

PRESS RELEASE

Detecting unexploded ordnance

Fraunhofer IGD incorporates “UXO Garden” into Digital Ocean Lab

Clearing the seabed of unexploded ordnance has become a political imperative. The focus is on the development of efficient systems for the detection of ammunition and explosives dumped in the oceans. Since last year, an underwater test field has been in operation off the coast of Nienhagen, where suitable technologies are being developed. Fraunhofer IGD is further expanding the Digital Ocean Lab and will be holding two workshops (November 17th) on the topics of the new “UXO Garden” and of calibration as part of the Rostock Ocean Convention.

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Rostock: According to the German Federal Environment Agency, around 1.6 million tons of discarded munitions dating back to the Second World War are still lying in German waters. But it is not only uncontrolled explosions that pose a danger. Over time, the volatile substances in the munitions can enter the water column and, from there, the food chain. With the growing political will to recover and disarm explosive devices, the question is increasingly being asked: How can contaminated sites be detected and cleared efficiently and safely? The Fraunhofer Institute for Computer Graphics Research IGD is currently working on solutions with a number of partners in the Digital Ocean Lab (DOL).

Scientifically proven test field for survey companies

The “UXO Garden” is being created for this very purpose as part of the DOL. The acronym UXO stands for Unexploded Ordnance. Objects with a magnetic field that has been measured and calibrated in the laboratory and special non-magnetic dummies are located in the newly designated area on the seafloor to serve as test sites for marine survey companies and academic research partners. The equipment on hand also includes current meters, wave measuring buoys and a multibeam echo sounder. Dr. Peter Menzel, head of the Digital Ocean

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Lab: “Not only is there a demand for the detection and classification of contaminated sites, accurate to the nearest centimeter, but companies can also train here in the safe recovery of multiple explosive devices piled on top of each other.”

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One of these research partners is SENSYS, a survey company based in Bad Saarow. Managing Director Wolfgang Süß explains their interest: “For us as a sensor manufacturer, the Digital Ocean Lab is a crucial testing ground for bringing our solutions into line with customer requirements. It enables us to compare technologies in terms of performance, handling and effectiveness.”

Precise calibration of the metrology

In the context of munitions detection, systems calibration obviously plays an important role. But this has so far been a challenge for survey companies: to determine the deviation of a survey instrument, they need reference to known structures on the seafloor. The “Calibration Objects for Multibeam and Sidescan Sonar in the DOL” workshop at the Rostock Ocean Convention is the framework within which the Fraunhofer Smart Ocean Technologies research group is pursuing solutions. Together with stakeholders from the maritime sector, the group is collating and defining requirements for a future calibration field in the Digital Ocean Lab. The key questions to be answered here concern the sizes, shapes, composition and material of the calibration bodies. In addition to the common relative calibration methods, it is intended that the field should also allow absolute calibrations, which are difficult to realize offshore.

Four Fraunhofer institutes are currently collaborating in the interdisciplinary SOT research group of the Fraunhofer-Gesellschaft Smart Ocean Technologies and, at the same time, using the DOL for their practice-oriented solution development.

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Plans for a “Cable Garden”

The addition of a “Cable Garden” to the Digital Ocean Lab is planned for next year. As with the UXO Garden, systems for tracking data cables or power lines can be developed and expanded there. “Because these infrastructures are extremely vulnerable, effective technologies for monitoring as well as maintenance are imperative,” adds Dr. Menzel. “Companies that wish to validate their research or test their technology will find a suitable facility here at the DOL. We also provide scientific support for such tests and advise on the best way to carry them out.”

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Further information:

For more information on Digital Ocean Lab, visit www.igd-r.de/dol

For more information on Rostock Ocean Convention, visit www.rostock-business.com/events/veranstaltungsdetails/rostock-ocean-convention/

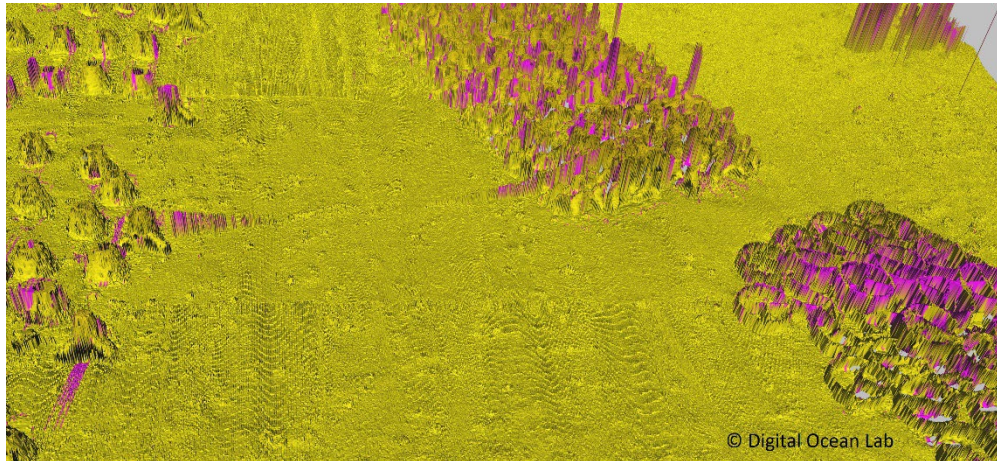
For more information on the Fraunhofer Smart Ocean Technologies Research Group, visit www.smart-ocean.fraunhofer.de



Image (1): Industry partners use the Digital Ocean Lab survey boat with its multibeam sonar to develop and improve their measurement technology. (Source: Patrick Suhrbier - Digital Ocean Lab)

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Image (2): The artificial reefs of the Digital Ocean Lab are visible on the multibeam sonar images. (Source: Frank Niemeyer - Digital Ocean Lab)

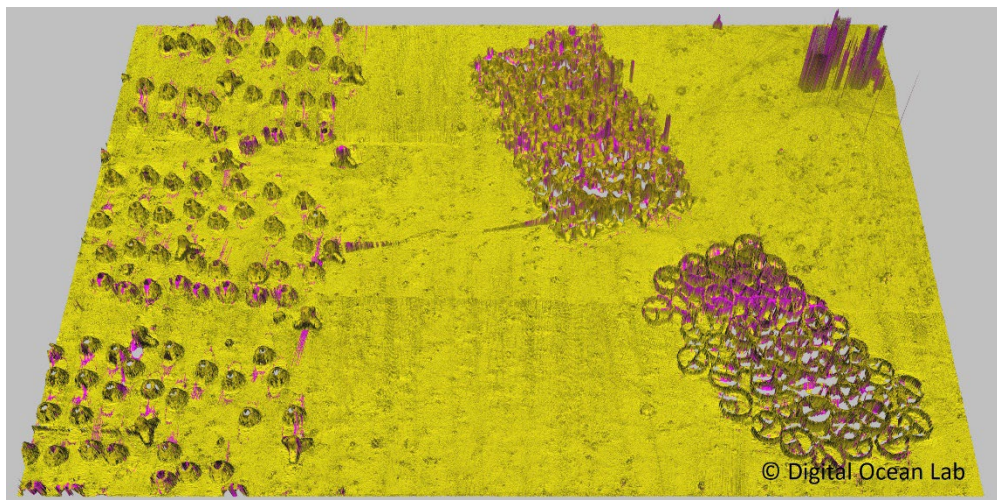


Image (3): Artificial reefs made up of precast concrete chamber rings also play a useful role in the further development of calibration technology. Working with stakeholders from the maritime sector, the Fraunhofer Smart Ocean Technologies research group is collating and defining requirements for a future calibration field. (Source: Frank Niemeyer - Digital Ocean Lab)

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The Fraunhofer-Gesellschaft multidisciplinary research group “Smart Ocean Technologies” (SOT) in Rostock is developing advanced maritime technology and new solutions for more sustainable use of the seas. Working in the framework of the “Ocean Technology Campus Rostock” (OTC), the group, which includes researchers from the Fraunhofer institutes IGD, IGP, IOSB, and IKTS, is essentially Europe’s only research association for underwater technology. As a campus of innovation, the OTC creates a productive atmosphere for developing and testing high technology for sustainable use of the ocean. In close collaboration between research and industrial application for different disciplines, the Rostock campus will become the leading center for underwater technology research in the coming years. At the heart of the OTC is the planned “Digital Ocean Lab” (DOL) of the Fraunhofer Institute for Computer Graphics Research IGD, a versatile underwater testing ground off the coast, which is set up for different application scenarios, making it the first of its kind. The DOL will be used to test, evaluate, and optimize materials, modules, and entire underwater systems under controlled conditions in a real environment.

About Fraunhofer IGD

Since 1987, the Fraunhofer Institute for Computer Graphics Research IGD has been setting international standards for applied research in visual computing, the branch of computer science that deals with images and 3D models. We transform information into images as well as images into information, and we support industry and business in their strategic development. Keywords here are human-machine interaction, virtual and augmented reality, artificial intelligence, interactive simulation, modeling, 3D printing and 3D scanning. Around 180 research staff at the three sites in Darmstadt, Rostock and Kiel are generating new technological application solutions and prototypes for Industry 4.0, digital healthcare and the smart city. Our products take on international relevance through our partnership with the sister institute in Graz and Klagenfurt. Our matrix organization enables us to serve our clientele from a wide range of industries with technical and competitive services relevant to their needs. For this purpose, we have assembled cross-functional teams of experts with extensive industry experience, who also take on planning, management and evaluation responsibilities for projects of any magnitude.