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Abstract

(Basis for Presentation/Lecture)

**The Internet of Things (IoT) – Second Internet and Telecommunication Revolution for
Machines and Humans: Business Opportunities and Challenges for**

Emerging Global Network of Smart objects and Devices

(Finnish and International Experience)

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Among many promising innovations in the modern Information and Communications Technology (ICT) industry, the Internet of Things (IoT), also known as machine-to-machine (M2M), stands out as an extremely lucrative and promising technology with unprecedented socio-economic impact. This, relatively new, phenomenon already enjoys a plethora of definitions, which could be generalized to:

The Internet of Things is a global network of interconnected objects and devices providing smart solutions for the interconnected world of machines and humans.

By and large, it appears to become the second Internet and telecommunication revolution in the next few years. This phenomenon is comprised of technological, business and social issues and implications, with the M2M and machine-to-human (M2H) interactions being **key business opportunity areas**. The predicted growth for this phenomenon is very impressive – a factor of 20, from 100.4 million to 2.1 billion M2M connections in the next 10 years, generating from USD 5.7 billion in 2011 to USD 50.9 billion in 2021 ([Analysis Mason, 2012](#)). In comparison, [Gartner Research](#) assessed the 2012 global mobile phones markets volume of USD 1.75 billion (indicating that roughly 50% were contributed by the smartphones sales), and [International Data Corp](#) predicts that the global smart phones market volume will exceed USD 1.0 billion in 2013 (making over 50% share of smart phones in the global mobile phones market for the first time).

Evidently, development of the IoT will follow and integrate both smartphone and conventional mobile phones connections—currently there are 5.3 billion mobile connections in the world (Frost & Sullivan, 2011)—and provide new opportunities and solutions to the subscribers. Besides, both M2M and M2H wireless and seamless communication is a key to the success of this second Internet revolution, while

conventional landlines will continue contributing to the development of global telecommunication networks.

This unprecedented opportunity is closely addressed by many large and small ICT, OEM and software companies worldwide. Many of them already have commercial products and solutions, which vary from wireless meters for utility companies to consumer solution for switching off a hair-curler, left working at home, from a plain. Provision of such smart solutions would not be possible without certain business models working as one ecosystem, creating and delivering value to its actors and end-users.

Although M2M communication is mainly associated with automation and M2H is associated with human control, both of these communication and business opportunities types are interconnected and have elements of monitoring, control and automation. M2M and M2H channel and facilitate provision of product and services (smart solutions) from physical objects with embedded intelligence sensors, microprocessors, communication devices, etc. (smart things) through the Internet to the end-users, i.e. individuals, businesses, governments, academia, NGOs and society as a whole.

Nowadays, governments, industry, technology and business research communities are starting to work together in order to assist in developing of this complex innovation, capitalize on business opportunities arising from it, create positive socio-economic conditions, generate and maintain positive momentum in their collaboration. [DIGILE](#), former TIVIT, one of Finland's Strategic Centers for Science, Technology and Innovation (SHOKs) in the field of ICT, a quasi-government organizations in Finland, promotes and stimulates development of the IoT through the DIGILE IoT Project, with its focus on brining Finnish, European and International ICT industry and research community together around the IoT phenomena. The IoT business models and ecosystem research is a key element of this four-year project, started in the 2012; and several outcomes, challenges and opportunities of this research will be covered during the presentation/lecture.

Questions for Discussion in a Roundtable or Other Format:

- Technological and socio-economic impact of IoT
- Role of small and large companies, research institutions, government and other organizations in developing IoT
- Business opportunities and challenges of IoT
- How to make business out of new technologies and innovation
- IoT – open or closed innovation
- Ecosystemic thinking and simple business strategies
- Feel free to add more