Internet of Things Challenges and Implementation in Modern World

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Abstract—**Electronic Commerce or E-Commerce is a term for any type of business that involves the transfer of information across the internet. It covers a range of different type of business from consumer based retail sites, trough auction or music site, to business exchanges trading goods and services between corporations. The internet of things is the network of a physical object embedded with electronics, software, sensors and network connectivity that enables to collect and exchange data. This paper will explain how IOT is implemented in e-commerce experience along with the description of Amazon dash an IOT technology developed by Amazon.**

Keywords—IOT(Internet of Thing); E-Commerce;Sensor;

I. INTRODUCTION

Internet of thing is an Integrated part of future internet and could be defined as global network infrastructure with self-configuring capabilities based on standard interoperable communication protocol where physical and virtual thing have identity physical attribute and use intelligent interfaces, basically the internet of thing is a system of interrelated computing device ,machine or people that are provided with unique identifiers and ability to transfer data over network without requiring human to human interaction.

II. ECOMMERCE

E-Commerce or Electronic Commerce is trading of good using internet,e-commerce is conducted using a variety of applications such as email, fax EDI (Electronic Data Interchange) File Transfer Protocol. The first e-commerce developed was in the year 1972 where ARPANET was used to cannabis sale between the student of Artificial Intelligence laboratory and Massachusetts Institute of Technology Some of the common application related to e-commerce are as follows.

A. Document Automation

It is the process of designing of system and workflows that help in the creation of electronic documents. Automation system helps companies to minimize data entry, reduce the time spent in proofreading and also the risk associated due to human error. The main function is to replace manual filing of documents with template based system where user answer data entry screen. Some document automation software are even capable of creating a single document suite where all the necessary document is encapsulated into one single file so updating can be done quite easily. There are many documents that are used in the business which involves invoices/packaging list/slips etc. These documents are usually contracts between receiver and sender and are very important to both the parties as well as the government. Documents handling in supply chain management is usually performed by Barcode scanner and laser printer .There are some companies of a high-speed document automation system that compare the laser printed document to order an insert a pouch to the shipping container .

B. Group Buying

Group Buying is a condition where products are given at reduced price only if a minimum number of buyers would make the purchase .Group buying is also used to purchase real estate in India a website called group booking provide a various deal on real estate booking.As of now there are more than 40 registered sites working in India.

C. Print on Demand

It is basically a printing technology and a business process in which copies of books are not printed until an order has been received. Print on demand is used as a way of printing items for a fixed cost per copy. POD has several benefits which include lower cost; technical setup is quick and little or no waste from the unsold product.

E. Online Banking

Online banking is an electronic payment system that enables customers of a bank to check status of their account, pay bills, transfer cash request check book etc without going to bank all the services are managed with help of computers and the internet because of reduced overhead cost associated with not having physical branches, online bank tend to offer consumers a significant saving and pay high-interest rates. The online bank handles customer task by email, phone or online chat.

F. Teleconference

The teleconference is basically a conference with participants in different locations linked by telecommunication device; sound conferencing, phone conferencing and telephone conferencing are likewise now and then allude as video chatting some of the notable service providers for teleconferencing include Skype and VoxOx.

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G .Social Networking Service

A Social networking service is a platform to build social relations among people who share similar interest, activities or real life connection. Social networking services are Web 2.0 internet based applications, the user creates service specific profiles for the sites or app that are designed and maintained by the SNS organization.The first social networking website was launched in 1997 SixDegrees.com this site started the trend of enabling the user to create personal profiles.

III. IOT AND ECOMMERCE

IOT refers to a network of connected device that can communicate with each other and can also be remotely accessed through Wi-Fi or cellular network. The process becomes more useful when a device senses something and sends data a common example of it is a car which can alert the owner if someone broke the window by deploying a sensor to detect broken window. Nowadays retailer is using one type of sensor radio frequency identification or RFID for monitoring inventory .RFID tags are cheap and very small they have a small built in battery and can last up to 3 years .The RFID tag gives an alert whenever an item is lost or stolen from warehouse does increasing efficiency of warehouse other than RFID sensors temperature monitoring sensor and delivery monitoring sensor are also being implemented.
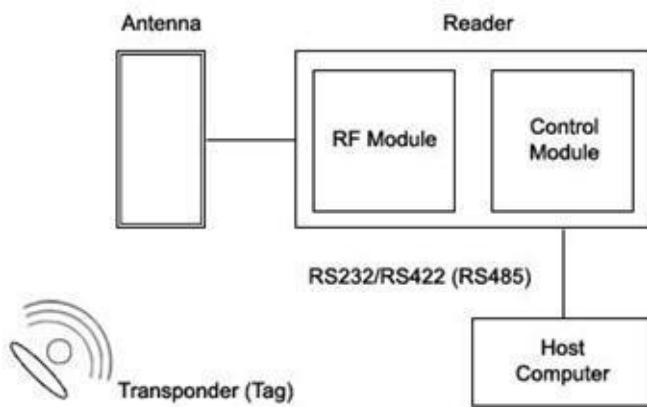

Fig 1.RFID Tag

IV. AMAZON DASH

Amazon dash is a consumer good ordering service through which customers can select bulk goods via an internet connected buttons .Dash button is an adoption of Amazon voice controlled dash ordering system that lets people speak to order. Amazon dash consists of a printed circuit board along with a lithium AAA battery In order to transfer the Wi-Fi information to the Dash; it has a microphone that receives protected data from a smart device with a speaker. The Dash uses an InvenSense INMP441 MEMS microphone to receive that data. The microcontroller on the Amazon Dash is the ST STM32F205 and Wi-Fi module is Broadcom BCM43362. Dash Button is configured using the Amazon mobile app using ultrasound to configure the button on account of iOS and Wi-

Fi on account of Android. The data is being sent from the iOS app using an ASK modulation scheme, with a carrier frequency of 19kHz.
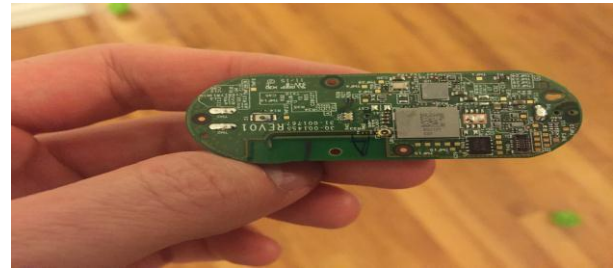

Fig 2. Amazon Dash Circuit Board(bitsofcent)

V. SMART CITY

Smart city is an urban region that is highly advanced in terms of overall infrastructure,sustainable real estate ,communication And market viability .It is a city where information technology is the principal infrastructure and basis for providing essential services to the resident. The IOT can be used to monitor the vibrations of building, bridges in case the building material is overloaded. Noise pollution can be controlled around hospitals and schools. It can be used to manage traffic especially during traffic jams, peak hours, accidents, and rains. It can be used to manage street lights automatically switch them off in the presence of sunlight and switch them on at the onset of darkness. The city of Santander in Cantabria, northern Spain, has 20,000 sensors connecting buildings, infrastructure, transport, networks and utilities, offers a physical space for experimentation and validation of the IOT functions, such as interaction and management protocols, device technologies, and support services such as interactions and management protocols, device technologies and support services such as discovery identity management and security. In Santander, the sensors monitor the levels of pollution, noise, traffic, and parking. Efficient IOT infrastructures for cities require two elements:[5]

1. Smart, innovative solutions that break away from traditional, energy-intensive, waste-generating approaches.

2. Solutions that eliminate silos of information within a city, allowing for more efficient and open sharing and utilization of information.[4]
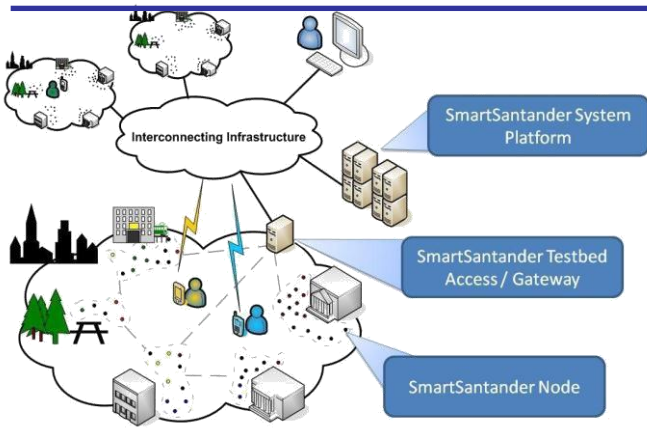
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Fig 3. Smart Santander Model

VI. IOT CHALLENGES

There are some problems associated with internet of thing which are as follows:

I.   Security-IOT security consists of safeguarding of connected devices and networks in the internet of things .The products of IOT are often consists of old embedded operating system and software which can be easily compromised by the intruder to improve the security an an IOT gadget should be straightforwardly available over the web, should be segmented into its own network and have network access restricted .In 2013 a research at Proofpoint discovered the first IOT botnet which is a group of hacked computers,smart appliances, and IOT devices that have been co-opted for illicit purposes.

II. Privacy- IOT privacy is the special considerations which is required to protect the information of user from exposure in IOT environment in which any physical or logical entity or object may be assigned a unique identifier and ability to communicate autonomously over internet,as users daily behaviour and activity are measures,recorded and analyzed there is strict need for developers and policy makers to ensure that what kind of information will be collected and how long it will be stored or analyzed .

III. Enterprise- There are several challenges for the enterprise to overcome for as to use IOT more efficiently one of them being disruption an denial of service attack , a denial of service attack is a situation where network resource is unavailable to the user by suspending services of a host connected to the internet.This situation can result in making a happy customer go frustrated resulting in a revenue loss for the enterprise.

IV. Storage Management-Organizations use IOT devices to make business better and improve customer satisfaction,but after data has been transferred it needs to gather together in a capacity framework which is making organizations reconsider their data storage infrastructures

one way to solve this problem is by using cloud storage system,cloud storage system has several advantage one of being a direct connection between device and public cloud provider which means data can be stored faster resulting in less storage on device and lower device cost

V.   Server-The impact of IoT on the server market will be largely focused on increased investment in key vertical businesses and associations identified with those commercial enterprises where IoT can be profitable, or add significant value.moreover, a huge array of the device will require a large capacity server and a high budget.

VI. Data Center Network-Existing data center WAN links have been built for moderate bandwidth requirements created by our current use of technology. However,as the quantity of data being moved is define to increase the need for expanded bandwidth.Data backup can be difficult because of both network bandwidth .This means companies will have to support selectively, automating the process of deciding which data are valuable or necessary to keep. The automation of this process can be another big data obstacle of its own.

VII. CONCLUSION

IOT is a rapidly growing service till 2020 there would be more than 38 Billion unit of connected devices yet there are some issue regarding IOT that needs to be resolved first, amazon dash is just one big step toward future improving its mechanism and application area can increase productivity furthermore providing an open beta mode of dash could be helpful in providing more accurate result and feedback from users.Internet of thing is making a foundation for a better smart city to beneficial e-commerce .Periodic research and up gradation can help it to grow on a much larger scale .The evolution of the next generation mobile system will depend on the creativity of the users in designing new applications. 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 various implementation and capabilities of IOT can surely justify the statement that IOT is the "Future Of Things"

ACKNOWLEDGMENT

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