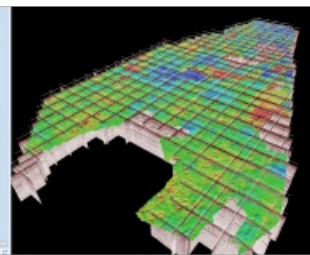
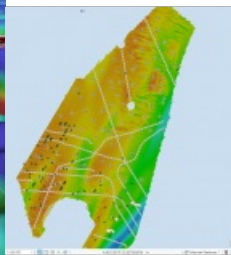
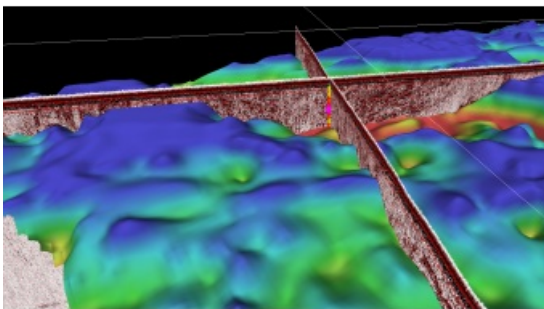
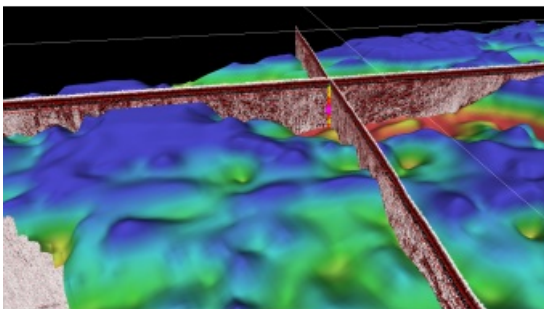


Simplifying seabed investigations for ocean wind actors



In 2021, five Norwegian and international companies decided to join forces to support the development of software that can be used to interpret seabed and subsurface ground conditions and visualize the results. The aim is for this software to help those working in the offshore wind market to identify and map

out the seabed and subsurface constraints, reduce risk, facilitate collaboration between project partners and speed up the investigation and design process, said CEO of Geocap AS, Erlend Kvinnesland.



Those working in the offshore sector often need to work with and integrate multiple complex datasets, and the interpretations of this data. These projects can also cover large areas of the seabed and cross areas of complex ground conditions, all of which needs to be captured within the project deliverables.

Although various tools are available, they often don't handle all these datasets or the derived interpretations, meaning that those working with the data and

interpretations need to develop complicated workflows, moving data between software applications, in order to produce the required deliverables.

There is also an increasing need to be able to visualize these datasets and the resulting interpretations in 3D and share these in an easy way which, again, is currently not always an option.

Earlier this year, [Statnett](#), [Scottish Power Renewables](#), [Atkins](#), [Nexans](#) and [RINA Consulting](#) entered into a Joint Industry Project with Norwegian Geocap AS to develop software that integrates all GIS, hydrographic, geophysical, geological and geotechnical data types and contractor interpretations into one software environment. The companies cover large parts of the value chain within power production – from surveying, consulting engineers and installation to management, operations and maintenance.

Geographic technology as a superintegrator

“Those working in the offshore sector are completely dependent on accurate and thorough analysis of the seabed and subsurface ground conditions across their project areas. To do this requires handling large volumes of both spatial and non-spatial data. The integration and interpretation of this data currently requires using multiple different software packages. It is currently very difficult, if not impossible, to integrate the different data types all into one software environment where it can all be viewed and interpreted together. Rather different packages are required for interpreting the different datasets and then sophisticated workflows are required to bring these different interpretations together to form a single comprehensive understanding of the ground conditions across a project site. We will solve this by using geographical technology as a superintegrator,” said Erlend Kvinnesland at Geocap AS.

The solution is built on the ArcGIS software, which is used by most players in this market. By expanding ArcGIS to be able to handle geotechnical and geophysical data, you get a complete solution for making qualified decisions in development projects on the seabed. It will also improve the collaboration between various stakeholders significantly.

Geocap AS is a Norwegian company that delivers solutions for underground data and has mainly conducted its operations

within oil and gas. It is now taking the step into the renewable field with offshore wind as the main focus. To strengthen this investment, it has hired Erlend Kvinnesland as the new CEO. Erlend attended [the Norwegian University of Science and Technology](#) and Boston University and has worked with subsea survey and underground data offshore throughout his career.

□ Five Norwegian and international companies are joining forces to support the development of software that can be used for interpreting seabed and subsurface ground conditions and visualizing those results.

Sharing data in an accessible data format

“At Atkins, our vision is to provide our clients with a robust, resilient, and fully integrated range of offshore geoscience services. To do this requires being able to integrate and interpret multiple complex datasets and then be able to communicate those results and findings to our clients and other project stakeholders in a timely and easy-to-access fashion. At present, this process can involve using multiple software tools and packages, as well as complicated workflows and workarounds to achieve the required results, which often cannot be easily shared with our clients without them needing to purchase expensive software themselves. Therefore, a solution that allows these complex datasets to not just be integrated and interpreted within a single software environment, but also provide a mechanism with which to share those results with others in a more readily accessible format, is a potential game-changer. The software currently being developed by Geocap therefore has the potential to allow us to do this – to streamline our capability in analyzing the complexities of the ground conditions across our project sites, while also providing an efficient tool for communicating our findings and recommendations to our clients, enabling them to make timely, data-driven decisions,” said Dr Andrew Hart, chief engineering geologist & geomorphologist at Atkins.

“At RINA Consulting, we are committed to providing high quality services in a cost-effective way. Nowadays, this means pushing towards new digital solutions. Geosciences-wise, we firmly believe that this JIP will make an important step forward towards a more efficient way to handle, understand and deliver integrated ground models,” says Omar Zanolli, head of Geosciences at RINA Consulting.

Improved technical insight

“ScottishPower Renewables engage with several multi-disciplinary experts to procure detailed, site-specific survey data for their offshore wind farm developments. The inability to meaningfully integrate geophysical and geotechnical data has been a bane for the offshore renewables industry for a long time. Traditionally, each discipline requires expensive software to view, interrogate and analyze large datasets. For this reason, the data is typically viewed in isolation with insights only coming together during the interpretation. The GeoCap Ground Model solution serves to address this shortcoming. At ScottishPower Renewables this will offer improved technical insight, improved efficiency in accessing potentially cumbersome data, and an improved ability to visualize and communicate results with project stakeholders. This is an innovation which could be adopted across our global portfolio of wind farm developments,” anticipates James Brown, senior GIS specialist at ScottishPower Renewables.

Securing cables and the environment

Statnett is responsible for building, operating and maintaining the Norwegian power system. A significant operation is also the maintenance and operation of submarine cables. Project engineer Øystein Pettersen, believes that the project will add value to Statnett's activities on the seabed. “We want to improve the route planning for submarine cables on the seabed, both to reduce risk, costs and not least the environmental aspect. We believe this project will contribute to this,” said Pettersen.

“Nexans has utilized the ArcGIS software for years for our route planning and to handle all survey data from our installation projects. We believe that this project will improve the quality and efficiency related to route planning and cable protection assessment for our projects. Seabed ground conditions are crucial information especially related to cable protection,” says Frode Karlsen, discipline manager Survey/GIS at Nexans.

Kvinnesland says that they are now working hard to release the first version of the software before the end of the year: “We are very happy that the companies involved want to contribute to this joint industry project. The software we are developing will undoubtedly contribute to safer and more cost-effective wind farm development.”

□ There is an increasing need to be able to visualize datasets and the resulting interpretations in 3D and share these in an easy way.