

Use and Threats of Internet on Things (Iot) In Smart City Project

Pankaj Chaudhary¹, Rahul Mandal²

¹Dean(Academics), JB Institute of Technology, Dehradun

²Technical Consultant, Net2Source India Pvt. Ltd, Noida

Abstract:

Govt of India has proposed a visionary project of Smart City in which several cities of the country will be developed as Hi-Tech Cities with ultramodern facilities based on technology, IoT (Internet of Things) is the network of physical objects-devices, vehicles, buildings and other items embedded with electronics, software, sensors, and network connectivity-that enables these objects to collect and exchange data. The internet of things allows objects to be sensed and controlled remotely across existing network infrastructure [1]. According to the Gartner, 260 million objects will be connected by year 2020. Several companies and governments have tried to make references with IoT in initial times, but nowadays in manufacturing, retail and SOC (Social Overhead Capital) industries, successful best practices are built recently. In this paper I summarized tangible IoT based service models which are helpful to academic and industrial world to understand IoT business.

Index Terms— IoT, Internet of Things, Smart city, Creative economy, Sensor, Business model

1 INTRODUCTION

In this paper, the definition, status, components, and standards of IoT (Internet of Things) are introduced, as well as possible business models that can implement IoT in a smart smart city are examined. There are many research data on IoT in US, and IoT case studies have been conducted in other countries as well. However, there were few studies on IoT business models that were directly applicable to national and regional development in India.

This study was conducted to present practical service models using IoT in line with domestic circumstances, and, thereby, it is expected to contribute to academic circles and related industries [1].

2 DEFINITION OF IOT

The rapid development of information technology (IT) has brought forward a hyper connected society in which objects are connected to mobile devices and the Internet and communicate with one another [2].

In the 21st century, we want to be connected with anything anytime and anywhere, which is already happening in various places around the world. The core component of this hyper connected society is IoT, which is also referred to as Machine to Machine (M2M) communication or Internet of Everything (IoE).

3 SMART CITY IMPLEMENTATION MODELS BASED ON IOT

Recently, government of India have been aiming to implement an IoT-based smart city through the construction of a test bed for IoT verification and an integrated infrastructure [4].

This movement also corresponds to the creative economy that is emphasized by the Korean government. In this chapter, smart city implementation models based on IoT that can be implemented by local governments are described through examples.

4 SMART TRAFFIC SERVICE OUTLINE

Major smart traffic services include smart parking services to prevent illegal parking and facilitate convenient parking [5], citizen participation-oriented illegal parking prevention services, and smart safe crosswalk services.

Smart parking refers to the construction of a platform that enables real-time checking of available space and parking prices in areas that require parking and facilitation of reservation/payment through Web and mobile connections [3].

The citizen participation-oriented illegal parking prevention service is an improvement of the illegal parking crackdown system of the traffic authority by allowing citizens (including victims of illegal parking) to conveniently report such violations through their smartphones [2].

Furthermore, the smart safe crosswalk service can contribute to the prevention of pedestrian accidents and secondary car accidents by detecting pedestrians in children protection zones, and alerting pedestrians and approaching vehicles through electronic display boards [4].

5 SMART EDUCATION SERVICE OUTLINE

This service provides real-time, interactive high-definition lectures that feel like face-to-face meetings at home through high-definition (HD) services and wide-area Internet infrastructure. Instructors participate in the lectures by using equipment in private educational institutes or separate places, and even foreign language teachers in other countries can access this service through the Internet [4].

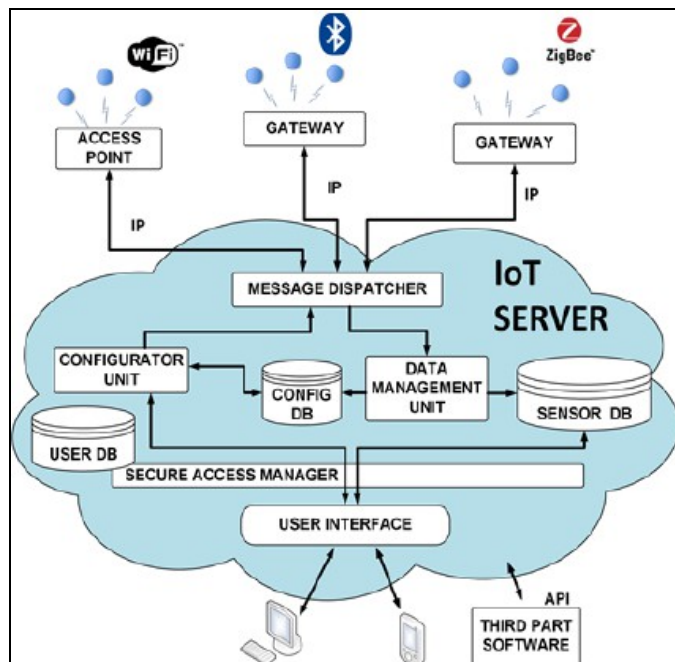


FIG 1 IOT IMPLEMENTATION

A TYPICAL DIAGRAM OF IOT IMPLEMENTATION IN SMART CITY

6. LIMITATION OF IOT IMPLEMENTATION

There are certain limitations also to IOT implementation as it presents security challenges in credentialing and identity management. Usability concerns are also there as the device sometimes experience problems for deployment. Here are some of the daunting security challenges of IoT-

6.1 Privacy concerns

The information being transferred becomes prone to the access by government agencies, data collectors and hackers. This might not only intervene with the privacy of the concerned individual, but also pose a security threat to the same. The personal information might get passed to the non-intended recipient, which might get misused and eventually cause security breach. After all, no one really likes to get watched all the time [3].

In this case, network security devices such as network guards and firewalls, are essential to meet the security requirement. The adoption of technology specifically designed to prevent information leakage is also necessary.

6.2 Widespread cyber threats

The Internet of Things provides a big opportunity to corporate and security firms for data management. However, cyber threats and high level of data exposure are few of the concerns, which can't be denied. The interconnection of various devices can make it much easier for a malware or worm to spread throughout the whole interconnected system. In this case, it will sweep off the numerous devices of the security [1].

This problem has emerged as there are many interconnected devices, which are not designed keeping in mind the limitations of IoT. Hence, they can easily become a victim of security attack. A hacker can easily alter the operation of any appliance/home appliance and cause physical damage to the whole system.

6.3 Unsolicited intrusions

Data transferred and managed through the Internet of Things can be accidently exposed or leaked out. This might hamper with the

personal privacy of the individual concerned and pose a threat to public security. Smart home appliances usually devour a large amount of data and information about a user. So, harm and damage can be done to the concerned user if it is altered or mishandled [1].

It becomes really essential to implement security features, which can stretch the capabilities of the interconnected devices. Security protocols can be paired in such cases, to provide an effective solution to the privacy issues. However, it's necessary to be aware of the troubles, which might follow, before you interconnect your devices.

7 CONCLUSIONS

This study is significant in outlining general information about IoT, such as definition, market size, and status of IoT, which has become a hot IT topic nowadays, and in presenting applicable IoT business models to help business entities and research institutes participating in related projects build a smart city as part of the future vision of local governments by reflecting the new information paradigm of IoT.

A limitation of this study, however, is the lack of available data in Korea that hinders the required empirical analysis on the benefits of IoT technology. We hope that more research in this field will be conducted in the future.

8 REFERENCES

- [1]. https://en.wikipedia.org/wiki/Internet_of_Things, Jun 25 (2016).
- [2]. Joo, D.Y and Kim, J.K.: Creative & active convergence model of IoT, Korea Institute for Industrial Economics & Trade, Korea (2014).
1. 3. <http://blogs.wsj.com/cio/2015/06/02/internet-of-things-market-to-reach-1-7-trillion-by-2020- idc/>, Jun 2 (2015).
- [3]. Gauer, A.: Smart city Architecture and its applications based on IoT, Procedia computer science, (2015), Vol.52, pp.1089-1094.
- [4]. Bagula, A., Castelli, L and Zennaro, M.: On the design of smart parking networks in the smart cities: An optimal sensor placement model, Sensors, (2015), Vol.15, No.7, pp.15443-15467.
- [5]. Andersson, P., Mattsson, L-G. Service Innovation Enabled by the "Internet of Things". IMP Journal. Vol. 9. No. 1. Pp. 85-106. (2015)
- [6]. 2.Brody, P., Pureswaran, V .: The Next Digital Gold Rush: How the Internet of Things Will Create Liquid, Transparent Markets, Strategy & Leadership, vol. 43 . no. 1. pp.36 -41.(2015)
- [7] Friedman, T. L.: The World is Flat: A Brief History of the Twenty-First Century, New York: Farrar, Straus, and Giroux (2005)