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Abstract:

The deliverable explains the approach followed by the 6QM consortium towards liaisons with other IST projects and cooperation with international bodies and fora. The QoS measurement technology developed within the 6QM project will provide key components to support the transition towards IPv6 technologies in Europe. It is important to coordinate and align with related groups for a fast uptake of project results.

Keywords:

IPv6, Measurement Infrastructure, Measurement Methods, Project Liaisons, QoS Measurement.

Revision History

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

Revision	Date	Description	Author (Organization)
v0.1	02/04/2003	First Version using Project Template ToC Preliminary Text	Rudolf Roth (FOKUS)
v0.2	10/04/2003	IPv6 connectivity content update and minor modifications	David Diep (HIT)
v0.3	16/04/2003	Update on HEL negotiations towards IPv6 connectivity. Minor revision on the rest of the document.	Lidia Yamamoto (HEL)
v0.4	10/05/2003	Update section 2.4 and 4.	Emile Stephan (FT)
v0.5	01/06/2003	Final updates, review, summary/conclusions.	Jordi Palet (Consulintel)

Executive Summary

This document describes liaison activities already started by the 6QM project and provides a roadmap for the future inter-project cooperation. It extends on the approaches outlined in D5.1 Dissemination and Use Plan, which identified other IST projects and activities for potential co-operations.

The following report provides an account on the liaisons activities performed during the last quarter since the publication of D5.1, and makes recommendations for further cooperation developing technical details on the targeted common research.

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1. INTRODUCTION

Deliverable D5.1 "Dissemination and Use Plan" detailed the opportunities considered by the 6QM consortium to disseminate achievements from the project. It identified potential partners for cooperation within IST project clusters, industrial fora and standardization bodies working on issues addressed by 6QM, where it is expected that 6QM can contribute substantial input.

This document extends on the approaches outlined in D5.1. It is investigated how project results can be used to support the work of those groups and how to promote the deployment of the IPv6 measurement infrastructure created by 6QM. It describes liaison activities that have already been started by the 6QM project and provides a roadmap for future inter-project cooperation.

High emphasis is put on forming synergies and cooperation with other IST activities and the dissemination of project results into the broad integrated initiatives for IPv6 technologies funded by the European Commission. Project groups of interests for cooperation with 6QM can be associated to all the three areas represented in the project's acronym: There exist clusters of IST projects around the topics of IPv6, Monitoring & Measurement and QoS. 6QM members are participating in events organized by these three project clusters and have been actively contributing to their publications. In addition there are the large IPv6 infrastructure projects of 6NET and Euro6IX and there is cooperation with related development groups of GEANT. With regard to standardization bodies, members of the 6QM project are particularly active within IETF, where they are regular participants and authors to a number of working group drafts currently under preparation.

This report provides an account on the liaisons activities performed during the last quarter since the publication of D5.1, and makes recommendations for further cooperation developing technical details on the targeted common research. It is organized as follows:

- Section 2 discusses Cluster Activities and Cooperation with IST Projects undertaken by 6QM.
- Section 3 describes the work being performed by project members within IETF and ETSI.
- Section 4 outlines the further Liaisons Roadmap for the on-going project. The IPv6 connectivity of 6QM members to the European networking infrastructure is presented, which is considered as prerequisite for common trials with partner projects. We explain the Scenario supported Development Approach, which has been adopted by the 6QM consortium. Demonstrations in realistic usage scenarios closely accompany the measurement tool development. Early demonstrations ensure high visibility and create awareness of project results with potential customers.
- In section 5 we provide an Update on Dissemination Activities summarizing major achievements in Q1/2003.

2. CLUSTER ACTIVITIES AND COOPERATION WITH IST PROJECTS

The Framework Programme considers clustering activities as a means to pool and to collectively build on their individual results and encourages to actively contributing to the work of specific clusters. A number of projects within the IST framework can be identified, for which there exist an overlap of common interests with the work in 6QM and where there is a potential for mutual synergies.

In the case of 6QM there can be identified target project groups for cooperation that are associated to all the three areas represented in 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. 6QM Target clusters are especially the projects with focus on Network Measurement and Monitoring, and there is a set of projects concentrating on QoS issues. Of particular mention are the IPv6 infrastructure projects of 6NET and Euro6IX and development groups within TF-NGN/GÉANT.

2.1 IPv6 Cluster

The European Commission Information Society Technologies Programme is funding a considerable number of projects focusing on IPv6 research. This represents an investment greater than 90 M€. Those projects are addressing different technical aspects related to IPv6 (e.g. IPv4 to IPv6 transition, Quality of Service, etc.). The IPv6 Cluster provides an important coordination forum for IST Projects that have a strict emphasis on IPv6, with the main goal being the research and development related to the protocol itself, and IPv6 Related Projects, which are employing IPv6 as part of their broader goals.

6QM is actively contributing to IPv6 Cluster activities. Currently there is on-going preparation of a new booklet 'Moving to IPv6 in Europe', where 6QM took over editorship for the section on IPv6 Conformance and Performance.

The development of conformance and performance technologies for the All IPv6 network will create a powerful leverage for realizing a fast transition scenario, and the supporting environment for IPv6 conformance and performance, to which the work of 6QM is contributing, helps to establish confidence in the IPv6 technology among the players and creates assurance for the adoption of the next generation IP protocol by manufacturers, service providers and end users.

2.2 QoS Project Cluster Activities

There are several IST projects addressing various QoS aspects. The three projects AQUILA, CADENUS and TEQUILA acted here as focal point for activities related to IP QoS and Premium IP Service, and their common workshops helped to create a forum for information exchange between IST projects working in this area. Of these however, AQUILA and TEQUILA have already terminated and CADENUS is now ending. Thus there is currently seen a transition phase in the cluster activities to follow-up projects working on QoS topics. 6QM will join in when those initiatives are resumed which is expected to gain more momentum with the start of the first round of 6th Framework projects.

MESCAL project is somehow the successor of TEQUILA.

2.3 Monitoring and Measurement Cluster Activities

The IST MoMe Project Cluster coordinates activities between projects active in the area of monitoring and measurement. The working topics addressed by this cluster have to be regarded as closest fit for 6QM results and, accordingly, coordination between projects in this cluster has high priority for 6QM.

The character of liaisons between projects in this cluster is different from that of the other areas. While cooperation in the other fields are more representing a user-provider relationship, where 6QM can provide tools for usage by others, we find here peer relationships to other projects working in similar and/or closely related fields, even though each project has its distinctive scope. It is important to reach early mutual understanding and exchange of ideas and to avoid duplication of effort, but to bring together complementary expertise and to pool a critical mass for the approaches taken by those projects. Work should be coordinated in particular with regard to standardization. It is important to agree on common open interfaces to allow cooperation of the measurement system with other functionalities in the operation support system and to support the integration and interworking of tools.

As projects working on monitoring and measurement, besides 6QM, there is to mention foremost IST INTERMON and IST SCAMPI. INTERMON is concentrating on interdomain-aspects. It is developing a scalable inter-domain QoS architecture with integrated monitoring, topological and geographical structure mapping, modeling, simulation, optimization and visual data mining.

SCAMPI is developing a scaleable monitoring platform for the Internet. It addressing core backbone links at 10 Gbps speed and investigates further the technical challenges of developing monitoring systems for 100 Gbps speeds and beyond.

6QM has already established contacts to both projects. FOKUS is member in 6QM and Intermon, and there has been already an exchange of information between all three projects through projects organized events.

On July 3, 2002 Fraunhofer FOKUS in cooperation with T-Systems Nova Gmbh organized a one-day workshop on QoS Measurement as a supplement to the 8th TF-NGN meeting. SCAMPI was presented in one of the presentation slots. In turn 6QM and Intermon were introduced at the SCAMPI organized workshop on Internet traffic monitoring, which was held on 27 January 2003, in Amsterdam to coincide with the RIPE 44 meeting. 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. 6QM was also introduced at the IST Intermon Workshop held in Salzburg, Austria, on 20-21 February 2003. A project overview was included in the talk by Carsten Schmoll (Fraunhofer FOKUS) on Non-intrusive delay measurements with IPFIX data export.

Efforts have been made by the projects to organize a Monitoring and Measurement session at 10th Concertation Meeting IST Communication & Network Technologies in Brussels, 10-12 March. However the date clashed with the Intermon technical audit and also representatives from SCAMPI were not available on this date. Coordination is under way to set up such an inter-project session in the next future. A possible target date is the last week of May.

2.4 6NET & Euro6IX

Two large very scale experimentation platforms are investigating the real deployment of IPv6. 6NET and Euro6IX, started in January 2002, are building dedicated, native, IPv6 networks, involving National Research and Education Networks, telcos and ISPs, in a complementary approach, and considering other aspects like applications and Internet Exchanges. Several partners of 6QM participate either in 6NET or Euro6IX projects, and we expect a number of collaboration activities carried out between all these projects. In addition, 6QM will use these networks as backbone to connect several 6QM trials and to interconnect to other IPv6 networks or projects.

6NET builds a native IPv6-based network with both static and mobile components in order to gain experience of IPv6 deployment and transition from existing IPv4-based networks. This will be used to extensively test a variety of new IPv6 services and applications, as well as interoperability with legacy applications.

The cooperation of 6QM will concentrate specifically on WP6 of 6NET as well as WP4 and WP5. *WP6: Network Management Architecture and Tools* considers configuration, performance, fault, security and availability management issues. It will also develop and test appropriate management tools. It has published Deliverable D6.3.1, the first version of the 'IPv6 Network Management Cookbook', which features, recommendations and tools that may be used to manage and monitor a wide area IPv6 network. The part on measurement tools is still rudimentary. 6QM can provide input in this area and can help to close the open gap.

WP4: Application and Service Support identifies and implements applications and services that support network mobility and quality-of-service (QoS). *WP5: IPv6 Middleware and User Application* will trial diverse IPv6-enabled middleware and user applications including real-time videoconference and media streaming applications, online gaming, relational databases, transaction processing systems, and portal services. 6QM will cooperate through common partner participation in both projects in some of these trials providing necessary measurement support to validate the performance of QoS sensitive IPv6 based applications.

Euro6IX project will research, design and deploy a native pan-European IPv6 network, called the Euro6IX test-bed. It will include the most advanced services obtainable from present technology and will follow the architecture of the current Internet (based on IPv4). It will consider all the levels needed for the worldwide deployment of the next generation Internet.

WP4 in Euro6IX is researching several IPv6 QoS aspects that will provide and received feedback with 6QM. The same is true with WP2 (network design) and WP3 (network deployment). Actually there are already some works carried out between both projects.

6QM will cooperate with Euro6IX and 6NET in the measurement of the QoS and in the control of SLA. The 6QM measurement system will use information provided by standard interfaces related to QoS that are available in these networks.

2.5 TF-NGN Performance Monitoring and PERT Initiative

The Task Force on Next Generation Networks TF-NGN is a collaborative effort of European national research and education networks (NRENs) and associated research organizations, coordinated by TERENA and DANTE, performing early trials and studying performance and deployment issues. As the development part of the IST project GN1, it complements the infrastructure building effort of the GÉANT network, the pan-European backbone with core network capacity at 2.5-10 Gbit/s. GÉANT interconnects about 30 NRENs (national and regional research and education networks) in Europe and provides connectivity to other research networks worldwide.

TF-NGN explores technologies viewed as strategically important for the NRENs and GÉANT. Two related subgroups within TF-NGN are of particular importance to the work of 6QM, namely *Performance Monitoring* and *PERT*, which are activities that have been newly included in the GÉANT technology roadmap for 2003.

Performance Monitoring explores monitoring and measurement tools for the research networks. It has the goal of devising an international inter-domain monitoring infrastructure that can serve for Service Level Agreement (SLA) verification as well as for other research and operational purposes.

Intra- and Inter-domain monitoring infrastructure aims to monitor "performance" metrics (such as one-way delay, jitter, packet loss, available bandwidth, etc) inside a domain and across several domains. The aim is to provide to different groups of users (NOCs, GRIDs, etc) an "across domains" view. In its first phase, focus lies on identifying the subset of metrics, which should be monitored, the interactions between the domains and to provide recommendations on how the metric should be monitored. Measurements need to be performed for IPv4, IPv6 and different Types of Service. An embryonic system of the inter-domain monitoring infrastructure is planned to be setup by Q3/2003.

The *Pilot PERT Initiative* addresses the end-to-end performance problem. The performance experienced by network users is the result of a complex interaction of many components: application software, operation systems, network adapters, and networks belonging to separately administered domains (campus, regional and national backbone, international backbones). In order to address the end-to-end performance appropriately it is necessary to go beyond a purely network-centered view of QoS mechanisms. What is needed, are cross-disciplinary experts that help locate problematic area(s) before relevant area-specific experts can take over. Such generalists need to understand the totality of factors contributing to the end-to-end performance equation, as well as their interplay. The term PERT refers to such a cross-disciplinary group with the task of looking at performance issues in an integrated way, where “PERT” stands for “Performance Enhancement and Response Team”.

The PERT focalizes vertical expertise. For their task, the PERT team depends on access to measurements and monitoring data from various points in the network, including participating host systems and applications in order to identify domains, which need to react. They propose possible remedies, and provide the “logistics” function to bring multi-disciplinary experts together to jointly solve the problem.

Another important contribution of the PERT is to make available tools for the diagnosis of difficult end-to-end performance problems, along with guidance on when and how to use them. Where such tools may require measurement and monitoring infrastructures, these infrastructures

should be made as openly available as possible, so that it can be deployed on additional networks, and used by more people at the “edges” of those networks.

Through previous involvement of 6QM partners in preceding research projects there are already close links into this community. Given the overlapping interests of the research topics addressed by the TF-NGN working group and the project objectives of 6QM, participation in TF-NGN meeting is used for mutual information exchange and planning for common experimentations with partner NRENs working in the 6QM relevant research areas.

Members of 6QM are providing expertise to the online discussions of those working groups. Besides several presentations of 6QM work have been given at recent meetings. 6QM had been presented at the 10th TF-NGN Meeting in Rome and updates of the work will be given at the next meeting in Poznan, May 2003.http://www.dante.net/tf-ngn/

3. LIAISONS WITH STANDARDIZATION BODIES

3.1 IETF Standardization

The work of 6QM is much dependent on standardization activities. The interaction of the 6QM consortium with standardization organizations and industrial fora is performed as a two-way communication. For the design of the 6QM system there are selected common industrial standards with regard to measurement metrics, data formats and protocols for results presentation, collection and exchange. 6QM will feedback the experiences made in the project and will come up with proposals for adaptations and supplements to existing standards where appropriate.

D5.1 identified the working groups of interests for 6QM within IETF, ETSI and ITU-T, while technical contents is discussed in deliverables D2.6 *6QM and ITU-T activities*, D2.7 *6QM and IETF activities* and *D2.8 6QM conformance with the IPPM WG.*

Of particular importance for 6QM are IETF standardization activities related to the working groups of IPPM (IP Performance Metrics), IPFIX (http://www.ietf.org/html.charters/ipfix-charter.htmlIP Flow Information Export), PSAMP (Packet Sampling), TE (Traffic Engineering), CCAMP (Common Control and Measurement Plane), V6OPS (IPv6 Operations), IPV6 (IP Version 6 Working Group), which are addressing 6QM relevant topics.

Members of the 6QM consortium can claim here outstanding IETF participation especially when taking into consideration the low representation of European representatives at IETF (see figures from the 56th IETF Meeting, San Francisco, March 16-21, 2003), which is far below 20% of the attendance. 6QM members are listed currently as authors/coauthors for four accepted working group drafts progressing towards RFC status, and three more drafts submitted as individual contributions. For the technical information on work contributed by 6QM partners see the Annex.

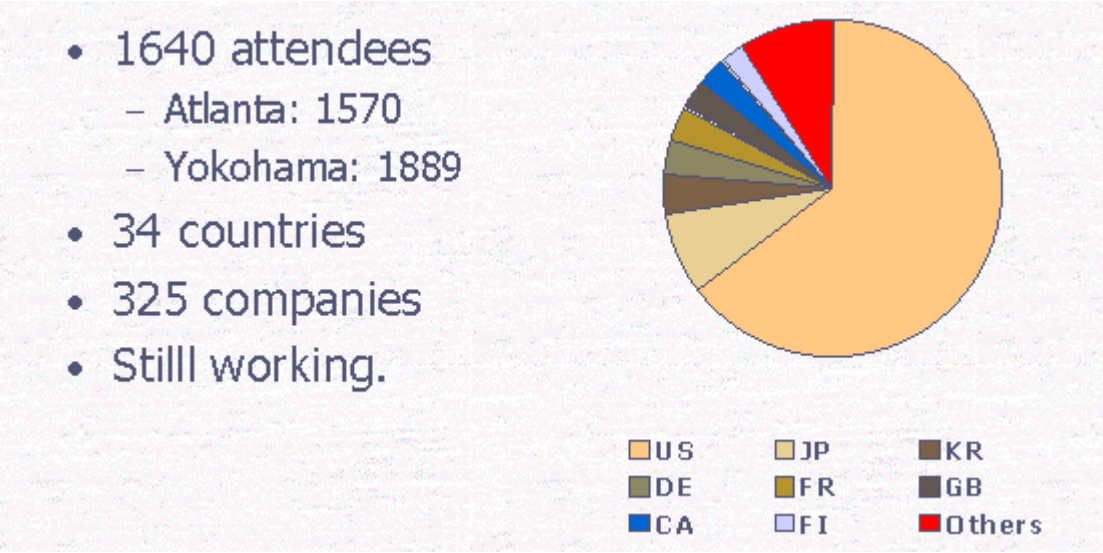

Figure 3-1: Attendees at 56th IETF Meeting, San Francisco March 16-21, 2003

3.2 ETSI IPv6 Testing Activities

ETSI's Plugtests™ Service organizes the IPv6 (Internet Protocol Version 6) interoperability testing event which provides a commercially secure environment in which engineers can meet together to share experiences, to check their implementations with others and to ensure interoperability of their products and prototypes.

ETSI TC MTS (Methods for Testing and Specification) have recently set up a new group dedicated to testing IP-based technologies. MTS-IPT will be dedicated to all aspects of testing IP-based technologies, and will cover conformance (compliance), performance and interoperability testing.

ETSI test specifications are usually developed by groups of experts, better known as Specialist Task Forces (STF), recruited from the ETSI membership and run by the ETSI Protocol and Testing Competence Centre (PTCC). Experts from the relevant Technical Bodies, manufacturers, test system developers and other interested parties are all closely involved in the development of the test specifications.

A scoping project (STF 236) under the leadership of the PTCC has been setup to define priority areas of activity of IPT in IPv6 (e.g., security, mobility, QoS). STF will provide a strategy and work-plan for the group. STF 236 will work from January 27th to the end of March 2003. Consulintel, one of the 6QM partners, is actively participating in this initiative.

There are currently preparations for a proposal of an Integrated Project specifically devoted towards IPv6 testing. It becomes apparent that the formerly separate fields of testing and network monitoring are coming much closer together. Performance monitoring and measurement devices are essential components for realizing complex test scenarios. On the other hand, testing approaches are seen to move beyond the deployment phase also into network operation. Testing capabilities are expected to become readily available functionality used in network management for diagnosis and exception handling. Detection of network state is needed for fast reaction to unforeseen events and conditions in order to maintain network health. Further integrating and harmonizing methodologies and approaches from these two areas can derive useful synergies and innovative approaches.

The All-IPv6-World working group identified in its work item list Conformance and Performance for IPv6 among its topics for which they recommend further research to be performed in the upcoming 6th Framework Programme. 6QM will engage in cooperation and will join into such activities during the later phases of its timeline.

6QM is already in contact with the groups organized by ETSI working on IPv6 testing. The IPv6 measurement system developed by 6QM can bring significant support to those testing activities. In case that planned 6th FP projects on IPv6 testing become accepted, 6QM will set up liaisons to input our expertise to their work.

Furthermore, Consulintel, one of the 6QM partners, has jointly organized with ETSI, the 1st Distributed IPv6 Plugtests, with the main venue in Madrid, running in parallel with the Madrid 2003 Global IPv6 Summit.

4. LIAISONS ROADMAP

The project consortium has already started the process of coordinating its activities with other projects. Those activities will become enhanced as the project matures and further results become available. In this section we outline the liaison roadmap taken by the consortium so far and next steps planned.

4.1 Role of Liaison Projects

There are different forms of cooperation depending on the character and role played by the partner project. We can categorize them as:

- Providers of IPv6 Infrastructure.

  6QM makes use of these infrastructures in order to set up experiments and demonstrations. 6QM can use those infrastructures during the early development phases internally to interconnect 6QM partners via IPv6 connectivity to build a distributed test-bed for its measurement platform and to perform first experiments. At later stages measurement points within the IPv6 infrastructure can be added and the IPv6 test-bed providers in their operational tasks can test the measurement tools. These roles will be played mainly by 6NET, Euro6IX, GÉANT and NRENs connecting 6QM partners.
- Developers of related and complementary monitoring and measurement technologies.

  For those projects it is necessary to set up mutually awareness and coordination from early on. Duplicate parallel developments should be avoided and complementary approaches should be sought. Agreements on common interfaces and protocols can help to integrate the tools. A common position will bring together critical mass and will create momentum in the development of standards. A way to achieve those goals is to set some cooperation with INTERMON, SCAMPI and with TF-NGN.
- Developers of IPv6 based services and applications.

  Those projects will primarily act as customers for the 6QM results. They can act as beta testers and provide feedback on the usefulness and appropriateness of the developed tools. In addition certain applications may choose to integrate measurement functionality as intrinsic part of the application.

4.2 Type of Interworking

Interaction between liaisons projects will occur over a range of actions and at different levels of participation.

1. Creating mutual awareness through presentations and exchange of technical documentation.
2. Input of measurement requirements to 6QM.
3. Common agreement and selection of interfaces and protocols.
4. Beta testing of Implementations providing 3rd party evaluation and Feedback.
5. Planning and organizing of common experimentation.

It is obvious that, resources for close direct cooperation with other project consortia are limited on both sides; therefore a well-balanced approach into this community must be undertaken. The main mechanism for mutual information exchange on the wider scale will be performed within the framework of project clusters, which are the appropriate forum for such activities.

For the more direct cooperation, the 6QM consortium has clear priorities. Highest goal is the coordination of common experiments. The requirement is that in the partner project there exist an accessible IPv6 infrastructure and applications with QoS requirements and there must be possibilities for 6QM researches to deploy measurement components.

Besides the currently running projects 6QM will have the opportunity to engage in cooperation with newly starting activities within the 6th Framework. The 6QM consortium will closely monitor 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.

4.3 IPv6 Connectivity

A pre-requisite for large scale experimentations among project partners in the 6QM consortium and, at later stages, for common experiments with liaison projects is the availability of direct IPv6 access of the project partners. The project consortium is here in a position to have excellent connectivity to the European IPv6 infrastructure.

Hitachi Japan has IPv6 connectivity the WIDE network for its IPv6 related projects. However there is no IPv6 connectivity dedicated to 6QM project at the moment, since worldwide IPv6 measurement is not in the scope of this project. However the possibility of a project scope extension has been discussed between partners. Indeed, this could raise interesting issues about connecting Europe to Japan with native IPv6 infrastructure and also provide some first IPv6 global performance measurement results.

Hitachi Europe is investigating the possibilities to obtain IPv6 connectivity for its HSAL (Hitachi Sophia Antipolis Laboratory) unit in France. There is an ongoing contract negotiation with France Telecom. Renater is another alternative.

France Telecom R&D has native IPv6 connectivity to the experimental IPv6 network of France Telecom, named VTHDv6. VTHDv6 international IPv6 connectivity is provided by France Telecom Opentransit, which has IPv6 peering with the 6Bone network.

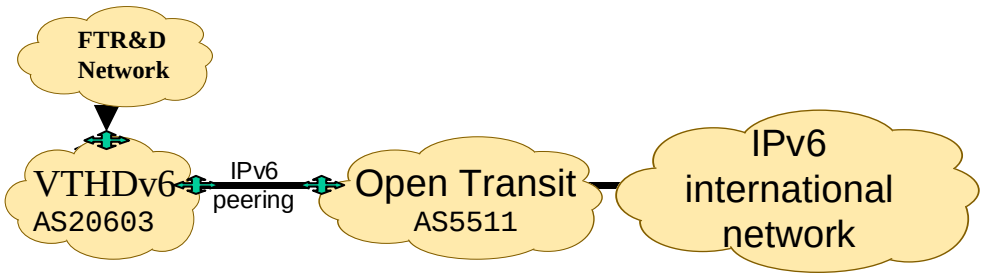

Figure 4-1: France Telecom IPv6 Connectivity

Consulintel has native connectivity to Euro6IX network, and also several tunnels with 6Bone. The connectivity to Euro6IX is via a dark fiber, with actually has configured an 8Mbps PVC over an ATM SMT-1 link. The connectivity to the rest of the Euro6IX network from the Madrid IX (MAD6IX), is via 34 Mbps. native links.

Fraunhofer FOKUS has been assigned official IPv6 address space by DFN and is currently installing direct native IPv6 connectivity to the 6WiN, the IPv6 network operated by DFN that is connected to 6NET.

4.4 Scenario Supported Development Approach

In order to better disseminate its project results and to facilitate cooperation with other projects 6QM follows a scenario supported development approach for its measurement system. The goal is to have early demonstrators for the system under construction that allows outsiders to get a glimpse on the development work starting from early phases in the project.

According to this philosophy 6QM partner France Telecom had set already two demonstrations at the 2002 IST conference in Copenhagen and updated during the past Madrid Global IPv6 Summit. The IPPM Reporting MIB proxy agent controls the sharing of the resources of its measurement system. The demo consists of a stand-alone proxy that permits granted peers to perform aggregated metric measurements on the network measures already performed in the proxy measurement system. The dual stack IPPM Probe, provided by Qosmetrix, allows for measuring the performance of IPv6 UDP and TCP applications. The demo consists of a set of probes performing IPv6 IPPM metrics measurements. One of the probes is located on the FTR&D IPv6 experimental network VTHDv6, the others are deployed locally in the IST or Global IPv6 Summit demo room.

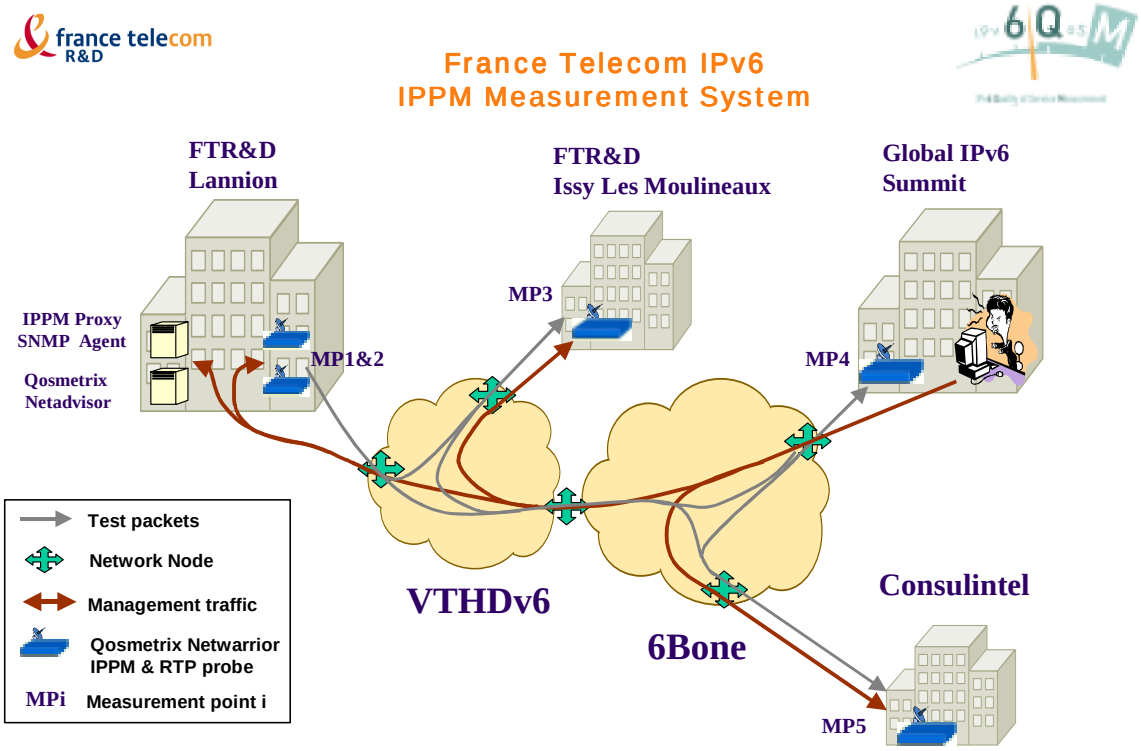

Figure 4-2: Demonstration of IPv6 IPPM Metrics Measurement & Management

6QM related functionality was shown also at CeBIT Hannover, 12-16 March by Fraunhofer FOKUS. The scenario presented there was a solution for transmission of multimedia streams over hybrid networks. Live video and audio streams are transmitted to mobile devices using IPv6 multicast over satellite, terrestrial and WLAN networks.

Two measurement points are installed to perform non-intrusive measurements of one-way delay for the audio and video streams. This enables investigation of the actual streaming quality. Based on the measurement results, validation of guarantees given in an SLA can thus be effected. Furthermore, the transmitted volume is metered, providing the basis for usage-based accounting.

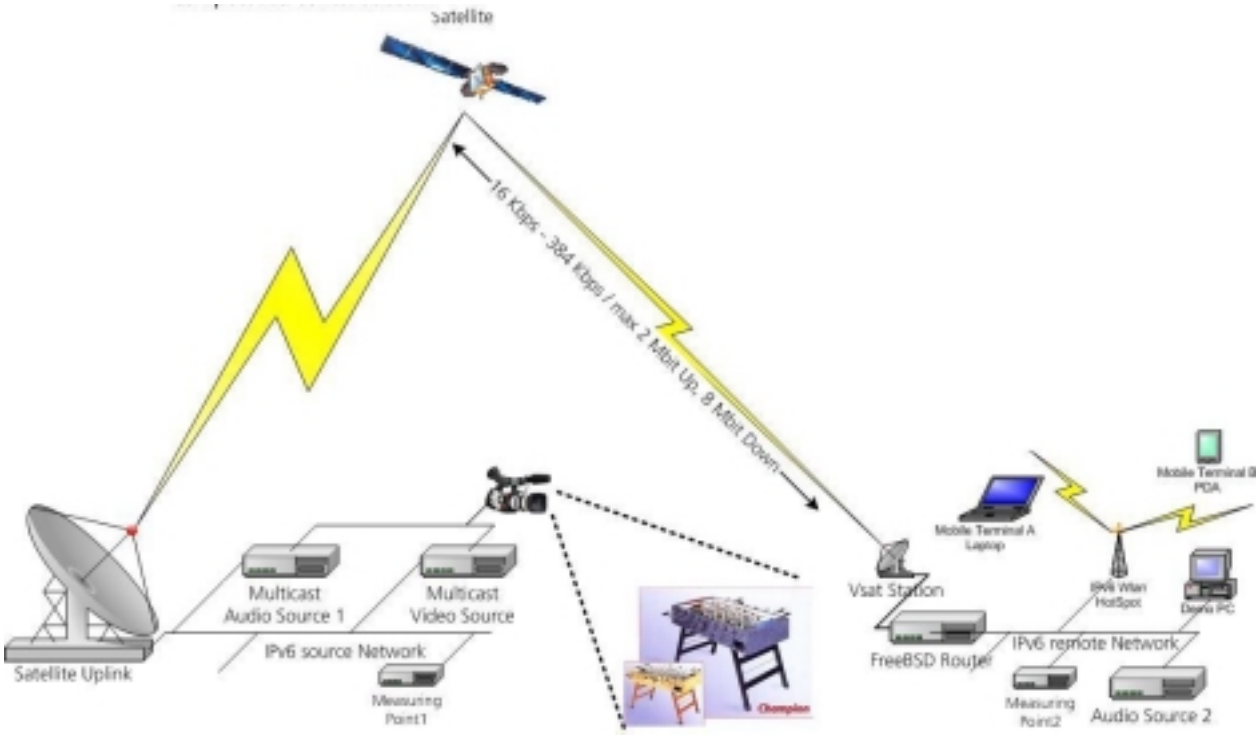

Figure 4-3: Demonstration of QoS Measurement of Streaming Video over IPv6 via Satellite

The measurement tools presented already included in rudimentary form some of the functionality planned for the integrated 6QM system. An update of this demonstration scenario was installed for the Madrid 2003 Global IPv6 Summit in May, for which also measurement components provided by Hitachi had been integrated into the demonstration system.

5. UPDATE ON DISSEMINATION AND LIAISON ACTIVITIES IN Q1/2003

Date	Location	Topic	Participants
03-06/12/2002	Paris	Deploying IPv6 Networks —Upperside Conference Presentation 'IPv6 QoS Measurement'	Jordi Palet (Consulintel)
18-19/12/2002	Yokohama	Global IPv6 Summit in Japan 2002 Presentation 'Outlooks on IPv6 Deployment: An European View'	Jordi Palet (Consulintel)
22-24/01/2003	Bangalore	3rd Global IPv6 Summit in India	Jordi Palet (Consulintel)
27-31/01/2003	Florida	SAINT 2003 Presentation 'Results and Plans of the IPv6 Testbed Initiatives within the European Commission IST Programme:'	Jordi Palet (Consulintel)
27/01/2003	Amsterdam	1st SCAMPI Workshop Presentation 'IETF Monitoring Activities'	Tanja Zseby (FOKUS)
04/02/2003	Brussels	7th IPv6 Cluster Meeting	Jordi Palet (Consulintel) Tayeb Ben Meriem (FT) Rudolf Roth (FOKUS)
05-06/02/2003	Rome	10th TF-NGN Meeting Presentation 'IST projects 6QM and Intermon'	Rudolf Roth (FOKUS)
20/02/2003	Salzburg	IST Intermon Workshop Presentation ´Non-intrusive delay measurements´	Carsten Schmoll (FOKUS)
12-19/02/2003	Hannover	CeBIT Demonstration of one-way delay measurements of streaming media over IPv6 via satellite link	FOKUS
24-26/03/2003	Taipei	1st Asia Pacific Global IPv6 Summit	Jordi Palet (Consulintel)
10-12/03/2003	Brussels	Concertation meeting	Jordi Palet (Consulintel)
16-21/03/2003	San Francisco	56th IETF	Several partners

6. SUMMARY AND CONCLUSIONS

6QM has finalized its first project phase with the publication of D2.1-D2.8 currently under way, which develop a 'Requirement Study for IPv6 QoS Measurement' to form the foundation for the 6QM measurement system. The second phase which performs the 'Design the IPv6 QoS Measurement System' has already started, with its first milestone of an 'Initial System for IPv6 QoS Measurement Specification' just completed.

Liaison objectives during the first phase were the creation of awareness for the 6QM project and the initial establishment to relevant groups.

A further milestone will be achieved through the demonstrator of 6QM system functionality at Madrid 2003 Global IPv6 Summit from 12 to 14th of May. The demonstration provides advertisement for 6QM project work and can act as reference point for the planning of common experimentation with projects.

Emphasis for liaison activities in the current project phase lies on the coordination with other groups and projects working on QoS measurement and monitoring, and it is planned to organize a cluster meeting with a target date for end of May 2003.

The next significant 6QM milestone is targeted for November 2003 where the release of the Prototype of the 6QM IPv6 QoS Measurement is foreseen. With the availability of the initial 6QM measurement system liaisons with partner projects on common experimentation will be intensified.

7. REFERENCES

Name	Title	Version	Date
6NET	http://www.6net.org/		
6QM —News	http://www.6qm.org/news.php		
Euro6IX	European IPv6 Internet Exchanges Backbone http://www.euro6ix.org/		
GÉANT	Performance Monitoring http://www.dante.net/tf-ngn/perfmonit/		
GÉANT	The Performance Enhancement Response Team (PERT) http://www.dante.net/tf-ngn/pert/		
Intermon	Advanced architecture for INTER-domain quality of service MONitoring, modelling and visualization http://www.ist-intermon.org/		
IPFIX	IP Flow Information Export (ipfix) http://ietf.org/html.charters/ipfix-charter.html		
IPPM	IP Performance Metrics (ippm) Charter http://ietf.org/html.charters/ippm-charter.html		
IPv6 Cluster	http://www.ist-ipv6.org/		
IST MoMe	Cluster of European Project aimed at Monitoring and Measurement http://www.ist-mome.org/		
PSAMP	Packet Sampling (psamp) http://ietf.org/html.charters/psamp-charter.html		
SCAMPI	http://www.ist-scampi.org/		
SIGTRAN	ETSI IPv6 and SIGTRAN Testing http://www.etsi.org/frameset/home.htm?/ptcc/ptccipv6_sigtran.htm		

8. ANNEX: IETF WORKING DRAFTS FROM 6QM PARTNERS

In this annex we list IETF Working Group Drafts related to 6QM topics that have been submitted by members of the 6QM project consortium

8.1 IPPM - IP Performance Metrics Working Group Drafts

8.1.1 "IPPM metrics registry", Emile Stephan (FT)

This memo defines a registry of the IPPM working group metrics. It provides an OBJECT IDENTIFIER to each metric currently standardized by the IPPM WG. It defines the rules for the identification of the metrics standardized in the future.

- draft-ietf-ippm-metrics-registry-02.txt March, 2002

8.1.2 "IPPM reporting MIB", Emile Stephan, Jessie Jewitt (FT)

This memo defines a portion of the Management Information Base (MIB) designed for use with network management protocols in TCP/IP-based Internet. In particular, this MIB specifies the objects used for managing the results of the IPPM metrics measures, for pushing alarms, and for reporting the measures results.

- draft-ietf-ippm-reporting-mib-02.txt March, 2003

8.2 IPFIX - IP Flow Information Export Working Group Drafts

8.2.1 "Requirements for IP Flow Information Export", J. Quittek (NEC), T. Zseby, S. Zander (FOKUS), B. Claise (Cisco)

This memo defines requirements for the export of measured IP flow information out of routers, traffic measurement probes and middleboxes.

- draft-ietf-ipfix-reqs-09.txt February, 2003

8.3 PSAMP – Packet Sampling Working Group Drafts

8.3.1 "Sampling and Filtering Techniques for IP Packet Selection", Tanja Zseby (FOKUS), Maurizio Molina, Fredric Raspall (NEC)

This document describes sampling and filtering techniques for IP packet selection. It introduces information models for packet sampling, for packet filtering and for combinations of methods. The information models describe what information has to be specified in order to describe the method. This information is used for configuring the selection technique in measurement processes and for reporting the technique in use to the measurement data collection process. The document first suggests some terminology, then it describes in detail packet sampling and packet filtering techniques and their parameters. It also describes how these two techniques can be combined to build more elaborate packet selectors. Finally, it introduces information models for the most common sampling and filtering techniques.

- draft-ietf-psamp-sample-tech-01.txt March, 2003

8.4 Individual Submissions

8.4.1 "IPPM measurement signature", Emile Stephan (FT)

Despite the growing availability of good measurement platforms, it is still impossible to generalize IPPM metrics measurement among heterogeneous points of measure. To do so, the extra information inserted in the IP packets to perform the measurement has to be standardized. This document defines an IPPM measurement signature suitable for performing the measure of the current IPPM metrics, for integrating those used by manufacturers and for allowing the IPPM WG to define other measurement signature in the future.

- draft-stephan-ippm-test-packet-header-01.txt October, 2002

8.4.2 "IPPM spatial metrics measurement", Emile Stephan, (FT)

The IETF IP Performance Metrics (IPPM) working group has standardized metrics for measuring end-to-end performance. Measurements system scope is often limited to administrative boundaries. This memo defines spatial metrics both for measuring end-to-end network performance using aggregation of sequence of network measures and for measuring the performance of segment of an IP path trajectory. It distinguishes clearly the decomposition of one end-to-end measure result in a sequence of per hop results from the aggregation of a sequence of per hop measure results in an end-to-end result.

- draft-stephan-ippm-spatial-metrics-00.txt September, 2002

8.4.3 "Evaluation of Diameter Protocol against IPFIX Requirements", Sebastian Zander (FOKUS)

This document provides an evaluation of the applicability of the Diameter protocol [DIAMETER] as an IPFIX protocol. It compares the properties and capabilities of the Diameter protocol to the IPFIX requirements [IPFIX-REQ].

- draft-zander-ipfix-diameter-eval-00.txt September, 2002