

**The Sixteenth Silk Board and Sixth OCCASION Meetings
Ashgabat, Turkmenistan, November 19-22, 2007, v1**

Monday November 19

Session 1 10.00 – 12.00 Formal Opening of Silk Board

The formal opening of the Silk/OCCASION Board meeting took place by way of a series of introductory speeches from the following persons Akjeren Allanurova. (Deputy Chairman of the Supreme Council of Science and Technology under the President of Turkmenistan), Peter Kirstein (Chair of the Silk and OCCASION Boards), Chris Dewispelaere (NATO Programme Director), Michal Wilson (EU TACSIS Programme Director) and James Green (Chair of NATO Communications and Networking Panel).

With regard to these opening speeches it is noteworthy that Akjeren Allanurova stressed the importance of the Silk project for her country. Silk still provides the only way in which students and scientists of Turkmenistan can reach the Internet.

**Tuesday November 20
The Silk/OCCASION Board**

Session 2 9.30 – 13.00 Current Status and Prospects for Silk-2

2. Welcome to Board Members

Kirstein opened the meeting and welcomed the Silk/OCCASION representatives and other persons.

3. Acceptance of, or Changes to, the Agenda [Kirstein, [SB16-2](#)]

The agenda was accepted without any changes.

4. Introduction of Participants

The participants were introduced in the customary round of introductions.

5. Minutes of Previous Meeting of the Silk Board in Bishkek [Kirstein, [SB16-4](#)]

The minutes were accepted without any suggestions for change.

6. Actions arising from previous meetings [Kirstein, [SB16-5](#)]

AP 12.32: Janz will prepare OCCASION communication templates.

Done.

AP 13.12.1: VIZADA¹/DESY will organise a VSAT workshop together with Uzscinet

Not Done. This will take place in the beginning of 2008, the venue Tashkent will probably be switched to either Oslo or Hamburg.

AP 13.12.2: AZRENA (Aliiev) will organise a wireless workshop

¹ Since the previous Silkboard meeting Telenor has been taken over by another company and is now called VIZADA. All previous mentioning of Telenor (for example in this action list) have been replaced by VIZADA.

Not Done. A wireless workshop has been held in Tashkent and may be seen as the alternative to this workshop.

AP 13.12.5: Janz will explore the possibilities of a financial workshop.

Janz has discussed the format of the workshop with ISOC, that has offered support for this workshop. He will prepare a proposal together with ISOC.

AP 13.12.6: Janz will update and distribute a workshop status table.

Not Done.

AP 14.34.2: KRENA: Report all IP addresses of VC equipment to DESY.

Done.

AP 14.38.2: The NRENS should provide information on who will be the auditor of the claim.

Done

AP 14.39.1: Janz will provide cost estimates of the SB meetings until the summer of 2008.

Done

AP 15.6.1: DESY will organise a workshop with the aim to clarify and clear the relation between the Silk NOC and the VIZADA operation centre.

Done and held.

AP 15.3.2: The Silk NOC will coordinate a software update of the modems (to version 4.6).

Done.

AP 15.3.3: DESY and VIZADA will fine tune the SAA QoS measurements and provide a network performance report.

Partially done. To be discussed during the meeting.

AP 15.3.4: The NRENS will put more load on there Silk-2 links

Mainly Done

AP 15.3.5: The NRENS will make use of the formal VIZADA/Silk NOC channels to bring forward their complaints about the performance of the system.

Partially done, but not always

AP 15.3.6: VIZADA will provide a detailed test report on Compression Lab Result; there will be an invitation to NRENS to participate in the tests.

Partially done. Certainly the NRENS have not participated

AP 15.22 VIZADA will provide an implementation plan for the actions defined during SB 15

Provided partially to Kirstein and Frese, but not as formal plan

AP 15.23 Kirstein will present bandwidth distribution plan at SB16

Nearly complete. Depends on some further VIZADA input.

AP 15.31.1: Janz will send information about ISOC to the list

Not done.

AP 15.31.2: Janz will provide a link to ISOC on the Silk/OCCASION pages.

Done

AP 15.36: Janz will provide framework for NREN services inventory.

Not done

AP 15.40.1: Ohrenberg will organise Cisco communication workshop

Not done

AP 15.40.2: Janz will organise transfer of Cisco telephones to Silk/DESY.

Done

7. Main points in agreed Service Level Agreement and Addendum to Statement of work [Frese]

A statement of work (SoW) has been distributed before the meeting and was presented by Hans Frese. The issues that were discussed gave rise to a (very) long discussion, initiated by the NRENs, about the general service level provided by VIZADA. The NRENs are not happy with the service level that has been provided up to now. In the view of the NRENs, there is a discrepancy between what the NRENs experience (especially AZRENA, Uzscinet and KAZRENA) and what the statistics show. In some cases the VIZADA channel has been switched off and other providers are being used.

AP 16.7.1: The Silk-2 SoW will be translated to Russian after the final modifications.

8. Report on Silk-2 from VIZADA Viewpoint [VIZADA]

In a reaction, Carl-Peter Moller of VIZADA stated that the implementation phase of the project had not been at the level that VIZADA was used to. Of course the explosion of the new satellite has been a major obstacle in providing the services that were stipulated in the contract. However he thought that the worst part had now been dealt with and the coming months would show an important increase in service levels. The agreement on the Service Level Agreement would certainly help in this. VIZADA would further intensify the contacts with the NRENs, as a group but also at the individual level. Also a number of technical activities would be implemented: TCP acceleration would be switched off, the BUCs would be upgraded, extra power would be put on the DESP hub. With regard to the statement that there was a discrepancy between the statistics and the experiences of the NRENs he stressed the importance that the ticket system should be used. There are three ways in which incidents can be reported to VIZADA technical staff: through the Silk NOC, by the NRENs and by way of the automatic alarm. Only incidents reported through these channels get registered and appear on statistic overviews.

Subsequently Erik Bakk (VIZADA) provided an overview of the Silk-2 problem reporting procedures. It is essential that VIZADA is provided with as much details as possible with regard to incidents/problems that are reported. Especially the following is important:

NRENs should inform VIZADA in which part of their network a problem occurs

NRENs should structure their complaints more

The reporting procedures will be part of the technical workshop in the beginning of 2008.

9. Status Report on Silk-2 from DESY and NREN viewpoint [Frese]

Most of the current status issues were discussed during the agenda points above. In general, Frese reported, the system was becoming more stable and reaching the required service levels. The system changes to be implemented in the beginning of 2008 would further improve the situation.

10. Changes expected over next few months [Frese, VIZADA]

A summary of the intended system changes, partly already mentioned above is:

- TCP acceleration will be switched off
- The BUCs will be upgraded
- The DESY dish will upgrade from 100W to 200W
- GSM modems will be installed
- Some small adjustments to the statistics pages will be implemented

AP 16.10.1: VIZADA will distribute a list of intended system changes, including expected implementation dates.

11. Bandwidth distribution proposal over next six months [Kirstein]

Kirstein stated that the current bandwidth distribution will be kept in place until April 1 2008. NRENs are expected to provide him with their bandwidth needs during the coming period, including their ability to provide co-funding of bandwidth.

12. Co-funding [Frese]

There is currently no co-funding of Silk-2 connectivity.

13. The Plans for national extensions

In various degrees the countries are expanding the Silk connectivity within their countries. The NRENs provided the following overview of their activities:

AFRENA (by Janz, as that NREN was not represented at the meeting): at the Kabul University campus a fibre-optic backbone has been implemented, connecting all faculty buildings as well as the Ministry of Higher Education to the Silk NOC. In a second project the Polytechnical, Educational and the Medical University will be connected, including PC class rooms. In 2008 other parts of the city will be connected by way of WIMAX, reaching the Academy of science and several libraries. National connectivity awaits the completion of a fibre optic ring that is being installed; the expected operation date is begin 2008.

ARENA: the changes in legislation are being implemented, at the next Silk Board meeting more can be said about the consequences. Together with UNDP, a project is being implemented that lead to a substantial rise in connected users in Yerevan.

AZRENA: Most of the academic institutes within the country are connected through fibre optic lines provided by the project with the Ministry of Communication. There are plans for further expansion.

GRENA: most of the country is connected; there are no projects at this moment with regard to expansion of the network. More work will be done at the service level.

KAZRENA: the NREN is currently expanding its connectivity to other parts of the country with fibre-optic services of KazTelcom. There will be eight operational centres throughout the country, connecting all mayor cities within the country. The current bandwidth level is 16–18 Mbps, but this is expected to rise to 30-40 Mbps by the end of 2008.

KRENA: the current important objective of KRENA is to connect Osh, the capital of the Southern province, to the Silk-NOC. This project has been stalled for more than a year due to the reluctance of Kyrgyz Telco to provide connectivity.

TARENA: the upgrade of the municipal network has been completed, the next step is to expand to the provinces. Some of these can be connected through fibre optic, but the mountainous locations will be dependant of satellite connectivity for years to come.

UZSCINET: the whole country has been connected for some time. An upgrade of the existing equipment is becoming very urgent because of the increased load on the links.

14. Plans for VoIP and conferencing equipment [Ohrenberg, McLauhlin]

DESY is still awaiting delivery of all the equipment for VoIP and VC. It is expected that all will be available to DESY in December. Following that the equipment will be tested and procedures for deployment will be worked out.

It is noted gratefully that RUG has donated 90 Cisco VoIP telephones and a caller.

15. Results of Recent ICT Panel [Green]

James Green reports that at the recent Panel meeting various Silk related proposals were discussed and approved by the Panel. As the internal approval by the NATO countries is now in progress, he is not allowed to disclose which proposals have been approved. It is taking more time than usual before the formal approval can be made public because NATO is formulating policy in what their stand point is with regard to GRID related proposals and WIFI proposals.

16. Status of Silk funding [Frese]

The only current funding body for Silk connectivity is NATO.

Session 3 14.00 – 18.00 Future Prospects

17. Status of EC Funding [Kirstein]

Since the previous Silk Board meeting there has been an OCCASION review, where the request for budget neutral extension of the OCCASION project was presented. After the findings of the review were available the EU has granted the requested extension. This means that OCCASION funding will continue until the end of June 2008 and then will completely stop.

The intended continuation of OCCASION in the ACCEPTOR project did not materialise as the project proposal was rejected. For the Caucasian countries the impact of this decision will not be very large because they are part of the Black Sea initiative that will start on March 1 2008. For the Central Asian countries the situation is more grim. Their only prospect of continued EU funding is the EU AIDCO initiative to provide funding for fibre optic connectivity to the Central Asian countries. A pre-feasibility study was conducted in the first part of 2007, leading to a follow-up study that will take place in the beginning of 2008. Janz and Kirstein have been invited to a meeting discussing the possibility to have the OCCASION project team take care of the implementation of this plan. In the end this did not work out because the intended budget for the activities (TEIN project) was not allowed to be used for this study. EU AIDCO is now tendering for a consultant to implement the study project, the results of this procedure are expected in December 1 2007. Once the consultant(s) had (have) been contracted; the contractors will most certainly want to talk to the Silk NRENs from Central Asia. Dates for Silk Board meetings in the beginning of 2008 will have to take their schedule into account.

18. NATO Plans [Dewispelaare]

NATO funding of Silk is scheduled to stop by the midst of 2009. If a role for NATO is requested after that date, or additional support is desired in the transition period, a document will have to be produced demonstrating the impact of Silk for the involved countries. This paper would be presented to the NATO Science Committee meeting in March 2008.

AP 16.18.1: Kirstein will produce impact document for NATO

19. Other sources of funding and Users of Silk-2

There are no other funding sources for Silk-2 connectivity. Funding for additional capacity is of course problematic because of the limitation of bandwidth provision: VIZADA cannot meet the specifications of 120/30Mbps in the Silk-2 contract, let alone that it can accommodate new users.

20. The BSI Project and international fibre in the Caucasus [Kvatadze]

The BSI project foresees connectivity in, for amongst others, the Southern Caucasus countries. A consortium of Greek, Turkish and Caucasian countries will implement the project that starts on March 1 2008. The participating countries are expected (and have underwritten this) to provide 20% of the budget of the project. The first connectivity is expected in the beginning of 2009.

21. EC activity and international fibre in Central Asia [Kirstein]

This was already discussed above.

22. The Education Programme [Janz]

A WIMAX workshop has been organised. The agenda, report and participant list still have to be received.

AP 16.20.1: Gajewski will provide Janz with the report of the WIMAX workshop.

- The financial workshop is being discussed with ISOC.
- The CERT workshops are in progress.
- The technical satellite workshop can now be organised. It is the intention to do this in the beginning of 2008 in Hamburg. Ohrenberg will work out the details of the workshop and communicate this to the NRENS.
- At a later moment during the meeting (during the Silkboard dinner to be precise) VIZADA offered to pay for the expenses of the VSAT workshop.

AP 16 20.2: Ohrenberg will organise technical Silk VSAT workshop.

A VoIP training workshop will also be necessary. This will take place at the beginning of 2008. There was a discussion about the possibility of combining the workshop with the VSAT workshop. As it is expected that different technicians will be involved with the relevant technologies it decided to keep the workshops separate.

23. Progress on Silk and National IP Registration Authorities

Afghanistan, Turkmenistan and Tajikistan still have not been able to register their own domain.

24. Progress on CERTs [Gajewski]

The CERT implementation is in progress. An overview of the current status was presented. Gajewski complained that not all NRENS are participating in the activities related to the CERT project. He will discuss their commitment on a one-to-one basis.

25. Progress on Web Sites [Janz]

The intended migration of the working documents to a Wiki web site has not taken place yet. This expected to happen by the beginning of 2008. It will then be possible to provide username/password restricted access to a part of the document store, including the link to the Silk-2 statistics page.

26. Progress on Current NIGs

Nothing was discussed here.

27. The progress in User Collaboration [Janz, NRENS]

Since the previous Silk Board meeting an extensive survey of the user groups has been made as preparation for the ACCEPTOR proposal. The findings of the survey have proven that there are existing user communities within the Silk countries making use of the services provided by the NRENS.

28. Expectations for NREN Participation [Kirstein]

Kirstein stresses the importance of more NREN participation in the project activities. One of the mayor comments of the reviewers in July was that it is not visible enough what the contribution of the NRENS is to the success (or failure) of the project.

29. The Schedule of Future Silk/OCCASION Board Meetings

The OCCASION project can provide budget for at least one more Silkboard/OCCASION meeting. This will take place in March/April 2008, depending on the schedule of the feasibility study of EU AIDCO. The exact venue and dates will be decided at a video conference in January 2008.

30. Summary of Actions

See end of minutes.

18.30 Onwards Formal Dinner

**Wednesday November 21
9.00 – 13.00 Technical Session**

The minutes of the following technical sessions will only cover the main topics and resulting action points.

31. Fault reporting and its Follow-up [VIZADA]

Erik Bakk gave a more detailed overview of the VIZADA ticketing system and fault report overview. Again it was stressed that the garbage-in/garbage-out mechanism is quite relevant: without the proper input VIZADA cannot register incidents properly and fault overviews are then worthless.

32. Monitoring of Silk-2 from the NREN Sites [VIZADA]

VIZADA and the Silk NOC have reached agreement on how statistics are to be interpreted. An extensive overview of the various statistics that are being followed is available to the NRENs. The Silk website will provide a password protected link to the statistics page.

AP 16.32.1: Janz will implement a link to the Silk-2 statistics pages from the Silk web site.

33. The Service Level Agreement [Frese]

The details of the Service Level Agreement were presented and discussed. In order to monitor if the required service levels are actually met a regular video conference with the Silk technicians will be organised. In order to accommodate Afghan participation this will take place on Monday, Tuesday or Wednesday.

AP 16.33.1: Frese will organise regular VC's concerning SLA issues.

34. VoIP and Videoconferencing Deployment [Ohrenberg, McLaughlin]

The VoIP system to be implemented as part of the OCCASION project was presented. The system will provide shared whiteboard services and be more flexible for soft-phone access than the current system. After some discussion it was decided to host the system at DESY. The issue of external connectivity was raised: it is not clear what the costs are of external connections (i.e. to the public infrastructure).

AP 16 34.1: Ohrenberg will provide a policy paper for the VoIP equipment deployment.

AP 16 34.2: Frese will provide an overview of the tariff structure for external calls.

35. VoIP and Videoconferencing set up and usage [Ohrenberg, McLaughlin]

The VoIP and VC system consists of the following:

- The central system
- Audio phones
- Video/audio stations
- Camera's (for combination with the audio phones)
- There will be no public access from the VoIP system to fore come license problems in some of the countries (including Germany!).
- The sequence in which services become available is the following:
- Video equipment and telephones will be distributed (December)
- The central call server will be installed (December)
- Meeting Place will be installed (January)

The conditions for deployment of the equipment are that (of course) it will be used and reports will be given of the usage.

36. The impact of VoIP and videoconferencing on the NRENs

The driving motive for the deployment of VoIP and Videoconferencing equipment is to enable user groups to participate in international projects without burdening them with substantial extra costs. Therefore an approval procedure will be worked out (as part of the

earlier mention deployment paper) in order to decide how the telephones are to be distributed.

GRENA reports that it cannot host a large number of phones because of national license restrictions.

37. Emergency Communications [McLaughlin]

A presentation about a Cisco communication system for emergency communications was given.

38. Systems Management for Energy and other Media using Information Technology [Vogt]

See presentation on the web site page of Silk Board 16.

14.00 Onwards Excursion

The excursion took us to the National Turkmen museum a tour through the country side and a dinner at the presidential guest residence outside the city. Photo's are on the web site.

Thursday November 22

9.00 – 13.00, The Future of the Silk Project

Here we discussed the steps we should take, and the impact of, several new developments;

39. The impact of the Refusal of the EC to fund ACCEPTOR on the Silk Project and the NRENS

The termination of the EU funding of the management of the project will have an impact on the partners in the Silk project after June 2008. The following consequences were voiced at the table:

- RUG will have to stop with any activities as there is no internal funding for continuation
- DESY involvement, also of the Silk-NOC, will depend on the availability of NATO funding
- GRENA will have problems to continue in the participation, but will do its best because of the importance they give to the Silk project (in the context of a collaboration network)
- KAZRENA vented its frustration that in their view the current situation is the result of a competition between satellite and fibreoptic initiatives. It would have been better to keep the ranks closed. In the end they will continue to participate in Silk-related activities.

The other NRENS did not express a particular view.

40. Progress in the BSI Project and its Impact on Bandwidth Requirements for the Caucasus

A consequence of the BSI project will be that there will be hardly any need for satellite connectivity. Even now the NRENS have competing offers for fibre connectivity and use Silk as back-up to these links. It was therefore probable that the Caucasus satellite bandwidth would become available for Central Asia starting Q1 of 2009.

41. VIZADA's ability to Move Satellite Bandwidth to Central Asia, and its Impact on the Caucasus Co-funding of Bandwidth

VIZADA must move satellite bandwidth from the Caucasus to Central Asia if this is requested. Also VIZADA is now considering introducing fibreoptic connectivity for the Caucasus in order to meet the bandwidth agreements stated in the contract.. It was stated that co-funding from the Caucasus countries would be available only for fibreoptic connectivity.

42. Co-funding of Bandwidth during the Remainder of Silk-2

It has already been agreed that once the Silk-2 system is operation bandwidth co-funding will be introduced. The following scheme will be implemented:

- 50% of the total bandwidth will be provided free of charge
- 50% of the bandwidth will be provided only if 50% of the costs are co-funded (this is a cost to the NRENs of €300 per Mbps per month)
- As a result of the discussions of the previous agenda points the following was decided:
- Satellite bandwidth will be moved from the Caucasus to Central Asia as soon as alternative fibreoptic connectivity becomes available

VIZADA will make an offer for fibreoptic connectivity in the Caucasus countries

The subsidy agreement will be implemented starting April 1 2008.

In order to determine the bandwidth needs of the NRENs, with the decisions above in mind, the NRENs need to communicate their bandwidth needs for the coming six months, and the following six months to Peter Kirstein. They should also indicate their needs in the case of fibre optic connectivity and in the case of satellite connectivity (this last point is especially meant for the Caucasus countries).

AP 16.42.1: NRENs need to communicate their bandwidth needs for the coming six months, and the following six months to Peter Kirstein

43. The EC initiative in Central Asia, and Immediate Actions of the NRENs

When the agenda was drawn it was expected that more information would be available about the EU AIDCO study. As this is not the case there were no specific actions that needed to be taken with regard to this project until there are specific requests from the EC or its contractors..

44. The Impact of NATO's Intention to Cease Funding for the Silk Programme

The Caucasus countries will not be severely affected by this decision. Their transition to fibreoptic connections is well underway and will provide an alternative before the ending the NATO funding. For the Central Asian countries the situation is quite different. The more prosperous NRENs such as KAZRENA and UZSCINET will have to charge their users more. TURENA sees possibilities of extra government funding. For Kyrgyzstan and Tajikistan the termination of funding will cause mayor problems for the NRENs and the connecting institutes. There is not enough internal funding available to continue the current service level.

45. The importance of Other Satellite Nodes in the Silk Countries, and the Re-deployment of the Existing Nodes

Given the situation that various countries will migrate to fibre within the next 12 months a number of Silk-2 dishes will become available. An inventory of existing needs within the resulted in the following:

- ARENA will probably not need extra dishes as a national fibreoptic infrastructure will become operation at the beginning of 2008
- TARENA will need three dishes for unreachable provinces
- Kyrgyzstan needs a dish for the Osh site.

14.00 – 18.00 The OCCASION Meeting

This meeting is intended only for OCCASION partners and Exco

46. Status of Management Reporting [Kirstein]

All management reports have been received.

47. Financial Status and the Second Claim [Kirstein]

The extension has been approved and the second claim has been delivered to the EU. The EU should have formally approved of the extension request by now, releasing the funds of the second claim. However due to some sand in the internal wheels of the EU bureaucracy this has not happened yet.

Once the funds have been released the next payment can take place. This will consist of Claim 2 and an advance for the remainder of the project.

AP 16.47.1: Kirstein will send NRENs letter regarding extension of project.

48. Progress and Plans by NRENs on Sustainability [NRENs, Janz]

A new overview of the sustainability status will be made in the beginning of 2008, continuing on the previous overviews. This survey will have some additional questions with regard to new services that have been implemented in the previous year and changes in international connectivity.

49. Progress and Plans by NRENs on User Support [NRENs, Janz]

Nothing was discussed.

50. The July Project Review and its implications

The Review document was sent to the NRENs early, including the comments of Peter Kirstein. The implications are that the OCCASION project will be allowed to continue until the end of June. However the NRENs will have to provide effort in the OCCASION activities if they want to be seen as credible partners in any future projects.

51. The No-cost Extension of OCCASION, Impact and Budget

In order to be able to forecast the available budget for the remaining part of the project Peter Kirstein needs information with regard to all expenditures of the partners upto the end of Q8. The main changes in the Description of Work under the amendment, was less emphasis on the provision of EC resources for the users directly, and an increased requirement to collaborate with any internal or EC studies on future sustainability.

AP 16.51.1: The OCCASION partners will provide overviews of their expenditures until the end of Q8

52. Summary of Continuing Actions

AP 13.12.5: Janz will explore possibilities of financial workshop.

AP 13.12.6: Janz will update and distribute workshop status table.

AP 15.3.6: VIZADA will provide a detailed test report on Compression Lab Result, there will be an invitation to NRENs to participate in the tests.

AP 15.31.1: Janz will send information about ISOC to the list

AP 15.36: Janz will provide framework for NREN services inventory.

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AP 16.7.1: Janz will arrange for the Silk-2 SoW to be translated to Russian after the final modifications.

AP 16.10.1: VIZADA will distribute a list of intended system changes, including expected implementation dates.

AP 16.18.1: Kirstein will produce Impact Document for NATO.

AP 16.20.1: Gajewski will provide Janz with the report of the WIMAX workshop.

AP 16.20.3: Ohrenberg will organise VoIP workshop.

AP 16.32.1: Janz will implement a link to the Silk-2 statistics pages from the Silk web site.

AP 16.33.1: Frese will organise regular VC's concerning SLA issues.

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AP 16.42.1: NRENs should communicate their bandwidth needs for the coming six months, and the following six months to Kirstein

AP 16.51.1: The OCCASION partners should provide overviews of their expenditures until the end of Q8

Attendees to SB16

Name	Organ	E-mail	Date arrival	Date leaving
ExCo				
Jacek Gajewski	CEENet	gajewski@ceenet.org	19	23
Hans Frese	DESY	hans.frese@desy.de	19	26
Sergey Berezhev	MSU	sfb@radio-msu.net	19	24
Chris Dewispelaere	NATO	chris.dewispelaere@hq.nato.int	19	21
Robert Janz	RUG	r.f.janz@rug.nl	17	24
Peter Kirstein	UCL	P.Kirstein@CS.UCL.AC.UK	19	26
Guests				
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Mikhail Makhaniok	CISCO	mmakhani@cisco.com	17	24
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Technical representatives				
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Mikhail.Orenbakh	DESY	Mikhail.Orenbakh@desy.de	19	24
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In the above Members of the ExCo who also represent their NRENs on the Silk Board (Kvatadze and Japarov) are listed only in the latter row.