



GNS

WHITE PAPER

Harnessing the power of big data in navigation



MEET THE AUTHOR



Mr Bireshwar Kumar started his career as a sea-going officer, sailing on merchant vessels before working as a maritime consultant for the past 17 years.

In his role as a Regional Manager at Global Navigation Solutions, he shares his thoughts on how big data can help save money on navigation and enhance compliance at the same time.

THE BACKSTORY

Let's start by sharing why we created this white paper.

It began a few years ago when something very surprising happened. We started collecting AIS and other data like port state control histories about SOLAS vessels worldwide and began using that data to identify which navigational products vessels needed.

We then started to analyse that data – comparing it to the paper and digital chart and publication purchases our customers were making and the navigation inventories we held – to see whether our shipping company customers were carrying the right navigational products on board their vessels.

“Companies are actually spending much too much on navigation products. They are just buying the wrong things.”

After analysing vessels in 50 or so shipping companies, we began to see a not-very-cool pattern which was that in virtually every single shipping company, vessels were spending too much on navigation. In some cases considerably more than they needed to spend.

They were also sailing with some quite significant gaps in their holdings which in some cases were creating some worrying compliance risks. Compliance risk that are also are born out in PSC inspection observation and deficiency records worldwide.

At GNS, we love data. We love using data to help make things more efficient. So when our data showed how many shipping companies were overspending on navigation supplies – we knew we needed to get out in the market and show as many shipping companies as possible how using data could make a massive difference to what they buy and how much they spend.

This White Paper is officially called Harnessing the power of big data in navigation. But it could quite easily also be called “How to save lots of money on navigation and enhance compliance at the same time.”

“
Most of the world will
make decisions by either
guessing or using their gut.
They will be either lucky or
wrong.

Suhail Doshi, Chairman, Mixpanel

”

THE CASE FOR A DATA LED APPROACH

As every marine
superintendent
knows, what we
spend on navigation
is relatively small, but
getting it wrong has a
big impact.

Last year the shipping industry spent approximately \$440 million on navigation - charts and publications, but despite this level of spending, a surprisingly high number of the reported PSC defects in 2018 were navigation related - 7,207 to be precise.

In fact, navigation-related issues (ENC/ECDIS, charts and technical publications) were the most common cause of vessels receiving deficiencies and observations - dwarfing other categories such as lifesaving and fire safety equipment.

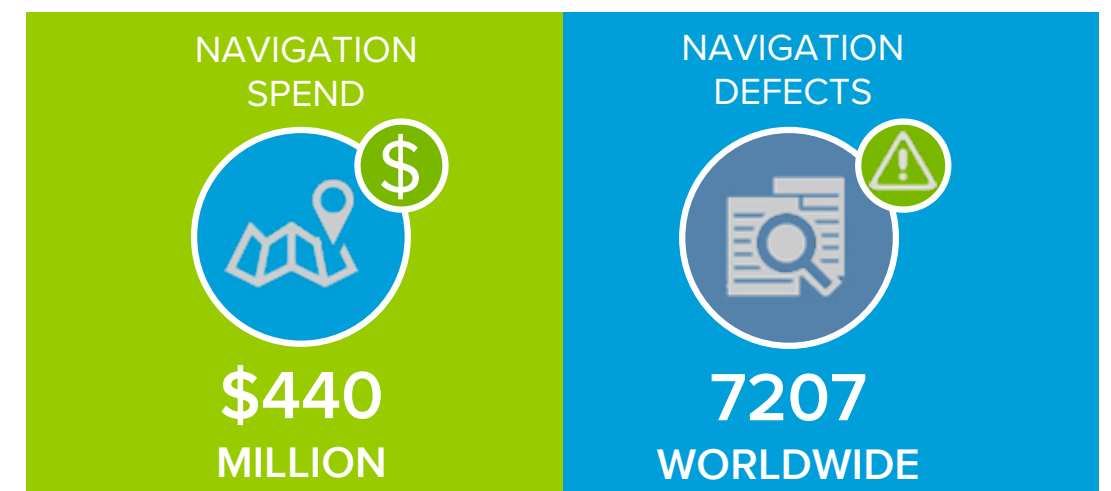
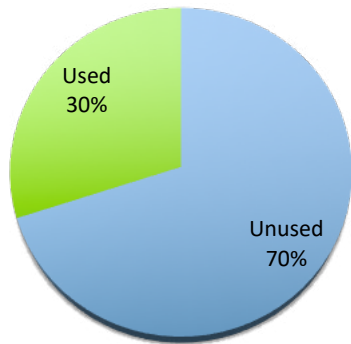


Image right
Total global spend on
navigation and number
of navigation related PSC
deficiencies in 2018

Our data shows the reason for this is very simple. Vessels aren't carrying the navigation products they are required to carry – they are either missing them completely or they are out of date. That's making easy pickings for PSC and SIRE inspectors.

What's interesting though, is that's not because companies aren't spending enough. In fact our data shows, conversely, companies are actually spending much too much on navigation products. They are just buying the wrong things.

Overall vessels are spending on average 25% more than necessary on ENC's – to put that into real money that's anything between \$375 and \$1800 per vessel per year.



In extreme cases we are seeing overspend of as much as 70% on ENC's which in the case of one of our customers worked out at around \$9k per vessel – well worth saving.

So here we are, 15 years after the first ECDIS performance standard was approved, and our analysis of shipping company purchasing habits has identified that shipping companies are very far from realising many of the benefits of digital technology and big data.

Instead of achieving the available operational efficiencies and cost savings, those savings, still in the majority of cases, remain untouched.

Why is that? Well because many shipping companies don't have the time to regularly review vessel inventories against routes, flag state requirements or technical library requirements. The software often installed on board to help navigate more efficiently isn't being fully exploited. And navigational product purchasing is still more often than not habitual, based on what has always

The potential cost savings from digital navigation are yet to be realised.

been bought rather than what is actually needed.

There is a persisting “just in case” mind set – in other words, vessels are carrying large numbers of charts and publications on board (even digital) just in case they need to sail in those waters in the way that they used to with paper charts. This is despite ENC's and digital publications being easily accessed via permit keys that can be emailed to ships within 10 minutes and the widespread availability of pay as you sail services, like GNS's Voyager OPEN PERMIT service, that provide always-on access to charts and relatively few people have easy access to the data needed to do things better. As a result, inefficiencies, which equate to many thousands of wasted dollars every year, are commonplace.

HABIT BUYING

Vessel inventories are not regularly reviewed against routes, flag state requirements or technical library requirements and purchasing is still habitual not trading or data led

JUST IN CASE MINDSET

Vessels continue to carry large numbers of charts and publications on board (even digital) just in case they need to sail in those waters in the way that they used to with paper charts

LACK OF DATA

The data needed to manage purchasing and compliance efficiently is often not available to the crew or the shore based management team

Image right
Reasons why digital cost savings remain elusive for most shipping companies

But in some ways this is actually good news because what it means is there are significant untapped opportunities where data can help improve safety and compliance AND help you to save money at the same time.

DATA-LED NAVIGATION COST REDUCTIONS

Data helps reduce costs through more accurate purchasing and better cost control

Most managers in most industries today would agree that data is no longer a nice-to-have, it's a must-have, and an essential part of an operations plan. Data helps you to build understanding, identify opportunities for greater efficiencies and, ultimately, helps you reduce costs.

From a navigation perspective, your focus should be about how to save big using data to help you do that.

Here's 4 ways every shipping company should be using data to reduce navigational costs:

1. Ensuring every vessel is on the most cost effective navigation service option for its trading patterns and operations
2. Budgeting more accurately so any anomalies can be quickly spotted and addressed
3. Equipping vessels to more accurately purchase what they need
4. Analysing usage and reducing overspending

Here's a little more about each of those opportunities and how they can help you save.

1. Selecting the most cost-effective service option

With so many different service options available these days – whether it be PAYS, fixed price, an ECDIS bundle or a more traditional buy on demand model – it can be tricky to work out which service is the best one for your vessels.

For example, it's easy to think that PAYS might be the right service for you. It's certainly easy to manage, but data shows that it's unlikely to be the most cost-effective option for all of your vessels.

At GNS, we use data to help you identify the most cost-effective option service option for each of your vessels. We have captured vessel sailing patterns going right back to 2015 to calculate which vessels would be better off on PAYS and which ones would save by using other service options.

Thanks to our Voyager NaaS offer that provides cost price navigation supplies, we share a common interest in making sure you never buy more than you really need. That means that we will always be on your side when it comes to matching each vessel with the best, most cost-effective navigation service option.

2. More accurate budgeting

Secondly, we use historic sailing data to analyse usage patterns and predict what annual spend should be. That enables you to budget your navigation costs more accurately.

This data is also increasingly used by GNS customers to more accurately predict other operational costs, support budgeting and improve maintenance scheduling. It also provides a clear picture of asset utilisation and trends.

3. More accurate purchasing on board

We give each vessel the software tools to enable officers to accurately buy the charts they need.

4. Analysing usage to reduce overspending

We also track where vessels are sailing and match those sailing patterns to the products they are using so that shore based stakeholders can monitor and address overspend.

Using our data, we can tell you which ENC's and digital publications your vessels have bought, what they have sailed through and where you could be saving.

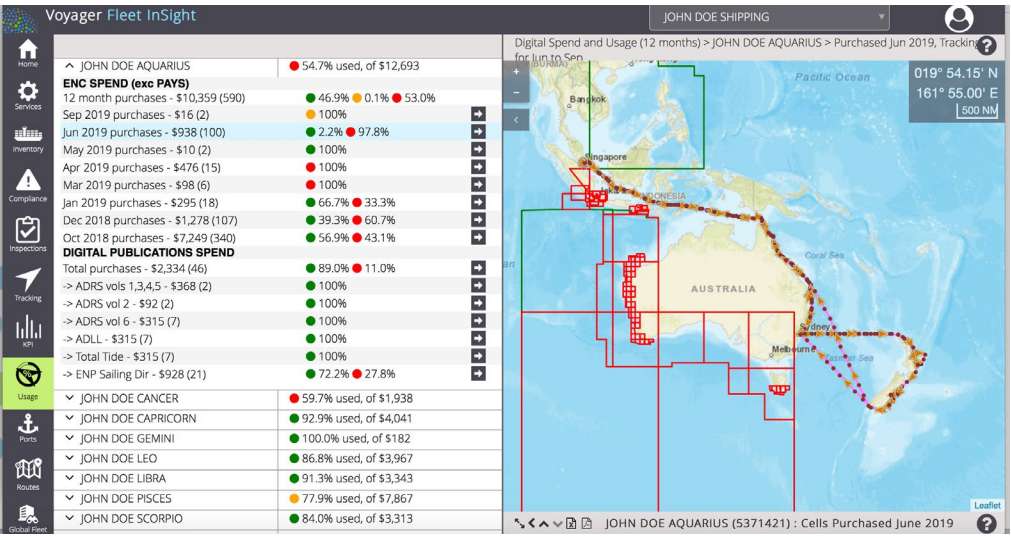


Image right
ENC usage for a real
vessel from June 2019. Red
polygons show the ENC's
purchased but never sailed
through. In this example
equal to \$900 in a single
month

In this example (above) from June 2019, a vessel has purchased \$938 of ENC's but used less than 3% of them. That's 97.8% waste – approx. \$900 in just one month. It all adds up, but most of the time at the moment it goes unnoticed because the guys in the office don't have the analytics tools they need to spot it.

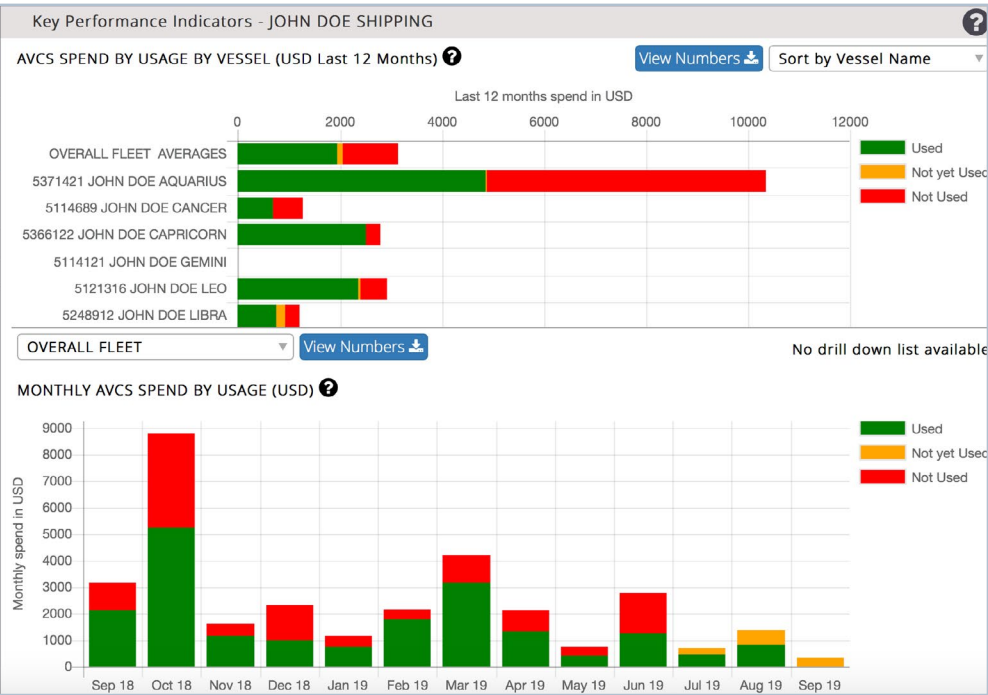


Image right
ENC usage data as well
as other KPI metrics like
percentage sailing time
are easily identified at a
glance

There is also a KPI module that shows the same data as a histogram to make it even easier to spot the outlier vessels that are buying too much.

Like most things in life, once you have identified the problem areas you can then get on with addressing behaviours and of course measure your progress towards improving performance and optimising your spend. There's nothing more satisfying than seeing how much you are saving on your ENC and digital publication spend

“Data offers opportunities for shipping companies to make big savings in many areas in particular navigation supplies.”

Data can also help you avoid navigation related PSC observations and deficiencies.

GNS's unique data analysis tells you exactly which products each vessel needs to sail safely and compliantly for its specific Class and Flag. It also tells you which products each vessel is missing and which products a vessel is carrying that it doesn't need. You will almost certainly be surprised by the results.

Our Customer Service teams work with you to get the missing

Voyager Fleet InSight

- ▼ JOHN DOE AQUARIUS ●●● Singapore Flag : Container
- ▼ JOHN DOE ARIES ●●● Liberia Flag : Tanker
- ▼ JOHN DOE CAPRICORN ●●● Denmark (Dis) Flag : Container
- ▼ JOHN DOE GEMINI ●●● Panama Flag : Container
- ▼ JOHN DOE LEO ●●● Liberia Flag : Bulker

Vessel Flag Liberia (Jun 2017) - Monrovia

Vessel Type Bulk/Gen

2 Trading Areas (12m) Singapore/Japan and
Australia/Borneo/Philippines

CUSTOMER DEFINED LIBRARY ➡

- 68 items required
- Items Held ● 63 items - 55 paper, 8 digital
- Items Missing ● 5 items - RRP \$232 : Net \$182

MINIMUM FLAG MANDATED ➡

- 14 items required
- Items Held ● 14 items - 11 paper, 3 digital
- Items Missing ● 47 items required

GNS ESSENTIALS LIBRARY ➡

- Items Held ● 38 items - 31 paper, 7 digital
- Items Missing ● 9 items - RRP \$181 : Net \$70

JOHN DOE LEO : CUSTOMER DEFINED Technical Library Requirements

| # | Code | Publication | Qty | Status |
|---|---------|---|-----|---|
| 1 | IMO260 | IMSBC Code and Supplement | | ● Not Held |
| 2 | IMO661 | Control and Management of Ships Ballast Water | | ● Not Held |
| 3 | ITK100 | A Guide to Bunkering of Ships for the Purposes of Annex VI MARPOL | | ● Not Held |
| 4 | NP131 | Admiralty World Chart Catalogue | | ● Not Held |
| 5 | WITH063 | Control of Drugs and Alcohol Onboard Ship (OCIMF) | | ● Not Held |

Publications missing from vessel holdings and required by regulators or ship cos own requirements are clearly flagged and can be auto-supplied.

With our data you can even see where in the world your vessels are being inspected most often and the defects they are picking up, so you know which ports are your hotspot ports to help you prioritise your management time even further.

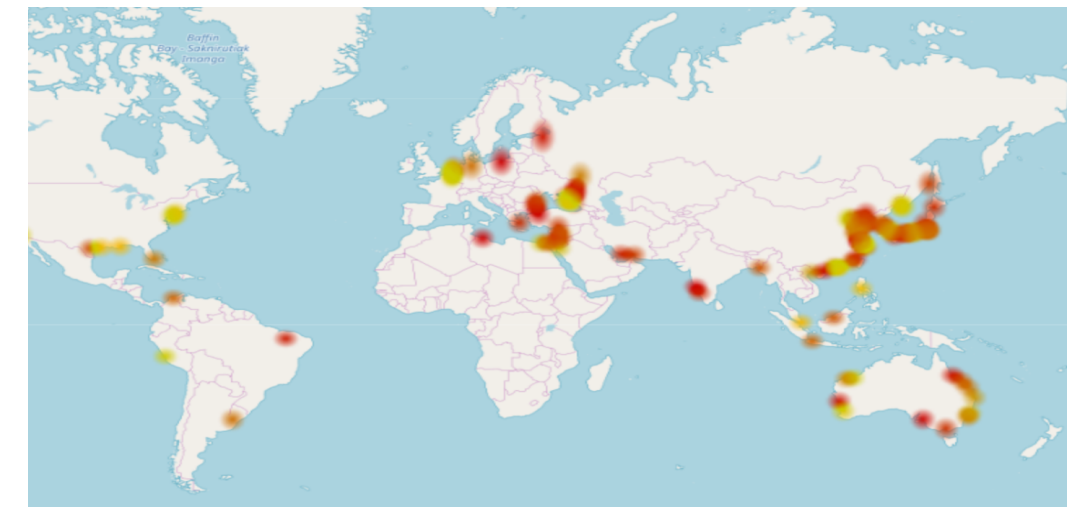


Image right
Port state inspection
hotspots worldwide as
identified by Voyager
FLEET INSIGHT

3 KEY TAKEAWAYS

In the digital world, data has the potential to underpin most—if not all—of your cost and budgeting efforts.



COMPLIANCE
MANAGEMENT

Why do we say that? Because the buying process has changed. With digital navigation, you no longer buy navigation supplies just in case... you buy just in time. And that means you shouldn't need to buy any supplies that aren't a requirement of a vessel's exact trading or navigation compliance requirements.



ACCURATE
PURCHASING

Navigation purchasing can now be about buying more accurately, using data to understand budget variances and identifying areas of overspend and where economies can be gained.



COST CONTROL
AND \$\$\$ SAVINGS

Do this right and you'll operate more safely and compliantly as well as more efficiently, and drive/encourage your crews and other stakeholders to adopt behaviours that enhance your overall operational efficiency.

To start taking advantage of data to save money and improve compliance in navigation and request a free trial of our services visit:

www.gnsworldwide.com

About GNS

GNS is a leading maritime solutions company and the world's number one provider of digital navigation solutions.

Uniquely, we use data intelligence to help our customers buy the navigational products and solutions they need with precision and accuracy that also helps them to reduce costs and improve efficiency.

We work with the biggest names in shipping worldwide - large and small. We have a powerful Voyager ecosystem that collects data from vessels and enables that data to be shared with shore-based stakeholders. We also collect, store and analyse millions of other data-points ranging from AIS positions to Port State Authority and Flag State data every day.

Since 2015 we have captured over 1.6bn data points relating to 120,000 vessels worldwide. This data forms a huge GNS data lake that through the help of our analytics and our Voyager FLEET INSIGHT web service, our customers then use to help them manage navigation (and increasingly) other aspects of their operations more effectively. Our goal is to turn data into information and information into insight.

Our Voyager NAVIGATION as a SERVICE product enables you to buy navigation supplies at cost price – so we have an unambiguous shared objective not to sell you more than you ever need. Since launch in mid 2019, Voyager NaaS has become the preferred way to buy ENC's for thousands of ships worldwide and has delivered an average of 31% savings on navigation spend – by providing the data analytics and software that shipping companies need to identify and buy exactly the products vessels need - at lowest possible prices.

www.gnsworldwide.com

Get in touch

To find out more contact your preferred GNS office from the list below or email us at customerservices@gnsworldwide.com. Alternatively, visit our web site at www.gnsworldwide.com

GERMANY

tel: +49 40 374811 0

GREECE

tel: +30 216 400 5000

SINGAPORE

tel: +65 6270 4060

UK

tel: +44 191 257 2217

www.gnsworldwide.com