Context refers to information characterizing the situation of an entity or a group of entities, and it provides information about the present status of the entities. The term context may be understood differently in different scenarios and for different involved users. The involved entities can be either concrete entities or virtual entities. Involved concrete entities could be either a single entity, such as a person, a machine device, an object, or a location, or a group of entities. An involved virtual entity could be a software function, a software application, a service, an activity, and so on. Conventionally, much of the functionality of communications and networking is context-irrelevant. With the rapid development of modern communications and networking technologies in recent years, especially the increasing functionalities and complexities of the Internet, context-aware communications and networking (CACN) systems and applications have been developed in some limited areas and aspects. In the foreseeable future, context-aware functionalities would be much more extensively applied in information and communication technologies. CACN could be performed at all layers of communications and networking, from the physical and networking layers to transport and application layers. Context awareness may be considered as a response mechanism to the context information obtained from the involved concrete or virtual entities. Context information may have many different meanings, such as activities, geospatial information, network states, battery levels, situations of social networks, energy consumptions, environmental parameters, and signal-to-noise ratios. Context awareness allows for customization or creation of applications to match the preferences of the involved entities.

The June 2014 issue of this Feature Topic includes nine accepted papers, which address a number of critical and relevant issues studied within industry and academia. We hope this Feature Topic will help readers obtain better understanding of some key issues in CACN, and draw more attention from researchers in information and communication technologies to the promising CACN research topics in the coming years.

The article “Context-Aware Quality of Services in Wireless Sensor Networks,” written by S. Misra, S. N. Das, and M. Obaidat, applies context awareness to location of nodes and dissemination rate to effectively reduce the end-to-end delay of disseminated data with different priorities in an energy-efficient manner.


The article “CA-P2P: Context-Aware Proximity-Based Peer-to-Peer Wireless Communications,” written by Q. Li, H. Li, P. Russell Jr., Z. Chen, and C. Wang, proposes a new modular system solution to enable context-aware direct communication among peers within proximity.

The article “CACC: A Context-Aware Congestion Control Approach in Smartphone Networks,” written by K. Wei, S. Guo, and K. Xu, presents a context-aware congestion control mechanism to compensate for the limitation of node resources in smartphone networks.

The article “Experimenting with Floating Content in an
Office Setting," written by S. Ali, G. Rizzo, V. Mancuso, V. Cozzolino, and M. A. Marsan, considers an opportunistic communication scheme called floating content (FC), which was specifically designed for serverless distributed context-aware applications.


The article “Multi-Dimensional Context-Aware Social Network Architecture for Mobile Crowdsensing,” written by X. Hu, X. Li, E. C.-H. Ngai, V. C. M. Leung, and P. Kruchten, proposes a multi-dimensional context-aware social network architecture, which may provide a mobile ecosystem to enable context awareness in the development and utilization of mobile crowdsensing application.

ACKNOWLEDGMENTS

This Feature Topic received 64 submissions. We thank all the authors and reviewers who have devoted the time and effort to write or review these submissions. Besides the nine accepted papers in this June 2014 Feature Topic Issue, there are a few more papers that have been accepted and will appear in a future issue of IEEE Communications Magazine. We would like to thank the great support and help of Sean Moore, Editor-in-Chief, Charis Scoggin, the Administrative Aide to the Editor-in-Chief, Jennifer Porcello, Production Specialist, and other IEEE Communications Society publication staff. We also thank the great support for this Feature Topic from the Technical Committee on Satellite Communications and Computing (TCGCC) and the Technical Committee on Satellite and Space Communications (TCSSC) of the IEEE Communications Society.

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