



A Review on Scope of Internet of Things

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Abstract: Only IoT allows objects to be sensed & remotely controlled over present network infrastructure, which creates opportunities of direct combination of physical world in systems which are computer-based & results in improved efficiency, accuracy & economic benefit. Internet of Thing offers large developed connectivity of devices, system & services, which is over machine-to-machine communications & it covers a big variety of protocols, domains & application. The Objective of our paper is to set up an Infrared Array Sensor system that is IOT

based in order to provide security at remote location. In this paper camera captures external event & sent signal to Infrared grid array sensor. If there is suspicious movement then it would transfer signal to IOT interface that is running on cloud server & connected to a remote database. Event database is updated & actuator is connected to database.

Keyword:- IOT, Integration,, Home automation, Machine to Machine

I. INTRODUCTION

IOT is a keen network of physical devices, buildings, vehicles, & all other items which are embedded with electronics, software, sensors, & network connectivity that enable these objects to collect & exchange data.

In IoT objects could be sensed & controlled at a large distance across present network infrastructure, which creates opportunities for direct combination of physical world into computer-based systems, & resulting in improved efficiency, accuracy & economic benefit; when IoT is augmented with sensors & actuators, technology becomes an example of general class of imitated-physical systems, that includes technologies like smart homes, smart grids, smart transportation & advanced cities. Each thing

could be separately identified through its implanted computing system but it could interoperate within present Internet infrastructure. Experts have estimated that IoT will include near about 50 billion objects up to 2020.

Scope of IOT

IOT has many advantages into our lives that could help individuals, society & business on daily basis. Its new concept could be presented in many forms which includes safety, health, financial matters, & planning of each day. IOT Integration in health care system could be very beneficial for both individual & society.

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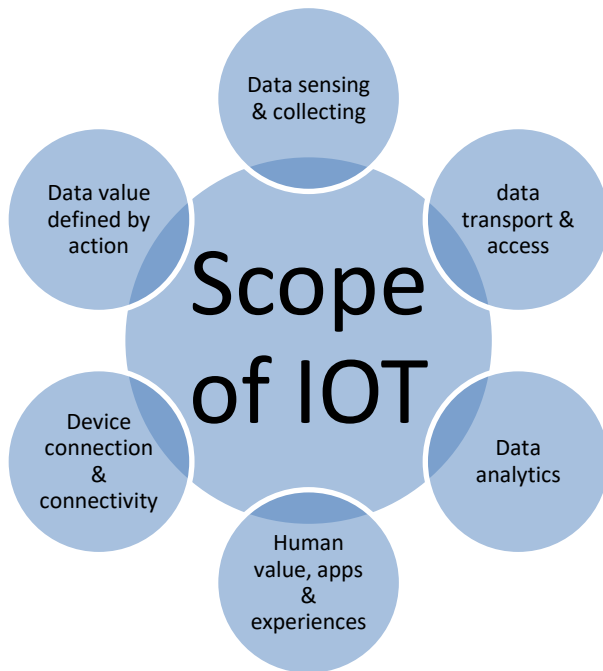


Fig 1 Scope of Internet of Things

A chip could be planted into every individual, which allows monitoring vital signs of patients for hospitals. By finding their important signs, it could help in indicating whether seriously assessment is necessary or not.

All of information which is available on Internet, it could also scare people to believe that they have to take more care than what is in need. Hospitals are already struggling to judge & caring of patients that they have it gives them ability to judge who requires primary attention only by monitoring individual's health. IOT could help people in their personal safety. ADT is a home security system, which permits individuals in monitoring their security systems at home by their phones, with ability to control.

Challenges to secure IoT deployments

Existing security technologies will play a role in mitigating IoT risks but they are not enough. The goal is to get data securely to right place, at right time, in right format. It's

easier said than done for many reasons, & here is a list of some of challenges:

- Many IoT Systems are poorly designed & implemented, using diverse protocols & technologies that create complex & sometimes conflicting configurations.
- Limited guidance for life cycle maintenance & management of IoT devices
- IoT privacy concerns are complex & not always readily evident.
- There is a lack of standards for authentication & authorization of IoT edge devices.
- Security standards, for platform configurations, involving virtualized IoT platforms supporting multi-tenancy is immature.
- The uses for Internet of Things technology are expanding & changing often in uncharted waters.

II. IOT Architecture

The Internet of Things (IoT) as a concept is fascinating & exciting, but one of major challenging aspects of IoT is having a secure ecosystem encompassing all building blocks of IoT-architecture. Understanding different building blocks of IoT, identifying areas of vulnerability in each block & exploring technologies needed to counter each of weaknesses are essential in dealing with security issue of IoT.

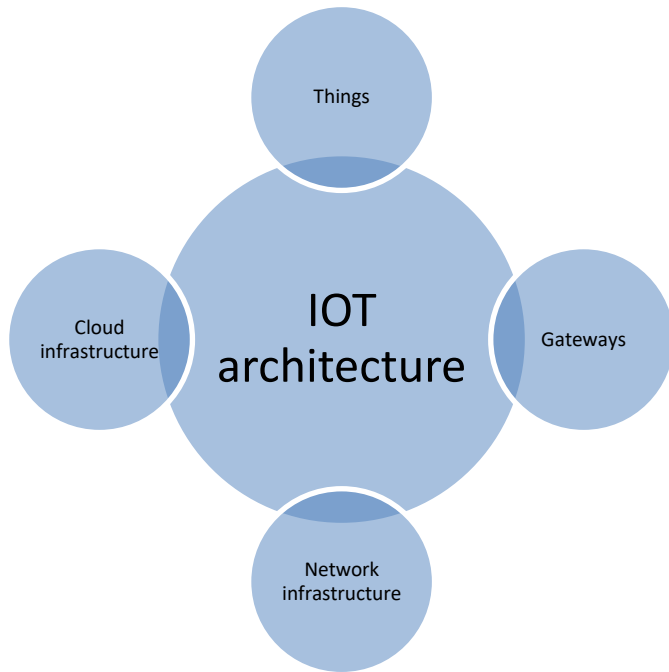


Fig 2 IOT architecture

IOT architecture would be speak for by four building blocks.

1. **Things:** These are defined as uniquely identifiable nodes, primarily sensors that communicate without human interaction using different connectivity methods.
2. **Gateways:** These act as intermediaries between things & cloud to provide needed connectivity, security, & manageability.
3. **Network infrastructure:** This is comprised of routers, aggregators, gateways, repeaters & other devices that control & secure data flow.
4. **Cloud infrastructure:** Cloud infrastructure contains large pools of virtualized servers & storage that are networked together with computing & analytical capabilities.

III. LITERATURE REVIEW

John A. Stankovic, Life Fellow, wrote on Research Directions for Internet of Things by IEEE

Several technical communities are pursuing researches that donate to Internet of Things. As sensing & actuation control has become ever sophisticated, there is important overlap in such communities, sometimes from slightly many perspectives. Cooperation among communities has been encouraged.

JayavardhanaGubbi,RajkumarBuyya. SlavenMarusic, MarimuthuPalaniswami Internet of Things: A Vision, Architectural Elements, & Future Directions^[6]

Sensing enabled by Wireless Sensor Network technologies cuts across several areas of modern day living. Proliferation of these devices in a communicating actuating network creates Internet of Things, wherein, sensors & actuators blend seamlessly with environment around us, & information is shared across platforms in order to develop a common operating picture.

In 2014 Abhay Kumar & Neha Tiwari published a research titled Energy Efficient Smart Home Automation System told about energy required by home instruments & air-con systems ,develops homes one among foremost important areas for impact of energy consumption on natural surroundings. Objective for planning of such system is to reduce energy wastage with efficiency controlling devices operation modes.

Authors Juan Felipe Corso Arias in 2014 published their research paper heading “Wireless Sensor System According to Concept of IOT -Internet of Things

In this research they focus on design of a wireless communication system. They keep responding to sensor concept that has been applied to industrial process. Here temperature variables used. Sensors have been connected to internet in order to be monitored remotely. Sensor data gets downloaded from cloud with graphical programming in order to control. It communicates system with programmable logic controller. Monitoring process was done with a SCADA system & modeling of



communication system was done using formalism of Petri nets, as a system that responds in terms of several events.

Chirag M. Shah, Vamil. Sangoi& Raj M. Visharia. in 2014 Smart Security Solutions based on Internet of Things

Popularity of Internet of Things & devices are getting smarter. Paper represents idea to reform access control systems. Approach of boosting access control system sure that system is wireless. Prototype described in this paper has provision of accepting inputs from a smart card reader or a biometric sensor. Such inputs are processed inside controller. If inputs are found to be valid, access is granted to user & logs are wirelessly transmitted to computer using a WiFi module. Machine learning algorithms have been implemented to monitor & analyse collected data.

ByungMun Lee in 2014 wrote **Design Requirements for IOT Healthcare Model using an Open IOT Platform** that tells most IOT platforms are developed to be universally applied to many services & applications. However, critical success factor of IOT is an explosion of demand for services. Therefore goal would be achieved if service & application are reflected their characteristics for each use case. Hence it presented an IOT platform for healthcare & suggested to configure it with 5 components in this paper. This paper introduced REST APIs as an interface in platform for interoperability with any service & device.

ByungMun Lee & Jinsong Ouyang in 2014 wrote on **Intelligent Healthcare Service by using Collaborations between IOT Personal Health Devices** where they opine that management of chronic diseases is important to self-management for health. The IOT concept plays a significant role in self-management for health. In order to accomplish it, personal health devices need two functions such as application network protocol & intelligent service. But, most of them have only simple function such as indicating measured data & storing data temporarily

IV. Distributed IOT Based Home Automation System

Distributed **IOT Based** home automation system, consists of server, hardware interface modules used. Server controls hardware one interface module, & could be easily configured to handle more hardware interface module. Hardware interface module in turn controls its alarms & actuators. Server is a normal PC, within built in Wi-Fi card, acts as web server. System could be accessed from web browser of any local PC in same LAN using server IP, or remotely from any PC or mobile handheld device connected to internet within appropriate web browser supports asp.net technology through server real IP. Wi-Fi technology is selected to be network infrastructure that connects server & hardware interface modules. Wi-Fi is chosen to improve system security by using secure Wi-Fi connection, & to increase system mobility & scalability.

INTERNET OF THINGS, WORLD, 2011-2025

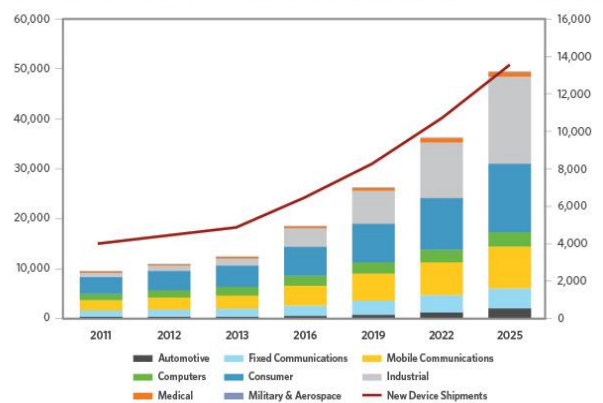


Fig 7. Growth of IOT FROM 2011 TO 2015 in different sectors[23]

Though user intends to add latest hardware interface modules out of coverage of central access point, repeaters or managed wireless LAN would perfectly solve that type of problem. Main functions of server are to manage, control, & monitor distrusted system components that enables hardware interface modules to execute their assigned tasks through actuators, & to report server within triggered events from sensors.

V. CONCLUSION



In order to program & control flow of information in Internet of Things, a predicted architectural direction is necessary. It is being called BPM. Everywhere that is a blending of traditional process management & special capabilities to automate control of large numbers of coordinated devices. In Internet of Things, significance of an event will not essentially base on a deterministic approach but would in its place to be based on framework of event itself: this is also being a semantic web. Consequently, this will not necessarily require common standards that will not be able to prefer every context or use: some actors' services, components, avatars accordingly be self-referenced & if ever needed, adaptive to active common standards. Some researchers give that sensor networks are most essential component of Internet of Things.

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