

# Types of Wireless Sensor Networks

Elementrix Classes

Depending on the environment, the types of networks are decided so that those can be deployed underwater, underground, on land, and so on. Different types of WSNs include:

- 1. Terrestrial WSNs**
- 2. Underground WSNs**
- 3. Underwater WSNs**
- 4. Multimedia WSNs**
- 5. Mobile WSNs**

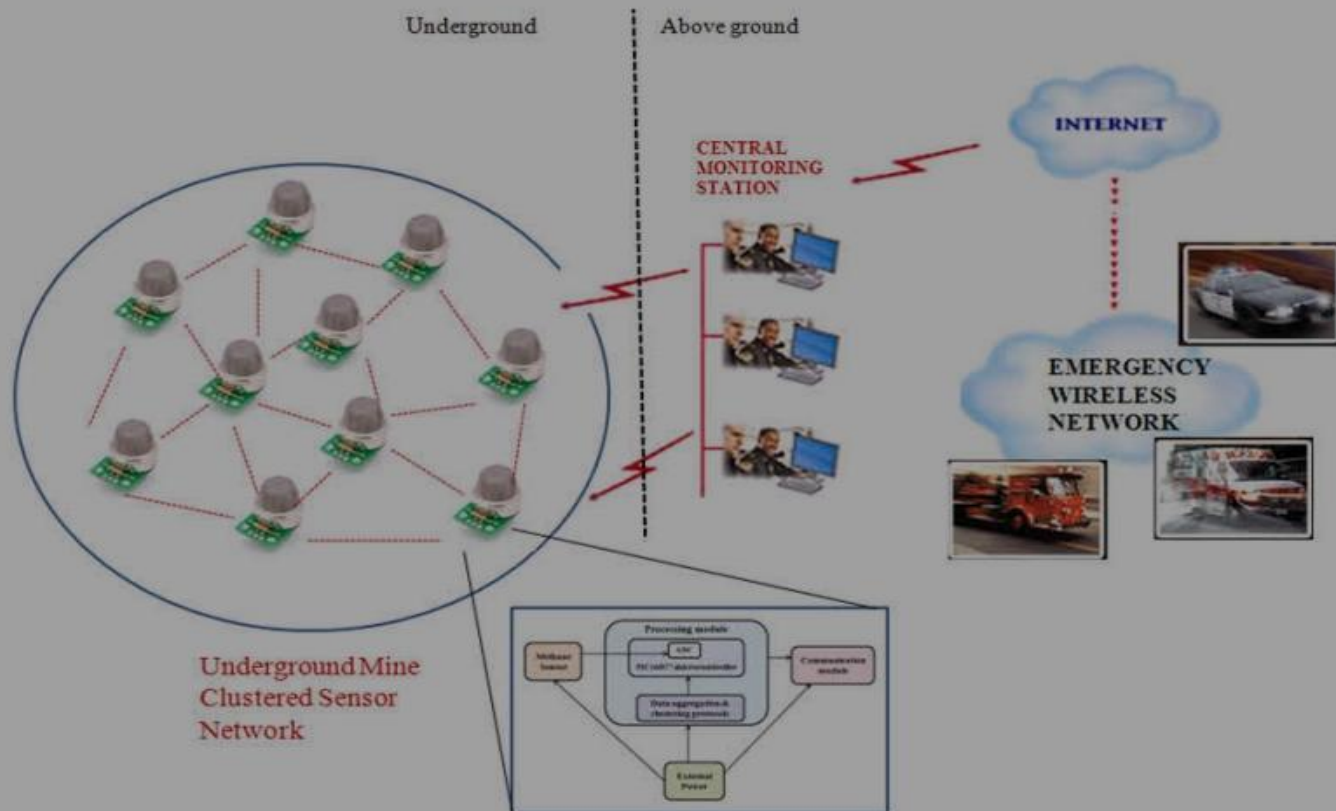
# Terrestrial WSNs

Terrestrial WSNs are capable of communicating base stations efficiently, and consist of hundreds to thousands of wireless sensor nodes deployed either in an unstructured (ad hoc) or structured (Pre-planned) manner. In an unstructured mode, the sensor nodes are randomly distributed within the target area that is dropped from a fixed plane. The pre planned or structured model considers optimal placement, grid placement, and 2D, 3D placement models. In this WSN, the battery power is limited; however, the battery is equipped with solar cells as a secondary power source. The Energy conservation of these WSNs is achieved by using low duty cycle operations, minimizing delays, and optimal routing, and so on.

# Underground WSNs

The underground wireless sensor networks are more expensive than the terrestrial WSNs in terms of deployment, maintenance, and equipment cost considerations and careful planning. The WSNs networks consist of several sensor nodes that are hidden in the ground to monitor underground conditions. To relay information from the sensor nodes to the base station, additional sink nodes are located above the ground.

The underground wireless sensor networks deployed into the ground are difficult to recharge. The sensor battery nodes equipped with limited battery power are difficult to recharge. In addition to this, the underground environment makes wireless communication a challenge due to the high level of attenuation and signal loss.

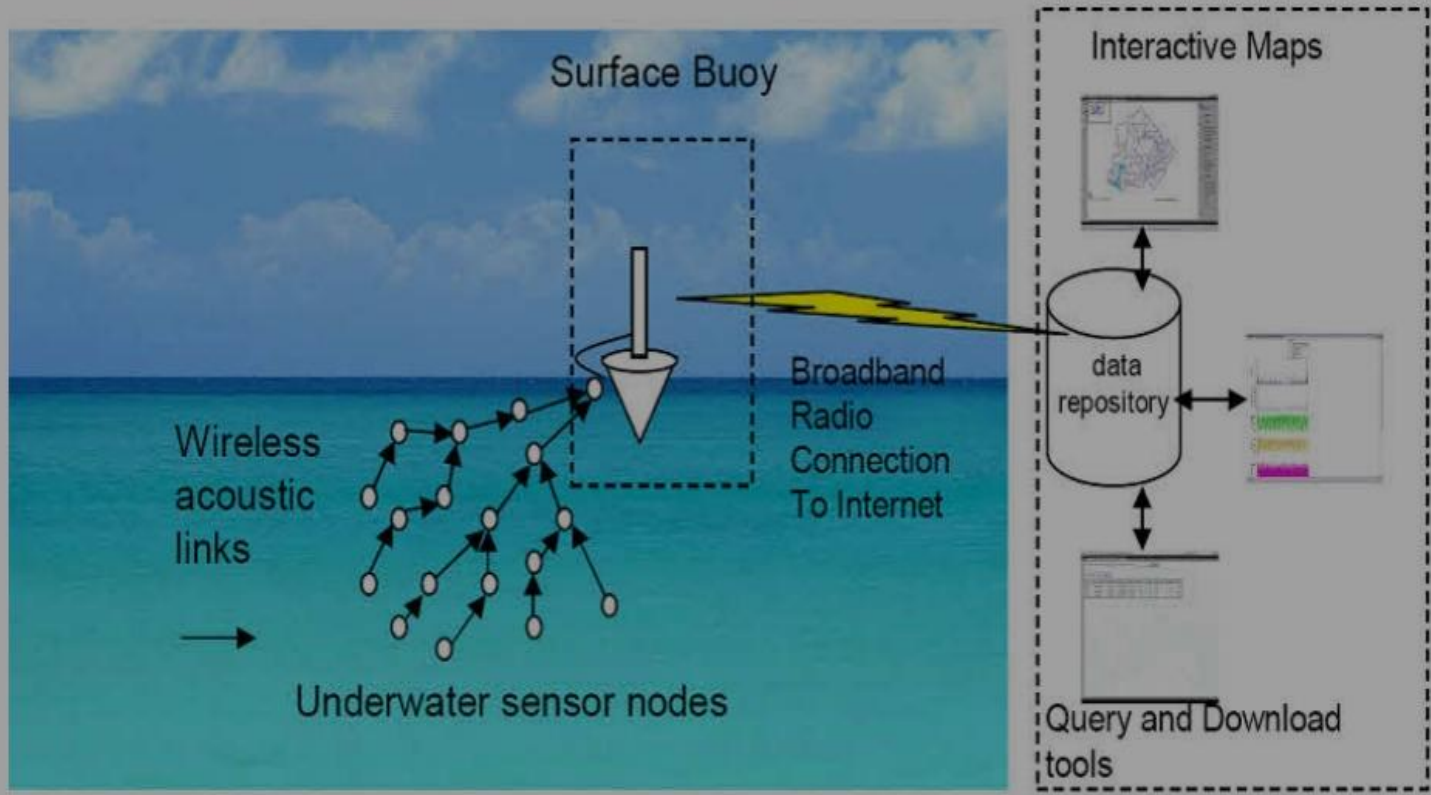


Underground WSNs

# Under Water WSNs

More than 70% of the earth is occupied with water. These networks consist of several sensor nodes and vehicles deployed underwater. Autonomous underwater vehicles are used for gathering data from these sensor nodes. A challenge of underwater communication is a long propagation delay, and bandwidth and sensor failures.

Underwater, WSNs are equipped with a limited battery that cannot be recharged or replaced. The issue of energy conservation for underwater WSNs involves the development of underwater communication and networking techniques.



Under Water WSNs

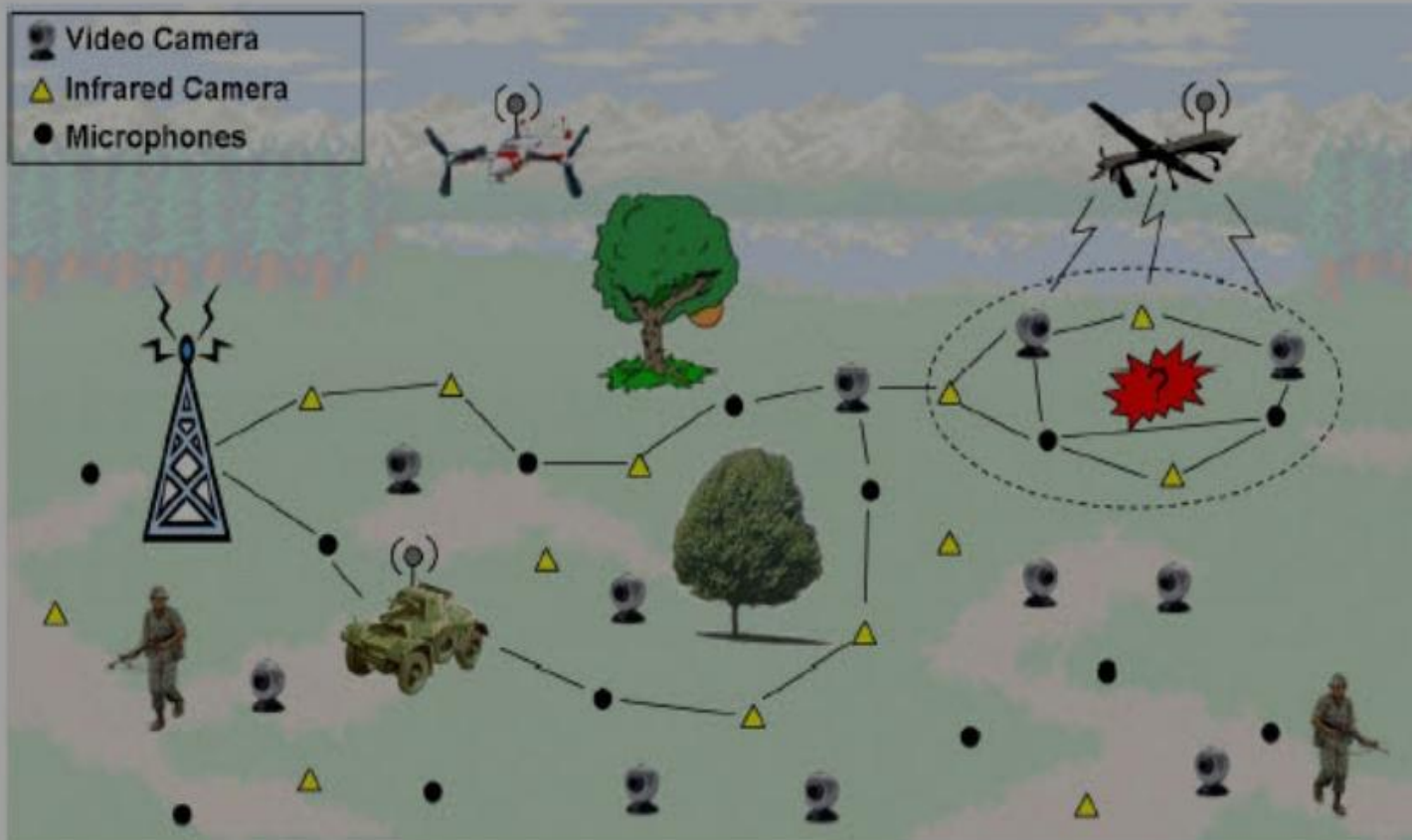
# Multimedia WSNs

Multimedia wireless sensor networks have been proposed to enable tracking and monitoring of events in the form of multimedia, such as imaging, video, and audio. These networks consist of low-cost sensor nodes equipped with microphones and cameras.

These nodes are interconnected with each other over a wireless connection for data compression, data retrieval, and correlation.

The challenges with the multimedia WSN include high energy consumption, high bandwidth requirements, data processing, and compressing techniques. In addition to this, multimedia contents require high bandwidth for the content to be delivered properly and easily.





Multimedia WSNs

# Mobile WSNs

These networks consist of a collection of sensor nodes that can be moved on their own and can be interacted with the physical environment. The mobile nodes can compute sense and communicate. Mobile wireless sensor networks are much more versatile than static sensor networks. The advantages of MWSN over static wireless sensor networks include better and improved coverage, better energy efficiency, superior channel capacity, and so on.

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