



# 4 BLIND SPOTS OF NAVIGATION

Enhance your operations with  
data-led navigation



GNS



# “The shipping industry is now embracing digital business processes at a rapid pace”.

## INTRODUCTION

Ship navigation is the process of monitoring and controlling the movement of the ship from one place to another - starting from knowing where you are on a chart and choosing the best route to where you are heading. Marine navigation is a big challenge, requiring both knowledge and skills. This was always true when the only way to navigate was using the stars and is still very much true today in the GPS age.

For centuries, the art and skill of safe navigation has required mariners to exercise caution and plan for every potential incident that could happen. Historically, vessels were built with dedicated chart rooms on the bridge, where the many hundreds of paper charts were housed, containing details of every port, sea and ocean where a vessel may ever need to sail. Books detailing every light, radio signal and tide and current were also held on board. And every one of those charts and publications was kept up to date by hand taking many hours a week and was replaced every time a New Edition was issued- just in case it may be needed.

Today, in the age of digital products and services, none of this applies. The age of the chart room has gone. Thousands of digital charts can be stored on a single PC or ECDIS and latest versions of digital charts and publications can be downloaded within minutes to meet any voyage requirement.

At the heart of this new way of navigating lies the idea of having access to increasingly more accurate information both for navigation and, also, to support other areas of operations which were never possible using paper based navigation systems. As a result, a new breed of systems is emerging, which enables automation, connectivity, data sharing and a level of data-led analysis, monitoring and control that previously fleet managers and purchasing directors could only ever have dreamed of.

When a company decides to modernise how its fleet navigates and adopt digital navigation, it creates a major shift across 4 core areas of how its operations are run, which provides significant opportunities to enhance navigation related operations and reduce navigational costs.

It is these 4 areas that are discussed in this paper.

## 1 Transparency

As the global economy becomes more open, a lack of transparency is increasingly seen as a financial and reputational risk that counterparties are unwilling to take. Large, regulated companies with reputations to protect won't shy away from demanding greater clarity from their trading partners. If they don't get what they want, they won't be afraid to walk away to a competitor that is more transparent.

Shipping companies cannot afford to be complacent. It is often said that the industry has a reputational problem and as the business environment gets tighter, the old opaque ways of doing things are becoming less of an option.

The first step is to acknowledge that transparency is becoming a way of life in shipping; Port State Control inspectors, Flag, Class and vessel management will expect to see information needs fulfilled in an increasingly structured and controlled manner. Likewise charterers might once have accepted that they would 'lose track' of vessels once or twice in a voyage, but we now operate in a world where they have access to the same AIS feeds and a similar interest in more efficient shipping.

This transparency is also informing the effectiveness of the Port State Control regime, which has improved in recent years (see Compliance below) since authorities started sharing data and making it publicly available, because deficient owners have fewer places to hide from inspectors, enforcement bodies and their customers.

The GNS approach embraces this new era of transparency. The company's Voyager FLEET INSIGHT platform combines detailed vessel tracking and the use of algorithms which GNS uses to understand vessel position, compliance for both navigation data and technical publications required by Flag States, vetting and other key stakeholders as well as global Port State Control inspection histories, inspection hotspots purchasing histories and overspending and even sea hours and asset utilisation analysis.



GNS's Voyager FLEET INSIGHT platform provides transparency to shipping companies.

By opening up this rich data resource to shipping companies' shore-based personnel, GNS is demystifying navigational purchasing and compliance to make it easier to control navigational spending, easier to identify and avoid navigation related compliance issues and create new levels of ongoing value for its customers.

GNS data, the collection of which was initially made possible by the transition to digital navigation, is now being used in a wide range of ways to support decision making, performance management and safety and compliance improvements across the fleet.



With these new levels of transparency, GNS is also leading a fundamental change in how navigational information is purchased and used. Hayley van Leeuwen, Director of Marketing and Product at GNS explains “At GNS, we are not interested in selling high volumes of products that vessels don’t need and won’t ever use. We don’t believe that is the way to build long lasting relationships or to provide value. We believe in using data to provide very tailored services that give customers just what they need, when they need it – nothing more, nothing less.”

Over the last five years, first using the data to create really tailored pricing for fleets and then running workshops with customers to raise awareness of how they can operate more efficiently, GNS has built huge amounts of data and knowledge. With Voyager FLEET INSIGHT it is now setting that data free, so all shipping partners can benefit from it. It’s totally transparent and its really putting the power in the hands of the shipping company.

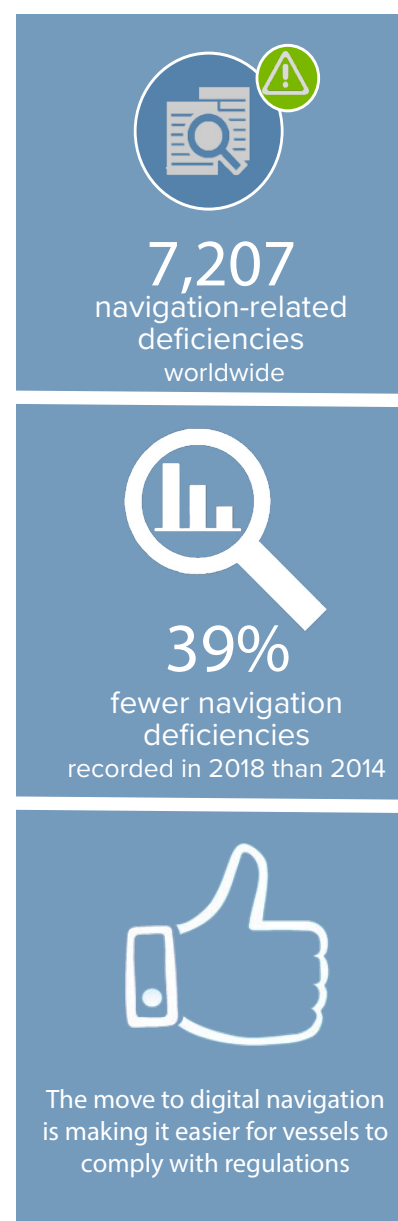
## 2 Compliance

In the digital age, compliance to some extent has become a function of understanding what data can reveal about which type of vessels are likely to receive the most inspections and where those inspections are likely to happen.

In the past, it was very difficult for operators to get a clear view of the status of the navigational products on-board their vessels. Navigation compliance, for the most part, has had to be left to bridge teams to manage on the operator’s behalf. The many different regulatory factors at play include Flag, Class and the specific trading requirements for areas such as Suez and Australia not to mention an increasingly stringent regulatory environment beyond navigation have made it easy to make mistakes and miss key requirements. It has also been difficult to identify systemic issues that perhaps required more comprehensive focus to improve compliance and safety levels in a fleet.

Data changes all that. Using digital compliance data, it is now possible to pinpoint gaps in navigation holdings at individual vessel level, uncover more general failings in bridge management and also identify inspection hotspots where a vessel is most likely to be inspected so that potential issues can be managed in advance. Once the problem is identified, then the compliance improvement opportunities can be grasped. In this way, safety and compliance are enhanced and navigation compliance deficiencies are reduced.

This can be seen from the fact that whilst the number of annual PSC inspections has risen by 4% over the last four years, the number of deficiencies has fallen by 8% over the same period.



# “The GNS system clearly shows where a vessel may be exposed at its next Port State Control or SIRE inspection so that gaps and risks can be quickly addressed.”

GNS data shows that vessel inventories are very often missing core compliance publications that vessels are mandated to carry and demonstrates that, while the headline PSC inspection figures are encouraging, there are safety issues that lie behind the results that need continued vigilance. Increasingly better data can only help here.

At a very practical level, the availability of good quality data can make a significant contribution to compliance and safety. The compliance module in GNS’s Voyager FLEET INSIGHT platform tracks the specific compliance requirements for every vessel using Flag, Class and trading data and compares it with the navigational products vessels have on-board. The data provided relates to both core SOLAS requirements as well as specific requirements such as those specified by the SIRE programme.

GNS’s Voyager FLEET INSIGHT system also tracks Port State Control inspections. Shore-based stakeholders can view inspection data by vessel. Importantly they can also view the same data by port. If you think about it, what do you want to know if you are responsible for a vessel’s compliance record? You want to know the ports where your vessels are most likely to be inspected and what they are likely to be looking for so you can make sure that your vessels are fully prepared ahead of arrival. With GNS you can do that.

## 3 Data sharing

When vessels were using paper charts to navigate, the shipping company was typically trying to measure vessel performance using data that had been collected in the past and in isolation from other data. Often that data didn’t integrate with other data and business systems making it difficult to access and use to inform business decisions.

But in the digital era, data sharing becomes second nature. There is a free flow of information between ship and shore that gives the shore-based team access to information in near real-time so they can access and use it more proactively in a myriad of ways. Making possible the sharing of navigation and voyage data is an essential component of smart shipping and it’s also the key to understanding where the achievable digital opportunity lies for shipping companies. The challenging part is how to collect, store and manage the large volumes of data involved and, of course, how to make sense of it all.





“Most people don’t believe the level of waste in their fleet until they see it with their own eyes. People are often shocked to find that they could be saving 30% (sometimes more) on their current navigation spending.”

Unsurprisingly then, when we dig into the detail of what some owners and managers have achieved so far, the digital reality is not as encouraging as the rhetoric. It’s very easy for shipping executives to talk a good game – and, for the most part, the story is one they whole heartedly believe in. The issue is whether staff in the field are as well-equipped.

Some users will expect to be able to use data to improve the day to day management of the vessels they manage from decision support and compliance management to incident management. Others will want to use data more strategically to track and measure key performance indicators, benchmark against the wider commercial fleet and assist with commercial aspects such as budget management.

The data collected by GNS also yields yearly operating costs by sea hours and port call data including port fees and major consumables. Being able to easily see how much time a vessel has spent steaming and at anchor helps superintendents to identify and plan maintenance in a timely way. Vessel data can also be leveraged to provide tracking and monitoring to report sailing times and calculate operating costs more accurately, as well as tracking progress against charter party terms.

It’s not unusual to hear the industry calling for better data sharing for improved safety and efficiency. In fact, the tools are there but in many cases the opportunities that spill out from vessel data – for voyage execution, analysis and benchmarking – are still the preserve of the few, not the many.

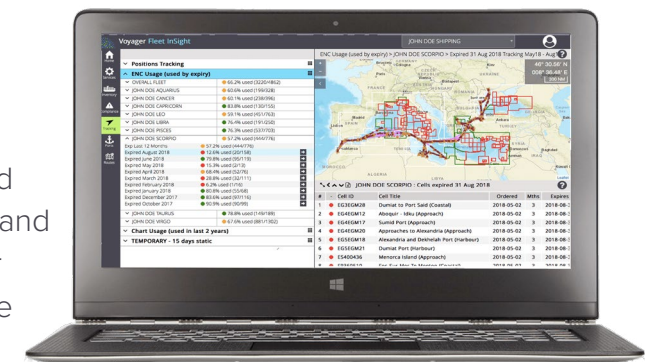
## 4 Efficiency

In the paper era, a little over 3,000 Admiralty paper charts covered the world’s major ports and trading routes. Vessels sailing those routes often purchased and held many hundreds of those charts to ensure they always had the chart they needed for any eventuality. These paper charts were purchased outright and, every time there was a New Edition, the chart agent notified the vessel and a replacement was purchased and sent to the vessel - wherever it was in the world.

In today’s digital era, there are over 15,000 Electronic Navigational Charts (ENCs) covering the same ports and trading routes at much greater detail at a much wider range of scales - nearly 5 times the volume of data that was available 10 years ago. Each country sets its own price for its ENCs and prices ranging from less than \$10 to over \$300 for 12 months access. Different prices can apply to a country’s ENCs depending on whether it is purchased on a standard or a Pay As You Sail service. Added to that, ENCs are licensed rather than owned with licenced access being bought for periods of 3, 6, 9 or 12 months at a time.

### Bridge inefficiencies

When a navigating officer is dealing with this level of complexity, he or she needs as much of it to be automated as possible. If not, the amount of data becomes unwieldy and on-board systems start to creak. Tools like GNS’s Voyager PLANNING STATION software are designed to help bridge teams to handle these new levels of complexity.



For example Voyager simplifies route planning and automates the process of identifying the ENCs and publications that are required for a voyage. Online ordering enables vessels to download any products that are not already on-board within minutes of requesting the ENC or digital publication. Updates to ENCs and digital publications are easily downloaded and applied and a full correction log is automatically generated so that compliance can be easily demonstrated to Port State Control and vetting inspectors.

In addition, historic trading data is used to help operators choose the most cost-effective and appropriate purchasing options for their vessels which range from Pay as you Sail for vessels trading on the spot market to fixed price deals best suited to vessels sailing on scheduled routes.

### Overspending

In the era of paper navigation, it made sense to buy paper charts and publications “just in case” a vessel may sail in that region. In the digital era just in case purchasing is completely unnecessary. Despite that, GNS’s research has shown that even the best run fleets are still applying a just in case mind set to buying digital charts and digital publications and, as a result, are wasting tens of thousands a year on electronic charts they will never use. Even at a time when earnings are slim, there is still significant wastage on un-used ENCs and digital publications.

# “When a shipping company transitions to truly digital navigation, a whole new world of data possibilities open up.”

Systems that were designed with paper products at the core of their data model do not have the concept of time or purchasing recurrence inherently built into the data model. These metrics are not natively captured, and typically require custom work and custom data algorithms. GNS's data model is designed to capture navigation-related metrics at the most granular level.

For example the Usage module in GNS's Voyager FLEET INSIGHT service is designed to analyse the navigational products each vessel purchases and compare them to what is actually used. This allows customers to view their consumption against trading, for example to identify areas where money is being wasted and their untapped savings are to be found.

Using Voyager FLEET INSIGHT fleet managers and marine superintendents can now easily identify which vessels are spending too much and work with those crews to reduce the amount of wastage. Its not uncommon as a result of the service for fleets to be able to reduce their navigational spend by as much as 25% or 30% per year. As a result, there is an urgent need simply to get control of spending.



## 4 Navigation Blind Spots



TRANSPARENCY



COMPLIANCE



DATA SHARING



EFFICIENCY

## CONCLUSION

As in any migration from a paper-based and compliance-driven culture to a data-powered and proactive one, progress is not always smooth sailing.

By enabling customers to benchmark their performance and providing tools that make it easier to identify and rectify problems. Instead of having to sift vast tracts of data, GNS is providing information as a management tool that can be acted on, for every vessel world-wide, whether or not they are a GNS customer.

Taken together, these issues combine the art and science of modern navigation on board ship with support and management onshore that promotes safety and efficiency.

For that, shipowners need the full picture on data that can support their voyage operations from the point of view of safety and efficiency. There is no question that an efficient ship is safer than an inefficient one, because working practices will reflect safety culture.

Without a system like GNS's Voyager to supplement ship management in the digital era:

- GMs and business leaders may find their growth strategies limited by their lack of information, resulting in lost revenue potential.
- Finance and operations teams may resort to manual processes and spreadsheets, resulting in operational inefficiencies.
- IT leaders may spend precious dollars and significant amounts of time and development resources to force applications to meet the needs of the business or developing in house solutions from scratch.
- Stovepipe data flows will make it harder to measure key performance indicators in a meaningful way, creating challenges for planning and decision-making.

By creating a detailed picture of critical vessel voyage and inspection data, vessel by vessel and across a fleet, it is possible to better manage costs, identify defects and spot trends – and put resources in place to promote safety and increase efficiency.

## Get In Touch

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