



ABCDE



Scientific Report

First name / Family name

Katrien De Moor

Nationality

Belgian

Name of the *Host Organisation*

NTNU

First Name / family name
of the *Scientific Coordinator*

Poul Heegaard

Period of the fellowship

01/04/2013 to 31/03/2014



I – SCIENTIFIC ACTIVITY DURING YOUR FELLOWSHIP

My scientific activities during my fellowship period at the Department of Telematics of the Norwegian University of Science and Technology were situated in the domain of user-centered Quality of Experience and its link to Quality of Service.

The first objective was to deepen the understanding of QoE from a user perspective, both from a theoretical and empirical perspective, by zooming in on features of QoE and relevant influence factors at the human, system and context level. Several subjective studies were set up and conducted during the fellowship period, considering QoE in the context of different application domains (including Internet Protocol Television, adaptive video streaming, cloud storage services,...). Especially the work on adaptive video streaming, took place in close collaboration with people from the host institution. In my scientific activities, particular attention went out to the theoretical and methodological implications of the new definition of QoE, which was developed within the scope of the COST IC1003 Qualinet project. Research was conducted both in and beyond controlled lab settings and the extension of the traditional subjective measures of QoE with alternative, explicit and subjective measures (e.g., self-reported indications of delight, annoyance, engagement, ...) as well as more implicit and more objective measures (e.g., behavioral and physiological measures), was one of major topics under investigation during the fellowship period.

A second objective was to foster knowledge exchange, to explore opportunities for future collaboration, to actively participate and engage in discussions within the host institution, in the international research community on QoE and non-academic stakeholders with an interest in QoE. To accomplish this goal, I participated in and presented my work at various events (conferences, workshops,...) and in the context of the REP visits. I also pro-actively sought to extend my professional network, continued my active engagements within the COST IC1003 Qualinet action, invested time in the co-organization of discussion events (e.g., collaboration workshop at VTT during my first REP visit, special session at QoMEX 2013, online meetings in the context of the Qualinet Task Force on emotions,...), etcetera. I also actively contributed as co-organizer to the proposal of a new Dagstuhl seminar on ‘Quality of Experience: from assessment to application’ (following the events from 2009 and 2012), which was recently accepted and which will take place in January 2015 in Schloss Dagstuhl, Germany.

Finally, linked to the second objective, the third objective was to valorize a number of previous research activities and to disseminate the results from the research activities that took place during the fellowship period (as listed above) through various channels. A detailed overview of these dissemination activities can be found in sections II and III of this report.



II – PUBLICATION(S) DURING YOUR FELLOWSHIP

Contributions published in international, peer-reviewed journals and books

1. **De Moor, K.**, Saritas, O., Schuurman, D., Claeys, L., De Marez, L. (2014). Towards innovation foresight: two empirical case studies on future TV experiences for/by users. *Futures: The journal of policy, planning and futures studies*, 10.1016/j.futures.2014.01.009
2. Wechsung, I. and **De Moor, K.** (2014, in press). *Quality of Experience vs. User Experience*, in S. Möller, A. Raake (eds.) *Quality of Experience: Advanced Concepts, Applications and Methods*, Berlin: Springer.
3. Reiter, U., Brunnström, K., **De Moor, K.** Larabi, M.-C., Pereira, M., Pinheiro, A., You, J. and Zgank, A. (2014, in press), *Factors Influencing Quality of Experience*. in S. Möller, A. Raake (eds.) *Quality of Experience: Advanced Concepts, Applications and Methods*, Berlin: Springer.

Contributions published at conferences

4. **De Moor, K.**, Mazza, F., Hupont, I., et al. (2014). Chamber QoE – A Multi-Instrumental Approach to Explore Affective Aspects in relation to QoE. Proc. of IS&T/SPIE Electronic Imaging, 2014, San Francisco
5. Villa, B.J., **De Moor, K.**, Heegaard, P.E., Instefjord, A. (2013). *Investigating Quality of Experience in the context of adaptive video streaming: findings from an experimental user study*. Norsk informatikkonferanse NIK 2013, Universitetet i Stavanger, 18. - 20.november 2013. Akademika forlag 2013 ISBN 978-82-321-0365-2. p. 122-133.
6. Amrehn, P., Vandenbroucke, K., Hossfeld, T., **De Moor, K.**, Hirth, M., Schatz, R., Casas, P. (2013). Need for Speed? On Quality of Experience for Cloud-based File Storage Services. *Proceedings of The Fourth Workshop on Perceptual Quality of Systems (PQS 2013)*. FTW-TECHREPORT-128. Vienna: FTW 2013 p. 184-190.
7. **De Moor, K.**, Ríos Quintero, M., Strohmeier, D., Raake, A. (2013). Evaluating QoE by means of traditional and alternative subjective measures: an exploratory 'living room lab' study on IPTV. *Proceedings of The Fourth Workshop on Perceptual Quality of Systems (PQS 2013)*. FTW-TECHREPORT-128. Vienna: FTW 2013 p. 11-16.
8. Vandenbroucke, K., **De Moor, K.**, De Marez, L. (2013). Use- and QoE-related aspects of personal cloud applications: An exploratory survey. *Fifth International Workshop on Quality of Multimedia Experience (QoMEX 2013)*. IEEE conference proceedings 2013 ISBN 978-1-4799-0738-0. p. 36-37.

Contributions under review / in preparation

- Varela, M., Skorin-Kapov, L., **De Moor, K.** and Reichl, P. (under review). *QoE – defining service quality from the user's perspective*. Invited chapter for 'Multimedia Quality of Experience (QoE): current status and future requirements. Editors: Wen Chen, C., Chatzimisios, P., Dagiuklas, T. and Atzori, L., Publisher: Wiley and sons.
- Vandenbroucke, K., Gonçalves, J., **De Moor, K.**, Ferreira, D., Kostakos, V. (in review). *Mobile Cloud Storage: a contextual experience*. Submitted to MobileHCI 2014.
- Varela, M., Hupont, I., **De Moor, K.**, Mazza, F., Ríos Quintero, M. and Mazza, T. (in preparation). 'What are you looking at?' *Linking gaze behavior to error saliency and*



affective cues of QoE. To be submitted to QoMex 2014 (special session on Quantitative QoE Assessment: Augmenting Psychophysical Experiments with Psychophysiological Measurements).

III – ATTENDED SEMINARS, WORKHOPS, CONFERENCES

- 19.04.2013 and 22.11.2013, presentations at the lunch colloquium of the Department of Telematics, NTNU.
- 07.05.2013, Presentation at and co-organization of brainstorming workshop “*Building bridges between QoE and Affective computing*”, VTT, Oulu, Finland (organized during the first REP visit).
- 13.05.2013, Presentation at University of Oulu, Department of Computer Science and Engineering (Community Imaging Group)(during first REP visit).
- 31.05.2013, Presentation at Colloquium of the Signal Processing Group, IET-NTNU.
- IEEE ICC 2013, Budapest, Hungary. Invited speaker at the panel “*Quality of End User Experience (QoE) for Network Services: “Are we really measuring the right things?”*” (10.06.2013).
- 27-28.06.2013, Participation in the RIF 2030 (Research and Innovation Futures 2030, <http://www.rif2030.eu/>) Stakeholder Strategic Workshop: Defining Strategies for Action and Areas of Cooperation University of Manchester.
- 03.06.2013, Invited talk at Telenor research, Trondheim.
- 05.07.2013, Co-organizer of special session at the Fifth International Workshop on Quality of Multimedia Experience (QoMEX 2013) on “*Affect and physiology in QoE research*” (<http://www.qomex2013.org/2013/01/special-session-affect-and-physiology-in-qoe-research/>), Klagenfurt, Austria.
- Participation (with two presentations and one chaired session) in 4th International Workshop on Perceptual Quality of Systems (PQS 2013), 2-4.09.2013, Vienna, Austria (<http://pqs.ftw.at/>).
- 21-24.09.2013, Guest lecture and tutoring at Qualinet summer school, Patras, Greece (<https://sites.google.com/site/qualinetsummerschool2013/>).
- 25-27.09.2013, Active participation in 6th general meeting of the COST IC1003 Action QUALINET, with reporting on activities in Task Force Emotional State as TF leader and 2 other presentations.
- Autumn semester 2013, Norwegian for beginners, level 1 (at NTNU)
- 31.10-01.11.2013 Participation in the third ERCIM Fellow seminar, Athens, Greece.
- 18-20.11.2013 Participation (with paper presentation) in the Norsk Informatikkonferanse (NIK) 2013, Stavanger, Norway.
- 13.12.2013 Attendance of workshop on ‘Systematic Reviews and Evidence Synthesis of Qualitative Research’, organized by Daniela Cruzes and Tore Dybå, SINTEF,



Trondheim, Norway.

- 10.01.2014, Invited talk at Tekna Teleforum 2014, Trondheim.
- 16.01.2014, Invited talk at Telenor research workshop, Trondheim.
- Participation (with paper presentation) in IS&T/SPIE Electronic Imaging, 2-6.02.2014, San Francisco.
- 03.03.2014, Presentation at SICS-ACREO-Swedish ICT, Stockholm (during second REP visit).
- 07.03.2014, Invited talk at Millicom Digital Ventures, Stockholm (during second REP visit).
- 24-26.03.2014, Active participation to the 7th general meeting of the COSTIC1003 Action QUALINET, with reporting on activities in Task Force Emotional State as TF leader.
- Ongoing: Norwegian for beginners, level 2 (at NTNU).

IV – RESEARCH EXCHANGE PROGRAMME (REP)

The **first REP visit** took place at VTT, Oulu. I visited the Quality of Service Technologies team, part of the Network Technologies Centre (28.04-14.05.2013). The host for the visit was dr. Martin Varela, principal scientist. During the visit, we organized a collaboration workshop on affective factors in QoE research (8-9/05/2013), aimed at exchanging research ideas, proposing joint studies / publications, kick-starting ideas for project proposals related to the topics of the workshop. In addition, a subjective experiment was conducted, which resulted so far in one joint publication (paper 4 in the overview above). I also gave a presentation at the Department of Computer Science and Engineering, University of Oulu and some further joint activities are planned, both with dr. Varela and his team and the team from the University of Oulu (main contact: dr. Denzil Ferreira).

The **second REP visit** took place at the Swedish Institute of Computer Science (SICS) and ACREO, both part of the Swedish ICT consortium and located in Kista, Sweden (24.02-09.03.2014). The main contacts were dr. Bengt Ahlgren (SICS) and prof. Kjell Brunnström (ACREO). During the research stay, we were working on the preparation of a joint subjective experiment, which is planned for spring 2014. I gave a presentation to introduce myself and my work and was able to meet and discuss with many people, not limited to people from SICS and ACREO. During the second week, I was able to visit the UX and Multimedia Technologies labs at Ericsson Research and was invited to give a presentation at Millicom Digital Ventures, Stockholm.

I experienced both REP visits as very enriching and productive and I am convinced that they will lead to further joint collaborations.