

The future of energy 'prosuming'



Contents

Introduction	3	AI applications across the energy infrastructure	14
A visionary approach	4	Consumer control is the new era of energy 'prosumer' management	15
Energy takes centre stage	5	Making it happen	16
A changing relationship	6	Accuracy, benefits and approach	18
The prosumer revolution	9	Imagining the grid of the future	20
A fresh approach to complex challenges	11	A look above the horizon	22
Success stories across sectors	12	Market intelligence tool for shipping	24

Introduction

Cognizant Ocean's AI-driven approach is transforming how energy providers manage their grids, empower consumers, and guide infrastructure investment in an increasingly demanding landscape.

Whenever you plug in an electric vehicle, switch on a heat pump, or install a smart home system, it's likely you intend to do the right thing for the planet's health. In fact, you're contributing to an unprecedented challenge, pushing energy grids to breaking point—and the team at Cognizant Ocean believes AI could be the solution that prevents the lights from going out.

As EV adoption accelerates and household power consumption rises, providers face mounting pressure to deliver more through ageing infrastructure, some of which is over a century old. Recent close calls with blackouts and spiralling consumer costs signal that the current approach isn't working.

The International Energy Agency (IEA) projects that electricity's share of final energy consumption will rise from 20% today to over 50% by 2050, driven by clean technologies such as EVs and heat pumps.

Cognizant Ocean, a division designed specifically to tackle complex challenges in asset-heavy industries, brings a fresh perspective to these mounting energy challenges. Combining AI capabilities, systemic design thinking, and domain expertise creates a new playbook for grid modernisation that benefits providers, consumers, and the environment.

A visionary approach

Founded in 2022 by Norway-based Stig Martin Fiskå, Cognizant Ocean was established to drive systemic change. The “Ocean” name itself hints at the division’s environmental roots and an awareness that our oceans—the lungs of humanity—are arguably being suffocated. The ocean creates approximately 50% of human breathable oxygen, so we’re essentially suffocating ourselves through poor environmental stewardship.

Fiskå’s vision extends beyond purely environmental concerns. He is clear that there isn’t a binary choice between doing the right thing for nature and doing something bad for capitalism and growth. The challenge is seeing new solutions and systemic ways of working, beyond with what we have and are familiar with. For Fiskå, technology has always been the enabler that takes us from linear to disruptive change.

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Ocean was created to grow and make use of the latest feasible technology to drive systemic change in how industries operate. Our aim is to improve practices, leaving behind a more sustainable way of living”

Stig Martin Fiskå

Global Head of Cognizant Ocean



Energy takes centre stage

The energy sector has rapidly shifted from background utility to mainstream focus, becoming a critical consideration for consumers, regulators, and environmental strategy.

Vinitesh Gaurav, Senior Consulting Director at Cognizant, recalls that as recently as five years ago, the only reason people would remember their utility provider was when there was a problem.

But people increasingly want to be part of the energy discussion. Whether that's EV or cleaner energy and sustainability conversations, the new era of energy usage has arrived and consumers aren't prepared to let the energy sector tackle it alone.

The developing geopolitical situation over the last handful of years has dramatically accelerated this shift. Particularly over the past few years where energy security has been pushed into public consciousness. People are now watching energy price news very carefully.

For energy providers, the core challenge is balancing increasing consumer expectations, regulatory requirements, and sustainability goals while managing infrastructure designed for a very different energy landscape.

A changing relationship

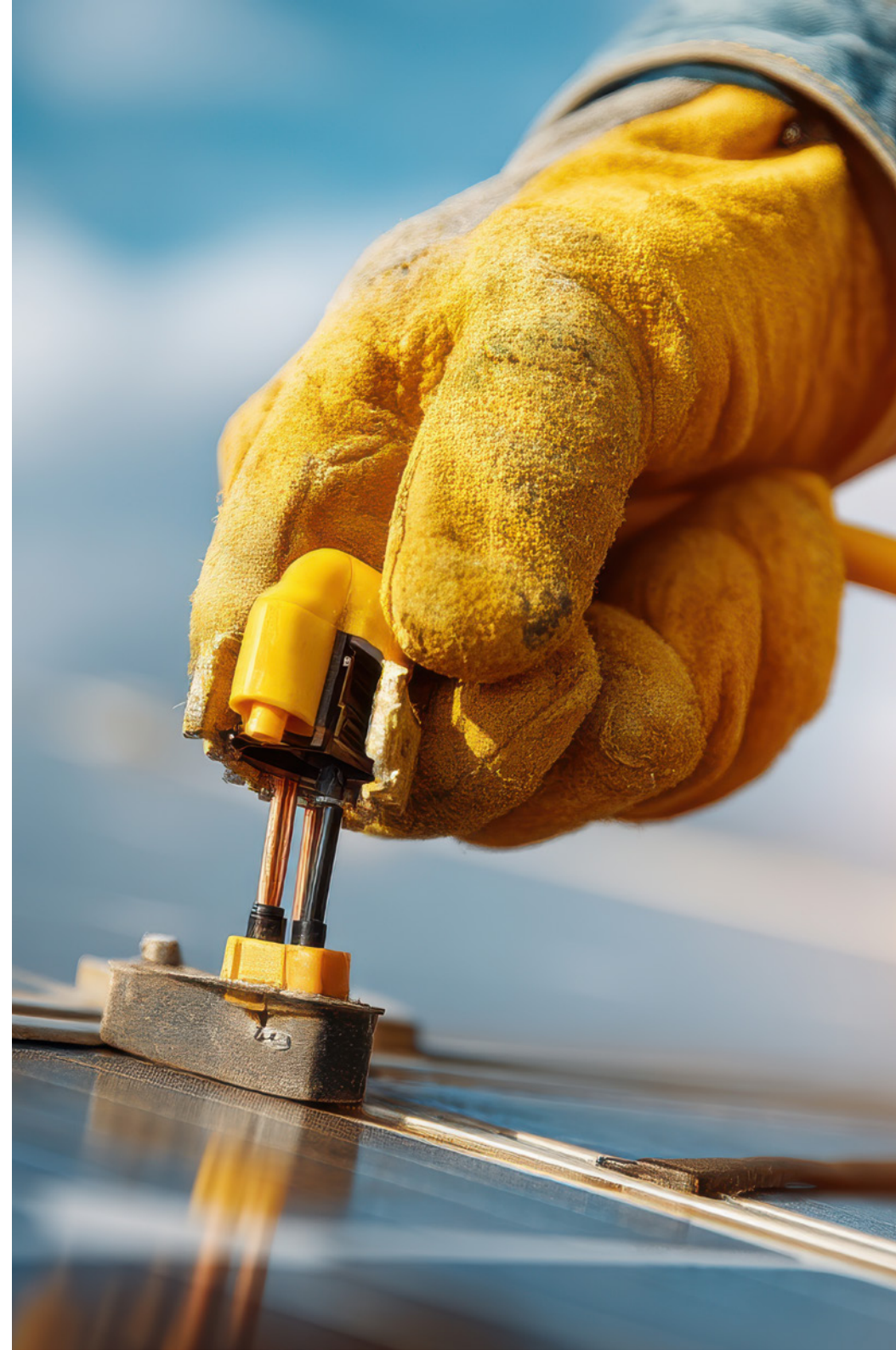
Consumers are becoming more technically savvy, willing, and confident to switch providers and increasingly interested in taking control of their energy future.

As people across generations become increasingly comfortable with technology as part of their everyday life, they've grown used to making decisions themselves and switching energy providers more quickly.

Isabella Lindholt, Global Operations and Delivery Director at Cognizant Ocean, thinks it's clear that consumers are more inclined to find

good solutions rather than wait for larger companies to adjust to their changing needs.

This shifting dynamic means energy providers must fundamentally rethink customer engagement. The experience customers demand from utilities is increasingly indistinguishable from what they expect from retailers or telecom providers.



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People are saying: 'I'm your customer —why can't you tell me what's right for me rather than using industry jargon like kilowatt-hours?' They're looking for simpler ways of engaging with suppliers to save costs.

Vinitesh Gaurav

Senior Consulting Director, Cognizant

Companies will spend up to six months pulling together disparate datasets before AI models can be layered on top.

At the heart of energy transformation lies a fundamental challenge: data fragmentation. Despite enormous quantities of information, most energy providers struggle to create a unified view of their operations and customers.

Most companies will have data lakes that reside in siloed areas and aren't necessarily connected. Before AI models can be layered on top, companies will spend up to six months pulling together these disparate datasets.

This fragmentation significantly limits providers' ability to understand their customers, optimise operations, and plan effectively for the future.

The prosumer revolution

Households will have a fundamentally different relationship with the grid in future.



Smart homes are not a new concept. An emerging idea of consumers evolving to become “prosumers”—people who both *consume* and *produce*, in this case, energy—is, however. This blurring of production and consumption will involve multiple interlocking solutions.

Energy flexibility is becoming essential to every utility provider's strategy for enabling consumers to participate in broader grid initiatives. With Cognizant's experience building the world's first independent flexibility marketplace and virtual power platform for the UK's largest utility, we are excited to be a core part of this shift for prosumers.

Solar has become much cheaper to implement. Heat pumps offer

approximately three times the efficiency of traditional panel ovens. And better home insulation also plays a role. The key shift will be the bidirectional relationship between households and the grid.

Today's grids are overloaded and haven't received sufficient investment to withstand the current electrification revolution. In a future with smarter devices that interact across households, communities, and even entire countries, the grid could finally become balanced.

The global implications are significant. Subsea cables are revolutionising how energy is traded and transported between units. Every part of that unit will sometimes consume and contribute to the greater grid. This brings a

more integrated view of electricity consumption and generation.

Some regions are already leading this transition. In markets like Australia, where one in three homes has solar panels and every second home has battery storage, consumers earn money from energy, rather than merely spending it.

While not all countries benefit from clear skies and abundant sunshine, they will all have their own advantages. Increasing interconnectivity in energy trading between nations is key, and it even has a peace dimension.

“With renewable energy and abundant generation, we get closer to zero-price energy, which grows prosperity and creates advances for humanity,” says Fiskå.

A pattern is already emerging between nations through subsea cables. It's revolutionising how energy is traded and transported between units.

A fresh approach to complex challenges

The Cognizant Ocean approach differs significantly from traditional consulting.

By looking at the full ecosystem, Cognizant Ocean is differentiating itself from traditional technology consulting that helps companies to determine solutions to identified problems.

Taking a holistic view of the challenges facing businesses, Cognizant Ocean then finds a solution that fits. By knowing the industry, the problems and the trends, the team can recommend the thinking, solutions and working methods to enable a business to shift for success.

Cognizant Ocean is organised into four verticals: blue food (aquaculture), blue transport (shipping logistics), blue energy (offshore energy production), and blue life (rivers and lakes of freshwater). This structure enables cross-pollination of ideas across seemingly disparate domains.

And despite its name, the concept extends beyond marine environments. The ocean economy is estimated to reach \$6 trillion by 2030, but this cannot be sustained without increasing sustainable practices.

Fiskå is now taking the same concepts from Ocean to bring them to land, grouping together players in the ecosystem who are used to working in silos. This collaborative approach is at the heart of Ocean's effectiveness.

Cognizant itself has seen this benefit through joined-up collaboration with engineering company Belcan, acquired in 2024, bringing together mechanical engineering and software engineering, including AI, that speak completely different languages, for real world benefits. And Fiskå wants to see more of this in the energy industry.

Success stories across sectors

The effectiveness of Cognizant Ocean's approach is evident in its track record of successful implementations across various domains.

The River Deep Mountain AI (RDMAI) project exemplifies this approach. Kicked off in 2024, this £5-million project focused on building open AI/ML models to better understand the health of our rivers. It pulls on multiple datasets from across the UK and ensures the models are scalable across different geographies, in the UK and beyond.

This solution addresses a significant operational challenge. Satellite imagery and AI are being utilised to find patterns in river health, with a high success rate.

This is a dramatic shift from the current approach of manually taking water samples for lab testing, and waiting for those results.

The impact of RDMAI is substantial. "This is going to cut down testing time and costs, and you could almost say revolutionise the way we understand the health of our rivers," enthuses Lindholt. The project is now moving beyond concept to implementation, with Cognizant Ocean preparing to release the first open-source models in summer 2025.

It's a new dawn for infrastructure optimisation. Raising AI capabilities are unlocking unprecedented opportunity.

By open-sourcing some of its AI models, Cognizant is demonstrating that it's been at this for quite a while. This type of AI implementation, unlike a chatbot, takes time and high-quality execution. Cognizant Ocean is addressing complex challenges in critical systems—infrastructure not to be tinkered with.

In the shipping industry, a marketing intelligence tool is applying similar principles to enhance decision-making. "In the spot market, vessels frequently travel empty between contracts, wasting fuel—their largest operational expense," explains Lindholt. "Our solution predicts the next contract's location, value, and length, allowing operators to make informed decisions about vessel positioning."

The business impact is substantial, and could increase freight earnings to \$8 million annually, through improved market insights that reducing idle time, while also delivering environmental benefits through reduced emissions.

These capabilities are also now being applied to optimise renewable energy generation. With AI and geospatial mapping, Cognizant Ocean is helping energy providers with the positioning of assets like wind turbines. Analysing wind patterns, terrain, and other factors, enables the identification of locations that could potentially double power generation efficiency—creating significant value while supporting the transition to renewable energy.

AI applications across the energy infrastructure

Cognizant Ocean's work with market-leading partners demonstrates the breadth of AI applications in the sector.

One of the world's largest renewable energy companies is already working with Cognizant Ocean to use AI for multiple critical functions.

It's the perfect use case for AI, replacing what would traditionally require huge teams of researchers.

AI can instantly compile and make sense of all these factors, producing recommendations on the best possible way to build and repair infrastructure.

AI is being used to:

- look into the future and understand what will happen with consumer, commerce, and industry demand.
- explore how to build infrastructure faster, track actual progress on construction sites and to understand supply chains
- understand which assets will be impacted by adverse weather, allowing for operational resilience
- evaluate land ownership complexities when building infrastructure
- identify potential issues like nature reserves, rare species habitats and historical sites, and calculating land acquisition costs
- evaluate regulatory frameworks, incentives, potential legal challenges, and the likelihood of local resistance to projects



Consumer control is the new era of energy 'prosumer' management

The transformation of energy providers from commodity suppliers to personalised service providers, thanks to AI advancement, represents a significant shift in the industry's future.

While self-service may be the goal for many consumers to manage their energy, Lindholt stresses that this is more about tailoring personalised customer experiences and solutions, recognising the diversity of customer needs.

The key to this transformation is a more data-driven approach. Tying together datasets provides a different customer view, allowing gaps to be identified and plugged. With AI, determining that someone is energy-conscious is more attainable. Companies can combine usage information with data that shows a

household recently installed windows through a governmental support mechanism. Therefore, the household may want to know about other solutions and grants.

Beyond individual households, the future may involve community-based approaches. Lindholt suggests that community production, storage and supply are closer than we realise—with community batteries to store energy and end users producing energy themselves through solar panels and heat exchange pumps. But this can't just happen individually—it must be managed across the board.

Making it happen

Transforming energy grid management requires a structured approach that addresses technological, organisational, and regulatory considerations.

Utility transformations are all interrelated. "Modernising the grid without looking at customer or user experience would be a mistake," says Gaurav.

A holistic perspective emphasises the connections between seemingly separate challenges. In one shape or form, customer experience, grid modernisation, energy transition, and workforce of the future all come together.

The implementation process typically follows several key phases:

1

Assessment of current data landscape and integration capabilities

Understanding the behaviors of end users requires more than just the datasets from an individual energy company.

2

Identify high-impact use cases where AI can deliver immediate value

Before RDMAI, Cognizant Ocean held multiple “art of the possible” sessions to push its team by pulling in domain experts in market understand and technical capability.

3

Develop the technical capabilities required for implementation

Through a strong partnership ecosystem, Cognizant Ocean is up-to-speed and has access to the latest solutions, ensuring customers are guided with the best options.

4

Address the cultural and organisational changes required for successful transformation

Successful grid modernisation requires more than just technology implementation. Organisations must develop new skills, adapt processes, and cultivate a data-driven culture that embraces innovation.

Accuracy, benefits and approach

Cognizant Ocean's energy grid solution creates remarkable value through its high accuracy and hybrid approach.

Currently, Cognizant Ocean is achieving 80-95% accuracy across several critical areas, including weather and energy output predictions, predictive maintenance, grid demand and storage optimisation, and environmental impact monitoring.

The benefits are substantial for energy providers:

- AI-driven energy forecasting optimises production, cutting inefficiencies and reducing wasted power.
- Predictive maintenance reduces unplanned downtime, lowering repair costs.
- Remote monitoring decreases the need for on-site inspections, reducing labour and logistics costs.
- Faster and more data-driven decision-making, improving investment returns and personalised recommendations for energy usage, green plans, and commercial viability,

This extends to marine ecosystem monitoring, ensuring minimal disruption to ocean biodiversity for offshore projects, and easier scalability for offshore wind farms, tidal, and wave energy projects.

By taking this whole system approach, our vision is to help energy and utility providers drive more and more green communities instead of a siloed approach of individual users.





Grid reimagination enables energy companies to reduce costs, prevent outages, eliminate waste, and ensure continuous reliability.

Consumers benefit significantly too:

- Optimised energy production reduces inefficiencies, leading to lower costs.
- Predictive maintenance cuts downtime and repair costs, which can translate to more stable electricity prices.
- Better grid integration prevents waste and ensures power is used efficiently.
- Faster issue detection reduces power outages by enabling quick repairs.

Consumers also gain access to more choices for green energy plans, allowing them to support sustainable power sources, and dynamic pricing models for money-saving from off-peak power usage.

This whole system approach combines real-time monitoring with forward looking analytics, pulling on the efficiencies of water systems and predictive capability of shipping logistics. It's a hybrid system, operating in both real-time and decision-support modes, combining real-time operational intelligence with data-driven foresight for optimised energy production, maintenance, and decision-making.

Imagining the grid of the future

The transformation of energy grid management represents more than a technological shift—it fundamentally reimagines how energy is produced, distributed, and consumed. The grid of the future will be more distributed, more responsive, and more intelligent.

The option to dig everything up and start again is simply not feasible for the grid. Continual adjustments and modernisation require smart decisions, maximising every tool available to ensure the best long-term—and big, cost heavy—decisions.

For energy providers, the path forward involves embracing this transformation while maintaining their commitment to reliability and service. Utility companies are always open to new challenges and innovative ideas, but they are constrained by regulatory needs and the fact that they're critical infrastructure with operational resilience requirements.



The best capital project execution, regulatory knowledge, local regulators, and partners like Google and NVIDIA, give an end-to-end holistic view for grid modernisation.

What Cognizant Ocean offers is a pathway through these constraints. As an ecosystem player, Cognizant Ocean brings the best of capital project execution, regulatory knowledge and local regulators. Partners like Google and NVIDIA complete the end-to-end holistic view of offerings for grid modernisation for any utility provider.

The ultimate vision involves seamless physical and digital systems integration, enabling more efficient, sustainable energy delivery. By creating digital representations of physical assets and systems, organisations can

test strategies and optimisations in a safe environment before implementing them in the real world, dramatically reducing implementation time from years to months.

This transformation becomes both desirable and essential as we face increasing energy demands, climate challenges, and regulatory pressures. Through the intelligent application of AI, design thinking, and domain expertise, Cognizant Ocean is helping to chart a course toward a more sustainable, efficient, and customer-centric energy future.

A look above the horizon

Cognizant Ocean is balancing immediate practical solutions with forward-looking vision.

The aim now is to deliver 80% feasible, ready-to-implement technology to clients and markets. The additional 20% requires organisations to look beyond what has always been to the horizon.

This balance of pragmatism and vision is central to Ocean's approach, giving a view above the horizon to show how we can better impact our surroundings and the environment, while using AI, data, and research.

"It can't all just be about business – we have to do it for the right reasons with the right impact." says Fiskå.

As grid modernisation accelerates, Cognizant Ocean's unique positioning at the intersection of mechanical engineering, software engineering, and AI provides a powerful platform for delivering that impact. By bringing together these disciplines, Cognizant Ocean aims to make a tangible change.

[Visit](#) our Immersive Room to explore further.

River Deep, Mountain AI (RDMAI)

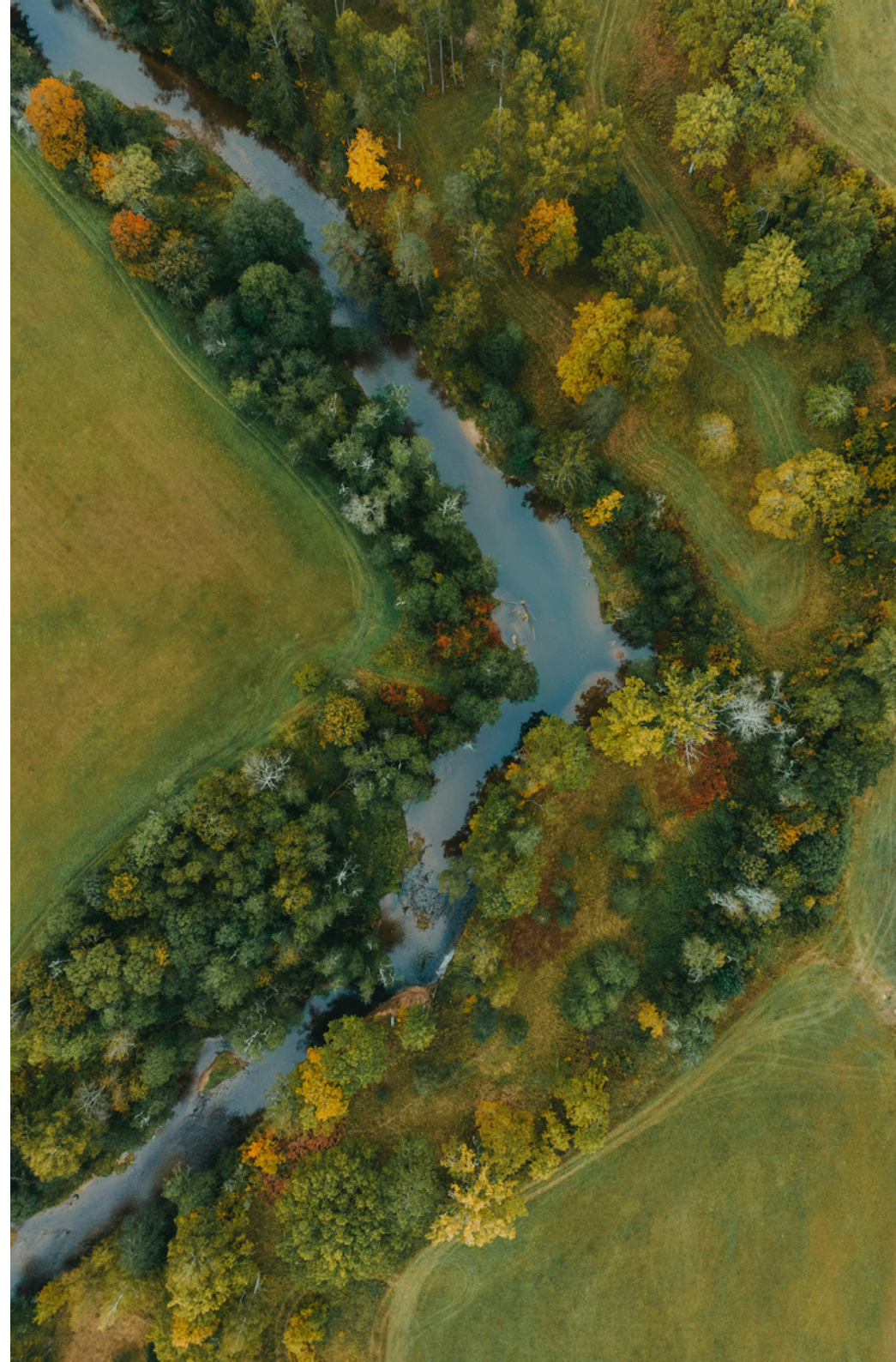
This groundbreaking £5-million project, funded by the Ofwat Innovation Fund, revolutionises river health monitoring across the UK. With 85% of English rivers currently failing to meet ecological health requirements and as many as three rivers in four posing risks to human health, the need is urgent. Traditional methods require technicians to physically collect water samples, transport them to laboratories, and wait days for results—a costly, time-consuming process with limited coverage.

RDMAI eliminates these constraints through collaboration with seven water companies and partners including Google, Northumbrian Water, Xylem, and The Rivers Trust.

The project applies advanced AI and ML models to Earth Observation data and satellite imagery, detecting pollution, algal blooms, and other health indicators with remarkable accuracy.

The 18-month innovation project has already won the Utility Week Awards 2024 Collaborative Excellence Award. When fully implemented, RDMAI could monitor all UK waterways in near realtime, enabling faster responses to environmental threats and more efficient resource allocation — demonstrating how AI can transform environmental management without extensive new infrastructure.

[Find out more](#)





Market intelligence tool for shipping

In the shipping industry's highly competitive spot market, vessels frequently travel empty between contracts, wasting fuel—their largest operational expense—and sacrificing revenue during idle periods. Cognizant Ocean's Market Intelligence tool tackles this inefficiency through predictive AI.

The solution was measured to lead to significant business value: improved market insights, reduced idle time, and increased freight earnings that could reach \$8 million (£6.2 million) annually, reducing costs and minimising risks.

The system analyses historical patterns, current market conditions, and global trade data to forecast optimal vessel positioning. Reducing unnecessary transit and idle time delivers both cost savings and environmental benefits through reduced emissions.



Stig Martin Fiskå

Global Head,
Cognizant Ocean

Stig Martin founded Cognizant Ocean in 2022 to drive systemic change in asset-heavy industries through innovative technology. With over 20 years of experience in digital transformation, Stig leads Ocean's vision to balance implementable solutions with forward-looking innovation across industries.

He specialises in creating cross-disciplinary teams that bridge mechanical and software engineering to deliver tangible environmental and economic benefits.



Isabella Lindholt

Global Operations and Delivery Director,
Cognizant Ocean

Isabella oversees the operational delivery of Cognizant Ocean's transformative solutions across all verticals. She brings extensive experience in implementing AI and satellite imagery technologies to solve complex environmental and industrial challenges.

Isabella has been instrumental in the development and delivery of groundbreaking projects including River Deep Mountain AI, focusing on scalable, open-source approaches that drive both business value and sustainability outcomes.



Vinitesh Gaurav

Senior Consulting Director,
Cognizant

Vinitesh leads the utilities consulting group for Cognizant across EMEA, bringing 17 years of industry expertise to energy transformation initiatives. His work focuses on four strategic pillars: customer experience, grid modernisation, energy transition, and workforce of the future.

Vinitesh specialises in helping utilities navigate regulatory environments while implementing innovative solutions that balance operational resilience with emerging consumer expectations.