ISSN: 2321-7782 (Online)
Volume 3, Issue 10, October 2015
International Journal of Advance Research in Computer Science and Management Studies
Research Article / Survey Paper / Case Study
Available online at: www.ijarcsms.com

A Future Expansion Technology-IOT

Omkar Khadilkar[1]
T.E.(Mechanical Engineering)
KIT's College of Engineering, Kolhapur, India

Akshay Bheda[2]
T.E. (Information Technology Engg.)
KIT's College of Engineering, Kolhapur, India

Abstract: ***Everywhere sensing is enabled by Wireless Sensor Network technologies in many areas of modern day living. This offers the ability to measure, conclude and understand environmental indicators. There is a rapid increase in the number of these devices in an actual communicating network which creates the Internet of Things, wherein sensors and actuators blend seamlessly with the environment around us, and the information is shared across platforms in order to develop a common operating picture. The Internet has developed tremendously over the last 2 decades. The Existing IPv4 is giving way to IPv6 so that every device on the Internet can have its own IP address. Machine-to-machine communication is on the rise, enabling devices to exchange and act upon information without a person ever being involved.***

Keywords: Internet of things, Wireless Sensor Network, Machine to Machine communication, IPv4, IPv6, Assigning IP, sensors and actuators, Vampire Power.

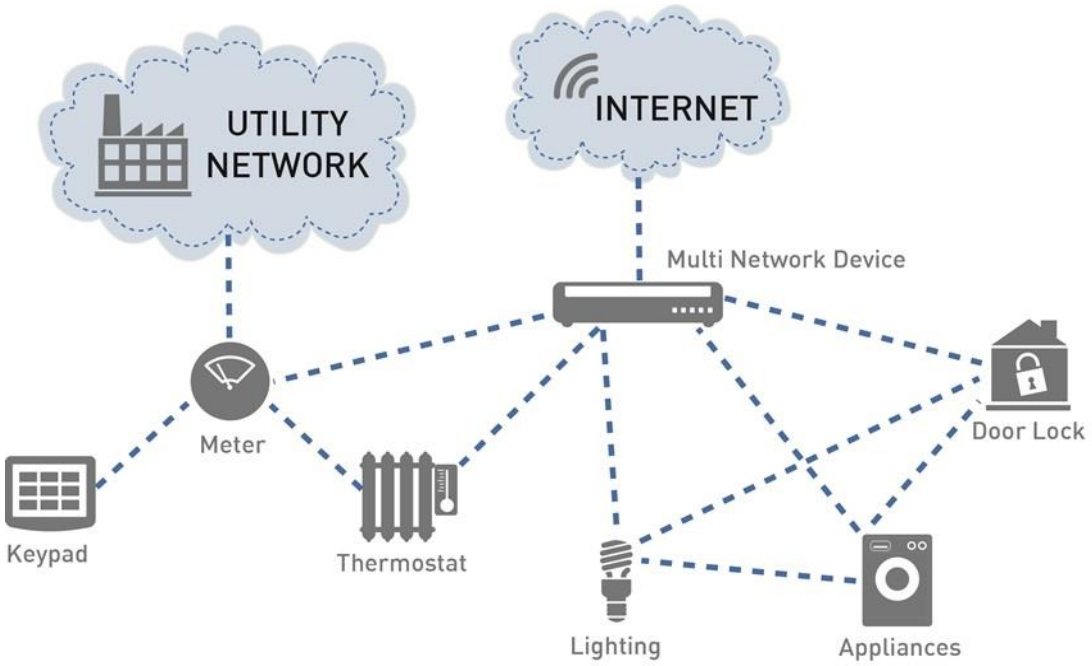
I. INTRODUCTION

The concept is simple but powerful. If all objects in daily life were equipped with identifiers and wireless connectivity, these objects could be communicating with each other and be managed by computers. How would we connect everything on the planet? What type of wireless communications could be built into devices? What changes would need to be made to the existing Internet infrastructure to support billions of new devices communicating? What would power these devices? What must be developed to make the solutions cost effective?

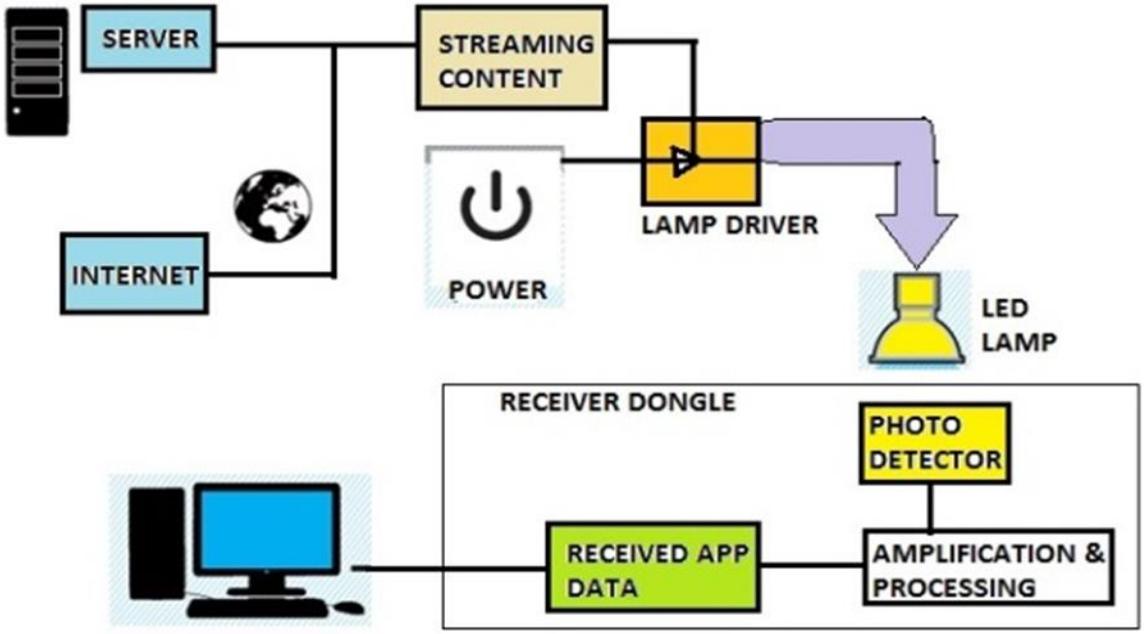
If we had computers that knew everything there was to know about things—using data they gathered without any help from us -- we would be able to track and count everything, and greatly reduce waste, loss and cost. We would know when things needed replacing, repairing or recalling, and whether they were fresh or past their best. We need to empower computers with their own means of gathering information, so they can see, hear and smell the world for themselves, in all its random glory. RFID and sensor technology enable computers to observe identify and understand the world—without the limitations of human-entered data.

II. IOT TECHNOLOGY

IPv6 allows us to assign a communications address to billions of devices. Electronics companies are building Wi-Fi and cellular wireless connectivity into a wide range of devices. Research estimates over Ten billion wireless chips will ship in 2016. Mobile data coverage can be improved significantly with many networks offering broadband speeds. While battery technology can be improved to a next level and solar recharging will be built into numerous devices. There will be billions of objects connecting to the network within the next few decades. For Implementation of the IoT we will take the help of the Li-Fi technology and if we want to reduce the energy cost we can move towards solar panels for powering the LED's. we use for the connectivity. There is a myth that when we will use the LED's we have to continuously keep it active at full power but the fact is that we don't have to keep it at high power we can reduce the brightness of the LED and doing this will not at all hamper the Connectivity.



III. LIFI TECHNOLOGY



Li-Fi stands for Light-Fidelity. Li-Fi technology, proposed by the German physicist Harald Haas, provides transmission of data through illumination by sending data through an LED light bulb that varies in intensity faster than the human eye can follow. Wi-Fi is great for general wireless coverage within buildings, whereas Li-Fi is ideal for high density wireless data coverage in confined area and for relieving radio interference issues. Li-Fi provides better bandwidth, efficiency, availability and security than Wi-Fi and has already achieved blisteringly high speed in the lab. Li-Fi uses visible light instead of Gigahertz radio waves for data transfer. Li-Fi can be the technology for the future where data for laptops, smart phones, and tablets will be transmitted through the light in a room. Security would not be an issue because if you can‘t see the light, you can‘t access the data. As a result, it can be used in high security military areas where RF communication is prone to eavesdropping.

A new generation of high brightness light-emitting diodes forms the core part of light fidelity technology. The logic is very simple. If the LED is on, a digital 1 is transmitted. If the LED is off, a digital 0 is transmitted. These high brightness LEDs can

be switched on and off very quickly which gives us a very nice opportunities for transmitting data through light. There is a light emitter on one end and a photo detector on the other. The photo detector registers a binary 1 when the LED is on; and a binary 0 if the LED is off. To build up a message, flash the LED numerous times or use an array of LEDs of perhaps a few different colors, to obtain data rates in the range of hundreds of megabits per second. The data can be encoded in the light by varying the flickering rate of LEDs ON and OFF to generate different strings of 1s and 0s. The LED intensity is modulated so rapidly that human eye cannot notice, so the LED light appears constant to humans.

Technology	Speed
Wi-Fi – IEEE 802.11n	**150 Mbps**
Bluetooth	**3 Mbps**
IrDA	**4 Mbps**
Li-Fi	**>1 Gbps**

IV. Benefits of Combined LIFI And IOT:

The sensors of a home security system can be used for a wide range of other applications as well. For example, the lighting system can be tied in to turn lights on when a person enters a room and automatically turn them off when no one is present. Existing systems can also be extended. For example, a low-cost humidity sensor can be added to a security system to automatically turn on and shut off an exhaust fan after a shower. Such interactions between different systems bring a number of benefits to users.

Higher Efficiency: When connected to the IoT, devices can determine the best time to operate; i.e., a clothes dryer can wait until after peak demand hours to operate using lower-cost electricity.

Proactive Usage: Today, users can set the air conditioner to run for when they plan to get home from work. If they are late, the system will operate with no one home.

Proactive Maintenance: Intelligent devices can monitor their own operating health and notify users the result in no time. This can also reduce the number of warranty service calls for OEMs.

Single Control Interface: Since users can use their own devices, such as smartphones, to manage the network, it becomes possible for a single application to control devices rather than requiring users to learn a different user interface for every new appliance or node added to the network. Note also that, for many applications, implementing a display is not cost-effective.

Ease-of-Use: When devices can be managed over a network, users have the ability to control the network from anywhere they want, using the applications they want.

V. Nuclear Weapon Detector

Basically idea behind IOT is Assigning IPv6 Address to each and every thing. So in the Nuclear Weapon detection we can give an IPv6 address to each and every weapon in this world. The only part we have to do is add the little hardware in the Weapons and some sensors such as the heat, gps, gamma rays, thermostat, etc. sensor which will determine the radiation of the weapon so that we can know if the weapon is in the ideal state or Recently active. We can track each and every weapon in the world hence this will provide us real-time tracking for all the arms and weapons which will benefit to the security of weapons.

Radioactive atoms are unstable and give off various types of radiation; the types of use for nuclear detection are gamma rays and neutrons. Detectors, algorithms are the eyes and ears, brains, and hands of nuclear detection, effective detection requires all three. Since photons and neutrons have no electrical charge, their energy is converted to electrical pulses that can be measured. This is the task of detectors, discussed next. The pulses are fed to algorithms. An algorithm, such as a computer program, is a finite set of logical steps for solving a problem. For nuclear detection, an algorithm must process data into usable

information fast enough to be of use to an operator. It receives data from a detector's hardware, such as pulses representing the time and energy of each photon arriving at the detector. It converts the pulses to a format that a user can understand, such as displaying a gamma ray spectrum or flashing "alarm." Every detector uses one or more algorithms. Improvements to algorithms can contribute as much as hardware improvements to detector capability. The only job of ours is to connect the sensors, and use the Li-Fi technology for connectivity for getting the real-time statistics about the sensors to the remote monitoring system.

VI. CONCLUSION

The no of addresses present in the IPv6 can be demonstrated as if we allot one address for every single atom in the world then we can provide for 8 earths still the addresses will be remained. So to use such IPv6 Address space available we are moving towards the technology Internet of Things (IoT). Li-Fi technology is a true enabler of internet of things and everything. Four computers can be connected to internet through one-watt LED bulb using light as a carrier instead of traditional radio frequencies, as in Wi-Fi.

IoT enables us for future computing and enabling us for real-time monitoring systems for all things. Research says that until 2032 every person will be connected to nearly 3000-4000 things individually via IoT. Using IoT for assigning every Weapon with an IPv6 address and using Li-Fi for the Connectivity tool we can reduce no of Wired Connections, Establish safe and secure Networking and finally use the Led Spectrum for efficient.

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