

The Usage of MANET (Mobile Adhoc Network) for Technology Enabled Learning in Rural Schools

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Abstract

Telecommunication field has witnessed a lot of developments in the 21st century. With the advent of wireless networks, we find cost effective communication between various locations. A Wireless sensor network is a network of devices that can communicate the information sourced from a monitored field through wireless links. The data transmission takes place through multiple modes and is connected to other networks. This technology finds widespread applications by virtue of its tracking and monitoring concept. This paper discusses the application of WSN in education.

Key words: *Wireless Sensor networks, Tracking, Monitoring, Application, E learning*

Introduction

Wireless networks transmits data from source to other places through wifi distribution nodes and back to the wired devices. WSN finds potential application in medical fields, education, utilities and remote monitoring. In WSN, the nodes are organised in to any one of the three types namely star, cluster tree and mesh topology. The mesh topology is usually referred as the router.

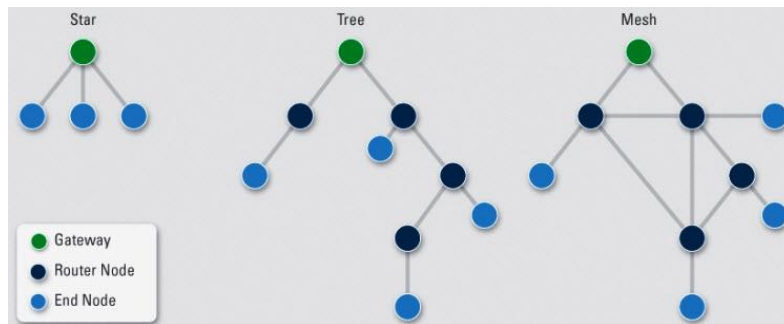


Fig 1 : Type of WSN topologies

Objectives

This paper aims to provide a basic viable model for MANET in rural and tribal schools for better dissemination of knowledge.

Applications

WSN makes patient monitoring simpler and effective and has good application in health care. For sustainable solutions, WSN can be used to monitor usage of the utilities like electricity, water and enables data collection on usage and helps in better management of resources. The other important application is remote monitoring which comprises of environmental, structural and industrial monitoring.

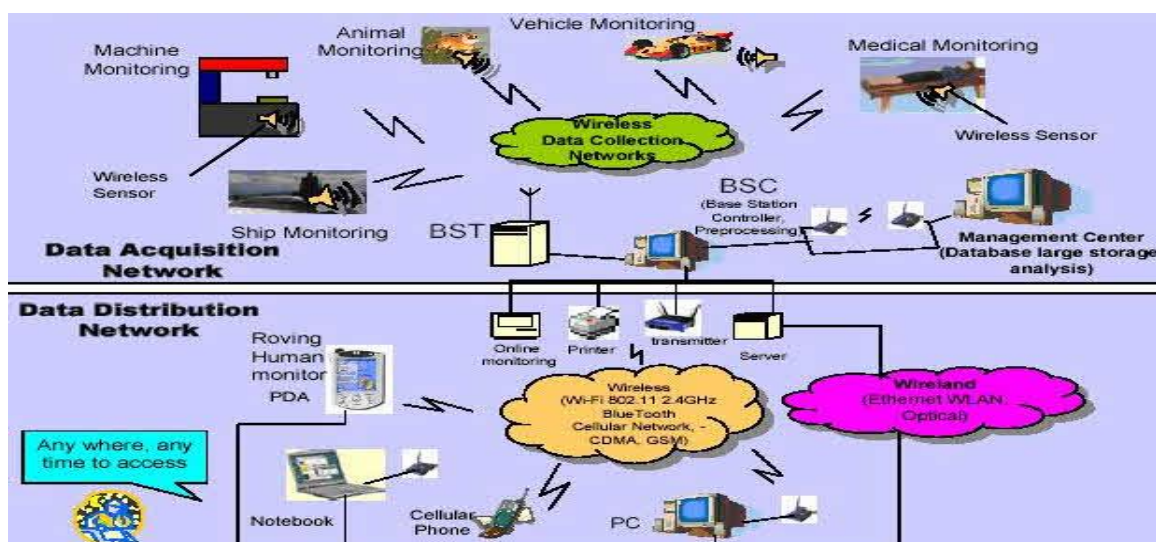


Fig 2: Applications of WSN

WSN and E learning

E learning is an emerging concept in education. This electronic learning can be customised as per the needs of the learner. People who cannot opt for formal learning can also utilise e learning. Learner's could have their own pace and access to all informations. Educational Institutes making use of smart class rooms make use of e learning to improve the teaching learning process. Ad hoc network is the most preferred WSN in E learning where access to IT infrastructure is less.

The need for adhoc network learning systems

We find that not all regions have schools or colleges with good IT infrastructures. There may be inadequate qualified teachers and insufficient learning materials. There are still under developed and under privileged villages where access to good amenities is still a dream. In such scenarios, mobile ad hoc networks is the solution. Compared to cellular networks, mobile adhoc networks are cheaper and simpler. They do not require any fixed infrastructure and cost is less.

Model for a mobile ad hoc network in rural schools

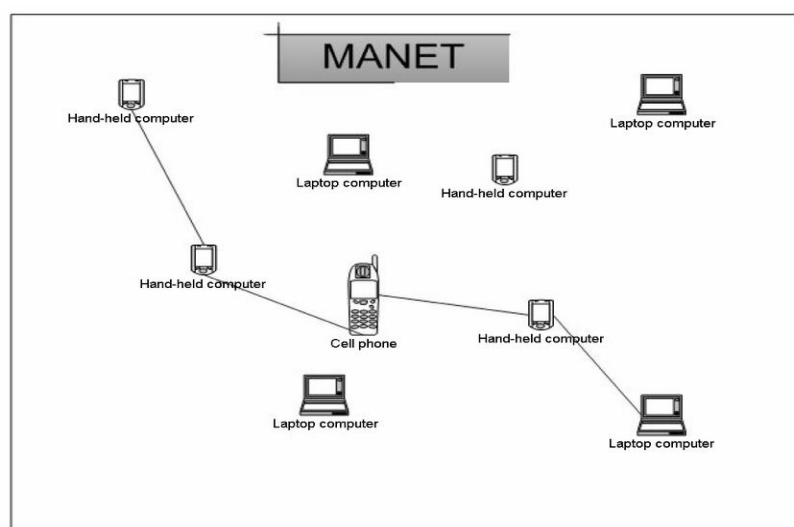


Fig 3 : Model MANET

The data could be stored in the main server. This data could be class lectures, NPTEL courses, videos, Power point presentations related to class. The entire course content is stored here. The mobile devices can be smart phones, tablets, etc. these devices can access the server and internet. Different levels could be used based on requirements. The level 1 mobiles would serve as routers for level two mobiles. Through this, near by schools could be connected. Such setups are needed for every district in the rural and tribal regions. Table driven (proactive) or on demand (reactive) can be used based on requirements.

This setup is cost effective, productive and feasible in all regions so that there is maximum benefits. The teachers can be facilitators for this process

Conclusion

Education plays an important role in the development of emerging economies like India. When there are challenges like lack of quality teachers, delays in recruitments, demand for systematic education, the Government should deploy effective technologies and come up with solutions. Mobile adhoc networks is a feasible and cost effective solution for providing world class education in the rural and tribal regions with minimum facilities. Initial training and orientation to the teachers, customisation of MANET are the requirements for the success of the programme.

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