EMERGING TECHNOLOGIES AND INNOVATION

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Introduction

Technology is continually shaping the human environment. It is important to consider systems such as I.T, database management, the internet among others when we decide to talk about innovation and technology. However, an advancement in technology has given birth to new problems and as such, there is continuous innovation and technological dexterity. The major aspect of concern in this essay is the internet, and specifically, the internet of things

The internet of things is a remarkable invention that basically encompasses the internet and the human environment, from manmade to natural. Therefore, a focus on this technology will simplify the human environment. By definition, the internet of things is a revolutionary technology whose aim is to interconnect almost every aspect of the human environment. In this, the technology is aimed at interconnecting things that play a significant part in our lifestyles. on this note, a thing is anything that has the capability of transmitting information through a wireless network into the internet.

The very aspect of our existence is about to take an unprecedented turn, in term of connectivity. Therefore, the technology will help human beings monitor everything that is to do with their environment, from the car tire pressure to the cow to the lawn, to the house, basically everything. However, the subject will need to be implanted with some sort of communicable device, having a unique IP address (Gubbi, Buyya, Marusic, & Palaniswami, 2013). Currently, this technology has various applications in agriculture, construction management, transportation healthcare, and energy. The interconnectivity of the various atoms of our livelihood enables us to identify a simple problem and put in place the necessary measures to prevent a catastrophe.

The roots of the internet of technology can be traced to the various technological improvements such as the internet, wireless communication, and micro-electromechanical system among others. Therefore, the merging of these various technological milestones has enabled us to live as though in a single and simplified space (Miorandi, Sicari, De Pellegrini, & Chlamtac, 2012). The convergence was mainly designed to resolve the numerous data input to the internet. Data input has always been done by human beings and as such there are various flaws and setbacks when it comes to this .human beings are prone to error and fatigue because of the relatively simple human nature. If there was a way in which technology could be used to code and distribute each atom of worldwide data, then it was through the design of a very complicated technology whose functioning is machine oriented (Xiaohui, 2011). Therefore, with the technology monitoring every aspect of our livelihood, we would be able to know, in real time, when something needs repair, disposal, replacing, treatment and whether they have expired or not.

Application of the Internet of things

To begin with, the technology has been successfully applied in precision agriculture. In this, the technology is integrated with the soil data as well as the moisture content of an agricultural field. Therefore, by ensuring that the farmer has every agricultural data within his grasp, the technology provides a platform where the plants are optimized for productivity.

The aspect of precision agriculture mainly revolves around acquiring data in real time and as such, requires very sophisticated software, equipment, and services. Furthermore, the technology requires the fields be designed in such a way that there are sensors which can monitor the soil as well as the environmental conditions. By doing so, the technology ensures efficient utilization of the resources and reduces the impact of agricultural activities on the natural environment. Prior

to the development of this technology various computer models were used to control and monitor

agriculture but with IOT, monitoring can be done from very simple gadgets such as mobile

phones

The second application of IoT technology is in construction and management. In this regard,

houses and settlements can be designed in such a way that every device and appliance in the

house is interconnected and as such, enables the owner to regulate and monitor all the activities.

Therefore, the cost of lighting, security, comfort, energy efficiency is enhanced by this

technology. Furthermore, the owner can customize the house in such a way that every aspect of

the house is as per with his stipulated preferences. All this can be controlled and monitored by

devices such as mobile phones etc.

The last, but not least, application of this technology is the healthcare sector. The technology is

basically known as the internet of medical things (Aztori, lera, & Morabito, 2010) and enables a

machine to machine communication. In this, the technology enables the caregivers to monitor

specified medical conditions and as such, provide a platform for efficient service delivery. Some

of the applications include remote patient monitoring, infusion pumps etc.

Challenges

The technology was first proposed in 1999 but it was not until the year 2005 that it was

introduced (Yang, 2013). Thereafter, the generation of smart objects was introduced to the world

in form of smart communication, smart sensory applications, supply chain management and

smart monitoring of the natural environment. Therefore, this technology can be used to reduce

the impact of pollution, mainly attributed to human activities, on the global atmosphere.

Considering that the technology is mainly designed to meet the present as well as the future needs of the human population, the IPV6 database storage has been described to have a tremendous storage capacity with the ability to store data of about 100 planets (Sun, Jie, Shan, Chun-xiao, & Juan, 2010). It is thus a remarkable improvement of the current database storage systems. However, the advancement in technology will basically bring issues concerned with the privacy as well as the individuality of any data stored in the system. Furthermore, there are various flaws attributed the internet of things and include technology, business, and the society.

The technological challenge

Basically, the internet of things is a convergence of individual technologies and as such, a simple flaw in one may have unprecedented consequences on the whole structure. However, since the technology functions on connectivity, the challenges may be attributed to the compatibility, security, connectivity, longevity and artificial intelligence. In a nutshell, the three technological aspects that affect the internet of things are security, connectivity, and compatibility (Tang & Wang, 2010).

To begin with, the security aspect is basically founded on the ability to hack a computer system. As in the recent past, numerous hacking incidences have been reported on fridge, thermostats, cameras etc. Hacking may not be that harmful to any system but because there may be a number of people with ill intention, the system still needs improvement.iIt is a worthwhile note to consider that the internet of things will not only cover the manmade entities, it will also cover our lives and as such, a hack into the heart support system of a hospital may result in grave consequences. Therefore, the node connectivity of the internet of things system needs to be looked at in more detail to prevent hacking.

The second aspect that should be considered in the security realm of the internet of things is the connectivity. It is very important to note that the connectivity of the various 'things' to each other is a very important functioning of the system.Basically, this system was established in order to meet the numerous monitoring challenges that have been brought about by the increased ownership of gadgets. Therefore, the ability of the objects to connect to each other is a very important aspect of the design. Currently, the connectivity depends on the server technology but this may not be feasible when there are numerous gadgets to be connected. This is mainly attributed to the fact that these systems cover relatively fewer devices, maybe hundreds or thousands. The internet of things technology will need to cover millions, billions or even trillions on gadgets and as such, there might be connectivity flaws.

It has been proposed that the internet of things connectivity devices, basically servers, be decentralized to prevent a bottleneck when there are numerous interchanges of information between devices. However, this might require humongous investments in cloud computing and peer to peer communication. Cloud computing refers to a communication system whereby smart devices such as mobile phones and IOT hubs can take the task of mission-critical operations (Bandyopadhyay & Sen, 2011) while the servers can take on the task of managing and disseminating the data. On the other hand, peer-to-peer design refers to a model whereby individual devices are able to identify and verify each other prior to communication. Therefore, the peer-to-peer communication will eliminate the need for intermediate devices because of the capability of transferring data to each other.

The final challenge associated with the IoT technology is the compatibility. In this scenario, there are challenges that are associated with the increase in the number of worldwide devices and

objects. Therefore, there is a growing concern on the ability of the technology to recognize the different structures and IP addresses. Furthermore, there is an increase in the number of IOT technologies and as such, there may be a differential view in each. The different devices have different firmware and software and therefore the protocols involved in communication may pose a significant challenge in identifying each. On the aspects of the standard technology, the various technologies competing for compatibility may eventually die out but the authentic technology is to remain in operation for longer (Rouse, 2017).

The business challenge of IOT technology

The ability of the technology to enable communication between different connected gadgets is a very important factor in business operations. Business entities will have the capability to observe the various e-commerce trends, vertical as well as horizontal communication. However, the system must be compatible with all these models for successful operation. Furthermore, these models are always under the microscope with various regulatory bodies monitoring each process.

The technology may be classified into three business areas: consumer, commercial and industrial. In this regard, the consumer party basically consists of all consumer gadgets and devices that basically utilize the system. These devices may include vehicles, watches, cars entertainment systems etc. while the commercial part is focused on the different aspects of business operations such as inventories, medical devices etc. Finally, the industrial part of the technology focuses on the gadgets and devices that promote industrial operations. Such devices may include water monitors, robots, pipelines etc. All these devices provide the platform for industrial management and operations and as such, may require a thorough understanding prior to the use of internet on things technology

The privacy challenge

The privacy challenge arises from the simple fact of transmitting information between various devices and gadgets without an individual monitoring this. Privacy is a matter of concern for each member of the public and as such, monitoring the activities of individuals and transmitting them in real time can be a major breach on the laws that regulate data privacy. As a matter of fact, because the data to be transmitted is stored in a cloud server, any third party with verification may access it and result in unforeseen danger and consequences. An example is a breach on the nuclear data by terrorists. Such a breach may pose a significant danger to the world and as such, data privacy and protection should be a major component of this design.

The solution in the data protection scenario is to put in place measures that recognize individuality and privacy. In this regard, each individual should be gifted policies that recognize choice of exposure and distribution. Nonetheless, this should be in line with the innovation and technological backgrounds associated with the technology.

Purpose of research

The internet on things technology is a remarkable development for the human civilization, however, research has indicated that this system has various flaws, basically associated with the technology and the privacy. As such, any transfer of important information to a third party may prove very costly. On this note, it is important to consider that the technology will be applied to emergency services such as medical and supply delivery. However, the architecture and design of this system are vulnerable to attacks and as such may pose a significant challenge in catering for these services. Therefore, the purpose of the study is to try and investigate all possible measures that can be used to prevent the various flaws described. As with the social,

technological, social and privacy problems stated above, the main solutions are described in the configuration of the system.

The process of designing a system that is immune to attacks and regulatory impeachment is a very complicated process. More so is the fact that the technology is still underdeveloped and still in the process of being utilized in the current world market. Furthermore, the humongous data that will require interpretation and this may require humongous investments for it to be successful. One major milestone that will put all these challenges to rest is the radio frequency identification technique and other verification technologies (Yun & Yuxin, 2010). Furthermore, various proponents of these systems have come up with various configurations of the system that will prevent a possible failure.

As with this research, the main objective is to try and identify the impacts of the technology on the very fabric of our livelihoods. In the future, we will be more dependent on technology and as such, there is the need for a very fast solution to the flaws associated with the technology. The research will be founded on various configurations of the internet on things technology with the main focus to try and identify possible and revolutionary tactics that may be used. According to Rouse (2017), the technology is very exciting and feasible, but there are various technical as well as regulatory requirements that need to be addressed in due time, especially by the developing team, to ensure a very successful implementation of the technology into our livelihoods. This is regardless of the fact that the technology has been developed for more than a decade.

Another important factor that was considered prior to this research was the applicability of the internet on things technology.As stated above, the technology has been successfully integrated into various fields such as agriculture, medicine, construction, and management, etc.

References

Aztori, L., Lara, A., & Morabito, G. (2010). the internet of things: a survey.

bandyopadhyay, d., & Sen, J. (2011). Internet of things: application and challenges in technology and standardization. wireless personal communication.

Gubbi, J., Buyya, r., Marusic, S., & Palaniswami, M. (2013). Internet of things: A vision, architectural elements, and future directions. future generation computer.

Miorandi, D., Sicari, S., De Pellegrini, F., & Chlamtac, I. (2012). Internet of things: vision, application and research challenges.

Rouse, M. (2017). internet of things(IoT). Retrieved from IoT agenda: internetofthingsagenda.techtarget.com/definition/internet-of-things-iot

Sun, Q.-b., Jie, L., Shan, L., Chun-xiao, F., & Juan, S. J. (2010). Internet of things: summarize on concepts, architecture, and key technology problem. journal of Beijing university posts and telecommunication.

Tang, l., & Wang, N. (2010). Future internet: the internet of things. Advanced computer theory and engineering.

Xiaohui, L. (2011). Internet of things and embedded technology. Computer study.

Yang, L. (2013). technological forecasting and social change how the internet of things technology enhances e, emergency response operations, 80(9), 1854-1867.

Yun, M., & Yuxin, B. (2010). research on the architecture and key technology of internet of things technology. Advanced energy engineering.