Data management

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Having access to accurately mapped submarine cable routes has become essential following the increase in seabed usage from industries such as telecoms, renewable energy, oil & gas and resource mining. With vast quantities of data being collected every day, the question has to be asked, whose responsibility is it to keep it updated?

Throughout each stage of the planning, installation and operation of a submarine cable, project data is created and collected. This data remains in a state of flux, with several changes over the project's lifecycle that must be continually captured. However, managing records is often overlooked. It is either low on the list of priorities or wrongly assumed that someone else, such as a member of the maintenance consortium, is doing it.

It is the responsibility of the cable owner to maintain records for their cable system. This extends to its location, straight line diagrams, cable armour type, fiber maps, burial depth, etc. Not just for the installation, but for changes that result from repairs on the system or from new cables and pipelines that are laid across an existing system.

Often, these are not properly checked by the wider industry, which can lead to errors creeping into the data, creating unnecessary risk for the future. OceanIQ's unrivalled team of experts not only

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organise records for customers, they update and manage them too, helping clients ensure their data is as accurate as it possibly can be.

If cables and pipelines are not accurately charted, it can result in costly mistakes. Vessels can be loaded with incorrect cable types for a repair, grapnels can cut through or damage uncharted cables, recovery of the wrong cable could take place, damage may be caused to uncharted repair bights, or even cause harm to pipelines.

OceanIQ's knowledgeable team verifies and updates individual records with new cable or pipeline crossings, repair details or other relevant marine operations, taking the burden away from clients and minimising the risk of errors negatively impacting repair or installation projects later.

The requirements for subsea fibre optic cables are ever-increasing as we become more connected 24/7

There are already 2,600,000km of subsea telecoms cable in commission. In total, the subsea fiber optic cables span hundreds of thousands of miles, across almost all the world's largest oceans.

As of 2022, there are over 420 in-service submarine cables installed around the world. With over 1.3 million kilometres of in-service cable installed and even more planned, the seabed is quickly becoming saturated, particularly in the choke point areas. This leads to the traditional three times water depth of separation between cables not being feasible. Knowing exactly where your cable is and keeping the records up to date is vitally important.

Almost 66% of the world's population is expected to have access to the internet by 2023, with three times as many internet enabled devices in operation than the human population. Demands for increased bandwidth to accommodate this growth trend will require investment in new high-capacity submarine cables, with a focus on how to safely install and provide ongoing maintenance for them.

To continue to meet the seemingly insatiable appetite for connectivity globally, the subsea cable infrastructure needs to grow, flex, and remain secure to deliver a consistent supply around the clock. However, retired cables remain on the seabed, which need to be considered when conducting repairs or installing new ones. Most fiber optic cables are engineered with a design life of around 25 years.

Subsea power cables are just as critical to the world's infrastructure

As we rely on undersea cables to ensure our internet connections, we do the same for power. The energy that heats our homes, keeps the lights on and powers the modems that keep the internet flowing into our lives is transported from its original sources and between countries through a series of cables that connect offshore power generators to the National Grid. As an island, the UK is more dependent than most on these cables being properly maintained, especially in times of crisis.

Currently, there are over 4,000 MW of operational connectors linking the UK with its closest neighbours, the Republic of Ireland, France, and the Netherlands, and this is set to increase in the next few years. In fact, the North Sea Link, an ambitious project

that will be the longest subsea power interconnector, is already well underway.

There is an estimated 20,000km of new power cables to be installed in northern European waters alone, and 63,200km of array cables globally by 2030. These trans-national interconnectors allow countries to trade and transfer power, ensuring a steady supply, managing fluctuations, and stabilising prices for consumers. It is vital that they are well maintained and quickly repaired should a fault occur.

For example, the typical revenue loss of a single 6MW turbine being offline for a day is 10,000 GBP. The latest turbines are scaling up to a capacity of 14MW, which can have a substantial effect on an offshore wind farm project in the event of a cable fault or failure. The loss of revenue per turbine per day would total over 23,000 GBP. If a string of turbines was down, this figure would quickly escalate into millions of pounds of revenue lost.

With nearly 20,000km of power cables estimated to be installed in northern European waters by the end of the decade, the number of repairs is naturally going to increase. The reasons behind cable faults can help us prepare and implement preventative measures for the future.

The pandemic has emphasised our reliance on these unseen networks, with some European countries seeing data usage surge by nearly 50%, as more and more people rely on the internet to work, relax, and communicate with others.

But what happens if a system isn't properly engineered, or we aren't prepared if an unexpected fault occurs?

OceanIQ's fault database shows an average of 190 annual faults on fibre optic cables over the last five years. This is rising approximately 10 per cent per year. Seventy-four per cent of all faults are caused by third party activity such as fishing, anchoring, dredging or other human intervention and a further 12% are caused by natural occurrences, such as sediment and ocean currents causing cable chafing. The final 14% are system and/or equipment faults.

Continental shelf areas are the most hazardous to cable security. Some 83% of all faults occur in water depths of less than 1,000m. In these water depths, 93% of non-system faults are caused by third-party aggression with natural activity accounting for only 7%.

Data from Lloyd Warwick and Codan suggests that 82.3% of insurance claims in offshore wind are because of cable faults or damage. The cost of these failures to date has amounted to £227 million, and statistically we expect to require one repair

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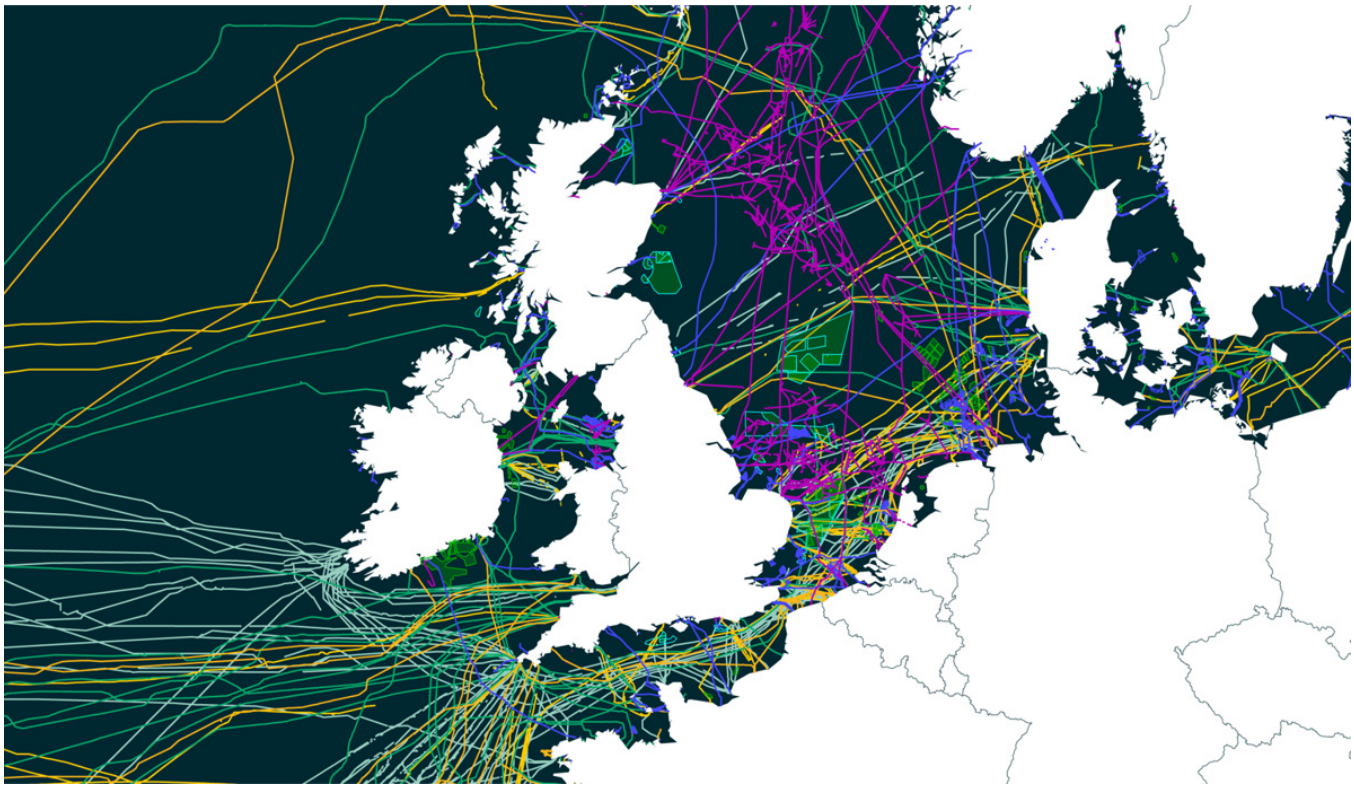

for every 413km of array cable installed.

As wind farms move further offshore and into deeper water, the risks will increase. Being prepared throughout the project lifecycle to avoid this costly statistic is key.

OceanIQ’s database of subsea cable faults contains information on over 5,500 historical cable faults, approximately 95% of all faults worldwide; a powerful resource for planning future cable systems and avoiding past mistakes.

The solution focuses on storing and managing accurate cable data

Keeping data organised in one place is key to ensuring system and project accuracy. OceanIQ has over 25 years of records management experience. Its world-leading team of experts has a combined experience of over 60 years of managing cable records across multiple subsea industries.

The company’s SEA Data Platform is a highly intuitive cloud-based platform that provides the highest level of security and peace of mind. When preparing new cable routes or planning marine operations, project preparation is paramount to success. SEA Data Platform can help avoid planning pitfalls, preventable costs and mistakes, and ensure the long-term safety of a new cable system by fully understanding risks, the subsea and landing site environments, licencing requirements and likely challenges all before the project begins.

Using anonymised fault data to characterise the risk environment for new cables based on actual faults on existing and out of service cables in a region, OceanIQ provides confidence that all possible steps have been taken to mitigate those risks. We work closely with customers to create bespoke packages to store, manage and enhance your data with added consultation services to safeguard it for unexpected requirements long into the future.

As part of GMG, the company has always been at the forefront of subsea innovation, from planning, laying, and maintaining cables for the power and telecoms industries, to using our extensive knowledge and data to consult on projects and create world-class solutions in emerging markets.

It has detailed knowledge of 97% of all fibre optic cables laid worldwide, and 70% of power cables, delivering accurate assessments for any subsea project across a range of industries.

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