
PROJECT IST-2001-37580 – SPONGE

Review 02

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REVIEW REPORT

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1. Introduction

On 6-7 December 2004, there was a review of the SPONGE project (IST-2001-37580 – SPONGE) performed by the persons listed below. The review meeting was held in Istanbul, Turkey. The review covers project months 13 through 24 (October 2003 – October 2004), of 30 months in total.

The review was initiated by Bernhard Fabianek at the European Commission.

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2. Executive Summary

SPONGE is implemented by four partners: University College London (UCL), Computing Centre of the University of Groningen (RUG), the Armenian Research & Educational Networking Association (ARENA) and the Georgian Research & Educational Networking Association (GRENA).

The partners have transformed the list of deliverables (SPONGE project proposal, July 2, 2002, page 16) into 4 work packages:

WP1: Administration and Management

- SPONGE Project Management
- SILK Project Management
- Relationships with Funders

WP2: Infrastructure Services

- Liaison with other relevant projects
- Dissemination of information on the SILK Project itself
- Workshops

WP3: Technical Activities

- Configuration
- Infrastructure Measurement
- Caching

WP4: Personal Communications

- Voice over IP (VoIP)
- Multimedia Conferencing

The SPONGE project is an *Accompanying Measure* to the SILK project. SPONGE will provide overall management for SILK etc. as outlined in the work packages above.

The project representatives from UCL and RUG presented an overview of the SPONGE Project broken down as following: Overview, Project Reaction to 1st Project Review Comments, WP1 Management, WP2 Infrastructure, WP3 Measurement and Technical, WP4 Personal Communications & IPv6, Training, Dissemination, Relations with other organisations and the Future. Finally, the project team asked for a six month extension in order to fully capitalize on project impact, which is fully supported by the review team.

According to the technical verification, SPONGE proceeds along its Description of Work, and the performance of the project with respect to the Description of Work is as expected. The project has now reached the operational phase, while there is a further station installed in Afghanistan. The review supports that decision of SPONGE.

The management structure provided under SPONGE will enable grantees and funding bodies (presently NATO and EU COM) to make operational and upgrading decisions. Much of the technical information on which these decisions are made will come from the activities of SPONGE. Notably, the organisational activities set up by SPONGE should assist in attaining nationally sustainable longer-term services of the initial SILK infrastructure. Comments given by the previous review remain valid, namely: “The essence of the SPONGE management services are the services provided by SPONGE to SILK. They depend to a large extent on the implementation of SILK objectives, which go beyond the SPONGE mandate as such. SPONGE provides not only the required management services to SILK, but also information and dissemination services. Chairing of the Silk Board meetings and organizing them, creating SILK Websites and organizing distribution lists, issuing a newsletter, implementing VoIP, conducting teleconferences/videoconferencing, caching (is an in-built feature), assistance in setting up NREN Web pages in local languages, wider use of FTP (alongside HTTP), are the cases in point”. The SPONGE has continued providing additional, beyond their formal Terms of Reference, services to the beneficiaries and end-users. The review team supports this holistic approach towards an extremely complex nature of assistance – both technical and substantive – in a very complex regional context. SPONGE has become a true, reliable partner and effectively the only one for local NRENS. TUG and UCL should take full credit of for this achievement.

One of the main issues that should be given more thought is sustainability. While NATO – as the review team understand – is planning to continue its support in future as well, the sustainability of the project gains even more importance in order to avoid dependency on external assistance. The reviewers believe that sustainability of the intellectual and technical and technological investment already provided – and that which will be provided until the project end – very much depends on the recipients’ commonly shared, ownership, responsibility toward other partners and mutual cooperation based on a clear sense of partnership and understanding that without cooperation among the participating countries individual successes will be significantly limited. A regional sustainability dimension and obligations vis-à-vis

other NRENs should be stronger integrated into the work of all participating NRENs and specifically emphasised in reporting.

The best way to proceed would be to ask NRENs to suggest their views on the future sustainability to encourage thinking deeper about common regional values of cooperation. That would strengthen a sense of a commonly shared responsibility. Thus reviewers suggest, at this point, that primary attention should be given to reporting on overall network sustainability from the perspective of how individual NRENs contribute towards this objective. For example, an impact analysis should be compiled by individual NRENs and commented on by the project consortium.

Findings in these reports and other tangible evidence on national/government commitments should be the bases on which potential further funding decisions rest.

Finally it worth's mentioning that a regional networking association was created and registered in Central Asia by three SILK countries.

Recommendations and Required Actions

- More emphasis should be put on ensuring that the set of NRENs are able to attain sustainable longer-term services, namely national commitment including funding to uphold the results achieved to date
- Invite NRENs for discussion how sustainability should be ensured in future, specifying (a) the role of external partners, (b) the role of individual NRENs, (c) the role of their governments, (c) and common responsibilities; discussion could not be exhausted only to these issues but also to those that could be proposed by NRENs themselves.
- Present at the next review results of how NRENs see their future and what they are prepared to commit.
- Assist NRENs in building their human, technical and managerial capacity, including proper project management techniques and reporting.
- Address the issue of ensuring more support / contributions from all SILK NRENs in the preparation of the deliverables and encourage NRENs to use and create of project resources, as well as to liaison with national funding bodies (governments).
- Strengthen incentive structure among national participant (technical and policy makers) in strengthening NREN organisational structure, possibly by seeking additional funding that might be used to pay for needed services and other work.
- Provide data of internal use of the provided bandwidth, so as to assist potential future funding bodies (national and/or others) estimate the degree of project impact.
- Possible future funding from external means, should be directly linked to tangible national commitment to insure network sustainability.

3. Approval of Deliverables

The following Deliverables and Reports were due according to the Technical Annex 1 – Description of work – (pages 16 to 17, month 13 through month 24) of the SPONGE project:

Deliv.	Due	Delivered	Comments
D5	31-12-2003	06-05-2004	Delivered according to the expectations. Reviewers note: Restrictive AUP's and monopoly position of the national telecom providers hamper project impact.
D6	31-03-2004	30-04-2004	Delivered according to the expectations.
D7	31-03-2004	07-05-2004	Delivered according to the expectations. Reviewers note: Possible future similar activities might put more focus on management, policy, strategy and budgetary issues. However, it is also important to give credence to educational wishes from NREN community.
D8	31-03-2004	07-05-2004	Delivered according to the expectations. Reviewers note: Caching seems to be worthwhile, but needs tuning.
D9	31-08-2004	15-11-2004	Shifted to October 2004. Delivered according to the expectations.
A4	31-10-2003	07-11-2003	Annual Report – Year 1. Delivered according to the expectations.
Q5	31-01-2004	23-1-2004	Quarterly Report. Delivered according to the expectations.
Q6	30-04-2004	06-05-2004	Quarterly Report. Delivered according to the expectations.
Q7	31-07-2004	08-08-2004	Quarterly Report. Delivered according to the expectations.
Q8	31-10-2004	20-10-2004	Quarterly Report. Delivered according to the expectations.
A8	31-10-2004	20-11-2004	Annual Report – Year 2. Delivered according to the expectations.

Analysis

The project is on schedule and the deliverables have been delivered in due time. The performance of the whole system has been good, and there are no current problems from the behaviour of any of the network components. According to the technical verification, SPONGE proceeds along its Description of Work without any substantial deviations, and the performance of the project with respect to the Description of Work is as expected. The SILK project has acquired wide political and public visibility, which is helpful in pursuing sustainability i.e. securing national and possible future external funding.

As mentioned, SPONGE deliverables are closely related to SILK. The primary aim of SILK is to provide satellite networking (Internet) access to the European dedicated research and education information technology network, GEANT, for the newly independent states (NIS) of the Southern Caucasus and Central Asia (Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan. Afghanistan has newly joined the group). The access from GEANT to NIS (and vis-à-vis), goes via National Research and Education Network (NREN) organisations in the target countries, which thereby act as "point of contact" both in technical terms and in organisational terms. NRENs are responsible for running national networks and for distribution of available bandwidth to national institutions, as well strategic planing

and budget analysis. The pre existence or initial creation of NREN organisations (or the equivalent) in each NIS, is therefore of fundamental importance to SILK success, and in turn to the success of SPONGE. Likewise, national distribution and optimal utilization of available bandwidth by NRENs, i.e. the *impact* of the SILK and SPONGE projects, should be seen as project success criteria. Though there is no direct deliverable aiming at this, it is especially important since both SILK and SPONGE aim to ensure that the set of NRENs are able to attain sustainable longer-term services.

Accomplishments within SILK and SPONGE must be understood against the background of the political, cultural and economical situation in the NIS region, with weak political structures in many countries and many pressing problems straining national budgets. Possible conflicting aims within the community of grantees and funding bodies related to SILK and SPONGE might further complicate project implementation. E.g. excluding NRENs/countries that tend not to cooperate or contribute, might jeopardise alternative NATO goals, priorities among which might be unclear. Furthermore, the very nature of the SILK project might conflict with national interests in controlling information in general and telecommunications in particular. It should in addition be noted that the project has no direct funding instruments to facilitate the strengthening of construction of national NRENs. The project has unclear influence on national funding mechanisms and policy priorities related to establishing national ICT infrastructures.

Thus, a significant proportion of the responsibility for successful project implementation rests on national commitment to build - and in turn finance - strong NRENs and to pursue optimal impact on national research and education communities on the bases of optimal distribution of delivered bandwidth from the grantees and funding bodies.

However, the complexity in the above mentioned line of reasoning and its possible consequences for project implementation are not clear in the SPONGE project proposal (July 2, 2002), nor its list of project deliverables (page 16), thus making it unclear how fully to assess the *success* of SPONGE.

The SPONGE project consortium and participants should, however, not be hold accountable for this lack of clarity. The SPONGE consortium can, to the contrary, be complemented for showing that NREN development, longer-term sustainability and general impact in the national research and education sector is of paramount importance. Though modest, results regarding "sustainability" *have* been attained, and there is furthermore a general agreement, that sustainability must be put to the foreground in the reaming span of project duration.

While some countries/NRENs experience significant unsatisfied bandwidth demand, others are not utilising their allocated share. This is understood to reflect varying successes in building/strengthening NRENs as well as NRENs ability to reach out to user communities. During "peak hours" all bandwidth is allocated, while the network is not fully utilised during "off hours". This is a standard attribute for networks, but might be regulated with a proactive incentive structure, so as to better utilise all available bandwidth (e.g. free access for student during night hours).

Malfunctioning machines not being reported or repaired hamper the optimisation of Content Engines and Content Caches. Malfunctioning machines not being reported indicates uncommitted or unprofessional NRENs hampering project credibility.

Customs duty problems in some countries with returning equipment under maintenance out of the country, is draining project resources. It might be asked if it is reasonable and should be tolerated, that international development aid to a given country is taxed in this way by the government.

There is an anomaly in the size of the Uzbek traffic, which should be investigated further.

It is noted that Georgia and Uzbekistan have developed the utilisation of the bandwidth use to the point where they are buying excess bandwidth. This is taken as an indication that the project has been especially successful in these countries. Contrary, it is noted that other countries are not making full use of the bandwidth offered to them.

Voice over IP (VoIP) services seem to be up and running, which is seen as a favourable development leading to better cooperation among NRENs - namely within technical problem solving, but preferably also within overall strategic and budget planning.

It is noted that especially Armenia and Kazakhstan are somewhat restrictive in allowing full and free distribution and use of the allocated bandwidth. This is seen as limiting the full impact potential of the project.

Most NREN web-sites have a good introduction to purposes, aims and achievements - though varying much in quality in terms of design, content and reliability. Turkmenistan, however, still has no NREN web-site.

Measurements on the caching have been carried out; they show improvement, however the situation on the state of the caches is not satisfactory, and is being addressed by the project team.

All deliverables are approved.

Recommendations and Required Actions

- SPONGE participants should be asked to report on how they individually can ensure that their NREN is able to attaining sustainable longer-term services, hence namely national funding commitment to uphold the network achieved to date.
- SPONGE participants should be asked to report on the *de-facto* national use and distribution of the bandwidth allocated, thereby giving ground for a project impact assessment.
- NRENs pro-active participation and involvement in providing timely sub-reports with comments and material for the preparation of deliverables, in the format compatible with EC regulations and containing realistic estimations of their work effort should be seen as national commitment.
- The above mentioned report in specific and national commitment in general is of paramount importance for efforts to raise future external funding for the SILK network.

- Report findings according to the above and clarifying national commitment should be directly linked to future external financing.
- Address the problems with the status of the caching service.

4. Conformance with Work Plan

Analysis

The project addresses its objectives in full. The project has now reached the operational phase, with a further station installed in Afghanistan, while two sites have purchased extra bandwidth.

The amount of work done by Caucasian Partners was still not quoted in the review, making difficult the estimation of their contribution to the total project effort made so far (in original "Description of Work" their contribution has been planned to be more than 50% of the consortium total). Lack of national contributions from government and/or NRENs is seen to threaten future credibility of the SILK and SPONGE project.

It is noted that the project consortium lack sufficient instrument (financial or otherwise motivating instruments) to fully engage technicians and policymakers. This leaves only bottom-up self-motivation and personal commitment from individual participants. Top-down national priorities committed to SILK/SPONGE and a *line of command* as a driving force is clearly weak or insufficient.

Recommendations and Required Actions

- The work plan should be adjusted to put more emphasis on attaining sustainable longer-term services. A special deliverable and work package for this should be formulated.
- Attempts to design or obtain a better incentive structure for national technicians and policymakers should be made. One possibility is to allow the project consortium to use limited present funding to help *get things done*. One other possibility is to seek a strengthening of top-down national political commitment resulting in more visible NREN contributions.

5. Project Management and Co-ordination

Analysis

The SPONGE project has two management aspects: the management of SPONGE itself and the management of SILK project. Most of the SPONGE own management has been done very well by Western partners although the contribution of Caucasus partners was still not in a form of timely delivered written sub-reports. This is seen to be a sign of lacking national interest in the SILK/SPONGE project threatening future willingness from external parties to finance infrastructure developments in NIS countries.

The SPONGE consortium operates without a formal Consortium agreement, despite uneven shares of responsibilities and funding (in kind). A formal Consortium agreement might be a good first step preparing NIS countries to handle the complexity of issues in the weak of future national self financing of networking bandwidth (describing distribution of labour and costs etc.).

The success of SPONGE management services depend to a large extent on the implementation of SILK objectives, which seem to go beyond the SPONGE mandate

as such. But aside from this, SPONGE has provided good and strong project management and co-ordination - thus facilitating implementation of SILK objectives. Information and dissemination services; Chairing of the Silk Board meetings and organizing them, creating SILK Websites and organizing distribution lists, issuing a newsletter, implementing VoIP, conducting teleconferences/videoconferencing, caching (is an in-built feature), assistance in setting up NREN Web pages in local languages, wider use of web-sites are the cases in point.

Project management and co-ordination efforts should now be focused on liaison with government agencies/ministries and potential international bodies active in the region, leading to sustainable longer-term services.

Recommendations and Required Actions

- More emphasis among the beneficiary countries NRENs managements, should be given to attaining a "*sense of community*" aiming for NREN development as well as cooperation among the regions NRENs.
- NRENs management should in reports elaborate on national impact of the SILK/SPONGE project(s).
- Invite NRENs for a discussion specifically on the project's sustainability and how it is seen by the eye of NRENs themselves; one of the meetings could be devoted to this issue.
- More mutual sharing of knowledge, i.e. transfer of know-how and experience, could better benefit all.
- Common self initiated seminars and cooperation in drafting strategic plans and budget analysis could strengthen all individual NRENs
- SILK/SPONGE project management should use more effort explaining NRENs managements, that external funding is dependant on visible national interest in the SILK/SPONGE project, i.e. committed funding, as well as documented project impact among user communities.
- On the bases of SILK/SPONGE moving towards national financing the need of formal consortium agreement for the SPONGE consortium should be discussed with all SPONGE partners and the EC Project Officer. This is especially relevant if the SILK community wishes (which is recommended) to continue cooperation after project termination (i.e. like other regional NREN groupings like SEEREN and NORDUnet, buying common bandwidth at lower prices and coordination strategic developments, hence being able to share bandwidth and costs, experience and solutions)
- Reliable VoIP (used within the realm of the SILK/SPONGE projects) should be encouraged and offered to all SILK partners - as a trivial necessity.
- SILK NRENs capacity, which is not yet at the required level, should be developed with the help of more developed NRENs (to the extent that the project can find *motivating instruments*)
- Reviewers note that that at the last review, reviewers asked for a plan for the management and the sustainability of SILK network, for the period after SPONGE and NATO SILK projects are finished. Unfortunately, such a plan is still forthcoming. This should have been developed within the duration of the SPONGE project, but has still not happened. A possibility of increasing the level of responsibility in the overall SILK management and sustainability by SILK beneficiary NRENs themselves, should be studied. Both documents should be presented to SILK Board and SPONGE Project Officer. Since

lacking such reporting must be seen as lacking ability to address the question of sustainability, it brings into questions the overall network sustainability, thus undermines the likelihood of external financiers to continue funding.

6. Relations to state of the Art, Other Projects

Analysis

There was some progress here, since the SPONGE team has arranged for SILK partners to attend two workshops organised by CEENet, and one by APAN. A joint workshop is being discussed between SILK, SEEREN and EUMEDCONNECT; whether it can be funded is a subject that will be discussed with the EC. Several members of the SILK ExCo are participating in world-wide meetings of regional networks. Unfortunately there is no finance for SILK countries representatives to do this on any interesting scale.

Contacts to other NRENs and NREN associations (CEENet, TERENA) as well as regional networking projects (like GEANT/SEEREN/EUMEDCONNECT) have to be further intensified. Means of this intensification (e.g. cross-linking of Web-sites, possibility of receiving newsletters, exchange of public results) should be further discussed within SILK NRENs.

SILK NRENs should be encouraged to yearly provide their data to TERENA compendium.

Recommendations and Required Actions

- SILK NRENs should be encouraged to yearly update their data to TERENA compendium.
- Funding of a joint workshop between SILK, SEEREN and EUMEDCONNECT should be discussed with the EC.

7. Activities related to Standards

Analysis

The SPONGE project is not involved in creating new standards.

Recommendations and Required Actions

- It is recommended to encourage SILK NRENs to get acquainted with rules, procedures, practices, software tools, etc. used within European Networking cooperation (GEANT / NORDUnet / SEEREN / EUMEDCONNECT / etc.).

8. Plans for Industrial Exploitation of Results

Analysis

Although the SPONGE results will be used to optimise the performance of SILK network, there are no plans to exploit industrially the acquired knowledge.

Recommendations and Required Actions

- None.

9. Plans for Dissemination of results/Web-Site Analysis

Lessons learnt from the creation of the central Web-site and the Web-sites of the SILK countries should be studied and summarized for discussion. Comments from this discussion and the study of the web logs and the statistics of the web-site usage should be summarized in a document containing recommendations how to provide more useful information and what is the appropriate design of the project Web-site.

In any case, dissemination of results, via the SILK web-Site and otherwise, has been extensive. It is doubtful if more can be done at this point by others than the national NRENs on a national level. However, little is known about national dissemination. Indeed, little is known about national impact in terms of which user communities (universities and research groups) is being informed about the provided services as well as the user communities is using the infrastructure for what.

Recommendations and Required Actions

- SILK NRENs should report on dissemination of results to national user communities, as well as on national use of the infrastructure, i.e. document the impact on universities and research groups, so as to help show the possible success of SILK/SPONGE in the eyes of the financing bodies.

10. Summary Of Reviewers' Technical Comments Analysis

The main activities within the SPONGE are of managerial or dissemination type. There is little effort that deals with technical issues, namely Configuration, Infrastructure Measurement and Caching. The results obtained are promising and were found helpful in fine-tuning of the day-to-day operations of SILK network. The project has now reached the operational phase, while there is a further station installed in Afghanistan. The VoIP services recommended by the previous review was fully tested and implemented. Five successful training workshops were done during last year, while a regional networking association was created and registered in Central Asia by three SILK countries. Finally additional bandwidth was requested by two countries.

Although no special recommendations are issued in purely technical area, several specific ones, which relate to technical aspects of the project management and dissemination, have been mentioned above. In the section below we only list the more general categories into which they can be grouped.

In general the analysis and assessment of the SPONGE project showed that:

- under the existing technical and administrative circumstances the project management has been done very well and the SILK project itself has acquired wide political visibility;
- there are no technical problems;
- There are several symptoms that SILK NRENs might not be able in future to manage SILK project themselves.

Recommendations and Required Actions

- Primary attention should be given to overall network sustainability (see comments above in Executive Summary and section 5).
- An *impact analysis* should be compiled by individual NRENs and commented on by the project consortium.
- NRENs should be more active in strategic as well budget planing, thus showing ability and commitment to overall network sustainability.
- Workshops and other activities which might raise NREN engagement in developing and sustaining NREN-organisations should be pursued.
- Liaison with governments and international bodies active in the region should be strengthened and approached with possibilities of them utilising the SILK network.
- It is recommended that the project is given a time extension as requested by the project consortium, so as to fully capitalize on project impact.