**Assignment No. 1**

**Topic: “What is Internet of Things, Describe Pros & Cons of the IOT and Challenges to Control IOT?”**

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**What is Internet of Things (IOT)**

A network comprised of physical objects capable of gathering and sharing electronic information. A universe of linked things providing key physical data and further handling of that data in the cloud to provide business insights. The IOT will control, embrace, extend and enhance cloud, big data, personal/mobile devices and social networks to provide more granular sensors and devices closer to the "edge.” As it indeed so, it will eventually provide completely new applications and use cases that will drive new business models and earnings opportunities. The web of Things might not exactly be here just yet, but it is coming, IOT is the next logical expansion of the "long tail" concept. It pushes devices and sensors to more granular levels and allows the creation of new uses and new business models that were not previously economically viable. IOT can be divided into 3 categories:

* **Consumer IOT** includes the connected devices such as smart automobiles, phones, watches, laptops, connected appliances, and entertainment systems.
* **Commercial IOT** includes things like inventory controls, device trackers, and linked medical devices.
* **Industrial IOT** includes such things as linked electric meters, waste water systems, flow gauges, canal monitors, manufacturing robots, and other types of connected commercial devices and systems.

It will endanger many existing industries, marketplaces and products. A bigger challenge than developing technology breakthroughs may be in answering problem "What problems can I solve with the IOT and what new value may I provide to my customers. Some benefits and drawbacks of the IOT are given below:

Pros of the Internet of Things

* More available information makes life much easier to control
* Inventories are much easier to keep track of
* In a word: automation
* It might make products and services more affordable
* It creates the potential for personal advertising
* People can still opt out of the IOT if they wish
* Difficult socioeconomic issues could finally be resolved
* Everyone has instant access to the data they create

Cons of the Internet of Things

* There can be compatibility issues.
* More complexity means more opportunities to fail
* It creates safety and privacy concerns
* It has the potential to eliminate jobs
* Not all of us have choice
* The ongoing future of this technology may be driven by revenue imperatives
* Eventually someone must control the data without guidance

#### Key challenges for the Internet of Things

#### None of the challenges is always a reason to oppose the Internet of Things. Nor is the list actually complete. In the same as purposes for smart devices will be found what it cannot take part today, so challenges are likely to emerge that what cannot predict today?

#### The Need for Open Standards

The IOT contains a lot of individual devices using their own specifications. At this stage, that hardly concerns, but will occur soon when further progress will demand that smart devices can communicate with each other. Yet, although much of the IoT is likely to be built with [open source software](http://www.datamation.com/mobile-wireless/51-open-source-tools-for-the-internet-of-things-1.html), universal standards and protocols lag behind the development of smart technology.

#### Energy Demands

In the past, Gartner predicted that 4.9 billion smart devices would be employed by 2015 -- an increase of 30 % from 2030. By 2020, Gartner estimated that the number of smart devices would reach 25 billion by 2020, an increase of 100% every year. Along with this boost will come a rise in energy needs comparable to the one created by the Internet. Even with improved batteries and renewable resources like solar and wind, just meeting the demand will be difficult.

#### Waste Disposal

Thanks to designed obsolescence, fifty million tons of [e-waste](https://en.wikipedia.org/wiki/Electronic_waste) -- the disposal of computers, phones, and peripherals -- are produced every year in the United States only. As countries like China and India continue to industrialize, and the Internet of Things comes online, the problem is only going to continue. in the meantime, less than twenty percent of e-waste is recycled, much of the rest continues to be shipped abroad to developing countries where it is salvaged in unsafe working conditions.

#### Storage Issues

Storage of information generated by smart devices will increase the energy demands required by the Internet of Things. A single corporation like Google, which already has myriad server farms, each occupying thousands of square feet, could be dwarfed by the demands of smart devices. However, the physical demands are only part of the problem. Much of the data generated by smart devices is needed only briefly to send signals to device, and does not need to be stored.

#### Lack of Privacy & Security

Potentially, the Internet of Things is a wealth of information about those who use it. Smart phones can already be tracked, but smart devices point to a future where governments supplement census information with the output of smart devices, and manufacturers harvest information about your habits. You can expect the Internet of Things to produce dozens of legal precedents and class action suits as countries debate just what rights to privacy the users of smart devices retain and which they forfeit. When faced with a choice between convenience and security for users, manufacturers almost always choose convenience. Even at this early stage, the Internet of Things is no exception. Already, [basic devices](https://securelist.com/analysis/publications/66207/iot-how-i-hacked-my-home/) such as routers, satellite receivers, network storage and smart TVs are ridiculously easy to hack. Suddenly, our current lack of security and privacy seems unimportant compared to what probably awaits us once the IoT is up and running.