PlanSea and Infosys: Using AI to Optimize Decommissioning Planning & Execution



Abstract

As oil and gas decommissioning grows in scale and complexity, planning must account for interdependent decisions across cost, emissions, vessel availability, schedule and risk. Artificial intelligence (AI) can help operators compare and simulate execution scenarios before and during work, while connected enterprise data and digital twins can help teams make better use of scarce marine assets.

This paper answers three practical questions: how the PlanSea–Infosys partnership comes together, how the people involved in decommissioning can benefit, and what fundamental problem the case study addresses. It then shows how AI-assisted planning can support portfolio-level decisions and coordination across operators.

Introduction

Many of the UK's offshore oil and gas fields are reaching the end of their productive lives and require decommissioning. Wells must be permanently plugged and abandoned, while platforms and subsea infrastructure must be removed or made safe. This work takes place offshore, where specialist vessels, rigs, equipment, and contractors are expensive and increasingly are shared across multi-operator/multi-location campaigns. Decommissioning can also take several years, with different activities requiring multiple resources at various stages.

The work is complex and comes with a high cost. Operators spent a record £2.6 billion on UK offshore decommissioning in 2025, with estimates of a further £21 billion to be spent by 2032[1]. Decommissioning is primarily a cost activity for operators, so minimizing cost within safety, regulatory and environmental constraints is a key objective.

Why Decommissioning Is Becoming Harder to Plan?

Decommissioning already accounts for 15% of total oil and gas spent on the UK Continental Shelf (UKCS)[2], adding to cost pressures across the sector. Vessel availability has become a key constraint on how quickly operators can move. Only a limited number of vessels worldwide can lift the largest

structures involved in platform removal, keeping day rates high and schedules tight. Specialist diving support vessels (DSVs) are similarly facing high levels of demand with a likely impact on day rates.

Regulatory scrutiny is also increasing, while the bar to achieve environmental, social and governance (ESG) requirements and emissions targets continues to rise. At the same time, the engineering data required to plan each such campaign is often scattered across legacy systems, different contractors, and years of ownership changes. Multiple stakeholders must plan in lockstep within a defined operational window. Yet the tools used across projects can make this coordination slow and challenging.

How the PlanSea–Infosys Partnership Comes Together

PlanSea contributes decommissioning domain knowledge, marine logistics expertise and an AI-assisted planning environment that models vessels, ports, tasks, weather, constraints and dependencies. Infosys contributes enterprise data engineering, systems integration, cloud and AI delivery capability, and the Infosys Topaz Fabric layer to connect fragmented information across legacy systems and stakeholders.

Together, the partners establish a practical delivery model: Infosys helps connect and prepare the enterprise data; PlanSea brings the domain model and marine-planning capability; and both teams work with the operator to define the scope, constraints, scenarios and decision criteria. The result is a shared view of cost, emissions, schedule confidence, risk and vessel-days. The engagement can start with one asset or campaign and scale to a portfolio or multi-operator program, subject to agreed data-sharing and governance arrangements.

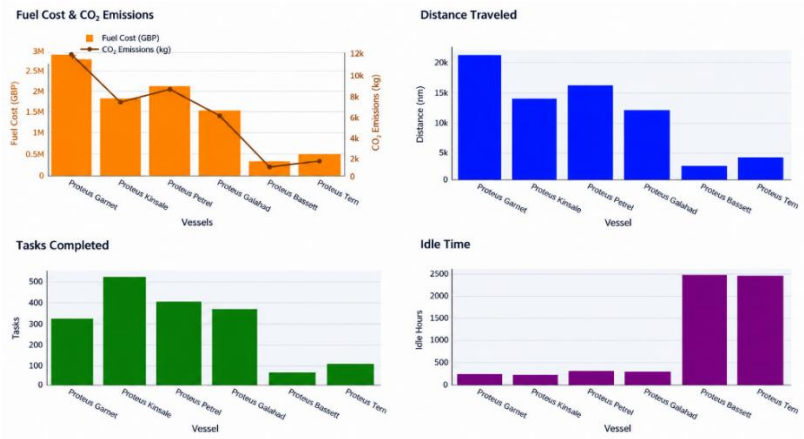
Case Study: AI-Assisted Planning for a North Sea Decommissioning Campaign

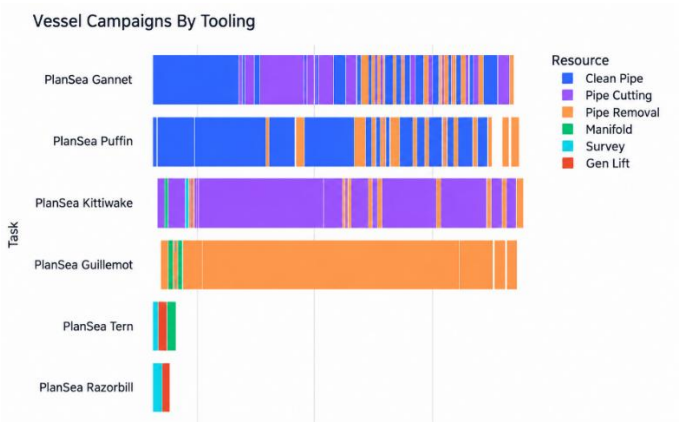
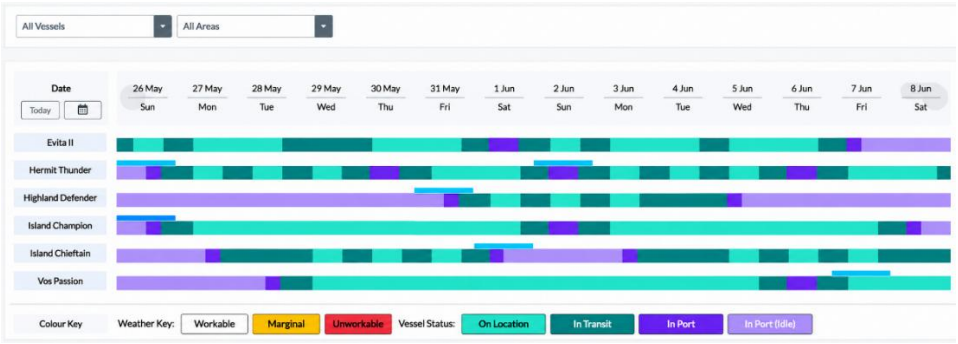
Problem statement: A North Sea subsea decommissioning team looked to coordinate thousands of subsea tasks, multiple vessels, supply bases, ports and operational dependencies within a limited weather and permitting window. The relevant engineering, asset and logistics data was distributed across systems and organizations, making it difficult to understand the cost, emissions and schedule consequences of a change before resources are committed.

This is the concrete planning problem that the wider industry context in this POV creates.

Solution response: The PlanSea–Infosys platform models a six-month campaign involving two ports (a home port and a location to deliver subsea material and equipment for processing), vessels and thousands of subsea decommissioning tasks. It evaluates 10,000 individual execution pathways in approximately 1.5 seconds, allowing the team to test different constraints and scenario options continuously. This would have previously taken many months of significant manpower. The platform is used as a decision-support environment; it helps planners compare alternatives and understand trade-offs before committing resources.

What Are the Stand-Out Benefits?

It optimizes cost, emissions, execution risk, resource availability and schedule certainty at the same time. Planners can compare execution strategies based on their overall value rather than a single measure. They can compare this to strategic KPI objectives, updating forecasts as	

new data becomes available.	Dashboard of Key Performance Indicators
It aligns vessels availability and locations with key tasks. You can simulate alternative scenarios as conditions change, such as weather, permits or vessel delays. Thus, you can make intelligent decisions before committing resources, therefore avoiding costly over-resourcing.	 Optimizing Vessel Scheduling by Task/Tooling Purposes
Optimisation can be extended beyond a single campaign to multi-operator planning. This is particularly valuable when identifying and scheduling compatible work scopes, sharing scarce vessels and coordinating and minimizing mob/demob without losing operator accountability. The AI-powered solution provides a common scenario view while allowing each organization to retain its own scope, approvals and commercial controls.	 Scheduling Tasks and Vessel Operations across Different Operators/Locations

Who Benefits and What Do They Gain?

In this case study, the direct beneficiaries are the people planning, approving and executing the decommissioning work. The campaign dashboard, vessel schedules, multi-operator views and KPI outputs give each group a different, practical benefit:

1. Planners and engineers gain a common, current view of the proposed campaign and can compare task and vessel sequences quickly. They can also optimally replan during execution.
2. Marine coordinators can identify vessel conflicts, port constraints and alternative routes or allocations.
3. Project managers can see schedule confidence, understand how disruption propagates and assess recovery options.
4. Commercial and finance teams gain a clearer basis for comparing cost, vessel-day and contractor decisions.

5. HSE and regulatory teams gain a more traceable record of the assumptions and rationale behind a selected plan with indicative emission consequences.
6. Operators benefit from lower avoidable cost, better use of scarce vessels, more predictable schedules and stronger evidence for regulatory and ESG reporting.
7. If visibility is given to wider stakeholders, service companies benefit from repeatable planning workflows, clearer interfaces with customers and better visibility of resource utilization.

How Can Industry Partners Begin to Plan Ahead?

The value of an AI-assisted planning tool depends on the quality and accessibility of the underlying data. To begin this journey, it is important to set the right foundations.

- Consolidated engineering records, often highlighting documentation and asset integrity data accumulated across decades of ownership changes.
- Vessel and logistics data: historical vessel schedules, day-rate data, deck area, crane performance and other specifications and contractor performance records where available, to calibrate scenario modelling against real operating conditions.
- Clarity on scope: whether the engagement covers a single asset, a full portfolio, or a multi-operator campaign — this shapes the scenario space the platform needs to evaluate.
- For multi-operator campaigns specifically: pre-agreed data-sharing and governance arrangements between operators, since shared vessel and schedule optimisation depends on all parties being willing to expose relevant planning data.
- Empowered stakeholders: named planning and engineering leads with the authority to evaluate trade-offs across cost, carbon, schedule, and risk, and to act on scenario outputs rather than simply reviewing them.

Operators do not need all of this in perfect order on day one. The PlanSea–Infosys team can help establish the foundations, connect fragmented data, agree the planning scope and identify the first decision that the platform should support. The partnership is most effective when named stakeholders have the authority to act on scenario outputs, not simply review them.

Conclusion

The scale of decommissioning activity in the UK and the limited availability of vessels needed to carry it out are creating significant planning demands. These demands are compounded by growing regulatory and ESG requirements. Operators need a planning environment that brings cost, carbon, schedule, as well as vessel availability together. It should also be able to support planning across an integrated multi-operator/multi-location/multi-year campaign rather than one project at a time.

The PlanSea–Infosys partnership brings these capabilities together. It combines enterprise data engineering, AI-assisted simulation and marine logistics expertise in a single planning environment. Operators can use it to explore different decommissioning scenarios, compare potential outcomes and make more informed decisions about how, when and what work is carried out.

About the Authors

Prof. John McCall is Technical Director of PlanSea Solutions. He is an internationally recognized expert in AI for industrial optimisation and planning with over 30 years' experience in academia and industry. He leads large interdisciplinary projects developing AI for optimized decision-making in complex industrial settings. He has over 10 years' experience modelling and optimizing marine logistics in the North Sea and other energy basins.

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www.plansea.co.uk