DIGITAL OCEAN TECHNOLOGY
EFFICIENCY IN VIDEO & DATA ANALYTICS
Oceans and seas offer numerous methods of utilization from the coast to the deep sea. They have always been used as routes of transport for worldwide freight traffic and are also a source of high-quality food. Energy and mineral resources in the deep sea are, economically, very attractive.

To sustainably utilize the ocean, technologies are needed that take into account demanding subsea conditions such as high pressures, visibility and currents under water as well as the rough climate above water.

We develop visual computing applications for a broad range of users, from aquaculture to marine mining, based on the special requirements underwater technology needs to fulfill.

Rely on leading state-of-the-art technologies!
We create customized concepts or evaluate marketable systems.

You benefit from our extensive expertise when it comes to using visual computing in marine technology.

We develop customized software solutions for you up to the point of product maturity by means of state-of-the-art technologies.

You receive excellent solutions in a broad range of application areas:
- Monitoring of underwater structures
- Aquaculture
- Surveillance
- Marine research
- UXO detection
- Hydrographic surveys

PERFORMANCE COMMITMENT

Competence
For over 25 years, we have been standing for top performance in visual computing at the location in Rostock. This high standard is ensured by our integration in the Fraunhofer competence network.

Customer Orientation
Personal customer contact is the basis for our customized and application-oriented project work. We aim to achieve long-term success for you and your customers.

Creativity
Our close networking with science and business ensures the development of new ideas and concepts.
OUR OFFER

Know-how – Our researchers have an excellent academic education in computer science or related disciplines, and continuously deepen their knowledge.

Technology – Fraunhofer IGD has developed a powerful collection of software modules and operates well equipped laboratories.

Process – We can rely on proven processes for performing industry projects and software development certified after DIN ISO 9001:2008.

Collaboration – Fraunhofer IGD collaborates with several high-tech companies and leading scientists within the multidisciplinary organisation of Fraunhofer-Gesellschaft and with other leading researchers worldwide.

Our Networks

We are active in networks to advance the marine industry in terms of technology. They serve an intensive exchange between research and practice.

MiniROV is an expert network for developing a new generation of mobile underwater inspection tools.

Subsea Monitoring Network combines the expertise of subsea research and the matching industries in Germany.

Munitect aims to develop technologies which detect unexploded ordnance (UXO) efficiently.
YOUR BENEFIT

Integrate – We will combine your different sensor systems and raw data to implement efficient digital processes.

Visualize – Your data will be clearly visualized by means of state-of-the-art technologies. It will become easier for you and your employees to keep track, ensure quality and make the right decisions.

Interact – Handling data will become simple and intuitive, be it in your conference room or in the field. You will have direct access to all data and will be able to work efficiently.

Detect – Our software solutions can automatically extract information from images and image sequences using state-of-the-art machine learning approaches.

FROM INITIAL IDEA TO DAILY USE

Selected References

- Atlas Elektronik
- Baltic Taucher
- BSH – German Maritime and Hydrographic Agency
- Evologics
- Geo Ingenieurservice Nord-Ost
- GEOMAR-Helmholtz-Centre for Ocean Research Kiel
- Innomar Technologie
- Kongsberg Maritime
- Kraken Power
- Leibniz-Institute for Baltic Sea Research Warnemünde
- LEONI Special Cables
- MBT
- Oktopus
- subCtech
Underwater Image Processing

In the submarine world, limiting conditions need to be considered that are different than those ashore: severe interference caused by floating particles and difficult lightning conditions strongly affect the quality of underwater images. With advanced underwater image processing, it is possible to determine the type and size of living organisms to a great extent. Fraunhofer IGD develops sophisticated computer vision algorithms for image enhancement, detection, segmentation and classification of objects and even for the reconstruction of full 3D structures.

Those algorithms solve many tasks in real time and are available as software modules for desktop applications. Alternatively, they can be offered as embedded systems with minimal energy consumption for smart cameras or in underwater vehicles.
Visual Monitoring & Analysis

The steadily increasing data volume of marine sensors and the complexity of these data need specific solutions to support decision-making. We combine the strengths of humans and computers: on one side visual pattern recognition, creativity and conclusion-drawing with uncertain prior knowledge – on the other side processing large amounts of data and deterministic reproducible processes.

With visual analytics, users can work with high-dimensional information sets, discover hidden correlations and explore large, heterogeneous data. Fraunhofer IGD supports you with tailor-made visual computing solutions from simple live data presentations to complex visual analytics tools.
YOUR COOPERATION WITH US

Successful Technology Transfer

Fraunhofer IGD is a part of Europe’s largest institution for applied research, which promotes the technology transfer between fundamental research and industry. Our institute is specialized in visual computing. Visual computing is image- and model-based computer science dealing with the questions of how information is extracted from images (computer vision) and how information can be represented in images (computer graphics).

As Fraunhofer researchers, we are identifying new technologies, adapting them and introducing them into commercial practice by means of customized solutions.

We support companies through the continuous development of new and improved technologies up to their marketability.

Technology Offers:
- Underwater computer vision
- Machine learning
- Image enhancement
- Augmented reality
- Interactive visualization
- Data fusion
- Web technology
- Big data handling

Our Portfolio:
- Studies
- Technology evaluation
- Consulting
- Demonstrators and prototypes
- Software development
UPCOMING TEST AREAS IN THE BALTIC SEA

Fraunhofer IGD is preparing an underwater test facility for digital underwater technology in the Baltic Sea near Rostock. It will offer a broad range of subsea installations including offshore structures, cables, pipelines, and a field of unexploded ordnance. This underwater lab supports our clients and partners in increasing efficiency in research, development, demonstration and approval.
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https://igd-r.de/digital-ocean-technology

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