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Internet of Things: Converging Technologies for Smart Environments and Integrated Ecosystems

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The book aims to provide a broad overview of various topics of the Internet of Things (IoT) from the research and development priorities to enabling technologies, architecture, security, privacy, interoperability and industrial applications. It is intended to be a standalone book in a series that covers the Internet of Things activities of the IERC ? Internet of Things European Research Cluster from technology to international cooperation and the global "state of play". The book builds on the ideas put forward by the European research Cluster on the Internet of Things Strategic Research Agenda and presents global views and state of the art results on the challenges facing the research, development and deployment of IoT at the global level.

Today we see the integration of Industrial, Business and Consumer Internet which is bringing together the Internet of People, Internet of Things, Internet of Energy, Internet of Vehicles, Internet of Media, Services and Enterprises in forming the backbone of the digital economy, the digital society and the foundation for the future knowledge and innovation based economy in supporting solutions for the emerging challenges of public health, aging population, environmental protection and climate change, the conservation of energy and scarce materials, enhancements to safety and security and the continuation and growth of economic prosperity.

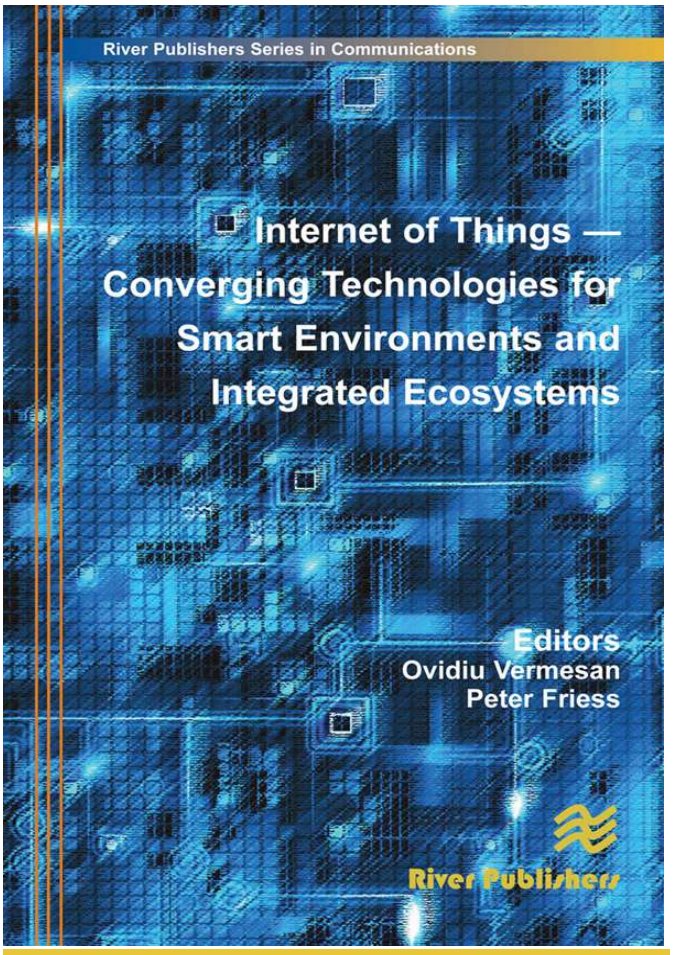
Penetration of smartphones and advances in machine to machine and wireless communication technology will be the main drivers for IoT development. The IoT contribution is in the increased value of information created by the number of interconnections among things and the transformation of the processed information into knowledge shared into the Internet of Everything. The connected devices are part of ecosystems connecting people, processes, data, and things which are communicating in the cloud using the increased storage and computing power and pushing for standardization of communication and metadata. In this context the next generation of the Cloud technologies will need to be flexible enough to scale autonomously, adaptive enough to handle constantly changing connections and resilient enough to stand up to the huge flows in data that will occur.

For 2025 analysts forecast that there will be six devices per human on the planet, which means 50 billion more connected devices over the next 12 years. The Internet of Things market is connected to this devices growth from industrial machine to machine (M2M) systems, smart meters and wireless sensors.

Enabling technologies such as nanoelectronics, MEMS, embedded systems, intelligent device management, smart phones, telematics, smart network infrastructure, cloud computing and software technologies will create new products, new services, new interfaces by creating smart environments and smart spaces with applications ranging from Smart Cities, smart transport, buildings, energy, grid, to smart health and life.

Technical topics discussed in the book include:

- Introduction
- Internet of Things in a wider context: Time for convergence.
- Internet of Things Strategic Research Agenda
- Interconnection and Integration of the Physical World into the Digital World
- Scalable Architectures for IoT Applications
- IoT standardisation requirements and initiatives. Standardisation and Innovation.
- Service Openness and Interoperability
- Software define and virtualization of network resources
- Mobile devices enable IoT evolution fro m industrial applications to mass consumer applications
- Innovation through Interoperability and Standardisation when everything is connected anytime at anyplace
- Security, privacy, trust, safety, dependability: new challenges for IoT
- Internet of Things Industrial Applications



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