



“Contributions of EUAsiaGrid Project and its Partners in the Next Phase Development of National Grid Initiative in Malaysia”

Suhaimi Napis, PhD

CTO and Director, InfoComm Development Centre

Domain Leader, Policy and Governance, National Grid Computing Initiative

**Research Director (Acting) and E-Research Area,
Malaysian Research and Education Network (MYREN)
Director, Natural Resource Area; Co-Chair, Agriculture Working Group,
Asia Pacific Advanced Network (APAN)
Member, TaskForce for TransEurAsian Information Network Phase 4 (TEIN4)**

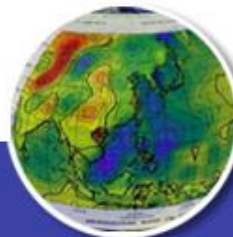
suhaimi@putra.upm.edu.my



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Outline



- **Historical Background of National Grid Computing Initiative (NCGI), Malaysia**
- **Key points of the Review of Terms of Reference with lesson learned from EUAsiaGrid Project and its Partners**
- **The National Technology Roadmap for Grid Computing**
- **Concluding Remarks**

Historical Background



- After several workshops, two documents were drafted in December 2005.
 - National Grid Computing Initiative (NGCI) Terms of Reference (TOR)
 - The National Technology Roadmap for Grid Computing
- Several revisions for both documents (TOR and Roadmap) in June/August 2006, November 2007 and July/September 2009.
- Major changes to the above documents were done in 2006 and Grid Computing was implemented the following year
- Inconsistencies from the original implementation plan and remained status quo until today



Historical Background-cont.



- The original implementation plan was unanimously agreed by the original workshop participants to have a shared, distributed computing resources to be deployed at several locations throughout the country with relatively similar facility to be run by GOC and all sites to be connected via MYREN
- An alternative approach was implemented which is more of an access to HPC services rather than a truly distributed shared resources.



Historical Background-cont.



- **Greatly focused on Grid application users with nearly no access for Grid core technology developers**
- **Local Certificates were implemented but SOP for issuance of the certificates for users to use the services was not emphasized**
- **Implementation of Grid Core Technologies in the so called National Grid were not discussed together with the original members of the Grid core technology developers**



Impacts of EUAsiaGrid Project



- **EUAsiaGrid Project tremendously contributed towards the next phase of Grid development and gave Malaysia a better understanding of Grid**
- **Enhance the overall understanding of a truly distributed shared compute resources.**
- **Emphasize the importance of federated certificates with SOP certificate issuance to users that must be adhered to.**
- **Opens up a platform for collaboration between European and Asian researchers as well as within region or even country (like Malaysia!!)**



Some Grid issues...



- **Must address two types of users:**
 - Researchers/students doing research on certain aspects of GRID technology (Grid core technology developers)
 - Researchers/students using GRID for computation; (Engineering, Finance, High Energy Physics, Bioinformatics, Cheminformatics, Medical Informatics)
- **Need Grid facilities and have total control of the entire Grid Ecosystem (all aspects of Grid)**
- **Academic staffs, research officers/assistants, and post-graduate students made up of over 80% of the entire research community in Malaysia! (Not including undergraduates)**
- **National Grid Computing Initiative (NGCI) should address these issues**



NGCI Revised Activities:



- Establish a true Grid computing ecosystem that addresses the needs of **BOTH** Grid technology developers and users in various domain specific applications;
- Deliver the services of high performance computing **AND** shared computing/storage resources locally, regionally and globally;
- Facilitate the access of Grid computing resources for **ALL** through world-standard technology framework and best practices that are **consensually agreed between the Grid service provider and the users**;

*** Shall include cloud computing; both public and private cloud**



NGCI Revised Activities-cont:



- Enable internationally recognized, federated and trusted security framework for **Grid resource sharing among government agencies including private companies** over the global network;
- Coordinate and facilitate application, **review, approval, monitoring, and enforce accountability (including corrective/punitive actions)** of grants by Grid R&D Expert Committee;
- Determine distribution of **costs and billing on the use of the facility for both public and commercial** when sharing resources



NGCI Revised Activities-cont:



- Introduce **new scientific applications** and **technology components on Grid computing** into local R&D;
- **Establish and expand joint research** in all aspects of Grid Computing technology and grid-enabled applications locally and globally
- **Establish research collaborations** with international Grid computing organizations (such as PRAGMA, SEAGF, CGF, GGF etc);



NGCI Governance and NGCA



- To develop and run Grid services through **consensus and close cooperation with local and international Grid technology developers/experts on every aspects of the entire National Grid ecosystem including access to the core technology components** such as Operating System, Middleware, Network, workflow, user interface and others



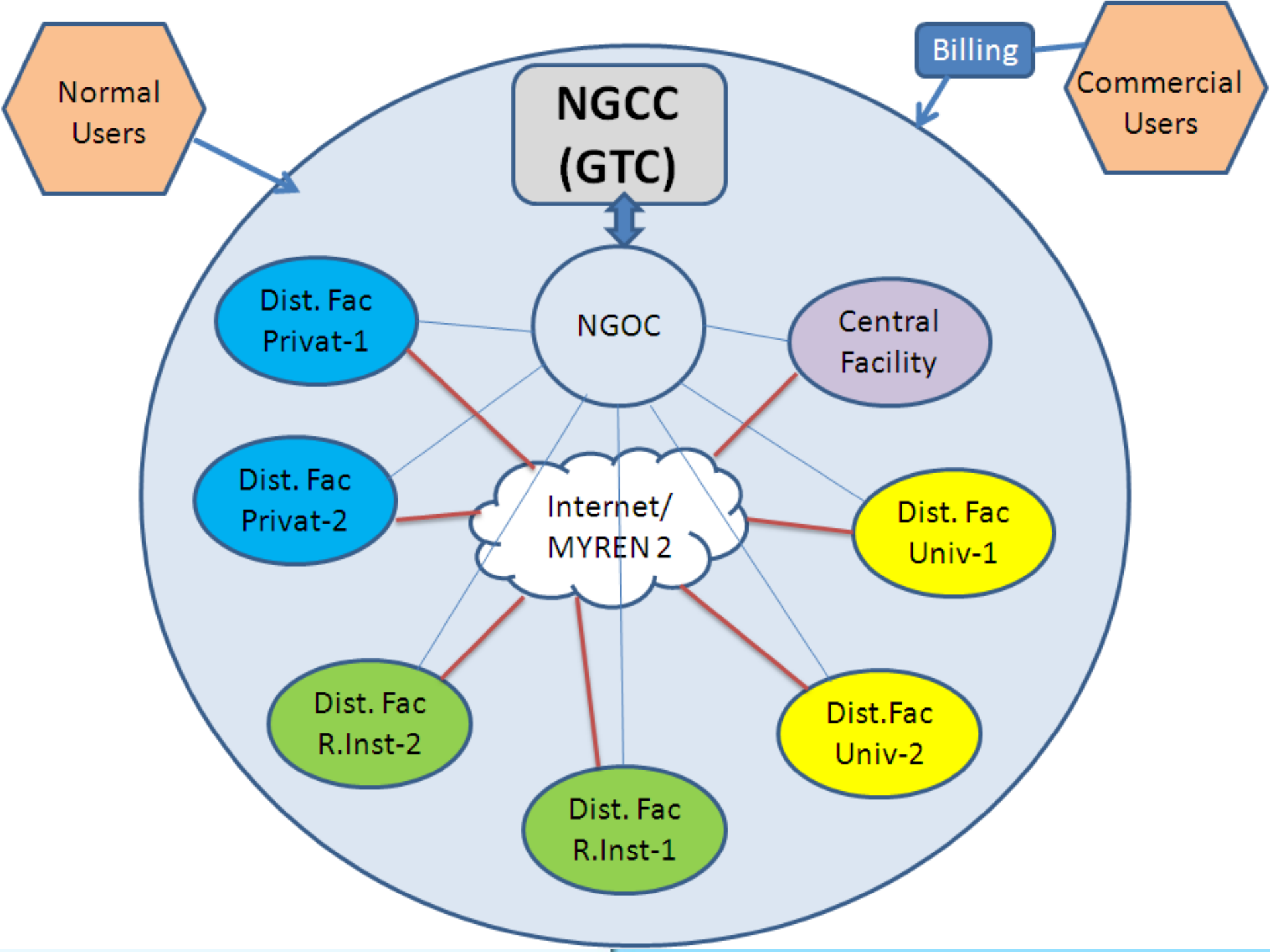
- **NGOC also acts as the coordinating body that manages the National Grid Certification Authority (CA) with recommendations of the GTC. The National Grid CA provides X.509 certificates to support the secure environment in grid computing and issue User Certificates, Host Certificates and Service certificates to people and sites participating in grid computing in Malaysia**

NGCA - Points:



- NGOC shall commence the development of **Malaysia's CA** that shall be **certified and recognized by appropriate regional or international Policy Management Authority** (such Asia Pacific Policy Management Authority (APPMA))
- For the moment ASGCCA is used by Malaysian RAs
 - Some challenges from a few researchers that previously used the Grid Infrastructure using local CAs
 - Needs promotion and education about Federated CA to users.





Concluding Remarks



- Malaysia directly benefited from EUAsiaGrid Project with the total review of the National Grid Computing Initiative TOR and Roadmap
 - Able to contribute and share computing resources with partners with Federated CA
 - Will follow closely EGI especially on the MW
- Promote **TRUST and CONFIDENCE** and encourage sharing for example by implementing and acculturating Federation (eg VOMS or GridShib, Digital Certificates) and developing policies for harmonization of Raw and Clean Data coming from various discipline



Concluding Remarks-cont

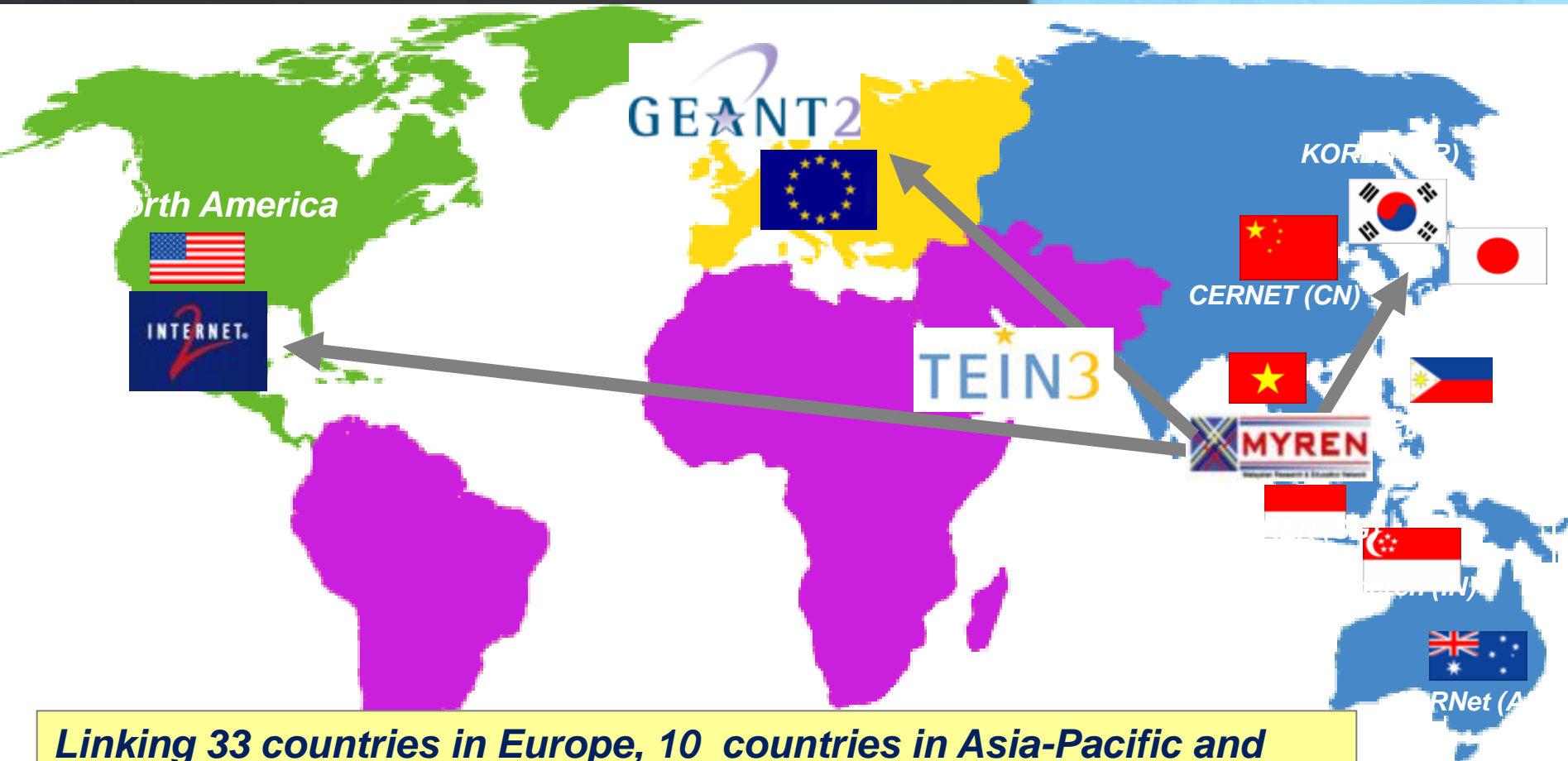


- Extend National Grid Terms of Reference and Roadmap to **Cloud Computing**; will explore and implement Virtual Machine Managers
- Embarking on **Fat Nodes for RAM intensive computing** for NextGen Sequencing Analysis
- **MYREN Phase 2 being deployed** which see the inclusion of polytechs and community colleges; **potentially larger grid engagement**
- **Invest in Human Capital Development** in Grid Computing and other Advanced Computing Technologies; Average USD10K-20K to produce MSc – PhD; (research funding additional)



Infrastructure Update

International Cooperation and Linkages

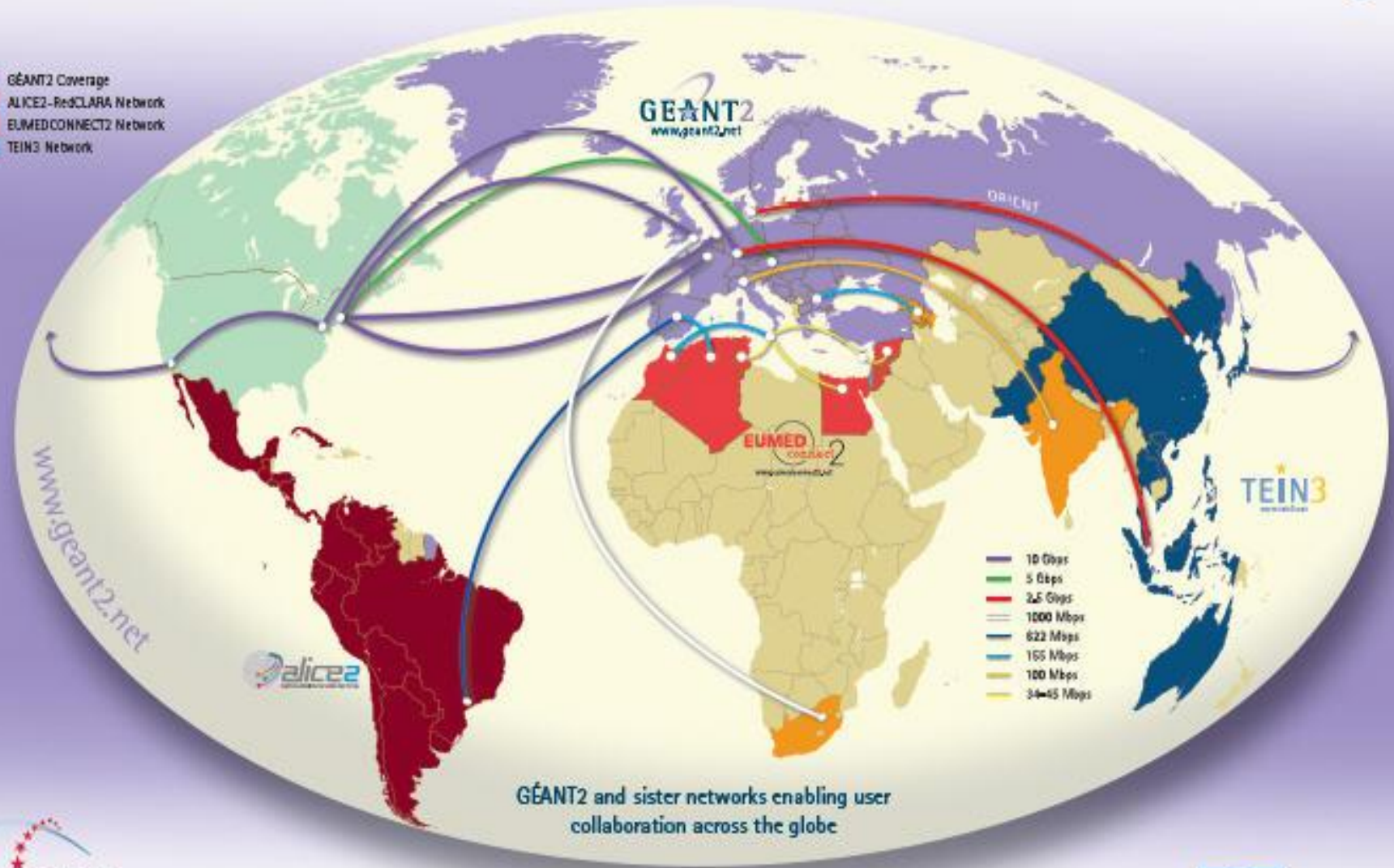


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“Trusted” Computing



NO TRUST....

NO GRID!

