



ME: Shane Cooke, Jorge Martinez, Kyle McCoy, Andrew Preece, Juan Rojas
ECE: Ahren Kimo Aguinaldo, Frank Aosman, Abdulaziz Bandar, Jason Lin, Ivan Orozco

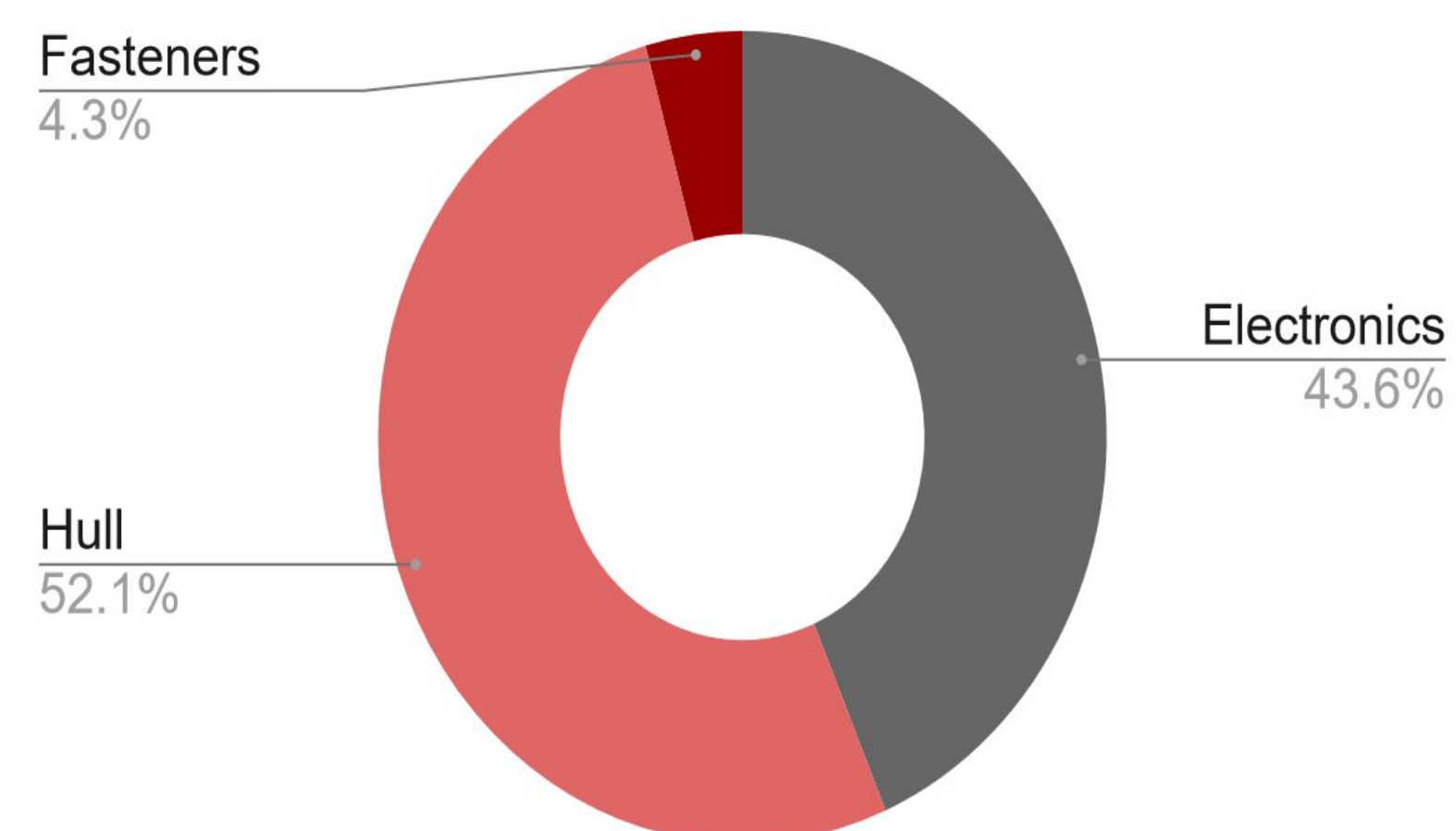
Project Overview

Transnational Criminal Organizations (TCOs) are using unmanned, autonomous surface vessels to transport contraband undetected across the Maritime Boundary Line. Such vessels are difficult to detect, so they pose a threat to national security, law enforcement, and public health. This project is focused on the design and manufacture of an autonomous surface vessel capable of transporting a payload across ocean waters. The end goal of the project is to provide useful ideas and information to the United States Coast Guard, who have intercepted a few vessels of this nature. Rather than improve upon or remaster one of the vessels confiscated by the USCG, the team shall design and build a device of their own concept. With a budget of \$4500, the team is expected to manufacture a model that meets or surpasses the abilities of the existing vessels. The team's final design shall not exceed a material budget of \$700, which correlates to the estimated cost of the previously intercepted vessels.

Budget

Total Project Budget: \$4,300.00

Breakdown of MKII Vessel - \$700



Key Requirements

- Material Cost < \$700
- 90 lb Minimum Payload Capacity
- 2 to 4 knot Operating Speed
- 66 Nautical Mile Range at 2.5 knots
- < 7" Freeboard, < 48" Waterline
- Autonomous Navigation
- Stealth against Radar, Visual, and Auditory Detection
- UV and Salt Water Resistant

Photos

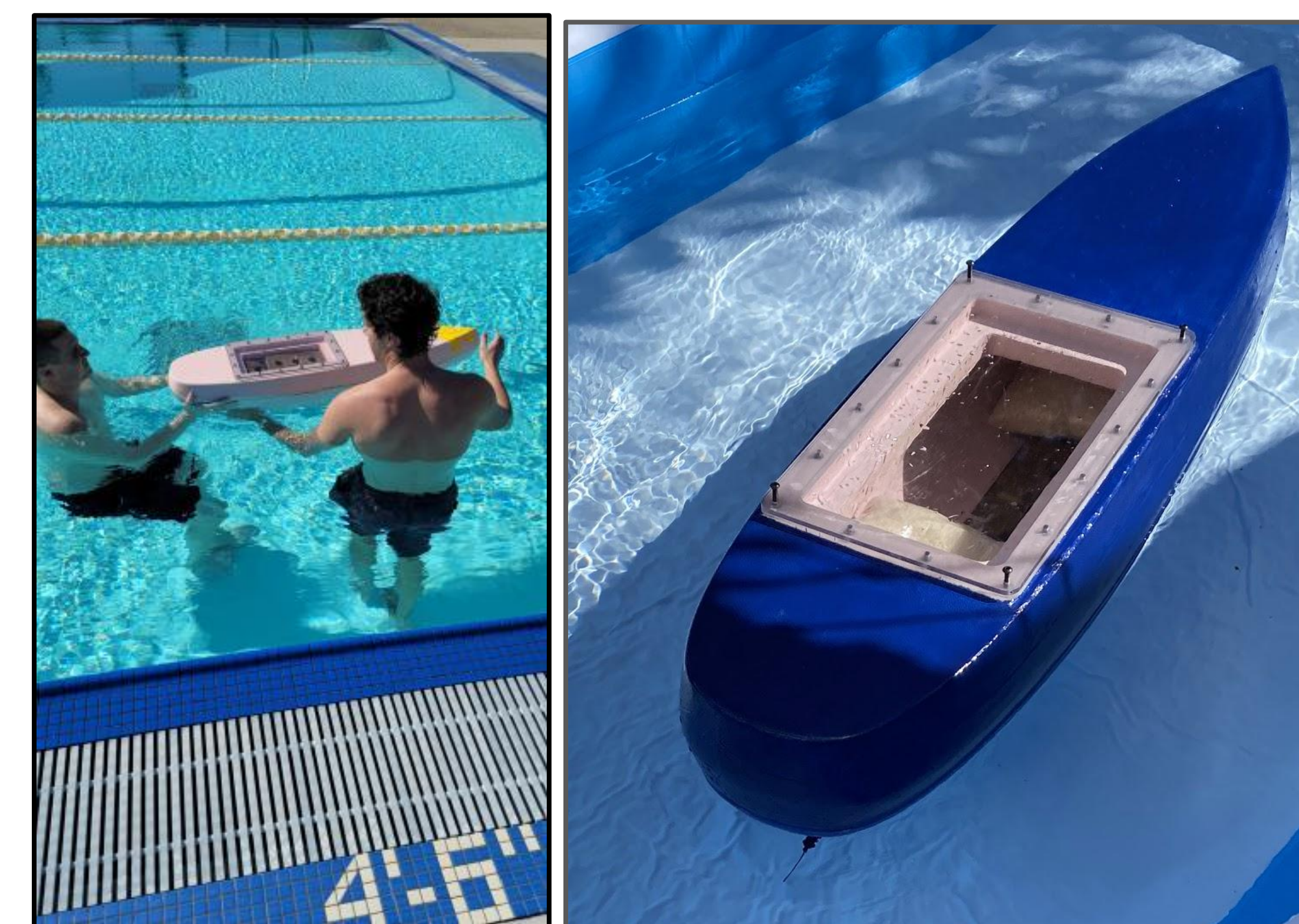
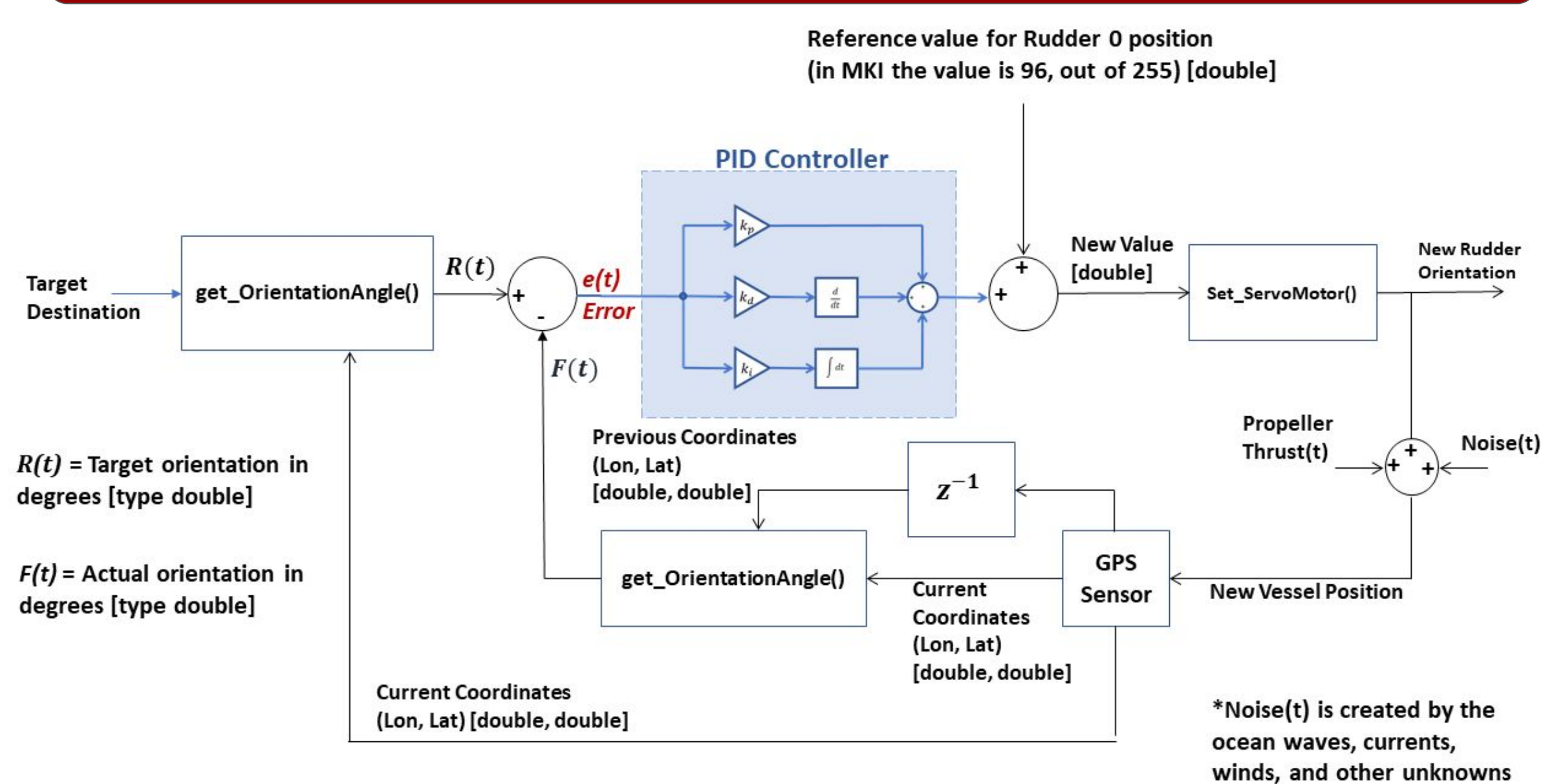
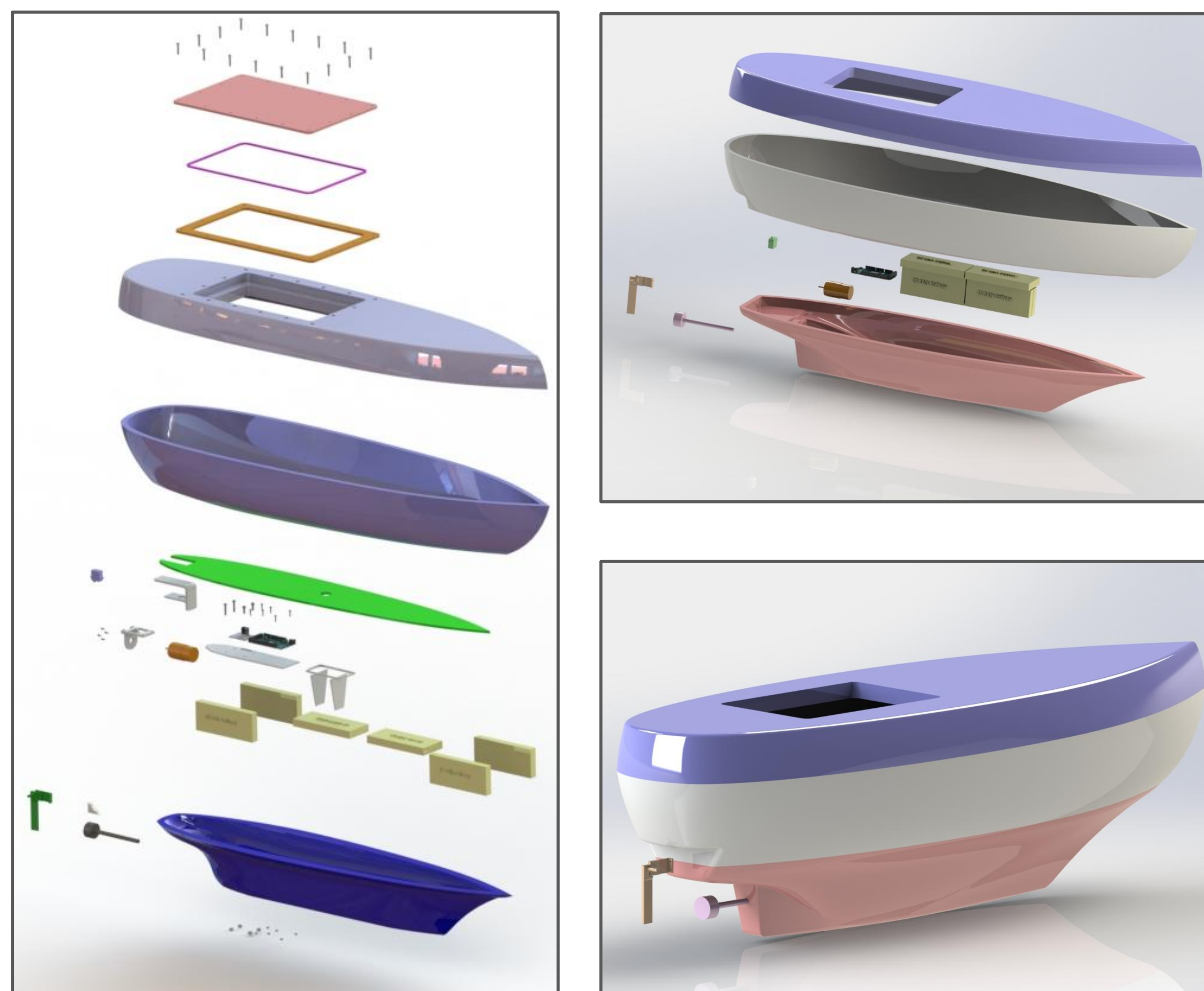


Diagram of the PID Controller



Exploded Views & Renders



Materials Used

Electronics	Mechanical	Mounts & Fasteners
Batteries (6x)	Sealed Hatch (1x)	4-40 Heat set inserts & Screws
Arduino Due (1x)	Propellor Shaft (1x)	10-32 Fasteners & Lock nuts
GPS (1x)	Universal Joint (1x)	Servo Mount (1x)
Bluetooth (1x)	Pushrod (1x)	Motor Mount (1x)
Servo (1x)	2 lb EPS foam	Rudder Mount (1x)
DC Motor (1x)	Fiberglass (~5 yds)	Electronics Enclosure (1x)

Team

