IOSR Journal of Computer Engineering (IOSR-JCE)
e-ISSN: 2278-0661,p-ISSN: 2278-8727
PP 13-16
www.iosrjournals.org

Analysis of Real Time Applications Based on Iot Architecture Reference Model

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***Abstract*:** *The internet of things is the interconnection of physical objects, sensor, networking synthesizers and embedded software which enables to collect and exchange the data. In recently, many states have focused to implement smart city, smart home, smart indoor personal comfort levels monitoring and smart health care based on the emerging field in IoT. In this paper briefly explains the basic concepts of IoT, some of the technology were reviewed and finally describe the major research and social issues.*
Keywords: *IoT Architecture, Privacy and Threats*

Introduction

Internet of tings concepts has evolved rapidly in recent years. It can be seen as umbrella term for interconnected technologies devices, objects and services. In particular, it builds on the following characteristics RFID, Communication, Addressability, identification, sensing, actuation, embedded information processing and user interface. Communication evolved based on Internet Protocol, this technology is used to communicate with outside the resources in Remote manner. Radio frequency identification (RFID) is the wireless use of electromagnetic fields to transfer data, for the purposes of automatically identifying and tracking tags attached the objects. The tags contain electronically store information. Some tags are powered by electromagnetic induction from the interrogating radio waves and act as a passive transponder. RFID tags can be either passive, active or battery- assisted passive. RFID system has three parts: a scanning antenna, a transceiver with a decoder to interpret the data. A transponder the RFID Tag that has been programmed with information sensing means sense the states of any particular objects/environment. Embedded information processing contains computing micro controller (processing information will take place communicated with IoT element), processor and storage capacity (RFID is limited storage, storing the data internally). The final characteristics of an IoT are a user interface which decides the outcome of IoT in terms of results. The element results may be text, audio and video.

II. Iot Architecture Model

The general definitions of IoT based on two words internet and things. Internet means combination of networks. Things refer generic objects. Based on hierarchical structure, IoT architecture is divided into six layers as shown in the figure 1.

2.1 Coding layer

This layer is a top level layer which provides identification of objects. Each object is assigned a valid unique ID which makes it easy to recognize the objects

2.2 Perception layer

This layer is often called as a device layer. This layer provides a physical meaning to each object. It consists of data sensors in different forms like RFID tags, IR sensors and other sensor networks. Each sensor senses the following parameters like temperature, humidity, speed and location of the objects. The main objective of this layer is extract the useful information of the objects from the sensor devices linked with them and converts that useful information into the digital signals which is then passed onto the network layer for the further action.

2.3 Network layer

Network layer receive the useful information from the perception layer and transmit the processing system with the help of middleware layer using various transmission mediums.

2.4 Middle ware layer

This result of processing system information received from the sensor devices. These devices store the useful information and make them into the database. Some of the technologies of sensor devices such as cloud computing, ubiquitous computing are directly access to the database.

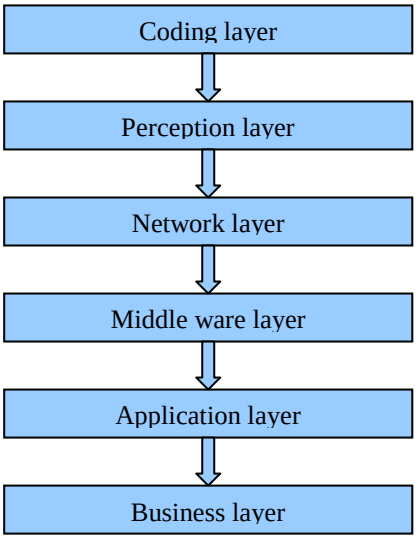

Fig-1 Architecture of IoT

2.5 Application layer

This layer recognize the applications of all kind IoT applications like Transport/Logistics, Smart Home, Smart Cities, Smart factory, retail, E-Health, Smart Energy/ Smart Grid. So this layer is very helpful in the large scale development of IoT network.

2.6 Business Layer

This layer manages the applications and services of IoT and is responsible for all the research related to IoT. It generates different business models for effective business strategies.

III. Technology In Iot

3.1 RFID Technology

Radio frequency identification (RFID) is the wireless use of electromagnetic fields to transfer data, for the purposes of automatically identifying and tracking tags attached the objects. The tags contain electronically store information. Some tags are powered by electromagnetic induction from the interrogating radio waves and act as a passive transponder. RFID tags can be either passive, active or battery- assisted passive. RFID system has three parts: a scanning antenna, a transceiver with a decoder to interpret the data. A transponder the RFID Tag that has been programmed with information sensing means sense the states of any particular objects/environment. Embedded information processing contains computing micro controller (processing information will take place communicated with IoT element), processor and storage capacity (RFID is limited storage, storing the data internally).

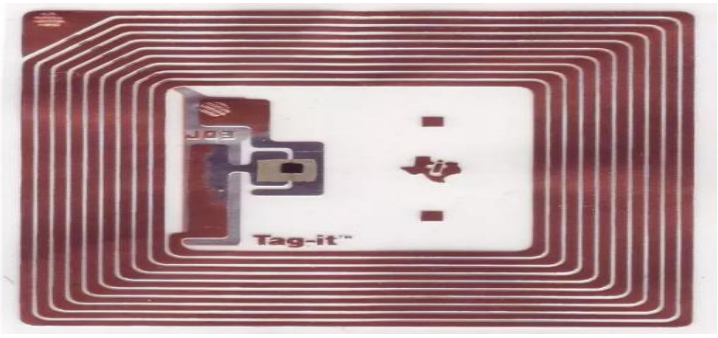

Fig-2 RFID Tag

3.2 Wireless sensor Networks

A sensor network is defined as being composed of a large number of nodes which are deployed densely in close proximity to the phenomenon to be monitored. Each of these nodes collects data and its purpose is to route this information back to a sink. The network must possess self-organizing capabilities since the positions of individual nodes are not predetermined. Cooperation among nodes is the dominant feature of this type of network, where groups of nodes cooperate to disseminate the information gathered in their vicinity to the user. Sensor networks are being widely used for large-scale real-time data processing. Their foreseeable applications help to protect and monitor critical military, environmental, safety critical, or domestic infrastructures and resources. A sensor network consists of thousands to millions of sensors with computation, communication, and sensing capabilities that can spread across a geographical area. Low power batteries, and thus, their capabilities are limited by the available energy. In addition, their limited computing power, bandwidth and memory size restrict the use of traditional data processing algorithms, and the size of Intermediate results that can be stored on the sensor nodes TinySec, a popular secure link layer protocol, achieve low energy consumption and memory usage. Unfortunately, it also sacrifices on the level of security

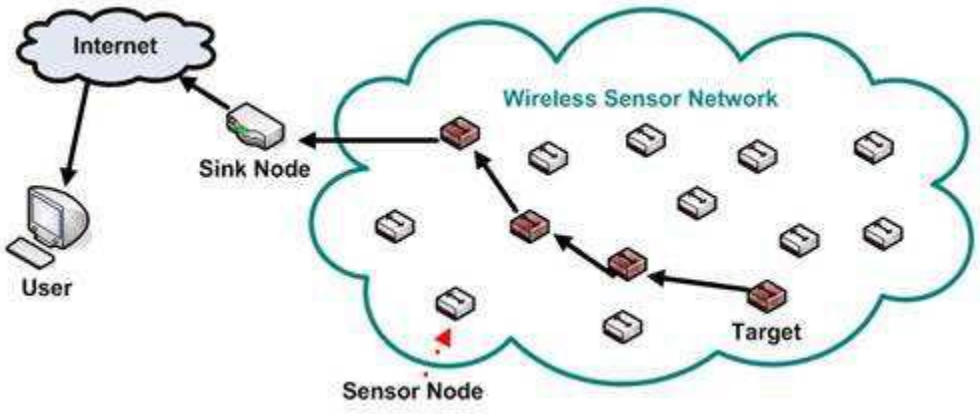

Fig-3 Wireless Sensor Networks

IV. Applications

Most of the daily life applications that we normally see are already smart but they are enable to communicate with each other and enabling them to communicate with each other.

4.1 Transport/Logistics

In transport logistics, IoT improves not only material flow systems but also the global positioning and automatic identification of freight. It also increases energy efficiency and thus decreases energy consumption. In conclusion, IoT is expected to bring profound changes to the global supply chain via intelligent cargo movement. This will be achieved by means of continuous synchronization of supply chain information and seamless real time tracking and tracing of objects. It will make the supply chain transparent, visible and controllable, enabling intelligent communication between people and cargo/goods.

4.2 Smart Home

Future smart homes will be conscious about what happens inside a building, mainly impacting three aspects: resource usage (water conservation and energy consumption), security and comport. The goal is to achieve better levels of comport while cutting overall expenditure. Moreover, smart homes also address security issues by means of complex security systems for detecting theft, fire or unauthorized entry. The stakeholders involved in this scenario constitute a very heterogeneous group. Different actors will cooperate in the user's home, such as internet companies, device manufactures, telecommunications operators; media service providers, security companies, electricity utility companies, etc.

4.3 Smart Cities

While the term smart city is a still fuzzy concept, there is general agreement that is an urban area which creates sustainable development and high quality of life. Giffinger et al model elucidates the characteristics of a smart city, encompassing economy, people, governance, mobility, environment and living. Outperforming in these key areas can be achieved through strong human or social capital and/or ICT Infrastructure. For the latter,

an initial business analysis concludes that several sectors/industries will benefit from more digitalized and intelligent cities.

4.4 Smart Factory

In a global supply chain, companies will be able to track of all their products by means of radio frequency identification tags (RFID). As a consequence, companies will reduce their operating expenses and improve their productivity due to tighter integration with enterprise resource planning and other systems. Also, maintenance of machinery will be facilitated by connected sensors, allowing for real-time monitoring of the health and performance of the factory equipment. Generally, IoT will provide automatic procedures that imply a drastic reduction in the number of employees needed. Workers will be replaced by bar code scanners, readers, sensors and actuators, and in the end by complex robots as efficient as a human being. Without any doubt, these technologies will bring opportunities for white collar workers and a large number of technicians will be required to program and repair these machines. This is synchronous to transfer to maintenance jobs, but it also constitutes a new challenge for providing all blue-collar workers with an opportunity to move toward these types of jobs and to avoid unemployment.

4.5 Retail

IoT realizes both customer needs and business needs: price comparison of a product; looking for other products of the same quality at lower prices; with shop promotion, giving information not only to customers but also to shops and business. Having this information in real time helps enterprises to improve their business and to satisfy customer needs.

4.6 E-Health

Control and prevention are two main goals of future health care. Already today, people have the option of being tracked and monitored by specialists even if the patient and specialists are not in the same place. Tracing people's health history is another aspect that makes IoT- assisted e-Health very versatile. Business applications could offer the possibility of medical services not only to patients but also to specialists, who need information to proceed in their medical evaluation. In this domain, IoT makes human interaction much more efficient because it permits only localization, but also tracking and monitoring patients. Providing information about the state of a patient makes the whole process more efficient, and also makes people much more satisfied.

4.7 Smart Energy/ Smart Grid

This field many overlaps with other scenarios, such as smart home and smart city. The key issue in these scenarios is to detect ways to save energy. We are basically referring to what is known as a small grid. In this application area, initiatives that imply more distributed energy production must be highlighted, as many houses today have a solar panel.

V. Conclusion And Future Work

IoT is an ideal emerging technology to influence this domain by providing new evolving data and the required computational resources for creating revolutionary apps. The main intention of this work is to analyze the applications which are based on privacy, threads and security. In this paper, we survey the architecture of an IoT, Architecture Reference Model (ARM) of an IoT, kinds of Applications were discussed

References

[1]. Memon, Azam Rafique, et al. "An Electronic Information Desk System For Information Dissemination In Educational Institutions."
[2]. Karimi, Kaivan, and Gary Atkinson. "What the Internet of Things (IoT) needs to become a reality." White Paper, FreeScale and ARM (2013).
[3]. Stankovic, John. "Research directions for the internet of things." Internet of Things Journal, IEEE 1.1 (2014): 3-9. [4] Gubbi, Jayavardhana, et al. "Internet of Things (IoT): A vision, architectural elements, and future directions." Future Generation Computer Systems 29.7 (2013): 1645-1660.
[4]. "Understanding the Internet of Things (IoT) ", July 2014.
[5]. Dogo, E. M. et al. "Development of Feedback Mechanism for Microcontroller Based SMS Electronic Strolling Message Display Board." (2014).
[6]. N. Jagan Mohan Reddy, G.Venkareshwarlu, et al. "Wireless Electronic Display Board Using GSM Technology", International Journal of Electrical, Electronics and Data Communication, ISSN: 2320-2084 Volume-1, Issue-10, Dec-2013