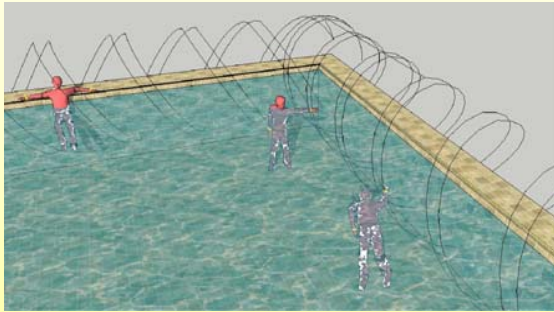


Mission Statement

“Our mission is to develop, test, and implement an assistive technology in collaboration with the blind and visually impaired (BVI) community that promotes safety and improves independence of BVI individuals while swimming.”



Objectives

- Evaluate approaches in previous IPROs
- Research previous IPROs most recurring technologies to determine the ideal solution
- Meet with subject matter experts for assistance
- Design and test a basic prototype for preliminary testing
- Evaluate performances of prototype and document findings

Conclusions

- Signal receiver based on radio frequency waves.
- Receiver designed to be internally powered and vibrate when close to transmitter.
- Transmitter worked, but receiver was problematic due to lack of circuitry expertise.
- More electrical engineering expertise would have been beneficial

Team Structure

TECHNOLOGY TEAM

Aubrey Chipman
Mukarram Amine
Lien Choi
Ashika Jayanthi
Matt McKinley
George Noorts
Jeff Reilly

COMMUNICATION

TEAM

Michaela Heaton
Claude Antony
Kim Dykeman
Michael Schafer
Joseph Taylor

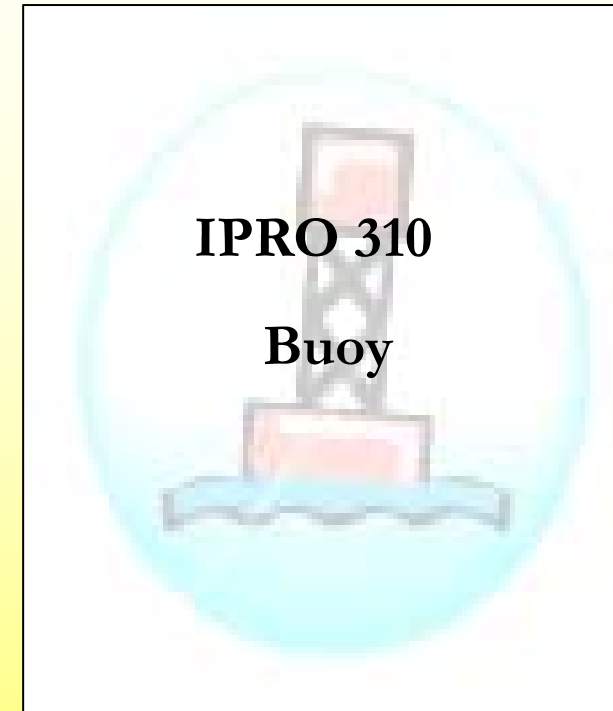


A Special Thanks to:

Prof. Lane, Prof. Troyk,
Prof. Glodowski,
ECE Department



Technology

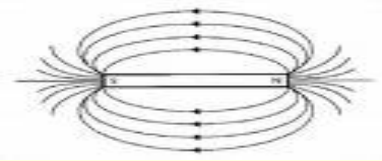


***A Vision
for
Blind Swimmers***

Research

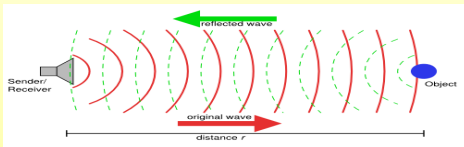


1. Simple EMF



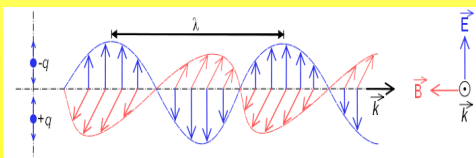
- Required too much electrical current to be practical.
- Dangerous to pacemakers.

2. Sonar



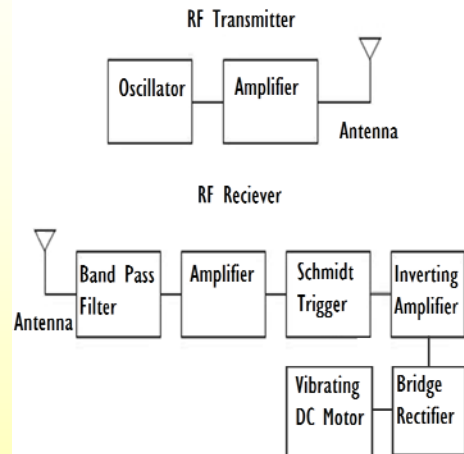
- More compact device.
- Greater autonomy due to more adaptability.
- Many technical issues with signal reflection within the small confines of the pool and signal refraction at the surface boundary.

3. Radio Frequency



- The most effective.

Technology



- Improved design for existing transmitter and receiver and confirmed with subject matter expert.
- Built and tested individual components of prototype.
- Assemble working prototype of transmitter and receiver.



Results



- Semi-functional transmitter and receiver built
- Design needs work → bridge rectifier
- Incorporated magnetic switch
- Signal attenuation in pool water must be calculated

Next Steps

- Require EE or ECE majors for technology team
- Make functional printed circuit board
- Attractive and waterproof enclosure for circuit