Applications of Internet of things on Smart Grid

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Abstract. Internet of Things devices in public and private spaces has changed our lifestyle. For example, home automation applications that support smart devices, locks, keys, surveillance systems, and Internet-connected devices has change the way we interact with our living spaces. These systems are widely adopted; the Internet of Things digitally expresses concern on safety and security. This technology makes life easier, safety as its priority. The firewall is also very important for the Internet of objects. The algorithms designed for users should be unique and safety. The basic principle of the Internet of Things is based on the integration of information networks to make people’s lives easier. In this way, the objects can connect to each other and share information. The development of the Internet of Things has triggered by technology. A smart grid is an electricity network based on digital technology that is used to supply electricity to consumers via two-way digital communication. This system allows for monitoring, analysis, control and communication within the supply chain to help improve efficiency, reduce energy consumption and cost, and maximize the transparency and reliability of the energy supply chain. The smart grid was introduced with the aim of overcoming the weaknesses of conventional electrical grids by using smart net meters. Smart Grid technologies contribute to manage IoT energy efficiently, which the present ones lack in the existing framework. The two-way communication between connected devices and hardware which can sense and respond to user demands makes the IOT smart grid better. A smart Grid with the help of these technologies is more resilient and less costly than the current power infrastructure.

1. Introduction

Internet of Things (IoT) is a network of devices which can sense, accumulate and transfer data over the internet without any human intervention. IoT is the idea of the fusion of the "real world" with the "digital world", making the individual be in constant communication and interaction, either with other people or objects. With the Internet of things, objects can be activated and controlled remotely through an existing network infrastructure creating opportunities for integration between the physical world and computer systems. IoT is not science fiction anymore, the power of internet connectivity has gone beyond Smartphone’s and computers. Now, the internet is been used in all smart devices which are aimed to resolve actual real-world problems, from smart watches to driverless.

2. Internet of Things for Human Life

Smart electrical grids are the most important building block in the development of technology. Networks provide access to quality energy with low budgets and costs. Smart grids for use ensure...
efficiency. Smart grids, economic and social applications provide development Fig [1]. One of the most important goals of smart networks is establishment of micro-networks that allow more distributed generation and energy storage at the end-user side. The expansion of power generation from micro grid applications and renewable energy sources, the systems and energy storage technologies that will serve as required energy buffers have become very important in order to meet the increasing power demand. Better and faster communication devices and technologies for the electricity grid, preventing most of the electrical circuits and voltage drops. Smart grids are very important for the development of technology and economic innovations. In order to make the existing electricity grid a smart grid, the design and implementation of a new communication infrastructure for the grid are two important research areas. Smart grids provide quality and appropriate electrical energy requirements. Internet of Things technology is the user. This technology receives the quality and efficient energy it needs from smart grids. It enables technology security in energy controllers and communication systems. It is the new age for users who can able to find and want to use the IoT applications. These applications need safe energy with the Internet of Things. And smart grids infrastructure technology and solution can provide energy with efficiency.

![Figure 1. Smart Grid IoT Applications.](image)

2.1. A Smart grid IoT application allows:

Smart Grid technologies all contribute to efficient IoT energy management solutions that are currently lacking in the existing framework [4]. What makes the IoT Smart Grid better is two-way communication between connected devices and hardware that can sense and respond to user demands. These technologies mean that a Smart Grid is more resilient and less costly than the current power infrastructure.

2.1.1. Mini Smart Grids

The basic part of electronic devices is microprocessors. From the most frequently used to the most rarely used device, the brain of most of them is the microprocessor. And these microprocessors are very sensitive. So the microprocessor really works as the brain of the device [3]. This information is not just a similar for the brain to the microprocessor. The microprocessor working principle is almost like a human’s brain. Smart grids, save energy, reduce costs and increases reliability. It provides energy independence by connecting everyone to an abundant, affordable, clean, efficient and reliable electrical energy anywhere, anytime. The most preferred type of these smart grids in the Internet of Things technology is mini smart grids. Smart grids have an important place for the Internet of Things that developed to easier for human life.

2.1.2. Communication and Networking in Smart Grids

Provided communication infrastructure is important for the use of smart grids. Communication is important for the development and operation of smart grids [2]. Consumers can minimize energy
expenditure by adjusting their smart home appliance operations to avoid peak home hours and instead use renewable energy Fig [2]. The basis of these applications is the intelligent network developed. The complexly developed network keeps the benefits of smart networking in the background [1]. Therefore, there is a way to provide the most efficient energy and infrastructure to provide high efficiency to the user. The most common way is to choose the right communication and network in smart grids.

Figure 2. Communication and Networking in Smart Grids.

3. Conclusion

It is the new age for users who can able to find and want to use the Internet of Things applications. These applications need safe energy with the Internet of Things. And smart grids infrastructure technology and solution can provide energy with efficiency.

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