# DIGITAL TRANSFORMATION: THE BENEFITS EXTEND BEYOND YOUR TERMINAL

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Data is transforming the world- the increasing rates at which data is generated, shared, stored and analysed is staggering. Digital transformation can be viewed as the movement of processes, functions and information flows utilising the benefits of data and analysis aided by modern technology.

The maritime ecosystem is rapidly evolving to becoming more digitised across the globe and are all on the path to becoming more digitally connected. In this article we will take three high level use cases that exemplify the need for digitalisation and opportunity it presents to vendors and stakeholders.

1. Lack of transparency in data exchange
2. Inadequate visibility
3. Automation

## LACK OF TRANSPARENCY IN DATA EXCHANGE

The lack of transparency in data exchange is a well-known problem and has many facets to it. COVID-19 has undoubtedly changed the way we do things. In many ways, it has accelerated digitisation due to the inability of physical transactions and personal interactions during a pandemic. Imagine terminal operators reducing their time on phone, emails and paper trails significantly - the opportunity to engage in their core business initiatives now is greatly enhanced. The alternative to voice messages and emails (and other inefficiencies) is the idea of a connected and digitised ecosystem. For instance, with mobile applications we can digitise operations within the terminals for bulk, breakbulk, ro-ro and container cargo. The mobile capabilities extend to the crew working pinning stations, to lashers and deck crew aboard vessels.

Additionally, many terminals are facing a need for contactless entry and to reduce face to face interactions to keep their workers safe. As we start to digitise these operations, our terminals often identify ways to improve safety for their workers, as well as reduce operating costs. They gain visibility into true productivity figures and are able to plan the workforce more accurately for demand.

Terminals and carriers are also rapidly seeking ways to electronically exchange data that can help improve overall efficiency of transactions. Integrating better estimated time of vessel arrival predictability into software systems or predictions around estimated time of completions at the terminal can improve planning and resource allocation.

Predicting and optimising vessel berthing locations while considering horizontal transport distances can drive efficiencies, reduce emissions, and enable shorter vessel port stays allowing vessels to slow steam further reducing global emissions.

Predicting equipment maintenance requirements based on historical data can extend the useful lifetime of equipment assets, reduce costs by merging maintenance windows for multiple assets, avoid costly off-hours unplanned maintenance, and avoid service level failures due to unexpected equipment downtime. Data exchange technologies have evolved rapidly and ideas like blockchain based systems which have a single source of ledger-based tracking are helping entities keep track of milestones in processes.

### INADEQUATE VISIBILITY

Inadequate visibility and tracking of data and assets creates opportunities for improvements in areas such as reducing maintenance for equipment, container damage tracking, vessel efficiency improvements and others. Artificial intelligence (AI) and machine learning (ML) technologies can be layered on top of the measurable data and useful predictions derived from the data sets. Waiting times at terminals is a huge pain point as well - these include trucks having to wait at the gate due to appointment delays, unproductive movements to uncover target containers causing delays, or vessels having to wait for pilots or for an available berth to mention a few. Solutions available today help alleviate these and collectively underscore the importance of digitalisation within the ecosystem.

Navis' next generation solutions leverage the Navis Smart Data architecture that not only allows us to process data faster in real time, but also enables data integration from other TOS and different third-party applications to derive valuable correlations.

Navis Smart OpsView focuses on real time Key Performance Indicator (KPIs), insights that help our customers manage operations 24/7. The Analytics platform is powered with latest technologies like Natural Language Processing (NLP) and easy to analyse datasets, giving our customers the ability to figure out why things happened the way they happened and predict what could happen in the future. Many terminals look to leverage the data they are producing and as they start to extract this data from their various systems, they run into a lot of different issues which can cause project delays. By building applications that can consume streams of data, they can subscribe to event updates, and reduce the need to rebuild infrastructure for downstream applications which may consume the same data. With the integration of other data streams, such as financial systems, equipment maintenance, and la-

bour management terminals can determine where in the operations it makes sense to invest, such as when evaluating modernisation, expansion and automation projects.

### AUTOMATION

Automation builds on the idea of digitalisation, providing more predictability over operations and improved asset usage. As processes and decisions are automated, variability is reduced between shifts and levels of experience. Automation enables one to get the most of current assets, which reduces fuel emissions and leads to a cleaner terminal and port. Digitalisation is also about being to connect various systems together and automate updates instead of relying on email and phone call exchanges. We have been working with terminals in Europe to implement the forwarding and transport schedule and availability information message (IFTSAI) EDIFACT message which can exchange vessel actual arrival/depart times and update vessel schedules. This can keep all parties informed on berthing information and proformas and can be pushed from liners, partners of liners and shipping consortia or port community systems and centres.

There have been two notable learnings (for all of us) from the digitisation efforts seen thus far. Firstly, the idea of going digital is only as good as the adoption of digital technologies. For example, when two entities want to exchange data digitally, but only one of them is bought into the technology, the idea will not work. There needs to be incentives for both parties exchanging data and sharing the derived benefit, which is amply seen within other processes at terminals or vessels at sea. Secondly, digitalisation breeds the need for data compliance and governance. This may soon become a huge issue if left unchecked and if the security measures taken are inadequate to ensure data integrity. These concerns can be mitigated with platforms that can provide digital trust and governance such that data contributors are able to determine levels of access and duration to address concerns around data ownership and use. Such a platform can then be consumed by authorised applications to deliver use cases based on trusted provenance and transparency, that solve specific operational challenges with real quantified benefits to stakeholders driving further buy-in with the technology.

Now is the time for ports, terminals, carriers, and their logistics partners involved in the ocean supply chain to act if they want to remain competitive in an ever-changing market. Customers are demanding more of their supply chain networks and the adoption of digitalisation technologies will provide a better level of service and consequently, customer satisfaction once implemented. Organisations that can harness new technologies to

make data-driven decisions will realise new opportunities that would otherwise remain unseen. The vision of smart, sustainable ports and terminals are within reach for those who are willing to commit to the future by investing in innovative technology now.

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### ABOUT THE AUTHORS

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### ABOUT THE ORGANISATION

Navis provides operational technologies that unlock greater performance and efficiency for our customers, the world's leading terminal operators. The Navis N4 terminal operating system (TOS) represents more than 27 years of experience and innovation that enables terminals to optimise their operations and move cargo smarter, faster and more efficiently.

As an industry leading technology, more than 270 container terminals worldwide, including some of the world's most advanced automated facilities, have partnered with Navis to improve performance, reduce costs and minimise risk.