Iot Based Smart Village

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Abstract:

This research paper presents differents methods to implement Iot Based Smart Village.The smart village is a concept that improves the traditional rural aspects with the help of digital transformation.Smart villages are rural communities which use innovative solutions to enhance their sustainability, built on local strengths and opportunities. The idea of smart village would help villages become self-reliant that can encourage foreign and domestic investors.

Introduction

There are huge challenges in realization of a rural development that monitors and integrates all of the village infrastructure and services to leverage the collective intelligence. The development of a IoT based smart village includes Cloud based network which can provide a virtual infrastructure to process and integrate the analysis tools monitoring equipment, storage, and visualization platform within the system.

This paper presents an intelligent monitoring platform framework and system structure facilitating the agricultural based ecosystem under IoT (Internet of Things).The complete system consists of three subsystems, viz. the GSM module, sensor units and M2M based Cloud Computing.

The concept of Smart cities has originated from the Internet of Things technology. It offers a neat and efficient way to implement IoT in day-to-day life by introducing technology in all the jobs of a modern city. Internet was conventionally used to connect computers or mobile phones. Likewise, Internet of Things will connect every possible device which we can tag as a smart device. All such devices can communicate with each other and act accordingly. In countries like Japan, the Internet is being used to connect such devices. For developing countries like India, the rise in population has necessitated the use of available resources in the best possible way. IoT is emerging as the savior for such increasing demands for efficient usage of resources.

Mehodology:

To create a Smart village, one must first determine all the artifacts that interact with each other and next identify the possibilities for integrating them. Then sensors, cameras, switches, and other devices will be placed that are much larger and serve other purposes, such as fixed alarm buttons will be added. This array of sensors and related equipment will be connected to the internet, which will generate a massive amount of data that can then be stored and processed in the cloud servers. Even after taking care of all the logistical issues, this data can be mined for finest details with Big Data analytics like Hadoop.

NEED FOR SMART VILLAGE

Each country has developed a reputation as a global leader in upgrading their city as smart city initiatives in its larger urban areas. The Rural areas are in need of essential infrastructure like roads, drinking water and power. The future development mainly concentrates on improving big metropolises into connected cities but failed to see where most of the population resides. Villages more than cities need to be made smart for the overall improvement and development of the country.

Ideas for smart Villages:

People now live in big cities in greater than in proportion to their population percentage of the population. This may be the reason that both researchers and governments focus on building sustainable cities, since the idea is that they have their resources with them, and are efficient enough to remain so Using sound and prudent fiscal planning, these cities may apply their resources in a useful and well-directed manner The same concept can be applied to the rural towns as well.

1) Smart Education:Education is the basic means to implement all the advancements in life. Educating people about the use of new technologies facilitates better implementation. It can be the force behind reducing the digital-divide which is far more prevalent in villages than the cities. The whole idea of Smart villages revolves around its people and how efficiently they make use of the components of a Smart village. They can be educated to participate in each and every activity of the village leading to a better lifestyle for its people. IoT is made up of various technologies like the Internet, smartphones, as well as intelligent devices, which assists in the process of education. The use of LCD screens and video games will promote children's learning and appreciation for things, as well as encourage interaction with others who are adults. The homes and businesses in the Smart village can be used to teach those in the villages about a variety of skills, such as about how to use the services and systems, tools and how to solve problems. Classrooms in the local villages can be provided with Internet access to new and the computers and school can then serve as a more interesting and engaging educational experience.

2)Smart Weather and Irrigation system:Accurate weather information can be of great use to the people of the village. As we know, the majority of population in villages engages in agriculture for their living. The use of environmental sensors to predict weather forecasts can help the farmers to a large extent. Many farming activities like sowing, irrigation and harvesting depend on the weather.

Smart irrigation systems can make use of sensors in the fields and remote satellite data to ensure the optimal use of available water resources. If it is going to rain the next day, then watering the fields on that day makes no sense. All this information can be made available to the farmers through message alerts on their mobile phones. The level of water in the dams and canals can also be monitored using sensors and it can be used to predict the future need of water.

3) Health Monitoring system:Smart health services are needed to improve the quality of life in the villages. The village dispensaries and hospitals need advanced devices which are connected to each other

and the doctors. The beds in hospital can be embedded with sensors which can detect various changes in the patient including its movements, heartbeat, blood flow from the wounds and body temperature etc. These reports along with the data generated by various machines like X-rays, CT scans etc. can be sent to the doctor directly. Such services will upgrade the health care sector of the villages.

4)Smart Dairy:Dairy has enabled secondary activity, and business to increase. Having the use of sensors and cameras in the barn or herdery will help farmers in better supervising their work. Any possible variation is shown as a warning message and any identified changes are reflected by procedures are brought into play. Smart devices may be used to regulate the animals' temperature in the ideal range. As in the above statement, it is possible to track the food, water, and health necessities of cattle in the same way. You run the risk of someone or something getting sick if you graze livestock in the open fields without an adult. Sensors in the fields will enable farmers to cut their staff numbers by eliminating the need for human oversight, which means they can operate more efficiently.

Future Scope:

The Smart Village will be developed in the future by the following ways.

1) Solid and liquid waste management.

2) Sanitation, sewerage and street lights

3) ATM/ Rural banks

4) Rural industries for value addition, agro- food processing, storage/ warehousing.

5) Information with Wi-Fi / Internet, cyber cafe service.

6) Community center with library

Conclusion:

The aim of all these techniques in energy management is optimal balancing of supply with demand in which undesired blackouts and outages are eradicated. For successful implementation of demand response technique, modern equipment has to be implemented the rural areas. The automation in irrigation will be ensured at low cost and high accuracy which minimize the water consumption. With the increasing population and changes in the lifestyle, cloud based waste management is another division where current technologies can be applied in a more constructive way for disposal of waste related to hygiene and resource management. This project meet out many facets of rural development and design which includes energy, environmental, economic impact using various technologies.

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