QCMan 2016 Preface

Proceedings of the Fourth International IEEE Workshop on Quality of Experience Centric Management

Co-located with the 2016 28th International Teletraffic Congress – The First International Conference in Networking Science & Practice

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(QCMan 2016 Workshop Co-Chairs)

Friday 16th September, 2016
Welcome Message from QCMan 2016 Co-Chairs

The Fourth International IEEE Workshop on Quality of Experience Centric Management (QCMan) will be held in Würzburg, Germany in conjunction with ITC 2016, which is technically co-sponsored by IEEE Communications Society (IEEE ComSoc) and the Information Technology Society within VDE (ITG VDE), and in-cooperation with ACM SIGCOMM. The workshop is supported by the University of Würzburg, RWTH Aachen, AIT Austrian Institute of Technology, and the University of Missouri.

In recent years, the Internet has evolved from a pure packet forwarder to a provider of complex and high demanding services and applications (e.g., video, voice, online gaming, cloud applications). These services and applications are typically managed through a set of Quality of Services parameters (e.g. packet loss, delay, jitter). However, it is widely agreed that the management of these services and applications should be based on their quality as perceived by the end user: the Quality of Experience (QoE). However, this QoE centric management is greatly challenged in today’s Internet by (i) the stringent QoE requirements of the supported services and applications (e.g., timing constraints, loss intolerance) and users (e.g., unpredictability of user behavior, request for high quality services), (ii) the plethora of service consumption possibilities (e.g. for video: live vs. on-demand, managed vs. over-the-top), (iii) the inherent complexity of services and applications which can be offered to users in several ways to reach the same QoE level, and (iv) the difficulty in assessing the quality as perceived by the end user also due to insufficient insight in the psychological and sociological factors of the service and application consumption.

QCMan 2016 aims at providing an international forum for researchers exploring this rapidly evolving domain of QoE Centric Management. Current research aspects are reflected in the technical program of QCMan 2016, which consists of five full and two short paper presentations and is complemented with both a motivating keynote and a panel discussion. The panel discussion focuses on discussing challenges of managing QoE for immersive media-rich applications. The program is further complemented by a keynote entitled “What’s the number? Monitoring IP-based video with standardized QoE models”, given by Alexander Raake, who is a professor and head of the Audiovisual Technology Group at TU Ilmenau. The keynote emphasizes efforts in QoE management by exploring the complete model development cycle - from model creation in user studies over ITU standardization to ISP-level deployment - and its challenges; based on lessons he and his team learned while creating and standardizing the IPTV quality model now recommended by the ITU.

A total of 19 papers were registered, 15 papers were finally submitted and 4 paper were withdrawn. All submitted papers underwent a rigorous review process with 3-4 reviews per paper. Based on these reviews, 5 full papers and 2 short papers were selected for publication, resulting in an acceptance rate of 46.67%.

The technical contribution of these full papers falls within three topic areas. The first area comprises new insights for video streaming techniques. The first paper investigates the current implementation of the YouTube streaming algorithm. Drawbacks of the algorithm are investigated and the optimization potential is quantified using user- and network centric metrics (YouTube Can Do Better: Getting the Most Out of Video Adaptation). More generic insights on the impact of bandwidth fluctuations on the QoE in video streaming are highlighted in the second paper (Impact of Variances on the QoE in Video Streaming).
In the second area, application-awareness and application-network interaction are discussed. The first paper provides insights into cloud service placement and the impact of the network design on the QoE. Further, a mechanisms based on application-aware network infrastructure clustering is proposed and investigated (Application-Aware Infrastructure Clustering for Cloud Service Placement to Enhance User QoE). A generic approach for comparing application-network interaction mechanisms is presented in the second paper (Towards a Framework for Comparing Application-Network Interaction Mechanisms).

The third area features a paper on new QoE management solution taking personal aspects of QoE into account. Based on multi-agent technology a personalized QoE management is proposed.

Both short papers provide new insights into the impact of delays on the user perceived application quality in the context of two fundamentally different application types. The first short paper considers an online gaming use case of Minecraft, and provides an assessment of the impact of network latency on the QoE of casual gamers (Insensitivity to Network Delay: Minecraft Gaming Experience of Casual Gamers). The second short paper considers an enterprise environment use case within a SAP system, and features a correlation of response times and subjective user ratings on the perceived application performance using machine learning (Correlating QoE and Technical Parameters of an SAP System in an Enterprise Environments).

Last but not least, we would like to take the opportunity to thank a number of people whose hard work and commitment were essential to the success of this workshop. First and foremost, we would like to thank the authors of submitted papers for their hard work in compiling their submissions. Second, we would also like to express our gratitude to the Technical Program Committee for their effort and solid work in all phases of the workshop preparation and the Steering Committee of the QCMan workshop series. Third, we express our sincere appreciation to the organizers of ITC 28 in Würzburg, in particular Phuoc Tran-Gia and his team at the University of Würzburg, and Tobias Hossfeld, University of Duisburg-Essen, Germany. Furthermore, we thank Christopher Metter for his technical support.

We hope that our program will provide you with inspiring ideas and thoughtfully presented solutions. To further enrich the experience, we would like to encourage the workshop attendees to actively participate during the sessions.

QCMan 2016 Workshop Co-Chairs

Thomas Zinner, University of Würzburg, Germany
Oliver Hohlfeld, RWTH Aachen, Germany
Raimund Schatz, AIT Wien, Austria
Prasad Calyam, University of Missouri, USA

September 2016
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2016 International Workshop on Quality of Experience Centric Management (QCMaN)

Friday 16th September, 2016

09:00 – 10:00 **Keynote** by Alexander Raake (TU Ilmenau, Germany)
*What's the Number? Monitoring IP-based Video with Standardized QoE Models*

10:00 – 10:30 **Multi-Agent Systems for Personalized QoE-Management** by Amro Najjar; Xavier Serpaggi; Christophe Gravier; Olivier Boissier

10:30 – 11:00 Coffee Break

11:00 – 12:30 **YouTube Can Do Better: Getting the Most Out of Video Adaptation** by Christian Moldovan; Christian Sieber; Poul Heegaard; Wolfgang Kellerer; Tobias Hoßfeld
*Towards a Framework for Comparing Application-Network Interaction Mechanisms* by Susanna Schwarzmann; Thomas Zinner; Ognjen Dobrijević
*Impact of Variances on the QoE in Video Streaming* by Christian Moldovan; Tobias Hoßfeld

12:30 – 13:30 Lunch

13:30 – 14:00 **Application-Aware Infrastructure Clustering for Cloud Service Placement to Enhance User QoE** by Dmitrii Chemodanov; Prasad Calyam

14:00 – 14:40 **Short Paper: Insensitivity to Network Delay: Minecraft Gaming Experience of Casual Gamers** by Oliver Hohlfeld; Hannes Fiedler; Enric Pujol; Dennis Guse
*Short Paper: Correlating QoE and Technical Parameters of an SAP System in an Enterprise Environment* by Kathrin Borchert; Matthias Hirth; Thomas Zinner; Decebal Constantin Mocanu

14:40 – 15:00 Coffee Break

15:00 – 16:00 **Panel: What Are Challenges in Managing the QoE of the Upcoming Wave of Immersive Media-rich Applications?**

16:00 – 16:15 Closing
ITC 28 Sponsors

The International Advisory Committee (IAC) of the ITC has decided to offer a number of travel grants that will be available to support full-time students for attending ITC 28. The IAC financially supports three prestigious awards for ITC 28: Best Paper Award, Best Student Paper Award, Best Demo Award.

Technical Sponsors

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