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Use of Cellular Technologies in Sensor Networking

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Guest Editorial

Cellular networks of today, because of their ubiquitous presence and ever increasing data handling capability, are ideally suited for a number of sensor-related applications. Even in scenarios where sensors are stationary or nomadic, wireless is the technology of choice for connecting these sensor networks together and beyond to central reporting locations. Use of cellular technologies in sensor networks is expected to increase further with the introduction of new cellular technologies such as LTE enhancements for Machine Type Communications (eMTC), new narrow band radio optimised for the low end of the IoT market (NB-IOT), and EGPRS enhancements with power optimisation that ensures that GSM/EDGE markets are prepared for IoT (EC-GSM-IoT).

This Special Issue focuses on the Use of Cellular Technologies in Sensor Networking. It presents novel sensor network applications, services, architectures and technologies that leverage existing cellular technologies or propose new optimisations/enhancements to them.

This issue contains three original papers in the areas of standards, architectures and energy.

The first paper, by Syed Husain *et al.*, reviews the ongoing activities in 3GPP and oneM2M standardisation bodies, in the area of machine type or machine-to-machine communications focusing on enhancing device, service platform, and mobile network technologies that can be useful in achieving cost efficiencies in sensor data networks.

The second paper, by Debashis De *et al.*, presents an architecture of green sensor mobile cloud computing which integrates sensor network and mobile network with cloud computing. The authors present an experimental analysis of the proposed architecture by considering both indoor and outdoor deployment models.

The final paper, by Mei-Ju Shih *et al.*, studies energy-harvesting M2M uplink cellular communications from the protocol design perspective, considering the properties of M2M and energy harvesting. The authors also provide designs and evaluate the performance of different schemes for ubiquitous and scalable energy-harvesting M2M uplink connectivity in large coverage cellular networks with the aim of achieving low latency, energy efficiency and improved throughput.

The papers selected for this Special Issue present solid foundations in the area of cellular technologies, providing the basis to exploit their ubiquitous presence and ever increasing data

handling capability, and demonstrating their suitability in the domain of sensor networks.

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