

Developed Internet of Things for the Improvement in Smart World

Mays Adel Khaki, Intisar Shaheed Al-Mejibli, Amer Saleem Elameer
University of Information and Communication Technology, Baghdad, Iraq

Abstract—Smart world Currently Internet of Things (IoT) one of the promising technology that has attracted a whole lot of interest in both business and educational fields and in which objects (e.g., watches, mobile phones, computers, cars) in these years, its ambitions to integrate seamlessly both physical and digital worlds in one single ecosystem that makes up a new intelligent a single atmosphere that makes up a new smart technology of the internet. Internet of Things (IoT) connects everything in the smart world. Motivated by achieving a sustainable smart world, this paper discusses various technologies and issues regarding IoT. However, as new emergent technology, IoT suffers from several protection problems that are maximum tough than those from other fields regarding its complex surroundings and assets-constrained IoT devices. Furthermore, the latest developments and future vision about sensor cloud, which is a novel paradigm in IoT. On this paper, we offer a comprehensive top-down survey of the most recent proposed protection solutions in IoT. We discuss in particular the benefits that new processes which include platform IoT. Our work targets to be a description of how developed IoT using smart sensors and the latest guidance for research with respect to IoT and smart world.

Keywords—IoT, Arduino, RaspberryPI, Sensor, Bigdata.

I. INTRODUCTION

The Internet of Things (IoT) Internet of things refers to unique objects (objects) that are ostensibly represented in an Internet-like structure. He was the first to use the term Internet stuff Kevin Ashton in 1999. The concept of internet things first became popular through publications related to auto-ID center and market analysts [1].

Radio frequency identification (RFID) is often seen as a prerequisite for internet things. If all things and people are equipped in everyday life with its own radio indicator it can be identified and restricted by computers. However unique objects can be achieved through other objects such as barcode or 2D-codes as well [2]. For example, businesses may no longer suffer from depletion of stocks or products that generate waste and stakeholders will know which products are required and expendable [3]. The Internet offers things to a person the ability to control things remotely without having to be in the same place or near the device [4].

These techniques are useful in smart homes with Internet-connected devices so you can turn on the heating remotely and you're on your way home if your heater is connected to the Internet.

We see Internet things billions of smart things smart "clocks") kind of "universal "With the Network the foundation is the intelligence that provides embedded processing [5] [6]. This paper going to declare the techniques of operations smart objects interact and communicate with other objects through Arduino environments and infrastructure.

II. MOTIVATION TOWARDS RESEARCH

- Providing local and private entities with access to the latest developments in the Internet and participants with the opportunity to present their advanced technology to visitors from the public and private sectors.
- Open a partnership horizon between companies' developers and innovators in Internet of things.
- Integrating company's institutions and government entities in the concept of "Internet of things" through the use of modern technology and automation work within.
- Raise the efficiency of smart manufacturing.
- Finding transportation solutions.
- Access to electronic protection systems.
- Access to Internet-related security technology.
- Access to the most important applications software and modern technologies.
- Access to modern technology for smart buildings.
- See previous experiences for Internet users.



Fig 1. Internet of Things Required

III. OBJECTIVES OF (IOT)

Compared with the traditional info meshwork - Synonyms/Hypernyms (Ordered by Estimated frequent) of noun work they are elaborated as follows.

- 1- Extensiveness in the quantity of device.
- 2- Extensiveness in the case of Electronic network - twist (networking elements)
- 3- Extensiveness in the connection The DE - vices may be connected in a wired or wireless mood.

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- 4- Hops: the connection can be strong State Department routing or statistical weak state routing.
- 5- Non-uniformity: Data formats for temperature, humidity, audio, video, and other info are different from each.
- 6- There is inconsistent information due to the distortion of space-time mapping [7].

IV. THE REASON FOR NAMED IT INTERNET OF THINGS

Word of things raises the curiosity of many are vague and do not refer to anything specific but in fact things are a general word and refers to anything that can be linked and connected to the Internet by giving it an IP address.

CHARACTERISTICS OF INTERNET OF THINGS

IoT describes a system in which the devices are in the physical world and the sensors are inside these devices or accessories are connected to the Internet by wired or wireless connection. These can Sensors Use many local area network communication technologies such as Bluetooth technology, RFID identification NFC Wi-Fi Bluetooth.

The extensive network connectivity technologies are also available in ZigBee and Bluetooth R-band service GSM cellular for totalitarian communication system such as Connectivity Area Wide (Fourth Generation) LTE Long-Term Evolution and Services 3G Third Generation Services GPRS[8].

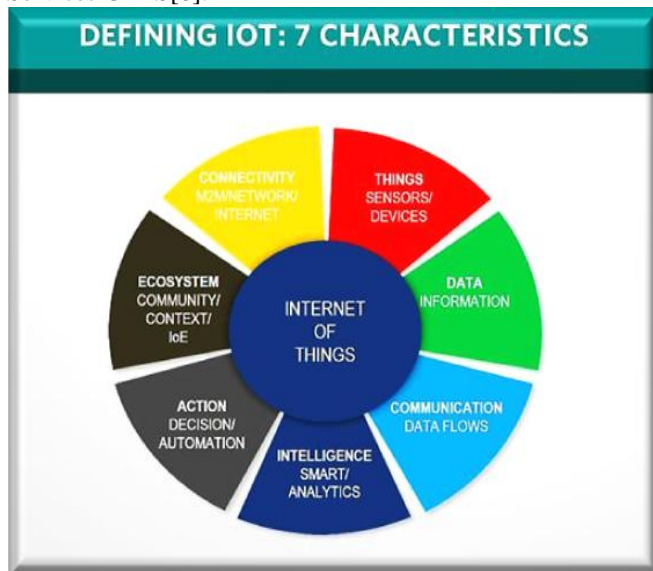


Fig 2. Characteristics of IOT

V. THE AREAS OF WORK THAT PEOPLE CAN LEARN TO ENTER THE WORLD OF INTERNET OF THINGS

1- Chief Internet of Things Officer / CioTO

He will be in charge of leading the Internet sector in the enterprise where he will develop the strategy of the institution in the adoption of Internet of things technology and feasibility study of solutions offered[9].

2- Internet of Things Business Designer/IoTBD

Will be responsible for analyzing and creating solutions to the problems posed by the Enterprise Management to create solutions that help the organization to overcome its obstacles or save costs in one of the work procedures using Internet technologies.

3- Full Stack Internet of Things Developer

A profession that I expect to have the greatest demand. Those who vacate this job must be familiar with the four application areas (Hardware, HardwareDevices ,Software IoT PlatformsDatabases Devices) Hardware Developer It is the closest to the study of the current electronics engineering.

4- Devices Software Developer

A profession that I expect to get the biggest offers (not the biggest demand) because it is the easiest area to learn by the programmers of mobile applications and websites and learning does not require the purchase of expensive hardware.

5- IoT Platforms Developer

Many companies will not need to use the available Platforms such as IBM Watson or Microsoft Azure IoT Suite which will raise the demand for the following profession[10].

6- IoT Platforms Administrators

Most companies will need them. Internet platforms will not manage themselves.

7- IoT Database Administrators

Most of those who will work in the field are those who have been working in the field of database management previously DBA all they will need is to learn some tricks of Internet databases[11].

8- IoT Solutions Advisor

Of course many companies will search for consulting services before investing in Internet stuff which will open the door to consulting services. Share on Facebook[12].

VI. ARCHITECTURE OF INTERNET OF THINGS

Implementation of IoT is based on a computer architecture consisting of several layers[13]:

- 1) *Edge layer*: this hardware layer consists of sensing element meshing, embedded systems, RFID tags and proofreader or other soft sensor s in different forms. These entities are the primary data sensors deployed in the field.
- 2) *Access gateway layer*: the first stage of data handling happens at this layer. It takes care of message routing, publishing and subscribing and also performs crown of thorns political platform communication, if required.
- 3) *Middleware stratum*: this is one of the most critical bed s that operates in bidirectional mode. It Acts as an interface between the hardware layer at the bottomland and the application program layer at the acme. It is responsible for critical role such as device management and information management

- 4) *Application layer*: this layer at the whirllig of the stack is responsible for delivery of various applications to different users in IoT. The applications can be from different industry vertical such as: manufacturing, logistics, retail, environment, public refuge, healthcare, food and drug etc.

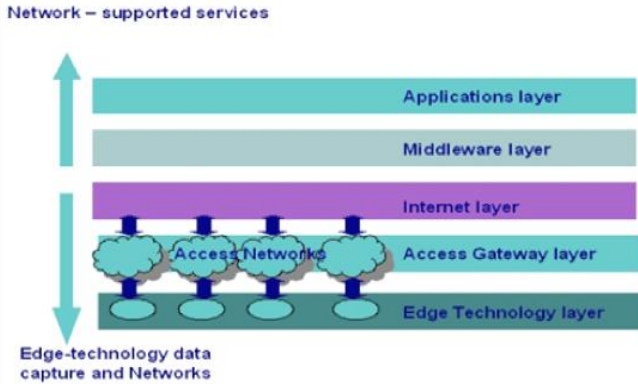


Fig. 3. Layered Architecture of IoT

VII. COMPONENTS OF INTERNET OF THINGS

The Internet consists of three main elements[14]:

- 1) The things.
- 2) Networks that connect them.
- 3) Computing systems that process data that objects send and receive.
- 4) Security and privacy challenges facing Internet things with the advent of Internet things and the wide use of their techniques the growing talk about protection problems and assault on the privacy of the individual.

VIII. HOW DOES INTERNET OF THINGS WORK

The communication we talked about between technical devices is done via the Internet but how exactly The method of communication was built by platforms designed using cloud computing as these platforms receive applications through the Internet and deal with them and rely also on the data collected to facilitate decision-making[15].

LEARNING IoT FOR DEVELOPED WORLD

Internet of things is divided into two main parts

- 1) Hardware includes devices that will send and receive data to the Internet. Such as Arduino Raspberry PI
- 2) Software The software needed in both of the above mentioned devices in addition to the huge databases Big Data and the platform for Internet stuff IoT Platform
 - First in the hardware sector:
 - *Arduino*: Arduino is one of the simplest platforms in the world of IOT, I recommend learning to use Arduino Uno for its simplicity and standard standards compatible with many other devices[16].

<http://www.arduino.cc>

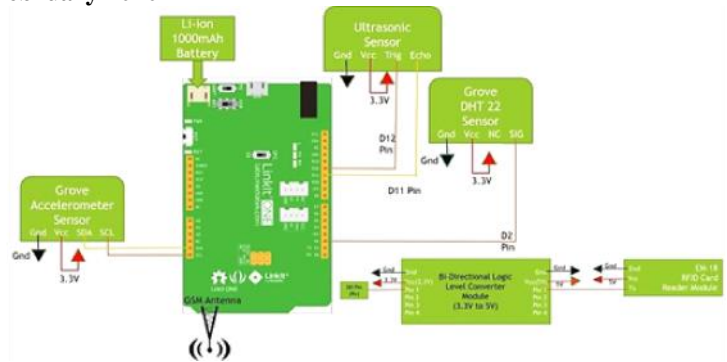


Fig. 4. Arduino Chip

- *Raspberry PI*: is the most widely used and widely used IOT. You can install Raspbian OS or Windows IoT Core and use the appropriate programming language[17]. <https://www.raspberrypi.org>

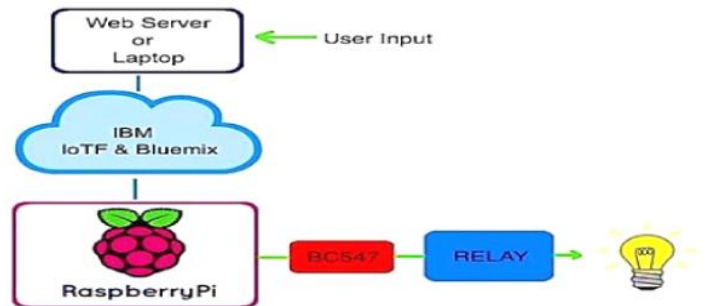


Fig. 5. Raspberry PI

- *XBee*: Do not forget to learn how to use XBee, a small electronic circuit that provides wireless data transmission for distances of up to 70 km, which can be used in home or smart cities[18]. <https://www.digi.com/products/xbee-rf-solutions>

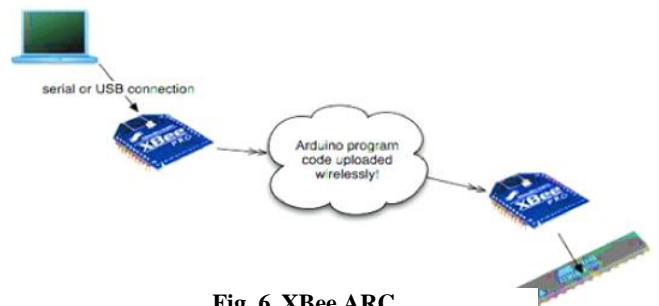


Fig. 6. XBee ARC.

- *Sensors*: You need to know what types of sensors a
- available in the local market and through the Internet stores will further equip you to know the technical needs of each type of sensors[19], you can hand with <https://www.adafruit.com>
 - Second in the software and software sector:

Of course I will assume your knowledge of one of the C-Based languages such as Java, Python or #C, as well as database development.

- *IoT Platforms*: The Internet of things platform is the code in the server to which the devices send all their data. The platform stores the data in the database, analyzes and reports, and it can be the user interface through which you can control your devices[20].
- *Big Data*: The world has not seen systems generate huge data as much as Internet systems do. To keep this entire database, you have to learn the Big Data concepts and how to contain that vast amount of data[21].

IoT and Big Data

Databases will need to address new requirements

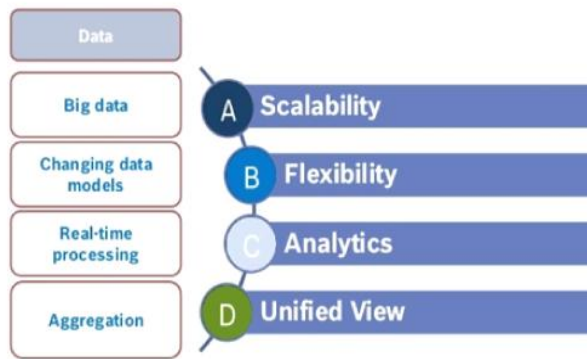


Fig. 7. Big Data schema

- *IoT OS*: If you want to build your own Internet of things, you have to master one of the operating systems such as Windows IoT Core, Android Things, Ubuntu IoT[22].
- *R Language*: When we talk about data analysis and industrial intelligence, the first thing to learn is R, a special software language for data analysis and industrial intelligence (see: What is Machine Learning and how does it use Internet of things)
- *BI*: A brief for Business Intelligence: Help systems for displaying reports and Dashboards based on databases, use them in Internet applications. Things give your project a high level of professionalism. For example, you can use Microsoft Business Intelligence.

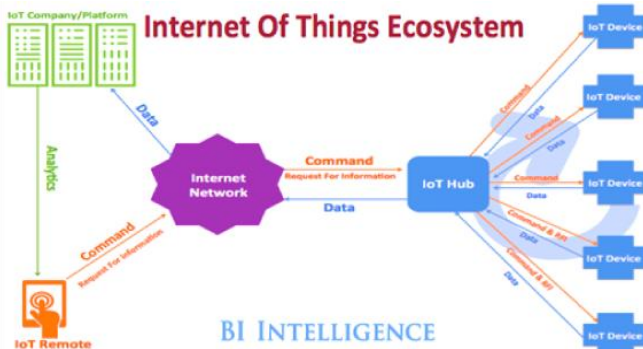


Fig.8. BI Intelligent

IX. AREAS AND APPLICATIONS USED IN IOT

The Potential of the Internet of things applications is huge, but there are some areas that will mature much faster than the rest[23].

1) Connected / Smart Homes

The definition of a connected home differs for different people, and simply can be said that a smart home is a home that has a device that has the ability to communicate with each other, as well as with its intangible environment. The Smart House gives the owner the ability to customize and monitor the home environment, to increase security and manage energy efficiency.

2) Smart clothing or clothing (Wearables)

There are several labels for this type of device. There is so-called "Wearable Computing", "Wearable Devices" or "Wearable Technology", all of which refer to "wearable" "Smart Wearables" means all smart, wearable technologies such as wrist watches, bracelets and spectacles that range from entertainment to sports to health. Currently, many international companies compete as "Apple, Google, Samsung and others Devices.

3) Electronic clothing

Installed with sensors and software, which collects data and information about users, and then the data, is processed to extract basic statistics about the user.

4) Retail trade

The potential of Internet things in the retail sector is enormous. Imagine that your home appliances are able to let you know in the event of a shortage of supply, or even ask for it on its own. This model began in ads based on proximity to smart retailing to become a reality.

5) Smart Cities

Intelligent cities, smart transportation, smart systems for energy management and environmental monitoring are all examples of smart Internet applications for smart cities.

6) Health Care

Health care is the sleeping giant among Internet applications. The concept of a health-care system connected to the Internet and smart medical devices holds tremendous potential not only for businesses but also for the well-being of people in general.

7) Agriculture

With the steady increase in the world's population and the dramatic rise in demand for food supplies, governments are helping farmers use advanced technologies and research to increase food production, and Smart Farming is one of the fastest growing fields in the Internet.

8) Vehicle and transport (Automotive/Transportation)

Digital car technology has focused on improving the internal functionality of vehicles, Car-connected, is a vehicle capable of improving its operation and maintenance, as well as providing the convenience of passengers using sensors and the Internet on board.

9) Industrial Automation

Industrial automation is one of the most profound applications of Internet applications. With the help of the Internet of Things Infrastructure - supported by advanced sensor networks and communications.

X. THE PROBLEMS ASSOCIATED WITH IOT

Can get worse as people try to generalize the experience on all home appliances. Home-connected devices will become more and more vulnerable in the chain as attackers may not be able to penetrate your home network through your computer but they may be able to do so by your coffee machine. While security considerations are not new under IT the features of many Internet applications represent new and unique security challenges. Addressing these challenges and ensuring security in Internet products and services should be a key priority. Internet devices and services that are not well secured can be a possible entry point for cyber-attacks and expose user data to theft[24].

XI. OBSTACLES TO USING INTERNET OF THINGS

Many of the products of this technology are rejected by many because of their violation of privacy and the entry of third parties in many aspects of life with no control over the quality of information that will be used by these unknowns. Hacker hackers can penetrate many systems either for entertainment purposes only or for economic and political reasons or for any reason. If all the things around us connect to the Internet and transmit information all the time how will this volume be controlled and how it will be processed[25].

XII. EVALUATION AND RESULT IOT SECURITY AND PRIVACY

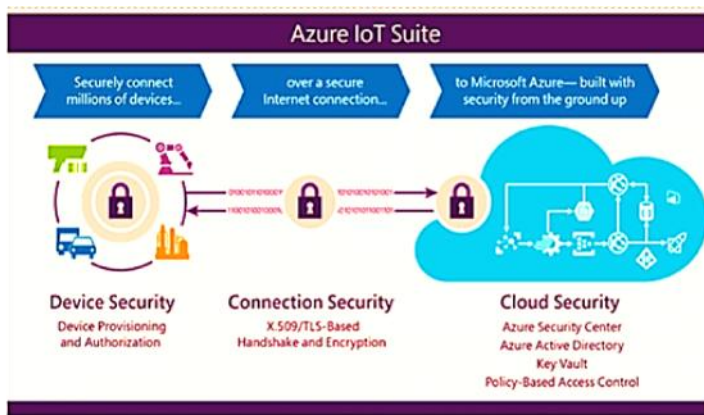


Fig. 10. Security of IoT

Internet things and privacy problems as the device become more connected thanks to the IoT, security and seclusion has become the primary concern among consumers and businesses. In fact, the security of sensitive data ranked as the top concern (at 36% of those polled) among enterprises, according to the 2016 Vormetric Data Threat Account. Cyber-attacks are also a growing threat as

more connected devices daddy up around the world. Hackers could penetrate connected railcar, critical substructure, and even hoi pollen’s homes. As a result, several tech fellows focal point on cyber security in order to secure the privacy and refuge of all this data[26].

XIII. CONCLUSION AND FUTURE WORK

In the context of this paper, the Internet of Things is closer to its implementation than the average person will think. Most of the necessary technological progress has already been achieved and some manufacturers and agencies have already begun to implement a small version of it. The main reasons for its lack of implementation are the impact it will have on the legal ethical security and social areas. Workers can abuse them hackers can access them companies may not want to share their data and individuals may not favor complete personal privacy. For these reasons, Internet things can be pushed far beyond what really should be.

In the coming years, we hope that changes to the organization of the Internet of things and implementation in smart city application with improvements to the encryption formula to increase the security of social networks using platform of Internet of things.

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