

Best of Business AI

OceanMind case study



More than 70 percent of Earth's surface is covered by ocean, teeming with seafood that billions of people rely on as their primary protein source, according to the [Food and Agriculture Organization of the United Nations](#). The [UN says](#) that more than 10 percent of the world's population relies on the wild-capture seafood industry for their livelihoods. The ocean is also crucial for producing oxygen and regulating climate.

But the ocean is in a precarious position. The [UN estimates](#) that 30 percent of the world's fish stocks are overfished, which means fish are caught faster than their species can replenish. An additional 60 percent are on the brink, sitting at the maximum level for biological sustainability.

Illegal, unregulated, and unreported fishing—fishing out of season or in a protected area, using banned equipment, or catching more than a quota allows—is one of the causes of the overfishing crisis. Governments, suppliers, and NGOs are well aware of the problem, but the vastness of the ocean makes it difficult to enforce regulations.

UK nonprofit OceanMind is trying to make it easier to protect the world's fisheries. It collects billions of data points about fishing vessels' locations and activities, from satellite and optical imagery to radar and infrared data. Based on this data, OceanMind is using AI models to track vessels and flag potentially illegal behavior. Thanks to the power of the cloud, data from around the world is processed in near real-time.

Once OceanMind has identified suspicious activity, it provides the information to governments and international organizations like INTERPOL to help them catch offenders. It also provides information to seafood companies to help them source from compliant and sustainable suppliers. The goal is to create a culture of compliance, where both the regulator and the regulated industry are working together to protect the future of ocean resources.

And OceanMind CEO Nick Wise isn't thinking small. He has big plans for the use of his organization's AI technology, including applications that identify human rights abuses on fishing vessels or map emissions from the shipping industry.

"There are possibilities right now as big as the ocean itself," Wise says.

A journey to AI success

Strategic partnerships

Training AI models requires raw data, AI expertise, and knowledge of the process in which AI will be used. Organizations can improve their chances of success with AI by partnering with other entities to share these resources.

OceanMind partnered with government organizations and seafood companies to create their AI model for fisheries compliance. Government partners, such as those in Thailand and Costa Rica, provided data that was used to train the model, including vessel tracking data and local fishing regulations. Governments and industry partners also contributed information about the way fishing vessels operate, which data scientists used to make key decisions about *how* to train the model.

OceanMind also partnered with Microsoft as part of the AI for Earth grant program to obtain AI tools and infrastructure.



Collaboration between data scientists and subject matter experts

To achieve its AI goals, OceanMind hired data scientists, knowing that their expertise would be needed long-term. They worked closely with fishery experts to train the AI system, a collaboration that was critical to their success. Without fishery specialists offering close guidance, the AI would have no idea what to look for. As Wise says, "You need to bring the domain expertise together with AI expertise. Having either one of these things independently won't give you the full impact that you want to achieve, but bringing them together will really make a fundamental difference."



Culture

Breaking data siloes

A crucial step for training the AI model was to aggregate the many data sources into a single place. The data that OceanMind collected alongside its government and industry partners ran the gamut from structured data like GPS and cellphone signals to unstructured data like satellite imagery, infrared data, and written fishing regulations. All of these needed to be linked together to provide a full picture.



Strategy

Senior Fisheries Analyst Natalie Tellwright says, "There are over half a million vessels transmitting on AIS at any given moment, and tens of thousands of vessels transmitting on VMS. This produces millions of data points on an hourly basis, which is way too much data for anyone to manually monitor and look through. So AI has helped by sifting through all of that data, and picking out the key areas of activity that are of most interest."

Keeping experts in the loop

The role of fishery experts didn't wrap up once the AI solution was running. OceanMind made a conscious decision to keep its analysts closely involved. When the AI identifies possibly illegal activity, it surfaces an alert to one of OceanMind's analysts for further review, rather than automatically notifying any regulatory agencies on the ground. The team carefully analyzes and contextualizes the AI output before any action is taken. Training analysts to understand and use the AI system was an important step.



Scale

AI oversight and improvement

OceanMind realized that its AI model would not be perfect right away, so employees would need to put in time and effort to monitor and improve it. In the early days, false positives and false negatives were common. Analysts would compare the AI outputs to actual fishing logbooks from government partners to identify ways that the model needed to be further refined. This approach helped increase the AI model's accuracy significantly.



Scale

The need for continual monitoring and improvement doesn't end once the model is highly accurate. AI models need to be regularly updated to remain relevant and valuable. OceanMind is constantly re-training their models with new data, and its analysts make note of inaccurate readings so that data scientists can investigate and address issues.

As Wise says, "We need to be sure that we're providing the right information to people at the right time, and that we're not misleading them," he says. "From that point of view, we are constantly questioning what information is being produced by the solutions, whether it's relevant, whether it's correct. And this is one of the reasons why we have experts that can translate between the information that the solution is providing and the end users themselves."

Expanding to additional AI applications

Thanks to the lessons learned during their first AI implementation, OceanMind has the ability to start using additional AI models for different applications. It is starting to use AI to detect indicators of human rights abuses on fishing vessels and illegal salvaging of underwater war graves. Next, OceanMind hopes to use the power of AI to map greenhouse gas emissions from the shipping industry, then use that information to promote policies that would mitigate the effects of climate change. Undertaking the journey to implement AI can be daunting, but the difficult work of creating the initial system can pay dividends for future endeavors built on a base of established data, skillsets, and partnerships.



AI in action: A more protected ocean

OceanMind is helping make a difference for its partners across the world. With the power of AI, its system tracks tens of thousands of boats across every ocean basin and has the capacity to track millions.

OceanMind gives law enforcement agencies in Thailand and Costa Rica information about potential violations so they can investigate them further. OceanMind's insights also help countries prevent offenders from entering their ports in compliance with the Port State Measures Agreement. In addition to providing government partners with information they've gleaned from the AI solution, OceanMind is also training them to use the AI solution for themselves.

Thailand is one of the world's major seafood producers and has made tackling IUU fishing a national agenda. Its partnership with OceanMind is "a match made in heaven," says Kanit Naksung, Director of Fish Quarantine and Fishing Vessels Inspection Division for Thailand's Department of Fisheries. "I think Thailand right now is one of the leaders for implementation of the Port State Measures Agreements because the Department of Fisheries is the first government agency that employed the AI," Naksung says. "When I talk to people from outside the department, they recognize that Thailand has done a great job. This can be done only with the help of OceanMind. I think Thailand has become a global model for fighting illegal, unreported, and unregulated fishing because of this."

It's not just governments that benefit. Thanks to OceanMind, retailers like Sainsbury's now have increased visibility into the supply chains of seafood they sell, ensuring their products aren't contributing to the overfishing crisis.

The solution has also had a huge impact on OceanMind's analysts. Previously, OceanMind's analysts spent hours upon hours going through datasets for every vessel to identify suspicious behavior. Now, that same process takes seconds. AI flags suspected non-compliance, freeing up the analysts to focus all their efforts on investigating those cases. Tellwright says "There's been quite a fundamental shift in our day-to-day activities away from the manual, clicking through data entries into actioning those and supporting our partners."

The AI solution not only advances the mission to prevent illegal fishing but gives analysts the bandwidth to pursue other goals like preventing labor abuses.

"Without AI we wouldn't be able to scale our organization neither as far as we have, nor to our ambition of full global impact," Wise says. "Without being able to analyze the global data sets and see everything that we need to see within the world to observe compliance, we wouldn't be able to fulfill our mission. And so, AI is essential to this future growth and this global impact."

Endless possibilities

The future is bright for OceanMind, with an AI-empowered system capable of pushing into new areas of exploration and a dedicated commitment to improving our ocean and our world.

"It's hard to overstate the importance of fish," Wise says. "A collapse in fish stocks and a failure to manage fishing sustainably would lead to a food security crisis and result in significant poverty around the world."

To achieve his vision of using AI for good, OceanMind is making its first API available to anyone in the world through Microsoft's AI for Earth initiative.

And the potential for additional applications is enormous.

"Our first application was to automatically identify fishing activity," Tellwright says. "And once we successfully did that, it was like a little firework going off in everyone's minds. Everyone was like, 'Wow, what else could we automate? What else could we automatically detect? And how could we apply this?' From the get-go onwards, it's just been, 'Wow, almost endless possibilities of how we could apply this.'"



Nick Wise

CEO, OceanMind



Kanit Naksung

Director of Fish Quarantine and Fishing Vessels Inspection, Thailand Dept. of Fisheries



Natalie Tellwright

Senior Fisheries Analyst, OceanMind

Learn how other companies have used AI successfully on the [Best of Business AI site](#) and the [AI Business School](#). The AI Business School includes modules on:



Defining an AI strategy



Enabling an AI-ready culture



Responsible AI



Scaling AI in your organization



Enabling business users with AI

AI Business School

Learn tips and strategies for leading in the age of AI with our online class

