OCEANS'13

TOURtorial: *Unmanned Underwater Vessels (UUV) – Modern Capabilities of Autonomous and Remotely Operated Systems and Sensors*

Date: September 23, 2013 (Monday) afternoon

13:30: Bus departs Town & Country Convention Center for local marine technology center
14:00 – 16:30 TOURtorial
16:45 Return to Town & Country Convention Center by 17:00

Hosts:
Michael B. Jones, The Maritime Alliance
Capt. Eric Patten (USN ret.), Ocean Aero, Inc.
John Scanlon, SeaBotix, Inc.

To be held at:
Headquarters of The Maritime Alliance (www.themaritimealliance.org)
SeaBotix, Inc. and Ocean Aero, Inc.
2877 Historic Decatur Rd.
San Diego, CA 92106
United States

The non-profit **The Maritime Alliance** is the cluster organizer for the San Diego maritime technology community and fosters maritime business and technology innovation through collaboration around the U.S. and the world. The mission of **The Maritime Alliance** is "Promoting **Blue Tech** & **Blue Jobs**". **The Maritime Alliance** is pleased to host this TOURtorial to help showcase some leading San Diego maritime robotics companies. In addition, on Tuesday, September 24, **The Maritime Alliance** is pleased to organize 4 sessions focused on the **Blue Economy** and **Blue Tech** as part of OCEANS'13.

Participants:
SeaBotix Inc., a San Diego-based manufacturer of underwater reconnaissance-class Remotely Operated Vehicles (ROVs), will host a TOURtorial stop in its facility. The course will focus on quick-hitting educational presentations highlighting the latest advances in underwater technologies, including high resolution sonar imagery, USBL positioning, data output, and remote and autonomous survey solutions. In addition to presentations and tour of the ROV manufacturing facility, attendees will have an opportunity to pilot ROVs in the dock adjacent to this waterfront building.

Ocean Aero Inc. has designed a highly ruggedized, energy scavenging surface & sub-surface vessel ("Submaran"), powered by wind and solar, capable of months at sea that can be deployed from land, sea or air to help solve ocean observation challenges for the military, scientific, security and oil and gas communities throughout the world. The "Submaran", a new class of Unmanned Underwater, Surface Vessel (UUSV), combines the best of surface and subsurface vessels into a new, "game changing" hybrid.

Attendance at this TOURtorial stop is recommended for all those interested to see emerging capabilities of unmanned systems. Complimentary food and beverages will be served.

The UUV course will cover:

I. Welcoming remarks by SeaBotix President Rick Timm and Ocean Aero President Eric Patten

NOTE: To streamline the course, attendees may be divided into sub-groups to rotate through the designated stations

II. Course Stations

A. Advances in ROV Technologies (Instructor: Sean Newsome - SeaBotix)
   1. History of the MiniROV
   2. Tour of modern production floor
   3. Advances in open frame designs
   4. Post Broad Area AUV Survey Target Identification Techniques

B. Advances in High Resolution Sonar Imagery (Instructor: Joe Burch - Sound Metrics)
   1. Lower frequencies for longer distances / Higher frequencies for clearer images
   2. Acoustic beamwidth effects on performance
   3. Processing power and time to form an image

C. Advances in Underwater Positioning Systems and User Interfaces (Instructors: Maurice Fraser - Tritech; Jesse Rodocker - SeaBotix)
   1. Updates in Spread Spectrum acoustic technology
   2. Integrating UUV and accessory data streams

D. Hands-on ROV & Sensor Operations (Instructors: various local ROV pilots)
   1. In-water piloting time of ROVs in the harbor from the dock
   2. Essentials of sonar targeting and ROV navigation and

E. The Leading-Edge: Unmanned Underwater & Surface Vessels (UUSV) (Instructors: Eric Patten, Mark Ott, Ken Childress - Ocean Aero)
   1. Next generation of versatility/capability in unmanned ocean systems
   2. The "Submaran": a revolutionary surface/sub-surface vessel capable of operation to 75 ft. (1^{st} generation)
   3. Wind/solar redundant hybrid propulsion
   4. Nearly unlimited transit ranges and adaptations to maximize level of stealth
   5. Significant increases in payload capacity and ability to operate in strong currents
   6. Will be able to be deployed singly or collaborate in swarms

III. Refreshments and Networking Discussions

A. Light refreshments available
B. Craft beverages may be available from next-door neighbor Stone Brewery
C. Come join us all on the harbor!

Instructor Bios

Sean Newsome is Global Business Development Manager at SeaBotix, responsible for developing new corporate opportunities. Over the years Sean has been instrumental in building key relationships with the Allied Navies. A native of San Diego, Sean got his start in ocean-related industries as a Submarine Nuclear Reactor Operator/Electronics Technician aboard the USS Henry M. Jackson (SSBN 730 Blue). He completed 6 strategic deterrent patrols while stationed at the Trident Submarine base in Bangor, WA. After the Navy, Sean worked for nearly 6 years at DeepSea Power & Light starting as a technician and moving into sales during the development of their pipe inspection systems. Sean's many duties at SeaBotix include technical writing, as well as training and support of the manufacturer's representatives.

Joe Burch is a founder of Sound Metrics Corp., based in Bellevue, Washington. Sound Metrics designs and manufactures imaging sonars that deliver some of the highest quality, clearest, and most detailed video images in their class. The company's line of products can be deployed from vessels, ROVs, AUVs (autonomous underwater vehicles) and by divers. In 1999, the U.S. Navy asked engineers at the Applied Physics Lab, University of Washington, to develop a tool capable of identifying swimming intruders in cloudy or dark water. With very detailed image quality and fast frame rates, the imaging sonar the researchers created delivered near video-like data, enough to capture the behavior of highly dynamic objects. Requests for other applications soon followed and in 2002 the research team founded Sound Metrics Corp.

Maurice Fraser serves as President of Tritech North America and is accountable for new product innovations, maintaining and expanding Tritech's dispersed network by supporting all its valued customers, and communicating with Tritech's many partners. Prior to Tritech, he served as an Aircraft Ground Engineer at the Royal Air Force and continued the work ethic that tasks should be done correct the first time. With a wide range of experience in many different fields, Mr. Fraser holds B.Sc in Mathematics and Computing.

Jesse Rodocker has an extensive background in ROV operations and is the co-founder of SeaBotix. Presently serving as the company's Senior VP Jesse oversees many technological developments and collaborations with clients and third-party sensor and accessory manufacturers to meet the global market's growing demand for ROVs. In addition to direct involvement with the engineering department on new product advances, Jesse plays a key role in sales and marketing. His thousands of hours accumulated operating ROV systems in the field has been essential in the development of the company's successful product range.

Capt. Eric Patten (USN ret.) joined Ocean Aero as President in April 2013. Prior to OA, he was the Director – Defense and Intelligence Global Solutions for geospatial technology leader Esri, where his team built awareness of Esri's geospatial technology within the defense and intelligence communities worldwide. Before joining Esri in 2010, Eric served as a US Navy Captain with a 25-year career of distinguished service including stints as the commanding officer of Helicopter Anti-Submarine Squadron Five One in Japan and several posts on a number of naval vessels, Navigator aboard the aircraft carrier USS Ronald Reagan on several deployments (including its maiden deployment to the Middle East in support of the global war on terrorism), and Director of Operations for the US Navy's Southwest region,

responsible for shore-based operations including those supporting anti-terrorism, fire and emergency services, emergency management, and air and port operations.

Mark Ott, co-founder and Chief Technology Officer of Ocean Aero, has many years of experience as a multi-hull boat designer, builder and competitive sailor with extensive open ocean sailing and racing experience. Mark's early multi-hull creations were the starting point for the design and development of currently the world's most sophisticated automated wing-sail assemblies and wind driven surface vessels. The team's research and development led to the creation of the world's first primarily wind driven autonomous unmanned surface vessel. Under Mark's direction, over a period of six years, the team successfully demonstrated several iterations of these multi-hull, wing-sail driven designs. Mark is the co-creator and inventor on several U.S. patents inspired during the engineering process. Mark and Senior Engineer Bud McClure developed the Ocean Aero UUSV hybrid concept (the "Submaran").

Ken Childress, VP, Business Development, brings more than twenty years of executive business experience in developing and managing high-technology businesses to OA. In his previous Business Development capacity for Harbor Wing Technologies, he was responsible for shaping and delivering the company's message to potential users of its technology, interacting with the media and financial communities as well as managing overall marketing and business partnerships. .