

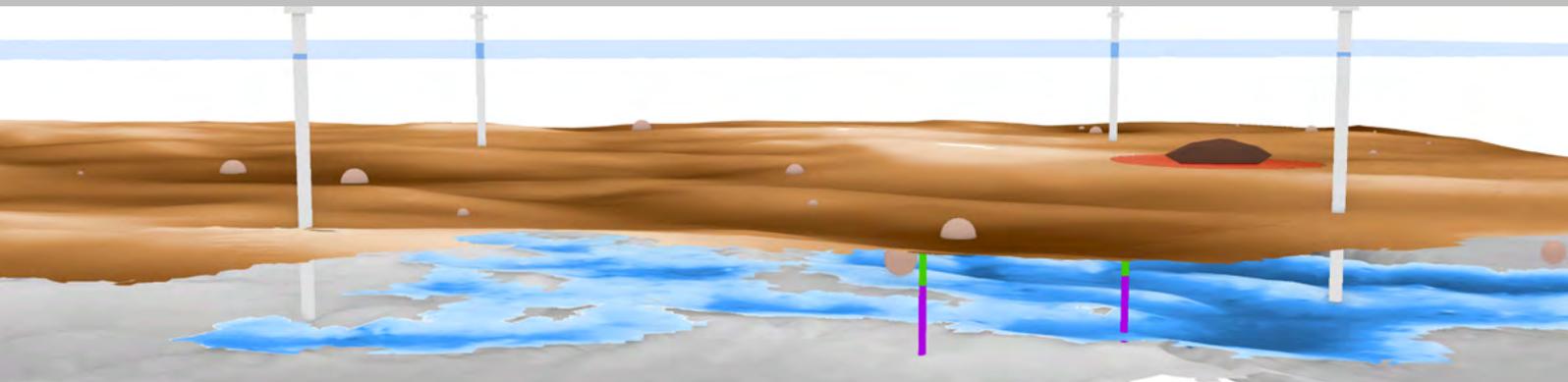


# Geographic Information Systems and Data Management

The volume, and quality, of data held by our clients is constantly increasing, becoming simultaneously both a company's most valuable asset, and one of its biggest challenges. New surveys are performed, using the latest technologies, to generate high-resolution interpretation of the seabed and below, and, with over 40 years of combined experience, our Geospatial Team help our clients manage these data efficiently and consistently. Terabytes of data, spanning multiple surveys, can then be combined to transform your data into meaningful information from which decisions can be made.

## Ground Modelling and Visualisation

In the modern offshore environment ground models form the basis for continual, progressive seabed risk understanding, management and mitigation planning throughout the project life cycle. Whilst the concept of constructing a subsea ground model is often seen as a new approach for offshore industries, at Cathie we've spent the last decade helping our clients derive greater insights into their projects' environment by combining their geophysical and geotechnical data into a dynamic, accurate and comprehensive models of the seabed.

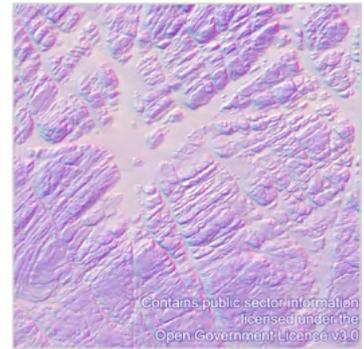




2D and 3D models, integrated into an underlying Geographic Information System (GIS), are a core tool we adopt across the spectrum of offshore sectors: from offshore renewables and oil and gas; to telecoms and ports and harbours. Our robust approach to data management makes site interrogation a seamless task, allowing a deep understanding of the spatial relationships present. Spatial decisions, such as infrastructure layout design and siting of future sample locations, can be made quickly and with confidence. Modelling serves as a base dataset for a number of different tasks including foundation selection/optimisation, geo risk mapping, geological and geotechnical zoning/provincing, site suitability assessment, cable routing and the production of alignment charts.

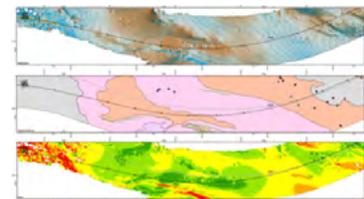
### Data review, Management and Integration

Data management is at the heart of Cathie. From assistance adopting data models such as the Seabed Survey Data Model, through to authoring spatial data specifications, our experienced Geospatial Team help clients standardise their data and improve quality. By cataloguing and storing surveys and as-built documentation, complete with metadata in standards such as INSPIRE and MEDIN, we give our clients confidence their data is in good hands; and via our WebGIS applications their data are accessible with only a few clicks – essential in a dynamic environment where every minute of downtime counts.



### Routing, Burial Assessments, Burial Risk

We rely heavily on geospatial data during the development phase of cable routing. Micro/macrorouting, constraints analyses, and the production of alignment charts and supporting Route Position Lists are regularly carried out, along with the presentation of engineering work such as burial depth and trencher recommendations.



At Cathie, route design is a fully integrated process. Our engineers, geoscientists and geospatial experts work as a single team to ensure all design parameters and spatial constraints are considered in unison. Route design is tailored to the specific development phase, with the Cathie team providing expert advice to ensure your route is optimised to reduce cable length and complexity. For projects in the early phases of development, our extensive – and regularly maintained – catalogue of 3rd party and open source spatial data allows seamless identification of preferable routing corridors. For projects in pre-construction, our micro-routing workflow combines our clients' wealth of primary survey data with Cathie's in-house expert knowledge, to ensure routes are optimised for burial depth and installation tool specifications.





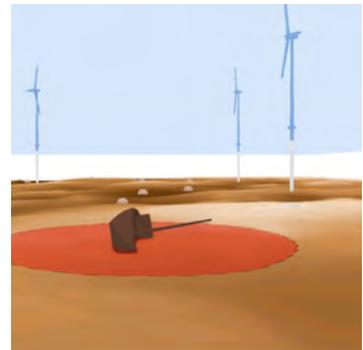
## Bespoke Training and GIS System Support

Training courses are tailored to our clients' own industry, datasets and expected common tasks. The aim of our courses is to ensure staff can present, analyse and interpret geospatial data in a manner which ensures data integrity and quality standards are adhered to. Unlike mainstream CPD courses, ours are designed to show staff how to conduct the techniques in a way which is relevant to the nature of the data we work with in the offshore environment. The option to "bring your own data" means we can tailor our courses around your specific business needs, focussing on providing you with the skills required to address real-world challenges.

In addition to training, we also provide consultancy and installation support for entire GIS systems and architecture.

## A Digital Twin supporting Your Full Project Lifecycle

A well maintained spatial data model is a powerful tool throughout the full project lifecycle. A Cathie model may start life based on exploratory, development-phase surveys; however, over time, the model is enhanced with construction and operations and maintenance (O&M) phase surveys to provide a complete historical record. Locations of assets are retained – along with references to all relevant construction and survey reports – resulting in a true Digital Twin of your site.



Once catalogued, Cathie's offshore engineering expertise allows us to provide enhanced spatial insights into your assets. Asset integrity, burial depth and presence of exposures/freespans can be recorded and displayed in a live dashboard environment, alongside latest surveyed data, and published in one of our user-friendly web mapping applications. What started as a pre-construction ground model becomes a centralised, reliable and easily-accessible record of all your project's data – an essential tool for dealing with emergency responses, where every minute of downtime counts.

