

## A Study of Internet of Things (IoT) Applications

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**Abstract.** The government has adopted the field of “Internet of Things” as a national strategic project, announcing the Internet of Things master plan to achieve a leading country of hyper-connected digital revolution last May. The government has the promotional strategy of reinforcing the competitiveness in software (SW) · sensor components devices, training specialists that will lead Internet of Things (IoT) services and products, and internalizing security for Internet of Things products and services. Internet of Things thus expected to grow from ₩2 trillion and 300 billion last year to ₩30 trillion by 2020 in the market refers to the internet environment where people, things around, data, etc. are all connected to the wired and wireless network to create mutually collect, share, and utilize information. Internet of Things is the technology and service that includes generating information (sensor) - acquisition (parts, devices) - sharing (Clyde) - utilization (Big Data)- application software. Internet of Things is getting the attention from the public due to the effect of increasing export businesses and jobs and has become a buzzword among businesses. The Internet of Things market has a tendency to grow in the future as it is extended from social infrastructure (utilities, transportation, automation, etc.) and safety management to the consumer sector centered on life services. Sophisticated wireless communication technology is expected to form a huge network connected to all object units as a communication function.

**Keywords:** IoT, M-Internet, RFID, B2C

### 1 Introduction

Our society is moving to a hyper connected society connected to internet due to the rapid development of information and communication technologies. The hyper connected society means the one of creating new values by adding communication features to all the things, such as mobile phones, houses, cars, watches, and cameras.

In line with the stream of the times and for the realization of creative economy, the government has adopted the IoT as a national strategy project. The basic plan of the IoT is aimed to realize the leading country of the digital revolution. The government

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plans to reinforce the competitiveness of software (SW), sensors, components, and devices. It thus make a plan to promote the security internalization of IoT products and services from the planning stage in the special enterprises that will lead the creation and innovation of the IoT services and products.

This study attempted to mention the concept, market environment, and mainly applied cases of the IoT to identify the evolutionary process of the IoT evolving that quickly at an early stage and to make the proactive response.

## **2 Concept and Coverage of the IoT**

Internet of Things (IoT) mean the internet environment of creating, mutually collecting, sharing, and utilizing the information while all the things including people, things, data, etc. are connected to wired and wireless networks.

In other words, the IoT is the technology and service for information generation (sensors) – information collection (parts, devices) - information sharing (Clyde) - information literacy (Big Data) - application software (SW). Through this, consumers are broadly expanding the range into the virtual world through the mutual communication of objects networked.

Machine to machine (M2M) is the initial stage of the IoT service. A review of the sectoral growth of the IoT found that the service market is expected to grow significantly focused on smart energy, industrial automation, and industrial infrastructures. In addition, the service market is expected to be expanded significantly centered on public safety, distribution, and logistics through the convergence of various industries in the future. The domestic IoT service market mainly consists of small sensor network services led by mobile operators, for example, logistics tracking, remote meter reading services, public services, etc. In the consumer area, high-pass systems have been activated.

## **3 Environment of the Market of Internet of Things**

The IoT in Korea showed a higher proportion of a mobile communication network-based billing, security, smart meter, telematics, and mobile POS. Currently, the Hyundai and Kia Group has released Bluelink, UVO, etc. as telematics, The number of domestic M2M lines in Korea is low in the proportion occupying the entire wired and wireless communication market. However, they tend to grow higher, compared to other communication services.

Until 2022, the service and application market has sharply grown annually by 98%. In particular, high-pass systems (7.73 million units) and security systems (2.74 million units) have been relatively highly supplied, followed by AV devices, mobile POSs, smart meters, etc.

In the future, the Korean IoT market looks ahead to be greatly expanded into the consumer area as well, including health care, living convenience, etc. The automotive sector and the smart meter sector are also expected to grow rapidly.

#### **4 Main Cases of IoT in the United States**

The IoT in the United State was initiated from Deconstruction. Deconstruction developed the mBulider sensor that monitors and analyzes the temperature, humidity, noise, and vibration of the construction site.

Once a certain level of damage is caused, Deconstruction provides the service to inform the damage immediately by analyzing the measured data through the mBuilder and using an analytical engine to predict the surrounding area and perceived noise of the surrounding area. In addition, Deconstruction has a function through the dashboard, which allows you to identify the possibility when a fine or a protest may occur by comparing the regulatory situation corresponding to the construction area and the field situation. Therefore, it supports the decision-making and the prevention of unnecessary costs from wasting.

#### **5 Costs of Internet of Things**

The most basic step of the IoT is RFID. Main cost factors of RFID are tags or sensors and readers. In the case of the retail sector that first started to introduce RFID, it is difficult to recover tags so the price decline of tags plays an important role in the decision of the introduction. As RFID costs fall, labour and labour costs are reduced according to the introduction. A failure rate will decline and the quality Improvement will increase such effectiveness due to quality improved. In the first 3~4 steps of the IoT phase suggested by Fleisch (2010), the main factor of the spreading of the IoT seems to be caused by the drop of the price of introducing the related equipment due to the development of the sensor technology. In addition, for costs of the IoT, high-performance, low-cost platforms should be provided so that customers can differentiate their end products no matter which sector they get engaged in. This will further enhance an attachment rate of Korean products in strategic concentration areas in a corporate low-cost RF front-end approach of the IoT.

#### **6 Advent of Internet of Things in Korea**

The Korean government has promoted a 'manufacturing innovation 3.0' strategy by creating the IT convergence new industry through the convergence of IT and SW, making a new-added value, and thus switching to a leading-type strategy from a leading-type strategy of developed countries to secure a competitive advantage of domestic manufacturing only.

Especially, the Korean government has made a detailed plan of promoting 10, 000 plants for a smart project by 2020 through the convergence of IT · SW, Internet of Things (IoT), etc. Thus, it is necessary to make a response to this.

## 7 Conclusions

The IoT market of the future can be utilized as the power for the new market in terms of social infrastructures and safety management and the IoT market of life-form services can be also utilized as the power for the new market in the new industry.

But in the other direction, the IoT market has a threat factor that the inter-industry areas could be ambiguous due to a variety of convergences.

In order to adapt to the IoT era, the electrical engineering industry, for example, is required to converse its thinking. First they need to think that communication functions can be granted to electrical engineering works. Second, continuous education and training is essential regarding these electrical properties and construction methods. Not only the telecommunication sector but the electrical engineering sector also needs education and training.

For that reason, there is a need to foster creative integrated and talented human resources. With the advent of the IoT market, the main functions between the electricity sector and the communication sector can be vague. Thus, to solve this, it seems to be very important to carry out standardization and regulation maintenance and to maintain the partnership between the construction industry and the lighting industry.

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