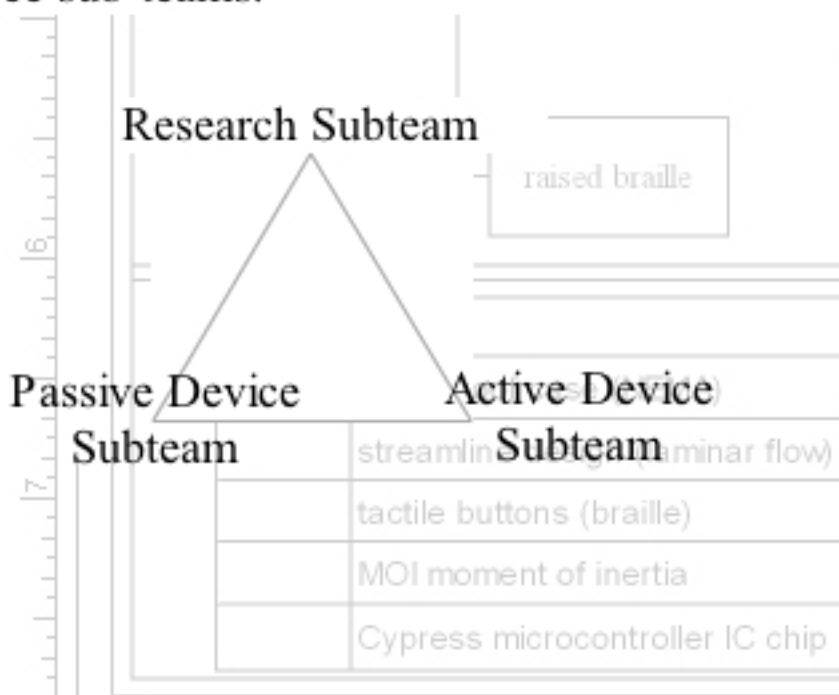


## Objective

I PRO 310's objectives have been to continue the designing and building process of devices that help visually impaired swimmers. The I PRO 310 team is in the process of designing, and testing a sonar device that actively aids visually impaired swimmers. The team also redesigned, built and tested a swimming lane tapper that passively aids visually impaired swimmers. In addition, the 310 I PRO team business and marketing team has surveyed members of the visually impaired community to assess their need and acceptance of the proposed devices.

## Team Framework

In order to accomplish these objectives the I PRO 310 divided up tasks among three sub-teams.



## The Problem

Currently there are over 10 million blind and visually impaired people in the United States. Of these 10 million 1.3 million are legally blind.

Access to facilities.

Being able to find their orientation in the water.

Being able to know where the end walls are while swimming.

## Solutions

The Research subteam principally focused on primary research, specifically interviews, to gather our data and learn what members of the Visually Impaired community need in order to swim.

The Active sonar subteam has three major components to work with for the completion of the SUPAD (Sonar Underwater Personal Anti-collision Device).

The Passive subgroup reengineered a design originally created by a Notre Dame project group. This design is called a 'Lane Tapper' and is considered a passive device because it does not require a power source nor does any part of this design require being attached to the swimmer to be effective

## Recommendations

### Research subteam

- Analyze results from surveys given to the family and friends of the blind or visually impaired swimmers
- Conduct Market feasibility search
  - Pricing Range
  - Possible Government Funding
- Identify other uses for the devices
- Compare satisfaction/ease of use of both prototypes by test volunteers

### Active Sonar subteam

- Transducer
  - Obtain a driving circuit
  - Possibly use two transducers
- At end of the pool and with the swimmer
  - Microcontroller
    - Determine constants of the driving circuit
  - Vibration
    - Build and finalize casing

### Passive Device subteam

- Testing
  - With more visually impaired swimmers
- Design Modifications
  - Length of tappers
  - Thickness of end of lane tappers
  - Bracketing tappers to prevent flipping
- Documentation
  - Of Everything
  - Engineering Notebook

## team members:

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Mr. Jeffrey Larson  
Mr. Ray DeBoth  
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Mr. John Komer

# TDPO210