Editorial

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Biographical notes: Tobias Hoßfeld received his PhD in Computer Science from University of Würzburg, Germany in 2009. He is heading the FIA research group 'Future Internet Applications & Overlays' at the Chair of Communication Networks in Würzburg. In 2011, he has been Visiting Senior Researcher at FTW in Vienna with a focus on quality of experience research. His main research interests cover social networks, crowdsourcing platforms, content distribution networks and clouds, as well as investigations on quality of experience for internet applications like Skype, YouTube, web browsing or cloud applications in general. He is leading and participating in several national and European projects.

Phuoc Tran-Gia is heading the Chair of Communication Networks within the Institute of Computer Science, University of Würzburg, Germany. His current research areas include architecture and performance analysis of communication systems, and planning and optimisation of communication networks. He has been active in several management committees of European research projects. He is currently working with the European Union authorities and the German Ministry of Research and Education on funding strategies and initiatives towards next generation internet. He is the Coordinator of the project German-Lab (G-Lab), aiming to foster experimentally-driven research to exploit future internet technologies.

In the last decades, the internet changed dramatically in an economic way, but also in a technical way. The internet evolved from a simple collection of websites providing pure information towards a service and application platform by implementing new paradigms. The rise of the peer-to-peer paradigm led to new applications and services which allowed internet users sharing files and user generated content among each others. Later on, the application of the Web 2.0 paradigm empowered internet users to become application and service developer themselves. Examples of this new generation of websites are blogs, wikis or media-sharing platforms. Thereby, the users are connected to each other by means of social networks creating new path to communicate and share information. Prominent examples for such social media networks are Facebook or YouTube.

Nowadays, a newly emerging service platform and business model in the internet is established by the crowdsourcing paradigm. In contrast to outsourcing, where a job is performed by a designated worker or employee, crowdsourcing means to outsource a job to a large, anonymous crowd of workers, the so-called human cloud, in the form of an open call. This human cloud is abstracted by a crowdsourcing platform, which distributes

the work submitted by an employer among the human worker resources and acts as mediator between worker and employer. The crowdsourcing paradigm is changing dramatically the future of work and work organisation in the internet. The work is organised at a finer granularity and jobs are split into cheap micro-tasks, which can be fast performed by the human cloud.

Due to the increasing interest in social networks and crowdsourcing, there is a lot of ongoing research in this area. However, there are still a lot of open research issues. The impact of social networks and crowdsourcing platforms on future internet traffic is still unknown. Due to the size of these networks and the human cloud, these platforms will change significantly the internet traffic in a similar manner as Facebook or other social media networks today. Thus, it is an important telecommunications issue to model and analyse these communication platforms and the evolving complex networks, like the dynamics and the growth of social media network and crowdsourcing platforms.

However, the particular services enabled through crowdsourcing or social networking platform will trigger its popularity among users, its application in professional environments, and consequently the impact on the internet and the internet society. The first paper is an invited editorial note from industry for indicating the industrial interests in this topic. Florian Zeiger and Zachos Boufidis discuss in 'Towards future internet services through crowdsourcing-based sensor platforms' how participatory mobile sensor networks can be used for many purposes like air quality monitoring. The objectives to be fulfilled and the necessary capabilities of related sensor platforms are summarised concerning service engineering, data processing, security and privacy.

The state of the art in crowdsourcing is presented by well-known experts in the area of crowdsourcing – Maja Vukovic, Rajarshi Das and Soundar Kumara in the second paper 'From sensing to controlling: the state of the art in ubiquitous crowdsourcing'. The focus is on ubiquitous crowdsourcing being enabled by ubiquitous connectivity and advances in mobile technologies. Emerging crowdsourcing systems are classified according to key challenges and proposed taxonomies. Quality control and incentive modelling are addressed in a framework for performance evaluations. In particular, a set of ubiquitous crowdsourcing applications that engage crowd members for simple, atomic tasks, such as sensing and more complex, problem solving task are considered.

One concrete application for crowdsourcing aims at the concept-directed expansion of search queries. M. Yuvarani, N.Ch.S.N. Iyengar and A. Kannan present a method to find related topics to a user's search query in the third paper 'Improved concept-based query expansion using Wikipedia'. The authors derive related topics by using Wikipedia – being a non-profit crowdsourcing platform – as external knowledgebase and evaluate their approach by tests in a commercial crowdsourcing platform. To this end, they identify Wikipedia articles being of possible importance for the query and aggregate those to abstract concepts to guide the user in his search.

The fourth paper 'Formation and interaction patterns in social crowdsourcing environments' by Daniel Schall proposes a framework how to enable crowdsourcing as a service. The environment is modelled with actors forming a social network based on their interactions. Two formation patterns are presented which allow creating service compositions. In particular, the link mesh based and the social broker approaches are introduced. A prototype implementation of the proposed framework is shown for evaluation.

Beyond the formation and interaction in social networks, other relevant measures describing social networks are the propagation of messages and the social influence. To this end, the fifth paper 'Measuring message propagation and social influence on Twitter.com' by Shaozhi Ye and Felix Wu, a well-recognised expert in social networking research, defines metrics for social influences utilising the number of followers and replies received. Based on measurements in the Twitter network, message propagation and social influence are characterised statistically. Furthermore, challenges encountered when measuring and evaluating these metrics are discussed.

As security and safety play an important role for end-users of social networks, the sixth paper 'On user perception of safety in online social networks' by Charlott Lorentzen, Markus Fiedler and Henric Johnson investigates the amount of security applied in user password for online social networks. In addition their impact on perception of safety and user perceived quality are quantified by means of subjective user studies. The analysis of the interconnection between password prompt response times, felt security and quality of experience shows some interesting insights. For the latter one, the authors provide a model for the relationship between response time and perceived QoE which may serve as guideline when developing security mechanisms for social networks.