



Strategy for research networking in Europe – conclusions and follow-up

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What is SERENATE?

- **Study project: May 2002 – December 2003**
- **Budget € 960k (\$ 1M)**
- **Funded by European Union**
- **SERENATE formulates recommendations for decision makers (governments/funding bodies, research networks, universities etc.) for the development of research networking in 5-10 years' timeframe (at ≥ 100 Gb/s)**
- **SERENATE looks into:**
 - user needs
 - technology
 - market conditions , regulation
 - organisation and finance





The background

- **SERENATE = Study into European Research and Education Networking As Targeted by eEurope**
- **Preparation for new projects, infrastructures**



The current situation

- **In general, Europe is not behind developments in other continents**
- **In some areas Europe is at the forefront of developments, e.g.:**
 - continental backbone
 - IPv6
 - AAA / PKI
 - Grids
- **Need for strategic planning (hence SERENATE), because:**
 - 1. no reason for being complacent**
 - 2. simple copying no longer sufficient**





Some of the SERENATE findings...

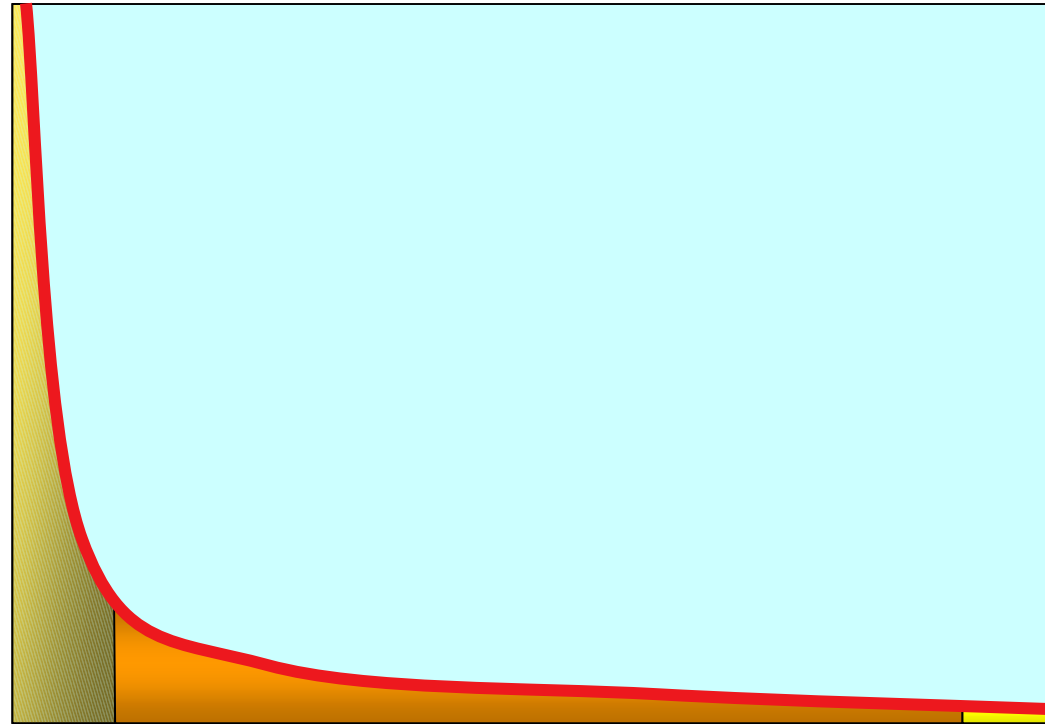


Users' views and needs

- **Impressive achievements in European research networking in past five years**
- **Networking requirements are rapidly increasing, in all countries in Europe and in all fields of research**
- **“class C” users require very high capacity networks and end-to-end services**
- **Essential that research networks cater for those most demanding users**
- **Requires new technologies and new organisational and funding models**



of users



A

B

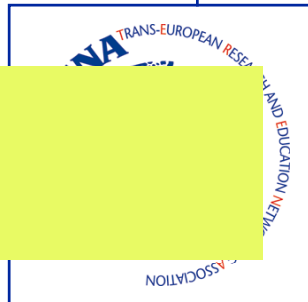
C

ADSL

GigE LAN

BW requirements

- A -> Lightweight users, browsing, mailing, home use**
- B -> Business applications, multicast, streaming, VPN's, mostly LAN**
- C -> Special scientific applications, computing, data grids, virtual-presence**



Digital Divide

- **There is a substantial and arguably increasing Digital Divide in research networking in Europe**
- **“Equal opportunities for researchers throughout the European Research Area” is an elusive goal**
- **National governments and European Commission need to take radical actions**





Regulations

- **In theory, markets are liberalised in EU+ and therefore you would expect**
 - real competition > competitive pricing
 - opportunities for “owning” your own fibre
- **Reality is very different in some countries**
- **Results in serious obstacles for research and education networking**
- **National governments, supported by European Commission, should be proactive**



Telecoms market

- **Sudden developments in the last years, with high impact**
- **Will take some time before markets are stable again**
- **The period of revolutionary price decreases has come to an end, and will not return**



Equipment

- **Some insight (under NDA) in developments to be expected**
- **Costs still very uncertain**





Access to fibre

- **Possible, cost-effective or even necessary**
 - although not everywhere and for all distances
- **Various operational, managerial and financial ways to implement “access to fibre”**
- **European research networking infrastructure of near future will be mix of different components with varying technology and management characteristics**



Follow-up

- **SERENATE findings and recommendations to be used for planning of next-generation networks**
 - on campus
 - nationally (National Research and Education Network)
 - at the European level: **GÉANT (GN2 proposal)**



GN2 project proposal

- **4-year project, starting September 2004 (?)**
- **100 M€ from European Union**
- **“Integrated Infrastructure Initiative”, includes:**
 - 1. Services (next phase of GÉANT)**
 - 2. Joint Research Activities:**
 - **Performance measurement and management**
 - **Security**
 - **New service development**
 - **Testbeds**
 - **Ubiquity / mobility**
 - 3. “Networking” Activities**
 - **(....)**





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 - 2. Joint Research Activities:**
 - (....)
 - 3. “Networking” Activities**
 - **Dissemination, publications, demonstrations**
 - **User support**
 - **NREN Development**
 - **TERENA Compendium of National Research and Education Networks**
 - **Combating the Digital Divide**
 - **Collaboration in TERENA Task Forces**
 - **Conferences and events**
 - **SERENATE, part 2**



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But in the meantime...

More information, including all reports, is available from the SERENATE website at

www.serenate.org

