

## WIRELESS SENSOR NETWORKS FOR MONITORING

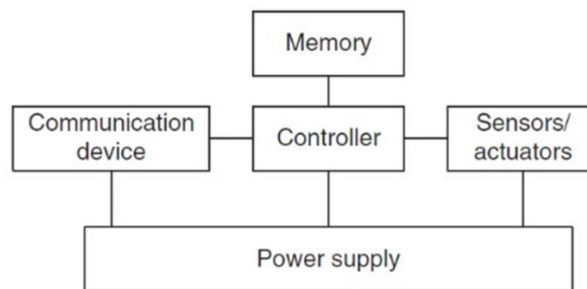
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The article is devoted to a detailed overview of the wireless sensor network and its appliance in monitoring. Much attention is given to routing process and routing protocols. Different types of routing protocols are compared. The possibilities of simulation program for WSN's model are described. The article may be interesting for telecommunication engineers and information technology specialists.

A Wireless sensor network can be defined as a network of devices that can communicate the information gathered from a monitored field through wireless links. The data is forwarded through multiple nodes, and with a gateway, the data is connected to other networks like wireless Ethernet.

Smart sensors are small devices composed of one or more sensors, a memory, a processor, a power supply and a radio unit. They can sense the environment, measure and send data wirelessly to control unit for further processing and decisions.



Picture 1 – WSN's node architecture

There are some major design challenges in wireless sensor networks due to lack of resources such as energy, bandwidth and storage of processing. Design challenges in WSNs are energy efficiency, scalability, signal delay and robustness.

Types of routing protocols are:

1. Data-centric Routing Protocols (SPIN)
2. Hierarchical Routing Protocols (LEACH)
3. Location-based Routing Protocols
4. Destination-initiated
5. Source-initiated

Routing protocol functions:

1. Node's self organization
2. Routing and addressing
3. Minimization of energy consumption
4. Data gathering and aggregation
5. Transmitting and processing speed
6. Coverage area maximization
7. Quality of service
8. Unauthorized access protection

Network Simulator (Version 2), widely known as NS2, is simply an event-driven simulation tool that has proved useful in studying the dynamic nature of communication networks. Simulation of wired as well as wireless network functions and protocols (e.g., routing algorithms, TCP, UDP) can be done using NS2. In general, NS2 provides users with a way of specifying such network protocols and simulating their corresponding behaviors.

### **References:**

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