

Minutes of the full day KIVS Workshop "Setup and Operation of Open Testbed Infrastructures in the Context of NGN and Future Internet - Status Quo and Quo Vadis", held in Kassel, Germany on Friday March 6, 2009

The workshop was opened by Udo Bub, EICT GmbH, Germany at 8:30 introducing the first speaker, Prof. Phuoc Tran-Gia, from the University of Würzburg, Germany. In his talk "*Experimental Platforms towards Next Generation Network*" Prof. Tran-Gia presented the different testbed initiatives in the US, Asia, Europe and Germany.

Subsequently, Prof. Thomas Magedanz from TU Berlin, Germany opened the first session „***The European Perspective of Testbeds***" (9:00 – 10:30) in which major activities in Europe have been presented. First, Dr. Max Lemke from the European Commission presented a keynote speech on "*The European FIRE Initiative – Overview and Potentials*", in which he outlined briefly the current running projects within the FIRE context and their relationships, as well as what are future requirements for the new upcoming call 5 FIRE projects.

Subsequently, the two major FIRE facility projects, namely PII and Onelab2 have been presented. Anastasius Gavras from Eurescom GmbH, Germany talked about the need for cross technology federation and the related Teagle Tool being developed in PII in his talk "*Towards Federated European Testbed infrastructures – PII*". Afterwards, Panayotis Antoniadis from LIP6, France, who replaced Prof. Serge Fdida, gave an overview of OneLab2 and the related federation concepts in his talk "*The Onelab2 project and research on federations*".

In the second session "***German Testbed Initiatives***" (11:00 – 12:30) chaired by Anastasius Gavras, Eurescom GmbH, Germany looked closer into the testbed projects and activities performed in Germany. Here Dr. Udo Bub, from EICT GmbH, Germany in his talk "*The national Beta Plattform*" presented the first version of a national testbed portal system, which is similar to what Teagle and PII aiming to do on a European level. Subsequently, Mr. Riccardo Pascotto, from Deutsche Telekom Laboratories, Germany replacing Dr. Heinrich Arnold, addressed in his talk "*The role of (national) open testbeds from an operator's point of view*", how an incumbent market player evaluates the role of testbeds for its own research activities and projects. Finally, Prof. Thomas Magedanz from TU Berlin, Germany looked on the importance of service orientation in his talk "*Following the changing Value Chains - towards Service oriented Testbeds*".

The third session "***Experiences and Challenges in Setting up Experimental Facilities***" (13:30 – 15:00) chaired by Prof. Phuoc Tran-Gia, from University Würzburg, Germany looked into more technical challenges of testbeds.

Michael Menth from University of Würzburg, Germany in his talk "*A Global Mapping System for Identifiers Assigned in Prefix Blocks by Authorities*" discussed the separation of IP addresses into Identifier and Locator and proposed a function to map these.

In his talk "*Wireless Access and the Future Internet - Concepts and Experimental Validation*" Prof. Hans Schotten from Technical University of Kaiserslautern, Germany presented requirements for experimental validation in real-world environments of wireless access to future Internet.

In the talk "*Issues, Challenges and Opportunities of Setting up Experimental Peer-to-Peer Facilities*", André König from Technical University of Darmstadt, Germany talked about the challenges to setup large peer-to-peer testbeds within the given limitations of current testbeds.

Dr. Wolfgang Kellerer from DOCOMO Communications Laboratories Europe GmbH presented in his talk *“The Chordella Overlay Network - Testbed Experiences and Requirements”* some practical experiences with peer-to-peer experimentation on existing testbeds and outlined requirements for large-scale testbeds to support peer-to-peer experiments.

Finally, Dr. Tanja Zseby from Fraunhofer FOKUS, Germany presented in her talk *“Onelab2 - Experimental Facilities for Future Internet Research”* the challenges in setting up large-scale experimental environments supporting controllable, repeatable and comparable experiments and how the work in Onelab2 is addressing these challenges.

In the final Panel Session *“The Role of Testbeds in NG Internet (Services) Evolution”* chaired by Prof. Jörg Eberspächer from Technical University Munich, Germany, different experts, including U. Bub, A. Gavras, M. Lemke, P. Tran-Gia, B. Stiller, University of Zürich, Switzerland discussed a number of challenges for testbeds.

A main question that was discussed concerns the business models for sustainable testbeds. Sustainability depends a lot on the testbed users, however testbed users are also looking for some guarantees in order to start using testbed services based on infrastructures they do not own. It was agreed that more work is needed to develop a clear and easy to use testbed service offering and its associated economic model, which to some extent will depend on public funds.

In order to demonstrate to the potential testbed users the capabilities of the testbeds, it was suggested to develop use cases and showcase these on different opportunities, thus effectively increasing the marketing effort of testbeds towards their users.

Another important question that was discussed concerns the criteria for measuring testbed success. Apart from the obvious, namely the sustainable business model and economic viability, it was suggested to develop benchmarking methods for large scale experiments.

Other issues that were briefly touched concern controllability and reproducibility of experiments as well as reliability of the environments. Finally it was reminded that legal issues and IPR handling deserve high attention.

The workshop ended around 17.00 and the attendees appreciated the possibility of having deep technical discussions.

We the workshop co-chairs want to thank all speakers and attendees for their valuable contributions and the KIVS organizing committee for their assistance to implement this workshop. We hope to see you at some of the future testbed workshops and conferences, such as Tridentcom 2009 in Washington, USA in April or the Future Internet Assembly (FIA) in Prague, Czech Republic in May.

The Workshop Co-Chairs

U. Bub, A. Gavras, T. Magedanz, and P. Tran-Gia