Special Issue on
Advances in Infrastructure Mobility for Future Networks

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During the last decade, the pervasive use of mobile devices has triggered various changes in network usage and infrastructures. Remarkable advances of autonomous systems have made ubiquitous connectivity no longer a futuristic promise, but rather an attainable technology to meet the imminent communication demands in emergency situations, harsh environments, and remote areas. The growth of Autonomous Vehicles (AVs) and Unmanned Aerial Vehicles (UAVs) empowers the wireless infrastructure with the ability to move physically and thus provides on-demand network services and multiple grid connections, alleviating unpredictable problems such as sudden traffic hotspots, poor coverage, and natural disasters. Researchers are making efforts to benefit from infrastructure mobility. Google has launched project Loon to connect people in rural areas through ad hoc network-style balloon. Facebook aims to build a network of laser-beaming drones. DARPA Landroids use autonomous robots for offering communication in challenging terrains for military. We believe that the next breakthrough in network performance will emerge from new ways of organizing networks by merging wireless networking and robotics technologies.

Realizing such a vision needs various pieces to come together, spanning from network architecture to protocol design to communication techniques. In particular, Mobility is expected to bring a new degree of freedom (DoF) to network design, which compliments existing dimensions of wireless innovation. It has also brought new challenges and led to fundamental and interesting research issues, for instance, how to achieve intelligent and effective coordination in the dynamic environments and how to set up efficient communications whose QoS guarantees can support bandwidth-hungry and delay-intolerant applications. Advanced technologies in communication and networking are highly desired in order to ensure the communication robustness, information reliability, and user-privacy protection against a wide range of cyber-attacks. More challenges can also be found in many related domains. To clearly address them and find suitable and practical solutions in time, this special issue focuses on advances in infrastructure mobility to cover the most recent ideas and research based on wireless networks. Experts and scholars from both industry and academia are encouraged to demonstrate the latest progresses, achievements, and potential directions in this area.

Potential topics include but are not limited to the following:

- ▸ Modeling and feature analysis in infrastructure mobility management
- ▸ Connectivity maintenance and user coverage for mobile infrastructure
- ▸ Energy efficient network mobility management architectures
- ▸ Network mobility prediction with cloud computing
- ▸ Cross-layer handover in mobile environment
- ▸ QoS control for mobile infrastructure
- ▸ Performance analysis of infrastructure mobility and architectures
- ▸ Deployment issues for infrastructure mobility management
- ▸ Emerging new topics in infrastructure mobility

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