

**EARNEST Initial Workshop  
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**Parallel Session on Geographic Issues**

**Discussion Paper  
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Introduction

Many geographic issues are related to the digital divide in research and education networking between different countries and regions in and around Europe. Such issues have been investigated in SERENATE. More detailed information from specific countries is becoming available through the NA4 Development Support activity in GN2, as well as the annual editions of the TERENA Compendium of NRENs, studies related to regional eInfrastructure projects and other sources of information.

However, it is important to look beyond these data and investigate matters in more depth. Not only because some figures reported, for example, in the TERENA Compendium, may be too optimistic, but mainly because tracing the root of the digital divide issues is much more demanding than what research and education networking indices and figures can reveal.

Recent reports on NREN geographic issues (e.g. the Varna Statement, the Report from the International Workshop on African Research & Education Networking), and EC-funded regional projects (e.g. SEEREN, EUMEDCONNECT, Porta Optica etc) aiming to lessen the digital divide in developing parts of Europe and the world, have hinted that the lagging in research and education networking is a by-product of overall national and regional policies and priorities. If one aspires to improve the research and education networking landscape, then one must address the root of the problem rather than its result. There are sometimes also digital-divide issues inside an otherwise well-developed country. These should be investigated as well and be illustrated where possible by some case studies.

EARNEST's geographic sub-study will focus on the following topics:

- Accurate monitoring/benchmarking of the state of the digital divide between research and education communities in Europe

The issue at hand is to attempt to filter out the use of any existing R&E index that may be inadequate and/or misleading as far as assessing the digital divide in research and education networking is concerned. Following that, the current list of R&E indicators needs to be complemented with a set of measurement factors that can accurately reflect and help reveal any digital divide aspects in a region. Only by accurately assessing the source/root of the digital divide – instead of trying to interpret its symptoms and results – it may be possible to come up with recommendations that can help lessen it. For example, the use of different indicators, such as:

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- country GDP or GNI vs. GDP or GNI per capita
- country connectivity (bps) vs. connectivity per capita or per student/researcher
- theoretical bandwidth capacity vs. actual bandwidth utilisation vs. application-specific bandwidth utilisation
- research infrastructure capabilities (e.g. network connectivity) vs. research results indicators (e.g. papers, PhDs, scientific books, patents etc)

may yield significantly different results and evaluations for the level of the digital divide for a certain region.

- Identification of real issues affecting sustainability of NRENs

It is becoming important that in order to lessen the digital divide and provide a sustainable R&E networking infrastructure there is a clear need for a tangible and quantified "business case / plan" that would justify in plain figures and simple arguments the benefits and the "business (scientific/research/educational) need" for investing in R&E networking in a certain geographic region. Such a "business case for R&E" is the best argument for convincing governmental or other stakeholders to take respective appropriate measures, and is very often overlooked under the assumption that the R&E world does not need a "business plan" justification; yet, the lack of clear, visible benefits and results on what and how R&E will benefit a region eventually affects in a considerable way most national and regional (funding/investment/policy) priorities, which in turn is one of the most significant inherent factors for causing the digital divide. As such, there is a strong need for R&E "champions" that will possess the necessary technological competence and managerial vision, and would be able to draft one or more "business case(s) for R&E networking", totally customised to the respective national/regional level, by taking into account appropriate policies, results visibility and public impact. In short, "real problems" need to be "really quantified", i.e. is there a specific user group suffering tangible and quantified "damages" as a result of a digital divide in research infrastructures? The high-energy physics community, for instance, has always been an excellent case of a group that has a "real" need.

### 1. Digital Divide in the "Greenfield" NREN Landscape

SERENATE has already dug into the digital-divide issues that still persist today (albeit in a different geographic area) and this has to be re-visited and addressed in more depth. Compared to some years ago, there is a new NREN landscape in several countries across Europe, as research networking has embraced new countries and regions that are still hampered by less-developed and/or less-deregulated telecommunications markets. This poses a direct obstacle to an open, competitive market that would otherwise allow for a (hopefully) significant drop in prices and would enable lagging NRENs to gain access to (dark) fibre and more bandwidth.

How to document the current status? Which incentives can be provided to provide/obtain information from Greenfield regions? Which policies and strategies can be suggested to address the issue of the digital divide in "greenfield" regions in a more sustainable way?



## 2. Digital Divide in the "Incumbent" NREN Landscape

More often than not, the issue of the digital divide is regarded as affecting less-resourced European and neighbouring regions. This notion can be now regarded as "obsolete" and needs to be seriously re-considered. It can very well be that figures in the TERENA Compendium are too optimistic because, for example, some services and/or capacities that are officially reported may not always work or may not always reach all locations and users that they are supposed to reach within the national boundaries. There was already a hint in the SERENATE reports that there are sometimes such digital-divide issues inside an otherwise well-developed country, and these issues require close investigation in EARNEST.

How can one verify already reported figures in the Compendium? Which incentives could be offered in order to gain more accurate data? What level of research networking "magnification" should one apply within the national boundaries (e.g., WAN/MAN/LAN)?

## 3. Miscellaneous Issues

- Do we go for a "top-down" or a "bottom-up" approach? Is EARNEST a vehicle that can go in-depth and derive results "top-down" via a centralised co-ordination or do we need many "sub-EARNESTs", each one at a national or even more local level?
- Is there one or more European country(ies) that could serve as really good example(s) / best practice(s) (i.e., role model(s) for the others) on how to address and overcome digital-divide issues? Are there similarly not-so-good examples / bad practices / things to avoid and learn from?
- How can one measure the effectiveness and impact of the support from the EU Framework Programmes and their intervention in laying out policies to address digital-divide issues? For example, has the financial support been too much / too little / just right? Have the policy interventions been too scarce / too frequent / just right? Can we possibly come up with a "lessons learnt" list and feed it back to the EC to shape FP7 and beyond?
- Why is it that other similar domains such as Information Society programmes are more "appealing" and "easy to comprehend" in terms of public impact compared to the R&E field? Is it (our own) "bad marketing"? Or is it a case of a "hard product to sell"?