

# **Terms of Reference**

## **For the Management of the Silk Project**

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**Acknowledgements to Peter Kirstein and Rolf Nordhagen**

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### **1 Preamble**

Whereas the NATO Science Committee has provided funds to assist in the establishment of the Silk Project for the period 2002-2004, it is not the sole funder of the project, nor does it normally manage closely any such projects. Its activities in the Silk Project are funded through its Computer Networking Panel. That Panel had set up the Silk Task Force (STF) to look after its interests in the Project.

The Networking Panel and the STF have set up a management structure to address both the long-term and short-term management of the Project. It is intended to ensure the functional, operational, technical, and financial success of the Project. In the former context, it will concentrate on making the Silk Network both functional and operational. The structure operates in the following environment:

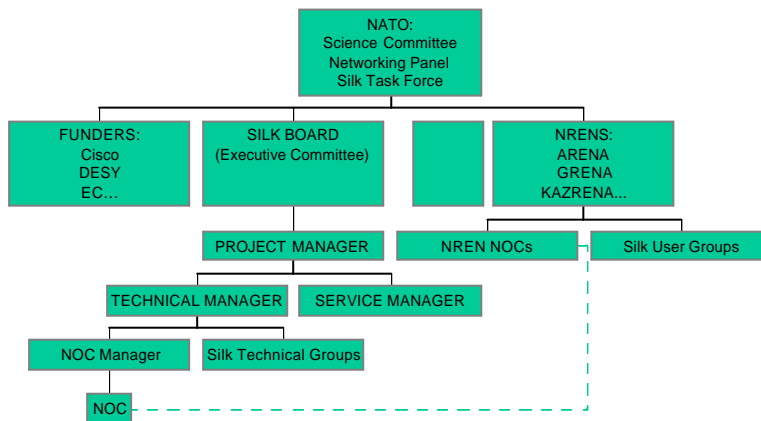
- The aim of the Networking Panel is to provide as high performance Internet access for the Research and Education community in the countries covered by the Silk Project as can be achieved within the financial and any other constraints operating.
- The Networking Panel believes that this aim is best met by establishing a Silk Network, currently satellite based, and connecting it to National Research and Educational Networks (NRENs) in each of the Silk countries. The Silk Network will work with such NRENs and with organisations helping to establish them in each Silk country.
- In order to further their aim, the Networking Panel has made a grant to Deutsches Elektronen-Synchrotron (DESY), Hamburg, to be the NATO co-Director, to house a VSAT hub, and to establish and to operate the Silk Network. The other co-Directors of the grant are the directors of the NRENs of the eight Silk countries, who will connect the Silk Network in their NRENs.
- The Silk countries are the Newly Independent States in the Southern Caucasus (Armenia, Azerbaijan, and Georgia) and Central Asia (Kazakhstan, Kyrgyz Republic, Tajikistan, Turkmenistan, and Uzbekistan).
- The Networking Panel realises that it can only provide very basic facilities, and intends that other parties contribute to the Project. The Silk Board constitution should encourage investment from such parties. The Cisco Corporation (Cisco), DESY, and Deutsches Forschungsnetz (DFN) are three parties who have already made such investments; the interests of such funding bodies should be safeguarded. Cisco has donated two routers and a content engine to each remote Silk site; DESY is responsible for running the Silk Network, and connecting to international networks through DFN.
- The European Commission has agreed to fund a project "Silk Project Operations Networking and GEANT Extension" (SPONGE) to manage the Silk Project and to provide various technical services such as multimedia/IP and web services.

- The success of the Silk Project depends on full collaboration and participation by the partner country NRENs and their governments. The Silk Project management structure should encourage such participation.

In the light of this environment, the following are the terms of reference for the management of the Silk Project.

## 2 Management Structure

To review graphically, the NATO Science Committee and Networking Panel oversight and interests are represented by members on the Silk Board and the Silk Executive Committee. The Silk Board (SB) is the main oversight body of the Silk Project. The Silk Board is composed of the NATO Programme Director, one representative from each of the NRENs (see the box to the right of the center box; therefore 8 people who can speak for the NRENs), funders of the project (one from each organization; see the box to the left of the center box), the three Silk Managers (Project, Technical, and Service), and the Silk NOC Manager. There will also be Silk Technical Groups (STGs) and Silk User Groups (SUGs). In addition, some of the management should be more personal and contractual than can be achieved by committees or working groups. The relationship between the different bodies is shown in Figure 1. Each facet is discussed below.



**Figure 1 Schematic of Interaction between different bodies**

### 2.1 The Silk Board

**Purpose** The Silk Board (SB) will be the principal oversight instrument of the Silk Project.

**Membership** It will contain both representative(s) of the NATO Science Programme and the beneficiary organisations *ex officio*; others who are contributing to the Project on a more local basis may be invited to participate. Each beneficiary NREN will be entitled, and expected, to provide one member of the Silk Board. Each funding agency will be entitled to provide one member to the Board. The three Silk Project Managers, and the Silk NOC Manager, will also be on the Board.

It is not expected that decisions will be made by vote; nevertheless it is necessary to limit the membership for efficiency reasons.

It is possible that users may be represented directly on the Silk Board at a later date although the NRENs should be representing those interests.

*The membership of the Silk Board will be settled in the context of the early meetings of the Board. For the first meeting, there were members from the Silk Task Force, the grantees, the funding bodies, and the Silk Managers. Each is discussed below.*

Many individuals could come from several constituencies; to make the Board more manageable, it is hoped that one will not appoint the maximum number of persons permitted.

The Grantees Each grantee NREN is invited to propose one member; additional members can serve on the STGs and SUGs.

Note that serving on the STGs and SUGs is not “official”, but does provide additional input to ensure the optimal operation of the Silk project.

The Funders Each substantial funding body should be entitled to appoint one member to the Silk Board. However, to reduce the size of the Board, it is expected that criteria will be introduced to ensure that the number of Board members representing the funders is constrained. This may require some mechanism like requesting written input from the funding bodies that only make a small contribution to the project.

Method of Operation While it is expected that most of its business will be conducted electronically; the Silk Board will have periodic physical meetings. These meetings will probably take place adjacent to other meetings to reduce travel and time costs.

Cost of Meetings The cost of attendance of Silk Board representatives will be borne by the representatives’ resources; the cost of one representative of each beneficiary grantee will be borne by central resources; the cost of other attendees will be decided by the SB on a case-by-case basis.

Activities The Silk Board will act as a contact group for the user organisations, to support joint initiatives, common practices, and suggest solutions to common issues and potential conflicts. Detailed work will be passed down to STG and SUGs. The Silk Board will monitor the performance of contractors and of the services provided – acting on the advice from STGs and SUGs (see Section 2.3), the Technical Manager, and Service Manager.

Guests Guests are discouraged to attend Silk Board meetings, due to the number of people already involved. Guests can only be admitted with prior application and approval by the Chair of the Silk Board.

## **2.2 Silk Board Executive Committee**

There is a sub-section of the Silk Board called the Executive Committee (ExCo). This Committee is a small number of individuals that make decisions and facilitate and expedite work. It will be chaired.

The Executive Committee contains the Managers (Project, Technical, Service, and Silk NOC) and the Programme Director. The Executive Committee also has regional representation; there should be one member from the Southern Caucasus and one member from Central Asia.

A Secretary should also be appointed.

Members of the Executive Committee should be ratified by the Silk Board and the NATO Networking Panel.

Other members may be invited to attend by the ExCo.

Meetings will be conducted in English.

## **2.3 Silk Working Groups**

It is intended that the Silk Technical Groups (STGs) and Silk User Groups (SUGs) be set up by the users and will provide input to the appropriate Silk Managers and the Silk Board. However, the Silk Board can also initiate Silk Working Groups. In both cases, the Silk Board must ratify the Working Groups.

### **2.3.1 Silk Technical Groups (STGs)**

Silk Technical Groups (STGs) are concerned with technical areas such as the development of monitoring, conferencing etc. The membership and terms of reference of each group will be agreed when it is set up. Normally such groups will provide input to the Silk Board and the Board may make requests to the Technical Groups. It is expected that the Technical Groups in turn will formulate requirements for services and performance, which will be fed back to the Silk Board and the SUGs. The membership will come from the Silk Board, the ExCo, the NRENs and the users themselves.

Mode of Operation It is expected that their business will be conducted electronically; it is not clear to what extent they will need physical meetings. It is intended that the personal communications mechanisms developed in the SPONGE project will eventually assist here. There will be an attempt to co-site some physical meetings with the Silk Board meetings or other convenient gatherings. The Silk Project will have only very limited funds to cover any travel costs.

### **2.3.2 Silk User Groups (SUGs)**

Silk User Groups (SUGs) will be concerned with user matters such as documentation, help facilities, use of caches, distance education, etc., and will be initiated by the users. The membership and terms of reference of each group will be agreed when it is set up. Normally such groups will provide input to the Silk Board and the Board may make requests to the User Groups. It is expected that the User Groups in turn will formulate requirements for services and performance, which will be fed back to the Silk Board and the STGs. The membership will come from the Silk Board, the Silk Task Force, the NRENs, and the users themselves.

Mode of Operation It is expected that this business will be conducted mainly nationally, and will be organised in the context of NREN activities. It is not expected that international physical meetings will be necessary or affordable. It is intended that the results of national user meetings be communicated to the Silk Board and to the Silk User Groups. The Silk Project will have no funds to cover any travel costs.

## **2.4 Technical Management**

For some purposes the STGs and SUGs are good mechanism the Silk Project; for others specific contractual responsibility is more appropriate. The Silk Task Force recommended that at least the following be organised on a contractual basis:

### **2.4.1 Project Manager**

The overall project management is a necessary and demanding task. The NATO Networking Panel recommended that Prof. Peter Kirstein (University College London) be appointed as the Project Manager (PM) at first instance; the European Commission (EC) has agreed to fund this activity through the SPONGE project.

### **2.4.2 Technical Manager**

The Technical Manager (TM) oversees the installations, agreements with contractors and relations with the beneficiary organisations, including the performance of EurasiaSat, the Satellite Service Provider (SSP), Cisco, and others making technical input. While the linkage between the SSP and the NRENs will be achieved by Cisco, the TM monitors the operation of this activity. NATO's Networking Panel has requested that the set-up and operation of the Silk Network be undertaken by Dr. Hans Frese in his role as the Chairman of the Telecommunications Committee of DESY; he will act as Technical Manager (TM). The TM is also responsible for the operation of the Silk Network Operations Centre (NOC), and the provision of network statistics.

#### **2.4.2.1 The Silk Network Operations Centre**

The coordinator of the Silk Network Operations Centre (NOC) is responsible for the connection between the SSP and each NREN NOC. The NOC is responsible for day-to-day management and operation of the Silk Network. It is responsible for fault reporting, 24/7 connectivity, and a help desk and user support centre for the NREN NOCs. Dr. Sergey Berezhnev (Moscow State University) has been appointed to this position.

The NREN NOCs will work directly with this central NOC. The dividing line for responsibility will parallel the equipment. The satellite/SSP and router will be the central NOC's responsibility and the router on the other side connecting to the NREN will be the NREN NOC's responsibility.

#### **2.4.3 Service Manager**

The Service Manager (SM) sets up and oversees the service levels that are agreed on, monitors that the service levels are actually met, and inform the partners of the service that is being delivered. The Networking Panel proposed that these activities be out-sourced to Drs. Robert Janz (University of Groningen). This activity is funded by the SPONGE project.

#### **2.4.4 Support Services**

The support for the Project includes secretarial and other services to keep all parties well informed of ongoing activities, network performance, and decisions made. This activity includes the maintenance and operation of a Silk web site, which contains central documentation and publicity material. While it is hoped that the NRENs will participate in this activity, some of it is funded under the SPONGE project; it was recommended that this portion be out-sourced to Drs. Robert Janz in his capacity as Service Manager.

### **3 Areas of Responsibility**

The areas of responsibility of the Silk Board should be discussed in the meetings of that Board. The areas should include, but not be limited to, the following:

- Collaboration between the Silk partners
  - Possible technical projects between the Silk partners
- Quality of Service (QoS) of the Silk Network
  - Service level agreements with the satellite service, earth station service, and LAN equipment providers
  - Problems in installation, licences, and operation of the Silk Network
  - Quality of the service (QoS) offered by the satellite provider, earth station, and LAN equipment
  - Usage of bandwidth by the different grantees
  - Monitoring and statistics
- Adequacy of, and needs for modifications in, Acceptable Use Policies (AUPs)
- Upgrades and extensions
  - Upgrade needs by the grantees
  - Policy on the acceptance of offers from potential funders
  - Acceptance of specific offers from potential donors
  - Technical, financial, and organisational implications of any network expansions and/or upgrades
- Need for, and establishment of, STGs and SUGs
- Training and workshops

- Requirements for training courses for both ISPs and NREN personnel and financing for their attendance
- Need for, and measures to organise, workshops
- Disputes of any kind between any of the involved parties
- Meetings
  - Frequency, dates and venues of Silk Board meetings; the ExCo currently envisages 3 meetings/year
  - Recommendations on specific venues of Silk Board meetings
- Considerations beyond the end of the current Silk Project

In some cases, the discussions of the Silk Board in these matters will be advisory rather than binding. For example, the bandwidth upgrades or expansions implemented may depend on financial considerations, which cannot be resolved by the Silk Board. For reasons given earlier, it is probably impractical to decide Silk Board matters by vote; nevertheless, the minutes should reflect disagreements inside the Board.

## **4 The Duties and Rights of the Different Constituents**

It is important that each of the parties mentioned in the preamble have their rights protected, and their responsibilities outlined, in the deliberations of the Silk Board. These parties include the following:

### **4.1 The NATO Science Committee/Computer Networking Panel**

The NATO Computer Networking Panel is responsible for the provision of grants in the Computer Networking area on behalf of the NATO Science Committee. It has appointed the NATO Programme Director to the Silk Board and the Executive Committee (ExCo) to represent its interests in the Silk Project. The Networking Panel may appoint additional members onto the Silk Board (SB). These appointees represent the Networking Panel and the NATO Science Committee in the management of the project.

Since it is expected that the SB will meet only a few times a year, it is possible that the ExCo will act to oversee the activities of the technical management and the Working Groups on an operational level. Ultimate responsibility will remain, however, with the Silk Board.

### **4.2 The Users**

The primary reason for the Silk Project is to provide Internet access in the Silk countries to all research and educational users. This should not be for commercial uses. It is the responsibility of the users to abide by the AUP of their NRENs; it is their right to have such access as is authorised by their AUPs – within the resources available on their NRENs. If any user feels it is not being granted the appropriate access, it is their right to appeal to the Silk Board, although this is expected to come via Silk User Groups at the first instance.

### **4.3 The National Research and Educational Networking Associations**

Each country clearly has a right to set up any NREN it pleases. For this NREN to qualify for receiving Silk equipment, its Acceptable Use Policy (AUP) must be provided to the ExCo and the Silk Board. The NREN must also name its representative to the Silk Board. It must state the location proposed as the site for the Silk Earth station, and show that it has regulatory permission to transmit and receive data as part of the Silk Network. It must provide the ExCo and the Silk Board with the terms of its regulatory approval, including its policy on the provision of additional Earth stations in the country. The Silk Board may have legitimate concerns on who is permitted to access the NREN, in the terms of (4.2) and whether its set-up is appropriate. The concerns should be limited, however to the following:

- The AUP is inadequate, e.g., it permits commercial usage.
- The NREN constitution would not allow it to fully participate in the Silk Project. The Silk Board would not consider lack of cooperation with another Silk Partner such a violation, but might so consider not providing relevant information to the Silk Board.
- The choice of installation site is technically unsuitable.
- Operation of the site interferes with the operation of other sites.
- The NREN does not allow access from researchers whom the Silk Board feels should be provided such access.

The NREN shall nominate a representative to the Silk Board. It is expected that he/she will be empowered to make policy decisions on behalf of his/her NREN, and at least approve technical decisions. The NREN official shall provide the information required by the Silk Board, and be answerable for ensuring that its AUP is followed.

#### **4.4 Deutsches Elektronen-Synchrotron (DESY)**

DESY has the duty to run the Silk Network in an efficient manner, and to provide the Silk Board and ExCo with the relevant statistics on the operation. It provides oversight of the central NOC. DESY has the right to limit traffic that violates the DFN AUP. It must also be provided remote access to the Silk equipment, including the LAN equipment, as required. Before installation of equipment, DESY must be satisfied that the site preparations by each partner are adequate, and that each site has appropriate access for its installations.

#### **4.5 Cisco Corporation (Cisco)**

Cisco has a right to decide whether it wishes to have its equipment delivered to specific grantee countries whether or not its NREN has met Silk Board conditions. The Silk Board will not oppose such a decision – even though they may try to convince Cisco not to do so. Cisco has the right to withdraw service or deny an upgrade if it feels that either the Silk Board or a country is not heeding its legitimate concerns. In practice, Cisco will be donating its equipment to DESY, so that this situation is unlikely to arise. Cisco has indicated that, even though it is entitled to withdraw its equipment from any individual grantee, it does not expect to exercise this right.

#### **4.6 Funding NGOs**

A funding NGO should not have any particular rights, of national access or otherwise, in the project in a country if such rights are disputed by a Silk Board member representing its NREN(s). However, if such an NGO does not obtain the rights it expects, it can of course withdraw any future support – subject to any relevant contractual constraints. A funding NGO should be eligible to be a member of the Silk Board; how many and which should be such a member have still to be resolved.

#### **4.7 The “Silk Project Operations Networking and GEANT Extension” (SPONGE) Grant**

The European Commission (EC) is funding the SPONGE grant proposal to deal with the management, and some technical extensions, of the Silk Project. As part of this project, the SPONGE partners require access to the router and content engine statistics. The SPONGE partners have the right to receive the information described in its Technical Annex; the Silk partners shall provide such access and information.

The SPONGE partners will provide all relevant information to the Silk Board and the ExCo. The SPONGE partners shall keep confidential any information so deemed appropriate by the Silk Board and/or the NREN.

## 5 Dispute Resolution

The NATO Science Committee has set up the Silk Project; its funds and the NATO grants are under the aegis of its Computer Networking Panel. The Networking Panel has decided that the NATO Programme Director should be appointed to the Silk Board and the ExCo and should act as its agent in connection with the Silk Project; *the ExCo can also assist in problem resolution, but the Silk Board and the Networking Panel must ratify such decisions.*

If there are any disputes in matters concerning the Silk Board, the parties concerned should try to resolve them. If it is appropriate, they should bring their suggested solution to the Silk Board. The Silk Board will often not be able to resolve such disputes, and will attempt to do so only if they concern vital concerns of the Board.

Since the NATO Programme Director is a member of the ExCo and the Silk Board, NATO's concerns will have been reflected in any decisions made by the ExCo. Any objections to the decisions of the ExCo and/or the Silk Board should be made directly to the Assistant Secretary General for Scientific and Environmental Affairs of NATO.