Internet Of Things In Modern Era

R.Krithika[1], A.Madhusri[2], A.Dhivya Bharathi[3]
[1, 2, 3] Dept of information and computer technology
[1, 2, 3] Sri Krishna Adithya College Of Arts And Science

Abstract- *The internet of things (IOT) is generally thought of connecting things to internet and using the connection to provide some kind of useful remote monitoring or control of those things IOT is becoming increasingly prevalent in today's society. It describer a future internet where every day physical object will be connected to the internet making daily life easier. It consists of real life objects, communication devices attached to sensor networks in order to provide communication. This paper gives a detailed analysis of various application based on IOT and explains how IOT has evolved from mobile computing and computing finally this paper focuses on the issues involved in IOT.*

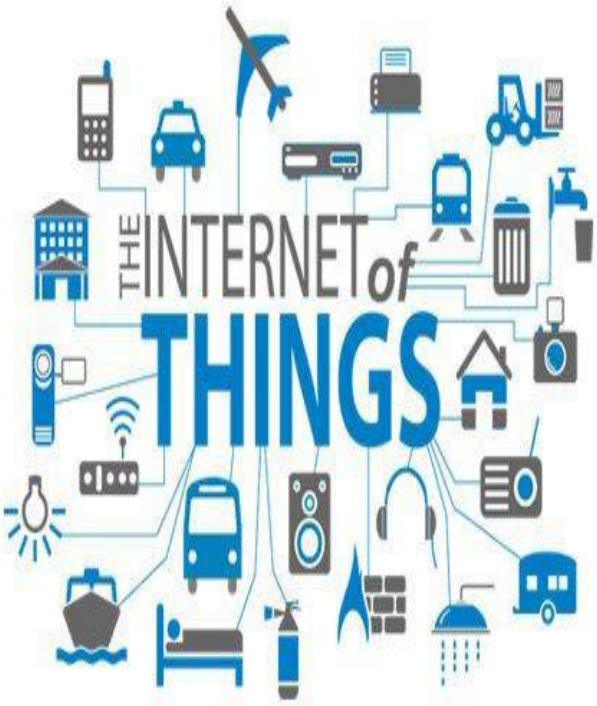
Keywords- IOT, communication, mobile computing, physical object, society.

I. INTRODUCTION

The term "INTERNET" refers to the applications built on the inter connected computer networks, which serves billions of users around the world. The term **INTERNET OF THINGS** was first confined by **KevinAshton** in 1999 in the complex supply to chain management. He believes the "things" aspect of the way we interact and live within the physical world that surrounds us need serious reconsideration , due to advances in computing, internet, and data-generation rate by smart devices. Now the focus has been shifted towards the integration of people and devices , creating Internet-of –Things(IoT). The IOT will change everything including ourselves. The IOT has a great impact on education, communication, business, science and government[2].With the concept o IOT , internet becomes favourable to have a smart life in every aspects. IOT is the new technique for internet accessing. This concept involves in new techniques such as security, energy saving automation,communication,and entertainment. The idea of IOT has been around for nearly 2 decades and attracted many researchers and in

II. SMARTNESS OF IoT

IOT is a technique filled with "smartness". This makes the IOT different from other concepts like sensor networks, and it can be further classified into "object smartness" and "network smartness" . The smart products such as fridges , smart washing machines ,smart TV, oter ome appliances, smart laptops, shoes and phones enables the users to control and automatically use the appliances. Smart things are the one of the latest technology launched by **Kickstarter**. The current trasition of thelobal Internet to IPv6 will provide a virtually unlimited number of public IP address able to provide bidirectional and symmetric(Machine-Machine:M2M) access to billions of smart things. Adding smartness to everyday things can make our life amazing. They are more convenient, efficient, safe and secure. This smartness can be obtained using RFID ,EPC, IPv4,barcode, sensors, actuators, IS, PS, Wi-Fi, Bluetooth, NFC and telemedicine. Smart Devices tend to be owned, operated, and configured, and under the control of individual human users, For Example:personal computers, smart phones, cameras, ame consoles, setup boxes and other computer peripherals, su as printers, mouse, external disk drives. The Smart Things concept has four logical architectural layers 1)which connect to the Smart Things hubs or in some cases directly to the cloud 2)wic acts as a gateway for



getting events and messages to or from the cloud 3)which provides the abstraction and intelligence layers described above, as well as the web services that support te presentation layer 4)which provides the presentation layer for smart things in the form of mobile applications and our web IDE.

III. APPLICATIONS OF IoT

Manufacturing applications Manufacturing technology currently in use exploits standard technology along with moderndistribution and analytics. IoT introduces deeper integration and more powerful analytics. This opens the world of manufacturing in a waynever seen before, as organizations become her.

Energy Applications: The optimization qualities of IoT in manufacturing also apply to energy consumption. IoT allows a wide variety of energy control and monitoring functions, with applications in devices,commercial and residential energy use, and the energy source. Optimization results from the detailed analysis previously unavailable to most organizations and individuals fullydeveloped for product delivery rather than a global network of suppliers, makers, and distributors loosely tied together.

Healthcare Applications:IOT systems are applied to healthcare enhance existing technology, and the general practice of medicine. They expand the reach of professionals within a facility an d far beyond it. They increase both the accuracy and size of medical data through diverse data collection from large sets of real-world cases. They also improve the precision of medical care delivery through more sophisticated integration of the healthcare system.

Building/Housing Applications: IoT applied to buildings and various structures allows us to automate routine residential and commercial tasks and needs in a way that dramatically improves living and working environments. This, as seen with manufacturing and energy applications, reduces costs, enhances safety,improves individual productivity, and enhances quality of life.

Transportation Applications: At every layer of transportation, IoT provides improved communication, control, and data distribution. These applications include personal vehicles, commercial vehicles, trains, UAVs, andother equipment.It extends throughout the entire system of all transportation elements such astraffic control, parking, fuel consumption, and more.

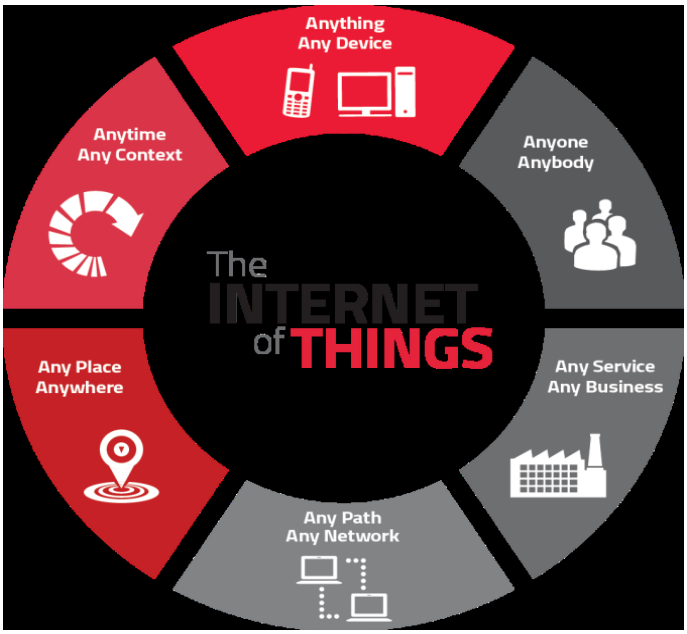
Education Applications: IoT in the classroom combines the benefits of IoT in content delivery, business, and healthcare.It customizes and enhances education by allowing optimization of all content and forms of delivery. It enables educators to give focus to individuals and their method. It also reduces costs and labor of education through automation of common tasks outside of the actual education process.

Government Applications :IoT supports the development of *smart* nations and *smart* cities. This includes enhancement of infrastructure previously discussed (e.g., healthcare, energy, transportation, etc.), defense, and also the engineering and maintenance of communities.

Law Enforcement Applications:IoT enhances law enforcement 0rganizations and practice, and improves the justice system. The technology boosts transparency, distributes critical data, and removes human intervention where it proves unnecessary.

Consumer Applications

Consumers benefit personally and professionally from the optimization and data analysis of IoT. IoT technology behaves like a team of personal assistants, advisors, and security. It enhances the way we live, work, and play.



IV. CHALLANGES TO BE FACED

There are key challenges and implications today that need to be addressed before mass adoption of IOT can occur. [1, 2, 12]

A. Privacy and Security

As the IoT become a key element of the Future Internet and the usage of the Internet of Things for large-scale, partially mission-critical systems creates the need to address trust and security functions adequately. New challenges identified for privacy, trust and reliability are: • providing trust

and quality-of-information in shared information models to enable re-use across many applications. • Providing secure exchange of data between IoT devices and consumers of their information. • Providing protection mechanisms for vulnerable devices.

B. Cost versus Usability

IOT uses technology to connect physical objects to the Internet. For IOT adoption to grow, the cost of components that are needed to support capabilities such as sensing, tracking and control mechanisms need to be relatively inexpensive in the coming years.

C. Interoperability

In the traditional Internet, interoperability is the most basic core value; the first requirement of Internet connectivity is that "connected" systems be able to "talk the same language" of protocols and encodings. Different industries today use different standards to support their applications. With numerous sources of data and heterogeneous devices, the use of standard interfaces between these diverse entities becomes important. This is especially so for applications that supports cross organizational and various system boundaries. Thus the IOT systems need to handle high degree of interoperability.

D. Data Management

Data management is a crucial aspect in the Internet of Things. When considering a world of objects interconnected and constantly exchanging all types of information, the volume of the generated data and the processes involved in the handling of those data become critical

E. Device Level Energy Issues

One of the essential challenges in IoT is how to interconnect "things" in an interoperable way while taking into account the energy constraints, knowing that the communication is the most energy consuming task on devices.

V. CONCLUSION

In summary , IoT consists of Smart Things that play an active role in every day life , and they are fabulous. These applications are spreading in to other sectors like government education, mining, geo-spatial and disaster management . The best part of Smart Things are development, deployment, architectural, global level standardization, and ethical issues. Security is the aspect , when things are communicate among themselves , which are not having intelligence power except via AI. We have already seen the wide application of internet of things. Many challenges ranging from communication requirements to middleware development still remain open and need further investigation. We have highlighted these shortcomings , have provided typical solutions, and have drawn guidelines for further research in this area.

REFERENCES

[1] Dr. Ovidiu Vermesan SINTEF, Norway, Dr. Peter FriessEU, Belgium, "Internet of Things: Converging Technologies for Smart Environments and Integrated Ecosystems", river publishers' series in communications, 2013.

[2] Dr. Ovidiu Vermesan SINTEF, Norway, Dr. Peter FriessEU, Belgium, "Internet of Things–From Research and Innovation to Market Deployment", river publishers' series in communications, 2014.

[3] [Online]. Available: http://www.phonearena.com/news/Androids-Google-Playbeats-App-Store-with-over-1-million-apps-now-o_ciallylargestid45680.

[4] T. Abdelzaher, S. Prabh, and R. Kiran, "On real-time capacity limits of ad hoc wireless sensor networks," in Proc. IEEE Int. Real-Time Syst. Symp. (RTSS), Dec. 2004, pp. 359–370.

[5] G. Burnham, J. Seo, and G. A. Bekey, "Identification of human driver models in car following," IEEE Trans. Autom. Control, vol. 19, no. 6, pp. 911–915, Dec. 1974.

[6] J. Deng, R. Han, and S. Mishra, "Secure code distribution in dynamically programmable wireless sensor networks," in Proc. ACM/IEEE Int. Conf. Inf. Process. Sens. Netw. (IPSN), 2006, pp. 292–300.

[7] R. Dickerson, E. Gorlin, and J. Stankovic, "Empath: A continuous remote emotional health monitoring system for depressive illness," in Proc. Wireless Health, 2011.

[8] C. Dixon, R. Mahajan, S. Agarwal, A. Brush, B. Lee, S. Saroiu, and P. Bahl, "An operating system for the home," in Proc. Symp. Netw. Syst. Des. Implement. (NSDI), 2012.

[9] T. He, J. Stankovic, C. Lu, and T. Abdelzaher, "A spatiotemporal communication

[10] protocol for wireless sensor networks," IEEE Trans. Parallel

Distrib. Syst., vol. 16, no. 10, pp. 995–1006, Oct. 2005.

[11] M. Huang, J. Li, X. Song, and H. Guo, "Modeling impulsive injections of insulin: Towards artificial pancreas," SIAM J. Appl. Math., vol. 72, no. 5, pp. 1524–1548, 2012.

[12] M. Kay, E. Choe, J. Shepherd, B. Greenstein, N. Watson, S. Consolvo, and J. Kientz, "Lullaby: A capture & access system for understanding the sleep environment," in Proc. 14th Int. Conf. Ubiquitous Comput. (UbiComp), 2012, pp. 226–234.

[13] A. Liu and D. Salvucci, "Modeling, and prediction of human driver behavior," in Proc. 9th Int. Conf. Human-Comput. Interact. (HCI), 2001, pp. 1479–1483.

[14] J. Lu, T. Sookoor, V. Srinivasan, G. Gao, B. Holben, J. Stankovic, E. Field, and K. Whitehouse, "The smart thermostat: Using occupancy sensors to save energy in homes," in Proc. 8thACMConf. Embedded Netw. Sens. Syst. (ACM SenSys'10), 2010, pp. 211–224.

[15] M. Maroti, B. Kusy, G. Simon, and A. Ledeczi, "The flooding time synchronization protocol," in Proc. 2nd Int. Conf. Embedded Netw. Sens. Syst. (ACM SenSys'04), Nov. 2004, pp. 39–49.

[16] S. Mohammed, P. Fraisse, D. Guiraud, P. Poignet, and H. Makssoud, "Towards a co-contraction muscle control strategy for paraplegics," in Proc. 44th IEEE Conf. Decision Control Eur. Control Conf. (CDC-ECC), 2005, pp. 7428–7433.