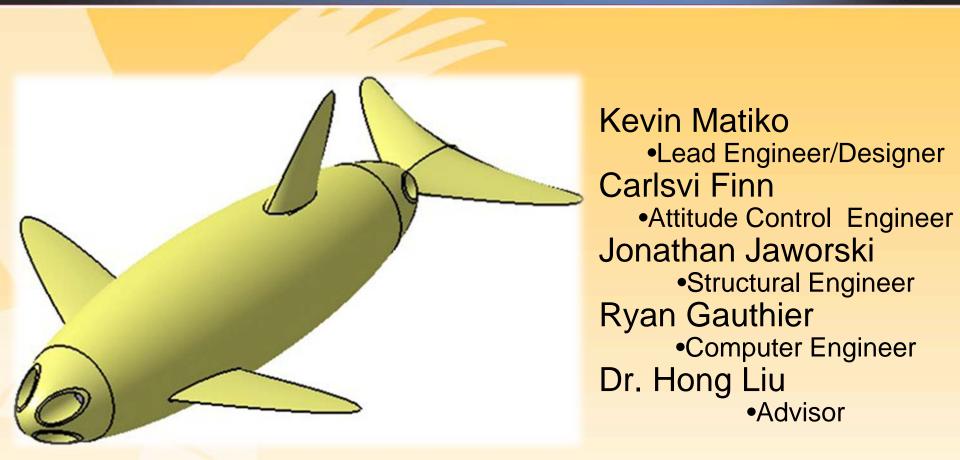
Eco-Dolphin I EMBRY-RIDDLE Aeronautical University

FLORIDA ARIZONA WORLDWIDE



 Highly integrated and streamlined Autonomous Underwater-Vehicle (AUV) development.

Objectives

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Phase I: Yellow Eco-dolphin

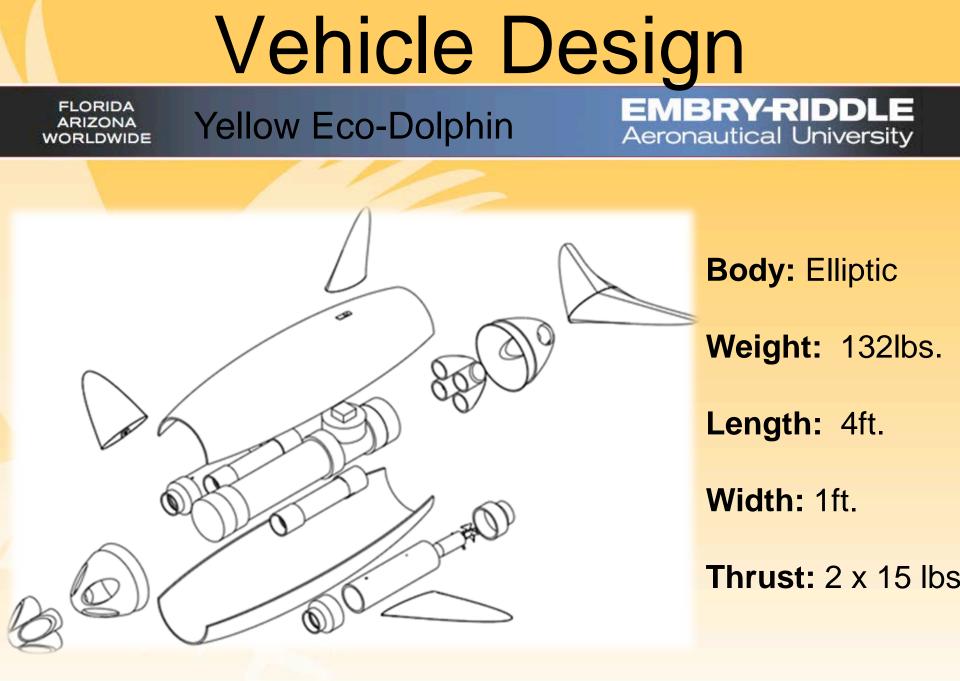
Cruise autonomously 32 feet below the water, at 6.5 ft/sec.

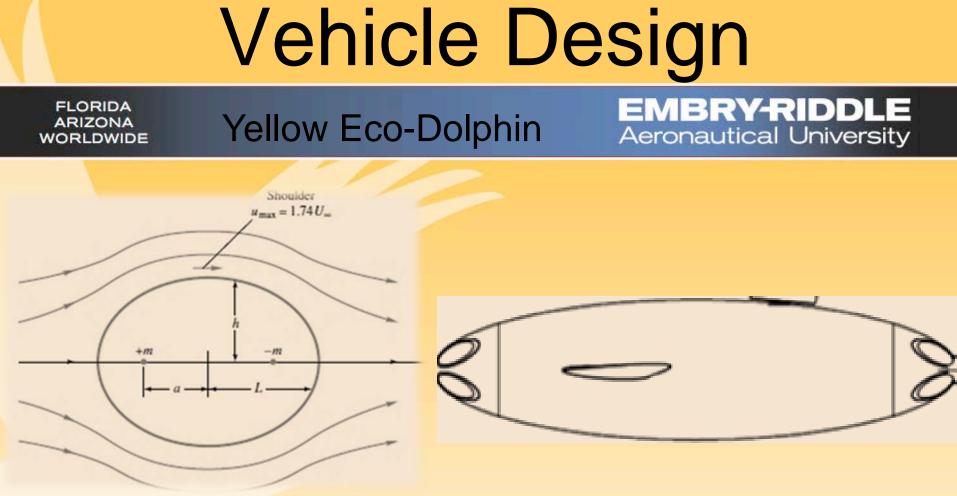
Phase II: Buoy Control systems

 Communication with ground station via Buoy relay system.

Phase III: Blue and Red Eco-Dolphin

• Communication among a small fleet of AUV's (3).





Source: White "Fluid Dynamics"

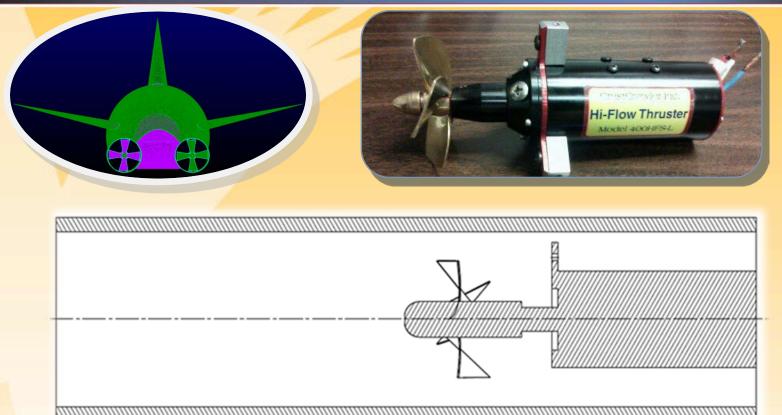
•Symmetry allows for equal and counteracting forces on top and bottom control surfaces, thus resulting in net-zero lift at zero angle of attack.

Propulsion Design

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Yellow Eco-Dolphin

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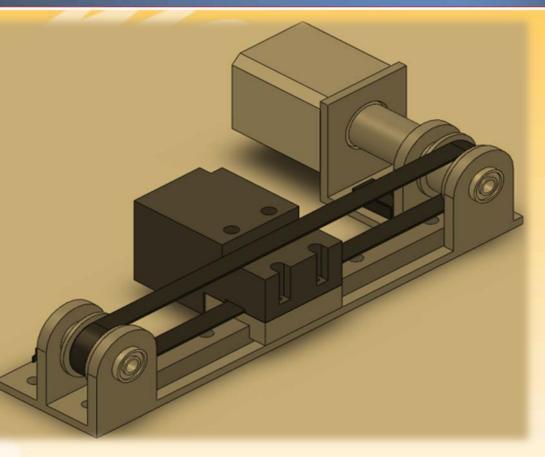
•2 – Brushless/DC thrusters powered by two
22 volt Lithium-Polymer battery packs.

Ballast Design

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Yellow Eco-Dolphin

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•The pitch control design involves changing the Center of gravity instead of redirecting the thrust.

Testing

Phase 1

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•We will utilize the Non-linear Wave lab in the Lehman Building.

Buoy Control System

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Phase 2

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GPS – Buoy Computer

Wireless (Buoy) – Sonar (Buoy)

Sonar (Buoy) – Sonar (Dolphin)

Wireless – Ground station

 Pose and position determined through active sonar relay system.

Blue & Red Eco-Dolphin

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- Cooperatively missions such as surveillance or environmental monitoring.
- Send and receive high volume message, including pictures through wireless network when it is surfaced.
- Communicating small volume messages, commands and status under water through acoustic sensor network.
- The fleet can relay message from ground station (Laptop) to surfaced AUV, then from surfaced AUV to submerged team members to fulfill mission cooperatively.

Conclusion

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AUV Research and Development

- Testing and Simulation
- Building a Cooperative fleet of AUV's

•Mathematical modeling and underwater mapping

Sponsors

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FUND FOR EMBRY-RIDDLE







Hydroplus Engineering

Contacts

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