

"From Industrial Wireless Sensor Networks to Industrial Internet-of-Things"

The Theme: Ever-growing volume of data and information is being captured from systems, machines and devices and made available to IT systems. The information is processed on-the-fly enabling IT-based management systems to make decisions for real-time control of the manufacturing process. This data capturing and collection for IT systems is often referred to as the *Internet of Things (IoT)*. When adopted to the industrial automation systems where robustness, reliability, security and latency and jitters are highly desired performance requirements, it is often called *Industrial Internet of Things (IIoT)*.

Industrial communication systems today primarily consist of legacy systems such as HART, Foundation FIELDBUS, CAN and Profibus – well-working and established industry-specific networks installed in millions of systems. In the last decades, there has been a push for IP-based technology which has made Ethernet become a popular communication infrastructure. But to meet the stringent timing requirements of industrial applications, it has been necessary to implement real-time functionality. The communication plays a central role for the availability of all relevant information in real-time. Furthermore, it is indisputable that the mobility of objects involved in the production as well as the necessary flexibility of the production require wireless communication systems. The need for wireless communication is steadily increasing in many automation applications. In order to fully exploit the potentials offered by wireless communication for monitoring, control and automation applications, there is a further need for time-constrained communication protocols that provide bounded latency together with high reliability or energy efficiency. In addition, wireless automation applications need to interact with legacy wired communications systems and provide equivalent levels of security and dependability. Furthermore, industrial settings are highly dynamic environments which call for the ability to adapt to changes in the operating conditions while still not violating the time-constraints of the applications. Given the above scenarios, there is a need to disseminate, streamline and investigate research findings coming from several different application domains, namely from factory automation to industrial process monitoring and control, from traffic, environmental, building and structural monitoring to mobile robotics, from vehicular communication to energy management and healthcare applications. This need is especially driven by the industry interest in enabling large-scale wireless deployments for the sake of flexible, competitive and cost-efficient production.

The goal of this special section is to attract papers addressing the main research issues in design, development, adoption and applications of Industrial Wireless Sensor Networks and Industrial Internet-of-Things. IIoT provides a great opportunity to new gains in flexibility and productivity but also challenges as to how to merge existing installations to these new technologies.

Topics include, but are not limited to:

- Architecture and protocol design for industrial IoT systems
- Resource management in industrial IoT systems
- 5G for future industrial automation
- Security, safety and privacy issues in industrial wireless networks and applications
- Deployment, integration and case studies of IWSN and IIoT.
- Performance evaluation, simulation, RF measurements, and modeling of industrial IoT systems
- Embedded industrial IoT applications
- Intelligent M2M communications in industrial IoT
- Cognitive IIoT systems
- Cloud-based IIoT solutions

The use of information technology also opens up new application areas for automation systems. Examples include but are not limited to:

- ✓ Smart Manufacturing and Web-of-Things in the Factory Line
- ✓ Process, Factory, Home and Building Automation
- ✓ Smart Grids / Smart Metering
- ✓ Industrial Robotics and Automation
- ✓ Smart and Connected Health

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Submissions to this Special Section must represent original material that has been neither submitted to, nor published in, any other journal. Extended versions of papers previously published in conference proceedings may be eligible for consideration if conditions listed in <http://tii.ieee-ies.org/o/PC.pdf> are fulfilled. Before submitting manuscript check the review criteria (<http://tii.ieee-ies.org/o/RC.pdf>) and other information (<http://tii.ieee-ies.org/o/DI.pdf>)

Note: The recommended papers for the section are subject to final approval by the Editor-in-Chief. Some papers may be published outside the special section, at the EIC discretion.

Timetable:	Deadline for manuscript submissions	July 31, 2017 (Extended to Sep. 30, 2017)
	Expected publication date (tentative)	Jan 2018

Guest Editors:

Prof. Mikael Gidlund, Department of Information and Communication Systems, Mid Sweden University, Sweden, mikael.gidlund@miun.se

Dr. Song Han, Computer Science and Engineering Department, Univ. of Connecticut, USA, song.han@uconn.edu

Dr. Emiliano Sisinni, Department of Information Engineering, Univ. of Brescia, Italy, emiliano.sisinni@ing.unibs.it

Dr. Abusayeed Saifullah, Department of Computer Science, Missouri University of Science & Technology, USA, saifullaha@mst.edu

Dr. Ulf Jennehag, Department of Information and Communication Systems, Mid Sweden University, Sweden, ulf.jennehag@miun.se