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Abstract:

The QoS measurement technology developed with in the 6QM project will provide key components to support the transition towards IPv6 networks in Europe and worldwide. 6QM has planned for a comprehensive communication strategy to ensure that awareness for project activities and an uptake of project results is achieved.

This deliverable summarizes the dissemination activities performed by the 6QM consortium during the first 14 project months covering the period from September 2002 to October 2003, and it provides updates and planning for the next dissemination steps.

Keywords:

Dissemination of Project Results, IPv6, Measurement Infrastructure, Measurement Methods, QoS Measurement, Project Achievements.

Revision History

The following table describes the main changes done in the document since created.

Revision	Date	Description	Author (Organization)
v1.0	25/10/2003	First Version Proposal using Project Template	Rudolf Roth (FOKUS)
v1.1	08/12/2003	Added FT part	Emile Stephan (FT)
v1.2	15/11/2003	Revised Text in Subsections	Rudolf Roth (FOKUS) David Diep (HIT)
v1.3	17/11/2003	Corrected Deliverable number in front page, added HEL contribution, other minor corrections.	Lidia Yamamoto (HEL)
v1.4	08/01/2004	Added Consulintel contribution at Liaison activities, exploitation results and Events Attended on M14 Corrected wrong cross references for deliverable version and title at footers.	Miguel A. Díaz (Consulintel)
v1.5	01/02/2004	Final Review	Jordi Palet (Consulintel)

Executive Summary

The QoS measurement technology developed with in the 6QM project will provide key components to support the fast transition towards IPv6 based networks in Europe and worldwide. Given the impact and relevance of the issues addressed, the 6QM consortium considers the task of dissemination as highly important.

This deliverable describes achievements by the project 6QM in the dissemination of project results into target communities. It encompasses the period of the first 14 project months from September 2002 to October 2003.

In response to the different information needs of each of its target customer groups the project has planned for a comprehensive communication strategy to ensure that awareness for project activities and an uptake of project results is achieved. In this document we describe how this strategy has been implemented during the first project phase and provide an update and planning for the future dissemination steps in the 2nd project period.

The report summarizes material produced and actions undertaken to distribute results to the various audiences. It gives an account on presentations and demonstrations, established liaisons within the 5th Framework Programme, material accessible via the established website, contributions to international standardization and industrial fora, and provides an outline of each partner's individual exploitation of project results.

An updated version of this deliverable will be produced by project month 22 to summarize the dissemination activities in the subsequent project period.

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1. INTRODUCTION

The QoS measurement technology developed in the 6QM project will provide key components to support the fast transition towards IPv6 networks in Europe and worldwide. Given the impact and relevance of the issues addressed, the 6QM consortium places special emphasis on the task of dissemination. This deliverable describes achievements by the project 6QM in the dissemination of project results into target communities. It encompasses the period of the first 14 project months from September 2002 to October 2003.

It is the task of Work Package 5 to plan, organize, perform and control the dissemination of project results. The objectives of this work package encompass the development of strategies for creating visibility, the establishment of cooperation and liaisons with other projects and working groups and to organize with them an exchange on information and coordination of common activities. The work package is responsible for accomplishing wide dissemination to industry and the scientific community and for ensuring successful exploitation of research results.

In response to the different information needs of each of its target customer groups the project has planned for a comprehensive communication strategy. In this document we describe how this strategy has been implemented during the first project phase and provide an update and planning for the future dissemination steps in the 2nd project period.

In order to cross-check the performance of the project against its dissemination goals it is necessary to evaluate what actions have been undertaken in order to realize the laid out plan including presentations at conferences and workshops, participation in industrial forums and contributions of project results to relevant standardization groups, to check the continuous maintenance and evolution of the project website and to validate that relations to other measurement groups and IST projects are established.

WP5 has previously produced 3 deliverables describing the *Project Dissemination and Use Plan*, the *Project Website* and *Project Liaisons*, respectively. In the current document, we shortly summarize the achievements and provide an update of information, whereas for a detailed description of background and rationale we refer to the earlier documents. An updated version of this deliverable will be produced by project month 22 to summarize the dissemination activities in the subsequent project period.

The document is organized as follows. Section 2 summarizes the dissemination strategy adopted by 6QM in order to establish wide spread awareness for project activities and to ensure an uptake of project results. Section 3 summarizes on material produced and actions undertaken to distribute results into the various audiences. It gives an account on presentations and demonstrations for various audiences. It reports on established liaisons with related projects and working groups from the 5th Framework Programme. It describes the material that has been made accessible via the established website, and lists contributions to international standardization and industrial fora. In addition, Section 4 provides an outline of each partner's further individual dissemination activities within the context of their own business strategy and describes actions undertaken for the utilization and exploitation of project results.

2. 6QM DISSEMINATION STRATEGY

The 6QM project has set out as dissemination goals the following main objectives:

- Project Awareness and visibility of achievements to industry and scientific community.
- Synergistic cooperation with other projects and working groups.
- Successful exploitation of the research results by project partners.

For creating maximum impact the project has adopted a strategy, which identifies main target groups and selects key events for dissemination opportunities; supporting material is being produced tailored to the specific information requirements of the various groups to be addressed.

The target audience for 6QM results includes managerial and policy decision boards of network operators, which have to decide on the transition towards IPv6 based technologies; vendors and implementers of networking equipment and software, tools for monitoring and measurement, which develop products related to the technologies developed within the project; network engineers operating IPv6 enabled networks, which make use of 6QM developed tools; and experimenters and researchers from other IPv6 projects performing trials of QoS sensitive application over IPv6 infrastructures, which can profit from a cooperation with the project to support them in their experiments.

In order to satisfy the specific needs of these diverse groups, 6QM members produced specific material, presentations, and demonstrations that had been presented at a comprehensive number of events worldwide. 6QM is active partner in concertation and clustering activities of the IST Programme and has established liaisons with other projects for mutual information exchange, coordination of activities and cooperative experimentation.

3. PROJECT ACHIEVEMENTS DURING THE FIRST 14 MONTHS

3.1 Project Presentations

A major effort has been undertaken by the project consortium to promote 6QM among its main target communities. Consortium members used a large number of opportunities to create awareness for the project by participating in a broad range of events worldwide.

At suitable occasions, announcements for the planned research in the up-coming project were already made before project start, and presentations on 6QM have been continuing since then, such that in total about 80 events can be mentioned, where 6QM made an appearance. The focus and character of those events varied from specialized technical workshops to more general conferences addressing an audience of management and strategic policy decision boards and events such as e.g. the Cebit trade fair, also attended by a wider public. A special mentioning deserves in this context the project partner Consulintel who demonstrated exceptional efforts in promoting the project.

Content and level of technical detail of presentations varied according to the nature of the event. It included more general introductions, where 6QM was presented together with other IPv6-related activities from the IST Programme, but, of course, it also comprises talks on specific technologies developed inside the project and presentations of early results obtained from trials using 6QM components.

The long list of events attended included among others, a number of global and national IPv6 summit events and IPv6 Task Force meetings on national and international level, IETF standardization meetings, concertation and cluster meetings, workshops held by partner projects and events organized by the 6QM partners.

In addition, 6QM partners had been active in organizing events. Such opportunities were used to promote the project and its results:

- November 28, 2002 Hitachi-Eurecom-Motorola Symposium, Sophia Antipolis, FR.
- April 7, 2003 DFN/FOKUS Workshop on Quality of Service, Monitoring and end-to-end Performance, Berlin, DE.
- May 12-14, 2003 Madrid 2003 Global IPv6 Summit and ETSI IPv6 Plugtests™ Madrid, ES.
- June 30, 2003 BCIX (Berlin Commercial Internet Exchange) workshop at FOKUS, Berlin, DE.

All dissemination activities performed in the project are continuously reported in the monthly project reports. For convenience, the complete list for the first 14 project months has been compiled in the Annex A of this document.

3.2 Demonstration of Project Results

6QM has adopted a scenario supported development approach for its measurement system. This approach has been detailed in D5.3 Sec. 4.4. The project is aiming to create fast prototypes for its target system that can be demonstrated to the public during early project phases and thus receive feedback in its developments.

Following this philosophy, four elaborate demonstrations had been set up by M14:

- IST 2002: Partnerships for the Future, 4-6 Nov 2002 Copenhagen, DK
  France Telecom R&D showed demonstratons of a IPPM Reporting MIB proxy agent and a dual stack IPPM Probe
  (a press release on the demo has been published by France Telecom in Feb 2003)

- CeBIT, 12-16 Mar 2003, Hannover, DE
  Fraunhofer FOKUS demonstrated measurements of one-way delay in a scenario modeling transmission of multimedia streams over hybrid networks including satellite (emulated link)

- Madrid 2003 Global IPv6 Summit, 12-14 May 2003
  France Telecom R&D showed active IPv6 measurement using Qosmetrix and the FT R&D IPPM proxy
  Fraunhofer FOKUS demonstrated passive measurements of one-way delay in an enhanced scenario installing a satellite link between Madrid and the local site in Germany

- ITU Workshop on "End-to-End Quality of Service. What is it? How do we get it?"
  1-3 October 2003, Geneva, CH
  FT presented the usage of the IPPM MIB as a proxy for interdomain measurement

With the 6QM measurement system becoming now mature, further demonstrations at prestigious public events are planned for the next project phase.

3.3 Liaisons and Cluster Activities

In order to create critical mass and impact for the research performed, it is important to install cooperation and engage in liaisons with other projects. The 6QM project has identified a number of projects within the IST framework, for which there exist an overlap of common interests with the work in 6QM and where there is a potential for mutual synergies.

D3.1 *Dissemination & Use Plan* listed under Sec. 5 *Potential Cooperation with Projects and Clustering* a number of projects and initiatives that address topics out of the scope of 6QM, which had been further elaborated into a concrete roadmap for actions in D3.3 *Report on Liaisons*. During the first 14 project months 6QM participated in a number of activities that helped to exchange experience and information between projects.

3.3.1 Clustering Activities and Concertation Events

Project groups for potential cooperation can be associated with the three working areas represented by the project's acronym. There is the large cluster of IPv6 projects working on different aspects important for a fast Europe-wide deployment of IPv6. There is the cluster with focus on Network Measurement and Monitoring, and there is a set of projects concentrating on QoS issues. In addition there has to be mentioned the cooperation with the infrastructure projects of the key area 'Research Networking' within the Information Society Technologies (IST) Programme.

As most of the projects organized in the QoS cluster were ending in early 2003, 6QM concentrated its efforts on the other two clusters. With regard to the Measurement and Monitoring cluster, liaison activities occurred mainly on the direct project exchange level (see below). However, with the now starting 6th Framework Programme, there has been created a special Coordinating Action for the Measurement and Monitoring issues, which 6QM will support by providing input.

6QM is a very active member in the IPv6 cluster. Project participants regularly attend the cluster meetings and the project is contributor to the booklet publications of IST IPv6 Cluster. *IPv6 Research and Development in Europe* published in Oct 2002 includes a project summary page for 6QM. For *Moving to IPv6 in Europe* (July 2003) 6QM acted as editor and contributor to section 3.4 *Performance, Conformance and Interoperability Testing*.

3.3.2 Project Liaisons

Besides these project group activities, 6QM has been engaged in collaborations and has established close links with individual projects.

- GÉANT
  6QM is in contact to the Task Force on Next Generation Networks TF-NGN, which is the research and development part of the IST project GN1 complementing the infrastructure building efforts of the GÉANT network. There is mutual exchange of information, especially within the discussion groups of *Performance Monitoring* and the related *Pilot PERT Initiative*. 6QM had been presented at the 10th TF-NGN Meeting in Rome, Feb 2003. Key results of 6QM up to now will be presented in the up-coming TF-NGN meeting.

- 6NET
  6QM has established contacts to 6NET with the goal for common experimentation. The cooperation relates in particular to *6NET WP4: Application and Service* Support, which identifies and implements applications and services that support network mobility and quality-of-service (QoS). and *6NET WP5: IPv6 Middleware and User Application.* Further details of the target experiments will be discussed in an up-coming *6NET WP4* meeting in early Jan 2004.

- Euro6IX
  FT and Consulintel are currently looking for a cooperation from Euro6IX consisting in exportingNetflowV9 (IPFIX) information to 6QM collectors. Furthermore Consulintel is currently working for a cooperation from Euro6IX in order to implement some test-beds that serve to prove the prototype developed within the project. Test-beds are oriented to test features like usability, performance, accuracy, security and so on.

- INTERMON
  Contacts and mutual awareness have been established. Cooperation is particularly devoted towards Interdomain Communication and Data exchange. At the International Workshop on Inter-domain Performance and Simulation, held in Salzburg, Austria, on 20-21 February, 2003, FOKUS gave a talk on Non-intrusive delay measurements with IPFIX data export, which presented work performed in the context of IST 6QM and INTERMON.

- SCAMPI
  Contacts and mutual awareness have been established. At the SCAMPI workshop on Internet traffic monitoring on 27 January 2003, in Amsterdam, Tanja Zseby from Fraunhofer FOKUS reported on IETF Monitoring Activities. Her talk introduced to the work of several IETF working groups and presented the IST projects 6QM and Intermon which are active in research related to these topics.

- 6POWER Consulintel is also looking for cooperation from 6POWER project for testing the prototype developed. One of the activities within the 6POWER project is related to the deployment of QoS within the PLC networks. The QoS algorithm developed within 6POWER project is based on layer II information, but cooperation between 6QM and 6POWER could consist in measuring the traffic flowing on the PLC networks for testing if the QoS measured is in accordance to the QoS expected. In this way, tests could serve not only for general purposes but also for getting objective results in QoS that serve for calibrating the QoS algorithm implemented within 6POWER project.

3.3.3 6th Framework Programme Liaisons

Besides the currently running projects 6QM will engage in cooperation with newly starting activities within the 6th Framework. The 6QM consortium closely monitors those developments and will set up links to relevant projects and Network of Excellences as soon as those new instruments will have been implemented and become operational.

Projects accepted from the 1st Call are currently starting their work, thus few dissemination results can be claimed for period reported in this document. However it is important to mention some activities with particular relevance to 6QM dissemination.

- Coordinated Action MOME (monitoring and measurement cluster). MOME cluster offers a platform for knowledge and tool exchange and for co-ordination of activities in the

field of IP monitoring and measurement between FP5 and upcoming FP6 IST projects and other European partners. 6QM will contribute here in particular to the planned interoperability database which collects information on different active and passive measurement components, tools and interfaces.

- Integrated Project DAIDALOS. DAIDALOS (Designing Advanced network Interfaces for the Delivery and Administration of Location independent, Optimized personal Services) is dedicated to the design of advanced network infrastructures and access technologies for location-independent, personalized communication services. Results from 6QM are particularly input to activities devoted to real-time network monitoring for end-to-end QoS control within the area of services and network management & provisioning.

3.4 Project Website Evolution

The project website makes project information accessible to the general public. The website has been operational since mid-Jan. 2002 and acts as an information service on topics related to IPv6 QoS Measurement.

The web-site presents a short introduction to the 6QM project on its home page. The *overview* page gives information on the objective and the scope of the project. Via the *documents* page access to project deliverables and other produced public material is provided. The news page is informing on recent developments in the project. In addition, the site provides contact information and is supplementing its service with announcements of events in the scope of 6QM and a collection of links including other relevant projects and initiatives worldwide. The website is accessible over IPv6 and IPv4. It has been cared for that the website has been advertised to search engines and requests had been sent to administrators of partner projects and IST website to create links to the site.

A detailed description of the 6QM website is found in deliverable *D5.2 6QM Website*.

Material has been added since the release of D5.2 in April 03. Major evolution include:

- Maintenance of the News section informing on recent project activities.
- Announcements on new up-coming events of particular interests for 6QM.
- Brochures and material from Demonstrations including short video clips recorded during the demonstrations at the Madrid Summit.
- Access to input documents for standardization produced by 6QM.
- Release of Public Project Deliverables produced in the reporting period.
- Update of Links to include newly started projects and other 6QM-related activities.

3.5 Standardization Activities

IETF Standardization is a major focus in the dissemination work of 6QM. Working groups of interest include particularly IPPM (IP Performance Metrics), IPFIX (IP Flow Information Export), PSAMP (Packet Sampling), RMON (remote monitoring). 6QM partners co-authored and contributed to 9 internet-drafts:

- IPPM Working Group

IPPM reporting MIB, E. Stephan, J. Jewitt (France Telecom R&D)
October 2003; draft-ietf-ippm-reporting-mib-04.txt

IPPM metrics registry, E. Stephan (France Telecom R&D)
April 2003; draft-ietf-ippm-metrics-registry-04.txt

Spatial metrics for IPPM, E. Stephan (France Telecom R&D)
June 2003; draft-stephan-ippm-spatial-metrics-01.txt

- IPFIX Working Group

Requirements for IP Flow Information Export, J. Quittek (NEC), T. Zseby, S. Zander (Fraunhofer FOKUS), B. Claise (Cisco)
November 2003; draft-ietf-ipfix-reqs-12.txt

IPFIX Applicability, T. Zseby (Fraunhofer FOKUS), R. Penno (Nortel Networks), N. Brownlee (CAIDA), B. Claise (Cisco Systems)
October 2003; draft-ietf-ipfix-as-01.txt

- PSAMP Working Group

Sampling and Filtering Techniques for IP Packet Selection, T. Zseby (Fraunhofer FOKUS), M. Molina, F. Raspall (NEC)
October2003; draft-ietf-psamp-sample-tech-03.txt

Passive One-way Delay Measurement, L. Mark, G. Pohl, T. Zseby (Fraunhofer FOKUS), K. Sugauchi (Hitachi)
June 2003, draft-mark-powd-00.txt

IPFIX Export of packet information for QoS Meaurements, G. Pohl, L. Mark, C. Schmoll, T. Zseby (Fraunhofer FOKUS)
Mai 2004; draft-pohl-pktid-00.txt

- RMON Working Group

Protocol identifiers for IPv6, E. Stephan (France Telecom R&D), J. Palet (Consulintel)
November, 2003; draft-ietf-rmonmib-pi-ipv6-01.txt

In addition, two contributions to ITU-T had been produced. In Dec 2002, FT sent a draft recommendation of an IPv4 and IPv6 test packet to the ITU SG4, question 4; ITU draft recommendation had been merged to get a common IPv4 and IPV6 test packet by Feb 2003. The FT contribution ITU O.Iptest was discussed during the Com session on 4 October. Consensus with manufacturers of testers is however not expected for 2003.

4. PARTNER USE REPORTS

4.1 Hitachi Europe Ltd.

Hitachi Europe, through its Sophia Antipolis Laboratory, is still strongly committed to European RTD activities, and 6QM is a key project in this context. We are working on tightening the relationship with Hitachi Ltd. in Japan towards exploitation of 6QM results in future product lines. We are eager to experiment with the upcoming IPv6 connection of our Sophia Antipolis Laboratory via Renater, not only as a way to perform distributed trials and validation within 6QM WP4, but also as a vehicle for learning more about the current state of the art of the IPv6 deployment in Europe, to participate in joint IPv6 activities across Europe and Japan, and to acquire more experience in the practical and operational aspects. This will provide us with a better understanding of user and operator requirements under a European perspective, in order to deliver products that are up to the expectations of the European market. It will also enhance our technical expertise and insight which can be used in related projects, and also to define future research directions.

Network measurement/monitoring is mandatory to provide reliable network services with adequate and predictable quality. 6QM results will provide a first step in this direction. Now, after more than a half of the project duration has elapsed, it is time to think about future directions. We are now trying to build and join initiatives for potential projects to complement and continue the efforts initiated in 6QM. There are several important next steps we would like to pursue, such as measurement and monitoring of mobile networks, including Mobile IPv6 and ad hoc networks (IPv4 and/or IPv6 enabled), and the inter-domain measurement problem, which remains largely unsolved. Moreover, 6QM has concentrated on human-based analysis and interpretation of measurement results. In large networks, with large number of monitoring points, and huge amounts of data to be processed, it will be unfeasible to have humans treat all the data. In this sense, a combination of 6QM results with the results of related projects such as IST INTERMON, with emphasis on data mining techniques, would be an interesting future research line to pursue.

As a first step towards direct exploitation of results, we have used part of the project's software (an IPv4-IPv6 library developed in Hitachi Sophia Antipolis Laboratory) within our own internal research activities in ad hoc networks. A prototype of Ad Hoc IP Address Autoconfiguration scheme has been developed using the library, and successfully demonstrated during the 7th Hitachi-Eurecom Symposium on Mobile Communications held in November 2003 in Sophia Antipolis, France (outside the coverage period of the present deliverable, thus to be reported in D5.4.2).

4.2 Hitachi Ltd.

Hitachi Ltd. is a telecommunication manufacturer with a strong focus on IPv6 network solutions. Hitachi Ltd. has already developed and shipped IPv4 and IPv6 capable gigabit router, GR2000, for carrier-class large-scale IP routers in a worldwide market. GR2000 supports QoS guaranteed IP packet forwarding capability that enable telecommunication operators to provide the premium services beyond best effort service. Moreover, Hitachi Ltd. developed and shipped IPv6 network topology management in the Japanese market. This product manages the configuration of IPv6 nodes and routers.

Another target of Hitachi Ltd. is also the QoS measurement, an IP QoS monitoring system is currently under development. This system is currently focused on IPv4 network to provide information about user traffic characteristics.

Through this project performed with the co-operation of major European operators and institutes, we try to combine our IPv6 knowledge and our QoS measurement experience. The output of this project will serve as input for further IPv6 extension of the mentioned IP QoS monitoring system. Moreover this project does not only deal with the measurement itself but with the whole measurement infrastructure itself as a consequence one target of this project is to explore new concepts for sophisticated IPv6 management/monitoring tools. Such a result could be proposed to our product development division after this project to enforce our QoS related product offer.

4.3 France Telecom R&D

As a global operator, France Telecom is very interested by any new technology, tools, equipment which improves the performance of the networks and services, lower the costs of management, generate new revenues and permit a penetration of new services with guaranteed SLA according to the contracts with the clients.

FT has invested heavily in QoS research, both internally, and in the context of other European projects. We remain committed to this effort in the evolution of IPv4->IPv6. As such, we intend to benefit from the studies done in the context of the 6QM project to further our expertise on QoS measurement, and ensure our ability to meet quality expectations in our future IP service offerings.

At this step, the 6QM project has given France Telecom opportunities to:

- Promote the need of measurement techniques integration.
- Promote the need of IPv6 probes industrialization.
- Contribute to the standardization regarding IPv6/IPv4 coexistence.
- Promote the need of standardization of general usage metrics and measurement packets.
- Identify inter domain measurement infrastructure bases.

4.4 Consulintel, S.L

Consulintel has been linked to IPv6 technologies for long time ago, and it has been working actively in several IPv6 topics related to multicast, security, mobility and IPv6 deployment within different activities belonging to other research projects.

With participation in 6QM project, Consulintel has deepened in the knowledge related to different QoS aspects like deployment, measurement techniques, management and so on. This knowledge serve to Consulintel to continue being leader in IPv6 consultancy for carriers, ISPs, government, SOHO and different Telcos in order to continue in the tasks of building better, more secure and more efficient networks in the future.

According to this philosophy the current project results for Consulintel can be grouped as follows:

- Commercial interest:
    - Participating in the development of equipments being able to measure the QoS deployed in a network that can be offered to the market in future.
    - Increase the potential customers of Consulintel by offering new products and technologies that permit the customers improve theirs networks by deploying systems that measure if the signed SLA is in accordance to the obtained results.
    - Acquiring experience in IPv6 conformance tests that serve to Consulintel to be leader in standardization tasks that can contribute to increase their expertise which is offered to their clients.
- No commercial interest
    - Collaborating in the different surveys that address the still open issues within the QoS measurement field, like inter-domain and mobility items that increase the standardization experience of Consulintel.
    - Increase the knowledge in IPv6 technology that serves to contribute to improve the fast deployment of such protocol and easy coexistence with the previous one IPv4.

Finally, Consulintel will highly support 6QM and concentrate a strong investment, reinforcing the growth of the company and its research, development, and marketing opportunities, increasing the experience and the number of full time dedicated employees.

4.5 FOKUS – Fraunhofer Institute for Open Communication Systems

FOKUS is an institute of Fraunhofer Gesellschaft, the non-profit organization for applied research in Germany offering contracted research to SMEs, industry and the public sector. The research group METEOR from FOKUS participating in 6QM has long standing expertise in the development and operation of IP measurement technologies. The METEOR Internet Measurement Platform (IMP) has been input to 6QM as starting point for the development in the project. Enhancements and components developed within 6QM are integrated into the further evolution of this system, which is offered as OpenIMP – an Open Source Measurement Solution to the research community and is also used as development platform for customized measurement solutions in contracted research projects with FOKUS customers.

Components developed in 6QM are installed in the test environment operated by the METEOR group including the FOKUS UMTS Testlab, a test and development platform for entry-level access to UMTS and integrated mobile services, and the tools are used in measurement tasks in a number of national and international research projects. Results from the project have been presented to interested parties, e.g. at the members-only BCIX Workshop at FOKUS of local ISPs and hence, provide an opportunity to gain research contracts from potential customers based on these developments.

People from FOKUS are active participants in IETF standardization currently co-authoring several working group drafts within ipfix (IP Flow Information Export) psamp (Packet Sampling), where results from 6QM have already been edited and submitted as internet-draft.

5. SUMMARY AND CONCLUSIONS

The deliverable demonstrates that the consortium members have been engaged in a number of activities that promote and facilitate the dissemination and broad take-up of project results. For a successful transition to IPv6 networks, collaboration between European and non EU research teams is essential. Through its unique European/Japanese partnership 6QM is a privileged position to ensure exploitation of research results at a global scale.

The project is actively participating in IST clustering activities, e.g. by contributing to the releases of the IPv6 cluster. There is a long list of presentations given to various audiences world-wide, and the practical demonstration of QoS measurements has been accomplished at various events starting early in the project run-time. The project web-site has been established that allows access to project related information. The strong commitment to standardization activities is a means to reach consensus on critical issues and is a pre-requisite to build interoperable technology solutions. The project can present here particularly strong achievements.

The 6QM project consortium includes industry and SME partners that act as the developers and/or users and evaluators for the QoS measurement technologies developed in the project. The individual partner use plans include actions that lead to an up-take and exploitation of results, and, hence, lead to a transfer of R&D innovations into operational practices and product development.

These steps will be continued and intensified during the second half of the project runtime. By providing key technology that supports the fast transition to IPv6-based networks the project is contributing to the strategic objective of creating an European leadership in next-generation Internet technologies. Especially through liaisons with newly starting European 6th Framework projects 6QM results will be input into those future community RTD activities.

6. ANNEX A: LIST OF DISSEMINATION EVENTS ATTENDED

No	Date	Location	Topic	Participants
1	17/09/2002	CA, USA	**6QM Presentation** UCI/UCLA	Jordi Palet (Consulintel)
2	01/10/2002	Brussels	All-IPv6 Meeting	Jordi Palet (Consulintel)
3	04/11/2002	Copenhagen	IST2002 and several related meetings	Jordi Palet (Consulintel) Lidia Yamamoto (HEL) Emile Stephan (FT) Tayeb Ben Meriem (FT) Yann Adam (FTRD)
4	06/11/2002	Copenhagen	IPv6 Cluster meeting	Several Partners
5	08/11/2002	Salamanca	RedIRIS event	Jordi Palet (Consulintel)
6	07/11/2002	Madrid	SIMO	Miguel Ángel Díaz (Consulintel)
7	14/11/2002	Leganes	Moby Dick Workshop	César Olvera, Miguel A. Díaz (Consulintel)
8	17/11/2002	Atlanta	55th IETF	Jordi Palet (Consulintel) Emile Stephan (FT)
9	28/11/2002	Nice	6th Eurecom-Hitachi-Motorola Symposium	Consulintel (HEL)
10	03/12/2002	Paris	Upper Side IPv6 Deployment Conference	Jordi Palet (Consulintel)
11	07/12/2002	Cracow	IPv6 and 3G Tutorial	Jordi Palet (Consulintel)
12	10/12/2002	Brussels	Brussels SB3G and Concertation	Jordi Palet (Consulintel)
13	16/12/2002	Yokohama	Japan IPv6 Summit	Jordi Palet (Consulintel)
14	20/12/2002	Tokyo	Japan Telecom Ministry	Jordi Palet (Consulintel)
15	17/01/2003	London	EC IPv6 Task Force meeting	Jordi Palet (Consulintel)
16	23/01/2003	Bangalore	Global IPv6 Summit	Jordi Palet (Consulintel
17	27/01/2003	Orlando	SAINT2003	Jordi Palet (Consulintel)
18	27/01/2003	Amsterdam	Presentation of Standardization Activities and 6QM in SCAMPI Workshop	Tanja Zseby (FOKUS)

19	03/02/2003	Brussels	7th IPv6 Cluster meeting	Several Partners
20	06/02/2003	Rome	Project presentation and Liaison discussion with GEANT at TF-NGN Meeting	Rudolf Roth (FOKUS)
21	12/02/2003	Distributed sites	NGNi and Isabel Workshops	Several Partners
22	13/02/2003	Lisbon	UMIC/FCCN Seminar “IPv6 - The Next Generation Internet”	Jordi Palet (Consulintel)
23	13/02/2003	Lisbon	Portuguese IPv6 Task Force Kick-off meeting	Jordi Palet (Consulintel)
24	17/02/2003	Madrid	Spanish IPv6 Task Force meeting	Jordi Palet (Consulintel)
25	19/02/2003	Madrid	Mundo Internet 2003	Jordi Palet (Consulintel)
26	24/02/2003	Taiwan	Taiwan IPv6 Summit	Jordi Palet (Consulintel)
27	03/02/2003	Brussels	7th IPv6 Cluster meeting	Several Partners
28	06/02/2003	Rome	Project presentation and Liaison discussion with GEANT at TF-NGN Meeting	Rudolf Roth (FOKUS)
29	10/02/2003	Geneva	Merge ITU draft recommendation to get a common IPv4 and IPV6 test packet.	R. Le Viol (FT) Emile Stephan (FT)
31	12/02/2003	Distributed sites	NGNi and Isabel Workshops	Several Partners
32	13/02/2003	Lisbon	UMIC/FCCN Seminar “IPv6 - The Next Generation Internet”	Jordi Palet (Consulintel)
33	13/02/2003	Lisbon	Portuguese IPv6 Task Force Kick-off meeting	Jordi Palet (Consulintel)
34	17/02/2003	Madrid	Spanish IPv6 Task Force meeting	Jordi Palet (Consulintel)
35	19/02/2003	Madrid	Mundo Internet 2003	Jordi Palet (Consulintel)
36	24/02/2003	Taiwan	Taiwan IPv6 Summit	Jordi Palet (Consulintel)
37	10/03/2003	Brussels	Concertation Meeting	Jordi Palet (Consulintel)
38	12/03/2003	Hanover	Demonstration of 6QM measurement functionality in CeBIT Meeting	Rudolf Roth (FOKUS)
39	16/03/2003	San Francisco	56th IETF	Several Partners
40	26/03/2003	Brussels	Concertation Meeting	Jordi Palet (Consulintel)
41	27/03/2003	Brussels	Global IPv6 Meeting	Jordi Palet (Consulintel)
42	02/04/2003	Beijing	Global IPv6 Summit	Jordi Palet (Consulintel)
43	07/04/2003	Berlin	DFN QoS Workshop	Rudolf Roth (Fokus) Guido Pohl (Fokus)
44	11/04/2003	Madrid	Spanish Task Force Meeting	Jordi Palet (Consulintel)
45	14/04/2003	Brussels	Eurov6 Meeting	Jordi Palet (Consulintel)
46	16/04/2003	Tunisia	Tunisia IPv6 Summit	Jordi Palet (Consulintel)
47	29/04/2003	Berlin	IPv6 TF-SC Meeting	Jordi Palet (Consulintel)
48	08/05/2003	Poznan, Poland	11th TF-NGN meeting	Lutz Mark (FOKUS) Rudolf Roth (FOKUS)
49	12/05/2003	Madrid	Madrid 2003 Global IPv6 Summit	Several Partners

50	22/05/2003	Madrid	CSIC (Spanish Scientific Research Council)	Jordi Palet (Consulintel)
51	24/06/2003	San Diego	North American Global IPv6 Summit	Jordi Palet (Consulintel)
52	14/07/2003	Vienna	57th IETF	Emile Stephan (FT) Jordi Palet (Consulintel)
53	24/07/2003	Madrid	UC3M Summer School	Jordi Palet (Consulintel)
58	19/08/2003	Seoul	16th APNIC Meeting 6QM and other EC projects	Jordi Palet (Consulintel)
59	11/09/2003	Košice/Slovakia	ICETA 2003 Non-Intrusive QoS Measurements	Cemal Cömert (FOKUS)
60	16/09/2003	Brussels	Concertation Meeting	Jordi Palet (Consulintel)
61	22/09/2003	Brussels	Belgian IPv6 Event	Jordi Palet (Consulintel)
62	29/09/2003	Heidelberg	Eurescom	Jordi Palet (Consulintel)
63	01/10/2003	Geneva	ITU Workshop on "End-to-End Quality of Service. What is it? How do we get it?"	Emile Stephan (FT) Jessie Jewitt (FT)
64	02/10/2003	Milan	IST IPv6 Cluster Meeting	Jordi Palet (Consulintel) Álvaro Vives (Consulintel)
65	03/10/2003	Milan	IST2003 Conference	Jordi Palet (Consulintel) Álvaro Vives (Consulintel)
66	20/10/2003	Kuala Lumpur	Malaysia IPv6 Summit	Jordi Palet (Consulintel)
67	28/10/2003	Madrid	IPv6 Spanish Task Force Meeting	Jordi Palet (Consulintel)

Project presentations performed during pre-project phase:

No	Date	Location	Topic	Participants
1	09/05/2002	Beijing	**6QM Presentation** China IPv6 Forum	Jordi Palet (Consulintel)
2	16/05/2002	Madrid	**6QM Presentation** Spanish IPv6 Task Force Kick-off	Jordi Palet (Consulintel)
3	21/05/2002	Yaroslavl	**6QM Presentation** Russia IPv6 Forum	Jordi Palet (Consulintel)
4	19/06/2002	Washington	**6QM Presentation** US IPv6 Forum / INET2002	Jordi Palet (Consulintel)
5	27/06/2002	Madrid	**Conecta SP 2002** IPv6 Presentation for Public Admin.	Jordi Palet (Consulintel)
6	02/07/2002	Brussels	**6QM Presentation** Japan IPv6 Promotion Council	Jordi Palet (Consulintel)
7	10/07/2002	Seoul	**6QM Presentation** Korea IPv6 Forum	Jordi Palet (Consulintel)
8	19/07/2002	Yokohama	**6QM Presentation** Hitachi Labs	Jordi Palet (Consulintel)
9	23/07/2002	Valencia	**6QM Presentation** Campus TI	Jordi Palet (Consulintel)
10	24/07/2002	Brussels	**6QM Presentation** IPv6 Cluster meeting	Jordi Palet (Consulintel)
11	02/08/2002	Gran Canaria	**6QM Presentation** FICIT 2002 event	Jordi Palet (Consulintel)
12	05/08/2002	Valencia	**6QM Presentation** Campus Party Event (two presentations)	Jordi Palet (Consulintel)