



**2009 Joint Workshop on
'Cognitive Wireless Networks and Systems - Cognitive Radio Networking'
Held in conjunction with
IEEE ICC 2009
14 June 2009 Dresden, Germany**

:: Important Dates :: Latest News

Full papers due: 1
November 2008, 11:59 PM
EDT (EDAS time)
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notification:** 16 January
2009
Camera ready version:
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1. **10 July 2008:** IEEE 2009 Joint Workshop on 'Cognitive Wireless Networks and Systems - Cognitive Radio Networking' proposal has been accepted by the IEEE ICC 2009 Organizing Committee
2. **15 May 2008:** Proposal for ICC 2009 Workshop on 'Cognitive Wireless Networks and Systems' submitted to workshop co-chairs

**:: Contact
Information**

Panagiotis Demestichas
University of Piraeus
Department of Technology
Education and Digital
Systems
Karaoli & Dimitriou 80,
PS:185 34 Piraeus, Greece
Phone: +30 210 4142758
Fax: +30 210 4142744
E-mail: pdemest@unipi.gr,
dpetroma@unipi.gr
WWW: www.ieee-
cogwinets.org

**:: Call for Papers
[PDF]**

**:: Organizing
Committee**

**Prof. Panagiotis
Demestichas,**
University of Piraeus,
Greece
Dr. Matthias Siebert,
Deutsche Telekom/T-
Systems, Germany
Dr. Didier Bourse,
Motorola, France
Prof. Victor Leung,
University of British
Columbia, U.S.A.
Dr. Hiroshi Harada,
National Institute of
Information and
Communications
Technology, Japan
Ignas Niemegeers,

:: Scope of the Workshop

The International Joint Workshop 'Cognitive Wireless Networks and Systems - Cognitive Radio Networking' is the juxtaposition of many initiatives, from around the world, which strive in parallel to contribute to the development of cognitive networking technologies, and wireless communications and networks. The Workshop provides a forum for discussion of all these developments, bringing together industry and academia, engineers, scientists and researchers. The discussions will cover achievements and open issues in research, standards, regulation, business models and products. The attribution of cognition in the wireless world is one of the most exciting areas in modern telecommunications. Targets are to increase efficiency and to address the complexity in the wireless world. Technical approach includes the development of intelligent management functionality and reconfigurable infrastructure. Reconfigurable infrastructures cover terminals, devices, access points and fixed-network elements. Management includes context acquisition mechanisms, decision making strategies and decision enforcements means.

Moreover, the incomparable evolution of wireless communications is reflected in the tremendous investments on research and development, targeted at the continuous introduction of innovations that could serve the information society. This has led to the coexistence and complementary exploitation of versatile, legacy and also emerging Radio Access Technologies (RATs), such as wireless wide area networking technologies (WWANs), which include 2G/2.5G/3G mobile communications, the IEEE 802.16 suite, WiMAX and broadcasting technologies, and wireless short range networks (WShRNs), which include wireless local/personal area networks (WLANs/WPANs), as well as wireless sensor networks (WSNs).

The evolution of wireless access networks is most commonly referred to as B3G (Beyond the 3rd Generation) systems. In the B3G era, network operators (NOs) will have to address increased complexity. Complexity derives from the inevitable heterogeneity of the network and terminal infrastructure,

Delft University of
Technology, the
Netherlands

Joseph Evans,
University of Kansas, USA
Przemyslaw Pawelczak,
Delft University of
Technology, the
Netherlands

R. Venkatesha Prasad,
Delft University of
Technology, the
Netherlands

Petri Mahonen,
RWTH Aachen, Germany
Ingo Gaspard,
Deutsche Telekom/T-
Systems, Germany

:: Technical Program Committee

Agusti Ramon,
Universitat Politècnica de
Catalunya, Spain

Altintas Onur,
Toyota InfoTechnology
Center, Japan

Berlemann Lars,
Swisscom Innovations,
Switzerland

Buddhikot Milind,
Lucent Technologies, USA

Buljore Soodesh,
Motorola Labs, Paris,
France

Buracchini Enrico,
Telecom Italia, Italy

Cesana Matteo,
Politecnico di Milano, Italy

Chandramouli R.,
Stevens Institute of
Technology, USA

Chapin John, Vanu,
Inc., USA

Chattarjee Mainak,
University of Central
Florida, USA

Chunsheng Xin,
Norfolk State University,
USA

DaSilva Luiz,
Virginia Tech, USA

de Graaf Hugo,
Twente Institute for
Wireless and Mobile
Communications, the
Netherlands

Doerr Christian,
University of Colorado

Doyle Linda,
Trinity College, Dublin,
Ireland

Einsiedler Hans,
Deutsche Telekom
Laboratories, Germany

Evans Joseph B.,
University of Kansas, USA

Feng Zhiyong,
Beijing University of Posts

business model aspects and application areas. To meet these objectives, NOs have to deploy complex network topologies of heterogeneous nature. The different RATs will have to co-exist, and be complementarily exploited. Since different RATs have different capabilities, in terms of capacity, coverage, mobility support, cost, etc, each RAT is best suited for handling certain situations. In this respect, a NO will have to rely on different RATs for raising the customer satisfaction, and achieving the required Quality of Service (QoS) levels, in a cost-effective manner. QoS refers to performance, availability, reliability, as well as security/safety.

The aspects identified above motivate the introduction of cognitive systems in wireless B3G infrastructures. Specifically, an option for meeting the requirements and the resulting complexity is to attribute the wireless B3G infrastructures with 'cognitive network' capabilities. In general, cognitive systems determine their behaviour, in a reactive or proactive manner, based on the external stimuli (environment aspects), as well as their goals, principles, capabilities, experience and knowledge. In the case of cognitive networks, this definition can be translated as the ability to dynamically select the network's configuration, through self-management functionality that reaches optimal decisions, taking into account the context of operation (environment requirements and characteristics), goals and policies (corresponding to principles), profiles (corresponding to capabilities), and machine learning (for managing and exploiting knowledge and experience).

In response to the above, the objectives of this Workshop, accordingly, are to provide:

:: The motivation for the development of cognitive networking technologies;

:: The specification of novel, intelligent management functionality applicable in cognitive network segments, access points and wireless terminals.

:: Topics of Interest

:: Context management, sensing, reasoning and context acquisition

:: Policy based management of B3G wireless infrastructures

:: Collaborative radio resource, spectrum, power management, resource optimisation

:: Autonomic computing, self-x functionalities for cognitive elements and terminals for managing elements of wireless infrastructures

:: Flexible spectrum management

:: Negotiation strategies

:: Profiles of user applications, elements, learning user preferences

:: Pilot channels, radio enablers in support of cognitive infrastructures

:: Cognitive 2.5G/3G/3.5G, wireless wide area infrastructures

:: Cognition in short range networks, mesh topologies

:: Cognitive radio devices, enablers

:: Reconfigurable elements, evolution from software defined radio to cognitive infrastructures

:: Demonstrations and Proof of Concept of reconfigurable and cognitive infrastructures.

:: Business models for cognitive infrastructures.

:: Standardisation and regulation aspects

:: Evolution from reconfigurable networks towards cognitive networks

:: Applications of cognitive wireless networks

:: Initial experiences with cognitive radio pilot implementations

:: Architectures for hardware and software defined cognitive radio

:: Regulatory policies for non-centralized spectrum management

and Telecommunications, :: Enforcement of policies for cognitive radio devices
 China :: Pricing and billing for cognitive radio devices
Gao Deyun, :: Authorization and authentication of cognitive radio devices
 Beijing Jiaotong University, :: Novel dynamic/opportunistic spectrum access techniques
 China :: Cross-layer optimization of cognitive radio wireless
Gorg Carmelita, networking
 University of Bremen, :: End-to-End modelling of cognitive radio wireless networking
 Germany :: Security of cognitive radio wireless networking
Grandblaise David, :: Signal processing for cognitive radio wireless networking
 Motorola, France

:: Workshop Programme

The workshop will be a full day workshop. The joint workshop will be composed of

- three technical sessions
- panel sessions
- poster session.

The workshop will favor the inclusion of very strong papers, which should also offer the opportunity for discussions and debates on hot-topics.

Papers on problem areas requiring inter-disciplinary approaches are envisaged, as well as papers related to standardization activities and major research initiatives.

It is expected that an annual IEEE TCCN meeting will ne hosted as part of the workshop.

:: Submission Guidelines and Registration

All the information are available at [IEEE ICC 2009 Workshop Papers Submission Page](#).

Han Zhu,
 Boise State University,
 U.S.A.
Hari K.V.S,
 Indian Institute of Science,
 Bangalore, India
Hekmat Ramin,
 Delft University of
 Technology, the
 Netherlands
**Hemstra de Groot
 Sonia,**
 Delft University of
 Technology, the
 Netherlands
Hoffmeyer James,
 Western Telecom
 Consultants, USA
Hossain Ekram,
 University of Manitoba,
 Canada
Houze Paul,
 France Telecom, France
Janssen Gerard,
 Delft University of
 Technology, the
 Netherlands
Jeux Sebastien,
 France Telecom, France
Jondral Friedrich,
 Universitat Karlsruhe,
 Germany
**Krishnamachari
 Bhaskar,**
 University of Southern
 California, USA
Kuhn Edgar,
 Alcatel Lucent, Germany
Liu Xin,
 University of California,
 Davis, USA
Ma Liangping,
 Argon ST, Inc., USA
MacKenzie Allen B.,
 Virginia Tech, USA
Mahonen Petri,
 RWTH Aachen, Germany
Mange Genevieve,
 Alcatel Lucent, Germany
Mangold Stefan,
 Swisscom Innovations,
 Switzerland
Marcus Michael,
 Marcus Spectrum
 Solutions, USA
Melodia Tommaso,
 State University of New
 York at Buffalo, USA
Misic Jelena,
 Manitoba, Canada
Misic Vojislav,

Manitoba, Canada

Mitola Joseph,

MITRE, USA

Moessner Klaus,

University of Surrey, UK

Muck Marcus,

Infineon, Munich, Germany

Munoz Luis,

University of Cantabria,

Spain

Muralishankar R.,

PES Institute of

Technology, Bangalore,

India

Niemegeers Ignas,

Delft University of

Technology, the

Netherlands

Nolan Keith,

Trinity College, Dublin,

Ireland

Pawelczak Przemyslaw,

Delft University of

Technology, the

Netherlands

Pollin Sofie,

University of California,

Berkeley, USA

Prasad R. Venkatesha,

Delft University of

Technology, the

Netherlands

Reed Jeff,

Virginia Tech, USA

Rondeau Tom,

Virginia Tech, USA

Rosenberger Manfred,

T-Systems, Germany

Shen Chien-Chung,

University of Delaware,

USA

Solana Beatriz,

Telefonica, Spain

Stavroulaki Vera,

University of Piraeus,

Greece

Steer David,

Nortel Networks, Canada

Stuckmann Peter,

European Commission,

Belgium

Subbalakshmi K.P.,

Stevens Institute of

Technology, USA

Thilakawardana

Duminda,

University of Surrey, UK

Thompson John,

University of Edinburgh,

UK

Tiemann Jens,

FOKUS Fraunhofer,

Germany

Tran-Gia Phuoc,

University of Wuerzburg,

Germany

Trogolo Alessandro,

Telecom Italia, Italy

Tsagkaris Kostas,

University of Piraeus,

Greece

Vishwanath Sriram,

University of Texas at
Austin, USA

von Hugo Dirk,

T-Systems, Germany

Walke Bernhard,

RWTH Aachen University
of Technology, Germany

Wolisz Adam,

Technical University of
Berlin, Germany

Wygliniski Alexander,

Worcester Polytechnic
Institute, USA

Yang Yang,

University College London,
U.K.

Zarki Magda El,

University of California,
Irvine, USA

Zhang Honggang,

Create-Net, Italy

Zhao Qing,

University of California,
Davis, U.S.A.

Zheng Haitao,

University of California,
Santa Barbara, U.S.A.

Zorzi Michele,

University of Padova, Italy

:: **Webmaster:**

Dionysis

Petromanolakis

:: **Last update:** 16 July
2008