Towards An Ultra Adaptive Internet
MAKI Scientific Workshop, March 28, 2014

MAKI: BACKGROUND

The Collaborative Research Center MAKI aims at making the Internet considerably more adaptable, both wrt. the degree of adaptation (up to the replacement of entire stacks) and wrt. to the adaptation agility (on the fly, without interrupting applications).

The workshops investigates both needs and advantages of such an 'ultra adaptability', but also the complexity and obstacles. Towards this aim, we will address the *two* 'sides of the adaptation coin':

a) The *candidates* for adaptation: which protocols, functions, concepts (and sets of these) are most promising candidates for on-the-fly replacement – and which kinds of adaptations are promising and which not?

b) The (non) *reasons* for adaptation: load variations, which MAKI considers as key reasons for transitions; we will investigate the potential of **scalable video** for mitigating load variations caused by behavior change, and discuss limitations of this approach in face of social dynamics (flashmobs)

Agenda

09.15 – 09.30 Welcome and Introduction
Max Mühlhäuser

09.30 – 12.30 Block I – Mechanism Adaptation

Keynote: **Human-Centric Control of 3D Video in Teleimmersive EnvironmentsAdapting**
Prof. Klara Nahrstedt Ph.D., University of Illinois at Urbana-Champaign
Klara is a highly renowned multimedia systems and networking expert with emphasis on monitoring, control and adaptation of resources, Quality of Service and Quality of Experiences for 3D teleimmersive systems. Klara will report on human-centric adaptive control framework for 3D teleimmersive video, and stress that MAKI vision must include human-in-the-loop together with the Internet optimization and control.

10.15 – 10.30 Coffee break

10.30 – 11.30 **The MAKI View: Adaptation by Mechanism Transitions**
In this section, three 20 minute presentations given by MAKI researchers will introduce different views on how MAKI plans to adapt mechanisms in specific (sets of) layers
- Adaptivity in Mobile Wireless Networks (Adrian Loch)
- Adaptivity in Publish-Subscribe Systems (Björn Richerzhagen)
- Incentives for Adaptive Overlay Networks with Heterogeneous Nodes (Matthias Wichtlhuber)

11.30 – 12.30 **Group Work:** Consolidation and extension of presented views.
In this session, we want to discuss the research approaches and ideas presented by MAKI researchers in the light of Ernst Biersack's critical view and his experience. We will consolidate the viewpoints exchanged into a joint summary

12.30 – 13.15 Lunch

13.15 – 16.15 Block II – Content Adaptation

13.15 – 14.00 Keynote: **Adapting Media Content: Video is King**
Prof. Dr. Roger Zimmermann, National University of Singapore
Roger has a long standing reputation in the multimedia and networks communities. He will discuss network resource demands of future high-quality and conversational video, effects of large user communities, and scalable and adaptable video coding.

14.00 – 15.00 **The MAKI view: Adaptation of Content – Adapting to Content**
In this section, three 20 minute presentations given by MAKI researchers will introduce how MAKI intends to deal with future demands *and* scalability of video and media
- Video Adaptation in MAKI (Stefan Wilk)
- Video Streaming Topology Adaptation (Julius Rückert)
- Impacts of social dynamics on Internet users' demands (Paul Gebelein)

15.00 – 15.15 Coffee break

15.15 – 16.15 **Group Work:** Consolidation and extension of presented views.
In this session, we want to discuss the research approaches and ideas presented by MAKI