



Presentation at the EARNEST  
Final Workshop in La Hulpe,  
25-26 September 2007

## Introduction to the EARNEST Final Workshop

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# What was SERENATE (2002-2003)?

- > Foresight study into the expected development of research and education networking over the next 5-10 years
- > SERENATE Summary Report has been very influential, e.g. it made the case for:
  - > Hybrid IP-optical networks (now taken up widely by NRENs and in **GÉANT2**)
  - > Direct access to (or even ownership of) dark fibre (now taken up widely by NRENs and in **GÉANT2**)
  - > Development of European Authentication and Authorisation Infrastructure (now pursued in Joint Research Activity of GN2 project)



# What is EARNEST (2006-2007)?

- > Foresight study into the expected development of research and education networking over the next 5-10 years
- > Funded by the EU as part of the GN2 project



# Three phases of EARNEST

## **March-June 2006:**

- A preliminary phase identifying topics and people to be involved, with an initial workshop in May

## **July 2006 – June 2007:**

- Seven parallel sub-studies
- Two workshops, for NRENs resp. governments

## **July-October 2007:**

- Integration and summary, conclusions and recommendations, with a final workshop in September



# The seven parallel sub-studies

- › **Researchers' Requirements**
- › **Technical Issues**
- › **Campus Issues**
- › **Economic Issues**
- › **Geographic Issues**
- › **Organisation and Governance Issues**
- › **Needs of Users in Schools, Healthcare, and the Arts, Humanities and Social Sciences**



# Researchers' Requirements

- > This sub-study has been led by the European Science Foundation (ESF)
- > Two surveys have been conducted:
  - in the first stage, more than 4,000 researchers have filled in a questionnaire
  - in the second stage, a more focused survey was made using interviews
- > The surveys have shown that having access to high-speed networking has had a substantial impact, and that the demand for new services is rising. Scientists also show significant interest in enhanced support and training in the usage of networking.



# Technical Issues

- › The sub-study has focused on possible technical developments relevant to research and education networking in the next few years
- › The SERENATE technology study largely focused on lower-layer issues, but currently control techniques are once again attracting attention as optical switching and hybrid networks become ubiquitous
- › Also middleware is a new topic for study, as authentication and authorisation have become important issues, complicated by the fact that users have become increasingly mobile



# Technical issues

- › The sub-study has been led by TERENA
- › The interesting observations fall under five "headlines":
  - › transmission findings
  - › control plane and routing findings
  - › network virtualization findings
  - › operations and performance findings
  - › middleware findings



# Campus issues

- > This sub-study has been led by CRU and EUNIS, the European University Information Services association
- > It has a number of interesting results, e.g. that the campus network is no longer experienced as a bottleneck in the network provision – as it was in the SERENATE study
- > But there is a need for further collaboration between campus IT staff and NRENs, and a need for better training and funding for campus IT staff



# Economic issues

- > The sub-study points to two major future changes that may affect the economics of research networking – one being the investment in dark fibre in Europe, the other the development of a more elaborate portfolio of services
- > In addition to the 'divide' caused by different telecom markets in different parts of Europe (known from SERENATE), there is also a 'geographic divide' (related to distance)
- > Both 'divides' are strong and are not going away



# Geographic issues

- > This sub-study has been led by JNP Consulting
- > The sub-study has developed a new index, called REDI (Research and Education Networking Development Index) – throwing new light on the concept of 'digital divide'



# Organisation and Governance issues

- > This sub-study has been led by Archway Computing
- > The sub-study has looked at the governance and funding of NRENs
- > It formulates 'best practice' - pointing e.g. to the importance of the involvement of end-users in NREN development



# Needs of Users in Schools, Healthcare, and the Arts, Humanities and Social Sciences

- > The sub-study has interesting observations about the developments in:
  - > Schools networking – a number of European NRENs now also serve schools and this gives synergy to the research networking, especially in smaller countries
  - > Healthcare networking – here NRENs' experiences can benefit the advanced services to the healthcare sector, i.e. there is a basis for transfer of knowledge to this research related sector
  - > Arts, Humanities and Social Sciences are developing new and interesting applications of high-speed networking



# The EARNEST Final Workshop



# Purpose of this workshop

- > To inform representatives of the major stakeholders of the findings of the EARNEST sub-studies
- > To discuss those findings and conclusions and recommendations with you
- > **To receive your feedback and suggestions,** for possible inclusion in the overall EARNEST Summary Report (to be written in October)



# Programme today and tomorrow

- › Participants are divided in 4 groups of 'mixed' composition
- › The authors of the sub-study reports will present their most important findings and recommendations to each group. There is about 1 hour available for each sub-study (presentation and discussion). Presentations are to be short – the discussion is the most important part.
- › In final plenary session tomorrow, there is time for general discussion. To be stimulated by recalling most remarkable points raised in the group discussions.



# What we want from you.....

- > Please be active – take part in the discussions
- > Do not hesitate to speak your mind – your openness will be appreciated and we will use your inputs in a sensible way
- > If you have further input after the workshop – or you want to put something in writing – please send us a mail before October 3rd to
- > [earnest-info@terena.org](mailto:earnest-info@terena.org)
- > In advance, many thanks for your contributions!