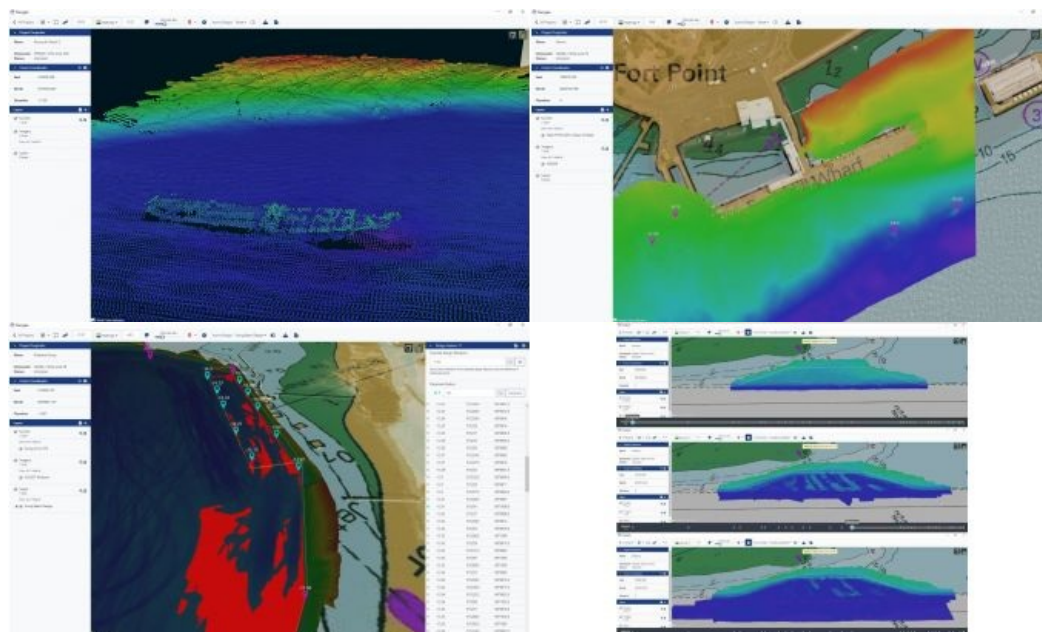


Navigate Hydrographic “the Nautical SmartChart



What is the core role of a hydrographer? To map the seafloor? Provide a precise position on the water? Some may believe it is to play with lots of expensive toys on boats, while colleagues are stuck in the office. While all those answers may be correct, I am asking about the *core* role of a hydrographer. I would suggest that it is collecting *data* to provide *information* that companies, clients and consultants rely on to make *educated* and accurate *decisions*. This is where our value as a professional service is demonstrated. However, here is another question – how do we present that information and, more to the point, could it be *better*?

Current Hydrographic Delivery Methods

Hydrographers have a variety of options to present their collected information, each with their own pros and cons. The traditional nautical chart is the most familiar way of presenting hydrographic information and importantly maintains the integrity of the data. But ultimately, nautical charts present 3D information in a 2D format, and this process will always bring with it some limitations.

GIS-type software is increasingly commonplace in the spatial industry because it offers benefits in data management and flexibility. While these factors alone make it a fantastic format for spatial professionals, often these individuals are not the end-users. The decision-makers, such as harbour masters and engineers, are often time-poor and hesitant about the software learning curve. Not to mention the cost barrier—most GIS software isn't cheap, and the dedicated bathymetry add-ons even more so. For use on a two-week project, why would the client bother?

Hydrographic visualisation packages, and there are many products out there, are also used. However, when they are not feature-rich (i.e. expensive and complicated), they tend to be a freeware-type viewer that doesn't offer a lot more than simply looking at a surface or point cloud. This means they tend to be used in conjunction with another form of delivery, such as a nautical chart.



More than just a visualisation tool, Navigate takes the benefits of a hydrographic chart and brings them onto a modern platform. (Courtesy: Darwin Port)

The Future of Data Delivery with Navigate

You're on a survey project, and the client requires fast information turnaround. You spend a large portion of your time creating paper charts, only for them to be printed, looked at for five minutes and then cast aside at the next survey update. Sound familiar? With the high cost of labour for something so inflexible and inefficient, why is the paper chart still the default mode of delivery? The reason is that the available alternatives don't provide the same information and aren't as easy to interpret as a chart, and certainly not at the same expense. The cost required needs to be justified by the time saved. Sure, you could send out 'raw' data, but how do you as the surveyor maintain the data integrity, or attach metadata? Considering the level of responsibility the surveyor has, one can imagine why a pdf is often preferred to a points file.

The future of data delivery comes down to presenting critical information efficiently. For a hydrographer in a port – the main information being conveyed is about the navigable areas being safe for shipping. The harbour master or dredging manager will want to answer questions such as what berths have silted up, what the minimum depth is, or whether that sandbank has grown since the last survey. Not only that, but they want to know *now*, not in a few days when you have finally managed to format the data for the chart, QC'd the title block, soundings and contour generation, and printed them out to take upstairs.

All these reasons led to the creation of Navigate Hydrographic – the Nautical SmartChart. Navigate has been developed to address these

limitations in a modernizing industry and provide an easy-to-use solution. With the aim of increasing the speed of data turnaround, ease of use and interpretation, and ultimately increasing the value of the hydrographer's work to his or her business and client, the SmartChart is the choice of the future.



Fig. 3: Design Analysis is one of the key features of Navigate. (Courtesy: Port of Brisbane)

What makes a SmartChart?

Navigate aims to take the idea of 3D bathymetry to the next level and not just provide raw data but *information* to clients. Think about the common questions you get asked as a hydrographer – Navigate approaches hydrographic visualisation with the purpose of answering these questions. It is achieved through features such as:

- *Being Approachable*. When the layman thinks of spatial software, what immediately comes to mind? Google Earth. And everyone can use Google Earth. Navigate offers a similar style of UI experience, making it easy to learn and master.
- *Metadata Management*. Everything we do requires metadata, but how best to visualise this? Creating a sounding in Navigate not only flags a depth but presents the when, who, what and how the survey data was collected.
- *Easy data compilation*. Because Navigate attaches metadata to every data source, it can easily and automatically compile multiple surveys without input from the surveyor. Old data will be hidden by new, but never deleted. It makes it easy to visualise *when* a survey was carried out to see where old data needs updating. It also means that your client will always be working with the latest dataset.
- *Visualisation of Navigable Depth*. Minimum navigable depth is the number one question in a port. Navigate not only allows instant assessment of what the depth is but where the depth is.
- *Smart Soundings*. Soundings on a chart play an important role in presenting an important depth. However, charts with hundreds of soundings all over a page are an inefficient means of presenting this information. Navigate takes soundings to the next level, and makes their role, and their creation smart. This means only the relevant soundings are presented when required. Create soundings in specific areas at different resolutions and share these easily.
- *Design Analysis*. Ports have complicated channel designs. Berths, reaches, channels, swing basins - they all have different declared depths. Colouring data by one elevation doesn't work when the design changes. Navigate makes it super easy to see what is above each different design depth, and if necessary, make changes to the design on the fly.
- Hydrography is as much a study of *when* as *what* depth. Navigate has the unique ability to offer true 4D data visualisation – use the time slider to see your seafloor change with each subsequent survey. If the user wants to see how the seafloor looked at each stage of construction or dredging, or pre and post-flood, Navigate can show this easily.
- These days, final survey deliverables are more than just bathymetry. What about backscatter? Side scan imagery? Or sun-shaded models? All of these can easily be part of a Navigate project.
- *Flexibility*. Cope with varying resolutions. Raster-based software makes it difficult to bring multiple resolutions together. Navigate allows you to have a gridded dataset in the same project as the entire sounding density survey of a seafloor feature and view them simultaneously.
- *Context*. Context is important to clients. Not everyone can look at a point cloud and know exactly where they are relative to everything else. That's why Navigate comes built-in with web mapping services automatically to assist the visualisation of data. All of this data is available in both 2D and 3D.
- *Secure*. Navigate allows compressed data to be packaged with the important metadata in a read-only format. So, as a surveyor, you can be sure the data you send isn't being tampered with, and what you prepare is what is seen by the end-user.



Fig. 4: Our Unique Timeline allows for true 4D analysis - see the seafloor change through time. (Courtesy: Port of Brisbane)

Conclusion

There will always be a place for the traditional nautical paper chart in the hydrographic community, particularly for seafarer applications. But sometimes the humble nautical chart isn't enough to answer all the questions your client asks. Navigate is the software solution that incorporates the benefits of a nautical chart with the features of 3D and 4D software visualisation. It not only makes data *look* smart but *be* smart.

More Information

Navigate is available for a free 30-day trial and can be licensed either on a month by month plan for flexibility and casual use or on an annual subscription license. Prices and further information can be found on our website: www.navigatehydro.com.