

An Approach to the Development of Smart Village under Virtual Environment

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Abstract— Smart village development is the main objective of this paper. Smartness can be achieved by Wireless Sensor Networks (WSN) and pervasive computing. People in the villages will be able to communicate with the government from any device, any location, anytime and in any format. This paper describes a mobile application by which one can communicate with the mobile server, cloud, every sensor that is connected to another sensor wirelessly to form a wireless sensor network to sense the surrounding environment. The rapid increase in the development of these devices in communicating-actuating network develops the Internet-of-Things (IOT). Sensors and actuators in this environment sense the information and is shared across platforms in order to create a Common Operating Picture (COP). Cloud centric vision is one of the application of this paper.

Index Terms— Actuators, Common Operating picture (COP), Internet of Things (IOT), Pervasive computing, Sensors, Wireless Sensor Networks (WSN).

I. INTRODUCTION

India is a country of villages. It needs to provide the villages with the latest technologies to facilitate their better livelihood.. It is necessary to build smart villages and smart wards. Smartness can be achieved by using smart devices which can sense the data and can do operations on the data acquired from the surrounding environment. The main theme of this system is to develop a free basic application. This system has to sense the data that is one part and this system has to communicate with the people to facilitate and to solve their problems. This system should help the villages to develop the smarter environment. There are some points this paper to develop smart villages are zero dropouts from the schools and farmers subsidiary systems, grievance cell, health of the citizens and to prevent malnutrition for the children. Skill development centers are to be established to improve the skills of the youth in the villages. People can be able to communicate with government and their officials from any place, time, and format without any data charges to make use of the application. The data or the information collected through this system is very huge. The data are maintained in the cloud platform. This cloud platform should share the data equally at any instance of time to all the resources. Now the www is upgraded to web3, since the data usage is more and the format of using the data is

formatted. As we move on from the static web pages to mobile web pages. Skill development should be done as to shift the people from the primary sector, i.e. from agriculture to secondary sector i.e. industries. More people have to shift in the industrial sector than the agriculture sector in the villages for the development of the nation.

II. EXISTING SYSTEM

Now, everything today is manually done without the involvement of technology. So it is difficult to maintain with the paper work. Some places like district headquarters and mandala's got the fiber optic internet connectivity. This connectivity is to mainly reside with government sector only. But in a few cases the fiber optic internet connectivity is given to the common man. The government is maintaining some data records of the public as like aadhar details, bank details etc. Even most of the schools don't have internet connectivity.

III. PROPOSED SYSTEM

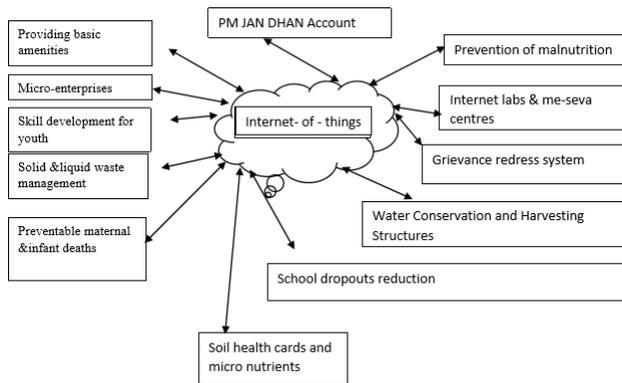


Fig 1 overall diagram for smart villages

The above figure shows the areas to be worked for the development of the smart villages. The people in the villages have to connect to the internet to facilitate them. The main areas to be focused are to provide basic amenities to all the people, to establish the micro enterprises with women in the village and they are to be connected with the internet, skill development for youth and for students, solid and waste management should be monitored digitally, prevention of maternal and infant death rates, providing of soil health cards and micro-nutrients to farmers for the lands they have, reduction of school dropouts up to 12th class, development of the water conservation and harvesting structures, grievance redressal system have to be improved, establishment of internet centers to educated the people, pm jan dhan account has to be digitally monitored to prevent the money loss due to corruption, prevention of mal-nutrition to the children and to pregnant ladies and finally health services are to be developed in the villages. These are the main areas which are identified for the development of smart villages.

internet connectivity to all the users with common operating picture. Cloud is one of the best solution for huge data and with more user population. Users can know this system by using the free basics application which runs in the cloud as Software as a service (Saas). People can access to the data from any place anytime in any format. Everything in the system has to be digitalized and partially automated to prevent the corruption and for the development of the better society. People can utilize this system and its services even from their handheld devices and smart phones. Common operating picture (cop) is located centrally in the cloud to provide information efficiently to all the users equally. There are some preventive measures to protect this system. Mobile application comes into the picture to communicate effectively with people. This system will provide some efficient access to the users without any breakdown of the system or overload to the server as the population is more. Population is the main constrain for bring up any idea with the proper utilization of the resources. Information or data is passed to the nodes or to server with shortest routing algorithms for the efficient access and the retrieval of the data from the end user and even from the server end also.

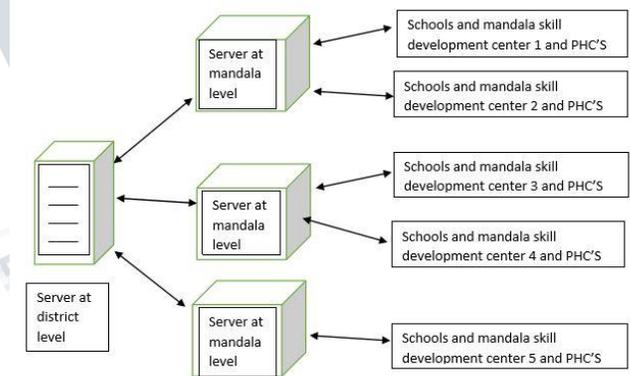


Fig 3 connectivity of PHC's and schools and skill development centers.

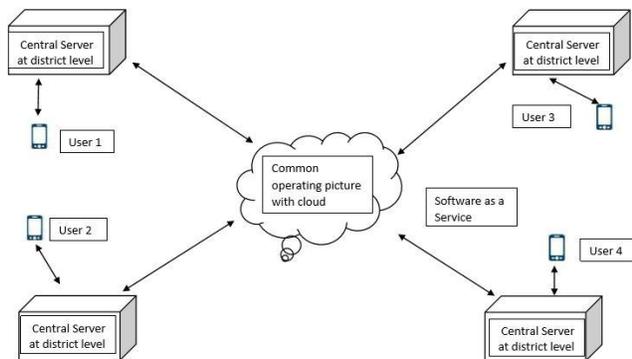


Fig2 connectivity of the local server with cloud and to users.

This central idea is to be to develop a cloud based

There will be a server at the district level which is directly connected to the cloud. The servers at the district level is connected internally with the servers in the mandala level. Every school in the each mandala is connected with the server in that mandala. Schools are to be first common connected to the internet for the development of the society. As the children are the future citizens of the nation. Every skill development center is connected to the internet. This connectivity is required is to learn new things from the outside world to develop themselves. There should be some activities to common people to actively participate in the course to develop the nation or else they don't show the interest in the development of the smart nation. Main thing is the health issue of the public. So it is the main consideration to the development and all the PHC's are connected to the servers to know the public

health issues and the diseases in that area. This prevents the maximum deaths of children in the initial stages. Important thing is that people are connected through mobile application to know the actions to be taken in the emergency times. They can easily get the first aid and medical prescription for health problems or to unexpected accidental conditions. Even for the uneducated people they can upload a one minute video to express their problem to the government officials. There they can conduct camps for the development of the villages. Mainly in the villages many people are working in the agriculture sector, so it does not improve the society much. So they have to be transformed to the industrial sectors to create and develop new products. If the new products are improved then there will be in improvement in the exports business from our country with other countries. Thus there will be increase in the value of our countries money. Automation of the sector is essential for the improvement but it should not be fully automated. Schools are to be connected with the internet to learn knowledge as it is a huge data source. They can learn new techniques to improve the performance of the system. Fiber optic connectivity is to be established as it is important like a water to a village. Water bring liveliness to the lives of the people and internet connectivity will improve their standard of living. Common operating picture has to identify the system faults and it has to be rectified easily. Unexpected incidents might happen so that information is to be intimated all the departments of the government to take necessary actions.

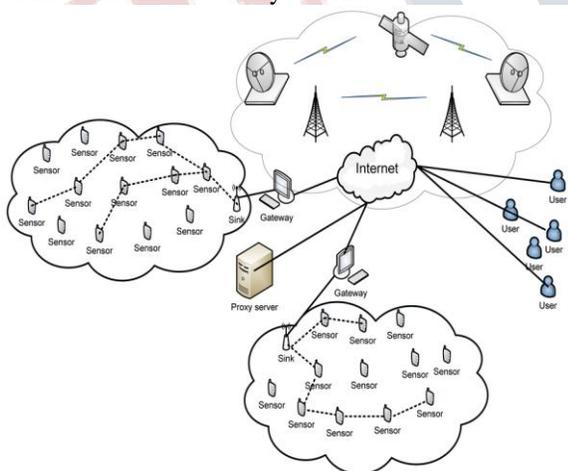


Fig 4 wireless sensor network (WSN) connectivity

Sensors place a major role in protecting in the people from natural calamities. Main purpose is to identify the temperature conditions to suggest the people to take precautions to prevent deaths. We can provide emergency services to the people in the effective way. They can know temperature levels at different times like in summer they can take precautions to protect themselves from the heat and even in the winter times also. With these sensors we can know the information about the ground water levels and to know the water level which can improve the crop

yield. This information can be sent to the public with the help of free basics mobile application. People can know the information and can the severity of the issues in the natural calamities.



Fig 5 Main location of the centers in the state.

These are the predictable locations to establish the internet connectivity centers in the state.

IV. CONCLUSION

The main output of this system is to build smart villages. The free basic application has to serve the people to improve their connectivity with their people’s government. Sensors and actuator have to work for the development of smarter cities. The cloud will be the basic data source and internet of things is the major concept in developing the smart cities and villages.

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