

3D Underwater Mapping from Above and Below **Wien, Austria,** July 8-11, 2025



Company Briefs

Speaker:

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Organization:

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BeamSea Associates: Background

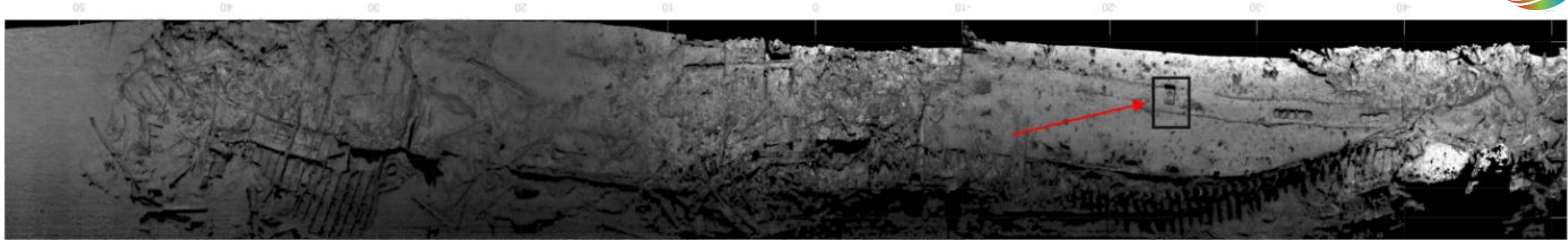
- Founded in 2019 to address the need for compact, full waveform underwater LiDAR for imaging and sensing that are cost-effective, operate through a wide range of optical properties and compatible with small unmanned underwater vehicles (UUVs).
- BeamSea founders have over 40 years of applied research and commercialization experience in both university and USG defense contractor settings, specializing in underwater laser imaging, LiDAR and laser communications.
- BeamSea have developed and validated a suite of time-resolved radiative transfer and optical modeling software tools for design and performance prediction of undersea LiDAR in known conditions.
- The team at BeamSea consists of 4 senior level engineers, 2 recent graduate engineers, a photonics technician, and utilizes several outside subject matter expert (SME) consultants and part time employees.



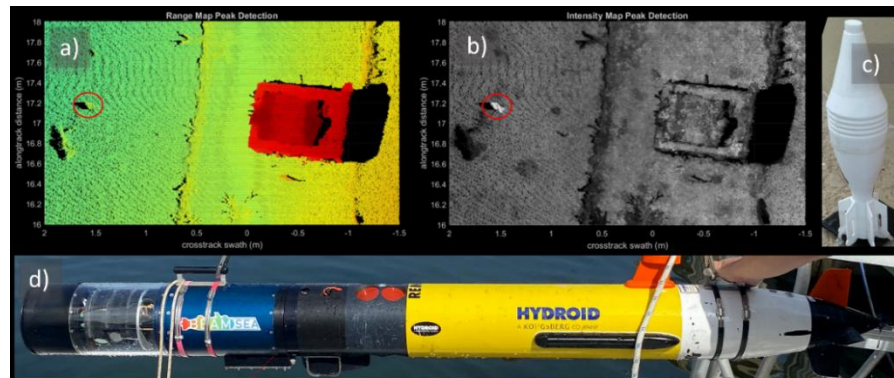
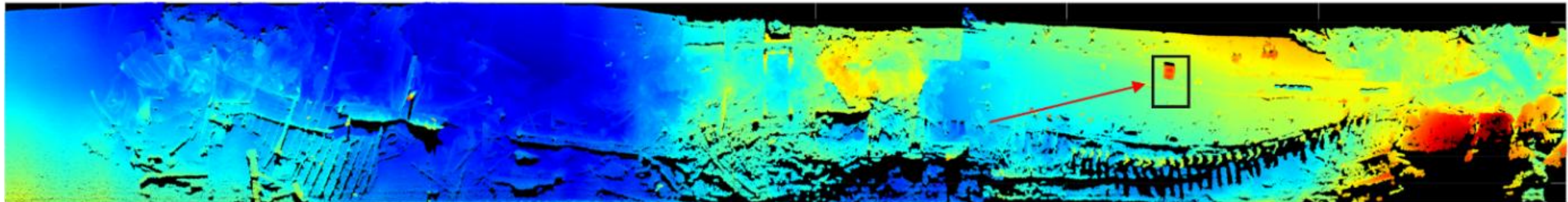
BeamSea Associates: Technologies

- The team have developed and miniaturized a turbid water and extended range synchronous scanning active electronically-steered array (SSAESA) full waveform LiDAR architecture, known as the pulsed laser line scan (PLLS).
- BeamSea designs and fabricates miniature fiber-amplified pulsed lasers and multichannel LiDAR transceiver integrated photonics assemblies – core components for low SWaP-C LiDARs suited to mobile robotic platforms.
- PLLS technology offerings, either under development or commercially available:
 - Hemispherical Underwater Non-Acoustic Tracking LiDAR (HUNT-L) is under development for USG customer. Proof of Concept Prototype testing planned in Aug/Sept 2025. SBIR Phase II.
 - 85 degree, 120 degree and 360 degree full-waveform 3D LiDAR imagers commercially available in 2025 for small (9”, 7.5”, 6” diameter) UUV form factors (Remus 100, Iver3/4-580, Gavia, Bluefin-9, Iver4-900, RTSys Comet, Graal Tech, Seaber etc).
 - Downward/upward looking for 4.5” – 5” diameter micro-UUV platforms (e.g. EcoSub, Seaber, TDSX etc) available in late 2025.
 - Extreme Turbidity Imager for close up inspection applications in highly turbid conditions.

Example single pass data with 120 degree PLLS on Remus-100



100m long x 12 m wide single transect of LiDAR image (reflectance top, range bottom) of the SS Copenhagen Wreck off the coast of Florida.



Left: Commercially Available PLLS-7500 underwater imaging LiDAR.

Right: Prototype deployed on a REMUS-100 UUV showing Reflectance and Range map