

# Chapter 70

## From Ubiquitous Computing to the Internet of Things

**Bozidar Radenkovic**  
*University of Belgrade, Serbia*

**Petar Kocovic**  
*Union – Nikola Tesla University, Serbia*

### ABSTRACT

*The Internet that most of us knows as the World Wide Web is expanding beyond PCs and mobile devices. Called the “Internet of things”, this movement will link consumer devices, enterprise assets, media and everyday items, such as packaged goods, to the Internet at an increasing rate. Why the push? New business models and new ways of interacting with customers, employees and suppliers are possible when physical items are linked to the Internet. In theory, the Internet of things will make it possible for a connected refrigerator to automatically order milk. However, history has shown that, even though a technology can be transformational, it takes a series of many small evolutions before the consumer and business world are ready for transformational models like this. We believe that, at first, the sweet spot for the Internet of things will be to use it in simple ways that extend or enhance an existing process. For example, a washing machine that has a 2D bar code can enable a smartphone user to view the instruction manual, or a service person to view the service history and parts list. In contrast, using the Internet of things technologies to make a washing machine that can auto-detect clothes by reading the RFID tags on the garments’ labels, and consequently run at the right settings, is less likely to gain adoption.*

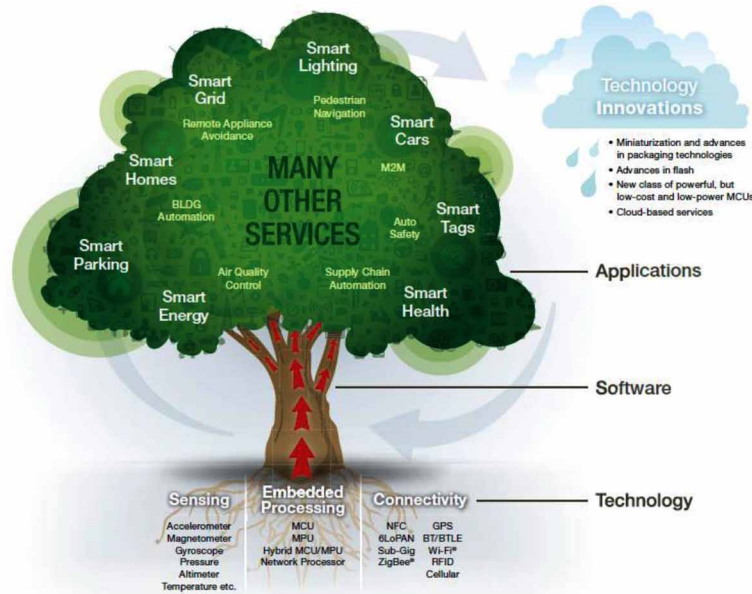
### INTRODUCTION

The Internet of Things (IoT) is a new hot buzzword and like most buzzwords, its purpose and definition are grossly misunderstood. When some people hear the term IoT they immediately associate it with famous 19-century novel “The Idiot” from Fyodor Dostoyevsky (1821-1881). Situation is very different – IoT referring to the world of smarties. Smart Energy. Smart Parking. Smart Homes. Smart Grid. Smart Lighting. Smart Cars. Smart Tags. Smart Health, Figure 1.(What the Internet of Things (IoT) needs to be a Reality, 2014)

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*Figure 1. Word of smart services, technologies, meanings for everyone*

*(Reproduced from ARM/Freescale)(What the Internet of Things (IoT) Needs to Become a Reality, 2014)*



The problem with IoT is a lack of education, marketing and PR. The majority of people have not been informed on what use cases are driving these astounding revenue predictions. Sure, we have all heard of connected cars, wearable devices, and appliances with sensors, but what has not been marketed enough is the real business value that these “things” create.

Today Internet “Sans Frontiers” consists of:

- Asset tracking of goods on the move.
- Automatic traffic management.
- Continuous monitoring of, and firmware upgrades for, vehicles.
- Environmental monitoring and control.
- Home and industrial building automation.
- Machine-to-machine communication.
- Machine-to-infrastructure communication.
- Remote security and control.
- (World of) Sensors.
- “Smart” applications, including cities, water, agriculture, buildings, grid, meters, broadband, cars, appliances, tags, animal farming and the environment, to name a few.
- Tele-health: remote or real-time pervasive monitoring of patients, diagnosis and drug delivery.

Most of the specified classes of devices and systems use PLCs (Programmable Logic Controllers) and protocols for building automation such as BACNet (ASHRAE, ANSI, ISO 16484-5 standard). Other standards for non wireless devices are: ModBUS RS 485, VDC and 12-24V VDC.

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