



Organisation and Governance

Discussion note

National Research and Education Networks (NRENs) are part of a multi-level network and support structure that supports the research and education community in Europe and beyond. The SERENATE study recognised that NRENs have become key in supporting many areas of research and education. The NRENs support their communities of research and education institutions through providing networking services and increasingly by developing and supporting other value-added services. NRENs have been effective at providing networking services and often provide new services ahead of those that are available cost effectively in the commercial telecommunications market. NRENs have supported some areas of scientific research which would be impossible to conduct without the use of advanced networking services. Staying at the leading edge of the provision of networking and other value-added services brings challenges, particularly when there are often many competing demands for resources, both financial and human.

There are many different governance models in place for the different NRENs, with different stakeholders represented in the governance structures. However, most NRENs have governance structures that have representation from the research and education communities, which is a healthy sign that NRENs are closely connected to the main communities that they serve.

The funding and charging mechanisms and the methods of making decisions within NRENs are also diverse, but it is clear that for many NRENs the government has a great deal of influence on them by providing funding which is aimed at the provision of services to support the country's research and education. Many NRENs do not have budget planning in place for more than one year ahead, which potentially could lead to problems when planning medium- and long-term network service development and upgrade programmes.

Different NREN organisations provide very different levels of technical and operational support for their networks, and different parts of the networks are often supported to different degrees, using different combinations of NREN staff, outsourced services and university and research institution staff. The hours of guaranteed support are very different in different NRENs, which could become an issue as more collaborative research is conducted using multiple NREN infrastructures.

NRENs are all taking a wider role in the support of their countries' national research and education programmes by getting involved in strategic projects as well as continuing to provide high-quality networking services. This move by NRENs to take a broader role is building on the success of the provision and support of networking services to the research and education communities. Several NRENs have already connected a wider range of institutions than just universities and research institutions. Others are planning to connect a wider range of institutions, which can include primary and secondary schools, tertiary and professional institutions, organisations supporting health services and government departments.

Several NRENs are delivering or aspiring to deliver end-to-end services, which allow projects to be supported that require more than just a commodity network service, without the necessity to build separate network infrastructures. Some NRENs are planning the automated set-up of end-to-end services, which will allow network services to be configured quickly and cost effectively.

The EARNEST study of organisation and governance issues has resulted in several recommendations, which if implemented should improve the governance and organisation of NRENs and the support they can offer to the research and education communities.

The study concluded that NRENs are in a good position to continue to provide strong support to the research and education communities, if they continue to improve their collaboration amongst themselves and with the research and education communities.

For discussion:

Do you agree with the recommendations below? What would you like to change? Are there any other recommendations that you would like to add? Which of the recommendations are the most important ones that should be incorporated and highlighted in the overall Summary Report of the EARNEST Foresight Study?

Recommendations for NRENs

1. The ability of NRENs to plan ahead is very important if NRENs are to be developed in a cost-effective and efficient way. Many NRENs are only setting annual budgets. It is recommended that all NRENs set multi-annual budgets over at least a three-year time period, even if their source of funding does not guarantee a budget over this period.
2. Where NRENs are not provided with multi-annual budgets, they should enter a dialogue with their funding organisations in an attempt to improve the budget planning and commitment process so that longer-term (multi-annual) budgets can be agreed and set.
3. Develop project and/or business plans for new projects or enhanced services, particularly when seeking additional funding.
4. Where possible NRENs should aim to simplify user-institution charging models, while maintaining transparency and fairness of charging. E.g., if bandwidth used is measured, then this takes up resources to measure the bandwidth, report on it and then bill institutions based on the bandwidth used. Simpler models would be ones with just one or two parameters that are linked to the type of institution or the type/bandwidth of the interface or bandwidth limit configured on the interface connecting the institution.
5. The study has commissioned from a limited number of NRENs a documentation of how those NRENs are organised and governed. These documents are useful reference documents and it would be very helpful to organisations who deal with NRENs to have these available for all NRENs, so that an understanding of their structures and decision making bodies can be obtained. It is suggested that all NRENs develop such reference documents.

6. NRENs that have not already done so must look into the future possibility of the provision of wavelengths to end-institution sites so that future collaborative research projects requiring wavelengths can be supported. Charging mechanisms for the provision of wavelengths should also be put in place, so that research projects can budget appropriately when writing research proposals and costing research projects.

7. NRENs that do not have key stakeholder representation in their governance structures should give consideration to include these stakeholders in their governance structures so that all key stakeholders have an input into the decision and policy making processes of the NREN.

8. When taking very important strategic decisions such as who should be allowed to connect to the national network, NRENs should consider consulting with existing stakeholders.

9. NRENs whose plans get delayed by too lengthy consultation and/or decision making processes should seek to improve their circumstances by either planning further ahead or attempting to streamline the necessary consultation and/or decision making processes.

10. NRENs should consider developing Service Level Definitions or Service Level Agreements in line with best practice.

11. NRENs should work together with the help of the co-ordination of TERENA and DANTE to develop robust self-provisioning of end-to-end services so that research and education collaboration can be better supported using applications that demand end-to-end quality of service and/or high bandwidth.

12. NRENs who pay for the development of additional networking infrastructure or services for special research and education projects need to maintain close contacts with the research and education community so that they can plan together the necessary budgets to support special projects.

Recommendations for funding bodies of NRENs

1. The ability of NRENs to plan ahead is very important if NRENs are to be developed in a cost effective and efficient way. Many NRENs are only setting annual budgets, probably because the funding is not guaranteed over any longer period than a year. It would be helpful if the budget horizon for NRENs is extended, so that there is a longer-term commitment to providing a stable budget, subject to other constraints.

2. Some NRENs are not allowed to carry forward budgets from one financial year to the next, which would cause budgetary problems with longer-term projects that get delayed or have to be re-profiled. It is recommended that consideration should be given to allowing all NRENs to carry forward their budgets from one financial year to the next. This could be done by requiring justification for carrying forward budgets based on a business plan. However, the decision process for giving permission for carrying forward budgets needs to be streamlined so that the decision can be made in a sensible time period.

3. Funding bodies need to be aware that certain research and education projects may need the development of additional networking infrastructure to support collaborative research or education. This needs to be budgeted either in the research and education project budget or in the NREN's budget, depending on the funding models used.

4. Funding bodies may need to help and if necessary give NRENs permission to modify their governance structures so that if necessary improved stakeholder representation on NREN governing boards is facilitated.

Recommendations for the research and education community

1. Researchers developing research proposals that require the provision of high bandwidth, and especially dedicated wavelengths, to end-user sites must liaise with their NRENs to ensure that the costs of the provision of the networking infrastructure is taken into account in the research project budget.

2. Rather than developing plans for implementing dedicated network infrastructures in isolation from NRENs, researchers should consult with NRENs and aim to use NREN network infrastructures whenever it is possible and cost effective to do so.

3. The research community needs to work with NRENs on developing and testing self-provisioning of end-to-end services, so that that research and education collaboration can be better supported using applications that demand end-to-end quality of service and/or high bandwidth.

Recommendation for the European Commission

1. The European Commission should continue to provide funding for GÉANT and provide further support.