NOA MARINE

PATENTED PATENTED

The National Centre for Research and Development

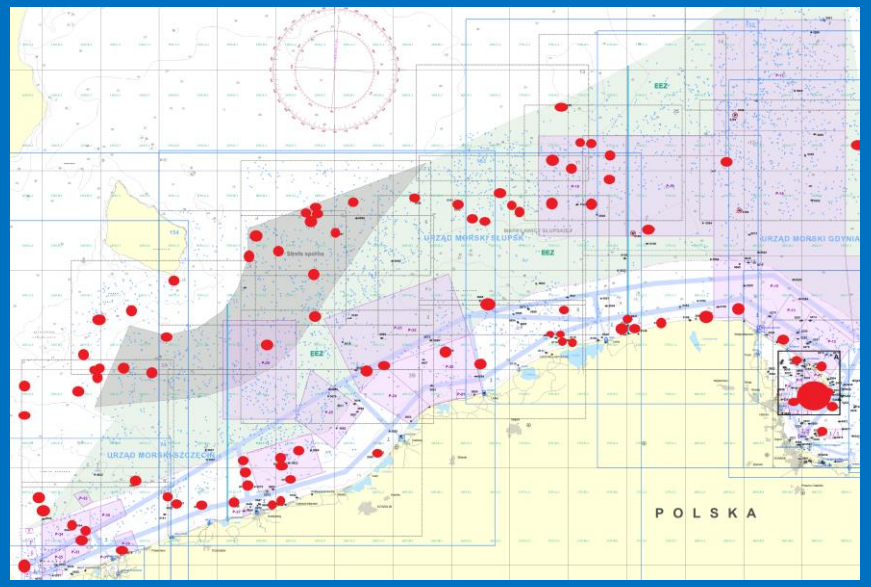
BONUS
SCIENCE FOR A BETTER FUTURE OF THE BALTIC SEA REGION

Member of
WORLD ALLIANCE for EFFICIENT SOLUTIONS by SOLARIMPULSE FOUNDATION

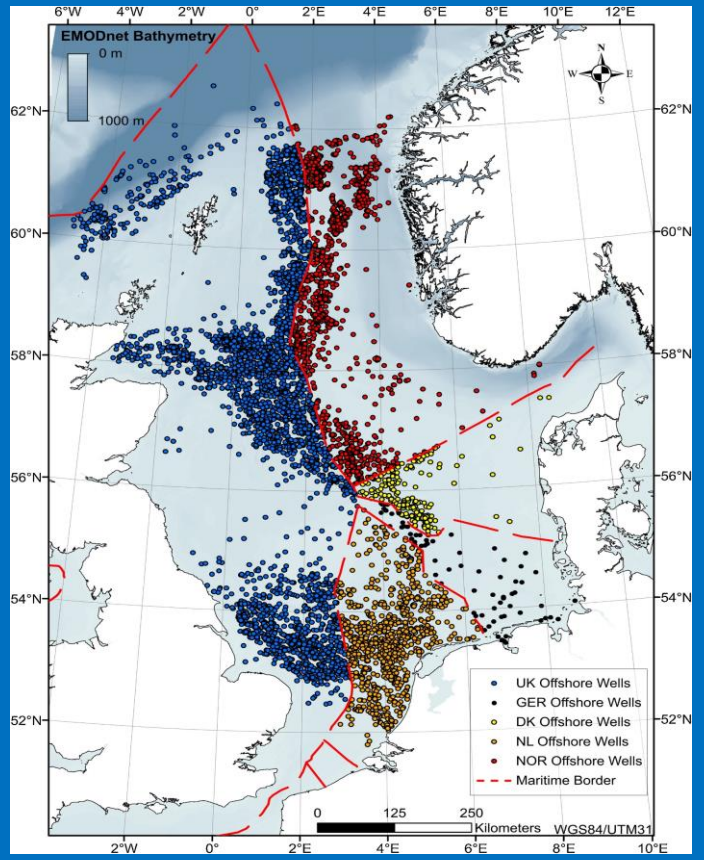
ANSYS Startup Program

Funded on:
SEEDRS

DECISION MAKERS NEED REAL-TIME DATA



Source: Biuro Hydrograficzne Marynarki Wojennej RP



Source: https://phys.org/news/2020-07-extensive-gas-leaks-north-sea.html

Detecting and monitoring Green House Gas emissions from decommissioned offshore hydrocarbon wells. Every year, thousands of tons of Methane leaks from old boreholes on the bottom of the North Sea.

The Baltic Pipe project is a strategic infrastructure project aimed at creating a new gas supply corridor on the European market. The investment will enable the transport of gas from Norway to the Danish and Polish markets, as well as to customers in neighboring countries. For the third time the investment has been recognized by the European Commission as a project of common interest (PCI). Infrastructure requires constant supervision.

NOA MARINE

PATENTED

The National Centre for Research and Development

BONUS
Science for a better future of the Baltic Sea region

Member of WORLD ALLIANCE for EFFICIENT SOLUTIONS by SOLARIMPULSE FOUNDATION

ANSYS Startup Program

Funded on: SEEDRS

COSTS / DATA ACCESS TIME / UNDERSPAMPLING

Global ocean business has a high demand for harnessing various types of data which is difficult to do at scale due to high operational costs of ships and manpower which make sea data collection service unscalable. The price of hiring a ship is a dominant cost in each sea operation related to data collection mission. It can reach even up to 60% of overall mission budget. Consequently, the cost of obtaining data in each of the offshore investments is very high as their quality is crucial for the ongoing investment processes as well as for scientific missions delivering knowledge about our fragile home world.

The ship is also the biggest limiting factor for work due to cost and weather constraints.

Preventive measures enabling transparency and assets monitoring to safeguard the port and ships require usage of multiple, complicated technologies and people to operate them which results in moderate efficiency and high cost of operation.

Before any investment, construction or intervention measures are taken, preparatory steps often need to be carried out to optimize the operation for cost-effectiveness and safety. Underwater infrastructure installations require periodic inspections and continuous monitoring. Doing this with a large reduction in the involvement of human and equipment resources is the key to the sustainable development of the entire industry. In order to reduce costs, the maritime industry is intensively looking for new solutions.

NOA MARINE
PATENTED PATENTED
The National Centre for Research and Development
BONUS
SCIENCE FOR A BETTER FUTURE OF THE BALTIC SEA REGION
Member of WORLD ALLIANCE for EFFICIENT SOLUTIONS by SOLARIMPULSE FOUNDATION
ANSYS Startup Program
Funded on: SEEDRS

FUTURE IS AUTONOMOUS

STARLINK READY

RESEARCH AND MARKETS
THE WORLD'S LARGEST MARKET RESEARCH STORE

„The unmanned underwater vehicle market is experiencing an advanced rate of growth over the past years due to the increasing demand in commercial, defense and military and **scientific research applications**."

THE VELUX FOUNDATIONS
VILLUM FONDEN × VELUX FONDEN

"The future regulations on aquafarming would significantly require the sensors and digital systems since it meets the equilibrium of price-quality, meaning **pollution monitoring and environment inspection with higher precision at a much lower cost**."

Wind EUROPE
windeurope.org

… Operations, maintenance and service (OMS) will mainly involve service operation vessels (SOVs) and will also make extensive use of technologies to reduce human effort and exposure to risk. **There will be reduced reliance on human effort through the use of automated systems, drones, sensors and actuators.**"

NOA MARINE

PATENTED

The National Centre for Research and Development

BONUS
SCIENCE FOR A BETTER FUTURE OF THE BALTIC SEA REGION

Member of WORLD ALLIANCE for EFFICIENT SOLUTIONS by SOLARIMPULSE FOUNDATION

ANSYS Startup Program

Funded on: SEEDRS

FUTURE IS AUTONOMOUS

STARLINK READY

BLUE ECONOMY

The 'Blue Economy' is an emerging concept which encourages better stewardship of our ocean or 'blue' resources. The Blue Economy is the sustainable use of ocean resources for economic growth, improved livelihoods, and jobs **while preserving the health of our oceans ecosystem as defined by the World Bank.**

NET ZERO EMISSION COMPLIANCY

Net Zero Emission goals proclaimed by international community force a **paradigm shift** in the wind and offshore industry in order to preserve its activities within upcoming net zero Greenhouse gas emission regime.

The definition of Net Zero is zero Green House Gas emissions and these Net Zero goals primarily feature 3 scopes of emission classifications**. Major Oil & Gas producers are committing to Net Zero, along with governments and numerous governing bodies.**

- Scope 1 emissions are those that companies produce on-site, such as when burning natural gas for heat.
- **Scope 2 emissions are those that third parties produce on the company's behalf**—example coal burnt in a power plant.
- Scope 3 is all of the rest, including the emissions that customers produce when they burn the oil and gas the majors sell.

NOA MARINE

PATENTED PATENTED PATENTED

The National Centre for Research and Development

BONUS
SCIENCE FOR A BETTER FUTURE OF THE BALTIC SEA REGION

Member of
WORLD ALLIANCE for EFFICIENT SOLUTIONS by SOLARIMPULSE FOUNDATION

ANSYS Startup Program

Funded on:
SEEDRS

Challenges of existing resident autonomous data collector systems utilizing Underwater Unmanned Vehicles & Charging and Docking Stations

- **The need for continuous, scalable and cost-effective supervision of critical installations necessitates the use of underwater drones as surveillance.** Using manned vessels is very expensive and existing resident underwater autonomous crafts must recharge power storage, hence the need to build and install docking stations for charging.

- Relatively **small payload capacity ratio of present day Unmanned Underwater Vehicles** further limits the industry capability to introduce a solution able to simultaneously carry all multiple and heavy sensor tools covering full mission spectrum distributed by a swarm of universal all-rounder vehicles.

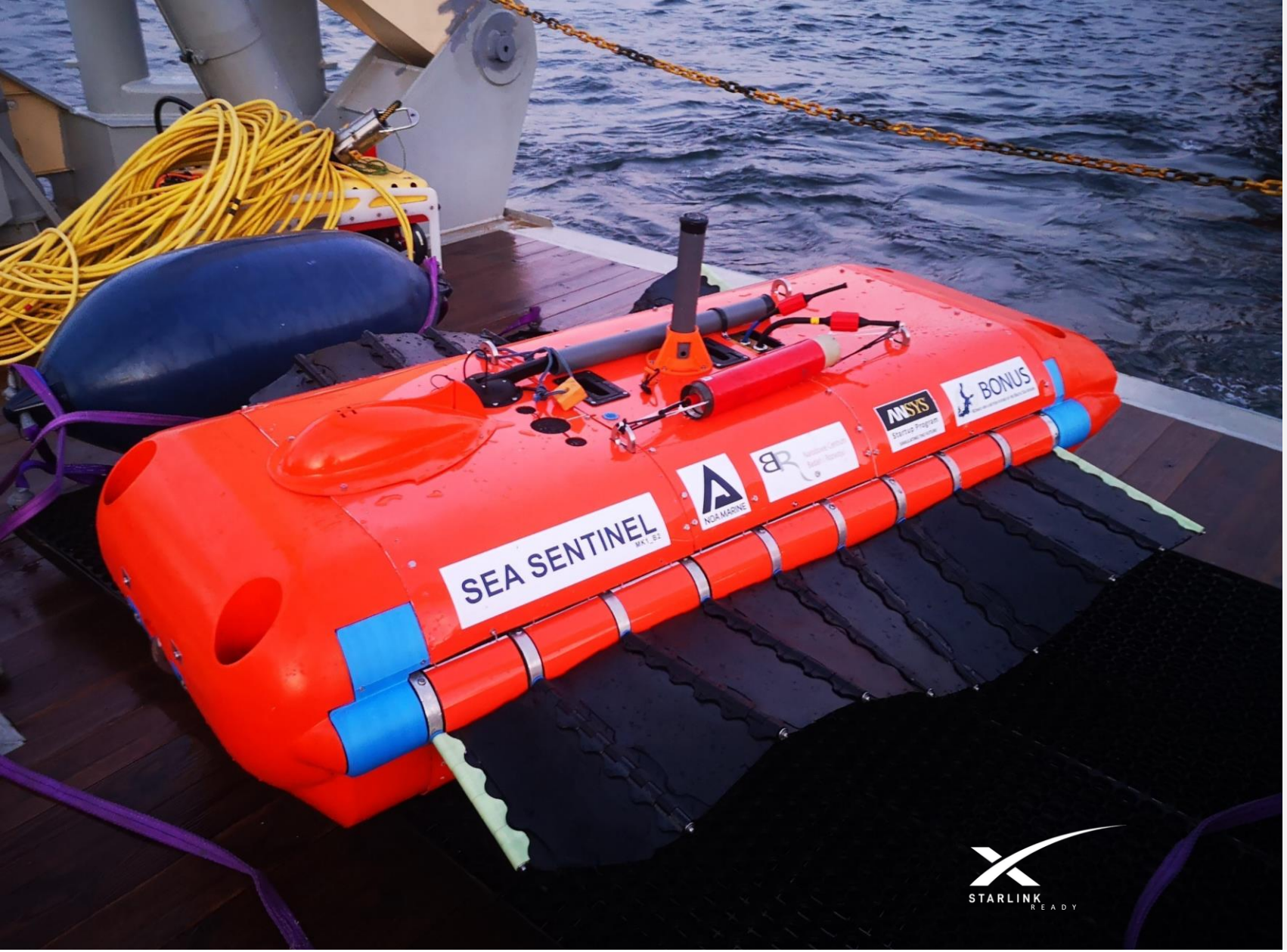
- **Present day resident systems is a complicated and costly** require frequent servicing due to biofouling resulting in optical elements not work properly.

- **Present day systems require Customer to have a specialist knowledge to operate them.**

- **Conventional solutions need constant refueling, represent maintenance cost and require complex delivery chain**

Brand example	Seabed installation required	Uses visuals for homing procedure	Complexity of maintenance	Link
Kraken Robotics	YES	no data	HIGH	https://krakenrobotics.com/kraken-announces-3-million-of-government-of-canada-funding-for-thunderfish-xl-development/
Kongsberg	YES	no data	HIGH	https://www.thinkdefence.co.uk/2015/07/underwater-pit-stops/
Subsea Tech	YES	YES	HIGH	https://www.subsea-tech.com/docking-station/
SAAB Sabretooth	YES	no data	HIGH	https://www.saabseaeye.com/solutions/underwater-vehicles/sabertooth-single-hull
Blue Logic	YES	YES	HIGH	https://www.bluelogic.no/news-and-media/subsea-docking-station-sds-
Noa Marine	**NO**	**NO**	**LOW**	www.noa-marine.com / https://bitly.com/noamarinerobotics

NOA MARINE
PATENTED PATENTED
The National Centre for Research and Development
BONUS Science for a better future of the Baltic Sea region
Member of WORLD ALLIANCE for EFFICIENT SOLUTIONS by SOLARIMPULSE FOUNDATION
ANSYS Startup Program
Funded on: SEEDRS



NOA MARINE implements the use of sea wave, wind and sun energy to power unmanned bionic underwater vehicles.

Vehicles left in a given area without human intervention will independently carry out tasks related to the exploration of the bottom and its supervision.

he goal of the NOA Marine system is to be able to collect chemical, acoustic and visual data and to conduct uninterrupted observation with high resolution measurements for 300 days a year.

The vehicles can be used, among others, to monitor potentially polluting wrecks.

NOA MARINE
PATENTED PATENTED
The National Centre for Research and Development
BONUS
Science for a better future of the Baltic Sea region
Member of WORLD ALLIANCE for EFFICIENT SOLUTIONS by SOLARIMPULSE FOUNDATION
ANSYS Startup Program
Funded on: SEEDRS

STAGE 1 - DRONES (COMPLETED)

First stage has enabled NOA MARINE to complete their works on full scale vehicle prototype able to handle unmanned missions and to carry first market pilots in the Baltic sea environment.

STAGE 2 – ROBOTICS AS A SERVICE (ONGOING)

The second stage is dedicated to developing fully functional autonomous data grabbing platform that will be able to work autonomously up to 6 months without any human intervention. It will consist of 3 to 5 SEA SENTINEL vehicles, solar recharging station with drone docking device and a broadband satellite communication for sending all DATA directly to any place in the world.

NOA MARINE

PATENTED PATENTED

The National Centre for Research and Development

BONUS
SCIENCE FOR A BETTER FUTURE OF THE BALTIC SEA REGION

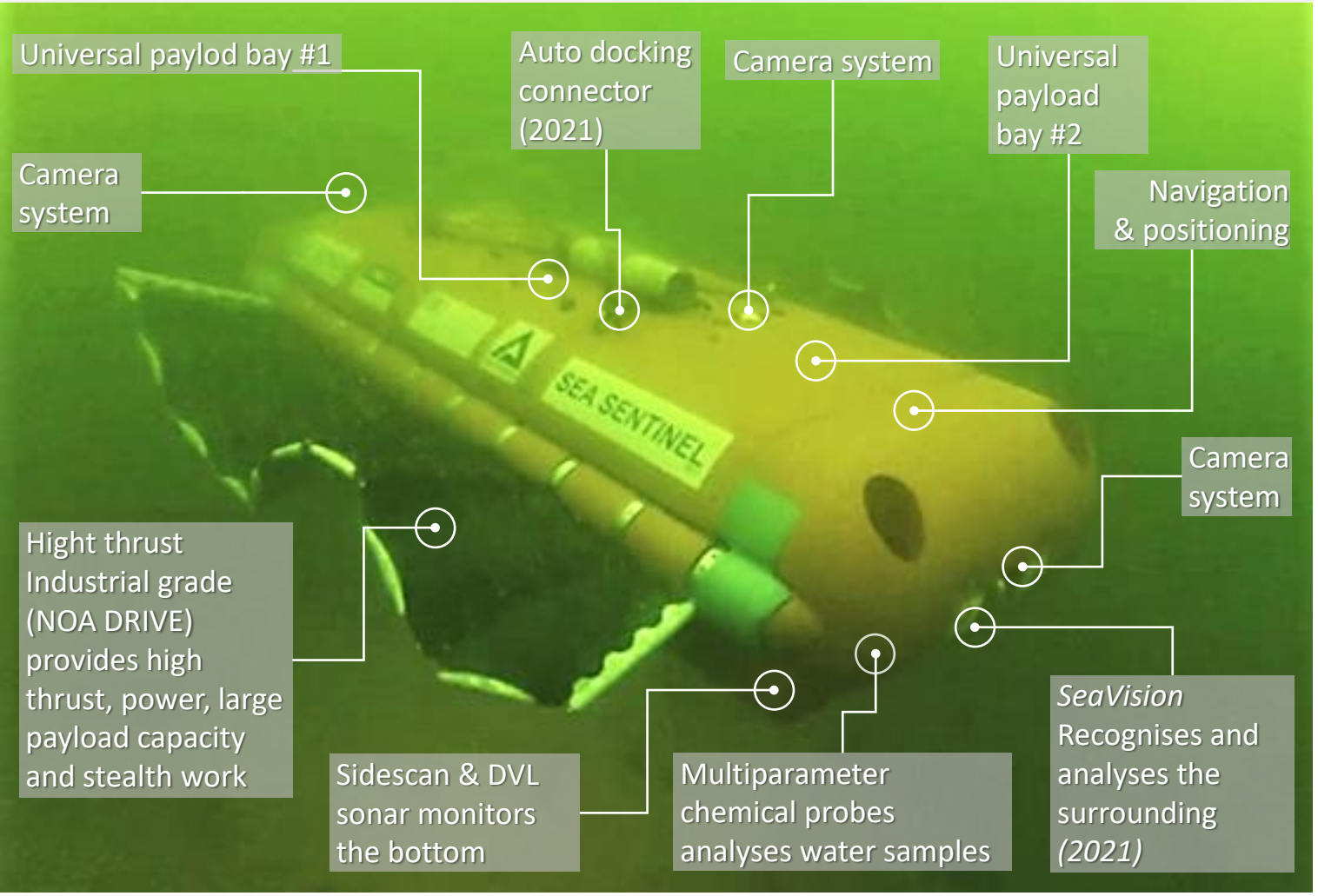
Member of
WORLD ALLIANCE *for* EFFICIENT SOLUTIONS by SOLARIMPULSE FOUNDATION

ANSYS Startup Program

Funded on:
SEEDRS

COMPETITIVE ADVANTAGES

SEA SENTINEL UUVs:



- Robust, patented NOA DRIVE ensuring high efficiency, power and maneuverability with up to one week between charging events.
- Silent work, the systems do not stress aquatic animals
- Vehicles do not get entangled in plants or other aquatic obstacles
- Utilizes green energy, zero emission, zero carbon operational footprint
- Increased payload capacity up to 100kg which is largest payload as per vehicle length allowing for more sensors, extra power, payload and devices
- High maneuverability with heavy cargo provides installation of multiple sensors on a single mission. Thanks to NOA DRIVE high thrust capabilities and efficient design the vehicle's inertia is reduced to a minimum. The vehicle stops from 3kn to zero in less than 1 meter even with the maximum payload of up to 100Kg installed. With this feature overall mission safety is vastly increased
- Glider capability with innovative Ballast Vectoring Protocol (BVP) ensures extra-long range with heavy cargo
- Vehicle monitoring such as current status, health, position and telemetry are sent in real-time to the docking floater via an acoustic link. For distances larger than 6km is sent over air at pre-programmed intervals.

NOA MARINE
PATENTED PATENTED
The National Centre for Research and Development
BONUS Science for a better future of the Baltic Sea region
Member of WORLD ALLIANCE for EFFICIENT SOLUTIONS by SOLARIMPULSE FOUNDATION
ANSYS Startup Program
Funded on: SEEDRS

COMPETITIVE ADVANTAGES

NOA SINAPS Docking stations & service:

- **Ease of deployment & maintenance, no seabed infrastructure required**. All hardware is installed under a floater, this approach makes the procedure for installing the system very similar to placing an ordinary buoy which can be done by almost any vessel equipped with a simple A-frame with a 6 tones lift capacity.
- **Low cost, simple and reliable docking procedure** thanks to NOA SINAPS technology, still possible at sea state 6. Once the docking protocol is initiated the NOA SINAPS technology triggers homing protocol once the vehicle approaches a 20m radius of the floater docking station. Vehicle is dynamically moored without requirement of sophisticated aiming and precise positioning which makes docking procedure simple and effective. Docking procedure accepts very large approach angle deviations and other inaccuracies resulting from a dynamic nature of docking process. After the vehicle is docked, it obtains inductive access to energy and a data link.
- **Single mooring point** (from 30m to 3000m depth)
- **CO2 free** hybrid renewable power: wave/wind/solar
- Reducing your environmental footprint
- Immediate **access to ocean data**
- Continuous clean power = **NetZero goals compliant**
- **No infrastructure** required on Client's side
- **No additional training** required on Client's side

NOA MARINE

PATENTED PATENTED

The National Centre for Research and Development

BONUS
SCIENCE FOR A BETTER FUTURE OF THE BALTIC SEA REGION

Member of WORLD ALLIANCE for EFFICIENT SOLUTIONS by SOLARIMPULSE FOUNDATION

ANSYS Startup Program

Funded on: SEEDRS

A wide range of applications are offered to Offshore & OilGas industry for subsea developments and associated sea to shore infrastructure using Noa Marine's Resident Autonomous SEA SENTINEL data collector vehicles including:

- ✓ Underwater infrastructure permanent monitoring with cost efficient resident UUV swarm
- ✓ Subsea developments and offshore platform inspection (XMT piping, umbilical's, platform jacket / submarine structure and associated infrastructure)
- ✓ Detect leakages and monitor GHG emissions from decommissioned offshore hydrocarbon developments.
- ✓ Sonar scanning throughout an investment area
- ✓ Water and solid sampling at designated stations
- ✓ Video inspection on cable routes and masts places
- ✓ Detailed bathymetry throughout an entire investment area
- ✓ Sub-bottom profiling throughout an investment area
- ✓ Pipeline integrity monitoring (laser scanning, acoustics, video)
- ✓ Preliminary search for objects with a magnetic signature
- ✓ Instant on-demand surveillance of a designated location/structure
- ✓ Detection of UXO (Unexploded Objects) presence on cable / piping
- ✓ Bottom current measurements localized or in large areas for short and long term periods

CHANGE FOR A COST EFFECTIVE, SIMPLE & RELIABLE MONITORING SOLUTION BASED ON ROBOTICS AS A SERVICE

NOA MARINE

PATENTED

The National Centre for Research and Development

BONUS
SCIENCE FOR A BETTER FUTURE OF THE BALTIC SEA REGION

Member of WORLD ALLIANCE for EFFICIENT SOLUTIONS by SOLARIMPULSE FOUNDATION

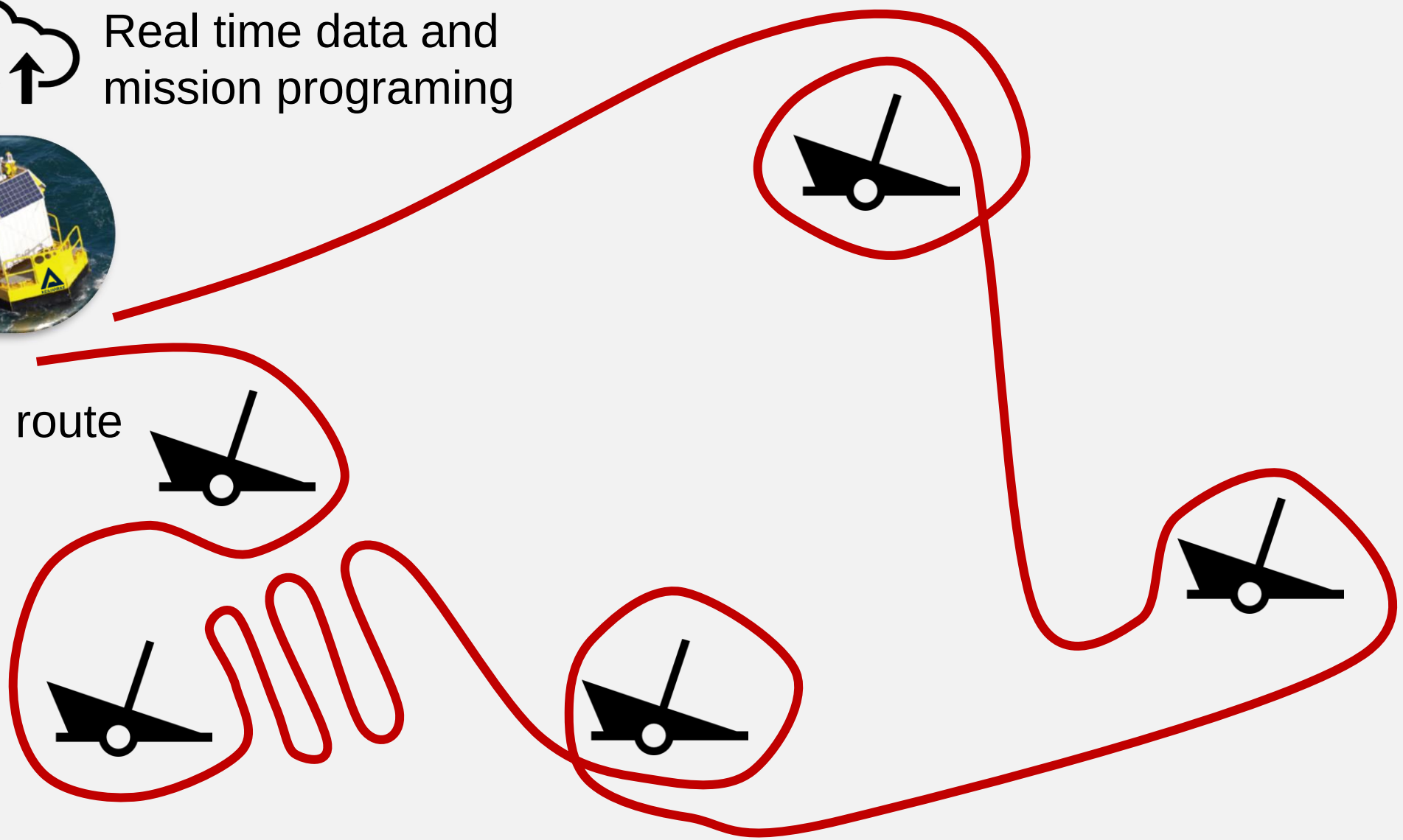
ANSYS Startup Program

Funded on: SEEDRS

STARLINK READY

Real time data and mission programing

Programmed route data logging



NOA MARINE

PATENTED

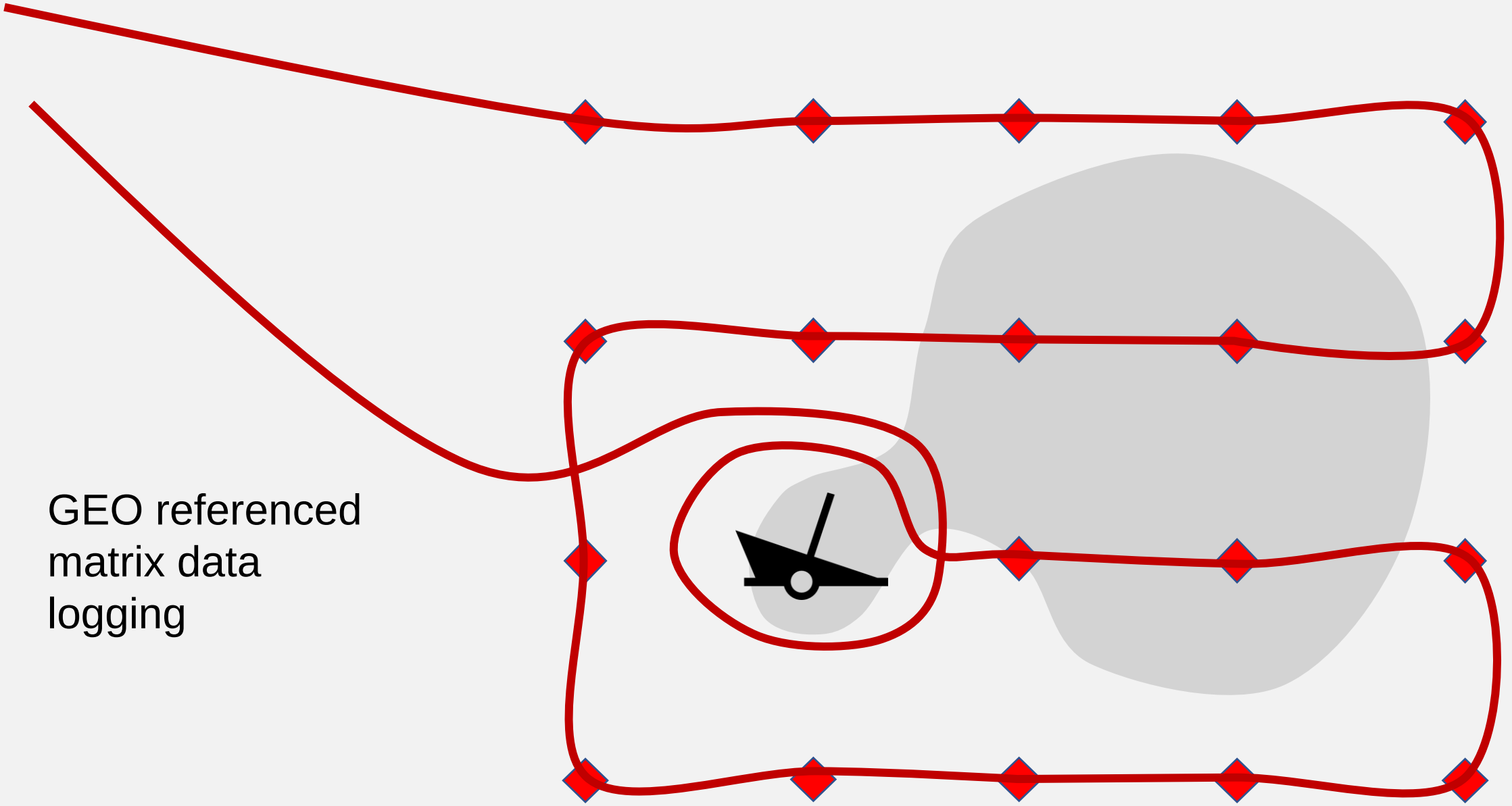
The National Centre for Research and Development

BONUS SCIENCE FOR A BETTER FUTURE OF THE BALTIC SEA REGION

Member of WORLD ALLIANCE for EFFICIENT SOLUTIONS by SOLARIMPULSE FOUNDATION

ANSYS Startup Program

Funded on: SEEDRS



GEO referenced
matrix data
logging

SEA SENTINEL vehicles in autonomous mode (without cable) while descending to a programmed depth in order to proceed with maneuvers (view from the camera of the assisting robot)

NOA MARINE
PATENTED
The National Centre for Research and Development
BONUS
Science for a better future of the Baltic Sea region
Member of WORLD ALLIANCE for EFFICIENT SOLUTIONS by SOLARIMPULSE FOUNDATION
ANSYS Startup Program
Funded on: SEEDRS

Historical materials

Actual status of the object

Weapons - mine wz. 08/39 Gulf of Gdańsk

NOA MARINE

PATENTED

The National Centre for Research and Development

BONUS
Science for a better future of the Baltic Sea region

Member of WORLD ALLIANCE for EFFICIENT SOLUTIONS by SOLARIMPULSE FOUNDATION

ANSYS Startup Program

Funded on: SEEDRS

Actual status of the object

Actual status of the object

Weapons - mine wz. 08/39 Gulf of Gdańsk

NOA MARINE

PATENTED PATENTED

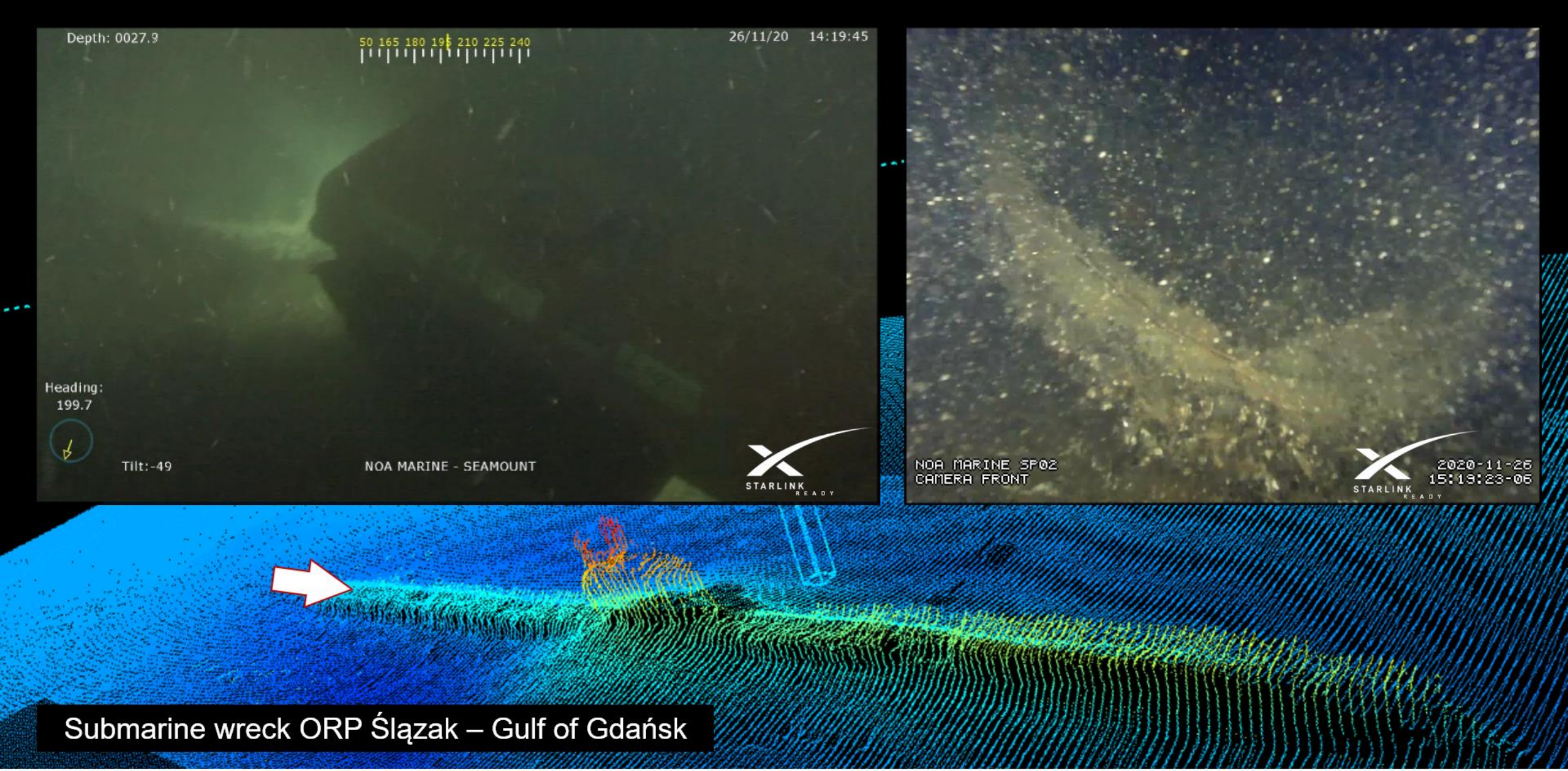
The National Centre for Research and Development

BONUS
Science for a better future of the Baltic Sea region

Member of WORLD ALLIANCE for EFFICIENT SOLUTIONS by SOLARIMPULSE FOUNDATION

ANSYS Startup Program

Funded on: SEEDRS



Submarine wreck ORP Ślązak – Gulf of Gdańsk

NOA MARINE

PATENTED PATENTED PATENTED

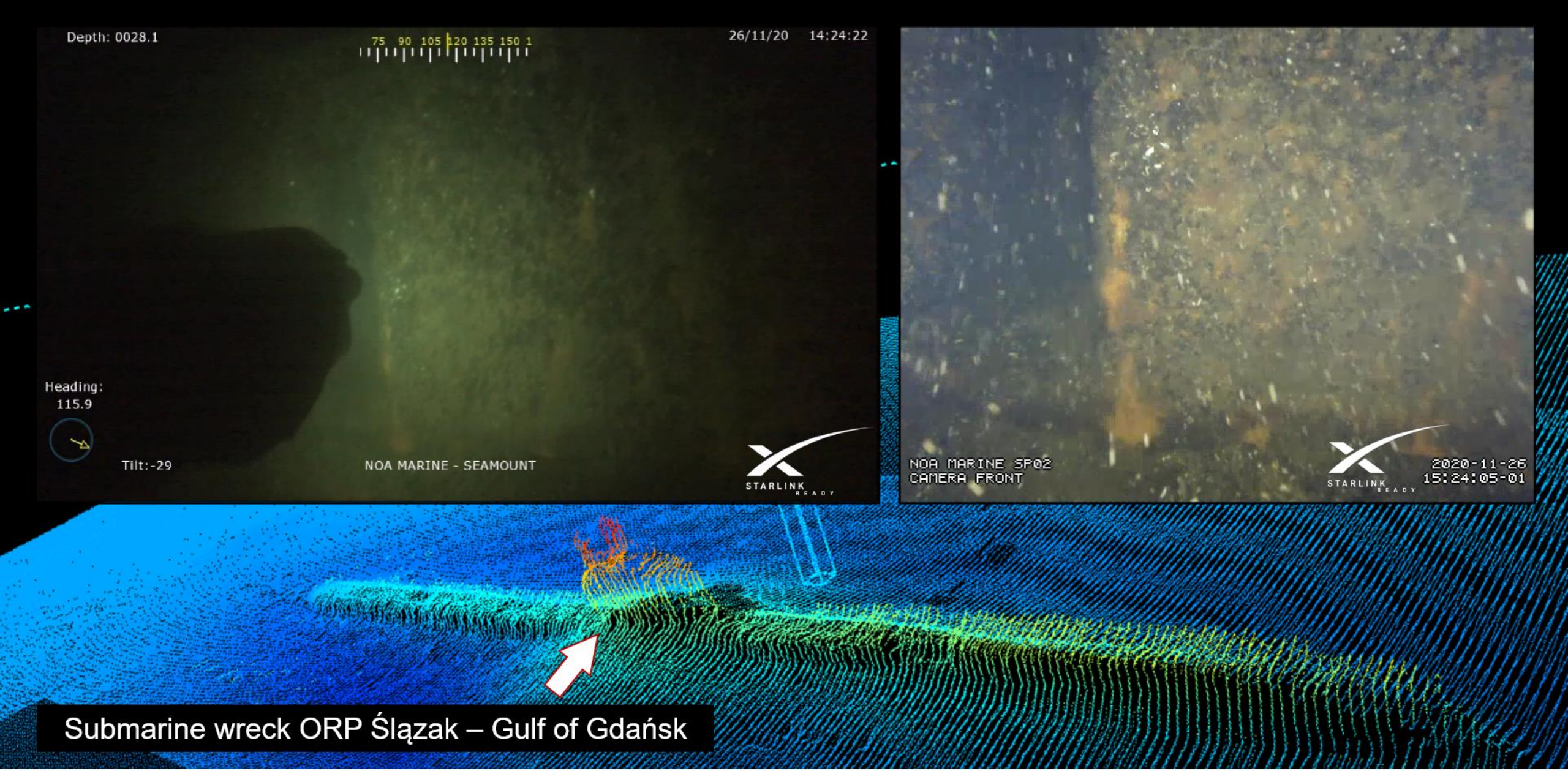
The National Centre for Research and Development

BONUS
Science for a better future of the Baltic Sea region

Member of
WORLD ALLIANCE for EFFICIENT SOLUTIONS
by SOLARIMPULSE FOUNDATION

ANSYS Startup Program

Funded on:
SEEDRS



Submarine wreck ORP Ślązak – Gulf of Gdańsk

NOA MARINE

PATENTED PATENTED

The National Centre for Research and Development

BONUS
Science for a better future of the Baltic Sea region

Member of
WORLD ALLIANCE for EFFICIENT SOLUTIONS
by SOLARIMPULSE FOUNDATION

ANSYS Startup Program

Funded on:
SEEDRS

LinkedIn:

Facebook:

Watch video:

Interested in cooperation?
Landing pilots?
Joint projects?

office@noa-marine.com

BONUS
SCIENCE FOR A BETTER FUTURE OF THE BALTIC SEA REGION

The National Centre for Research and Development

NOA MARINE

Member of
WORLD ALLIANCE *for* EFFICIENT SOLUTIONS by SOLARIMPULSE FOUNDATION

SEEDRS

ANSYS Startup Program

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

13 CLIMATE ACTION

14 LIFE BELOW WATER

17 PARTNERSHIPS FOR THE GOALS