

Special Issue on  
**Internet of Things (IoT): Integration of  
RFID and WSN**

CALL FOR PAPERS

It is expected that the way we live will be pleasantly improved with Internet of Things (IoT) technology, be it in the way we are housed, commute, use energy resources, receive medical care, grow our food, or manage our resources and even waste. For example, in 2014, the smart home industry generated revenue of \$ 79.4 billion. It is expected that, by 2020, 50 billion devices will be used as IoTs. Hence, the future will be replete with wonderful smart things that not only make our lives more convenient but also help realize green technologies to allow for sustainability.

The IoTs include physical objects or devices which are known as “things.” They can sense and/or affect the physical environment and virtual objects, such as electronic tickets, agendas, books, and wallets. IoTs consist of the said things, the local area network, the internet, and the cloud. While all sensors and actuators in the wireless sensor network (WSN) can be accessed through internet, the platform for effective interactions is provided by social and mobile forces while the cloud delivers the computational and information delivery infrastructure. This nexus of forces evolved through the convergence of information enabled by IoTs is unlocking an incredible opportunity to connect everything together. It is giving rise to a new digital industrial economy by combining the physical and the virtual world. Future IoTs are expected to be highly complex due to a large number of interconnected heterogeneous devices, big data, interoperability, and Quality-of-Service (QoS) requirements.

Radio Frequency Identification (RFID) technology mainly helps a reader to find and identify objects using radio waves. Low-cost, ability to embed sensors, and a wide range of applications make RFID networks desirable in IoTs. RFIDs can be used in IoTs for healthcare, inventory tracking, theft prevention, retail management, structural health monitoring, parking access control, toll collection, smart homes, environment monitoring, and industrial automation. However, this ubiquity of RFID networks and WSN in IoTs gives rise to significant challenges that need attention of the research community. Context-aware processing of data, coexistence with other radio technologies in IoTs, dense network deployment, cheaper sensor-tag design, energy-efficient semipassive sensor-tags, privacy, security, machine learning, and novel designs of sensor-tags and their applications are some of the open research areas for RFIDs in IoTs.

This Special Issue offers a platform for researchers and engineers from academia and industry to systematically address the research challenges of using sensor-tags in IoTs using their novel ideas and techniques.

We hereby invite researchers to submit original research articles and reviews to this special issue.

Potential topics include but are not limited to the following:

- ▶ Novel applications and services for RFIDs in IoTs
- ▶ RFID and physical user interfaces in IoTs
- ▶ Wireless sensor-tag design
- ▶ RFID reader design
- ▶ Middleware for RFID computing in IoTs
- ▶ RFID reader-to-reader network design and development
- ▶ RFID sensor-to-reader network design and development
- ▶ Network architectures for RFIDs in IoTs
- ▶ Next-generation sensor-tag design and development
- ▶ Future deployment strategies of dense RFID networks in IoTs
- ▶ Cooperative issues of interconnected RFIDs in IoTs
- ▶ Interoperable communication in cross-platform IoTs
- ▶ Energy-efficiency and green RFID networks in IoTs
- ▶ Study and comparison of RFID with BLE, NFC, and other communication technologies that are suitable for IoTs
- ▶ Wireless HART compliant networking protocols for RFID networks in IoTs
- ▶ Network architecture and integration of RFID networks in IoTs for 5G
- ▶ Wireless networks of active RFIDs/sensors in IoTs
- ▶ Wireless networks of passive RFIDs/Sensors in IoTs
- ▶ RFID networking protocols for achieving QoS Requirements of IoTs
- ▶ Cognitive resource allocation for RFIDs in IoTs
- ▶ Smart machine-to-machine (M2M) communication techniques for RFIDs in IoTs
- ▶ Context-awareness and machine learning for RFID network management in IoTs
- ▶ Cyber-security Issues of RFIDs in IoTs
- ▶ Fault-tolerant and reliable MAC/routing techniques for RFIDs in IoTs
- ▶ Cross-Layer Solutions for RFIDs in IoTs
- ▶ Cloud computing and large-scale RFID network management for IoTs
- ▶ Channel modelling for low and high density RFID networks in IoTs
- ▶ Aggregation, processing, and management techniques for RFID data in IoTs
- ▶ Ensuring security and privacy of RFID data in IoTs
- ▶ Performance evaluation of RFID networks in IoTs

Authors can submit their manuscripts through the Manuscript Tracking System at <http://mts.hindawi.com/submit/journals/wcmc/rfid/>.

**Lead Guest Editor**

Varun Jeoti, Universiti Teknologi  
Petronas, Bandar Seri Iskandar,  
Malaysia  
[varun\\_jeoti@petronas.com.my](mailto:varun_jeoti@petronas.com.my)

**Guest Editors**

Micheal Drieberg, Universiti Teknologi  
Petronas, Bandar Seri Iskandar,  
Malaysia  
[mdrieberg@petronas.com.my](mailto:mdrieberg@petronas.com.my)

Fabrice Meriaudeau, University of  
Burgundy, Dijon, France  
[fmeriau@u-bourgogne.fr](mailto:fmeriau@u-bourgogne.fr)

Dominique Gin hac, University of  
Burgundy, Dijon, France  
[dom@le2i.cnrs.fr](mailto:dom@le2i.cnrs.fr)

Shao-Wen Yang, Intel Labs, San  
Francisco Bay Area, USA  
[shao-wen.yang@intel.com](mailto:shao-wen.yang@intel.com)

**Manuscript Due**

Friday, 5 May 2017

**First Round of Reviews**

Friday, 28 July 2017

**Publication Date**

Friday, 22 September 2017