

**EARNEST Initial Workshop
Berlin, 23-24 May 2006**



Parallel Session on Economic Issues

**Discussion Paper
by Dai Davies**

Introduction

The NREN community is moving from offering just a simple IP service to providing a much richer portfolio of services, most importantly, including point-to-point services that give users defined capacities between fixed end-points. At the same time, there is significant, but not universal, investment in dark fibre which generally provides increases in capacity at very low marginal cost, but where the cost structure is strongly based on route length. These factors, coupled with the existing and continuing digital divide issues identified in SERENATE, give rise to a new set of economic issues to be addressed by EARNEST. Particular questions recognised are set out below. Although these are addressed from a pan-European perspective, they have both national and European implications.

1. Structure of Pricing

The starting point for GÉANT2 pricing has been a cost-sharing model based on IP capacity subscribed, modified by the international costs of providing service to an individual country. Point-to-point services have been added to the IP subscription as a marginal cost addition. The bulk of the network costs are covered by the IP service. This gives an incentive to use point-to-point services but is not a strongly cost-based approach. It is assumed that point-to-point services will, increasingly, represent a significant element of demand. We will then need to develop a model whereby the usage of such services represents a fair element of contribution to cost. What are the key elements of such a model?

2. Targeting of Prices

This point derives partly from the issue of price structure. It has, potentially, stronger national than international implications. An IP service is a generalised access service, potentially providing access to the entire Internet. It is assumed that few, if any, NRENS divide their charges according to type of usage. As new services are provided which give far greater clarity about the type of network usage, a generalised subscription model, which averages costs among users independent of their actual demand, becomes an increasingly difficult approach to sustain. Are there thoughts about how national pricing models should develop and, if so, do they consider targeting usage?

3. Digital Divide

The problem of the digital divide was recognised and documented in the SERENATE study. Although the geographic scope of the digital divide has changed, the problem has not gone away. This is partly because the geographic scope of pan-European research networking has extended to embrace new countries with less well-developed telecommunications markets, a trend which is likely to continue, and partly because the original problem of lack of competitiveness in international markets, particularly those further from the economic centre of Europe, remains. What further action needs to be taken to address the question of the digital divide?

4. Geographic Divide

Investment in dark fibre in GÉANT2 has meant a significant reduction in the marginal cost of providing additional wavelengths on an international basis in Europe. The current DWDM technology remains a distance dependant technology. This is particularly true in respect of the need to regenerate wavelengths. Regeneration becomes an additional cost on longer routes, doubling, or even trebling, the cost of providing an additional wavelength. The need for regeneration is defined by several factors, including route length and network topology. A similar issue is the cost of access to global connectivity. Certain European locations are uniquely favoured when it comes to accessing global connectivity, because intercontinental links terminate in a limited set of European countries. These geographic factors can act as an economic disincentive to European co-operation. How should they be addressed?