Call for Papers for
Selected Area in Communications Symposium

Scope and Motivation:

The IEEE ICC 2012 Selected Areas in Communications Symposium focuses on new and emerging communication technologies, including areas that are not directly addressed in any individual symposia. It offers an open forum for academic and industrial researchers to exchange the latest technical information and research findings on novel concepts, technologies, systems, and applications in the following areas: (a) E-Health, (b) Power Line Communications, (c) Smart Grids, (d) Tactical Communications and Operations, (e) Satellite Communication Systems, and (f) Access Networks.

- eHealth defined as the cost-effective and secure use of information and communications technologies in support of health and the related fields, including health-care related services, surveillance, literature, education, knowledge, and research, both at the local site and at a distance. The adoptation of eHealth technologies in medical fields creates huge opportunities yet lots of challenges still need to be resolved to build reliable, secure, and efficient networks or platforms with great flexibility.

- Powerline Communications is an active research area since many years. Its applications vary from in-home networking, access, automatic metering and recently the smart-grid. Typical problems attacked are the coupling into an electrical network, channel characterization, communication systems, interference and electromagnetic compatibility, networking, home automization and standards. These topics need specialists from different disciplines to cooperate, which makes the area very interesting and challenging.

- The concept of a “smarter” electricity grid including generation, transmission, and distribution of electrical energy requires an underlying smart communications infrastructure that enables reliable two-way communication between grid elements such as meters, sensors, actuators, control centers, etc. It is anticipated that such an infrastructure will include different communications media, proven communications solutions already applied in, for example, sensor and personal communications networks, as well as new solutions that specifically address the needs of communications for Smart Grids with regards to coverage and connectivity, reliability, agility, resilience, security, and many more. This track in the Symposium on Selected Areas in

Communications invites manuscripts that make original contributions towards establishing, evaluating, and discussing the role of the communications infrastructure for Smart Grids.

- Modern tactical combat operations are characterized by large number of communicating operational entities (either humans or machines), heightened mobility, and existence of complex, often incomplete and unpredictable combat situations. As a result, there is a need for effective methods of tactical communications, combat situation awareness, and prediction, reasoning and control of tactical combat operations. Often situations involve a large number of inter-dependent dynamic objects that change their states in time and space, and engage each other into fairly complex relations. From tactical C2 viewpoint it is important to understand the situations in which these objects participate, to recognize emerging trends and potential threats, and undertake required actions.

- Due to their inherent features, satellites present the key technology to realize the dream of global ubiquitous communications systems where applications and services can adapt to different needs and geographic environments. They have been the research focus of many researchers and industry professionals.

- Progress in VoIP, IPTV and (high-definition) video streaming has impacted the access segment of service-provider networks. In parallel, many access lines today terminate on multiple home devices. This led to a need for home networks that are designed for a blend of multi-computer Internet access, entertainment, and voice support. Broadband access utilizes a variety of transmission media and systems. Understanding the performance characteristics of all the technological ingredients of tomorrow's access networks/systems is critical for delivering the desired Quality of Service (QoS) to end users.

The success of any of these hinges on many factors pertaining to the requirements of the applications intended to be serviced on top of the concerned networks and systems as well as to the stringent constraints imposed by their underlying architectures. Efficient resource management and allocation, guarantee of seamless and ubiquitous coverage, smooth mobility management, Security, and Quality of Service (QoS) provisioning are some key enablers.

Topics of Interest

Prospective authors are invited to submit their original work addressing new and emerging issues in communications and networking on the above themes. Submissions are welcome from academia, industry, and government organizations. Topics of interest include, but are not limited to:

E-Health Area	● Biomedical and biosensors engineering ● Body sensor networks and wearable sensor systems ● Clinical biofeedback, decision support systems, and tools ● eHealth information and network Infrastructure ● eHealth virtual and augmented reality ● Emerging eHealth applications ● Health grid and health cloud ● Health monitoring, traffic characterization, & management ● ICT-enabled personal health system ● Image and video processing on eHealth ● Pervasive and ubiquitous computing on eHealth ● Security and privacy on eHealth ● Storage and Display Devices for eHealth ● Telemedicine and mobile telemedicine

	• Wireless medical device systems and effectiveness
Power Line Communications Area	• Channel characterization and modeling • Electro-magnetic compatibility/interference and coupling • Coexistence and interoperability • Modulation, coding techniques, and error control • Signal processing • Modem and LSI design • System architectures and solutions • Cognitive and cooperative algorithms and approaches • Security in PLC • Multiple access techniques and MAC protocols • Duplex and repeater techniques, routing, and autonomous network functions • Network planning, optimization and service management • Cross-layer optimization and service integration • Access PLC networks • In-home PLC networks • In-vehicle power line networks • Smart grids • Green communications • Broadband and multimedia applications • Experimental systems, field trials, and commercial networks • Standardization and regulation
Smart Grids Area	• Physical layer technologies and techniques for Smart Grid communications • MAC layer and routing protocols for Smart Grid • Architectures and networking for Smart Grid Networks • Resource allocation, coexistence, interference in Smart Grid networks • Cross-layer optimization for Smart Grid communications • Communications requirements and Quality-of-Service for Smart Grid applications • Modeling, performance analysis, field trials for Smart Grid communication networks • “Green” solutions for Smart Grid communications • Security for Smart Grid communication networks
Tactical Communications, Situation Awareness & Decision Support Area	**Tactical Communications** • Architectures and Interoperability • Joint tactical network security • Tactical network operations and management • Information assurance in tactical environments • Net-Centric warfare • Cooperative tactical communications **Tactical Combat Situation Awareness** • Situation modeling, recognition and verification • Situation awareness in incomplete, inexact and probabilistic environments • Predictive situation modeling

	● Cognitive modeling and hard/soft information fusion ● Situation knowledge acquisition ● Learning and situation discovery ● Situation ontology ● Semantic web technologies
Satellite & Space Communication Area	**Air Interface over Satellite Networks** ● Adaptive coding modulation for satellite communication networks ● Fading countermeasures over satellite networks ● Satellite channel management ● Power and bandwidth allocation solutions over satellite networks ● Emerging standards: DVB-S2, DVB-RCS, IP over Satellite ● RF design for satellite communications ● Spread spectrum and multicarrier techniques for satellite communications ● Software radio for satellite communications ● Phased array for satellite communications **Internetworking, Architecture, Protocols and Applications in Satellite Networks** ● PEP architectures and solutions ● QoS-oriented solutions for DVB-S2, DVB-RCS, IP over satellite ● Satellite gateways optimization algorithms ● Security in satellite and hybrid networks ● New protocols for delay tolerant networks ● Deep-space communications ● Gigabit connectivity via satellite ● Convergence and integration among satellite networks and terrestrial wireless networks ● Satellite technology for mobile services ● Satellite communications and "Digital Divide" issues ● Satellite navigation systems **Control and Algorithms for Satellite Networks** ● Satellite network control and management ● Control architectures and algorithms for satellite and heterogeneous internetworking ● Control schemes for resource allocation over satellite channels ● Satellite communication **New paradigm in Satellite and Space Communications** ● Quantum communication in Space ● Satellite communication using laser ● Satellite/terrestrial frequency sharing
Access Networks Area	● Twisted pair copper systems and xDSL ● Hybrid Fiber Coaxial (HFC) systems ● FTTx and Passive/Active Optical Networks (PONs and AONs) ● Progress in Cable TV systems ● Bluetooth, Wi-Fi, WiMAX, WLL and Cellular Access ● Integrated wired/wireless access ● Optical-Wireless integration

- Free-Space Optical-Access (components, systems, and networks)

- Digital satellite access technology
- Municipal and community networks
- Power Line Communication (PLC)
- Home/Building/Neighborhood Area Networks
- Access network architectures and protocols
- Service convergence
- Quality of service provisioning
- Access network survivability and security
- Access Networks for Smart Grid and energy related applications
- Body area, elder/health care and biomedical access networks
- Networked appliances
- Applications (video streaming/IPTV etc.)
- Billing and management aspect