



**Report on TERENA Technical Advisory Council (TAC) Meeting
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1. Welcome and Apologies

Christoph Graf opened the meeting by welcoming the participants; he then briefed them on the role of the Technical Advisory Council (TAC) and introduced the meeting agenda.

2. Review of the Special Interest Areas

According to the terms of reference of the TERENA Technical Programme a maximum of six special interest areas (SIAs) are identified and reviewed by the TAC every two years. The latest list of special interest areas, which was agreed in 2006 was:

- Lower Layer Technologies
- Security
- Middleware
- Mobility
- Voice and Video Collaboration
- Grid

In addition, Campus and End-to-End issue coordination are challenges that have an impact across all SIAs.

Christoph Graf introduced the main topics for this session: to assess the TERENA activity in the security area, to discuss the focus of the middleware and mobility areas and to specify the meaning of the lower-layers area. Finally, he mentioned that "virtualisation" is an emerging key concept encompassing a number of technologies and architectures and it may become a new SIA.

Security

Andrew Cormack introduced the discussion on the security area. He started with the warning that security does not equal AAI, an interpretation, which is somehow became commonplace in certain communities, such as some Grids: security, he said, is not about access management, but has rather to do with protecting the things users want to log in to.

TERENA security activities span over a number of topics, from information exchange to services: established services include TRANSITS training courses and the Trusted Introducer (TI). Thirteen TRANSITS training courses have been organised by TERENA so far and relevant course material is available for non-profit use by other organisations. The TI accredited CSIRT teams form a core community in Europe and these teams are now sharing information: new ideas about certification and exchanging bulk data had been discussed during the latest TI meeting a week before the TAC in Oslo, Norway. More security activities include the IRT object in the RIPE database, which is slowly being populated, an open-source incident handling system and a set of security toolkit training events provided in GN2.

TF-CSIRT, the task force on coordination of CSIRTs, exists since 2000 and is very popular: approximately seventy people meet three times per year. TF-CSIRT has ended its mandate and is currently in the process of revising its terms of reference; in the future TF-CSIRT will also look at CSIRT exercises, perhaps with the European Network and Information Security Agency

(ENISA). Gorazd Božič (ARNES) who had chaired the task force since its early days is going to be replaced by Lionel Ferette (BELNET).

The main questions raised by Andrew addressed the importance of collaboration and the way of increasing it, even in the context of TF-CSIRT meetings; additional important issues are what NRENs need and what they could offer and, finally, relevant topics to be dealt with in TF-CSIRT.

Christoph Graf felt that the level of cooperation in the security area had been slightly decreasing in the past few years and he wanted to encourage people to exchange information and find areas for common work.

Victor Reijs asked for examples of things where more collaboration would be needed. Andrew replied that there are no clear examples, although people seem too busy to effectively collaborate. When asked whether experience with the security training has raised some scope for further collaboration, Christoph answered that the tools the research and education community is using are building blocks that need more work before they can be used effectively.

Mauro Campanella said the big picture seems to be missing from the current activities and added that some taxonomy may need to be developed to map security to such things as encryption etc. He added that from the outcome of the discussion he would expect significant input for engineering next generation networks, particularly in GN3.

Andrew Cormack mentioned an idea that he picked up during the TERENA Technical Workshop "Using Authentication and Authorisation Techniques in Multiple Environments", which was held the day before TNC2007 in Lyngby, Denmark, about the issue of security advice on setting up Identity Management systems. He said this was a good example of how security impacts on other activities, such as middleware.

Christoph Graf remarked that one should not look at security separately: there is a real need to look at it as more integrated in the products and services delivered by NREN.

Middleware and Mobility

Diego López introduced the discussion on refocusing the Middleware and Mobility SIAs, by starting with the remark that two task forces in the respective areas are coming to an end in September. The session was aiming at discussing and clarifying the meaning of the two areas, by looking at the best way of refocusing their "incarnations": TF-Mobility and TF-EMC2.

Diego remarked that the focus of TF Mobility seems too narrow, whilst the TF-EMC2 one seems too wide. Additionally, the interest of the community in mobility issues has been shifting from eduroam related stuff towards other things, whereas TF-EMC2 activities have been quite effective in disseminating information, providing guidance and coordinating activities globally. A number of achievements in both areas are well known: eduroam, RadSec (currently progressing in the IETF), TACAR (Identity service offered by TERENA and NRENs and widely used by the Grid community), SCS, SCHAC (becoming widely established), REFEDS meetings (significant interest in establishing a common framework, policies and rules, understand how to influence industry and service providers, find some stable organisational set up).

Middleware is the basis for any network service and vendors are aware of this. The NREN community has established good connection with them and this collaboration, Diego remarked, represents the core for inter-institutional collaboration by being at the same time a way for innovating at low cost. However a definition of middleware is still needed: the concept is too wide and the community should focus on enhancing the achievements, promote their exploitation in more application areas and look at what the community is demanding from NRENS.

As a result Diego suggested refocusing TF-Mobility and TF-EMC2 along the protocol stack:

- TF-Mobility to cover the highest part of the network layers, particularly in relation to network services and therefore looking at mobile technologies, which are currently not covered by its terms of reference, such as Network Access Control (NAC), Network Endpoint Assessment (NEA), Trusted Network Connect (TNC) etc.
- TF-EMC2 to cover the lowest part of the application layers, including infrastructure services, such as PKI, directories and schemas, federations, reputation systems etc.

Christoph Graf asked the participants' opinion about Diego proposal. Mike Norris was wondering if things like WiMax and other mobility services at campus or national level would still be interesting for TF-Mobility. It was remarked that TF-Mobility used to focus on things were people could actually work together, such as eduroam, but there was an interest in those things already; Klaas Wierenga thought this will still be the case in the future although these technologies should be handled more explicitly in the new task force.

Lower Layers

Christoph Graf suggested clarifying the meaning of the lower-layers area, by specifying that it should cover layers 0 to 4. The audience agreed. Stanislav Šíma observed that the term "lower-layers" is probably not suitable to portray the wide interest of the research and education community in optical technologies; whilst appreciating the remark, Christoph suggested to watch the developments in next generation networking activities and then come back to this issue at the next revision point.

Virtualisation and Grids

Christoph Graf reported a suggestion from the TERENA Technical Committee (TTC) to change the formulation of the "Grid" SIA into "Virtualisation (including Grid)".

Mauro Campanella remarked that virtualisation and Grids are different things: they differ in scope, tools, etc. and there are also possible clashes between them, so it seems difficult to combine them in one special interest area.

Victor Reijs observed that virtualisation takes place in lower layers as well and therefore there are relationships to other SIAs; Christoph agreed but he said it would make sense to have it as a separate item in its own right. David Foster remarked that also Grids have "horizontal" relationships with several different areas. Other participants agreed on this. Andrew Cormack remarked the importance of keeping Grids mentioned somehow, particularly because the NREN community seems to be having problems in engaging with the Grid community. There were some suggestion on presenting the SIAs through a matrix with vertical and horizontal items and then look at the intersections.

As a result from the discussion Christoph Graf suggested to move Grids from a separate SIA into a cross-activity one and the attendees agreed on the following six special interest areas for the next two years: lower-layer technologies (Layers 0-4), security, middleware, mobility, voice and video collaboration, virtualisation. In addition, campus and end-to-end issue coordination are challenges that have an impact across all special interest areas, while Grid collaborations span many of the areas. Final remarks were made by Andrew Cormack, who suggested the TTC can work out a bit more in detail how to present the SIAs on the TERENA website and by Christoph Graf, who said it might also be worth adding a short description to clarify the meaning of each SIA.

3. "Green matters" - Transparent networks to offer transparency on resource consumption?

The new TERENA task force TF-Storage is looking, among other topics, at power consumption. During the discussion about work items that took place before the creation of the task force Lars Fischer had raised the issue whether "green matters" are specifically related to storage services only or they impact on a broader set of services and, in that case, whether these matters should be dealt with in the various relevant task forces or in the framework of a separate task force.

Lars Fischer introduced the discussion on "green" issues by observing that *eInfrastructures* have a significant impact on a number of those issues, including, for instance the cost of energy, cooling, and CO₂ footprint; he also remarked that in some countries the IT sector has a larger CO₂ footprint than the aviation sector. Lars said there is currently a lot of hype on environmental friendly technologies and energy-saving matters, but the issues are real. Commercial "zero-carbon data centres" are actually being built today and they represent a good step in moving towards renewable energy sources. Of course power is a dominant cost component already and the energy-related costs of operating IT equipment are growing significantly in comparison to capital expenditure.

Lars mentioned four types of issues, which NRENs should look at: cost, policy, responsibility and opportunity:

1. *cost*; as the cost of energy grows, power becomes a dominant issue; above a certain threshold power costs as much as hardware, so NRENs should aim at reducing opex, particularly by finding ways of keeping such costs under control;
2. *policy*; CO₂ footprint is becoming an important issue for policy makers and NRENs should be aware that having a "green profile" may be important for them in the near future;
3. *responsibility*; does the research and education community have some special responsibility towards environmental issues? What about the IT and the Internet communities?
4. *opportunity*; maybe NRENs can help in this field: for instance by promoting certain technologies, such as All Optical Networking?

A number of additional questions relate to the above issues: does European collaboration provide an opportunity to reduce CO₂ or not? Could NRENs have a proactive role in this? What

could TERENA contribute? A first suggestion would be to get people together and start documenting the current state of NRENs and Campuses in the form of white papers, guidelines and best practice.

There was some discussion whether collaboration should take place in a dedicated task force or other task forces should be encouraged to look at "green" matters. Lars said there are pros and cons in each case, though he seemed to find a separate task force the most appropriate solution.

Christoph Graf asked the attendees if they were doing anything in this area and it transpired that roughly one third of them had some experience or interest in "green computing" matters. In addition, Andrew Cormack suggested investigating if EUNIS had done something in this area.

Erik-Jan Bos said SURFnet were advised by the Dutch government to take these matters into account when making their plans for the next generation infrastructure; he thought this is a quite relevant area for NRENs in general and for TERENA.

Mauro Campanella said the way people use the network (for instance videoconference or reading electronic books online) matters as well and this seems to be missing from the introduction, he thought it would be good to consider how users can be encouraged to make a more efficient use of the network.

Mike Norris thought the outcome of the discussion could provide important input to GN3. Karel Vietsch was wondering if this would be relevant to a networking activity in the project. Although interesting, it was remarked that there is no time to consult the community via a workshop before the GN3 proposal is submitted. However, it was agreed that when it will be clear what the GN3 project structure will look like, TERENA should seek input from those experts in the community who have been dealing with "green matters".

Ingrid Melve reported that Uninett had started to work on "green matters" in particular with respect to physical infrastructure and had issued best practice recommendations for colleges and institutes; however looking at the implications for the whole set of NREN services and their lifecycle would be more difficult because of the distributed nature of these services.

Per Nihlén said it would be interesting to know what the cost issues are; he added that cost saving might make people listen with more interest to such issues.

Andrew Cormack said an interesting task would be to obtain information about how much power consumption increases when deploying VoIP rather than using telephones.

Christoph Graf thought there is enough interest in the community for this sort of matters, maybe even for a task force. Karel Vietsch warned that for creating a successful task force volunteers are needed and therefore TERENA should follow the usual path of getting community members involved in discussing the content first rather than the format. Christoph Graf concluded by saying that it makes sense to start with a workshop and see how the community reacts.

4. Impact of "free services" - How are Google and Co affecting us?

In recent years a number of "free services" have become widespread and are now largely used in the research and education environment as well. These include services such as *gmail*, *skype*, etc. but also indexing and search services. The newly created TERENA task force TF-MSP (Management of Service Portfolios) looks at the management of NREN service portfolios and the way new services are trialled, brought into operation and finally ended or replaced at the end of their lifecycle. The type of services exemplified by the various Google and co. are not specifically developed for the academic community, but academic users are using them and more and more institutions are considering replacing specific in-house provided services with such commodity services. The subject of this agenda item was to discuss how these services are going to affect the research and education community and particularly NREN services.

Christoph Graf introduced the topic by first considering whether these services are really "free" or not. Indeed there is no direct cost for NREN customers, nor for the NRENs; the cost bearer in all cases are the suppliers, therefore, Christoph argued these should rather be called "third-party paid services".

Christoph remarked that NRENs and the academic community at large have various options to deal with these services. He mentioned a few of them based on real cases, but the following list may be not an exhaustive one:

- 1) The community can "withdraw" from being involved in such services and just adopt commodity, "off-the-shelf" solutions – this is the case in areas such as searching and indexing, where major attempt by the academic community to deliver services were abandoned a few years ago in favour of services such as *Google*, *Yahoo*, etc., but also in the area of videoconferencing.
- 2) NRENs can "compete" with providers of such services, like it is the case today in the provision of email to institutional users, versus the provision of free email accounts. NRENs can develop very specific services for research and education based on their well-established trust relationship with customers, like it is the case in the area of AAI.
- 3) NRENs can choose to exploit complementary strength/weaknesses and "collaborate/partnering" with third-party providers in certain areas, for instance in Public Wireless LANs, by sharing access points with public operators, or in enabling collaboration services based on AAI, an asset that the NREN community may be able to provide.
- 4) Another possibility may be "Controlling, enabling, selling access" to the community – the following examples were mentioned to illustrate this approach: ongoing discussion between JANET(UK) and BBC on a peering agreement for distributing content, experience in Switzerland in talking with the Microsoft Developers Network Academic Alliance on AAI, support for commercial IPTV in Finland.

A number of questions arise from the above: are NRENs really aware of their potential? There are at least three advantages: NRENs reach a huge number of end users; they play an emerging role in building trust-based infrastructures (AAI); they have a dominating position in providing services to the research and education community. Should not NRENs try to actively look for collaboration opportunities, by talking to companies like Google, Yahoo etc.? If yes, at which

level should those talks occur? And at what level should the outcome be exploited/addressed: Campus, NREN, TERENA?

Diego López said that some of these talks are already happening sometimes at campus level and he thought TERENA could actively contribute. Andrew Cormack added that some UK universities are considering entering into agreements with third party providers such as Google and Microsoft to provide services such as email to their users, however there are significant policy and technical issues in such outsourcing and it is therefore important to look at the development and take-up of such services and how they impact NRENs; he said in the UK JISC was looking at providing some guidance in this area.

Christoph Graf mentioned that the developments in AAI in the research and education sector might be a significant help in leveraging those services. Lars Fischer remarked that their widespread usage among students and new users, make them perceive the relevant suppliers as those who are really driving innovation nowadays, rather than NRENs, and argued that it would not be wise to ignore them. Diego López suggested that TERENA could seek to encourage collaboration with third party service providers as part of the definition of the works of future task forces. Mauro Campanella suggested to approach matters in a practical way and to start by gathering more information.

In closing the discussion Christoph Graf remarked that the advice to TERENA should be for the time being to be vigilant and keep the opportunities in mind.

List of Participants

First Name	Last Name	Affiliation
Claudio	Allocchio	GARR
Uladzimir	Anishchanka	UIIB NASB/BASNET
Hansrüdi	Born	SWITCH
Erik-Jan	Bos	SURFnet
Mauro	Campanella	GARR
Valentino	Cavalli	TERENA
Tryfon	Chiotis	GRNET
Andrew	Cormack	JANET(UK)and TTC
Tomás	De Miguel	RedIRIS
Erik	Dobbelsteijn	TWIYO/ co-chair of TF-ECS
John	Dyer	TERENA
Jón Ingi	Einarsson	RHnet
Lars	Fischer	NORDUNet
Licia	Florio	TERENA
David	Foster	CERN
Christoph	Graf	SWITCH and TTC
Jan	Gruntorád	CESNET
Torgny	Hallenmark	SUNET
Josh	Howlett	JANET(UK)
Avgust	Jauk	ARNES
Baiba	Kaškina	Sigmanet
Peter	Kaufmann	DFN
Werner	Koblitz	ACONET
András	Kovács	NIIF/HUNGARNET
Mikael	Linden	CSC
Diego	López	RedIRIS and TTC
Ingrid	Melve	UNINETT
Kevin	Meynell	TERENA
Jari	Miettinen	CSC/FUNET
Miroslav	Milinović	CARNET and TERENA TEC
János	Mohácsi	NIIF/HUNGARNET
Per	Nihlén	NORDUNet/SUNET
Mike	Norris	HEANet
Victor	Reijs	HEANet
Afrodite	Sevasti	GRNET
Stanislav	Šima	CESNET
Milan	Sova	CESNET
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Péter	Szegedi	TERENA
Daan	Velthausr	SURFnet
Fabio	Vena	SWITCH/co-chair of TF-ECS
Karel	Vietsch	TERENA

Klaas	Wierenga	Cisco Systems
Stefan	Winter	RESTENA