Research report for the STSM of Christoph Egger
May 19- May 26, 2011

Host: INRIA Rennes, France (Bruno Tuffin)

The main goal of this STSM has been to discuss recent conceptual and technological developments in the area of Next Generation Networks. The following points summarize the issues dealt with during this week.

1. ***Submission of a paper on SIP performance aspects:*** Based on previous work of C. Egger, M. Hirschbichler and P. Reichl, a paper has been submitted to the MMBnet2011. The paper is entitled "Enhancing SIP Performance by Dynamic Manipulation of Retransmission Timers". This paper proposes to dynamically increase SIP retransmission timer(s) in high load situations, in order to lower the probability of a congestion collapse. This approach is validated by means of dedicated simulations, and shows how manipulating the SIP retransmission timers increases the success rate of SIP requests. Finally, it proposes to introduce an additional SIP header that allows an overloaded server to signal its current state to the next upstream server or user agent.

2. ***Presentation of the current status of C. Eggers PhD thesis and discussion of recent topics:*** On Tuesday, B. Tuffin has organized a short seminar where C. Egger presented his PhD work to the DYONISOS team. Simulation scenarios and new approaches for simulation of improvements of the Session Initiation Protocol that C. Egger wants to develop during his PhD thesis have been discussed. The results of the discussion with the DYONISOS team contribute significantly to its progress.

3. ***Working on a draft version of a paper on SIP proxy implicit high- and overload detection mechanisms:*** Based on the results of the discussions after C. Eggers PhD presentation, the idea of this paper is to continuously measure the delay values caused by proxy processing to detect high-load situations that can lead to a collapse in order to reduce the traffic load and therefore to avoid congestion. This has been done during this STSM.