



Better connectivity, fewer emissions:

How Hologram and Intelligent Cargo
Systems are helping shipping go green



Your phone, your coffeemaker, your favorite jeans — most started their life far across an ocean.

In fact, 90% of the world's trade is carried by sea at some point, with over 50,000 merchant ships in service.

Container ships sail between ports for tightly scheduled rendezvous, when they must be unloaded and reloaded as quickly as possible. That takes a highly orchestrated, labor-intensive process with onboard and shore crews working together.

And since ships spend an average of 23.5 hours in port, they must also factor in shift changes, breaks, and other “human” factors.

All the while, ports try to minimize how long their berths sit empty (and unproductive).

So how long does it take to unload and load a ship?

Fleet management teams make rough estimates based on the number of containers and gantries (cranes), available labor, and the port's own average productivity. But lots of things can torpedo those estimates. Dangerous cargo requires special handling that takes longer. Shift changes can temporarily grind operations to a halt. Another ship may divert resources.

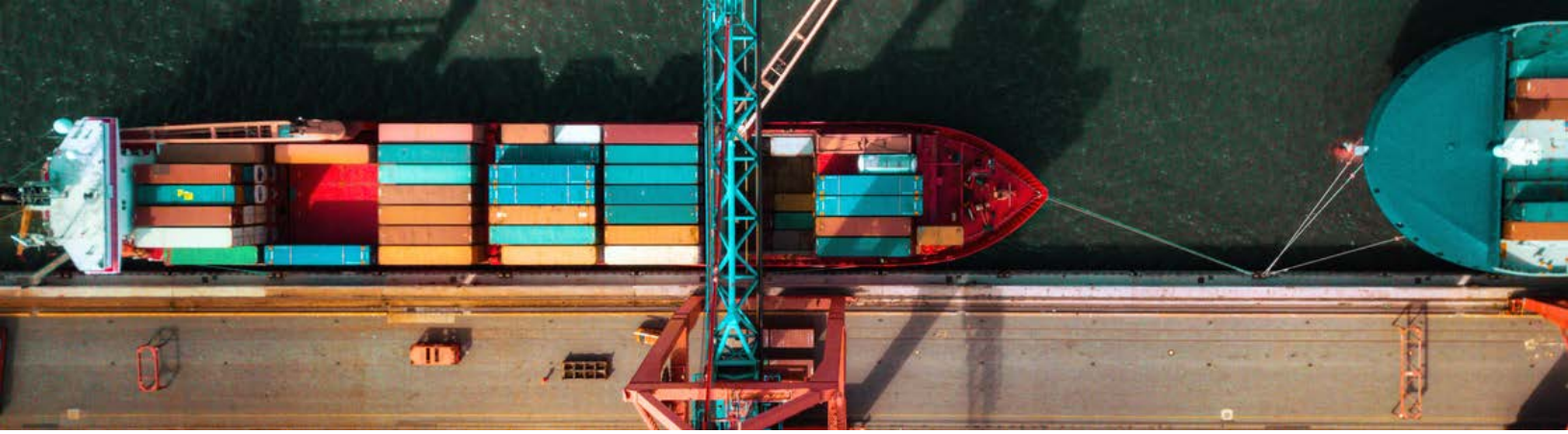
If a ship is late to its assigned slot, it faces fines — while forcing every other scheduled ship to wait offshore, burning fuel.

The whole thing ripples up and down the supply chain.

But a delayed ship has other problems, too. If a ship takes longer than scheduled to load its cargo, it must then hurry to reach its next port on time. And just like a car, a faster-moving ship burns more fuel.

How long does it take to unload and reload a ship? It depends:

- Number of containers
 - Whether any containers require special handling
 - Number of working gantries (cranes)
 - Each gantry's productivity
 - When shift changes or breaks occur
 - Whether or not ships are in adjacent berths
-



Water-based transport, air-based effects

The shipping industry is under intense pressure to get greener. And it is, largely. Ships are growing more efficient and the most noxious fuels are being phased out. However, the industry's sheer growth is outpacing its efficiency gains.

The Fourth International Maritime Organization's Greenhouse Gas Study found that the industry's greenhouse gas emissions rose by nearly 10 percent between 2012 and 2018 — and are on track to increase another 50 percent by 2050. Today, the shipping industry accounts for about 2.89 percent of all global emissions, but that is expected to reach 10 percent by 2050.

So how can the shipping industry clean up its act — while ensuring goods keep moving?

Like so many things, data holds the answer.

Shipping must get smarter

The industry has launched numerous initiatives aimed at using data to make shipping more efficient and reduce the environmental impact. One of these, port call optimization, applies machine learning, artificial intelligence, and other technologies to one of the world's oldest industries.

Enter Intelligent Cargo Systems.

“Data is critical to how we operate and move forward.”

KITACK LIM, SECRETARY GENERAL — INTERNATIONAL MARITIME ORGANIZATION

Intelligent Cargo Systems: a better way to predict when ships can sail

Intelligent Cargo Systems is one of the leaders of the port call optimization movement. They developed CargoMate, the first global, real-time containership cargo monitoring system. On-board crews enter cargo data into the intuitive CargoMate interface, which uses proprietary algorithms to more accurately predict when the loading process will finish. Shore-based teams use the CargoMate dashboard to access real-time data to see how operations are progressing. With that intelligence, they can shift resources to boost efficiency.

Ships using CargoMate are often able to sail early — meaning they can sail sooner to their next destination.

In turn, they save fuel (and money) while reducing their emissions.

Challenge: reliable connectivity in every port on every continent

However, shipping poses unique connectivity challenges.

As Chris Jones, CEO of Intelligent Cargo Systems says, “Ships are effectively gigantic Faraday cages,” meaning that Wi-Fi simply isn’t a viable option.

But relying on cellular data poses its own problems. After all, a typical ship will visit several ports on a voyage — each with a different set of cellular carriers. Reliable connectivity proved to be the single biggest challenge for Intelligent Cargo Systems.

“Ships don’t just go to one country and stay there for a while. Every time a ship goes to a new port, it’s usually in a different country, with different requirements on the local cell network.” Jones says.



The solution: single-SIM simplicity

Hologram's global SIM card serves

200 countries

550+ carriers

100,000+ happy customers

When Intelligent Cargo Systems discovered Hologram, they found their answer. Hologram developed a Global SIM that can be used with 550 different carriers covering 200 countries. This Global SIM and IoT connectivity platform are hardware-agnostic, so they can install the same SIM card in every single device it produces. And those devices can connect as soon as they hit port — no matter where they are.

Intelligent Cargo Systems decided to field test the Hologram Global SIM side-by-side with its existing solution. Jones says, "We put a Hologram SIM card in one of our test devices, put it onboard a ship for a good couple of months, and just let it go. We didn't have a single drop of signal in any of the ports." The previous SIM did not fare nearly as well.

We used to discuss changing carriers "quite a lot. When we made the decision to move all of our existing ships to Hologram, the discussion stopped. We don't need to discuss it because it's working as it's supposed to."

CHRIS JONES, CEO — INTELLIGENT CARGO SYSTEMS



How Hologram helps Intelligent Cargo Systems' customers stay connected (and do more)

After the successful field test, Intelligent Cargo Systems decided to replace all their existing SIMs with the Hologram Global SIM. The result has been an improved experience for everyone — the Intelligent Cargo Systems

Simple connectivity, no matter what

With Hologram SIMs, it no longer matters where the CargoMate devices go. As soon as they arrive in port, they connect and begin instantly streaming all the data needed to predict the ship's next departure.

Redundancy that chooses the strongest carrier

The Hologram SIM is designed to choose the best available carrier. Sometimes that means that a CargoMate device may connect to a couple of different carriers before settling on the one with the strongest signal. That redundancy ensures onboard crews stay connected to their shore-based counterparts.

Per-gig data pricing that saves money

Rather than buying blocks of data that may expire unused, Intelligent Cargo Systems pays for only the data they use, and only after the Hologram SIM cards are activated. That gives them flexibility to develop and ship devices while minimizing costs for them and their customers.

“ It’s a joy to be able to see where the ships are going, the conditions that they’re facing, and what’s actually happening on the ground, and to get that data coming back to us. It’s so valuable, not just for us to improve our products, but also for our customer so they can provide a better quality of service to their customers.”

CHRIS JONES, CEO — INTELLIGENT CARGO SYSTEMS

Focus on better customer service

Before Hologram, many CargoMate support issues were actually connectivity issues. Now, the Intelligent Cargo Systems support team can rule out connectivity and get right to the customer’s actual problem. And when they need support, the Hologram team, “is pretty quick to answer our queries, which is really good for us. It’s been a very good customer experience,” Jones says. Intelligent Cargo Systems plans to begin using Hologram’s API data to further improve their customer service.

Real-time data that identifies where ships are

Through the Hologram Dashboard, the Intelligent Cargo System team can see which ships are in which ports, and which carriers they’re connected to. As Jones explains, “It’s a joy to be able to see where the ships are going, the conditions that they’re facing, and what’s actually happening on the ground, and to get that data coming back to us. It’s so valuable, not just for us to improve our products, but also for our customer so they can provide a better quality of service to their customers.”



Intelligent Cargo Systems' CargoMate helps shippers get more efficient

Get connected to start streaming data

CargoMate end users can simply turn on the devices, connect, and instantly stream data — no need to identify where they are or which carriers are available. And if something goes wrong, the Intelligent Cargo Systems team can rule out connectivity and focus their troubleshooting efforts.

Identify opportunities to sail early

CargoMate's proprietary algorithms can identify when the loading process will complete based on the cargo, port productivity, and other factors. When CargoMate estimates that a ship can depart ahead of schedule, it notifies on-board and shore-based teams. That means that tugboats can be standing by as soon as the last container is loaded. And when a ship sails early, it can travel more slowly, saving fuel and reducing emissions.

Benchmark every port and terminal to find inefficiencies

Fleet managers use CargoMate data to identify trends and potential inefficiencies. For example, if they notice that one port is prone to delays, they can examine their processes and work with the terminal staff to improve procedures. The savings quickly add up across the fleet.

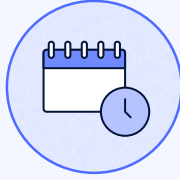
Improve cooperation between crews onboard and ashore

CargoMate helps crews stay in sync, whether they're working on ship or shore. With access to real-time data, both sides can better anticipate the other's needs and ensure that the right equipment and teams are in place for a speedy, efficient turnaround.

What happens when a ship sails early?



A ship began loading cargo at 12:40 PM



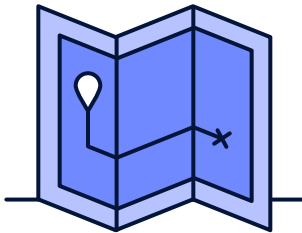
Scheduled departure: 00:00



247 containers to load in 11 hours, 20 minutes



= must load 21.8 containers/hour



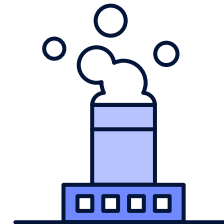
CargoMate noted that since productivity was > 21.8 containers/hour, the ship could sail early — and alerted the fleet management team

The ship departed at 21:15, nearly 3 hours early

That meant it could sail its 560-mile route at 13.95 knots instead of 15.07 knots



Fuel costs



CO2 emissions

Ship's savings on that voyage

\$1,600

12 tons

Estimated annual ship savings

\$14,000

1,050 tons

Estimated annual savings across 40-ship fleet

\$5,000,000

36,000 tons

Source: 'Finding the missing link for Port Call Optimisation' by Intelligent Cargo Systems

Setting sail to a more efficient, greener future

Today, Hologram SIMs have already made over 300 port calls with CargoMate as Intelligent Cargo Systems works with several of the world's largest ships, connecting with 15 unique carriers some months. But that's only the beginning.

“We're looking forward to sending the Hologram SIMs to some really weird places.” Jones says.

And in every one of those destinations, Jones says, Hologram's expanded 4G service presents new opportunities for our customers to do more things with the device,” particularly with more data-intensive reporting that will give fleets more insight into their operations.

More intelligence will lead to smoother, more efficient supply chains that keep the economy humming. And the ships at the heart of it all will produce fewer emissions — and a cleaner, healthier world for everyone.



Want to try Hologram? Contact us.

We're ready to help you deploy your cellular devices anywhere in the world.

SALES@HOLOGRAM.IO