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Creating visibility

to improve reliability in container shipping
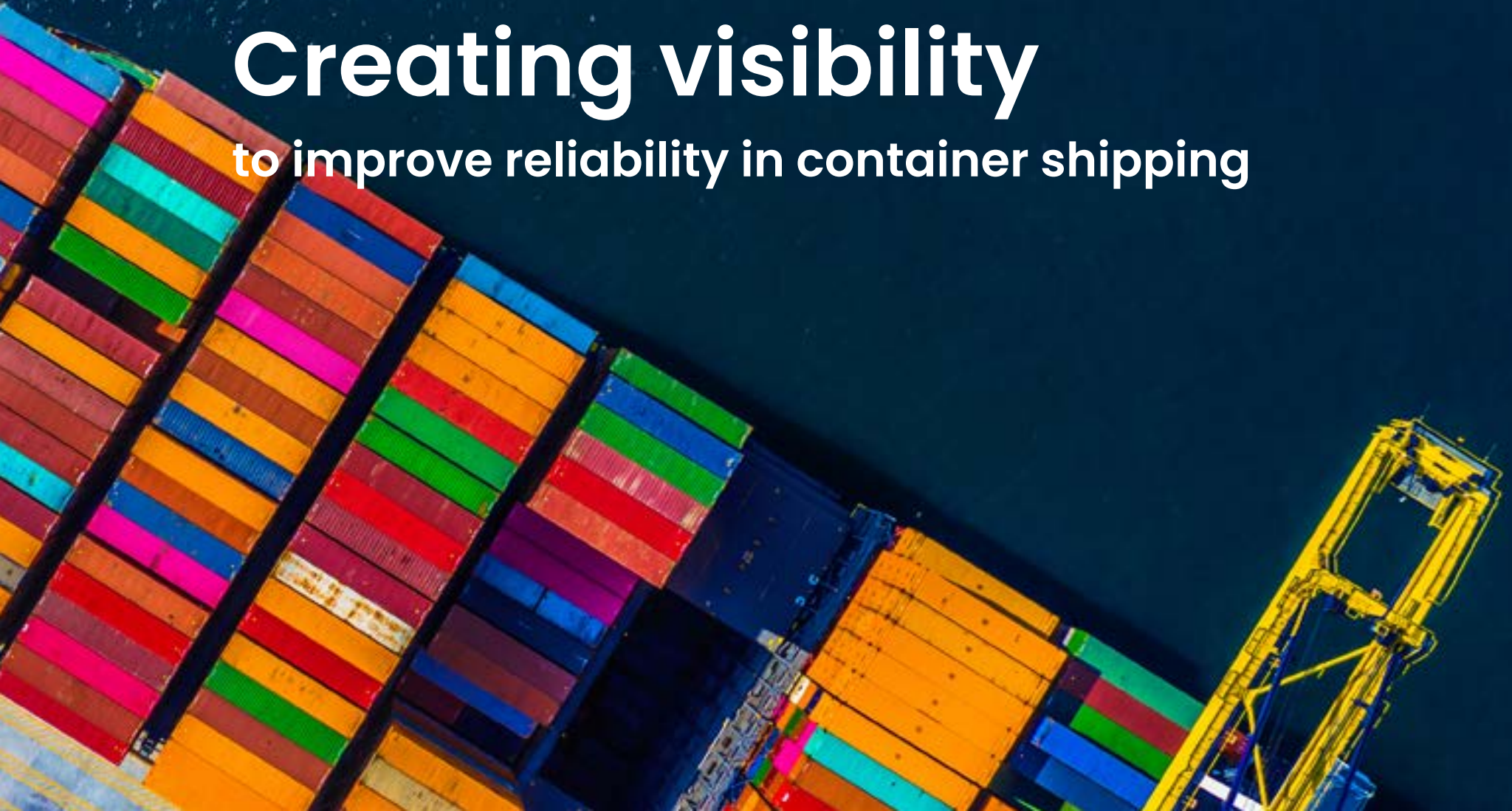
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Container shipping has a visibility problem

Lack of visibility into container whereabouts leaves cargo owners at a disadvantage

Unexpected delays have a negative economic impact

Reliability of global supply chains has a direct impact on business performance for shippers. Timely arrival of goods is vital to maintaining supply levels for every industry. Unexpected delays are most acutely felt in industries that ship vulnerable goods such as pharmaceuticals or perishable items. But for any business that relies on just-in-time inventory management, special events or promotional activity, unexpected delays can have a negative impact on their bottom line and ability to compete, not to mention their relationships with customers.

According to the International Chamber of Shipping, 90% of world trade is carried out through ships[1]. With the average global schedule reliability of container shipping for some trades as low as 50%[2], delays have a negative economic impact not only on individual shippers, but on global economic productivity. While delays can't be prevented entirely, proactive notification of delays would enable shippers and their consignees to prepare for the "unexpected" by making alternative operational plans.

DCSA envisions a digitally interconnected container shipping industry. Our mission is to be the industry's collective voice, setting the technological foundation for interoperable IT solutions. Together with our member carriers, DCSA creates vendor-neutral, technology-agnostic standards for IT and non-competitive business practices. By working towards the widespread adoption of these standards, our aim is to move the industry forward in terms of customer experience, efficiency, collaboration, innovation and respect for the environment.

[1] https://www.ics-shipping.org/wp-content/uploads/2014/08/shipping-world-trade-and-the-reduction-of-co2-emissions-min.pdf
[2] SeaIntel Maritime Analysis, Global Liner Report July 2019 as summarized by Verband der Chemischen Industrie (VCI)

The shipper's point of view

over 70% of survey participants
want a carrier that offers more

Looking to other industries for a good customer experience

Reliability and responsiveness are key

Shippers want to be informed and in control of what's happening to their shipments. In 2020, DCSA conducted a survey of logistics decisionmakers in shipper organisations who confirmed that visibility is key to deciding which carrier they will use. Over 80% of the respondents used multiple suppliers for ocean transport and 69% reported varying satisfaction levels with different shipping suppliers.

Over 70% of survey participants said[3] they would likely switch to a carrier that offered:

- **High schedule reliability**
- **Guaranteed arrival times**
- **Proactive communication around exceptions and better responsiveness**

Survey respondents also said container shipping should emulate more digitally advanced industries such as airlines, banking, ecommerce and hotels, all of which provide a superior experience to customers as a baseline rather than as an exception to the rule.

Airlines
Customers are fully apprised of the exact price, route and schedule of a flight before they book. Flights can be tracked in near real-time. If there are delays, flights can be rescheduled on-the-fly to accommodate the customer's schedule.

Banking
Customers have 24/7 online visibility into their accounts and quick access to their money for paying or investing through a host of web-based applications. Account features are clearly stipulated, and customers are rarely surprised by current balances or fees.

E-commerce
Online retailers have seen impressive growth in recent years, representing 14.5% of total retail sales in the U.S.[4] This is in part due to their ability to offer a satisfying experience from end to end— from extensive product details during the purchase process to online tracking and tracing of packages. Customers can even select when, how and where they want their purchases delivered and paid for.

Hotels
Hotels offer guaranteed availability, pricing and facilities based on dates of stay. Details about the stay can be altered based on the guest's needs. Every process from booking to cancellations can be managed online by the customer. During the booking process, some even offer add-on services based on the customer profile to increase revenue and customer satisfaction.

[3] DCSA survey in Q4 2020 to North American shippers; survey respondents comprised professionals involved in a broad range of supply chain management functions
[4] Forbes, "3 Emerging E-Commerce Growth Trends To Leverage In 2020"

A lack of communication is a lack of visibility

Containers are lost from view during much of the end-to-end journey

Interoperability is needed to enable end-to-end data visibility

Container shipping is currently unable to compete with the customer experience provided by digitalised industries due to a lack of data accessibility. For example, track and trace data is not aligned or digitised across carriers and their logistics partners, which means that multi-modal transport chains often appear as "black boxes" to customers, and containers are lost from view until they arrive at certain points in the supply chain. This problem is compounded by inaccurate estimated time of arrival (ETA) data, especially when ETAs change and cargo owners are not proactively notified. **In the DCSA North American Shipper survey, better communication from container carriers was a key improvement area cited in half of the responses.**

EDI and other methods of digitalisation have enabled some carriers or third parties to provide essential data to shippers (and their freight forwarders) regarding ETA, or revised dates of arrival. However, in many cases, the data quality is questionable due to the lack of a common language across carriers, or even within a carrier. Also, the mechanism for informing customers of changes is often impractical, requiring shippers to search for the latest ETA across multiple carrier web portals. This is not only costly and time consuming for the shipper, it is virtually impossible for companies that ship thousands or more TEUs per year.

Digitalisation within a single carrier's operation can improve on the above scenario to a certain extent for shipments that are confined to a single mode and carrier, but many shipments are executed across multiple carriers and modes of transport[5]. And with multi-model shipments, visibility is blocked due to a lack of interoperability between different IT solutions. There are currently limited pathways for digitised data to travel freely across the end-to-end supply chain. Messages are blocked as systems and modes of transportation change and geographical borders are crossed. As a result, there are huge "blind spots" along the container journey that no proprietary solution is likely to resolve.

Barriers to interoperability

Legacy technology wasn't designed to meet the needs of global trade today

The limitations of EDI

EDI has been the dominant method for exchanging messages between container shipping stakeholders for decades. It was designed to eliminate much of the human error that occurs with manual, paper-based processes, and it does so quite effectively. But like many 40-year-old technologies, EDI has some drawbacks in terms of keeping up with modern customer demands for visibility.

The limitations of EDI stem from the fact that it is designed for one-way communication of one type of message from one machine to another.

Each EDI connection has to be integrated into the back-end systems of the sending and receiving machines. A cargo owner needs multiple EDI connections with each carrier they work with to communicate all the messages involved in, for example, a booking request. And if any of the data in any of the messages changes on either end, or a new type of data is needed, the EDI connection has to be reconfigured, or a new one has to be created.

As a result, the maintenance of EDI is extremely labor-intensive and expensive due to the number of 1:1 EDI connections required to connect multiple parties. But even if you have the money to spend, it's becoming increasingly difficult to find people who can do the job. Technology is moving forward, and technologists are trained on modern technologies. EDI is a dead end for companies that need to innovate while maintaining a sustainable workforce.

The modern standard for digital communication

Today's technology platforms can handle billions of interactions per day, in real time

## APIs—real-time interactions, lower costs

The application programming interface (API) is the modern standard for interoperable digital communications. It is a set of programming instructions and data exchange standards that allow different web-based systems to communicate with each other in real time. **APIs can handle billions of interactions every day.** With new technologies like smart container tracking devices, real-time data exchange volumes will grow exponentially, necessitating a shift to API technology.

The value of API technology is well recognised in business, and it has been a linchpin for digital transformation in the aforementioned industries. Think about when you use your credit card to purchase something online. The data needed to complete the transaction is exchanged and validated instantly over the web using APIs. Many standards organisations are embracing APIs as a way of improving information sharing and interoperability. For example, UN/CEFACT has launched efforts to ensure proliferation of web APIs to support international trade and transport processes.

The 2-way, real-time data exchange enabled by APIs is what's needed to increase visibility into container shipping processes and events. Think about the benefits for exception handling in particular. With EDI, shippers have to wait for carriers to notify them about agreed-upon events. But with APIs, shippers can query the carrier's system or subscribe to automatically receive status updates for any relevant event. If there are delays or other types of exceptions, shippers can learn about them as they happen and work to resolve them immediately.
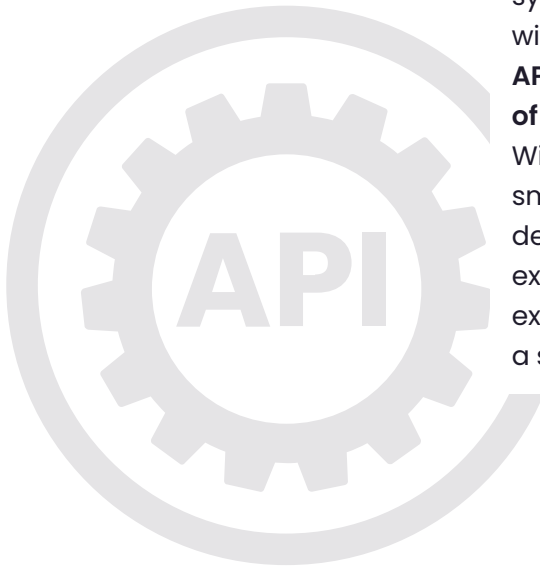
Visible data is vulnerable data

Standards for cyber security are necessary for safe end-to-end digital communication

As digitalisation increases, so do attempts at hacking

Achieving end-to-end, real-time visibility into multi-modal supply chains requires a unified, futureproof approach to the exchange of data. Having a common data language and framework for processes based on shared requirements is the first step to ensuring high-quality data can be communicated in a way that is understandable and usable for any stakeholder in the supply chain regardless of carrier, choice of technology platforms, or even the mode of transportation.

But once data is visible from end-to-end, it is much more vulnerable to attack and needs to be protected. Robust cyber security must be in place at every data handoff point between stakeholders to thwart attempts at hacking. With the rise of COVID, 2020 has seen a higher level of digitalisation as stakeholders try to meet the challenges of the pandemic. As a result, **there was a 400% increase in attempted hacks between February and May 2020** as cyber criminals find ways to infiltrate vessel- and shore-based IT networks in the maritime industry[6].

Industry regulators and standards bodies such as IMO and UN/CEFACT recognise the critical nature of data security, as do the shippers we surveyed. In fact, the IMO has mandated a minimal level of cyber security preparedness with its Resolution MSC.428(98) on Maritime Cyber Risk Management in Safety Management Systems. As an enabler of digital transformation, DCSA has developed best practices for helping provide all shipping companies with a common language and a manageable, task-based approach for meeting the IMO's January 2021 implementation timeframe.

400%↑ increase in attempted hacks

[6] Naval Dome research, June 2020

DCSA digital standards for container shipping

The collaborative path to visibility and a better customer experience

API-based standards let stakeholders connect in real time

The purpose of DCSA is to establish digital standards that will enable the interoperability of technology solutions across the end-to-end supply chain. This will provide a foundation for industry-wide digitalisation along the lines of what you see in banking, telco and the airlines. By working towards the widespread adoption of standards, DCSA's aim is to advance the industry in terms of visibility, real-time responsiveness and as a result, greater reliability and a better customer experience.

With 9 of the top 10 carriers as members, DCSA is in a unique position to work with a broad range of industry stakeholders, including regulatory bodies and other standards organisations, to drive alignment at every connection point using APIs. This will **create an ecosystem of interoperability across the global supply chain that will enable shippers to connect in real-time** not only with carriers, but with freight forwarders, terminals, ports, regulators, banks, customs officials, etc. And all of these connections will have far fewer technology integration points and require much less maintenance than an EDI-based system would.

To date, DCSA has published standards for some of the most urgent and impactful aspects of the container shipping industry including Track & Trace, Internet of Things (IoT) and electronic bill of lading (eBL) (as the first step towards eDocumentation). While these standards would move the industry closer to interoperability even if implemented in EDI, DCSA publishes open API definitions and design principles to expedite the shift to API-arbitrated communication.

More than a good customer experience

Greater resilience, reliability and innovation are on the horizon…

… if everyone gets on board

Digital transformation in highly standardised industries such as banking and telecommunications didn't happen overnight, but it did happen decades ago. This contributed to their ability to weather the COVID pandemic without disrupting global operations. While disruptions along the physical supply chain due to COVID (such as factory closures) were unavoidable, the impact on container shipping could have been diminished if the industry was more digitalised and standardised. Container

transportation can be more resilient if (API-based) digital standards such as those published by DCSA are widely implemented by carriers, solution providers and other participants in the supply chain.

Shippers who wish to have more visible and reliable shipping services must start by working with their carriers and service providers to adopt standards that will create a foundation for timely exception handling driven by accurate, real-time data that is consistent across carriers. With these standards in place, shippers
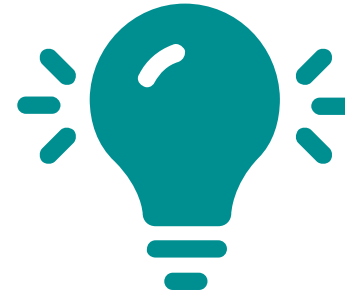
can have instant access to the information they need to make informed, data-driven decisions about inventory management, which will help establish trust between all stakeholders. **Once trust through transparency is established, real innovation can occur**—innovation that will enable transparent, reliable, easy to use, secure and environmentally friendly container transportation services.

If you are a customer of ocean carriers or work closely with container shipping, your involvement in the standardisation process is crucial to transforming this industry. As highlighted by the pandemic, the need to replace antiquated shipping processes with efficient, digital processes is more urgent than ever. And a standardised, scalable approach is the only way to future-proof such a fragmented, complex and global industry.

We invite you to engage with us by subscribing to DCSA updates and making contact through our website, www.dcsa.org.