Monitoring and Measurement Activities in European Projects

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Abstract

The 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 current and upcoming IST projects and other European partners. Part of the project was the collection of information on projects dealing with monitoring and measurement issues. Currently, eleven IST projects from the 5th and 6th framework and nine companies have participated in the survey. This paper summarises the results of this survey gathered from the IST projects and categorises the European activities and needs on IP monitoring and measurement issues.

Introduction – the MOME project

MOME is a co-ordination action in the area of IST of the sixth framework programme. The overall objective of the MOME project is to co-ordinate activities in the field of IP monitoring and measurement by offering a platform for knowledge, tool and data exchange. Therefore MOME evaluates the interoperability of monitoring and measurement tools, collects and disseminates monitoring and measurement data, co-ordinates monitoring and measurement related standardisation and organises workshops and conference sessions.

Project duration of MOME is 24 month, started in January 2004. The project is organised in two main phases. While the first year is dedicated to gather information about projects and tools as well as infrastructure set-up, the second year will be the main period for data collection and analysis.

One of the key issues of MOME is to recommend measurement tools for IST projects. To collect the needs and activities of projects in the field of IP monitoring and measurement a survey has been designed and conducted. In this paper the results of the survey made in the first half of 2004 are summarised. The results of the survey will be used for the design of the MOME platform.

Collecting information on projects – the survey

The questionnaire used for this survey contained three parts. The general part requested the general approach on monitoring and measurement. The second part asked for project specific details, and the third part collected information on the tools developed and/or used by the different projects. In addition to the projects also Internet network operators have been interviewed.

The questionnaire of the survey was made available online [2], using a web-based survey tool including a database and evaluation features. In addition the questionnaire has been used by the project partners to personally interview measurement responsible persons of IST projects. Among the project key data, the projects have been interviewed about six core points regarding measurements: their monitoring and/or measurement approach, the followed measurement scenarios, the used measurement tools, the standards and standardisation plans and the expectations from the project MOME. Finally the environment where the measurements are taken and the role of measurements in the projects were requested. Figure 1 shows the six areas with their subtopics.

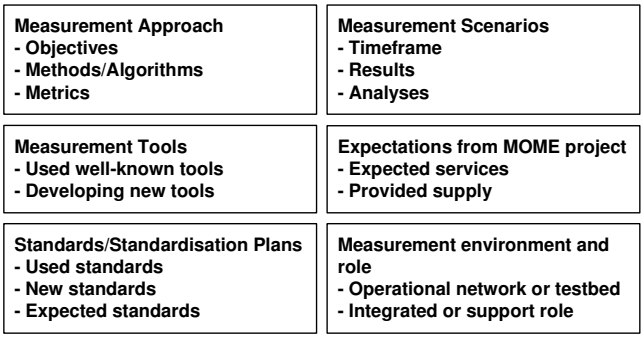

Figure 1 – MOME survey structure

Current survey results

Currently the survey results of eleven projects have been collected. For this paper the results of the different areas of the survey have been summarised.

Measurement objectives and tools

The bar chart in Figure 2 shows the results about the importance of different measurement objectives. Each interviewed project could select one or more objectives they target at (indicated as light grey bars). In addition, the projects were free to add further objectives (indicated as dark grey bars).

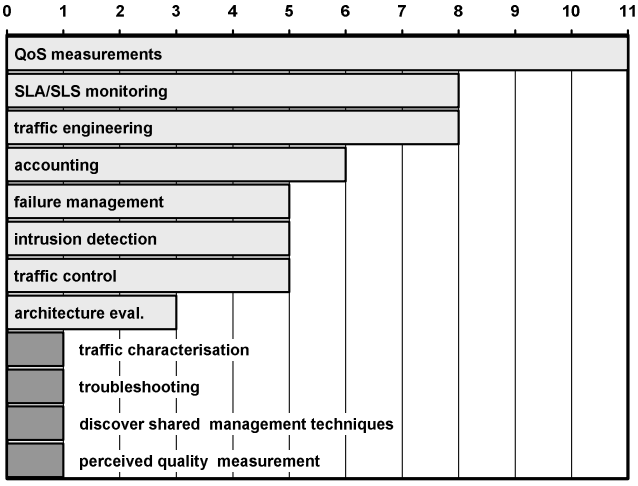

Figure 2 – Measurement objectives

All of the currently interviewed projects have QoS measurements as an objective in their measurement approach. QoS measurements are strongly connected to SLA/SLS monitoring, which is the objective secondly often mentioned. Further, eight projects deal with measurements for traffic engineering. And more than every second of the interviewed projects use measurements for accounting.

Different measurement tools are used to reach these objectives. The questionnaire distinguishes between used well-known tools and new tools of the projects own developments. Although many projects rely on already existing tools, about 25 tools are currently developed or already available from these eleven projects. Relating this to the twelve different measurement objectives shows the potential of possible co-operations. From the standard tools used by the projects, the base tools like "ping", "traceroute" and "tcpdump" still have a major importance.

Measurement metrics and standards

Another part of the survey was on metrics and standards of measurements. Figure 3 depicts the distribution of the targeted measurement metrics. The main metrics of QoS measurements like packet loss, one-way delay and connectivity are obviously leading also the metrics statistics.

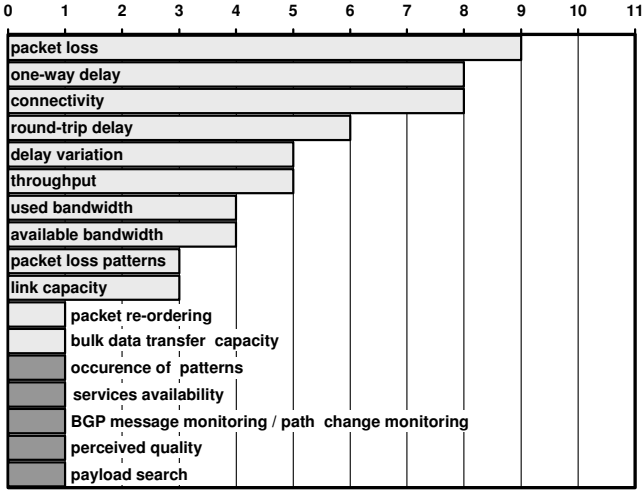

Figure 3 – Measurement metrics

IETF is dominating the IP measurement standardisation and the metrics are standardised in the IPPM working group. Hence almost all projects focus on the IETF standards. But still not all aspects of this area have been solved by IETF and other standards. To join the forces of European projects in related standardisation activities, MOME co-ordinates active contributions to IETF and other standardisation bodies. The developed standardisation plan and recommendations are documented in D31 [3].

Measurement methodologies and environment

Both active and passive measurements are used in the projects to a similar amount. Also the use of artificial networks like testbeds and operational networks for measurements is balanced. From the timeframe, only a few projects are doing measurements over longer periods of time. Most of the projects reduce the measurements to duration of minutes and hours. Through MOME, this lack of long-term measurements will be reduced by exchanging measurement data through the MOME platform.

Contributions and Expectations

The last part of the questionnaire covered the relationship between the project MOME and the associated projects. There is a strong interest from the projects to co-operate with MOME. The contributions are various, like provision of measurement data, measurement tool descriptions and by actively contributing to workshops and conferences related to MOME for exchanging knowledge. This results into expectations from MOME to provide the platform for knowledge exchange, like the workshops and conference sessions as well as the repository for tools and data. As one of the main reasons for measurements is traffic engineering, there is a need on measurement data to be able to investigate algorithms on a large collection of different kind of measurement data (e.g. different link speeds, etc.). Already finished projects from the 5th framework showed interest to be able to keep their results on-line via the MOME platform.

Future Work

The survey on the monitoring and measurement needs and activities of IST projects is continuing during the lifetime of MOME. Further projects are expected to be added to the survey. Currently under development is the MOME platform containing searchable tools and measurement database. Results from the survey were used as input to the design of the MOME platform. The MOME platform will be available via the MOME web-site [1].

Conclusions

From the view of the interviewed projects, the most important activity of MOME is to provide workshops and conferences for know-how exchange. The know-how exchange will be strengthened by the MOME platform, which provides the possibility of data and tool exchange between the projects. MOME platform will succeed only, if the available data will fulfil the needs of the projects and provide up-to-date information. Currently five projects plan to provide measurement data and seven projects will share their knowledge by providing descriptions of their measurement tools. The importance of QoS measurements is considered during the development of the MOME platform.

Acknowledgments

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