

# Who We Are

- Started in January 2015
- Principals
  - Jeffrey Smith – CEO – 20+ years Defense, 10+ years in UUVs
  - John Vestri – COO/CFO – 8 years in ROVs
  - Dr. Dani Goldberg – SW Principal – 20+ yrs in Autonomy, 10+ yrs in UUVs
- 15 Current Employees – multiple openings
- Currently working from Greentown Labs, Somerville, MA



# Vehicle Background

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- May 2015 Riptide kicked off its initial prototype design which concluded with its first in-water trials September 2015 at the ONR Patuxent River Demo.
- Rapid development timeline was achieved by a small integrated team through extensive use of COTS and rapid prototyping techniques.
- Since the demonstration we reassessed the vehicle design and made modifications required to support end-users and operators in preparation for initial production deliveries.



# μUUV Overview

Initial Prototype Vehicle



Pre-Production Vehicle



- 4 7/8 inches in diameter
- ~20 lbs
- 29" to 60" in length
- 300 m rated

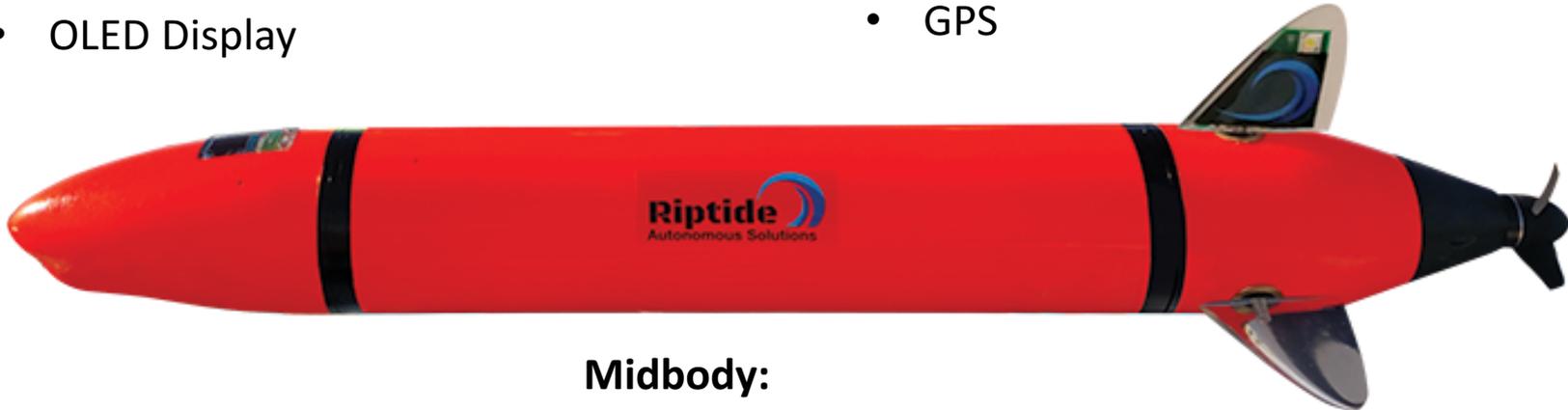
# Basic Architecture

## Nose:

- Vehicle Sensors
  - Pressure, Temp, Altitude, IMU
- Mission Processing
- Power Distribution
- OLED Display

## Tail:

- Propulsion
  - 350W External Motor (3000m rated)
- Vehicle Control
- Communications (WiFi Standard)
- Emergency Systems
  - Dropweight / LED Strobes
- GPS



## Midbody:

- Power
- Payload
  - Dry or Flooded Volumes

# Vehicle Flexibility



Standard Vehicle



Mini – w/ 900kHz Sonar



Standard Vehicle with flooded payload bay



Standard Vehicle with additional dry payload bay



Standard Vehicle with additional 900 kHz Sonar



Custom Vehicle w/ ACOMMs & 900 kHz Sonar

# Persistence

- Riptide has driven hydrodynamic and power efficiency way up
- Riptide has partnered exclusively with Open Water Power to field a breakthrough, highly energy dense power solution
- At 5 kWh, the  $\mu$ UUV has a range of 1500 nmi at 2.8 knots

Prototype  $\mu$ UUV



Production Mk1  $\mu$ UUV

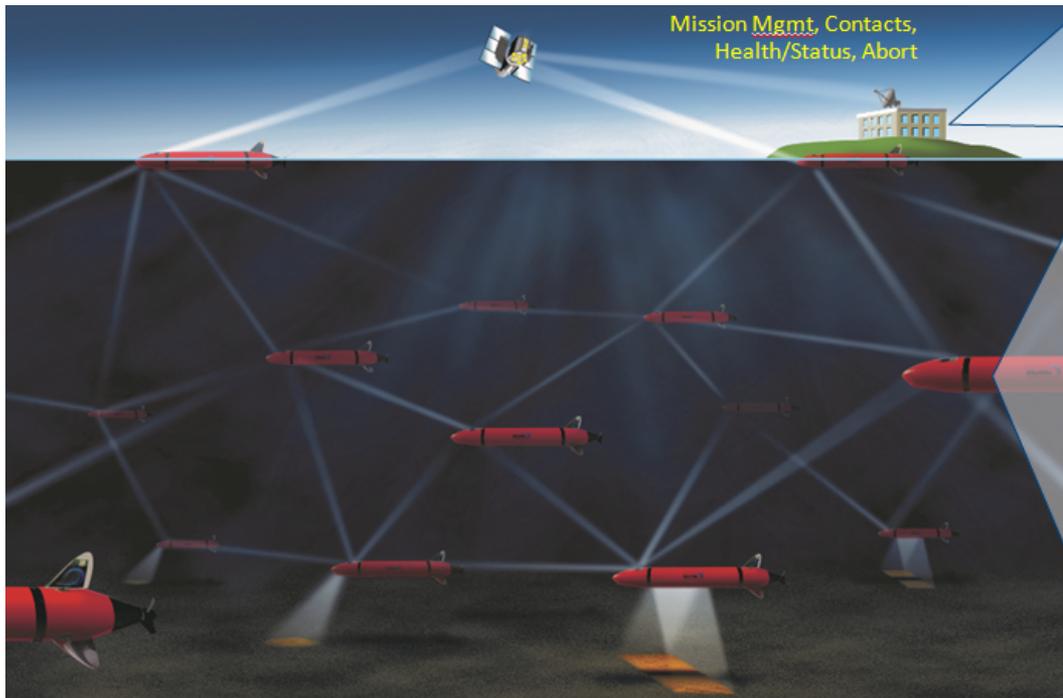


Production Mk2  $\mu$ UUV



# Swarming

- Riptide has enabled swarming of UUVs through
  - Providing capable vehicles at an affordable cost
  - Providing significant persistence



## Shipboard/Shore-side C2 operator station (OTH)

- Supervisory mission operations via COMPACT TDA software



## RIPTIDE micro-UUV

### **Key Features:**

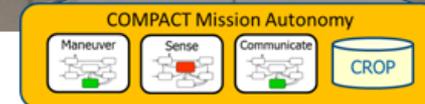
25-72", 5" dia. 12-36lbs  
1-8 knots, 200m depth

### **Endurance:**

30-48 Hrs Alkaline-Li  
~400 Hrs Al-seawater

### **Communications:**

RF, Acoustic modem



COMPACT Collaborative Mission Autonomy onboard software

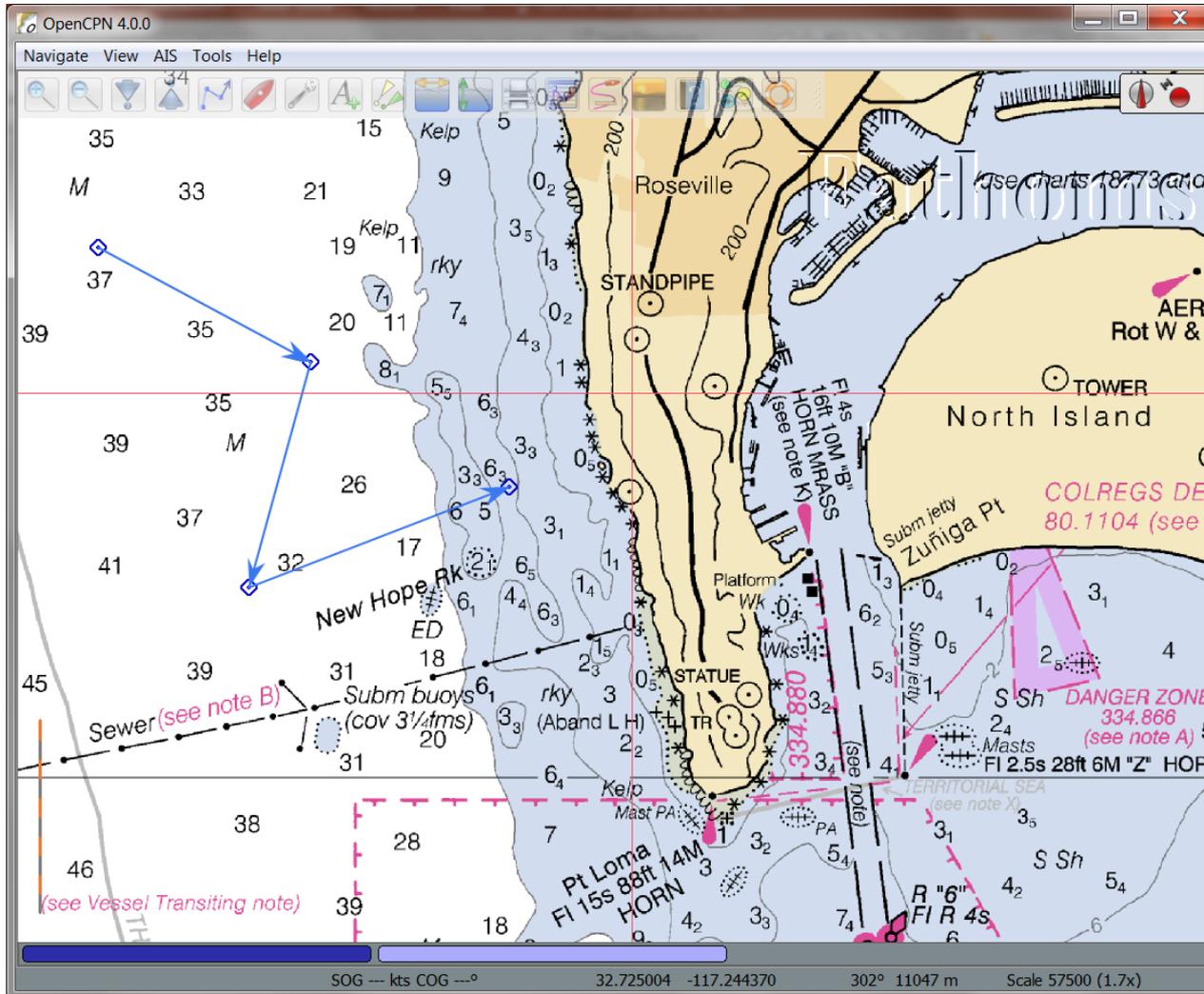
# Vehicles Deliveries



# Very Low Logistics



# Mission Planner



- OpenCPN
- Add
  - Depth
  - Lawnmower pattern
- Translation to MOOS or ROS mission format

# Qualified Deep



200m Rating will increase to 300m standard, option to 500m  
Alternate Material Options exist to depths of up to 6000m

# $\mu$ UUV Scalability

Riptide is building a Family of Man-Portable UUVs

Standard  $\mu$ UUV

~22 lbs / 300m

Diameter – 4 7/8 (A)



Standard 1MPUUV

~62 lbs / 300m

Diameter – 7.5



Standard 2MPUUV

~140 lbs / 600m

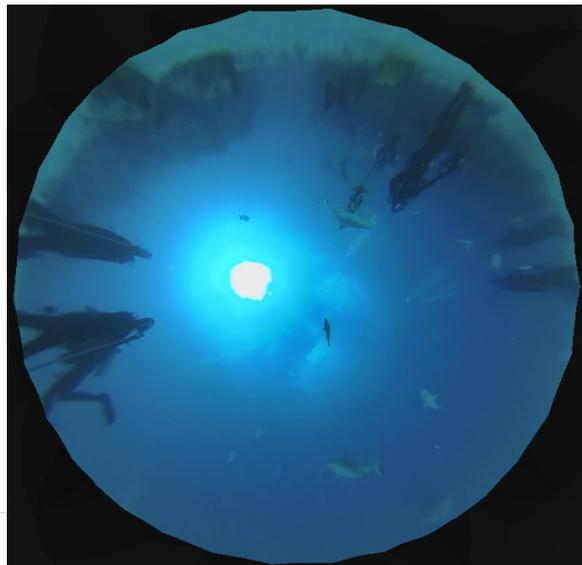
Diameter – 9 3/8



# Above and Below Water Camera



Fly360 Camera



Recorded Image



Processed Image



Micro-UUV with Proposed Fly 360 Payload

# Contact



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