

Abstract

With the advancement of very small power-efficient computing, communication and sensing devices, sensor nodes can be designed to form Wireless Sensor Networks (WSN). These recent advancements give WSN a new kind of opportunities that can be applied to a wide range of applications in diversified areas. It can be used to monitor our environment, objects in that environment and the interactions of objects with each other and their encompassing environment. To mention just few examples, uses of these networks include environmental monitoring, radiation detection, security and safety enforcement, structural monitoring and condition-based equipments maintenance and disaster management and emergency response, health care mentoring and the list is very long.

Hundreds and thousands of very small sensor nodes are deployed to form a WSN. The WSN can be design to form a distributed/centralized architecture. Extracting data gathered by sensor nodes in remote/hazardous location poses unique challenges. These challenges have to be tackled carefully and application-based solutions have to be provided. These challenges include node density, scalability, power management, remote management and most importantly security.

*Therefore, WSN offer huge potential applications that can be designed to fit the Saudi environment. WSN can easily lend itself to a giant company such as **ARAMCO and SABIC**, just to mention few possible clients, where environment hazarders, security enforcement, mining and oil exploration are very critical to their day operations.*

In this project, we are planning to explore new ways of implementing and deploying wireless sensor networks for Saudi Markets and especially oil and environmental industries.