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Challenges & Issues faced by IoT in India

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Abstract - *Internet of Things is the Connections of embedded systems that consists of sensors and physical objects and is used to communicate or interact with the external surroundings.*

IoT can connect devices embedded in various systems to the internet. When devices or objects can represent themselves digitally, they can be controlled from anywhere. The connectivity can help us capture more places, ensuring more ways of increasing efficiency.

The IoT is a network of connected sensors, and everyday objects that are used in various areas, like healthcare, airports, smart devices, and military. Not only people to people interaction, IoT conjointly focuses on machine to machine interaction. This paper studies the standing of IoT growth in India. Eventually, this paper brings into focus, the risk issues, security problems and challenges that are faced by IoT in Indian.

Key Words: Internet of Things (IoT), embedded systems, sensors, smart devices.

1. INTRODUCTION

In the forthcoming years, it will have major effects on business models, infrastructure, security and trade standards, during the complete IT computing and networking sector. The IoT is a new light of technology progression within the early stages of market growth. IoT has the ability to boost up the "sharing economy." Therefore, as providing new techniques to manage and track minor things, it will also permit the sharing of latest, minor and economical items outside the communities, aircrafts, cars and motorbikes. As its trends proceed, it will provide completely new applications, that will drive new business prototypes and profit prospects. It pushes devices and sensors to more detailed levels and allows the creation of new uses, new applications, new services and new business models that weren't antecedently economically feasible.

Today, in worldwide IoT Technology is among five prime technologies as per the Gartner's Chart. Which means, it is widely used in various sectors in various roles either it is in smart homes or vehicle tracking, kids and old age people monitoring or daily routine job. Nonetheless, at present the reality is that these segments hire several IoT enabling devices, and future is already fragmenting the new revolution.

Fig - 1: Internet of Things

2. ROLE OF IoT IN INDIA

Government initiatives, supporting environment, good living standards and increasing approval of smart applications plays the vital roles in the growth of market. According to the report of COMSNETS in 2015 [1], Government think about to invest in IoT for developing approximate 100 Smart cities its approximate proposed cost is Rs.7060 crores.

Fig - 2: IoT Future in India

Although as per Indians demand, IoT products are helpful in every domain and many of the companies invest in a lot of sector and this percentage is increase day by day, but main focus is on Smart Water Management, Smart Environment, Healthcare, Smart Agriculture, Smart Waste Management, Smart Safety, Smart Supply Chain, etc. however as per the Indian economy factor affordability to a billion population is quiet tough. Supporting environment and Indian Infrastructure like power supply, poor pollution, extreme temperatures, high levels of humidity and dust, and poor telecom coverage.

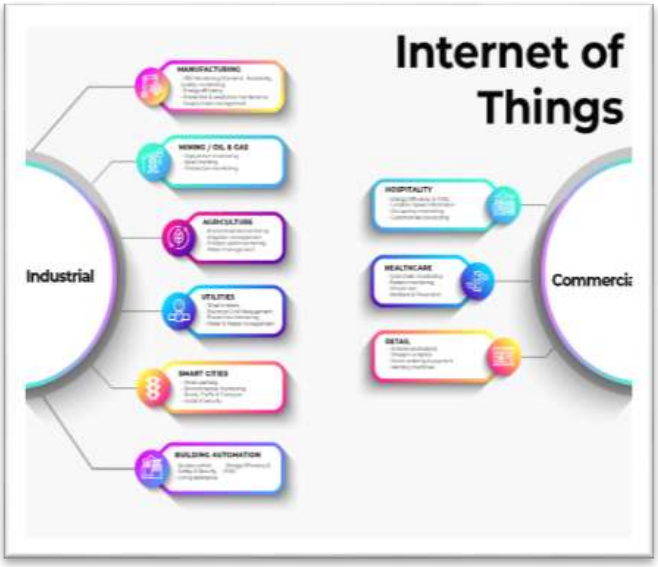

Fig - 3: IoT Scope

The highest rated priority project by Indian Government is Digital India Program which is use for encouragement of digitalization, and make India as a digital empowered country and knowledge economy, is expected to provide the required motivation for expansion of the IoT productiveness ecosystem in the country.

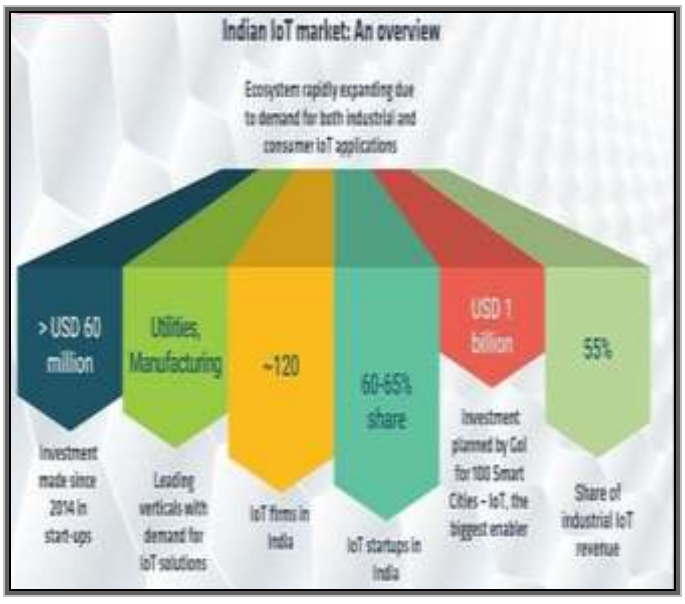

Fig - 4: IoT in Indian Market

S.N.	IoT Global	IoT India
1.	In global, IoT market will raise from a 15.4 billion devices in 2015 to 30.7 billion devices in 2020 and 75.4 billion in 2025.	By 2020 IoT market in India is expected to grow to $ 15 billion with 2.7 billion units from current $ 5.6 billion and 200 million connected units.
2.	During 2016-2021, Global expenses on IoT based products are services by initiatives are projected to reach $120 billion to $253 billion attaining a 16% CAGR.	During 2015-2020, IoT market in India is expected more than 28% to grow at a CAGR and business is expected to touch $300 billion by 2020.
4.	In 2020 automated driving and IoT enable vehicle will be increased globally.	In India utility sector and oil sector will slowly reach on top 5 sectors like Electronics and telecom, both are revenue generating sector.
3.	IoT will increase $10 to $15 trillion to global GDP in the next 20 years.	The Indian government's objective is to generate an IoT production in India of $ 15 billion by 2020.

Table 1: Market in Global & in India [3]

3. CHALLENGES AND ISSUES OF THE IoT

Security, Privacy, Standards & Trained Workforce are some of the major challenges of IoT in India.

A. Security:

Security is a vital pillar of the Internet whereas the key challenge for the IoT. As the time passes the trend of IoT inflates from millions of devices to tens of billions. As the quantity of connected devices increases, the chance to exploit safety vulnerabilities also increases, as in cheap or low standard or low quality designed devices, because of incomplete data streams the probability of data theft is increased due to which people's health and safety can be at risk. Various IoT arrangements may also include collections of comparable or adjacent similar devices. This homogeneity expands the potential impact of any single security weakness by the total number of devices that all have the same features.

B. Privacy:

As Authenticity, trustworthiness and Confidentiality are important aspects there are some other requirements also important like discriminatory access to certain facilities, preclude them from shared with other things at certain Times and business communications involving smart objects would need to be secure from opponents'. The data networks are still delicate and also costly in comparison of other developed country. From an Indian perspective, the cloud storage operation is still in the merging stage. Transmitting the data to a cloud service for processing, sometimes includes a third party. The gathering of all this information leaks legal and

regulatory challenges facing data protection and privacy law. In order to realize the opportunities of the IoT, some new strategies will be required for privacy choices through a broad range of expectations, by making development and innovation in new technologies and services.

C. Standards:

Absence of standards and documents can assist Senseless activities by IoT devices. Low standards or cheap designed and configured devices have undesirable consequences for the networking resources. Without having any standards to guide, sometimes the developers and manufacturers, design products that operate in troublesome ways on the Internet. When any technology has standard development process then it can be easily available everywhere and can used by all applicants, and increase the growth also. While in today's world, global standards are followed by every local station.

D. Trained Workforce Requirements:

Implementation of every technology requires team of skilled persons those have ample knowledge of network, hardware, software and about that technology. And India is backward in this point where manpower thinks when technology is spread they lose their job and there is no life of new technology. So they don't take any initiative to lean about it. So every organisation face lots of problem during their changeover phase from the legacy systems to IoT enabled systems.

Similarly, Scalability, Fault tolerance and Power supply is also big challenge in India.

4. CONCLUSION:

Finally, the future of IoT becomes a worth but massive amounts of data increased its complexity in detection, communications, controller, and in producing awareness but its growth will be increased day by day. Although future of IoT will be predictable to be integrated, all-in-one, and ubiquitous. Service organization required to be enclosed in a set of standards. So, as an Intelligent system, progresses of IoT can be decided with the cooperation of interoperability, awareness, skilled, teamwork, energy sustainability, privacy, trust, confidentiality, and security. IoT have become an expected trend of development of information industry. This will outcome in quality of lifestyles. This paper surveyed some of the most important issues and challenges of IoT in Indian perspective like what is being done and what are the issues that

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