

The Role of NREN's from a functional perspective

Introduction

There is sometimes an implicit assumption that the concept of an NREN is very clear. The TERENA compendium, which seeks to analyse NREN's, mainly in Europe, according to a standard set of metrics, shows that, in practice, the way NREN's are structured in terms of funding and organisation varies considerably. Nevertheless, although the organizational detail and the specific organisation structure may vary there are a number of common functions that all NREN's need to carry out.

Analysing NREN's from a functional perspective, i.e. the set of things that they need to be capable of doing, provides a better model for emerging or new NREN's. It provides a checklist of capabilities that an emerging or new NREN needs to have in order to be viable. The precise way in which the functions are organized and funded will vary from case to case. What is important is that an NREN organisation has the scale and resources necessary to perform a specific set of functions and that these resources are under single management control.

This document sets out two groups of functions relating to the operational functions of an NREN. The first is a basic set of functions that summarise the capabilities that all NREN's should be able to deliver. The second groups sets out areas where a more mature NREN could be expected to be engaged or have a policy perspective.

Basic NREN Functions

There is a set of functions that an NREN needs to be able to perform in order to be relevant and add value to its connected end-users. These are described briefly below

- 1. Organise National Connectivity.** A key raison d'être for an NREN is the implementation and operation of a National network interconnecting the various connected end-users within the country. The network needs to have some selling proposition when compared with other national sources of connectivity e.g. cheaper connectivity, better performance, additional services, advantages of a community etc.
- 2. Provide User/Potential User Support.** Support should be provided both for the network service and other any other services offered. As well as dealing with issues experienced by existing users, the support function should be able to support new users and assist them in obtaining and operating services. Many users will belong to campuses or connected institutions who will have their own local ICT capabilities. User support will need to interact with these, but it is important that connectivity issues outside the campus/institution and, more controversially, between end-users in different campuses/institutions are owned by the user support function.
- 3. Manage operational aspects of services.** Services have finite reliability. They also need maintenance and upgrades. These functions need active management to log, supervise and resolve operational service issues. This function can be seen as being related to User Support but it is basically concerned with interacting

with equipment more than with users. The functions are operated in tandem in many support models.

4. **Participate in regionally based global connectivity initiatives.** Research and Education are generally global activities. The range of communicating parties, particularly in research, is world-wide. The Research and Education community has organized international and global networking on a co-operative basis as it is more cost effective and efficient to do so. It is generally very inefficient for an NREN to organise its own individual international connectivity. The economies of scale achieved by doing this, on a shared basis, as well as the management efficiencies associated with co-operation are enormous. It does require participation in the joint management though at least at a decision making level. This is particularly the case with Aid related projects where there is a particular need to interact with the funders and other beneficiaries.
5. **Organise interconnectivity with Commercial Internet.** Although Research and Education networks are typically closed user groups, there is nearly always a need to interact with the broader commercial Internet. By managing this function centrally it is normally possible to obtain significant economies of scale. Many NREN's use their commercially neutral status to act as an Internet Exchange Point. This both facilitates national Internet connectivity as well as reducing costs and possibly providing a revenue stream.
6. **Manage finances/business.** There are significant costs associated with being an NREN. Whether these costs are funded by end-users or by other sources, or possibly some combination, there needs to be clear accounting and financial management functions. Because of this, the best form of commercial structure for an NREN is some sort of limited liability vehicle. An NREN is never a static object and it is necessary, therefore, to provide standard business planning and commercial functions e.g. procurement. Where an NREN is collecting costs from end-users pricing and billing mechanisms are also necessary.
7. **Interaction with national funders.** Research and Education almost inevitably involves interaction with national governments. They will typically be seen in the roles of customer, policy maker etc. Since this is the case they will typically play a significant role in the overall direction of an NREN. It is therefore advisable to focus carefully on the interaction with national funders and to see this as a dedicated function in its own right.
8. **Publicity and Promotion.** In a competitive world, it is necessary for any organisation to promote its existence, to assist users by appropriately targeted communications and to encourage new or latent users by publicity and promotional literature.

Additional NREN Functions

The above list represents the basic functions that are really needed by a viable NREN. They mirror the standard functions that are part of any organisation, commercial, technical and sales/marketing. Roles an NREN can play in addition to those identified above are described below. They do not really change the functions identified. Instead they imply new tasks and more resources.

- 9. Supporting E-government.** The application of ICT technology is an increasingly important issue for governments. It is becoming an area of public policy where NREN's have a potential role to play. A great strength of an NREN is its relative independence from major ICT suppliers. This, coupled with a high level of technical expertise and experience serving a more ICT literate customer base, make NREN's potentially natural partners to assist governments with the implementation of E-government. This is a policy area that has to be approached with some caution as government needs may not be realistic but it is nevertheless a potential opportunity.
- 10. Pro-active role in proactive service provision to groups.** The basic role of an NREN is to provide service to individual institutions and campuses. Users of the service often co-operate as groups on subject specific developments. The requirements of the group are often additional to the basic service portfolio (e.g. security, performance etc.). By co-operating with and supporting groups of users an NREN can enhance network usage as well as providing more useful multi-end-point services.
- 11. Engagement with Regulation and Liberalisation.** Telecommunications has historically been provided as a monopoly service reserved to quasi-state organisations. The liberalisation of national and international telecommunication's markets in many parts of the world has had had a dramatic effect in reducing prices for service and improving service capabilities. As representatives of advanced users NREN's can be in a strong position to engage with the liberalisation and regulation of telecoms. Such engagement has the doubly beneficial effect of enhanced political visibility and achieving lower costs.
- 12. Contribute to Technology/Service development.** NREN's generally serve advanced users with service demands ahead of the public marketplace. As such they are in a position to trial new services and also contribute to the general development of technology. Such activity improves political visibility and acts as a stimulus for NREN staff.

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