

The value of visibility

Predictive analysis and preventive action to enhance sea freight supply chains

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Executive Summary

The unprecedented disruption initiated by the COVID-19 outbreak in 2020 led to massive repercussions in the supply chains of businesses worldwide. Logistics were revealed as a business-critical component that could either make or break the best-intentioned plan. Consequently, a significant need for increased supply chain resilience ensued.

Companies are searching for ways to integrate as much resilience as possible in their supply chains to successfully address customer demand and deliver on their promises. Logistics companies are the partners in providing this business-critical element and in supporting businesses in designing a dynamic supply chain that can adapt to unforeseen situations.

It is through predictive analysis and preventive measures that they make this possible. By bringing together data from relevant sources and visualising these on customer-facing digital platforms, logistics partners offer businesses opportunities to identify and avoid vulnerabilities and to manage their shipments in the way that best fits their needs.

Four elements are crucial to building a resilient supply chain that meets a business's specific needs: **planning** that is based on granular and accurate information; a capacity for **tracking** shipments and unforeseen events; the ability to take **action** to alleviate identified situations and bottlenecks; and harnessing big data to detect patterns and **design** a resilient supply chain for the future.

The benefits to be reaped are many, including increased customer retention, improved productivity, financial stability, and business growth.

Through examples and use cases, this white paper outlines how real-time data, end-to-end visibility and preventive action can help create and maintain a resilient supply chain. It also describes how logistics partners can support their customers with advanced digital platforms as well as trusted and timely expertise.

Introduction

Global sea freight: a market in turmoil

When the COVID-19 outbreak impacted the world in early 2020, global sea logistics started to experience significant instability. Over the subsequent course of the pandemic, a series of unexpected events have developed the situation into a perfect storm.

Logistics was brought centre stage by these turbulent times. Air logistics and storage facilities have been crucial to the distribution of the vaccines required. But with the passenger airline sector in a tailspin of its own, aircraft belly cargo capacity has been in especially short supply. Sea logistics saw trade dip substantially at the onset of the pandemic, only to then significantly recover, throwing the global sea logistics ecosystem into severe instability. The pandemic caught businesses unprepared for such disruption, leaving them with inadequate safety buffers and little flexibility to handle disruptions. Without such flexibility, the consequences of the pandemic were more than many companies could take.

Most of the disruptions that sea freight is experiencing today can be traced to COVID-19-related events. An unexpected drop in trade and consumer purchases in the initial phase of the pandemic pushed the usual container flow out of sync. The decrease in trade also prompted many vessels

into maintenance or refurbishment, with operators sensing an opportune moment to have such work performed.

An already distorted container flow was then further dislocated as the growth of e-commerce began to revive consumption. At the same time, the more immediate consequences of COVID-19, such as local outbreaks and the adoption of strict safety measures at ports and terminals, reduced available workforces and made loading and unloading less effective.

If the above developments were not challenging enough, in March 2021 the 20,000-TEU Ever Given container vessel blocked the Suez Canal for six days in an almost unprecedented event, affecting about 12% of global logistics and creating additional long-term ripple effects.

Taken together, these disruptions sent the global sea freight market into an unrest that is likely to linger.



Business outlook

For businesses worldwide, the consequence of the current state of the sea logistics market is crippling volatility and high degrees of uncertainty. Inbound deliveries to factories and outbound shipments to regional storage facilities have all been disrupted through port congestion, global container equipment shortages and sailing cancellations and delays.

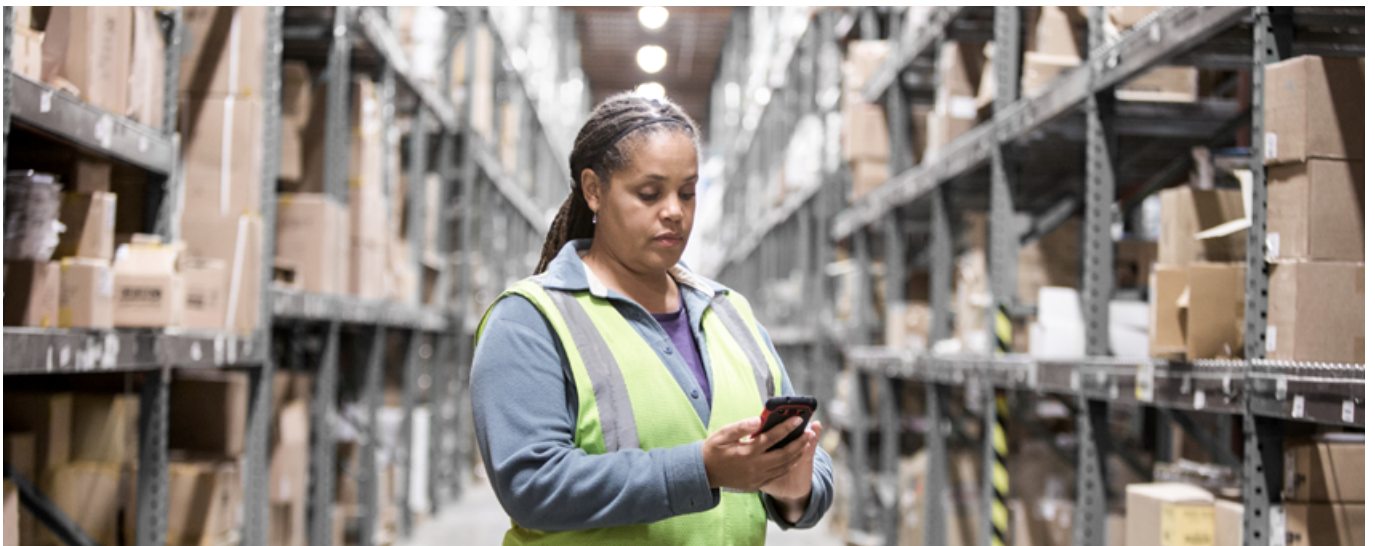
This in turn has led to parts and materials supply delays, inventory shortages, postponements in customer deliveries and more. Powerless to supply on time (if indeed at all), some companies have faced the business-critical situation of being unable to meet their customers' needs.

And the current state of global logistics will force businesses to continue to plan and work within such uncertainties for some time to come.

Risk mitigation paramount

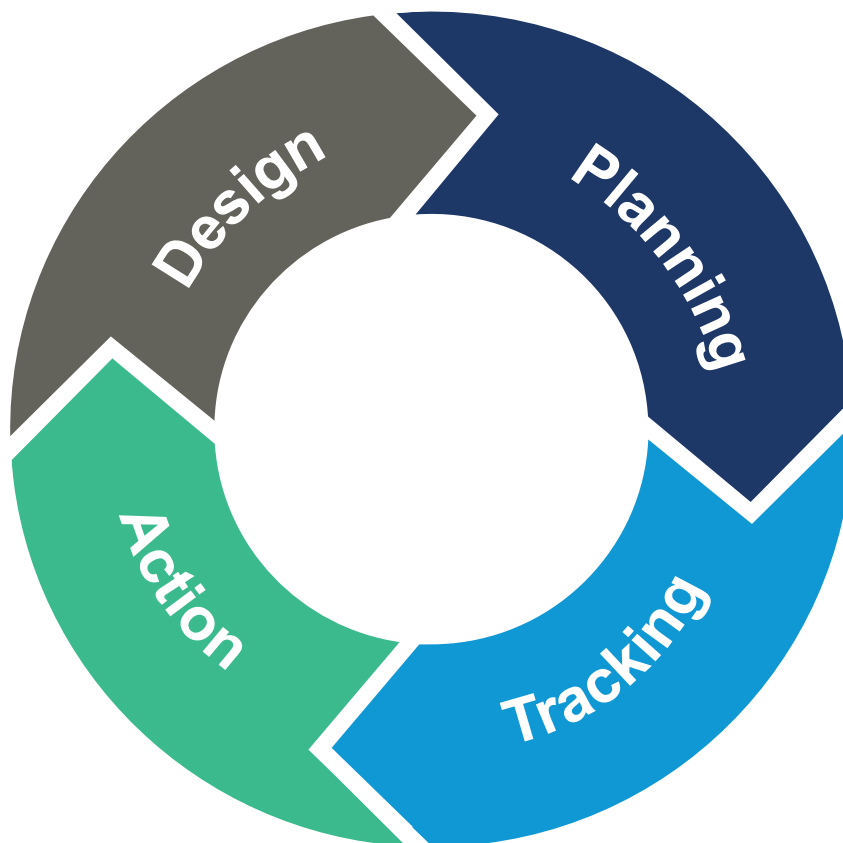
Covering customer demand and ensuring customer satisfaction rely on having an effective supply chain. Therefore, companies are currently looking to mitigate their supply chain risks and engineer as much reliability as possible. This is far from easy. In addition to the already disrupted global sea freight market, supply chains are subject to several other variables. Weather, political unrest, and unforeseen vessel problems are just some of the factors that can affect arrival times, unloading schedules, and more.

Today, it is not only about knowing “how to send what where”: it is also about setting up and maintaining a dynamic supply chain that can be swiftly and effectively adapted as more information becomes available.



The elements of a resilient supply chain

Logistics partners play an essential role in offering businesses the right tools and advice to integrate resilience into their supply chain. Accurate and real-time information are vital when planning and tracking. Efficient response and immediate action are crucial to staying ahead. And big data and pattern detection can alleviate stress on the supply chain and are a significant aspect of resilient supply chain design.



Planning

Advanced visibility to support business objectives

Businesses require information ranging from speed and availability to vessel rates and routes when planning their shipments. Based on the options available, they can decide on the way forward. Lately, one further parameter has been rapidly gaining traction: the carbon emissions generated for the route chosen. By bringing this

parameter into their planning, companies can effortlessly make decisions that also support their ecological ambitions.

Planning with advanced visibility based on granular parameters enables companies to make decisions that fit their business objectives, every time.

myKN – The Kuehne+Nagel online visibility platform

myKN offers customers the capability to efficiently quote, book, and track their shipments online. The platform comprises various tools and features that support customers in planning and managing their shipments, regardless of the mode of transportation chosen.

Through myKN's customisable dashboard, businesses can assess costs, evaluate different routes and obtain a holistic overview of their entire logistics set-up.

seaexplorer – An online planning tool for sea freight

seaexplorer is a guide within Kuehne+Nagel's myKN platform that is specifically designed for sea freight. It includes all the carrier services and vessels offered and equips businesses to plan a resilient sea freight supply chain. It further provides information on the schedules and the current locations of vessels along with their CO2 emissions, ETA and more. seaexplorer is an intuitive tool which offers businesses a complete overview of all the options available, enabling them to make the best-informed decisions.

Tracking

New visibility including predictive analysis

In the quest to set up a resilient supply chain, accurate and adequate information has never been more crucial. Tracking and tracing make up the foundation of visibility, and processes have long been in place to keep track of vessels and their shipments.

Over time, however, technology has become increasingly sophisticated, offering high information granularity. This has been facilitated by advancements in communications and enabling technologies such as GPS and the Internet of Things (IoT). Massive amounts of data can now be tracked, collated, and viewed on the visibility platforms of the logistics service providers (LSP).

The concept of visibility has grown to include more than just the location of a given shipment or available routes. Today, factors such as vessel status, weather updates, and market developments that may suggest future vulnerabilities and situations in the supply chain must also be integrated.

In view of this, platforms need to incorporate the capability to detect and inform about such unexpected situations. This, of course, requires a highly integrated platform that provides visibility into the entire supply chain.



Predictive analysis in seaexplorer

seaexplorer offers comprehensive real-time information and alerts about changes in vessel services for such reasons as port congestion, adverse weather conditions or vessel-related problems. This enables fast and fact-based decision-making that is founded on firm data. These data are made available through a path-finding algorithm and big-data technology connecting relevant data sources.

The platform helps to minimise potential deviations and increase the resilience of sea freight supply chains by enabling customers to avoid services with low on-time performances or services that are often subject to congested ports or other disruptions.

With its high level of integration and partnerships with all major carriers, seaexplorer also helps customers consider alternative routing options and thereby reduce inefficiencies and risks. With the same aims in mind, the system further features a rating system for carrier service reliability and sailing schedules that are based on historical data.



To attain this level of integrated or holistic visibility, historical data, relevant market information, carrier network status, and other relevant sources must be brought together within a complex algorithm.

This will make it possible to proactively detect short-term and long-term disruptions and successfully identify shipment-critical situations.

Action

Preventive intervention

It is the capability to intervene and to re-route shipments with impending deviations that truly utilises the power of data and visibility.

Some predicted deviations identified by tracking platforms will be more critical for businesses than others, and the motivation to re-route will be higher. In other situations, the urgency might not be as great, and the business may decide not to intervene at all or to re-route onto an alternative route that better suits its plans. For every disruption,

however, the company should have the choice and the possibility of pivoting or finding an alternative routing.

Preventive action is mainly about re-routing shipments that require this. But it can also be a matter of increasing the priority of a shipment and ensuring that it is loaded last and thus unloaded first once the vessel reaches the port. To support businesses in utilising predictive data in their operations, visibility must also support their searching for such alternatives.

The myKN Container Dashboard

The Container Dashboard is part of Kuehne+Nagel's myKN platform. The tool was developed as an extension to seaexplorer to provide a simple dashboard for identifying potential service disruptions at the earliest possible stage. While seaexplorer primarily provides carrier services and vessel information, the Container Dashboard tracks containers in real time.

The underlying system integrates multiple data sources into a single consistent source to predict and visualise situations before they occur.

The Container Dashboard utilises carrier data, route maps, vessel tracking and data science to combine information and predict a vessel's arrival time at its port of discharge or transshipment. The Dashboard constantly compares the information from carriers to its self-calculated predicted time of arrival (PTA). If the Dashboard detects a carrier's ETA that it considers unrealistic, Kuehne+Nagel's PTA will be shown next to the carrier's ETA. The many sources for raw data include IoT and tracking devices, carrier data, and weather and news information.

Digital platforms are set to play a significant role in identifying disruptions and suggesting alternative ways forward. This will reduce manual coordination and instead offer fast ways forward based on a range of variables that will be more or less important to the customer. Speed may be of the essence, for instance, or reliability may be more important than speed. Only the customer can make such decisions, so the alternatives must be clearly presented to them, together with parameters that empower them to make their decision

quickly. And act immediately on it, too.

In time, it will be possible to further reduce manual intervention and task artificial intelligence (AI) programs with finding and taking preventive action based on different businesses' preferences and historical behaviour. Even then, however, human skills will continue to play a vital role in developing and teaching algorithms that understand and learn from both past behaviour and future possibilities.

Regaining control of the supply chain

A Kuehne+Nagel customer active in retail and located in Paris was experiencing massive disruption to their supply chain owing to COVID-19. The issues involved both their inbound supply chain and getting their products shipped to their two regional warehouses. These supply chain issues were starting to tangibly damage customer satisfaction and business growth.

With Kuehne+Nagel's guidance, the business decided to approach its logistics differently. They realised that their primary need was not speed per se, but rather the reliability of the outcome, i.e. the punctuality of their shipments. Being able to predict delivery timings enabled them to offer realistic delivery expectations to their customers and plan their manufacturing around what material would arrive when.

This approach was only possible thanks to the information available on Kuehne+Nagel's digital platforms. Through the transparency offered by myKN and the updates continuously posted on seaexplorer, the company could take preventive action and find the alternative that best suited their business needs.

Providing the capability to act on a situation before it gets out of control, and doing so systematically with all shipments, will generate vital benefits and help businesses make decisions on how they can increase reliability in an unstable environment.

Design

Achieving resilience through big data

Predictive analysis also offers businesses the prospect of more far-reaching benefits in terms of their strategic direction and of creating business scenarios. Without the right tools and expertise, however, making sense of the data involved is a complex task.

Here the LSPs offer two key capabilities: data integration and business intelligence. While data integration addresses the continuous automation of data flows and information in the supply chain (including carriers, LSPs and shippers), business intelligence interprets and visualises the data concerned. By integrating such data

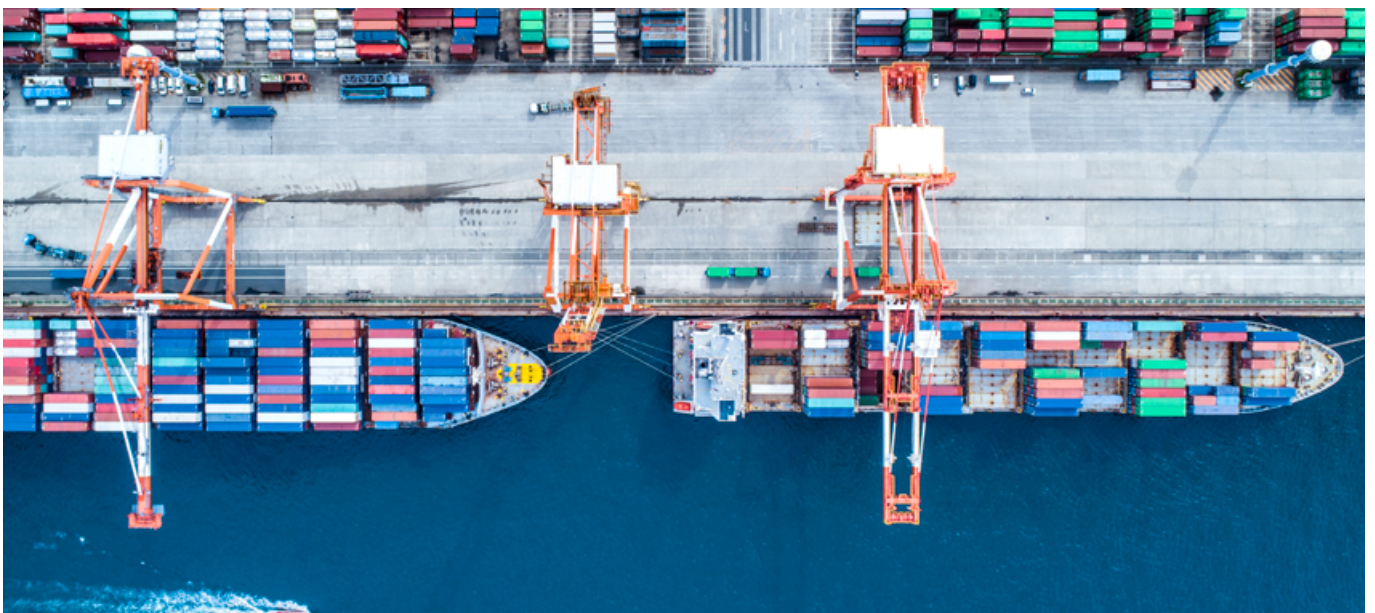
and transforming them into actionable information, LSPs can help businesses to access their big data, predict patterns, and engineer a supply chain design optimised to their needs.

To achieve this, the data must be presented to businesses at the right time and in an understandable and actionable format. They can then be used to form insights and ways forward and to serve as a basis for strategic decision-making. This could be a matter of opening a warehouse in a new region to better satisfy the market's needs, or of transferring sourcing to another location where port congestion is less prevalent.



The business benefits of predictive analysis and preventive action

In their endeavours to build a resilient supply chain, businesses are quickly coming to appreciate the value of predictive analysis and preventive measures. By adding these dynamic elements to their supply chain design, based on information provided in real time, businesses can empower themselves to make decisions that maintain their supply chain's resilience.



The business benefits of predictive analysis and preventive action

- ➔ Continuous, accurate and granular visibility can equip companies to proactively update customers on their shipment's status. This in turn enables them to position themselves as a reliable partner and build lasting relationships that **promote customer retention**.
- ➔ Businesses that can plan and track shipments and can act on promptly detected deviations will make informed and conscious decisions about specific shipments, giving them **control in an uncertain environment**.
- ➔ Predictive analysis equips businesses to consider alternatives, evaluate space and rate advantages, and place shipments that are optimally **aligned with their business needs and objectives**.
- ➔ **Enhanced accuracy and higher productivity** are secured by receiving information and alternatives upfront. Teams can spend more time managing exceptions instead of permanently looking for them by checking the status of carrier services, container locations or possible disruptions.
- ➔ Increasing supply chain reliability and agility through enhanced visibility and preventive action allows businesses to **reduce safety buffers on inventory and increase the savings** that derive from avoiding unnecessary charges at ports – through demurrage and detention, for example.
- ➔ With accessible and actionable big data, logistics can act as a solid strategic driver, not only of the supply chain's design but of business design and strategy, **setting businesses up for growth**.

Conclusion

Predictive analysis and preventive action are game changers for businesses looking to bring increased reliability into their supply chain. Together, they bring far-reaching benefits that offer companies the opportunity to focus on the work at hand, develop new products, expand to new markets and grow.



Kuehne+Nagel – Your partner for a resilient supply chain

The present pandemic has exposed the need for resilience in global logistics and business-specific supply chains alike. The importance of sound, clean and timely data that offer a holistic view is unquestioned. And the competitive advantages provided by predictive analysis and preventive action are equally clear.

Network reliability, experienced decision-making, and the clear display of multiple alternative options are cornerstones of such resilience. And, as transport issues can result in a lack of inventory or even a loss of market share, it makes sense to invest in a robust and flexible supply chain, and to do so proactively. Over time, the financial benefits of enhanced customer satisfaction, optimised inventory and increased market share will clearly confirm the value of maintaining a flexible supply chain.

Needless to say, though, data alone—without their considered interpretation or options for a way forward – will not mitigate risk or help companies build a more resilient supply chain. Establishing supply chain resilience requires flexibility and adaptability, enabled by technology and people, as well as the ability to design and execute concrete actions. At Kuehne+Nagel we believe that the basis for such flexibility is a well-designed platform of suppliers,

managed through data integration. This makes it possible for all the partners concerned to be a connected network of stakeholders, efficiently adapting to market conditions and exploring alternative routes and shipping options.



As the world leader in sea logistics, Kuehne+Nagel has a strong network with access to carriers with capacity and flexibility. Furthermore, we have the experience, the technology and the people to execute the vital decisions taken on

the basis of predictive analysis at both a tactical and a strategic level. This is how we help businesses to gain and maintain the competitive edge that reliable supply chains provide.

We have the data. We have the expertise. We have the global capacity to execute. And we bring these dimensions together to support businesses in delivering on their promises to their customers.

Are you ready to optimise your business?
Get in touch with us now.

About us

Kuehne+Nagel is the global number one in sea logistics. Over 10,000 sea logistics experts worldwide ensure Kuehne+Nagel customers can access reliable sea transport on all major trading routes and 63,000 port connections. Its focus is on shipping full container loads (FCL) and less-than-container-loads (LCL), perishable and fresh cargo shipments as well as project logistics. We offer a flexible and reliable service with more than 750 weekly departures and a multitude of connections in an independent network spanning multiple shipping companies. Innovative digital information solutions such as seaexplorer ensure full visibility and customised supply chains, whatever the size of the company.

Kuehne+Nagel offers completely climate-neutral shipments in sea freight, e.g. via biofuel. In doing so, the company aims to neutralise its collective carbon footprint including all suppliers and help all stakeholders achieve their own bold environmental targets.

Learn more about our services at → kuehne-nagel.com