identity federations



Latin America

- EGI related infrastructure, two ROCs
  - Support from series of EC-cofunded projects (EELA, GISELA)
  - Well developed regional services
- Recommendations
  - Work with GISELA for smooth transfer into RedCLARA infrastructure
  - Identify and promote of DCI and DCS, fostering financial support of the NRENs
  - Use sub-regions to transfer expertise from most advanced and active countries, use task force mechanism for trainign and user support

Mediterranean, Middle-East and Gulf

- EGI related infrastructures
  - EUMEDGRID project support
  - Limited hardware and expertise
- Recent undertakings
  - ASREN (Arab States REN) establishment
  - AfricaROC creation
- Recommendations
  - Identity federations and CAs should be properly established
  - AfricaROC should converge to a sustainable organziational structure
  - ASREN e-Infrastructure should support research communities in Arab countries, make available services at regional level; should also include coordination of NGIs

Africa (sub-Sahara)

- Very heterogeneous landscape
  - Huge differences between regions
  - Varying level of service deployment
- Recommendations
  - SANReN and other NRENs should develop national NOCs and take care of trust (CAs and Identity federations)
  - The UbuntuNet Aliance should play key role in coordination actions, approaching African research institutes via Aliance partners
  - The UbuntuNet Aliance to coordinate closely with the AfricaROC training of new experts; increase the awarness of the existence of AfricaROC
  - SAGrid to coordinate operations and encourage integration of new resources, based on common middleware

Interoperations

- The EGI-centric view does not fit all regions/countries
  - E.g. India and China already have an independent e-Infrastructure
- Recommendations
  - Implement a standard set of functionalities, typically embedded in core services
    - Job submission, data exchange, accounting, monitoring, security
  - Setup inter-infrastructure monitoring framework (based on Nagios)
  - Integrate the Ticketing systems with GGUS or XGUS
  - Use Science Gateways as easy to use entry points hiding complexity of individual e-Infrastructures
  - Use intercontinental VRC based on one specific domain (e.g. climate change) to push forward the inter-regional infrastructure collaboration

Conclusions

- CHAIN project collected up to date information about state of e-Infrastructures (esp. DCI) in world regions
- Based on the analysis of the available data, a set of recommendations has been presented in the D2.2 project deliverable
  - The recommendations targets technology, policy as well as individual regions
  - The middleware interoperability can be addressed with a reasonable effort, with the exception of China and India
    - The widespread availability of gLite (UMD/EMI) middleware helps
  - The Interoperation field will need more development, going from addressing individual players (resource providers, technology/middleware providers and VRCs) into more aggregate model of dealing with peering e-Infrastructures
    - Global VRCs can help to establish compromise solutions

Conclusions II

- Short term organizational model
  - Cloning tools currently used by EGI and EU countries
  - AfricaROC and ChinaROC are excellent examples
- For longer term solution
  - New type of agreement between EGI and other e-Infrastructures
- Accepting new technology development
  - Virtualization
  - Cloud computing
  - Identity federations