IEEE International Workshop on Global and Social Resource Sharing in/through Wireless Networks (in Conjunction with IEEE VTC-Spring 2015)

It is predicted that in 2020 and beyond there will be hundred billions of heterogeneous devices relying on cellular networks for data exchanges. The number of devices and traffic volume are expected to increase a thousand-fold (e.g., 100 Gbps/km^2 and 500 Gb/user/month according to the fifth generation (5G) flagship project METIS). The capabilities offered by fourth generation (4G) networks, currently being deployed worldwide, where each device is capable of achieving data rates from the order of hundreds Mbps to several Gbps, will not be enough to service the projected amount of connected devices and traffic volume in future wireless networks. The transmission capacity is largely limited by the offered bandwidth, enjoyed signal strength, and suffered interference. Hence, to to substantially enhance the spectrum efficiency, diverse technologies have been widely discussed for co-channel/cooperative deployment including heterogeneous small cells, device-to-device (D2D) communications, machine-to-machine (LTE-M) communications, unlicensed LTE access (LTE-U), IEEE 802.11af, IEEE 802.11u, and cloud radio access networks (C-RAN). Nevertheless, enhancing the spectrum efficiency is only one of the core requirements in the future system design. To suggest equal enhancements in network efficiency, energy efficiency, information management capability, universal service, and user experiences, it is challenged to develop technologies of ubiquitous "resource sharing" including energy, computing/processing capability, memory/storage , and information/database, required to be shared among devices and networks globally and socially. To be able to address above unprecedented challenges for future wireless networks, we should explore all the frontiers of human knowledge and potential technologies. This is the motivation to envision the next generation paradigms of communications, networks, computing, information dissemination, data storage/processing, and energy harvesting in terms of fundamental theories, emerging technologies, innovative system architecture/protocol/algorithm designs. Considering the limited time left to tackle these critical challenges, it is now time to move forward. The purpose of this workshop is consequently to bring together state-of-the-art innovations, research activities (both in academia and industry), and the corresponding standardization impacts, so to understand the inspirations, requirements, and the promising technical options to boost and enrich human's activities in future wireless networks.

Topics of interest (includes but not limited to)

- Protocols, architectures, and algorithms for system designs of heterogeneous networks, D2D communications, machine-to-machine (M2M) communications, unlicensed LTE access (LTE-U), IEEE 802.11af, cyber-physical systems
- C-RAN supported processing and resource sharing technologies
- Energy-harvesting, wireless charging, and energy management technologies in/through wireless networks
- Cooperative networks, cognitive radio, and software defined network (SDN) technologies
- Frameworks and designs for cache in wireless networks
- Distributed antennas, network coding, and advanced multiple access technologies for resource sharing
- Resilience, self-organization, and reconfigurable designs for resource sharing in wireless networks
- Navigation, positioning, mobility tracking, and social connection for resource sharing in wireless networks
- Standardizations for the next generation networks with resource sharing
- Impacts of innovative technologies (e.g., wearable devices, unmanned vehicles, augmented reality, kinesthetic/sensory/virtual reality)
- Statistical physics/economics/biological aware technologies for resource sharing
- Social networks-aware technologies for resource sharing
- Secure communication with shared resources

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Workshop Website

http://faculty.csie.ntust.edu.tw/~smcheng/ResourceWirelessNet2015/