



20 Years ACOnet Infrastructure
Vienna, 9 June 2010

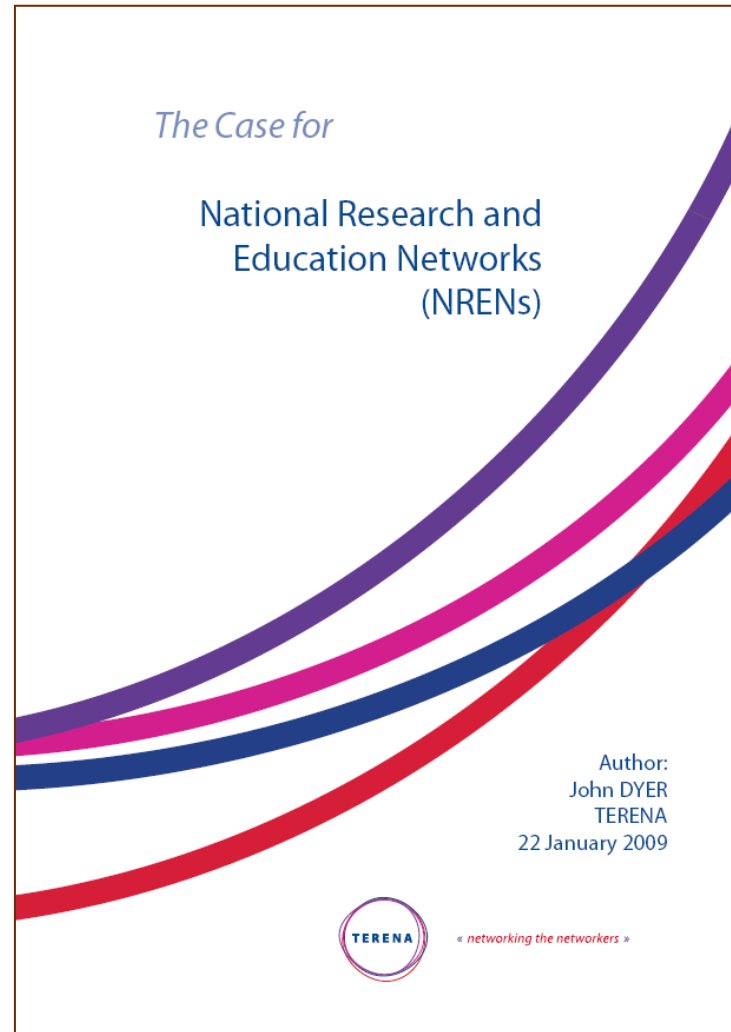
Valentino Cavalli
TERENA
cavalli@terena.org
www.terena.org

« *networking the networkers* »

Positioning Inter/National Research Network Infrastructures *the case for NRENs*



The Case for NRENs document



The Case for

National Research and
Education Networks
(NRENs)

Author:
John DYER
TERENA
22 January 2009



« networking the networkers »



Why making the Case for NRENs

- › European NREN and e-Infrastructure model successful but at times counter voices may arise requiring reiteration of arguments in support of them.
- › Helps positioning them and clarify their unique value for science, education and the society at large.
- › Is key to sustainability in an ever changing and dynamic environment.



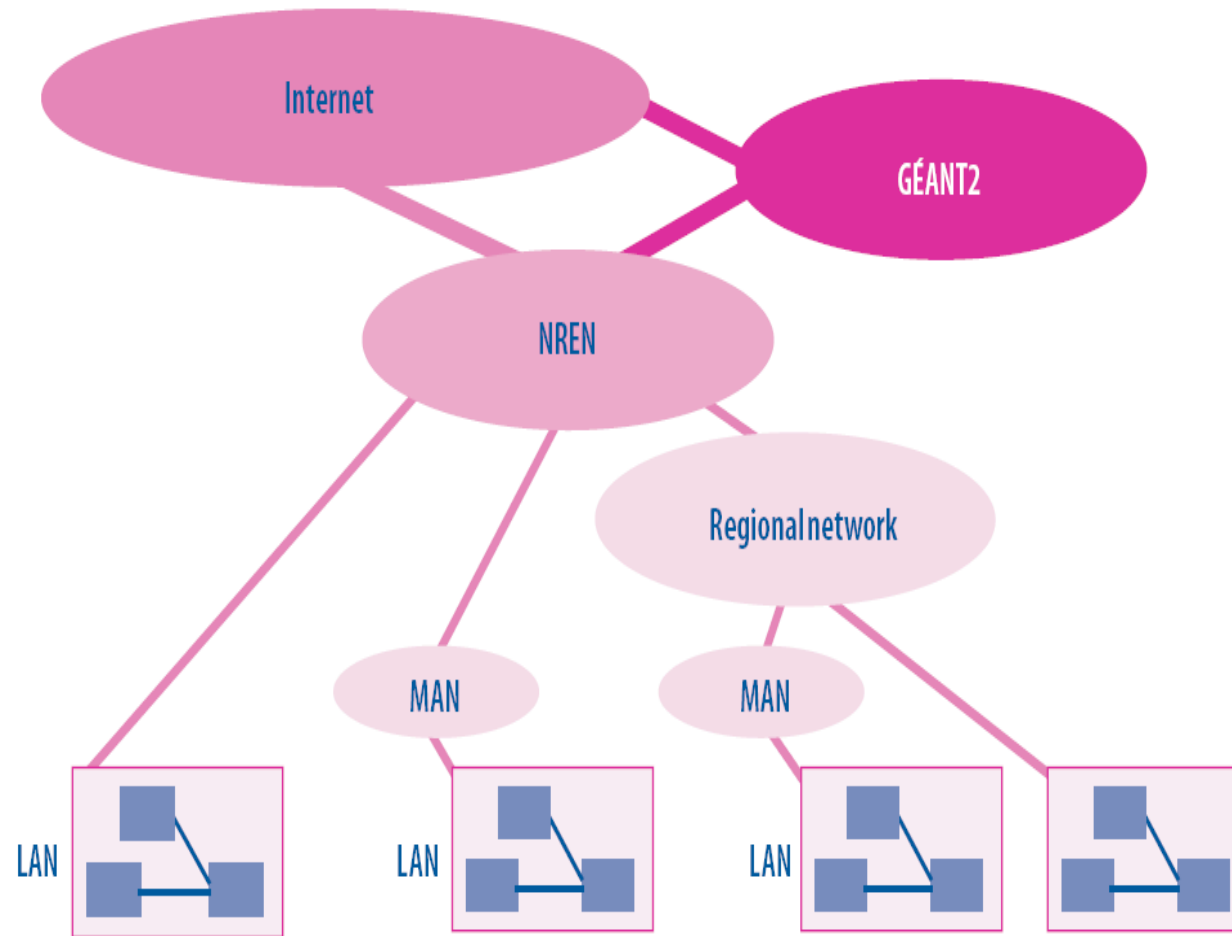
The Collective Achievements of European NRENs

Slide 4





Federated European Model





Research networks and the Internet

- › The Internet was pioneered in the world of research and universities. Today research networks are still the most advanced part of the Internet.
- › Shift from technology development towards service development and integration of network, services and data into e-Infrastructures.
- › Research networks are still an important source of innovation.



Some NREN Services

- › Support high-demand e-science projects/ applications
 - › CERN LHC, eVLBI, bioengineering, meteorology, earth/atmosphere observation etc.
 - › Grid computing and Virtual Organisations, High Performance Computing.
- › Storage services, backups, cloud computing, virtualisation.
- › Videoconferencing, Group Collaboration.
- › Performing arts, remote learning cultural heritage.
- › Federated Network Access and Federated Identity Management/Authentication and Authorization Infrastructure – Confederation Level
 - › eduroam™, eduGAIN.



Technical benefits of NRENs

- › Pioneered development and use of hybrid networking technology
 - › Shared IP traffic
 - › Point-to-point high bandwidth circuits
 - › Leading to dynamic user-controlled bandwidth in support of high demanding scientific applications.
- › Security Incident Response Teams and Performance Enhancement Response Teams.
- › Confederation of trust to provide Authorisation-Authentication between user community and resources – supporting dynamic virtual organisations.



“strategic” benefits

- › Innovation: development of national and international testbed and pilot services that result in new production services.
- › Contribute to counter damaging effect of monopolistic situation and decreasing divide among regions.
- › Benefits of collective buying power to universities by procuring networks and services on a national basis.
- › Strength on international stage by being part of a recognised “club”.
- › Independence and reputation to advise on national IT and education policies.



In summary: the NREN is a national asset

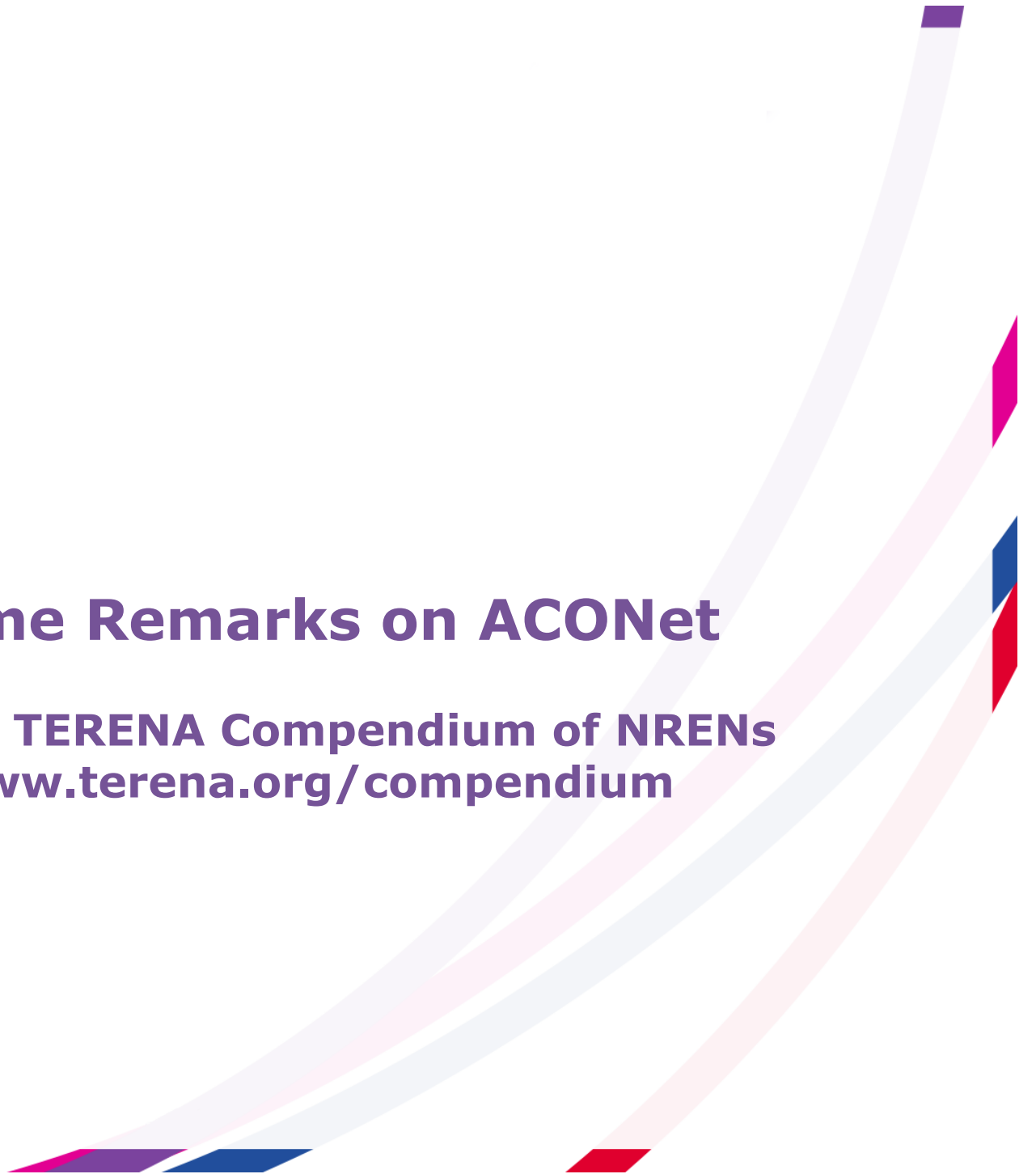
“National governments should be aware that research and education networking in their country, and in particular their National Research and Education Network (NREN), is an asset for economic growth and prosperity. It is a source of innovation and provides fast and widespread technology transfer to society and industry. Promoting such technology transfer should be an explicit goal of NRENs.”

Summary Report SERENATE foresight study
December 2003



Some Remarks on ACONet

**source: TERENA Compendium of NRENS
www.terena.org/compendium**





ACONet

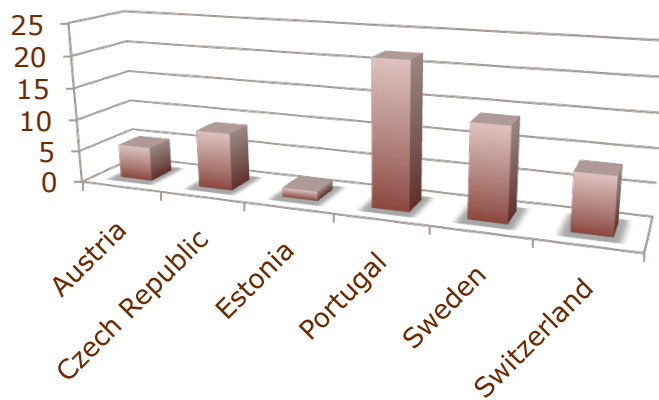
- › Member of TERENA and GÉANT.
- › Acquired fibre network infrastructure in 2007-2008 and able to offer multi-Gigabit connectivity.
- › Offers a number of services, including premium IP, native IPv6, a professional CERT, AAI Federation, eduroam™.
- › Limited service portfolio as far as Grids, Storage, and user-oriented services such as videoconferencing, media management, media repositories etc.



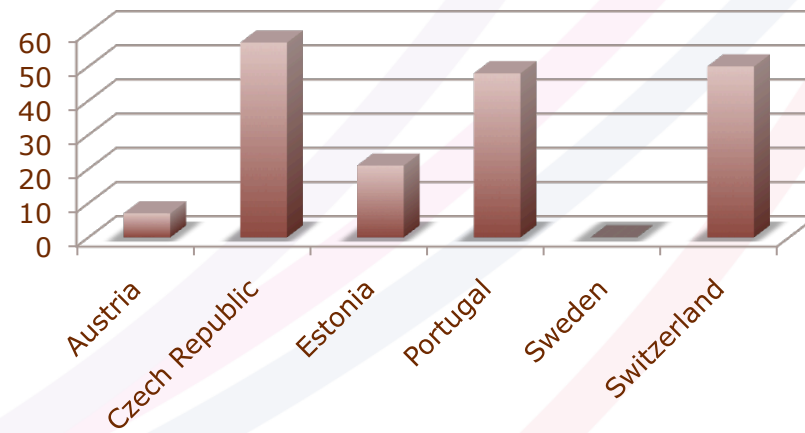
Positioning ACONet

- › Comparison with similar size NRENs
 - › Equivalent high capacity backbones.
 - › Connecting between 25-35 universities, + research institutes, libraries, government departments.
 - › Funding/charging models differ (see next slides).
 - › Portugal ±3,000 schools, Sweden outsourced staff, Czech Republic and Switzerland very active in research and prov. Services resp.

NREN Budget



Staff





Advocating the NREN Position





What could be the threats?

- › If Funding Bodies **THINK** services that NRENs provide are available on the commercial market.
 - › The need for NRENs vs commercial ISPs.

- › If NRENs are **THOUGHT** to distort the market as they receive government subsidies.
 - › The need for national/international funding.

- › If commercial ISPs **EVOLVE** to be able to offer identical services to the NRENs.
 - › The uniqueness of NRENs concerning their user basis, relation with ISP market and regulatory issues.

- › Something else



What is the need for NRENs when commercial ISPs exist?

- › Affordable access to necessary facilities.
 - › Commercial ISPs may offer cheaper connectivity but do not satisfy the requirements of our demanding users at an economically justifiable price.
 - › Taylor made service development.

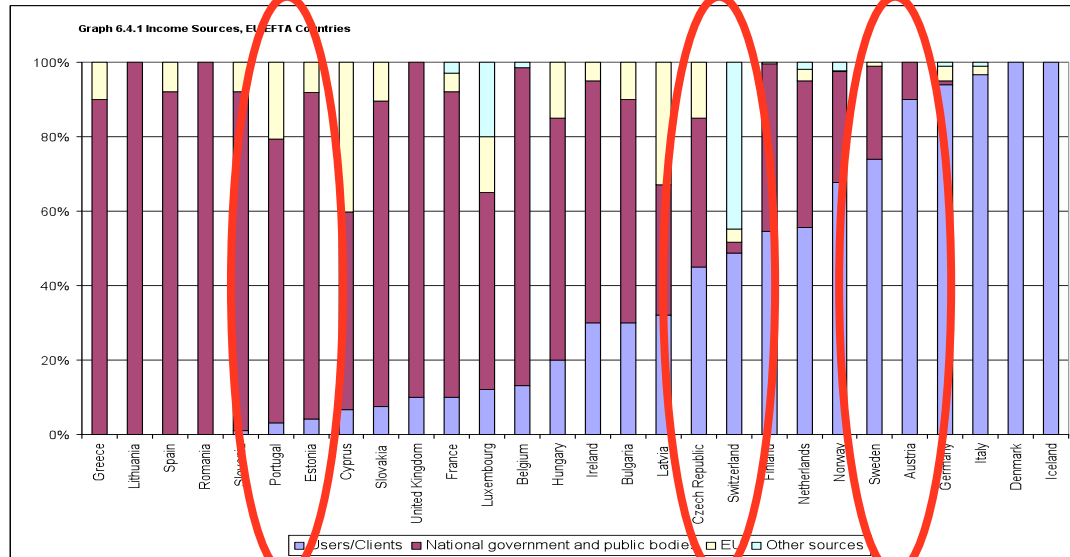
- › "The NREN Club" model.
 - › NRENs have a history of collaborating globally on finding solutions in a way that would be difficult for commercial ISPs.

 - › Services can be developed better jointly.
 - › International multi-domain collaboration.
 - › Common approaches to things like QoS.



The question of funding

Direct
Govt
Funding



User/Client
Funding

› A complete spectrum exists in Europe:

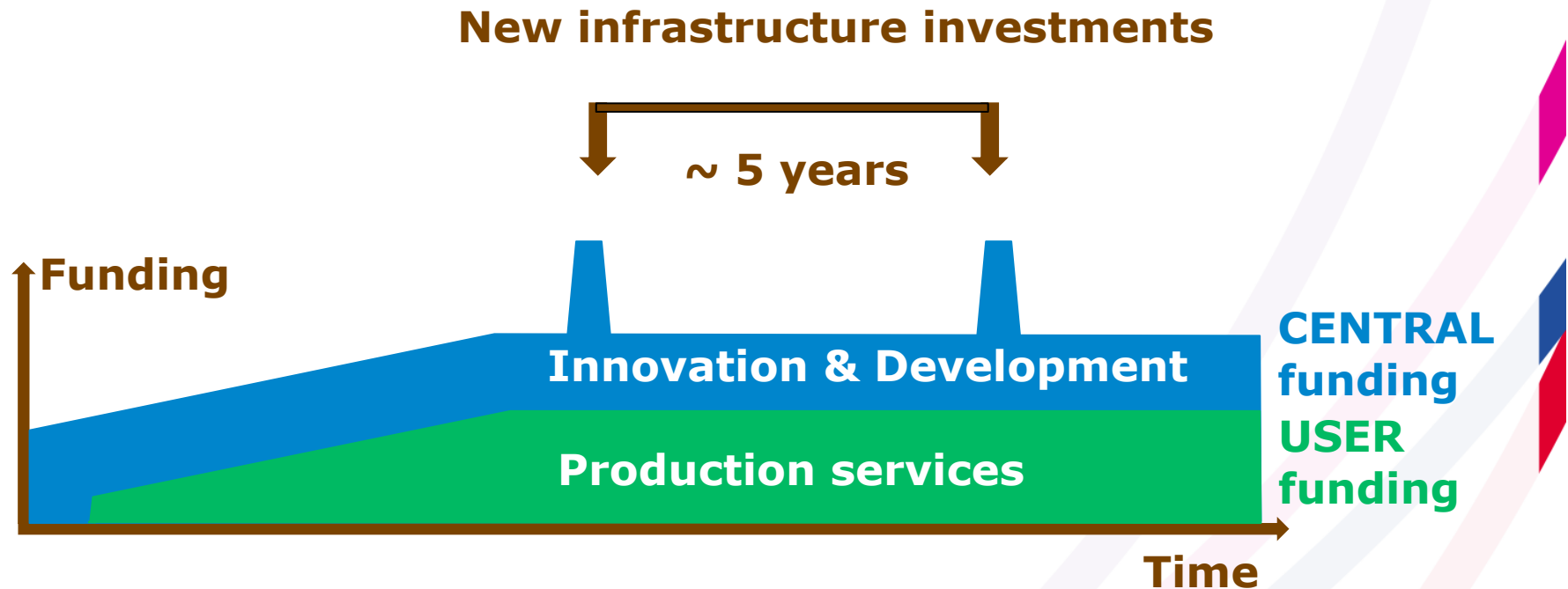
100% user-client funding

100% non-user-client

and everything in between



Why is there a need for central/ government funding of NRENs?



- › Users have short term investment horizons
- › Governments can invest in long term innovation
- › The most sustainable is probably a hybrid



The NRENs' relationship with the ISP market

- › NRENs serve a closed user group of advanced users.
- › NRENs buy infrastructure in the commercial market.
- › NRENs can use the competitive market to the best advantage just as any other purchaser.
- › Collaboration between NRENs and commercial ISPs is taking place and should be encouraged further to result in mutual benefits.



The regulatory position of NRENs

- › NRENs serve a well bounded community.
 - › CLOSED USER GROUP
- › Not in the business of providing public access.
 - › NOT A PUBLIC NETWORK
- › Not be compelled to register as a public network.
- › NRENs should adopt best industry practice.



General Summary

- › A country that wants to be competitive in research and education has also a modern, well-organised, well-resourced NREN.
- › There are many ways to organise an NREN
- › Involvement of stakeholders is essential
- › Support from the government is indispensable
- › Service portfolios are constantly evolving.
 - › Running an NREN is much more than providing connectivity.



Thank You

More information at
www.terena.org

