**ABSTRACT**

**UNDER WATER WIRELESS COMMUNICATIONS**

The Earth is a water planet, two-thirds of which is covered by water. With the rapid developments in technology, underwater communications has become a fast growing field, with broad applications in commercial and military water based systems. The need for underwater wireless communications exists in applications such as remote control in the off-shore oil industry, pollution monitoring in environmental systems, collection of scientific data from ocean-bottom stations, disaster detection and early warning, national security and defense (intrusion detection and underwater surveillance), as well as new resource discovery. In contrast with terrestrial wireless radio communications, the communication channels in underwater wireless networks can be seriously affected by the marine environment, by noise, and by limited bandwidth and power resources, and by the harsh underwater ambient conditions. Acoustic and optical communications are the most compelling, and somewhat complementary, owing to the potential for longer range and high bandwidth networked communications in size and power-constrained modems and unmanned systems.

Underwater wireless communication is the wireless communication in which acoustic signals (waves) carry digital information through an underwater channel. Electromagnetic waves are not used as they propagate over short distances.

Wired underwater is not feasible in all situations as shown below

• Temporary experiments

• Breaking of wires

• Significant cost of deployment

• Experiment over long distances.

To cope up with above situations, we require underwater wireless communication.

Factors affecting acoustic communication are path loss, noise, muti path propagation. Hardware platform interfaces involve sensor interface and communication interface.

**PARTS OF ACOUSTIC MODEM**



When no data is being transmitted, the modem stays in sleep mode, it periodically wakes up to receive possible data being transmitted by far end modem. This results in low power consumption. Similarly when the data is to be transmitted , the modem receives data from its link in sleep mode and then switches to transmit mode and transmit the data.

**UW-ASN COMMUNICATION ARCHITECTURE**

**2-D ARCHITECTURE**

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**APPLICATIONS:**

• Seismic monitoring.

• Pollution monitoring

• Ocean currents monitoring

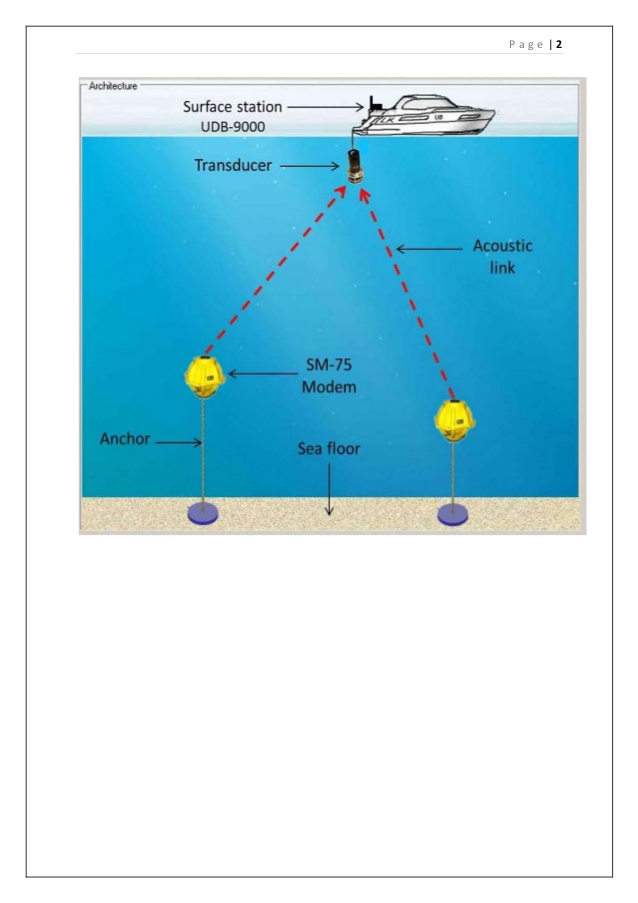
• Equipment monitoring and control

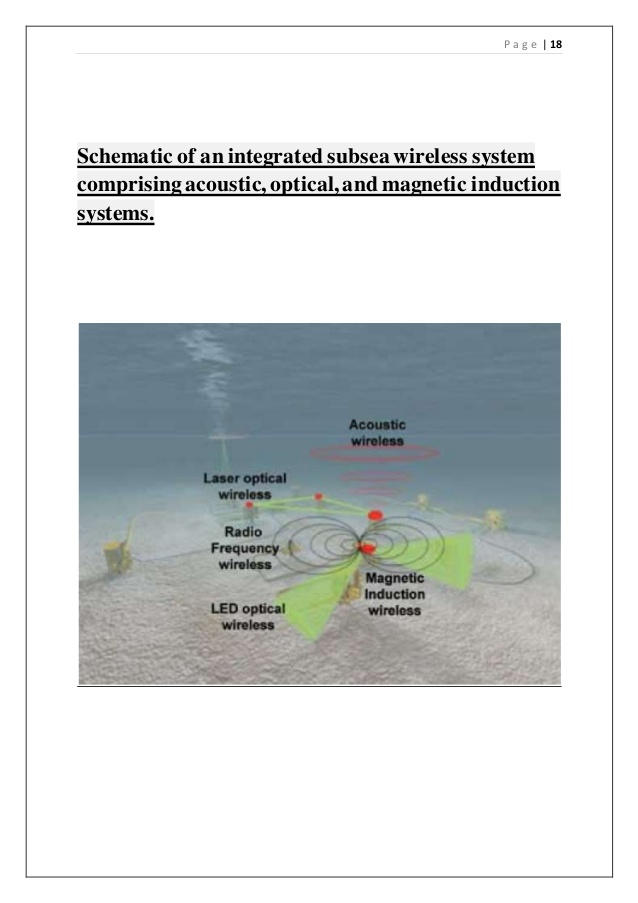
• Autonomous Underwater Vehicles (AUV)

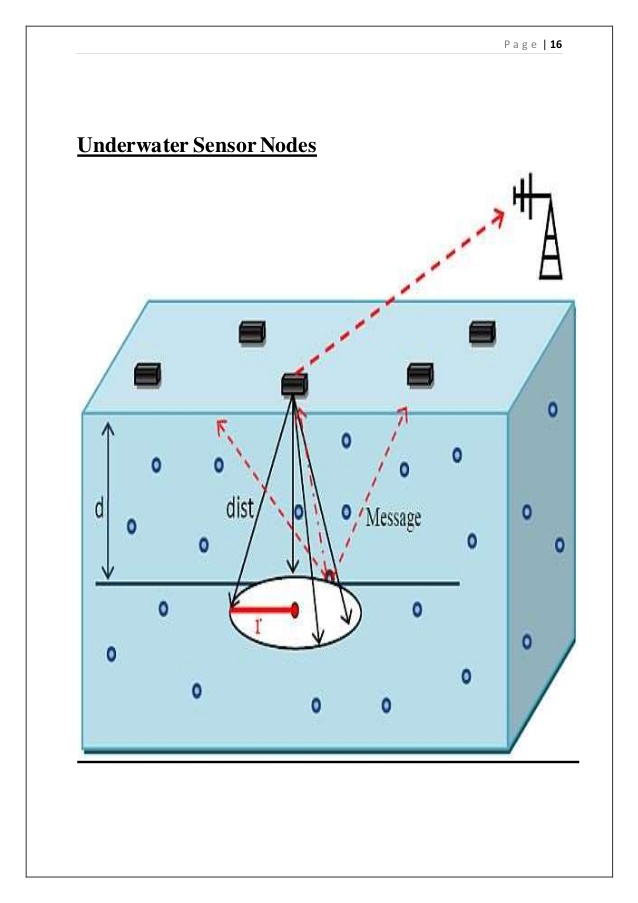
• Remotely operated vehicle(ROV)

• Acoustic navigation technology for multiple AUVs.

• Solar Powered AUVs



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