



A Context-Adaptive Content Ecosystem Under Uncertainty

D6.4

Final Project Dissemination and Exploitation Report

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Abstract:

The CONCERT project has been extended into the fourth year; the actual duration of the extended work differed for the partners, due to different budget constraints. Due to the extension, the project added a deliverable D6.3 “Year 3 Project Dissemination Report” in 2017 and moved the original D6.3 to this report, D6.4 “Final Project Dissemination and Exploitation Report”, delivered at the end of the project.

This deliverable gives an overview of dissemination material produced and activities undertaken (exhaustive list of all the papers, presentations, publications and demonstrations published or performed) within the final year of the CONCERT project. In addition, it lists the partners’ efforts to exploit, and follow up on, the results of the project.

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1 Introduction

This deliverable documents the dissemination activities of CONCERT and further exploitation of the project results.

During the fourth year, the CONCERT project and project partners published xx peer-reviewed publications in conference proceedings or journals.

Also, the third MuSIC workshop (Multimedia Streaming in Information-/Content-Centric Networks) was held in 2017, in conjunction with IEEE ICME 2017 in Hong Kong.

Furthermore, the CONCERT project participated in the CHIST-ERA 2017 event in Brussels, Belgium.

Besides publications, CONCERT led to a number of exploitation/follow-up activities, mainly further projects and project proposals.

2 Publications, Press, and Standardisation

2.1 Scientific Publications

The following publications (9 journal articles, 6 conference/workshop papers) related to the CONCERT project were produced and published by the project consortium in the fourth year:

- P.1** Chang Ge, Ning Wang, Wei Koong Chai, Richard Bradbury and Hermann Hellwagner, “QoE-Assured 4K HTTP Live Streaming via Transient Segment Holding at Mobile Edge”, *IEEE Journal on Selected Areas in Communications*, Accepted for publication.
- P.2** Stefano D’Aronco and Pascal Frossard, “Online Resource Inference in Network Utility Maximization Problems”, *IEEE Transactions on Network Science and Engineering*, Accepted for publication.
- P.3** Binxu Yang, Wei Koong Chai, Zichuan Xu, Konstantinos V. Katsaros and George Pavlou, “Cost-Efficient NFV-Enabled Mobile Edge-Cloud for Low Latency Mobile Applications”, *IEEE Transactions on Network and Service Management*, vol. 15, issue 1, pp. 475-488, March 2018.
- P.4** Truong Khoa Phan, David Griffin, Elisa Maini and Miguel Rio, “Utility-centric Networking: Balancing Transit Costs with Quality of Experience”, *IEEE/ACM Transactions on Networking*, vol. 26, issue 1, pp. 245-258, Feb. 2018.
- P.5** Peng Qian, Ning Wang and Rahim Tafazolli, “Achieving Robust Mobile Web Content Delivery Performance Based on Multiple Coordinated QUIC Connections”, *IEEE Access*, vol. 6, pp. 11313-11328, Feb. 2018.
- P.6** Chang Ge, Ning Wang, Gerry Foster and Mick Wilson, “Towards QoE-assured 4K Video-on-Demand Delivery through Mobile Edge Virtualization with Adaptive Prefetching”, *IEEE Transactions on Multimedia*, vol. 19, no. 10, pp. 2222-2237, Oct. 2017 (featured in *IEEE ComSoc Technology News* in October 2017).
- P.7** Wei Koong Chai, “Modelling Spreading Process Induced by Agent Mobility in Complex Networks”, *IEEE Transactions on Network Science and Engineering*, <https://doi.org/10.1109/TNSE.2017.2764523>, Oct. 2017 (published online).
- P.8** Xu Zhang, Ning Wang, Yue Cao, Linyu Peng and Haining Meng, “A Stochastic Analytical Modelling Framework on ISP-P2P Collaborations in Multi-domain Environments”, *IEEE Systems Journal*, <https://doi.org/10.1109/JSYST.2017.2725914>, Aug. 2017 (published online).
- P.9** Stefano D’Aronco, Sergio Mena and Pascal Frossard, “Distributed rate allocation in switch-based multiparty videoconferencing system”, *ACM Transactions on Multimedia Computing, Communications, and Applications (TOMM)*, vol. 13, issue 3s, Aug. 2017.
- P.10** Jian Li, Truong Khoa Phan, Wei Koong Chai, Daphne Tuncer, George Pavlou, David Griffin and Miguel Rio, “DR-Cache: Distributed Resilient Caching with Latency Guarantees”, *Proceedings of the IEEE International Conference on Computer Communications (INFOCOM)*, Honolulu, USA, April 2018.

- P.11** Onur Ascigil, Truong Khoa Phan, Argyrios G. Tasiopoulos, Vasilis Sourlas, Ioannis Psaras and George Pavlou, “On Uncoordinated Service Placement in Edge-Clouds”, Proceedings of the IEEE International Conference on Cloud Computing Technology and Science (CloudCom), Hong Kong, Dec. 2017.
- P.12** Wei Koong Chai, Vasilis Sourlas and George Pavlou, “Providing Information Resilience through Modularity-based Caching in Perturbed Information-Centric Networks”, Proceedings of the 29th IEEE/ACM International Teletraffic Congress (ITC), Genoa, Italy, Sept. 2017.
- P.13** Philipp Moll, Sebastian Theuermann and Hermann Hellwagner, “Persistent Interests in Named Data Networking”, 4th Workshop Research Advancements in Future Internet Architectures (RAFNET), in conjunction with IEEE VTC2018-Spring, Porto, Portugal, June 2018 (to appear).
- P.14** Philipp Moll, Julian Janda and Hermann Hellwagner, “Adaptive Forwarding of Persistent Interests in Named Data Networking”, Proceedings of the 4th ACM Conference on Information-Centric Networking (ICN) 2017, Berlin, Germany, Sept. 2017.
- P.15** Philipp Moll, Daniel Posch and Hermann Hellwagner, “Investigation of Push-based Traffic for Conversational Services in Named Data Networking”, Proceedings of the IEEE International Conference on Multimedia and Expo Workshops (ICMEW) 2017, Hong Kong, July 2017.

3 Events

In the fourth year of the CONCERT project, the consortium was again active in organising and attending events, especially those that match the project's domain and goals. The third MuSIC workshop was held at the IEEE ICME 2017 conference. Furthermore, the consortium mainly attended international events directly related to the research conducted during the fourth year of the project.

3.1 Organised Event

The project consortium organised a workshop at the IEEE International Conference on Multimedia and Expo (ICME) 2017 in Hong Kong on July 10, 2017 (<http://music2017.itec.aau.at/>). The workshop entitled *Multimedia Streaming in Information-/Content-Centric Networks (MuSIC)*, the third in a series initiated by the project, provided researchers in the field of Information-/Content-Centric Networks (ICN/CCN) a platform for presenting novel research with a focus on improving and enabling efficient multimedia streaming in ICN/CCN and for strengthening the communication and interaction between ICN/CCN and multimedia systems researchers.

3.2 Attended Events and Demonstrations

One paper resulting from the CONCERT project's work was presented at the third MuSIC workshop (publication **P.15**).

In addition, project researchers attended the conferences at which their papers and presentations were accepted.

The MEC (multi-access edge computing) based video content delivery scheme developed by UniS (see publication **P.6**) was demonstrated at the Mobile World Congress (MWC) in February 2018, the world's largest exhibition event on mobile network technologies.

In addition, the technology has been specifically demonstrated to various audiences for more than 40 times, including UK/oversea government officials (e.g., China's Vice Premier, UK national technology advisor, UK Secretary of Digital, Culture, Media and Sports (DCMS)) as well as executive members of industry (British Telecom, Vodafone, O2, CableLabs, Fujitsu etc.).

3.3 Participation in CHIST-ERA Event

Several CONCERT partners participated in the CHIST-ERA Projects Seminar in Brussels, Belgium, March 21-23, 2017.

3.4 Media Event

The MEC (multi-access edge computing) based video content delivery scheme developed by UniS (see publication **P.6**) featured in the IEEE Communication Society Technology News in September 2017 (<https://www.comsoc.org/ctn/quality-experience-mobile-video-using-smart-edge>) as a piece of "interesting, timely and newsworthy" research achievement.

4 Exploitation

The MEC (multi-access edge computing) based video content delivery scheme developed by the University of Surrey’s 5G Innovation Centre (see publication **P.6**) was successfully demonstrated multiple times to important audiences; cf. Sect. 3.

AAU’s study on an “intelligent cache control agent” driven by declarative knowledge representation and reasoning (i.e., an Answer Set Program, ASP) – cf. publications **P.14** and **P.17** in D6.3 “Year 3 Project Dissemination Report” – was taken further into an applied-research Austrian project proposal. The proposal was accepted, the project started in November 2017. The work is performed in collaboration with AI experts at AAU and TU Wien and with several industry partners and is planned to solve dynamic configuration problems in networking contexts.

AAU also transferred some of the project results into an H2020-ICT-2018-2020 project proposal. Furthermore, AAU is transferring CONCERT findings and results into joint projects with the AAU spin-off company BITMOVIN (<https://bitmovin.com/>).