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Deliverable DN4.0.3,3:
Annual Report on Activities to Support Research Networking in Less Advanced Regions

Deliverable DN4.0.3,3

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Abstract

This is the third of a series of annual deliverables reporting on the activities that have undertaken in the previous 12-months' period within NA4 to provide assistance to the development of research and education networking in less advanced regions and countries.

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0   Executive Summary

The status and the development of research and education networking vary significantly in European countries. There are wide gaps spanning over multiple dimensions - technical, financial, political - between the countries that are connected to the GÉANT2 network directly. The gaps are even wider between those countries and neighbouring regions that are connected to GÉANT2 via regional networks or international links procured in collaboration with National Research and Education Network organisations (NRENs) that participate in the GN2 project. Narrowing these gaps is of the utmost importance for achieving the European Union's political goal of equal opportunities for researchers throughout the European Research Area.

Through its NA4 activity, the GN2 project contributes to narrowing the Digital Divide in research and education networking in Europe, by:

• monitoring the status and the evolution of National Research and Education Networks in different European countries, and

• actively providing support to countries and regions where networking services for the research and education community are less advanced.

This is reflected in the two distinct but interrelated parts of NA4:

a) The production of annual editions of the TERENA Compendium of National Research and Education Networks

b) Assistance to the development of research and education networking in less advanced regions.

This report describes the activities carried out in part b) of NA4 during the third year of the GN2 project, i.e. from the 1st of September 2006 until the 31st of August 2007. Some of the activities that started in the reporting period were followed up in a few events that took place after September 2007; these events are reported in this document as well.

The development support activities focus on a number of selected countries. Assessments of the needs of research and education networking in two focus countries were carried out in the reporting period: Malta and Bosnia and Herzegovina.

The work concerning Malta had started in 2005 and was completed by a visit of a GN2 team of experts in October 2006; the result of this work is reported in confidential documents that were distributed to key stakeholders of research and education networking in Malta and to the European Commission.

The work concerning Bosnia and Herzegovina started in 2007 and was complemented by visits to all public universities in the country[1], as well as a number of key political stakeholders, during June 2007; the confidential report documenting the findings of the study was produced during the summer and was distributed to the European Commission and to participants in a workshop that was organised by TERENA and was held in Sarajevo on 20 November 2007.

In addition to these two country needs assessments, a major action was started in the spring of 2007 aimed at the organisation of a policy workshop on e-Infrastructure in Mediterranean countries; this initiative received active collaboration of related European Union projects and was held in Brussels on 23-24 September 2007.

A number of activities were carried out during the year in support of other European countries, partly as a follow-up of studies carried out in the previous years about the status of research and education networking in Bulgaria, Moldova and Morocco. These activities, aimed at raising awareness among the users of research and education networks about services that are enabled by advanced networks, included workshops on eduroam[®], identity management and security incident handling (CSIRTs[2]).

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[1] There are eight public universities in Bosnia and Herzegovina. The agenda of the visits mentioned in this report is provided in Appendix A.
[®] eduroam is a registered trademark of TERENA
[2] Computer Security Incident Response Teams

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1 Introduction

Networking Activity 4 (NA4) of the GN2 project consists of two parts:

a) the TERENA Compendium of NRENs , and

b) assistance to research and education networking in less advanced regions.

The goal of the NA4 development support activity is to address the challenge of the digital divide by providing assistance to NRENs and local networking organisations in the less-advanced regions in the geographical area covered by GN2.

The main components of the activity can be summarised in the following three points:

- The selection of a limited number of countries on which the development support activities will be focused in particular. The selection of focus countries is reviewed on an annual basis with assistance from an advisory panel.

- The assessment of the needs in each of the focus countries. This provides a basis for the various activities to assist in the development of research and education networking. The result of each country needs assessment is laid down in a report that includes recommendations to the relevant actors in the country and to the European Commission.

- The actual actions to support the development of research and education networking in less advanced countries and regions. Such actions can take different forms, including technical managerial and policy workshops, training, consultancy etc.

The three components listed above can be seen as subsequent phases: theoretically the actual support actions would follow from the selection of focus countries and the assessment of their needs. However, it is neither advisable nor necessary to postpone the start of support actions until needs assessments have been carried out for a large number of countries. Where there is an obvious need and an opportunity to provide support, actions will be started on the basis of the information already available to the GN2 team working in the activity.

TERENA staff members and experts from NRENs as appropriate carry out the work. A development support advisory panel, which provides assistance in the selection of focus countries, assists these staff members and the priority setting for needs assessments. The panel advises on the actions to be undertaken, and acts as a quality control panel for the country needs assessment reports and individual support actions. The TERENA Executive Committee (TEC) appoints the members of the panel. The composition of the panel was renewed in

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December 2006 and has now senior representatives from the following NRENs: CYNET, SigmaNet[3], RENATER, RESTENA and PSNC.

The objectives and the method of work of the NA4 activity have been described in great detail in deliverable DN.4.0.2, which was written at the end of 2004 and submitted to the European Commission early in 2005. The activities carried out in the third year of the GN2 project have followed the methodology described in that deliverable and are reported in this document.

At the beginning of the GN2 project, based on the advice of the development support advisory panel, an initial long-list of beneficiary countries was defined, which includes a subset of the countries represented in the GN2 project, as well as all SEEREN[4] and EUMEDCONNECT[5] beneficiary countries plus countries having an agreement with a neighbouring NREN connected to GÉANT2. At the end of the second year of GN2 this list was revised and a few countries were added, which took part in the Porta Optica study[6]: Belarus, Georgia and Ukraine. A number of countries from the long-list were selected to be the focus of specific activities and the subject of a country needs assessment in the reporting period.

The main activities carried out in Year 3 can be classified in three ways: 1) new country needs assessments, 2) follow-up actions from previous years and new support actions, including the EU-MED Event (policy workshop on e-Infrastructure in Mediterranean countries), 3) other ongoing activities.

1.1   New country needs assessments

Two country needs assessments were carried out during the reporting period: in Malta and in Bosnia and Herzegovina.

The country needs assessment of Malta had started in the previous reporting period of GN2. A visit of the GN2 team of experts, composed of Valentino Cavalli and John Dyer (TERENA), Vasilis Maglaris (National Technical University of Athens) and Enzo Valente (GARR), took place on 18 and 19 October 2006. The country needs assessment report is composed of two main sections, including a memorandum for the Minister of Education Youth and Employment and a memorandum for telecommunications operators. On 18 January 2007, the first of these two documents was distributed on a confidential basis to the office of the minister and to the chairman of the Malta Council for Science and Technology; the second document was sent the same day to managers of Maltacom and Vodafone Malta. The country needs assessment of Malta is reported in chapter 3.

Because of the complex organisational and institutional structure of Bosnia and Herzegovina, that country's needs assessment required a much more significant effort than was devoted to other countries. A joint NA4 and SEEREN2 team was formed to carry out the work: TERENA's Kevin Meynell and Valentino Cavalli and GRNET's Yannis Mitsos (the SEEREN2 project manager) visited all public universities and relevant stakeholders of the Bosnia and Herzegovina NREN during two weeks, spread over a period of one month. In

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[3] Formerly known as LATNET, the NREN of Latvia has changed name during 2007.
[4] http://www.seeren.org/
[5] http://www.eumedconnect.net/
[6] The study was funded via the Commission FP6 Porta Optica project (see http://www.porta-optica.org/)

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the week of 4-8 June 2007 the team held meetings with key representatives from the Universities of Tuzla, Zenica, Banja Luka and Bihac, in the north of Bosnia and Herzegovina. In the week of 18-22 June 2007, the team held meetings with the following organisations in the southern part of the country: the University of Sarajevo, the University of East Sarajevo, the University of Mostar, the University "Dzemal Bijedic" in Mostar, the Ministry of Communications and the Ministry of Science and Education of the Federation of Bosnia and Herzegovina, the Office of the High Representative (OHR) in Sarajevo and the European Union Delegation in Sarajevo. The country needs assessment report of Bosnia and Herzegovina was finalised at the end of October 2007. The document, which was provided as input material to all invitees to a workshop, held in Sarajevo on 20 November, was submitted to the European Commission via DANTE at the end of November. The country needs assessment of Bosnia and Herzegovina is reported in chapter 4.

1.2 Follow-up from previous years' activities and other support actions

In the past year TERENA had planned a number of training course modules to be implemented as future support measures for less advanced countries. Two course modules were developed: one course focused on eduroam, and was initially delivered during year 2 back-to-back with the RoEduNet conference in Sibiu, Romania; the other course, which focused on Identity Management, was developed during the reporting period. In year 3, the course on eduroam was delivered to Cyprus (Nicosia, 15 January 2007), Turkey (Gökova, 4 April 2007, back-to-back with the ULAKBIM annual conference) and Morocco (Rabat, 6 June 2007, in conjunction with the "Journée MARWAN"); the course on identity management was delivered to Moldova (Chisinau, 15 May 2007, the day after the first RENAM user conference) and Morocco (Rabat, 5 June 2007). The goal of these events was to raise awareness among end users of the NREN in the countries concerned about advanced value-added services.

On 5-6 July 2007, a training course for staff members of Computer Security Incident Response Teams (CSIRT) was held in Sofia, Bulgaria. This was one of the regular CSIRT training events that are organised by TERENA twice a year[7], but additionally the event, which was supported by BG.ACAD | CERT, the Bulgarian Academic Computer Emergency Response Team, aimed at facilitating the take-up of CSIRTs in Bulgaria. NA4 provided financial support for six local participants to attend the course.

As part of a consultancy to the Moroccan NREN, MARWAN, on 7 February 2007 Valentino Cavalli (TERENA), Redouane Merrouche (MARWAN) and Simon Leinen (SWITCH) held a videoconference to discuss the technical aspects of the new network to be procured by MARWAN during 2007.

1.2.1 EU-MED Event: Policy workshop on e-Infrastructure in Mediterranean countries

Early in 2007, Valentino Cavalli started discussions with DANTE about planning a policy workshop for NRENs in Mediterranean countries. Valentino Cavalli was invited to attend a EUMEDCONNECT meeting in Madrid on

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[7] TERENA has been organising TRANSITS training courses for members of CSIRTs for a number of years; see: http://www.terena.org/activities/csirt-training/

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27 February to discuss the plans with the EUMEDCONNECT project participants. Following the meeting, a management committee responsible for the organisation of the workshop was formed. The committee held regular telephone conferences in the following months, to discuss the details of the event preparation. In May 2007, partners in the EUMEDGrid[8] project joined the initial team - composed of representatives from TERENA, DANTE and the NA4 Development Support Activity Panel - in the organisation of the event. The organisation of the event progressed during the whole summer of 2007, by securing the venue, finalising the workshop programme and managing invites. Detailed information about the workshop, which was held on 23-24 October 2007 at the Crowne Plaza Europa Hotel in Brussels is available on the workshop website: http://www.terena.org/eumedevent .

1.3 Other ongoing Activities

Other ongoing activities carried out in year 3 include the update of the "development support" activity web page: www.terena.nl/development-support, the meetings of the advisory panel and the production of project reports (one annual deliverable and periodic highlight reports).

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[8] http://www.eumedgrid.org/

2 The country needs assessment of Malta

The country needs assessment of Malta started at the end of 2005 and was carried out during the first half of 2006. The study was concluded with a visit of a team of experts from NA4 in Malta on 18-19 October 2006. John Dyer and Valentino Cavalli (TERENA), Vasilis Maglaris (National Technical University of Athens) and Enzo Valente (Consortium GARR) were the members of the team. The team met the rector and key representatives of the University of Malta, NREN managers and directors of research and education institutions, the Minister of Education Youth and Employment and members of his staff, the chairman of the Malta Council for Science and Technology, managers of Maltacom and managers of Vodafone Malta. The programme of the visits is provided in Appendix A.

In October and November 2006 Valentino Cavalli drafted two documents that were sent to the University of Malta for feedback: 1) a memorandum of the visit with the Minister of Education Youth and Employment of Malta and 2) a report for infrastructure suppliers in Malta. These reports were sent on 18 January 2007 to the office of the Minister of Education Youth and Employment, to the Malta Council for Science and Technology, and finally to managers of Maltacom and Vodafone Malta. A consolidated country needs assessment report of Malta was delivered to DANTE for submission to the European Commission in February 2007.

As is apparent from the GÉANT2 network topology[9], the core of GÉANT2 has a very high capacity, whereas many countries in more peripheral parts of Europe are connected at speeds that are many orders of magnitude lower.

At the time of the study, Malta was connected to GÉANT2 at 45 Mb/s, a capacity that is 250 times lower than any typical connection in the core and much less than other small countries such as Cyprus. The result of such a low-bandwidth international connectivity was that researchers in Malta, who wish to participate in collaborative research with their counterparts elsewhere in Europe, were unable to do so in many respects.

Malta requires better connectivity than it has at present, but the price of connectivity depends very much on two main factors: the number of competitors and the dimension of the market. Malta is suffering on both sides. The small size of the country and the size of its research and education community do not make a sufficient business case for telecommunications operators to offer more capacity at lower prices, as happens in other parts of Europe.

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[9] http://www.geant2.net/server/show/nav.00d007009

The long-term strategic issue for Malta is to be able to match other European countries in allowing researchers and students to take part in the European Research Area. To achieve this aim, there is a need to:

- Increase the "customer" base of the NREN by including all not-for-profit users: research institutes, the university and colleges, higher and further education institutes, primary and secondary schools, hospitals and libraries; possibly also government institutions, while nevertheless making sure that the focus is really on research and education rather than on eGovernment;

- Facilitate the take-up of a competitive environment for the provision of telecommunications services; this should definitely help in reducing the prices for connectivity, although given the small marketplace it is unlikely that this will give rise to such an abundance of fibre availability as in continental Europe.

Knowing this, the country needs assessment report argued for the need to pursue the creation of a dedicated fibre link between Malta and the rest of Europe: GÉANT2 and most NRENs in Europe are leasing fibre; but a few ones, like the Polish NREN, have built their own fibre infrastructure in collaboration with utility companies. Malta should exploit the opportunity to work in synergy with utility companies to lay down a fibre dedicated for research and education. Other countries like Greece and Italy already have plans to do so. The use of European Union Structural Funds should be investigated for such an initiative.

The country needs assessment report of Malta provides also the following key messages for telecommunications operators:

1. Infrastructure providers will benefit in the long term from a positive cooperation with the NREN;

2. Developing the research and education network of Malta will promote the take-up of Internet services to other parts of the community, driving revenues up;

3. Partnership between the research and education community and the infrastructure providers can improve financial performance;

4. Liberalisation of the market will encourage new changes and collaboration anyway, so collaboration is the sensible way of working in the future.

One year after the study was completed there was no evidence that the study and the visits had led to any significant change in the country's situation. The author of this report was informed by representatives of the University of Malta that early in 2008 attempts would be made to approach the Ministry of Education and relevant agencies to try again to encourage them to procure bandwidth for public schools through the NREN. In terms of telecommunication infrastructure, it was expected that the re-tendering to be carried out by DANTE during 2008 could produce some better results.

3 The country needs assessment of Bosnia and Herzegovina

The status of research and education networking in Bosnia and Herzegovina is particularly critical. The country has a legal entity, called BiHARNET, which is mandated to run the national research and education network, but BiHARNET has not been working effectively for a number of years. In addition, participants from Bosnia and Herzegovina in the SEEREN and SEEREN2 projects, co-funded by the European Union, so far have not been able to fulfil their contractual commitment to interconnect the universities of Tuzla, Banja Luka and Sarajevo, due to country-specific organisational, political and economic issues.

The country needs assessment of Bosnia and Herzegovina was carried out in 2007 in close collaboration with the SEEREN2 project. A team of experts comprising TERENA's Valentino Cavalli and Kevin Meynell and GRNET's Yannis Mitsos undertook the work, which was complemented by meetings with representatives from all public universities and relevant stakeholders of the National Research and Education Network (NREN) of Bosnia and Herzegovina in June. The programme of the visits is provided in Appendix A.

The meetings were aimed at providing information to the main stakeholders of research and education networks in the country about the outstanding issues related to SEEREN2 – the need to interconnect at least three university sites in the country before the end of the project in spring 2008 – and to the revitalisation of the NREN, and to discuss with them the possible options to resolve the problems. An immediate result of the talks was that strong communication links were established at the level of government institutions, universities and telecom operators in Bosnia and Herzegovina in order to find viable solutions to interconnect at least the universities of Banja Luka, Tuzla and Sarajevo. At the time of writing this report, progress was ongoing.

The report of the country needs assessment concerning research and education in Bosnia and Herzegovina was distributed on a confidential basis to stakeholders of the Bosnia Herzegovina NREN and the European Commission in November 2007. The main points from the report are summarised in the remaining paragraphs of this chapter.

The SEEREN2 project has established a regional network connecting beneficiary countries, including Bosnia and Herzegovina, to several GÉANT2 Points of Presence (POPs) in neighbouring countries. Thanks to SEEREN2, a cross-border link based on dark fibre was established between Sabac in Serbia and the exchange node of Doboj in Bosnia and Herzegovina. Besides providing international connectivity, a SEEREN2 specific objective in Bosnia and Herzegovina is to connect the universities of Banja Luka, Tuzla and Sarajevo. From

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December 2006, Banja Luka has been connected to Doboj via a dark-fibre link provided by Telekom Srbija[10]. However, the universities of Tuzla and Sarajevo have not yet been successful in obtaining any connectivity from the relevant operators.

Two main issues guided the study and the meetings: one short-term and one long-term. The short-term goal was to assist the universities in the Federation of Bosnia and Herzegovina in their talks with BH Telecom and Telekom Srpske[11] regarding the acquisition of dark-fibre links to connect to the Doboj exchange node, or if this was not available, to obtain an affordable offer for high-capacity leased connectivity. The long-term goal was to start a discussion with local stakeholders about the options available to revitalise the NREN of Bosnia and Herzegovina.

As of summer 2007, none of the eight public universities in Bosnia and Herzegovina were interconnected with each other. Some of them had made progress in building wide-area networks connecting institutes in the university metropolitan area. However, the typical connectivity and bandwidth capacity (2 Mb/s) was limited to individual Symmetric DSL connections offered by the incumbent operators via a standard educational package. Such capacity is sufficient for administration purposes, but inadequate to support science and research applications, or to connect students.

BiHARNET, the NREN of Bosnia and Herzegovina, was created at the state level in the 1990s as a separate legal entity. The network was built with technical and financial support from the European Union and the Slovenian government. The external funding was due to be replaced by local funding, but this did not happen and in December 2000 inter-city connections were discontinued. BiHARNET has not been functioning since then.

The complex institutional organisation of Bosnia and Herzegovina, resulting from the Dayton Agreements, poses various challenges to the existence and functioning of an NREN. Bosnia and Herzegovina is split into two entities: the Republika Srpska and the Federation of Bosnia and Herzegovina. Policies and budget for research and education are managed at different government institutional levels: at the entity level in the Republika Srpska, and at the federal and cantonal level in the Federation of Bosnia and Herzegovina. The Ministry of Civil Affairs at the state level is responsible for coordinating policies concerning science and education, but does not allocate any budget for supporting those policies. This fragmentation of responsibility does not favour stability and manageability of the NREN.

In the Republika Srpska, SARNET used to be an integral part of BiHARNET, but more recently, with full support from the entity government, a new independent research and education networking organisation with the same name has been created. SARNET currently benefits from a dark-fibre backbone obtained from Telekom Srpske for exclusive usage of the academic community under very favourable conditions.

Acquiring a dark-fibre infrastructure for interconnecting universities in the Federation of Bosnia and Herzegovina, as happened in the Republika Srpska, is a challenge because the incumbent operator, BH Telecom, claims that there is no spare fibre available for similar undertakings on all required routes. Many talks

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[10] Telekom Srbija is the owner of Telekom Srpske, the operator serving the Republika Srpska.
[11] Telekom Srpske operates in the Republica Srpska, whereas BH Telecom and HT Mostar operate in the Federation of Bosnia and Herzegovina.

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have taken place in the past months between BiHARNET, several universities, BH Telecom and Telekom Srpske on the acquisition of dark fibre to interconnect universities in the Federation of Bosnia and Herzegovina. However, individual universities have little negotiating power.

The country needs assessment report argues that in order to progress in this direction all universities in the country should collectively try to raise awareness amongst the politicians about the importance of such a network infrastructure for improving science and education. In doing so, they should highlight the need to promote the Information Society, and look to obtain the support of the politicians in order to influence the commercial attitude of the telecom operators towards the provision of such an infrastructure.

Management and organisation of the NREN is also an issue in Bosnia and Herzegovina, as the experience of a non-functioning organisation such as BiHARNET shows. There is a need for a single organisation to coordinate the provision of network services and participation of the country in pan-European undertakings, but given the fragmentation of the institutional framework and the activity of different operators etc., the operation of a single organisation such as BiHARNET in its current form is a serious challenge. Viable solutions therefore need to be investigated to ensure such coordination. Alternatively, devolution of tasks, responsibility and management to regional organisations where universities have a fundamental role in their governing bodies, appears to be an option.

Funding of research and education networking in Bosnia and Herzegovina is a serious issue. Devolution to the entity and canton government level makes funding difficult, and in any case, science and research has a low priority at all levels. In fact, as of June 2007, most universities in the country were connected via 2 Mb/s Symmetric DSL connections offered by the incumbent operators via a standard educational package for a price of approximately € 4-500/month. The two exceptions were the universities of Banja Luka (dark fibre) and East Sarajevo (ISDN). The University of Mostar has a connection to CARNET, the Croatian NREN, which is allegedly only connected to a local node (hence does not give access to GÉANT2) and only used for videoconferencing.

Providing a state-of-the-art infrastructure based on dark fibre that connects all universities in the country is not expensive. Estimated figures, provided as a cost-case scenario in the country needs assessment report, amount to € 450,000 for the first year of operation, including international connectivity, fibre links and equipment. For following years, the required funding level would be € 370,000.

Several funding models exist for different NRENs in European countries, ranging between two extremes: full funding from the government, to full funding from the connected institutions, with some cases being a mix of the two. However, in all cases, even when the funding comes from fees paid by the connected institutions, the NREN is ultimately funded by public money because these institutions are public universities and research institutes receiving funding from the government. Providing direct government funding for the NREN appears to be quite a challenge in Bosnia and Herzegovina, although serious attempts to coordinate funding at the level of the Council of Ministers should be undertaken. Alternatively, funding for the NREN could be directly allocated to universities.

Based on the issues discussed above, the country needs assessment report of Bosnia and Herzegovina has made the following recommendations.

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R1. A functioning national research and education networking organisation (NREN) is vital for Bosnia and Herzegovina. All stakeholders of the NREN in Bosnia and Herzegovina should join forces in order to coordinate effort and funding towards the revitalisation of the NREN.

R2. Universities and government and entity institutions should exert pressure on BH Telecom and Telekom Srpske in order to acquire an adequate network infrastructure for research and education at favourable conditions.

R3. The stakeholders of the NREN in Bosnia and Herzegovina should develop an acceptable and sustainable organisation/management model for revitalising the Bosnia and Herzegovina NREN. The universities should be included in the governing body of the NREN.

R4.1. The government institutions in Bosnia and Herzegovina need to increase the priority of science and education, and to provide funding for research network infrastructure at the appropriate institutional level.

R4.2. If central funding cannot be provided, then the relevant government institutions of Bosnia and Herzegovina should include specially earmarked funds in the budget of universities.

R4.3. A third alternative, in case of failure of the first two options, may be the development of a specific agreement to establish a fair cost-sharing model, with penalties where one or more participants refuse to pay.

3.1 The Round Table on Research and Education Networking in Bosnia and Herzegovina, Sarajevo, 20 November 2007

Addressing the revitalisation of the NREN in Bosnia and Herzegovina is a quite complex issue and this was tackled in a specific policy workshop that was held in Sarajevo on 20 November 2007[12]. The event was the major action resulting from the country needs assessment of Bosnia and Herzegovina. NA4 had started the organisation of the workshop during the summer. The event, which took place after the end of the reporting period, targeted approximately 50 participants, representing the following stakeholders:

- university rectors

- university researchers

- ministers of education and communications at canton/entity/state level

- CEO of telecom operators

- OHR

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[12] The website of the event is http://www.terena.org/activities/development-support/sarajevo-ws/

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- EU Delegation in Bosnia and Herzegovina

- international guests from SEEREN2, TERENA, NREN Policy Committee, the European Commission.

Participation in the event was lively and led to a number of suggested resolutions to address the revitalisation of the NREN in Bosnia and Herzegovina, including clearing out administrative issues still outstanding in BiHARNET and the possible creation of an entity-level organisation to manage a research and education network in the Federation of Bosnia and Herzegovina.

The programme of the round table is provided in Appendix A.

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4   The EU-MED Event: Policy Workshop on e-Infrastructures in the Mediterranean region

The policy workshop on e-Infrastructure in the Mediterranean region[13] was organised by NA4 in collaboration with the EUMEDCONNECT and the EUMEDgrid projects. As agreed during the second GN2 project review in September 2006, part of the GN2 NA4 Development Support budget was used to reimburse travel expenses of some workshop attendees. The EUMEDGRID part of the funds was mainly provided by GRNET.

The EU-MED event was designed to progress collaboration between countries of the Mediterranean region and European Union countries in the field of e-infrastructures and networking for research and education. The workshop was held at the Crowne Plaza Europa Hotel in Brussels on 23 and 24 October 2007. The day after the event, a meeting of senior ICT officials from Mediterranean countries was organised by the Commission in Brussels. The dates and location of the policy workshop were chosen to ensure synergy with the Commission event.

The theme of day 1 was "Access to research infrastructures in the Mediterranean: status, perspectives and strategies for the future".

The programme of this day was intended for NREN managers and for network operators. The workshop focused on access to telecommunications infrastructure for research and education in Mediterranean countries. It presented a picture of the status and perspectives of research infrastructures in the Mediterranean region, enlightening the relationship between e-infrastructures and major stakeholders in the ICT environment, and brought together providers, users and managers to discuss strategies for the future.

The theme of day 2 was "Policy agenda for e-infrastructures in the Mediterranean countries".

The second day was aimed at a wider audience comprising politicians, NREN managers, network operators, managers of research and education institutions and civil servants from relevant ministries. This workshop

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[13] The workshop information website is available at: http://www.terena.org/eumedevent/

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The EU-MED Event: Policy Workshop on e-Infrastructures in the Mediterranean region

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focused on policies for research and education networking (NRENs, EUMEDCONNECT) and Grid activities (EUMEDGRID, new Mediterranean National Grid Initiatives (NGIs)) in the Mediterranean. It discussed the importance of leading-edge, sustainable NRENs and e-infrastructures in order to support research and education in Mediterranean countries.

Both days featured VIP speakers and were by invitation only. High-level keynote speakers provided views about their strategies and discussed the current status and perspectives of e-infrastructures in the region. Existing and potential applications from several fields were illustrated. A final interactive session built on the Rome Declaration to continue collaborative efforts, drew conclusions and identified follow-up actions.

Almost 90 politicians, network operators, users, civil servants, and managers of national research and education networks came from more than 15 countries to discuss collaboration in e-infrastructures and networking for research and education.

Sustainability was the recurring concern of the event, with many questions about long-term support for projects that have been established across the Mediterranean region in recent years.

During the second day, several speakers presented overviews of the status of e-infrastructures in their countries. These included dignitaries and ministers from a number of countries currently benefiting from European-supported e-infrastructures, including HRH Princess Sumaya Bint Al Hassan of Jordan, Dr. Najib Abdul Wahed of Syria and Mr. Mashour Abudaka of Palestine.

Representatives of the European Commission also emphasised the importance of building on recent achievements.

The 'digital divide', with great disparities between different countries in levels of connectivity, services and pricing, poses one of the main challenges in the Mediterranean region. This was highlighted by two consecutive presentations: one on the SESAME project which is expected to produce petabytes of data each year from 2010 onwards, and one on the Syrian Virtual University, which today copes with limited Internet capacity and is often crippled by simple power failures.

Following a session on national research and education networks and how they fit into the picture, a panel discussion highlighted how essential EUMEDCONNECT and other projects have been and remain in the development of national e-infrastructures in various Mediterranean countries.

The issue of funding surfaced, with some pessimism from members of the audience that the Mediterranean region may be "losing what we have built in the last two years".

Today EUMEDCONNECT is the principal e-infrastructure in the Mediterranean region. It supports the vital communication needs of over 100 projects, including many receiving European funding support, but its EU funding ends soon and its future is not yet assured.

The programme of the EU-MED Event is provided in Appendix A.

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5 Other Support Actions

In the past year, TERENA had planned a number of course modules to be implemented as future support measures for less advanced countries. Two course modules were developed: one course focused on eduroam, and was initially delivered during year 2 back-to-back with the RoEduNet conference in Sibiu, Romania; the other course, which focused on Identity Management, was developed during the reporting period. In year 3 the course on eduroam was delivered to Cyprus (Nicosia, 15 January 2007)[14], Turkey (Gökova, 4 April2007, back-to-back with the ULAKBIM annual conference)[15] and Morocco (Rabat, 6 June2007, in conjunction with the "Journee MARWAN")[16]; the course on identity management was delivered to Moldova (Chisinau, 15 May 2007, the day after the first RENAM user conference)[17] and Morocco (Rabat, 5 June 2007)[18]. The goal of these events was to raise awareness among end users of the NREN in the countries concerned about advanced value-added services.

The programmes of the events above are provided in Appendix A.

As part of a consultancy to the Moroccan NREN, MARWAN, on 7 February Valentino Cavalli (TERENA), Redouane Merrouche (MARWAN) and Simon Leinen (SWITCH) held a videoconference to discuss the technical aspects of the new network to be procured by MARWAN during 2007.

5.1 TRANSITS CSIRT Training, Sofia, Bulgaria, 5-6 July 2007

TERENA organised a TRANSITS training workshop in Sofia, Bulgaria on 5-6 July 2007[19]. ENISA, the European Network and Information Security Agency, co-organised and sponsored the workshop. The venue was the Skyway Hotel and Conference facility just outside Sofia, Bulgaria.

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[14] http://www.terena.org/events/details.php?event_id=884

[15] http://www.terena.org/events/details.php?event_id=935

[16] http://www.terena.org/events/details.php?event_id=1002

[17] http://www.terena.org/events/details.php?event_id=1005

[18] http://www.terena.org/events/details.php?event_id=1006

[19] http://www.terena.org/activities/csirt-training/sofia/

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As a rule, TERENA organises two CSIRT training courses per year targeting a wide community. The Sofia event, which was supported by BG.ACAD | CERT, the Bulgarian Academic Computer Emergency Response Team, additionally aimed at facilitating the take-up of CSIRTs in Bulgaria. NA4 provided financial support for six local participants to attend the course.

The CSIRT training course aims to develop the knowledge and skills that are needed by staff who are members of a Computer Security Incident Response Team, who will join such a team, or who are involved in creating such a team. The course has been developed by members of CSIRTs in Europe, from both the commercial and the academic sector, under the auspices of TERENA's task force TF-CSIRT.

The CSIRT training course consists of five modules. Some of these include exercises for the trainees to complete and discuss, while others include time for discussion among the whole class. The modules are:

- **CSIRT Organisation**

This module describes how CSIRTs fit into their organisations: planning the CSIRT, defining the constituency of the team and gaining management authority for it, deciding the services the team will offer, working with those outside the organisation, staffing the CSIRT, funding. Students are supposed to discuss their own organisation and how their team fits into it.

- **Technical Aspects**

Understand how intruders attack systems: intruders and their motivations, network protocols and how they can be abused, operating systems and services, types of vulnerability, information gathering, breaking in, hiding traces, denial-of-service attacks. A number of exercises are used to show how these appear in practice.

- **CSIRT Operations**

Describes the facilities, systems and tools needed by CSIRTs to operate successfully: housing the CSIRT, equipment, e-mail, remote access, information and contacts, servers and networks, incident response plans and procedures, tracking systems. As an exercise students discuss and develop incident response plans for their own teams.

- **Legal Issues**

Looks at the areas of legislation that are likely to affect CSIRTs in their work and that team members need to be aware of: origins of computer legislation, problems, data protection, computer misuse, working with law enforcement, monitoring, evidence, European developments.

- **Working with vulnerabilities**

Discusses the roles that CSIRTs may decide to play in distributing and producing information about vulnerabilities: why do vulnerabilities exist, what should CSIRTs aim to do, sources of information and how to use them, advisories - distribution, interpretation, investigation and co-ordination.

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Appendix A Programme of Visits and events

A.1   Agenda of the meetings in Malta

- 18 October 2006
    - 1130 Minister of Education Youth and Employment
    - 1430 Maltacom
    - 1600 Vodafone Malta
    - 1700 Representatives of the University of Malta
- 19 October 2006
    - 17:00 chairman of the Malta Council for Science and Technology

A.2   Agenda of the meetings in Bosnia and Herzegovina

- Tuesday 5-6-2007 Tuzla and Zenica
    - Meeting at University of Tuzla
    - Meeting at University of Zenica
- Wednesday 6-6-2007 Banja Luka
    - Meeting at University of Banja Luka
- Thursday 7-6-2007 Bihac
    - Meeting at University of Bihac
- Tuesday 19-6-2007 Sarajevo
    - Meeting at Office of the High Representative (OHR),
    - Meeting with representative of the European Commission Delegation
    - Meeting at the Ministry of Transport and Communication
- Wednesday 20-6-2007 Sarajevo

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- o   Meeting at the university of Sarajevo
- o   Meeting at university of East Sarajevo
- Thursday 21-6-2007 Mostar
  - o   Meeting at Ministry of Science and Education (FMON)
  - o   Meeting at "Dzemal Bijedic" University in Mostar
  - o   Meeting at university of Mostar

A.3   Round Table on Research and Education Networking in Bosnia and Herzegovina, Sarajevo, 20 November 2007

10:00-10:30	Coffee and Refreshments
10:30-10:45	Welcome Address
	Zeljko Knezevic, Ministry of Communications and Transport of Bosnia and Herzegovina
10:45-11:00	Opening Keynote Speech
	John Pyres, European Union Delegation in Bosnia and Herzegovina
11:00-11:45	European Research and Education Networking and SEE: GÉANT2/SEEREN2
	Vasilis Maglaris, National Technical University of Athens, Chairman of the GÉANT2 Consortium and Yannis Mitsos, GRNET
11:45-12:30	Summary of the Findings and Recommendations from Country Needs Assessment
	Valentino Cavalli and Kevin Meynell, TERENA
12:30-13:00	Working Discussion - Part 1
	Chair: Vasilis Maglaris, National Technical University of Athens, Chairman of the GÉANT2 Consortium
13:00-14:00	Lunch
14:00-15:00	Working Discussion - Part 2

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Chair: Yannis Mitsos, GRNET

15:00-16:15   Conclusions - Agreed Actions

Chair: Ivan Maric, CARNet/SRCE/GÉANT2 Executive Committee

16:15-16:30   Closing Keynote Speech

Christoph Kowalski, European Commission, DG Information Society and Media

16:30-17:00   Coffee and Refreshments

A.4   eduroam MiniCAMP, Nicosia, Cyprus, 15 January 2007

0830-0900   Badging and Registration

0900-0930   Welcome and Introduction

Agathoclis Stylianou, CYNET

0930-1000   TERENA activities and overview of middleware activities in Europe

Valentino Cavalli, TERENA

1000-1030   Coffee Break

1030-1115   What is eduroam: the technology and how to set it up

Stefan Winter, RESTENA and Rok Papez, ARNES

1115-1200   eduroam-in-a-box

Rok Papez, ARNES

1200-1245   eduroam federation and how to join

Stefan Winter, RESTENA

1245-1300   Questions and Answers

1300-1400   Lunch Break

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A.5   eduroam MiniCAMP, Gökova, Turkey, 4 April 2007

14:00 - 14:30   Overview of the middleware initiatives in the European Higher Education

Licia Florio, TERENA

14:30 - 15:15   What is eduroam: the technology and how to set up eduroam

Paul Dekkers, SURFnet and Rok Papez, ARNES

15:15 - 15:45   Coffee Break

15:45 - 16:45   eduroam-in-a-box: a tool to ease eduroam deployment (See slides above)

Rok Papez, ARNES

16:45 - 17:15   eduroam federation

Paul Dekkers, SURFnet

17:15 - 17:30   Questions and Answers

A.6   Identity Management Workshop, Chisinau, Republic of Moldova, 15 May 2007

Lecturer: Victoriano Giralt, University of Malaga.

09:30 - 10:15   Introduction to Identity Management

10:15 - 10:40   Introduction to LDAP

10:40 - 11:00   Break

11:00 - 11:30   Schemas: what are they and how to use them? Notions on eduPerson and SCHAC

11:30 - 12:00   RADIUS

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12:00 - 12:30   How to provide Authentication

12:30 - 13:00   The experience at University of Malaga

13:00 - 14:00   Lunch

14:00 - 16:30   Hands-on session

16:30   Closing

A.7　Identity Management Workshop, Rabat, Morocco, 5 June 2007

09:15   Opening (TERENA)

09:45   Introduction to Identity Management systems

Florent Guilleux, Comité Réseau des Universités (CRU), France

10:45   Introduction to LDAP

Christian Claveleira, CRU

10:30   Coffee break

11:15   Examples of schemas: eduPerson and family

Christian Claveleira, CRU

12:30   Schemas used for identity management

Christian Claveleira, CRU

13:15   Lunch break

14:30   Directories in real life

Christian Claveleira, CRU

15:15   Introduction to Authentication mechanisms

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Florent Guilleux, CRU

15:45   Coffee break

16:15   Introduction to Authorisation mechanisms

Florent Guilleux, CRU

16:45   Example of IdMs in real life

Florent Guilleux, CRU

17:30   Closing

A.8   eduroam MiniCAMP, Rabat, Morocco, 6 June 2007

Lecturer: Vincent Carpier, CRU

09:30 - 10:00   What is eduroam: the technology and how to set up eduroam

10:00 - 10:45   eduroam-in-a-box: a tool to ease eduroam deployment

10:45 - 11:15   Coffee Break

11:15 - 12:00   eduroam federation

12:00 - 12:30   Questions and Answers

A.9   EU-MED Event: Workshop Programme

Day 1 - 23 October 2007

Workshop Chair: Vasilis Maglaris, National Technical University of Athens, Chairman of the NREN Policy Committee

13:15 – 13:45   Registration

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13:45 – 14:00   Welcome Address

Mario Campolargo, European Commission, Head of Unit – DG INFSO. F3

14:00 – 14:30   Telecommunications markets and regulations in Mediterranean countries

Claire Milne, Antelope Consulting

14:30 – 15:00   Applications and end-user projects in Mediterranean countries: MedGeNet

Michele Bianco, Managing Director European Genetics Foundation

15:00 – 15:30   Applications and end-user projects in Mediterranean countries: EUMEDGRID

Federico Ruggieri, INFN, Italy

15:30 – 16:00   Coffee Break

16:00 – 16:20   The NAP initiative and the evolution of network connectivity in the region.

Nisreen Araj Ministry of Information and Communication Technology, Jordan

16:20 – 17:30   Panel Session: Access to infrastructure in Mediterranean countries

Gian Marco Badii, Telecom Italia Sparkle; Dimitris Botsis, OTEGlobe; Gil Sidis, Bezeq

International; Jean-Marc Uzé, Juniper Networks; Fernando de Paula, Telefónica

Chair: Vasilis Maglaris, NTUA, Greece

17:30 – 18:00   Infrastructure in Mediterranean countries: conclusions and ways forward

David West, DANTE

Abdelkader Khelladi, CERIST, Algeria

Day 2 – 24 October 2007

Workshop Chair: Cem Sarac, TUBITAK-ULAKBIM, Turkey

8:30 – 9:00   Registration

9:00 – 9:10   Welcome address

Cem Sarac, TUBITAK-ULAKBIM, Turkey

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9:10 – 10:20   Keynote Address: e-Infrastructures as promoters of development

The following keynote speeches addressed the needs of deploying e-infrastructures for scientific and social development, providing a view of the strategies in Jordan, Syria and Palestine.

9:10 – 9:20 I   ntroduction by European Commission

Mr Marcus Cornaro, European Commission, Director Europe, Southern Mediterranean, Middle-East and Neighbourhood Policy

09:20 – 09:40   e-Infrastructures in Jordan

Her Royal Highness Princess of Jordan, Sumayya Bint Al Hassan

09:40 – 10:00   e-Infrastructures in Syria

Dr. Najib Abdul WahedDeputy, Minister of Higher Education for Scientific Research, Syria

10:00 – 10:20   e-Infrastructures in Palestine

Mr. Mashour Abudaka, Minister, Palestine

10:20 – 10:50   European and Mediterranean cooperation

Mr. Ahmed Badr, European Commission Delegation in Egypt

10:50 – 11:30   Coffee Break

11:30 – 12:00   European Union support for e-infrastructures in Mediterranean countries

Ulf Dahlsten, European Commission, Director – DG INFSO.F

12:00 – 12:30   e-Infrastructures: the SESAME project

Prof. Hafeez Hoorani, Scientific Director of SESAME Project

12:30-13:00   The role of education and training towards exploiting e-infrastructures

Dr Anas Tarah, Vice-President of Syrian Virtual University

13:00 – 14:00   Lunch Break

Session Chair: Dany Vandromme, RENATER, France

14:00 – 14:20   What are NRENs and why they are important?

Vasilis Maglaris, NTUA, Greece

14:20 – 15:00   Governments are the main stakeholders of NRENs

Enzo Valente, GARR, Italy

Said Belcadi, CNRST, Morocco

15:00 – 15:30   Management, sustainability and funding of NRENs

Alberto Pérez Gómez, RED.ES, Spain

Abdelkader Khelladi, CERIST, Algeria

15:30 – 16:00   Coffee Break

16:00 – 16:45   Panel Session: Baseline assessment of NRENs and e-infrastructures in Mediterranean countries

Chair: Dany Vandromme, RENATER, France

Aouaouche El-Maouhab, CERIST, Algeria; Redouane Merrouch, MARWAN Morocco; Fotis Karayannis, GRNET, Greece; Yousef Torman, JUNet, Jordan

16:45 – 17:30   Panel Session: Wrap-up and conclusion

Chair: Dai Davies, DANTE

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