Report on the TERENA Technical Advisory Council
Lyngby, Denmark
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Introduction

The 2006 TERENA Technical Advisory Council (TAC) met at the Danish Technical University in Lyngby, Denmark on Monday 21 May.

Claudio Allocchio welcomed the participants and summarised the goals of TAC meetings, which are mainly to provide strategic directions for the TERENA technical activities and discuss issues that are important for NRENs. The 2007 TAC meeting focused on two main subjects: 1) should TERENA support innovation in lower-layer technologies and how; 2) videoconferencing, SIP and ENUM deployments in Europe. Each subject was introduced by presentations, which were meant to set the scene and stimulate discussion.

Innovation in Lower-layer Networking Technologies

Steve Williams started the session with an introduction on the first discussion topic. He said the distinction between commodity Internet services and services provided by NRENs was becoming narrower than in the past. This change was raising a need for understanding if there still is an added value in the services provided by NRENs and, if yes, where does this added value come from.

Nowadays more and more services and applications require higher bandwidth. In many research areas, such as HPC, biology, chemistry, visualisation etc. lot of bandwidth is required to shift large amounts of data from one place to another; photonic research is pushing for national scale projects on various areas; researchers need access to wavelengths – a shared IP service is not enough – and this adds complexity both at the technology and at the management levels, leading, for instance, to requirements for automatically provisioning, on-request and in a short time, of high-bandwidth dedicated capacities. Particularly, in the UK, JANET is involved in optical projects, looking at technologies to optimise the network control and management plane and inter-domain services. In such an environment, researchers are demanding access to lower layers to carry out their experimental work.

In the past years TF-NGN, the TERENA task force on next generation networking, had worked as a forum for testing lower-layer networking technologies. Since the start of the GN2 project a lot of work, which was carried out in TF-NGN on a voluntary basis, became part of GN2 Joint Research Activities (JRAs); as a result, there seems to be no other European focus on lower-layers at the moment. A possible criticism about GN2 may be that the project's RTD programme is not looking far enough in the future, whereas the work should be looking at the years ahead and

discuss ways of facing the challenges that NRENs will be confronted with in, say, 10-15 years. TF-NGN was indeed forward looking and at the peak of its success used to involve a significant number of innovative components, coming both from industry and university research environment. However, in the latest period, TF-NGN participants had also experienced a number of potentially serious issue related to the choice of location, limited management effort and threatening overlap with other projects, activities and forums. Steve was interested in discussing whether in the current environment there is a need for a "new TF-NGN" and if there is space for it.

Maria Isabel Gandiá Carriedo presented the plans of CESCA, the Catalonia regional research and education network, as an example of the need for innovation in the global European networking environment. Regional networks often have shorter procurement cycles than NRENs and are closer to end users. CESCA have currently a Layer-2GE network, the "Anella Cientifica", connecting to RedIRIS, and providing access to a large number of institutions in Catalonia. They also support advanced research applications and users, for instance by providing VLANs for projects of the i2Cat foundation. Maria Isabel remarked that projects in the future will need hybrid networks at the local level too, as demand for new services and new requirements come along. So CESCA were planning to evolve to a distributed network in 2008 with two points of presence and an IP-DWDM network infrastructure.

Walid Dabbous presented an overview of the US PlanetLab project and its European extension, the OneLab project. He focused on the need for virtual test beds the current approaches and the way towards global experimental facilities. The basic need behind the PlanetLab and OneLab projects was to address and manage the complexity of the current Internet. This need gave rise to setting up virtual test beds to evaluate networking projects dealing with innovative, potentially disrupting technologies. PlanetLab had set up a distributed experiment facility. Planetlab limitations today lie in a limited view of the underlying network as well as in being built on the wired Internet. OneLab intends to enhance such limitations by helping the understanding of federation, which will be key to the success of its experimental facility. OneLab is also expected to make considerable progress in extending PlanetLab beyond the traditional wired internet, in deepen PlanetLab's monitoring capabilities and finally in providing a federated administration for PlanetLab nodes in Europe. The project is aiming at building a global facility, which could serve as a generic testbed for testing future proposals for network architectures.

Andrew Cormack remarked that a strong aspect of Planet-Lab lies in central monitoring capabilities, which make possible to track its usage. He warned the audience in being careful and not going away with that.

Victor Reijs briefed the audience with an introduction on the MantiCORE project, which builds on experimental work on UCLP and aims at expand it at Layer 3.

After the set of initial presentations Claudio started the discussion with the remark that there are lot of initiatives, which probably are not all sustainable and there is a need for some European focus. However, it was not obvious what are the technical areas the community should focus on. He said that there is little coordination between all the various activities, and maybe there should be. Generally, it was felt that not just coordination was missing, but even more, there was no sufficient or effective exchange of information, so a forum for NRENs to discuss together, evaluate and understand the different activities was very much needed.

Some examples to illustrate the benefit of information exchange and the relationship between TERENA task forces and EU research projects were provided from other TERENA special activity areas, such as middleware and mobility: Diego Lopez said that when moving from TF-AACE to TF-EMC2 a few years ago the task-force activity was refocused and its scope broadened. This was quite successful and spun off a number of interesting new activities, which then focused on very specific direction, thanks to some project funding. On the other hand, the mobility area was rather more affected by JRA5 than the middleware one because it focused on a limited number of activities (eduroam).

Steve Williams observed that actual coordination between the various projects and initiatives was not very practical, but some space was definitely needed to pick out useful ideas from NRENs projects: this could take the form of a series of workshops, perhaps held twice a year, for NRENs to find out what are the current developments/plans and share ideas.

Mike Norris remarked that there would be support for research even in small NRENs; HEANet need feedback in graduate programmes as well as in projects dealing with primary and secondary schools.

Dimitrios Kalogeras pointed out an example from the Brazilian NREN, who have installed research nodes on their physical topology giving users the opportunity to undertake research in a realistic environment: policy and governance issues need to be addressed for this. He also remarked that in Europe EU framework programmes are strong drivers for research; additionally, he said that infrastructure need to be provided for NREN customers, enabling research by university campuses.

Mauro Campanella expressed a need to address lower-layers better: this means to understand how to control layers that are lower or equal to two (no IP) and how to control the IP layer (<=3). Other important issues to look at are policy and economic issues, as well as the evolution of test beds. Mauro argued that technical coordination is indeed missing and is needed because NRENs are aiming at delivering common services. The time scale for such an achievement should be approximately one year. He found that an interesting discussion item was to understand what is the most suitable model to manage the current complexity of the networking environment, basically in order to ensure that different networks talk to each other at the lowest possible layer. He stressed that by the next year European NREN will need coordination to make sure that the service they are developing are going to work.

Diego Lopez recommended that the coordination efforts should be limited to the technical level and not touch on policy or political issues. He pointed out how the eduroam service was currently suffering from such a policy-related discussion.

Klaas Wierenga remarked that although coordination is important one has to pay attention to letting NRENs enough freedom for experimenting alternative ideas. He pointed out at the trade off between the benefit of coordination on the one hand and the beneficial effect of competition on the other hand. Rather than emphasising coordination he would support the need to talk and exchange information.

Andrew Cormack was wondering whether people were talking about coordination between NRENs or between EC projects. Although exchanging information about EC project was felt important this clearly would not exhaust the whole of NRENs

research interests and activities. Karel Vietsch added that NRENs need to talk not only with each other; on the contrary, there is a need to exchange information and possibly collaborate with the wider community, including other projects, industry and universities.

Final remarks and suggestions from the audience hinted that it was not yet appropriate to create a task force; however it was definitely recommended that TERENA should organise a workshop, or a series of workshops, to start with. It was recommended that the organisation of the event/s should not be left under the responsibility of a single individual, but instead several people from the community should have been involved in the organisation.

Stanislav Sima said CESNET was interested in discussion and cooperation between NRENs about supporting research and application of photonic technology in wide-area networks, oriented to the future deployment of advanced programmable photonic devices in suitable research and education networks. Such a deployment would enable new network applications, network manageability and would substantially improve cost effectiveness. The approach can be seen as a bottom-up effort in building the Internet of the future, enabled by developments in photonic industry and open software systems. Stanislav presented a cost comparison of fibre pair lighting between traditional vendors and photonic vendors. More details may be obtained via the Porta Optica project deliverables or directly from CESNET. Finally, Stanislav mentioned recent successful deployment in some lines of the CESNET2 DWDM system and CBFs.

Videoconferencing, SIP and ENUM deployment

András Kovács presented the idea of submitting a proposal to create a new GN2 service activity to support videoconferencing at the pan-European level. The idea was the outcome of the TERENA task force TF-VSS (videoconferencing service study) and was presented and discussed at the GN2 year-4 planning meeting, which was held in Amsterdam in April 2007. The proposal had been developed with two options in mind as far as the service model is concerned: a) with a central Multipoint Control Unit (MCU) to be managed by an organisation and being made available to the whole European research and education community b) without a centrally managed MCU, but rather based on sharing existing resources already available at participating NRENs. There was indeed a third option: c) although interest was expressed by a number of NRENs the TF-VSS proposal had got very limited support in terms of actual contribution to the proposal definition and even less regarding the offer of resources to implement and deploy the service; as a result, TF-VSS was not sure whether there was sufficient scope to go ahead with the idea and submit a proposal for GN2 year-4 or simply withdraw the idea.

TAC delegates were asked to express their opinion on the three options discussed above. The result was: a) 13 NRENs supported the full service (including the central MCU) b) 11 NRENs supported the option of a reduced proposal (without a central MCU) c) nobody was in favour of withdrawing the proposal.

Some additional remarks were made: the audience felt that a federated directory service was needed: this should include some sort of service coordination plus coordination/management of the Global Dialling Scheme (GDS). However, it was

observed that even if the proposal would not go ahead or was not approved, this coordination could be part of a TERENA task force, possibly even converge in an updated version of TF-ECS, the task force on Enhanced Communication Services.

Mike Norris said that a service like the one proposed would be very important if it also looked at performance and user support. Fabio Vena agreed that end user support was very important; in fact, he remarked that the current view was focusing too much on back-end infrastructure and end users needed to be more involved.

Artur Binczewski remarked that there are several NRENs who do not have a MCU, whereas videoconferencing should be available to the whole of the European community, therefore he felt that the proposed service would be very useful to help less-advanced countries/NRENs.

Erik Dobbelsteijn agreed on the importance of end user support but objected on the feasibility of providing such support centrally; he remarked that successful NRENs are those who support users locally.

Mauro Campanella remarked that restricting the service to H.323 would be a mistake. A really useful service should be "future-proof" and therefore it would be essential to cater for the next technologies or protocols to become available. It was objected the focus on the MCU was mostly due to the fact that several NRENs have already made significant investments in H.323 and this was not working reliably at the moment; however the proposal was not only focusing on H.323, but also on the SIP protocol. In addition, Diego Lopez observed that MCUs are not so expensive and are widely deployed in the NREN community, to such an extend, he reckoned that H.323 is not going to disappear in less than three years. Mauro acknowledged that, but added that local network issues affect H.323 and hence the service should provide some debugging tool to support local teams.

Steve Williams said that a big plus of the JANET videoconferencing Service lies in support personnel sitting close to the equipment and able to fix problems immediately when they occur. One cannot ensure this sort of timely support by simply coordinating distributed resources.

Fabio Vena and Erik Dobbelsteijn presented their views on interconnecting SIP "islands", which are currently deployed or are in the deployment planning stage. The intention was to discuss if and how to assist the rollout of next- generation SIP-based networks. This topic is related to the work of TF-ECS, the TERENA task force on Enhanced Communication Services. The speakers explained what TF-ECS is and presented the results of a survey carried out among NRENs on the deployment of such services in Europe. After a description of a typical, single-domain, deployment scenario, Erik discussed in detailed the architecture and issues involved with the provision of SIP-based services in a multi-domain environment. The attendees were asked if NRENs were interested and able to undertake work in that direction. Unfortunately the meeting was running late and therefore there was time only for a limited feedback. The main remarks were from Artur Binczewski and Claudio Allocchio, who found it a very important and useful service and from Dimitrios Kalogeras, who stressed the need to address the control plane in addition to the data plane.

Attendees at the 2007 TAC
DTU, Lyngby, Denmark

Monday 21 May 2007

Claudio Allocchio	GARR and TERENA
Lajos Bálint	NIIF/ HUNGARNET
Kurt Bauer	ACONET
Martin Bech	UNI-C
Artur Binczewski	PSNC
Vanessa Camilleri	University of Malta
Mauro Campanella	GARR
Valentino Cavalli	TERENA
Andrew Cormack	UKERNA
Walid Dabbous	INRIA
Erik Dobbelsteijn	SURFnet
Lars Fischer	NORDUnet
Licia Florio	TERENA
Maria Isabel Gandia Carriedo	CESCA
Christoph Graf	SWITCH
Jan Gruntorad	CESNET
Torgny Hallenmark	SUNET
Avgust Jauk	ARNES
Baiba Kaškina	LATNET
Peter Kaufmann	DFN
Andras Kovacs	NIIF/HUNGARNET
Olav Kvittem	UNINETT
Jean-Paul Le Guigner	RENATER/CRU
Tomas Liljebergh	SUNET
Mikael Linden	CSC, the Finnish IT Centre for Science
Diego Lopez	RedIRIS
Cătălin Meiroşu	TERENA
Kevin Meynell	TERENA
Janos Mohacsi	NIIF/HUNGARNET
Mike Norris	HEAnet
Christian Panigl	ACOnet
Victor Reijs	HEANet
Esther Robles	RedIRIS
Olaf Schjelderup	UNINETT
Stanislav Sima	CESNET
Martin Sutter	SWITCH
Helmut Sverenyák	CESNET
Guy Van Den Bergh	TERENA
Walter van Dijk	SURFnet
Fabio Vena	SWITCH
Karel Vietsch	TERENA
Klaas Wierenga	SURFnet
Steve Williams	UKERNA
Stefan Winter	RESTENA