

MANAGEMENT CHALLENGES OF SELF-ORGANIZING NETWORKS

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Femtocell deployments have started with a goal to enable mobile broadband services with data rates of up to and exceeding 1 Gbps. This is very challenging task in residential and enterprise environments where the macrocell coverage is very weak or without any coverage at all. Thus, a network densification (introduction of smallcells or femtocell technology) has been proposed to cope with this problem but network management and control remains an open issue. The Broadband Forum with support from 3GPP has defined technical specification (TR-) 069 and TR-196i for 3G while TR-196i2 for 4G LTE femtocell configuration and management. 3GPP has introduced self-organizing network (SON) technical specifications (use cases) and recently, more advanced features, such as self-healing and self-optimization capabilities into LTE. This talk is trying to show SON perspectives with respect to both mobile users as well as to network operators. Several SON architectures in multi-layer network deployments are investigated.

Haris Gačanin received his Dipl.-Ing. degree in Electrical engineering from the Faculty of Electrical Engineering, University of Sarajevo in 2000. He received his M.E.E. and Ph.D.E.E. from Graduate School of Electrical Engineering, Tohoku University, Japan, in 2005 and 2008, respectively. Since April 2008 until May 2010 he has been working first as Japan Society for Promotion of Science (JSPS) postdoctoral research fellow and then as an Assistant Professor at Graduate School of Engineering, Tohoku University. In June 2010 he joined Alcatel-Lucent Bell in Antwerp, Belgium. His professional interest is to develop, lead and motivate the activities of real and virtual multinational research and development teams with strong emphasis on product/solution development through applied research projects. Advanced signal processing and algorithms with focus on mobile/wireless and wireline physical (L1) and media access (L2) layer technologies and network architectures. In particular, in-house broadband technology, L1/L2 management/diagnostics, wireless network coding, channel estimation and equalization, cognitive radio, MIMO, wireless sensor networks, dynamic resource allocation, iterative

receivers, channel coding and hybrid ARQ, peak-to-average power reduction, cooperative relaying, communication theory, xDSL and gigabit PON identification. In these areas he has published 100 scientific publications (journals, conferences and patent applications).

He is senior member of The Institute of Electrical and Electronics Engineers (IEEE) and The Institute of Electronics, Information and Communication Engineering (IEICE). Currently, he is a chair of IEICE Europe Section. He was acting as a chair, review and technical program committee member of various technical journals and conferences. He is a recipient of the 2010 KDDI Foundation Research Grant Award, the 2008 Japan Society for Promotion of Science (JSPS) Postdoctoral Fellowships for Foreign Researchers, the 2005 Active Research Award in Radio Communications, 2005 Vehicular Technology Conference (VTC 2005-Fall) Student Paper Award from IEEE VTS Japan Chapter and the 2004 Institute of IEICE Society Young Researcher Award. He was awarded by Japanese Government (MEXT) Research Scholarship in 2002.