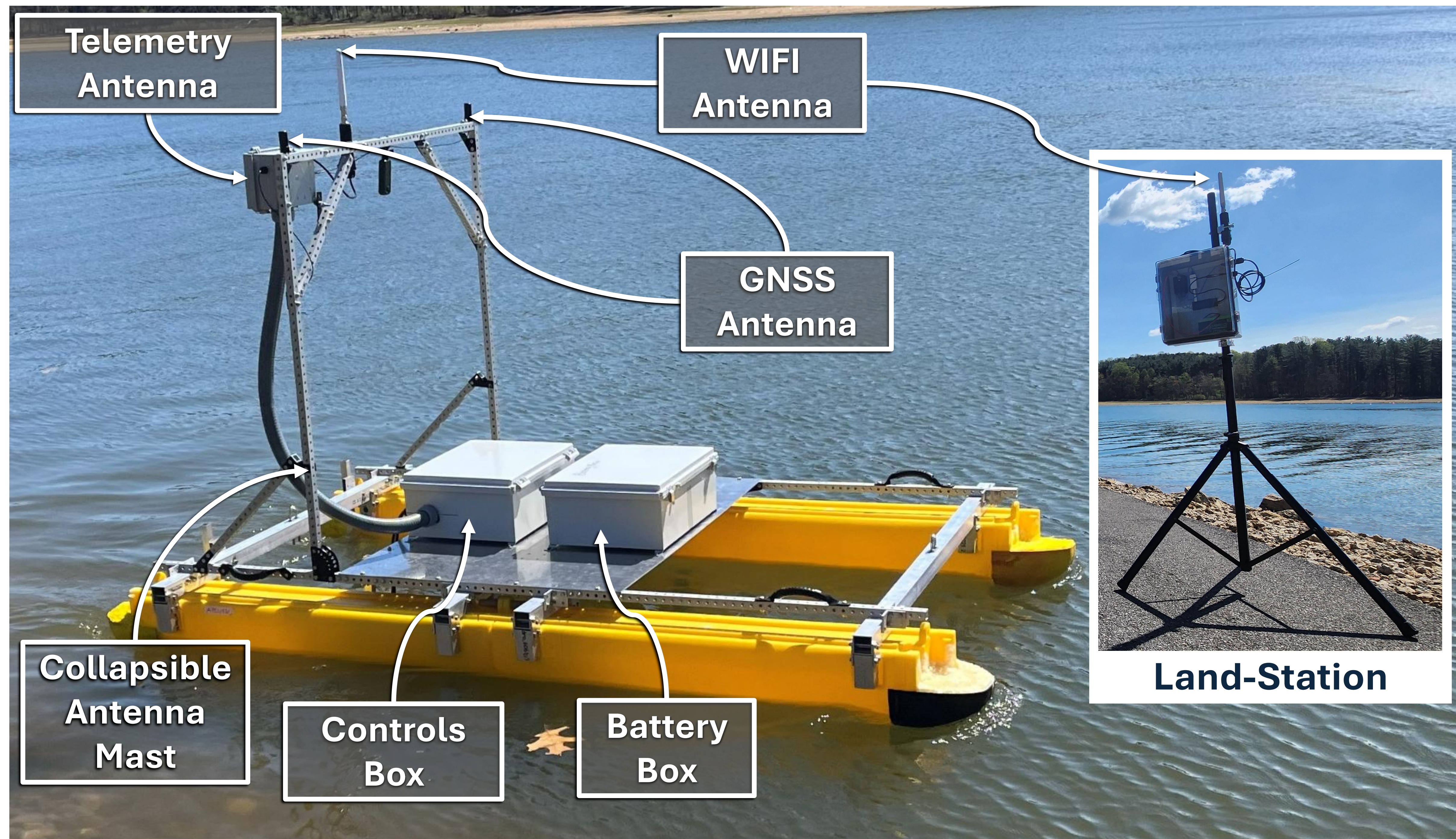


## APLUSV Design

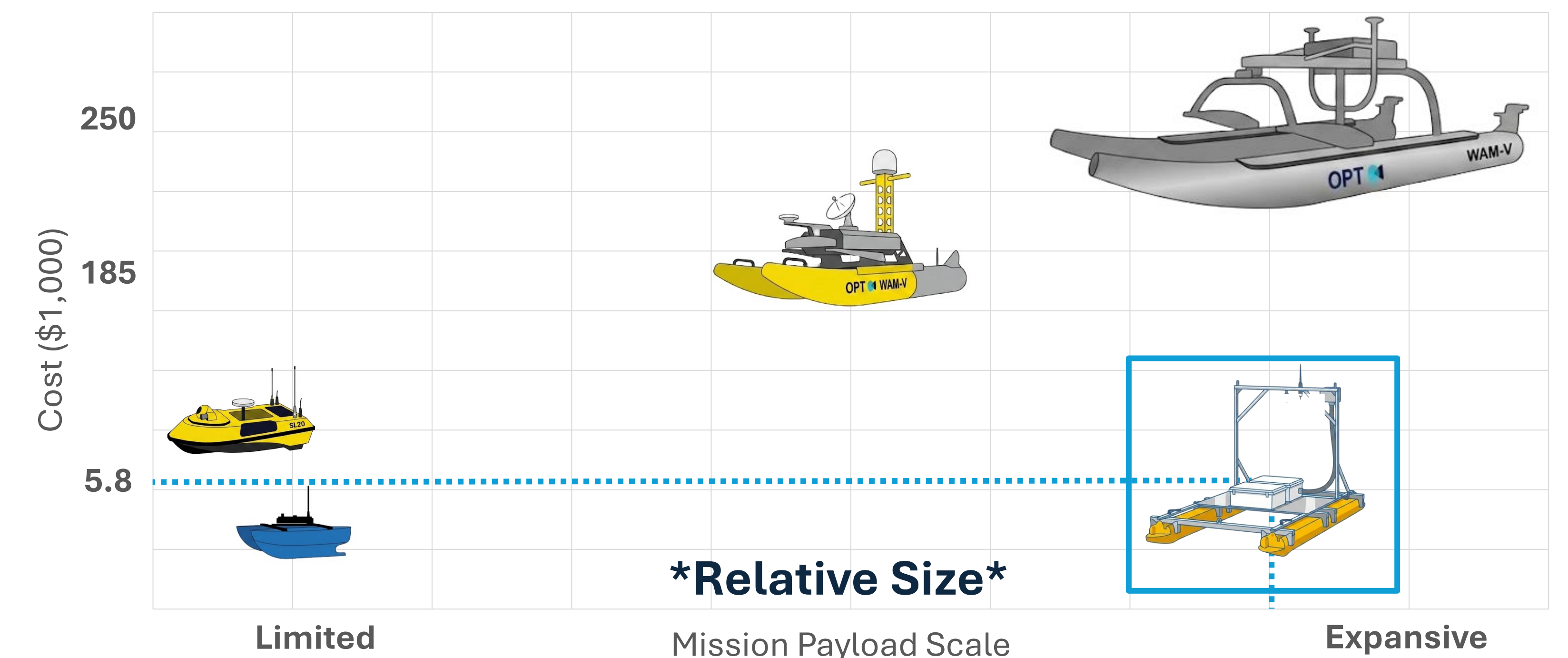
## Technical Specifications



Vehicle weight: 150 lbs	Operating conditions: Sea-State 2
Max payload capacity: 180 lbs	Transportation: Pick-up truck
Max mission duration: 9 hrs	Control types: RC and autonomy
Top speed: 3 knots	Autonomy level: Conditional autonomy
Topside mounting area: 51.39 ft <sup>2</sup>	Transmission rate: 300+Mbps
Ventral mounting area: 33.33 ft <sup>2</sup>	Navigational accuracy: 1 m
Max thrust: 52.2 lbs	Max operating range: 32 km
Material unit cost: \$5,800	Turning radius: 0 m

## Competitors

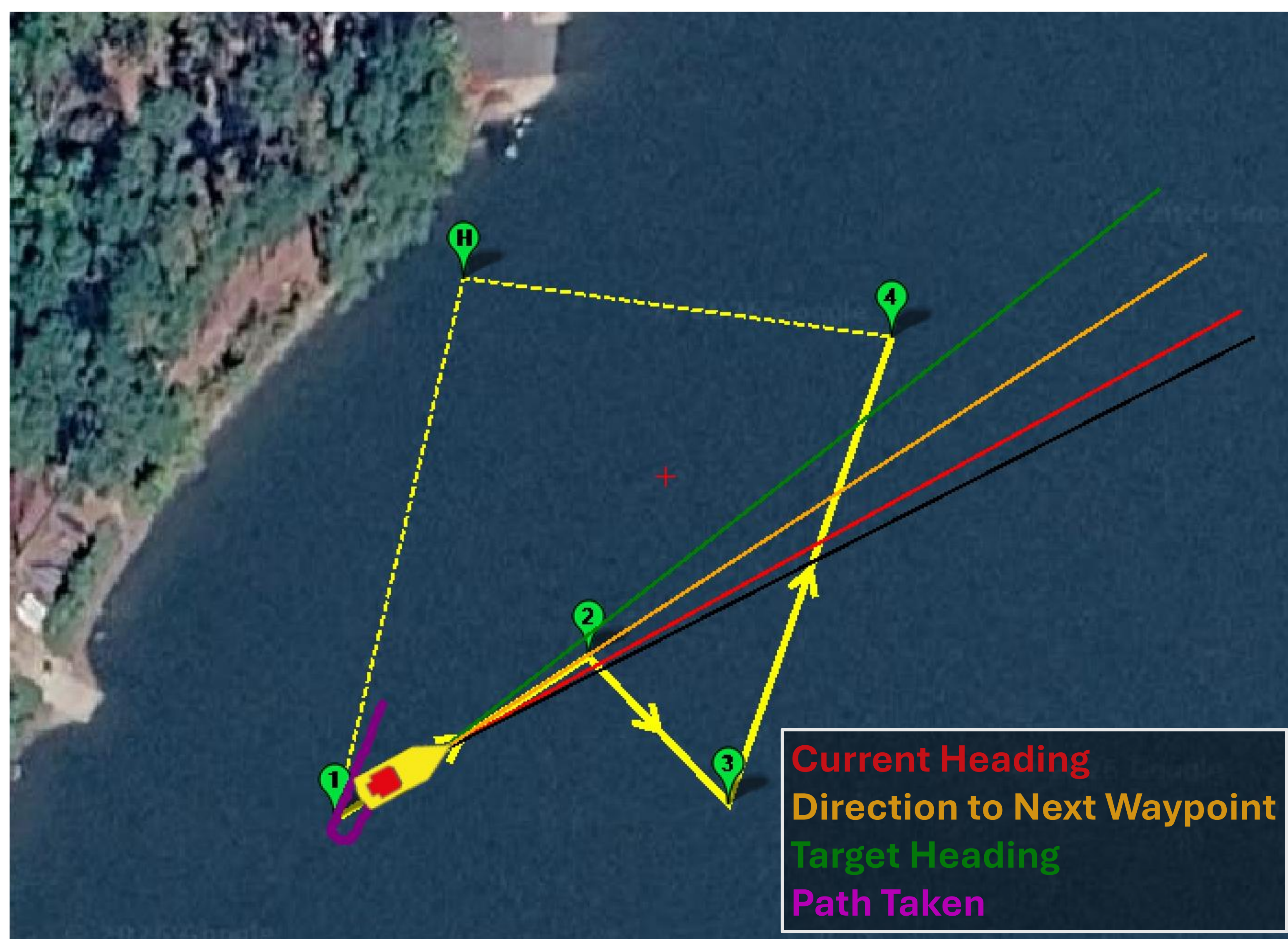
Enterprise Capability. Micro-USV Cost & Portability.



## Guidance, Navigation, and Control

## Testing & Analysis

- **Autonomy:** Intelligent system supporting both user-driven and autonomous missions.
- **Navigation:**
  - Pixhawk V6X flight controller
  - Dual-antenna GNSS.
- **Propulsion:** ApisQueen U92 Thrusters
  - 52.2 lbs thrust
  - Differential steering
- **3x Redundancy Comms:**
  - Remote Control
  - Long-range Telemetry
  - 5 GHz Wi-Fi
  - Starlink-compatible architecture.



- **Field Validation:** Trials at Triadelphia Reservoir (Sea-State 1, 15-knot winds) confirmed operational stability.
- **Endurance:** Testing verified a 9-hour mission duration using a single 2.56 kWh LiFePo4 battery.
- **Navigation Precision:** In-situ PID tuning achieved high-accuracy waypoint tracking and station keeping.
- **Reliability:** Successful propulsion testing in debris-heavy environments (plants, sand, & rocks) while exceeding operational envelope.

