

Periodic Progress Report 9
Period: 10.2004 - 12.2004

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Silk Project Operations Networking and GEANT Extension

SPONGE

Project Manager:

Professor Peter T Kirstein

Department of Computer Science
University College London
Gower Street
LONDON
WC1E 6BT
U.K.

Phone: +44 (0) 20 7679 7286
Fax: +44 (0) 20 7387 1397
Email: p.kirstein@cs.ucl.ac.uk

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1 OVERVIEW

During the quarter we prepared the material for the 2nd Project Review, and were gratified by the immediate reaction of the reviewers. We took full notice of their strictures on working towards a sustainable system – and one aspect of this is to ensure that we provide a base for affordable communications in the next phase of the project – which we call Silk-2.

During the quarter the Kabul earth station came up. The usage has still been slight, mainly because they have very few computers at present, and a rudimentary technical support infrastructure. We are pleased that there is a substantial assistance programme to Kabul via the Technical University of Berlin; this may help provide some of this needed education.

In QR8 we mentioned the plan to achieve the phased reduction in funding from NATO during 2006 and 2007, with the increase in funding from the Silk NRENs starting already in 2005. This was accepted by the Silk Board at its September meeting in Dushanbe, Tajikistan. The proposals was then presented to the NATO Panel and the NATO Science Board in October. The Science Board was particularly enthusiastic about the whole Silk Project. Many of the members praised the project as the sort of Regional initiative that the Science Board should support.

The 2nd SPONGE Review was held in conjunction with the SEEREN project in Istanbul. This allowed a closer collaboration with SEEREN to be forged. In addition, we took the opportunity to make a personal visit to Eurasiasat in Istanbul, in order to clarify our communications needs for Silk-2 – and our concerns that their current offering might not be economically competitive.

We mentioned in QR8 that the first phase of the IPv6/satellite work had been largely completed. This was the phase in which special IPv6/DVB cards were installed in five earth stations. We remedied the shortcomings shown in our earlier tests, and demonstrate live, native IPv6 multi-way conferencing at the IPv6 booth at IST2004 in the Hague from Azerbaijan, Kazakhstan and Uzbekistan. We would have included Georgia also, but their people had another important event at the same time, and could not spare any manpower. We have now started planning further usage of IPv6 without the extra cards in a tunnelled mode.

Discussions with the University of Central Asia have re-started, but it is not clear what will be the result. There are some thoughts of their joining a regional network based on Kazakhstan. Discussions with the World Bank have started again.

The last workshop funded by ISOC has now been held. Unfortunately Zita Wenzel, who was the Vice President for Education at ISOC, and Silk ExCo's main link with that organisation, has resigned from being the NATO Consultant for the Caucasus, and will no longer be associated with the Silk Project. As a result, we must forge new links with ISOC to maintain the workshop programme. We were pleased to hear that the 6DISS proposal was accepted in principle; this will certainly provide IPv6-based workshops for the Silk community.

From the dissemination viewpoint, a paper on Silk was presented at the IPSI Conference (October, Venice). We have already mentioned the presentations both to the NATO Science Committee. This project was the only one presented also to the larger group representing the 47 countries who were associated with the NATO Science Board.

The belated Deliverable D9 on operational experience was produced during the quarter. Its salient findings were presented at the Review, and so will not be repeated here. The Deliverable D10, on papers from the Silk Committees, will be delayed. We feel that some of those on Silk-2, which are only now coming, will make it a better Deliverable.

In view of the decision to extend the Silk Project to 2007, we have taken two decisions. The first, to extend the contract at no cost to the end of October 2005 was presented to the Reviewers in Istanbul and endorsed by them. The second was to put together a new proposal to have a broader project following the end of SPONGE. This will be prepared for the new Research Networks Call which came out at the end of December.

2 TECHNICAL ACHIEVEMENT

2.1 WP 1 - Administration and Management

The project has three tasks in the administration of the Silk Project and of the Sponge Project itself, namely:

- A1.1 SPONGE Project Management
- A1.2 Silk Project Management
- A1.3 Relationships with Funders.

2.1.1 Sponge Project Management

There was no formal SPONGE project meeting during the quarter, but the Review has been mentioned already. .

2.1.2 Silk Project Management – Silk-1

The Silk project was scheduled to end in July 2005; this initial project is hereby called Silk-1. This section is concerned with the Silk-1 Project management. The minutes of the 7th meeting of the Silk Board (SB7), which was chaired by Prof Kirstein and held in Dushanbe, Tajikistan – September 27-29, 2004, were produced. They have been put up in English and Russian on the Web Site. Normally they would be appended, but we intend to include them in D10 instead.

In view of the difficulty of considering alternatives to Eurasiasat for Silk-2, We have re-scheduled the next three Silk Board meetings. Now SB8 will be in Yerevan, Armenia, (February 4-7, 2005), SB9 in Tashkent, Uzbekistan (June 2005) and SB10 in Bishkek, Kyrgyzstan (October, 2005).

The Silk equipment has now to be maintained. This has led to a new problem appearing. Some governments are charging a high duty, up to 20% of the purchase price, every time equipment is exchanged for maintenance. We are trying to resolve the problems this policy causes.

2.1.3 Silk-2 Preparation

The Science Committee has provided a further 800 KE to continue the Silk Project for a further 2 years; this continuation we call Silk-2. During this period we are supposed to move the project towards a self-sustaining basis. There will be some more NATO funds for Afghanistan; most of this will be for NREN development there, but some for Afghan bandwidth,

In preparation for this, there have been two sets of activity. The first is to start moving towards requiring contributions for communications from the Silk NRENs; the second is to investigate the most economic form of communications during the extension period. In addition to the above, the current activities like management and training should be continued. As far as management is concerned, the SPONGE project will terminate during the first half of 2005; we will discuss with the European Commission whether some sort of follow-on activity could be envisaged. For training, we have started further discussion with the Internet Society (ISOC) about further support.

Prof Kirstein has held discussions with both the NATO Panel and the Assistant Secretary General (ASG) on the current status of Silk, and how the Silk-2 funds will be used. He provided a paper for, and addressed twice, the Science Committee meeting at the end of October in Brussels. One presentation was for the Committee itself, and included mention of some of the political concerns. The second was to a larger group which included all the associated partners, a 47 country group. The Silk Project was very-well received by both audiences.

2.1.4 Co-funding from the NRENs

Both Georgia (GRENA) and Uzbekistan (Uz-Scinet) are already buying extra bandwidth – some of it subsidised, from Silk. We expect to reduce the bandwidth fully funded by NATO by 50% in 2006, and will halve it again during 2007. Most Silk Board members indicated that they hoped they could persuade various bodies to come up with the requisite finance, though some countries may have to restrict themselves to the minimum provided by NATO.

2.1.5 Choice of Communications for Silk-2

We mentioned in QR8 that even with offers of substantial subsidies for the use of the Russian NREN in the provision of terrestrial communications, all the indications are that fibre will continue to be more expensive than satellite during the period of Silk-2, both in the Caucasus and Central Asia. For this reason the decision has been made that satellites will continue to be used. Eventually fibre will become cheaper than satellite; then the political question will have to be addressed.

Eurasiasat is still indicating that their costs during Silk-2 would be the same as in Silk-1. We also have had offers from other satellite providers. We are therefore discussing also with who has offered capacity in the Caucasus at 50% of Eurasiasat's; that satellite cannot see Central Asia, and with another who has offered a satellite that can see all the Silk countries, which would cost 75% of the Eurasiasat one; both of these solutions would require some capital expenditure to modify the earth stations. We are discussing with all the potential providers what their best offers might be – bearing in mind the political implications of providing this capacity. These will be evaluated and decisions reached during the next two quarters on both which provision would provide the best value, and what contractual conditions must be envisaged. It is becoming increasingly probable that economics may force us to use different satellites for the Caucasus than Central Asia. It is probable that such a split in communication will occur eventually, because fibre is becoming cheaper in the Caucasus more rapidly than in Central Asia. As we move towards requiring the partner countries to come up with their own funds, the economics will become the prevalent factor.

2.1.6 Relationship with Funders

The discussions with the main potential co-funding organisations, ISOC, the Soros Foundation, the University of Central Asia, the World Bank and Wageningen University have all been slow this quarter. These are listed in the order of probable finalisation. The discussions with the World Bank have ceased for the time being; it is probable that they will return – but only during the second quarter of 2005.

- The \$122,000 from ISOC for workshops has been spent. Because Zita Wenzel has stopped being involved in the project, we are having to renew our contacts with ISOC. This will occur in Q10.
- Contact with the Open Society Initiative (OSI) has been interrupted during this quarter. This is for two reasons. First, our contact person, Ilya Mafer from OSI, had troubles with the authorities in Belarus, and remained under House Arrest throughout the quarter. All indications are that they continue to be very interested. The second is that Soros himself was much more concerned with the US elections than making temporary appointments to deal with the Central Asian countries from New York or Budapest.
- There has been a further change of personnel in the University of Central Asia (UCA), who need to connect together its proposed sites in Tekeli (Kazakhstan), Naryn (Kyrgystan) and Khorog (Tajikistan). Janz will contact them in his role as NATO consultant for Central Asia

Both Georgia and Uzbekistan are now purchasing some extra bandwidth. The Georgians are purchasing only transmit bandwidth, since the Silk Receive bandwidth is more expensive than they can obtain from an alternate carrier.

2.2 WP 2 - Infrastructure Services

Here the project has three tasks:

- A2.1 Liaison with other relevant projects
- A2.2 Dissemination of information on the Silk project itself
- A2.3 Workshops

2.2.1 Liaison with other Projects

We demonstrated live video conferencing over IPv6 at IST-2004 (in the Hague) in Hamburg between Hamburg, Almaty, Ashgabad, Baku and Tashkent. 6NET provided some bandwidth for use of IPv6, and IABG had provided special cards. The problem encountered the previous quarter in our demonstrations in ESA in Noordwijk had been overcome; we ensured that the bandwidths used could be handled by the whole system.

2.2.2 Dissemination

Dr Kvatadze gave a talk on the Silk/SPONGE activity at the CEENET workshop in Chisina, Moldova on October 10. Prof. Kirstein has provided presentations on the Silk and SPONGE activity to the NATO Science Committee – as stated before. Another talk and paper was given: Janz, R.F. *et.al.*: “Lessons learnt from the Silk Project”, Proc. IPSI, Manchester, October 2004.

2.2.3 Workshops

The first tranche of funding from ISOC for the workshops has been used. During the quarter, we sent two people to attend an ISOC-sponsored workshop on local registration of domains in Bangkok, and held a workshop on the same subject in Almaty December 8-10. Further discussions to obtain a new grant should start next quarter – for reasons mentioned in Section 1.1.6.

Arena has provided most of the translation facilities for documents into Russian. Unfortunately the person who was doing it is leaving ARENA, so that another person must be found for this.

2.3 WP 3 – Technical Activities

Here the project has three tasks:

A3.1 Configuration

A3.2 Infrastructure Measurement

A3.3 Caching

2.3.1 Configuration

Under configuration, the main activity has been setting up the IPv6 sites, so that they could use the new IPv6 boards from IABG. We also had to set up the multimedia tools VIC and RAT, though this has not been completed. Boards have been set up in Almaty, Baku, Tashkent and Tblisi – as well as Hamburg.

2.3.2 Statistics and their impact

As usual, the complete traffic statistics are available on the Web. The figures for use of the IPv6 link have been added. We give below a summary of the traffic for the whole quarter.

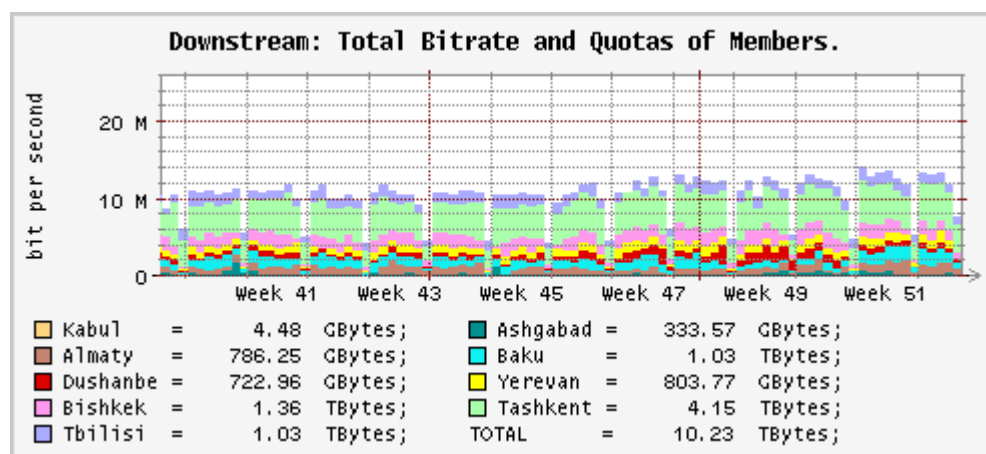


Figure 1 The Traffic Received for Q4 2004

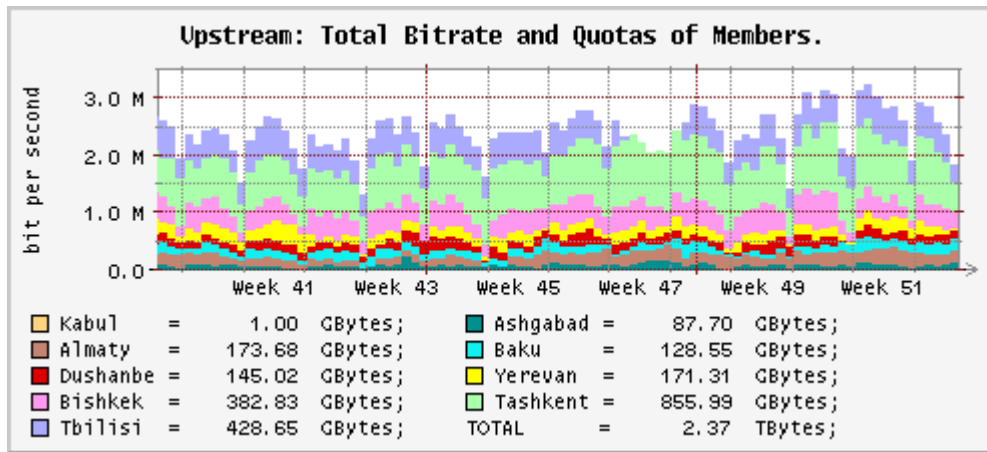


Figure 2 The Traffic Transmitted for Q4 2004

We have now implemented not only allocation of bandwidth on the SCPC transmit channel, but also Committed Information Rate on the common DVB channel. During December, we experimented with the capacity the individual countries could use. We used the opportunity of the extra capacity we gained through removing the separate IPv6 channel to give the countries which seemed to be using less capacity than their entitlement a greater allocation – and told them we were so doing. We then carefully monitored the usage. This will be used in re-allocating channel capacity during the next quarter. There are other interesting features. Thus although Tashkent and Tblisi have almost similar transmit capacity, the receive data on the Tashkent channel is almost twice that of the Tblisi one. This is because Tblisi requested that it be allowed extra bandwidth on the transmit side only; it was getting much of its received traffic from another carrier because it was cheaper. The traffic policing ensured that this could be implemented. These figures show also which of the countries have the largest amount of traffic.

The figures show a slow growth from quarter to quarter. The received/transmitted data has grown from 7.58/1.66 TB in Q1 to 8.28/1.87 TB in Q2, 8.66/2.08 TB in Q3 and 10.27/2.37 in Q4. While some extra capacity was put in during Q3, most was used for the IPv6 testing. This is because this version of the cards required an extra channel for the tests. From week 50, after IST-2004, this channel was removed; the result was a small rise to the new maximum contracted bandwidth. It was not used as efficiently as possible, because of the experimentation mentioned above.

A very useful measure of the health of the system is the signal/noise ratio. The figures for the quarter are given in Fig. 3.

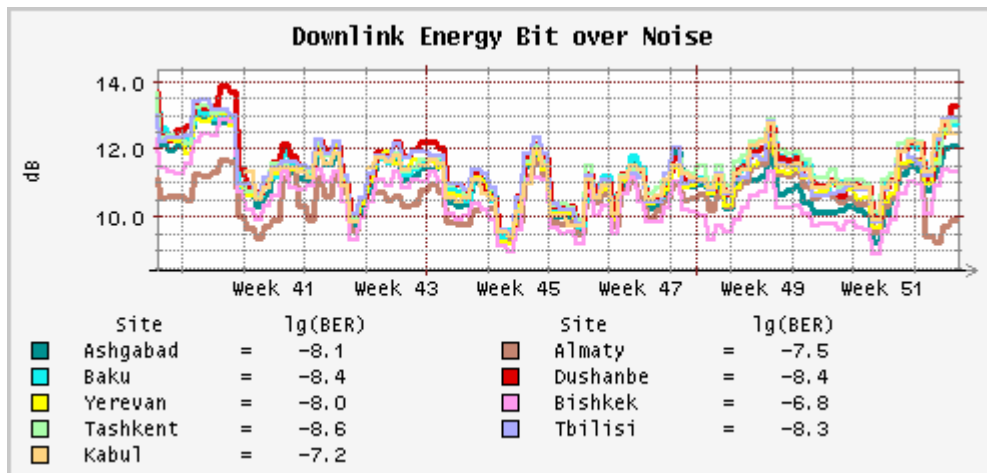


Figure 3 The Downlink Signal to Noise Ratio for Q4 2004

This figure shows that the signal to noise ratio is reasonably good most of the time, and normally varies little between the different countries. This is not surprising, since they are using the same DVB channel, and we do not expect any errors due to the equipment itself. Nevertheless, there are significant problems shown during the beginning of Week 51 for Almaty; this was due to problems with their earth station.

The uplink signals/noise ratio is shown in Fig. 4 for the quarter.

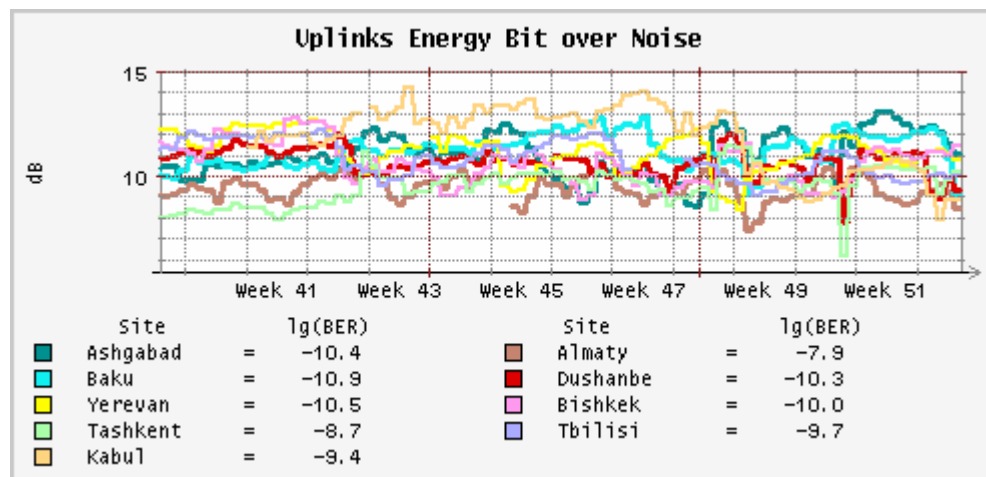


Figure 4 The Uplink Signal to Noise Ratio for Q3 2004

This figure indicates that there was a serious problem in Tashkent at the end of week 50, for example.

2.3.3 Caching

In the Silk Board meeting, it became clear that the situation with the Cache engines is still very unsatisfactory. We have not yet resolved the difficulty of uploading the newer version of the cache software.

2.3.4 IPv6 Activity

While we were running a separate stream for IPv6, we could gather statistics. After IST-2004, we stopped the separate stream because of the inefficiency of using the QPSK coding on the DVB channel – rather than the 8PSK used for the IPv4 stream. Thus we are no longer able to separate out the IPv6 traffic, since it is now encapsulated.

2.4 WP 4 – Personal Communications

The organisation of the audio-conferencing still remains unchanged, and is now in routine use. The present Cisco phone software still allows only three-way conversations on the phones by themselves. The two Cisco phones for each Silk partner site have been delivered. Unfortunately DESY and UCL use different mechanisms for initiating Voice/IP (VoIP) calls. DESY uses the Cisco proprietary mechanism, UCL uses SIP. Neither can change because of other uses of VoIP in the two institutions. We have now registered one of the IP phones with each system, and put in MCUs in each location, to ensure that full connectivity can be maintained. This has not yet been completed.

3 STATUS OF DELIVERABLES AND MILESTONES

3.1.1 The Technical Deliverables

Del. No	Del. Name	WP No	Lead Parti-Pant	Est. Pm	Plan	Target	Actual
D1	Terms of Reference of the Different Committees	1	UCL	1	03-03	03-03	03-04
D2	Covering paper on the services available and the status of the Silk Sites	2	RUG	6	09-03	09-03	10-03
D3	Detailed Report on the performance of the Silk system over the previous quarter	3	RUG	3	08-03	08-03	10-03
D4	Report on resources required for, parameters needed for, and experience with VoIP in the Silk Environment	4	UCL	4	09-03	09-03	10-03
D5	Status of NRENs and their regulatory environment in the Silk countries	1	UCL	1	12-03	02-04	04-04
D6	Minutes and Working Papers of the Committees after first year of operation	1	UCL	1	03-04	03-04	04-04
D7	Table of Contents of two co-sponsored workshops	2	RUG	2	03-04	03-04	04-04
D8	Preliminary Report on the advantages gained on caching	3	RUG	3	03-04	03-04	04-04
D9	Report on the performance of the Silk system over the previous quarter	3	RUG	4	08-04	10-04	10-04
D10	Report on resources required for parameters needed for, and experience with the Mbone tools in the Silk Environment	4	UCL	4	11-04	11-04	Delayed
D11	Minutes and Working Papers of the Committees after second year of operation	1	UCL	1	11-04	11-04	Delayed
D12	Final Report on the advantages of caching	3	RUG	4	02-05	02-05	
	Total						

We intend to re-schedule the remaining Deliverables to take advantage of the proposed end of the project being postponed to October 2005. This will take effect when the new Amendment is approved.

4 ISSUES

Travel costs – both for Silk Board meetings and for dissemination, have been higher than planned. We have requested transfer of funds from staff to travel.

End date – In view of the need to ensure a smooth transition to Silk-2, we requested that we extend the SPONGE project to October 2005. This proposal was endorsed in the Review.

5 PARTNER DETAILS

None

6 MEETINGS

6.1 Project Meetings

Here we list only physical meetings. The bulk of the meetings are telephone meetings.

Date	Location	Participants	Outcome
Oct 21	Brussels, BE	Kirstein	Assistant Secretary General of NATO endorsed plans for Silk-2
Dec 6	Istanbul, TK	Kirstein	Visit Eurasiasat about Silk-2
Dec 6-7	Istanbul, TK	Kirstein, Janz	SPONGE Review

6.2 Conferences/workshops organised

Conferences or Workshops have been organised in this Quarter.

Date	Location	Participants	Outcome

6.3 Conferences attended and Presentations Given

Date	Location	Topic	Participants	Outcome
Oct 4	Brussels, BE	Silk achievements and plans for Silk-2	Kirstein, Janz	NATO Panel endorsed the plans
Oct 10	Chisina, MO	Silk Achievements	Kvatadze	
Oct 21, 22	Brussels, BE	Silk achievements and plans for Silk-2	Kirstein, Janz	NATO Science Committee endorsed the plans
Oct 29	Manchester, UK	Silk achievements and plans	Janz	Presentation at IPSI conference
Nov 15-17	Amsterdam, NL	IPv6 Voice and Video/satellite	Kirstein, Janz	Demonstrations at IST-2004

6.4 Submission of papers

Topic	Abstract	Journal/Conference	Status
IPv6/Satellite	Experiences with IPv6/Satellite	SAINT 2005	Accepted

7 EFFORT FOR THE REPORTING PERIOD

Resource allocation (Partner vs. WP) for the reporting period (man-months)

SUMMARY Q9

	WP 1	WP 2	WP 3	WP 4	Total	Uncharged
P01	0.4	0.2	0.3	0.4	1.3	0.4
P02	0.5	0.5	0.5	0.5	2.0	1.0
P03	0.5	0.0	0.0	0.0	0.5	0.5
P04	0.3	0.2	0.2	0.1	0.8	0.8
Total	1.7	0.9	1.0	1.0	4.6	2.7

Previous Q1 – Q8

	WP 1	WP 2	WP 3	WP 4	Total	Uncharged
P01	4.0	1.3	1.2	3.4	9.9	3.1
P02	3.6	5.2	4.1	2.0	14.9	5.0
P03	2.0	0.0	0.0	0.0	2.0	2.0
P04	1.8	1.2	1.2	0.6	4.8	4.8
Total	11.4	7.7	6.5	6.0	31.6	14.9

6.4.1.1 Cumulative Q1 – Q9

	WP 1	WP 2	WP 3	WP 4	Total	Uncharged
P01	4.4	1.5	1.5	3.8	11.2	3.5
P02	4.1	5.7	4.6	2.5	16.9	6.0
P03	2.5	0.0	0.0	0.0	2.0	2.0
P04	2.1	1.4	1.4	0.7	5.6	5.6
Total	13.1	8.6	7.5	7.0	36.2	17.6

8 EXPENDITURE

The financial information contained in this report is estimated and does not represent a legally binding statement of costs.

The figures are quoted in Euros, using the exchange rates of 0,7 £/Euro for Partner 1.

8.1 Durable Equipment Expenditures

Date*	Description	Depr	% Allocation to Project	Used for	Amount
Total for quarter					
Previous Total					
Total Cumulative from start of the project as originally planned					

8.2 Travel and Subsistence Expenditures

Date*	Description	Used for	Part	Euro
Nov 15-17	IST-2004			€1000
Total for quarter				€1000
Previous Total				€25000
Total Cumulative from start of the project				€26600

8.3 Consumables Expenditures

Date*	Description	Depr	% Allocation to Project	Used for	Amount
Previous Total					300
Total Cumulative from start of the project as originally planned					300

* Invoice Date

9 OTHER INFORMATION

None

REFERENCES

None