



# Proceedings



## ICQT 2013

**8th International Workshop on  
Internet Charging and QoS Technologies**

**Collocated with the 9th International Conference on  
Network and Service Management (CNSM 2013)**

**October 14, 2013  
Zürich, Switzerland**



## *Welcome to ICQT 2013*

Dear Participants of the 8th ICQT 2013!

With the appearance of new technologies and new services, the nature of the economic stakes in the ICT (Information and Communication Technologies) sector is continually evolving. An illustration is the increasing number of providers who base their business models not purely on bandwidth selling but on publicity as well. Following the same tendency, the power relationships have radically changed in the last decade, between the providers offering connectivity, and those managing services and user identities (content providers, cloud computing providers, social networks). While future business models and regulatory frameworks are still under discussion, the design of efficient charging methods for the variety of upcoming network technologies, including fixed networks, wireless access networks, and mobile user support, has become of paramount importance for realizing the economic potential of future convergent architectures and services. The resulting combination of technical and economic perspectives drives many relevant research topics for application developers, business architects, network and service providers, and customers.

Therefore, the 8th International Workshop on Internet Charging and QoS Technologies (ICQT 2013) is devoted to discuss most recent approaches, models, and mechanisms in a highly important research area of network economics. The present proceedings include papers presented at ICQT 2013 - colocated this year with the 8th International Conference on Network and Service Management - taking place on October 14th, 2013 in Zurich, Switzerland, and hosted by University of Zürich.

The identification of novel service charging solutions, the investigation and evaluation of their technical feasibility, and the consolidation of technical and economic mechanisms for enabling a fast, guaranteed, and efficient charging of services is of fundamental importance for the future evolution of the Internet and the telecommunications business. In particular, the economics of inter-domain services and charging strategies for content delivery and Internet access are of utmost urgency. All contributions included in this volume fit perfectly into the general scope of the international ICQT workshop series.

This year's ICQT followed the already established tradition of a vivid workshop series on charging and QoS technology issues, which started back in 2001 with the first ICQT workshop in the framework of the Annual Meeting of the German Society for Computer Science (GI) and the Austrian Computer Society 2001 in Vienna, Austria. In 2002, ICQT was colocated with the QoS 2002 workshop in Zurich, Switzerland, in 2003 with the NGC 2003 workshop in Munich, Germany, and in 2004 again with QoS 2004 in Barcelona, Spain. In 2006, ICQT was hosted by the University Institute of Technology (IUT), St. Malo, France together with ACM SIGMETRICS 2006, and in 2009 by the Rheinisch-Westfälische Technische Hochschule (RWTH) in Aachen, Germany, together with the IFIP Networking conference. In 2011, ICQT was hosted by Paris Descartes University, Paris, France, together with CNSM 2011.

As in the past, ICQT 2013 brought together researchers from the areas of technology and economics in both industry and academia to discuss key advances in these fields. The combination of micro-economic models, auctions, game theory (cooperative and non-cooperative), peer-provided services, QoE influenced charging strategies and content selection, content charging strategies addressed important aspects at the intersection of networking research and business modeling. Thus, ICQT 2013 provided a truly interdisciplinary forum for analysing topics at the overlap of those areas.

Like all of its predecessors, ICQT 2013 consisted of a single-track one-day event, which has proved to be especially suitable for stimulating the interaction among and the active participation of the workshop audience.

In summary, the workshop started with a keynote presentation delivered by Claude de Jacquilot, who is internationally recognized as a distinguished research fellow in the area. Claude de Jacquilot was the former head of the ICT sector at PIDA and now working as an individual expert for the world bank. His talk provides a political view on investments in the telecommunications sector with a focus on African countries. The following two technical sessions, namely Inter-domain Quality of Service and Charging Strategies for Content Delivery session and Internet Access session, include a total of six full papers, which were selected after a thorough review process. The accepted papers represent a right mix of the latest results from both academy, research institutions, and industry.



Furthermore, the editors would like to express their thanks to Peter Reichl for helping in hosting the ICQT 2013 website, and to Christos Tsiaras, the CNSM 2013 webmaster for his excellent work. Special thanks go to the organizers, in particular Burkhard Stiller as general chair, of the CNSM 2013 conference for enabling the colocation of ICQT 2013 with their renowned event, as well as to the local organizers for smooth cooperation and efficient support. Finally, all the editors would like to address their thanks to IEEE Explore for a very smooth cooperation on finalizing these proceedings.

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