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A Survey on Smart Grid Technology.

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ABSTRACT

The Internet of Things (IoT) is that the wide accepted technology that connects everyday objects to the net for providing ease and numerous functionalities. Sensible Grid (SG) is outlined because the installation integrated with an outsized network of knowledge and technology. Survey is distributed on differing kinds of sensible grid and scada rules so as to spot the algorithm that most accurately fits the net of Things with high level of accuracy. Introducing the Raspberry Pi to the plant of home automation provides various customizations to show a home into a smart home. Raspberry Pi provides a low cost platform for interconnecting electrical/electronic devices and varied sensors in an exceedingly home via the net network.

Keywords: Internet of Things, Requirements, Smart Grid, Technologies.

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INTRODUCTION

The term web of Things (IoT) is associate intelligent network, that promptly achieving ground within the context of contemporary wireless telecommunications. The IoT has recently become universal to spotlight the vision of a worldwide structure of interconnected objects.

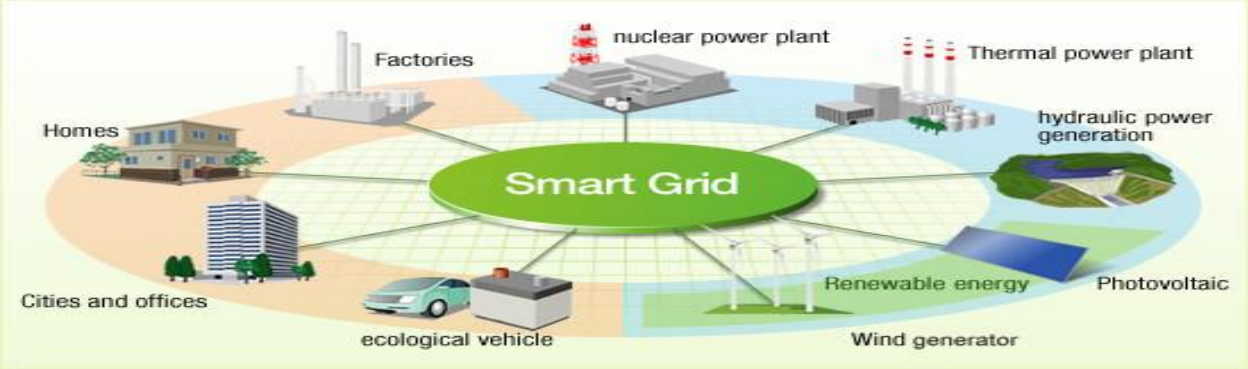

Figure 1: Smart Grid

Once web of things technology is deployed in Sensible Grid, it from associate vast sensible network comprised of individuals and instrumentality with numerous styles of distributed recognition or data sensing instrumentality as RFID device optical device scanning, infrared sensors, the worldwide positioning system. Sensible grid ideas emerged as a quick growing analysis and development topic with the previous couple of years, the National Institute of Standards and Technology (NIST) developed a abstract model for the sensible grid to line the stage for a higher understanding to the sensible grid technology bulk generations, transmissions, distributions, consumers, markets, operations and repair suppliers. Sensible grid users communicate in two-way directions by utilizing many wirelesses and wired communication protocols like Zigbee, WIFI, Homeplug, cable carrier, GPRS, WiMax, LET, Lease line.

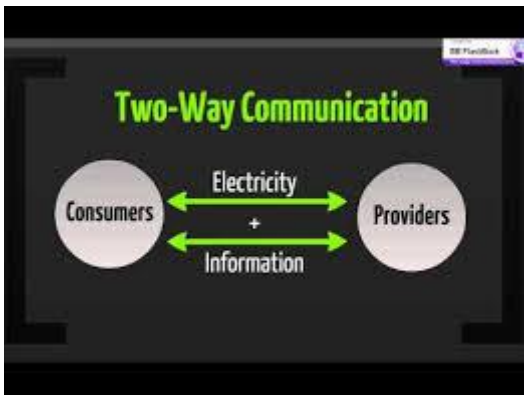

Fig 2: Two-Way communication

Literature survey:

[1]. An Integrated Cloud-Based Smart Home Management System - S. Kong, Y. Kim, R. Ko, and S. K. Joo.

Paste your Home Energy Management focuses on the power management on consumer side, wherever home appliances will be monitor and controlled to balance and optimize their power provide and consumption. HEM excellent meters, sensible appliances, in-home displays, and advanced control systems. The basic task of the house Energy management system is raising energy potency, data measurement, and transmission. The communication wants of HEM systems on customer premises may be handling with low power, short-distance technologies, like as Zigbee, Bluetooth, and residential Plug. There is no need for a large amount of bandwidth or communication speed, since such applications are not counted as mission critical. The

advantage of planned Home Energy Management provides the correct account of overall electricity consumption to the buyer facet. It provides the facility demand needed by the buyer to the Smart Grid. Block diagram of Home Energy Management system using smart grid communication enforced within the FPGA Design.

Home energy management system (HEMS)-related devices area unit put in within and outdoors residences for instance, star panels area unit put in on residential rooftops. Previous studies have recommended that stratified architectures composed of community units will promote knowledge and repair sharing among many families. However, these studies have lacked real environments within which to develop such architectures, typically deploying the design on cloud platforms. Our system consists of a home controller system, community management system, and cloud server platform. the house controller system contains network connections, digital input and output (DIO) lines through that the house controller system will integrate physical and conversion sensors and be extended to change security settings, energy reportage, and situation management.

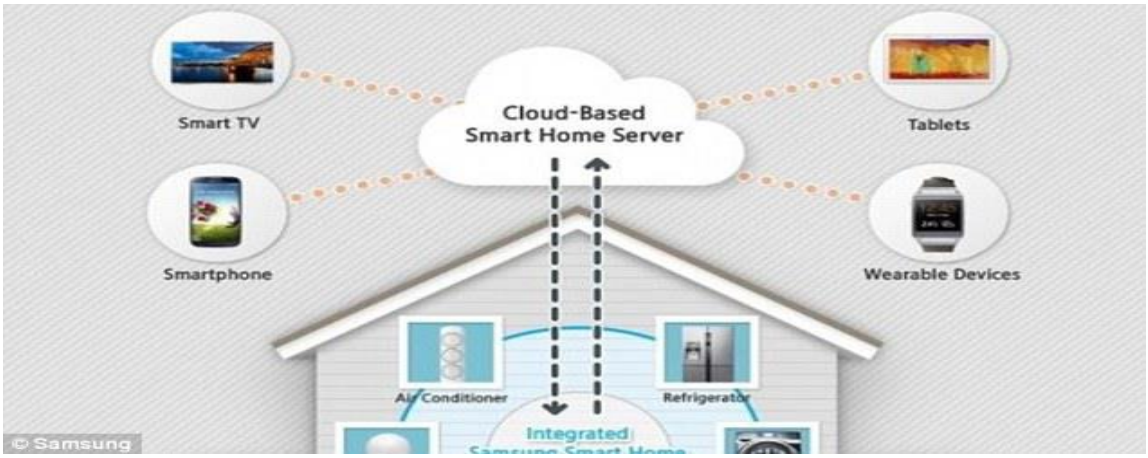

Figure 3: smart home server

[2].Title: Implementation of IoT for Environmental Condition Monitoring in Homes-S.D.T. Kelly, N.K. Suryadevara, S.C. Mukhopadhyay.

Home Automation is automation of the house, work or social unit activity. Home automation could embody centralized management of lighting, HVAC (heating, ventilation and air conditioning), appliances, security locks of gates and doors and different systems, to supply improved convenience, comfort, energy potency and security. Home automation for the senior and disabled will offer inflated quality of life for persons United Nations agency may otherwise need caregivers or institutional care. The thought of the "Internet of Things" has tied in closely with the popularization of home automation. A home automation system integrates electrical devices in a very house with one another. Home automation or sensible homes is delineate as introduction of technology inside the house setting to supply convenience, comfort, security and energy potency to its occupants.

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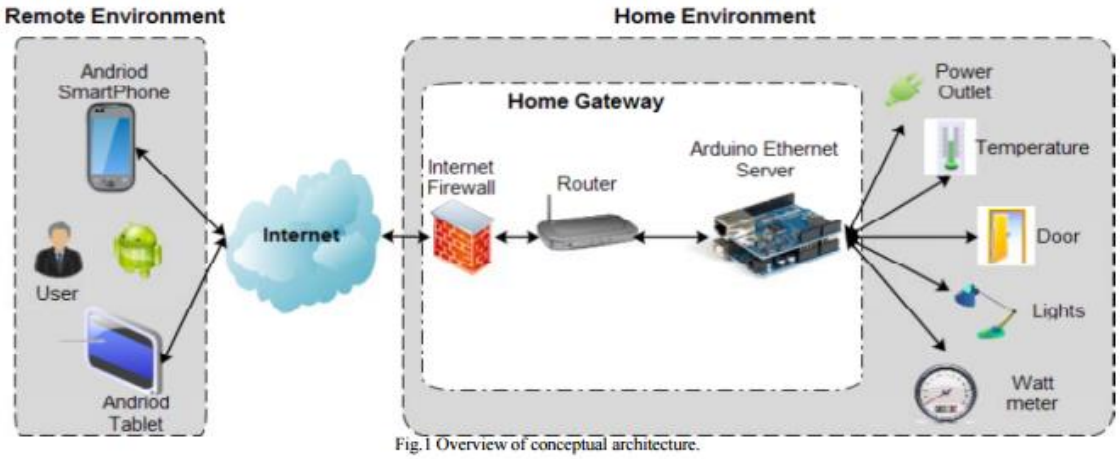

Figure 4: overview of home application

[3].A Survey on Real time Analytics Framework for Smart Grid Energy Management- Simmhan, Y,Aman, S, Kumbhare, A., Rongyang Liu , Stevens, S. , Qunzhi Zhou and Prasanna, V.

Smart grid unit of measurement electronic grids that alter two way communications. Smart grids have many interconnected parts like sensors, Phasor measuring units (PMUs), smart meters, small grids, Pluggable Hybrid Electrical Vehicles (PHEVs) etc. the basic components of smart grid. All these components have to communicate with the grid. These essential parts need to communicate data the grid operations. This rids square measure completely different from ancient grids. Renewable energy generating stations typically endure instrumentation repairs, outages or damages that your time needs quite every day to be fixed. In such cases the utilities or grid ought to be able to still control the supply demand mismatch.

The software system platform is analysing additional sensitive information like consumer energy/device usage pattern in home in addition as industry. Such data, is accessed maliciously will cause the understanding of behaviour of consumers. Also, authentication of smart meters and frequent outlier analysis is needed by utilities for fraud or anomaly detection. Renewable energy generating stations typically endure instrumentation repairs, outages or damages that your time needed quite every day to be fixed. In such cases the utilities or grid ought to be able to still control the supply demand mismatch.

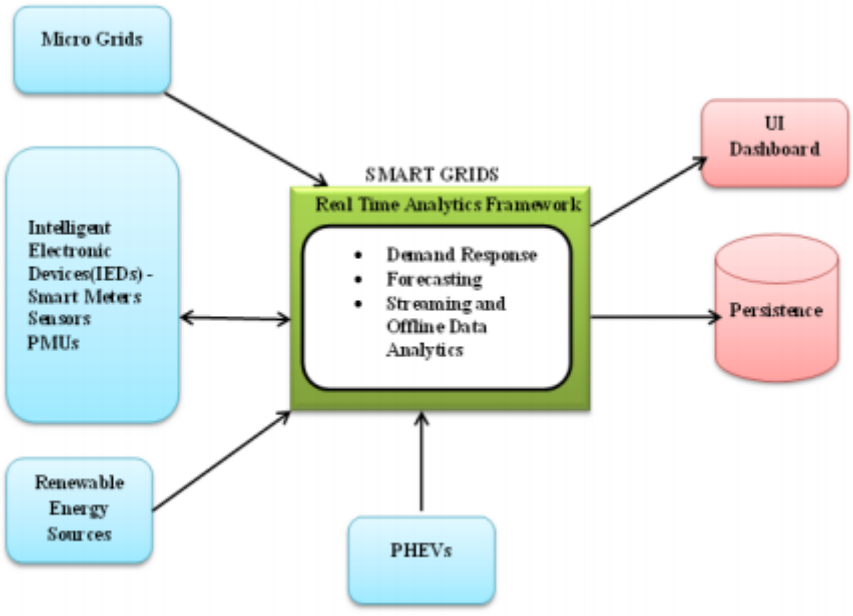

Figure 5: Smart Grid

[4].Power Control Applications In Smart Grid Using IOT-V. Giordano, F. Gangale, and G. Fulli.

The system has been designed for measurement of electrical parameters of household appliances. The block diagram of power control in three phase loads. The measurement of electrical parameters of home appliances is done by interfacing with fabricated sensing modules. The output signals from the sensors are integrated and connected to wifi module for transmitting electrical parameters data wirelessly.

Literature Survey mainly focuses on power management, it focusing on large-scale systems, within which a home network of power meters, connected to individual masses, cloud be a scheme in associate degree integrated infrastructure aimed to manage the entire power grid, as well as power generation plants, transmission and distribution systems, and "smart" consumers, with native generation capabilities, flexible usage and sometimes local energy storage capacity. The installation and configuration of this device makes the deployment of the system out of the reach of many end users. Several communication technologies square measure for the native transport of data within the home network: Zigbee, wifi are popular but also dedicated point-to-point radio links are proposed. A recent IETF document discusses in detail many aspects of the use of IP. Smart plug collects load information from the attached electrical equipment. Information includes: single section active, reactive, and apparent power; power factor; sampled waveforms; root mean square (RMS) current and voltage; on/off status. The smart plug is also an actuator, since it can turn the load on and off standing. The smart plug is additionally associate degree mechanism, since it will flip the Load control is implemented using a single pole bitable 12 V relay supporting loads up to 16 A. The board includes a power supply unit, which provides the supply voltages of 12 V for the relay and 3.3 V for the cortex m3 lpc2148SoC. The firmware running on the smart plug is implemented using the swift stack.

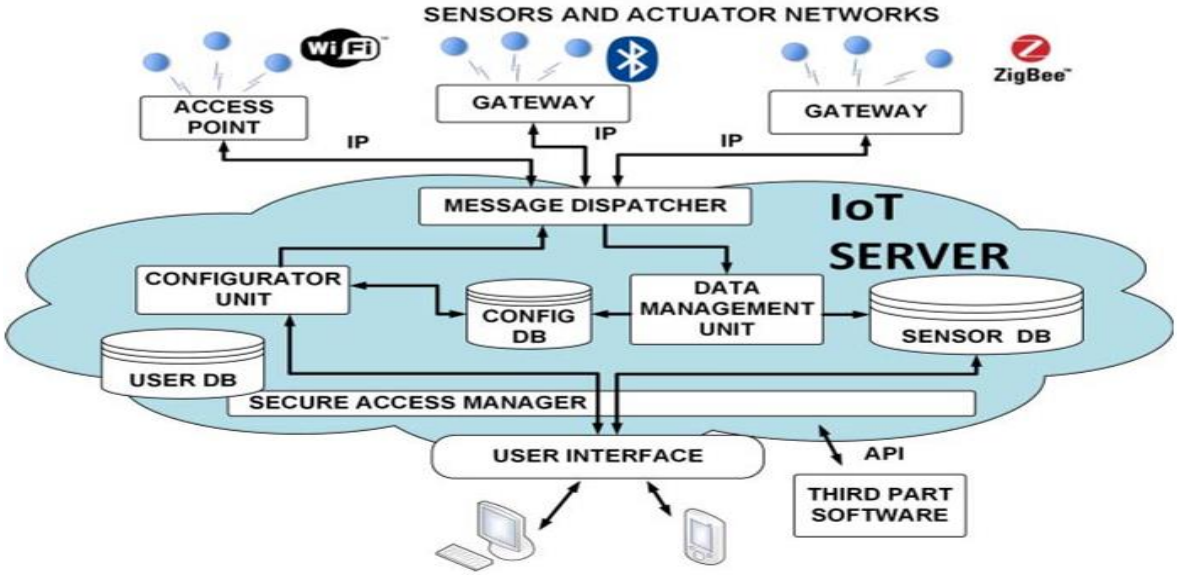

Figure 6: Block diagram of the internet of things platform supports in-home smart grid

[5].Smart Medicine and Physical Health System Using IoT-M. Dohler, C. Ratti, J. Paraszczak, and G. Falconer.

In Proposed system Ontology based automating design methodology for smart medicine and physical health system using IoT. Based on the objectives IoT aims to interconnect all the resources and easily provide an immediate information interaction. Major role during this system is to applying the metaphysics for the creation of rehabilitation strategy and to create the system analyses for collaboration of the patient's information's or identity. Human machine interaction and other one is multidisciplinary optimizations which are formed in the many operations on the system architecture. .The Human machine interaction can be achieved by the base of the resources and human, like doctors, nurse and patients are the human related resources and devices such the RFID, ambulance, medical resources are the interact to the human resources. Second, Multidisciplinary optimizations that is employed to perform the design of the automated design methodology and the major role in the system architecture, because it creates the all strategy of the system

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and also to provide the prescription to patient automatically. Used to manage all the resources and the patients records also.

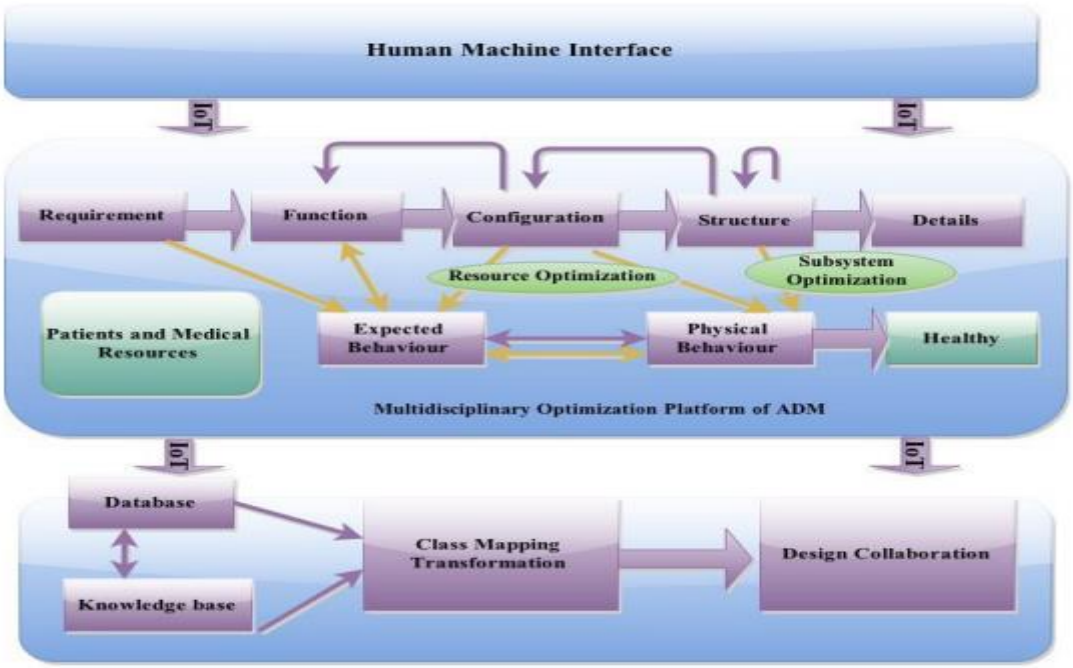

Figure 7: system Architecture

Internets of Things (IoT) devices are often largely wont to facilitate distant health observation and emergency healthcare systems. At the current we have a tendency to face several challenges within the recent universe that ought to deal realistically. By the employment of IoT challenges are rehabilitate that consumes longer, resources and work force. Within the recent years the rehabilitation of Internet resources has become well-liked and also development of the smart applications like smart home. Compared to the standard system, the sensible rehabilitation is aiming at providing a good treatment, spare interaction and fast reconfiguration to creating the determined use of the medical resources in keeping with the patient's specific requirements probable. Internet of Things is that the primary technology for interconnecting all the medical resources of the rehabilitation systems. During this half inputs are reborn into perform during which patients symptoms are analyzed, diseases are settled, and every one information's are place into the remote information. Once the patient first enters the hospitals, the physical characteristics of the diseases will be primarily determined by the doctor. The determined functions are divided into the categories and sub categories. Classes are represents the patients basic information and subclasses are represents detailed diseases information.

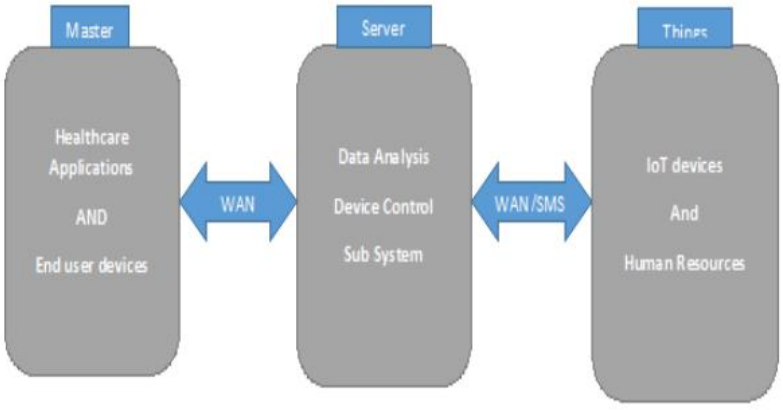

Figure 8: Internet of things

CONCLUSION

An application of IoT is increasing day by day. In most of the domain Internet is needed for use. Internet-of Things can be said as the application of internet and use of some hardware parts. In this paper the system architecture of IoT is presented. The use of internet of things is increasing rapidly. Smart grid design technologies has been developed using this concept of IoT.

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