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E-Healthcare Monitoring Architecture using WSN.

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Abstract: *Now-a-days healthcare is an important point in all aspects. Healthcare means improving the lives of patients especially in the weaker parts of the society which include the elderly, physically and mentally disabled as well as the chronically ill patients is the major factor to be improved. The e-health system should be such that, it should monitor the students/employees health condition by diagnosis of the student/employee with the help of the heartbeat, temperature and Blood pressure sensors, controllers as well as TTL. The sensor will monitor and generate the health report of the student/employee and send it to server. If The obtained health result of the student/employee matches with the entries prescribed medical history database server for a student/employee to be sick, send a text message and a mail to the respective Teacher/Manager " A detailed report of his health issues and that his sick leave was true ". Else if obtained value fails to match with the medical history send the message and mail "The sick leave of the student/employee was fake and the student/employee is physically fit and his normal health report". And it will suggest some medicine related to it.*

Keywords: *Heartbeat, Temperature, Blood pressure sensors, TTL, Controller.*

I. INTRODUCTION

A. What is WSN?

Wireless sensor networks (WSN), are similar to wireless ad hoc networks in the sense that they rely on wireless connectivity and spontaneous formation of networks so that sensor data can be transported wirelessly. Sometimes they are called dust networks, referring to minute sensors as small as dust. Smart dust is a U C Berkeley project sponsored by DARPA. Dust Networks Inc., is one of the early companies that produced wireless sensor network products. WSNs are spatially distributed autonomous sensors to monitor physical or environmental conditions, such as temperature, sound, pressure, etc. and to cooperatively pass their data through the network to a main locations. The more modern networks are bi-directional, also enabling control of sensor activity. The development of wireless sensor networks was motivated by military applications such as battlefield surveillance; today such networks are used in many industrial and consumer applications, such as industrial process monitoring and control, machine health monitoring, and so on.

B. Applications of WSN

- 1) Healthcare Monitoring.
- 2) Process Management.
- 3) Environmental/Earth Sensing.
- 4) Forest fire Detection.
- 5) Landslide Detection.

C. Advantages of WSN

- 1) Network setups can be carried out without fixed infrastructure.
- 2) Suitable for the non-reachable places such as over the sea, mountains, rural areas or deep forests.
- 3) Flexible if there is random situation when additional workstation is needed.
- 4) Implementation pricing is cheap.
- 5) It avoids plenty of wiring.
- 6) It might accommodate new devices at any time.
- 7) It's flexible to undergo physical partitions.
- 8) It can be accessed by using a centralized monitor.

D. Why WSN is Different?

The WSN is built of "nodes" – from a few to several hundreds or even thousands, where each node is connected to one (or sometimes several) sensors. Each such sensor network node has typically several parts a radio transceiver with an internal antenna or connection to an external antenna, a microcontroller, an electronic circuit for interfacing with the sensors and an energy source, usually a battery or an embedded form of energy harvesting. A sensor node might vary in size from that of a shoebox down to the size of a grain of dust, although functioning "motes" of genuine microscopic dimensions have yet to be created. The cost of sensor nodes is similarly variable, ranging from a few to hundreds of dollars, depending on the complexity of the individual sensor nodes. Size and cost constraints on sensor nodes result in corresponding constraints on resources such as energy, memory, computational speed and communications bandwidth. The topology of the WSNs can vary from a simple star network to an advanced multi-hop wireless mesh network. The propagation technique between the hops of the network can be routing or flooding.

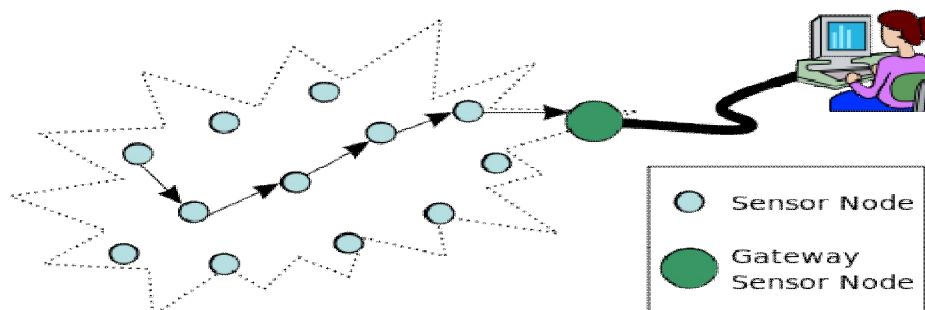


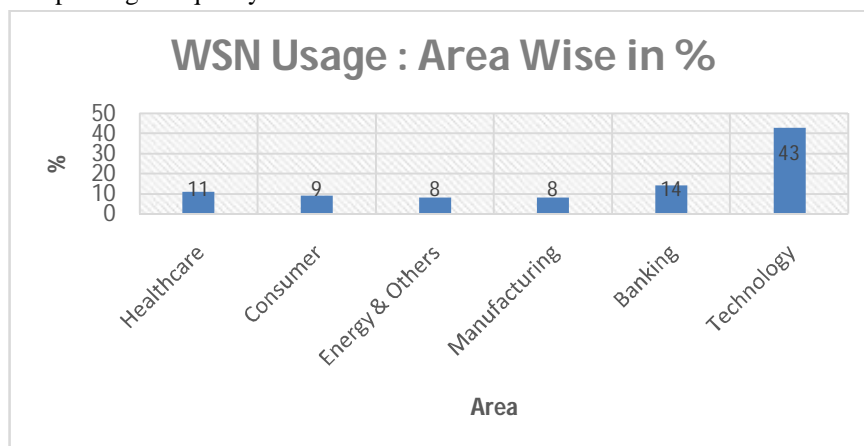
Fig: 1 Working of WSN

1) Issues in Big data:-

- a) Security.
- b) Localization.
- c) Power Consumption.
- d) Deployment.
- e) Cryptography.

E. WSN in Healthcare Analysis

Body sensor network systems can help people by providing healthcare services such as medical monitoring, memory enhancement, medical data access, and communication with the healthcare provider in emergency situations through the SMS or GPRS . Continuous health monitoring with wearable or clothing-embedded transducers and implantable body sensor networks will increase detection of emergency conditions in at risk patients. Not only the patient, but also their families will benefit from these. Also, these systems provide useful methods to remotely acquire and monitor the physiological signals without the need of interruption of the patient's normal life, thus improving life quality.



Graph 1: Area Wise WSN Uses

According to analysis on uses of WSN is in all the relative fields. The overall uses of WSN in each and every field is varying constantly. Most of the use or utilization of WSN is in technology sector where growth is rapid as new researches coming in. In below that healthcare, banking, manufacturing, consumer, energy and other sectors uses WSN for enhancement and better performance. As we seen banking and healthcare sectors having uprights for evolution of WSN. The use of WSN will surely increasing in those areas in future.

F. Technical perspective in Healthcare Data

Health care data available in the heterogeneous Formats. Tools for the technical perspective Requires the input database which contains Appropriate numbers of patient records. We Applying here WSN technique to collect the data. This data will be compared with already stored data. It compares the records related data with respect to patient. Text message about health of patient will be sent to Respected Patient's Family members and family doctor.

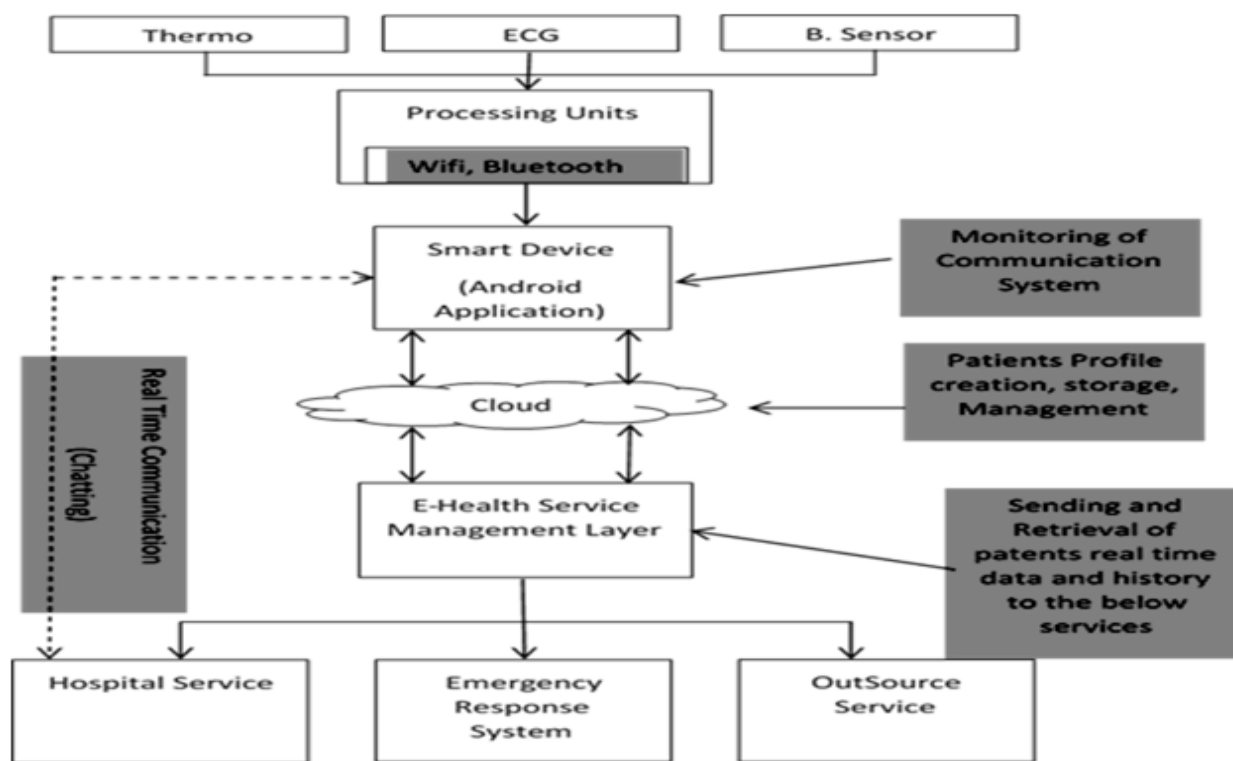
II. LITERATURE SURVEY

Table: 1 literature Survey

Paper no.	Problem Statement	Tools	Journal	Year
1	Trust based Decision making for health Iot Systems	Decision making, Threat Model, Location ratings, Query processing	IEEE	2017
2	Patient monitoring system based on e- health sensors and web services.	IDE, FileZilla, XCTU	IEEE	2016
3	Health Monitoring using wearable sensors and cloud computing.	WBAN Infrastructure, BMI	IEEE	2016
4	A New web based E-Health platform	MVC Model, IHM	IEEE	2014
5	Diabetes digital Coach : Developing an infrastructure for E-health self management tools	Kiperformance, DDC, Rescon, Oviva	IEEE	2016
6	Development of real- time Patient health (jaundice) Monitoring using WSN	Body Area network	IEEE	2016

7	Cloud based application for health monitoring system using wearable sensors.	Cloud computing	IEEE	2016
8	An autonomous wireless body area network Implementation towards IOT connected healthcare applications.	Solar pnel and MPPT	IEEE	2017
9	Medication intake adherence with real Time activity recognition on IOT	PNS, Activity recognition	IEEE	2016
10	An mHealth platform for Parkinson's Disease patient management.	Mhealth System, Decision making	IEEE	2017

III. PROPOSED ARCHITECTURE



IV. EXPLANATION ON PROPOSED SYSTEM

To generate a auto generated text message to a Teacher / Manager regarding a students/employees sick-leave.

The e-health system should be such that , it should monitor the students/employees health condition by diagnosis of the student/employee with the help of the heartbeat , temperature and medical sensors .

The sensor will monitor and generate the health report of the student/employee and send it to server.

If the obtained health result of the student/employee matches with the entries prescribed medical history database server for a student/employee to be sick , send a text message and a mail to the respective Teacher/Manager " A detailed report of his health issues and that his sick leave was true . "Else If the obtained value fails to match with the medical history send the message and mail " The sick leave of the student/employee was fake and the student/employee is physically fit and his normal health report " .

V. CONCLUSION

So we conclude that this system uses mobile devices and wireless sensor networks for real time monitoring and analysis of the student's health parameters and in return provide medication. It is easy for doctors and the caregivers to immediately act in emergency cases, and also to provide medication depending on the health parameters without the physical presence of the doctors with Students real time and historical Details. Provide emergency SMS as well as suggests some medicines on stored contact details of the Student.

VI. ACKNOWLEDGMENT

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