



SERENATE Initial Workshop, La Hulpe, 17-18 September 2002

Breakout session 5: Technical Evolution

Tuesday 17 September 2002, 18:00-19:30 hours

SERENATE is a fundamental review of all aspects of research networking in Europe. An important element is the technology that is employed to provide services. For some people technology is important, for others it is a matter of indifference how services are provided if they meet the users' needs.

Today, most services provided to support researchers are based on simple best-efforts IP with no real guarantees of performance. Additionally, research users, like Grid users in particular, require services based on Authentication and Authorisation technologies as well as the availability of dedicated or semi-dedicated facilities. Over the years, the average performance available to users has improved. DWDM allows high amounts of data to be transported over a single wavelength. Some of the equipment (including switches, routers, and optical transmitters) needed to build next-generation networks, such as those based on core links operating at 100 Gb/s or above, is starting to become available, at least in prototype form.

The discussion in the breakout session should provide an insight into the developments or issues that can be expected in the next five years, regarding transport infrastructure, transmission and switching/routing technologies, as well as their impact in terms of network architecture and the consequences for network management and control.

Some of the questions are:

- What networking facilities and technologies are currently available at the campus, national, European and intercontinental level, and which developments may be expected in the near future?
- What services do research networks want/expect to provide their customers with, in particular in terms of middleware, embedded network intelligence and resource allocation?
- What specific technologies are research networks going to deploy?
- How do you address the multi-management domain issue?
- Leasing or owning fibres on the one side and managed wavelength connectivity on the other represent extreme opposites in terms of service models between providers and NRENs. What other models do you foresee being enabled by upcoming technological developments?
- What developments do you see in available and future switching/routing interfaces, SDH, Lambdas, generic framing, etc.?
- New service models emerge from the integration of the transport infrastructure with the network control plane; what is the expected evolution and the impact for research networks?
- Will this development that moves the control of the network from the core to the edges open up new possibilities for experimentation, and if so: how will that affect the use and the development of research networks?
- All-Optical Networking: what are the issues, what needs to be tested, what needs to be developed before it can be deployed at large scale internationally?