



Maximize Efficiency and Safety Through Optimized Weather Routing

Copenhagen, Denmark

"I have been using DTN since 2009 on board the vessels I have sailed. It really had impact in more accurate passage planning, engine/power utilization and fuel saving."

Captain Petkov Albert

Copenhagen is the melting pot for the shipping industry; it's where all the new ideas start. It's therefore not surprising that the success of The Ship Performance Optimization System (SPOS) started in the Danish capital.

DTN experts went to a leading shipping company in the container business with a proof of concept. This triggered an operational research project with a similar company and, over 18 months, we developed and proved the concept.

We kept the original company involved in our developments throughout the research project: they have been a loyal and challenging client ever since.

DTN^o

Considering the fuel savings alone from optimized routes are typically between \$5,000 to \$15,000, there are clear opportunities for companies to save money.

Sailing an optimized route

This spirit of innovation continues today. DTN currently works with another leading Copenhagen-based shipping company, using weather routing to help them sail optimum routes.

Using accurate weather forecasts, ships can sail at the right speed to get to the port in time. It involves calculating the optimum speed, based on the ship, fuel usage and the growth of shells and seaweed on the hull to meet the ETA. Considering the fuel savings alone from optimized routes are typically between \$5,000 to \$15,000, there are clear opportunities for companies to save money.

Until recently, the dry cargo division at this shipping company wasn't using SPOS. Although both the tanker division and the internal performance system used DTN data, the dry cargo division was using another weather routing system. However, a drive towards greater continuity between divisions and the need for the company to be in a better position to adapt in the future meant that this needed to change. They also needed a more proactive service. If things go wrong, they needed their partner to be proactive and let them know what to do in a situation.

Work towards a more proactive service

To start, the company went to the incumbent supplier, requesting a different service with the data in a different format. The incumbent supplier said no. The shipping company then spoke to DTN, who said they could provide the service required.

At the start of a voyage, the shipping company will instruct both the vessel and the weather routing company to maintain the optimum speed. DTN monitors that ship to make sure that it maintains the set speed. If she doesn't, they go back to the captain and say: you're going to fast or too slow, depending on the scenario.

Sailing on the edge, while keeping the voyage safe

Weather routing takes data from the wind, waves and current conditions, the ship specific speed loss profile and, of course, the ports that the vessel is sailing between. The priority is to help vessels avoid difficult weather conditions so that they can maintain their speed, normally by sailing on the edge of what is acceptable. For the ship, the crew and the cargo. This is optimized weather routing: sailing on the edge, but keeping the passage safe. Otherwise, you end up just sailing in really good weather, but the passage will take too long and cost too much in fuel. But the optimum route depends on the KPI's of the client. So it can vary from route to route.

After gathering all the data, the Master Mariners and Meteorologists of DTN work to determine the best route and the potential alternatives, establishing what each route will mean for the voyage duration, ETA and the total cost.

It starts with planning the Initial Voyage 24 hours before departure. This means the company knows upfront the options and the numbers that support each option, including the pros and cons of each route.

"DTN helps our Masters to safely navigate the globe with minimal fuel consumption and emissions, by calculating and recalculating optimum routes and anticipating oncoming weather and sea conditions."

Karel van Zijl,
Spliethoff

Then, every single day for the duration of the voyage, DTN will recalculate whether or not that particular route is still the best route or does it need to be adapted. This is a big difference from the much of the competition. DTN does the recalculation no matter what because small changes in weather can change the whole route and long term forecasts are less accurate.

Perfect operational efficiency

Tomorrow's forecast is 99% likely to be accurate, up to five days ahead accuracy is in the 90%+ range. But after five days it drops to 80% and after nine days it drops to 60% accuracy. This means that if you use the starting data for a twenty-day voyage, after nine days it's not likely to be accurate enough. Recalculating every day pushes the nine days forward and gives a better picture of what will occur in the short term.

Since the dry cargo fleet started using DTN, the service already shows signs of saving money. Helping to managing the speed effectively is saving money on the fuel bill and making it easier and safer to plan your route from port A to port B.

More companies are now starting to ask the same questions, regarding using constant, set speed in the same way. The word is out and everyone is now diving into this particular topic. In many ways, steady, set speed has become the description of perfect operational efficiency.

The future of weather intelligence for shipping

Increasingly, shipping companies are looking at linking the logistics further into the chain: both before and after the journey. There is a whole life before starting a voyage and also at the end. Currently, there are so many different parties that don't communicate with each other and have different interests. Adding more port logistics and port information to existing weather routing will start to bring this together.

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