

# Ensure your mixed cargo port's digital future.

*How to retain your competitive edge and work smarter with a modern TOS.*



# Ready to become a competitive smart port?



Digitalization is forecast to change the game for mixed cargo ports, and those looking to secure their future in the logistics industry simply cannot ignore this trend.

Logistics is traditionally a conservative industry where technology advancements are often perceived as disruptive and complex, with process changes outweighing the clear benefits available to those who dare to embrace the technology available.

Jade Logistics has over 25 years' experience in delivering the digital edge to mixed cargo clients around the world through our terminal operating system (TOS), Master Terminal.

A modern digital TOS is the first step on the digital ladder to becoming a more efficient, effective and competitive port. It is essential to find a TOS that has been designed specifically with your business in mind. In this eBook we discuss how a TOS can help you work smarter and retain your competitive edge.

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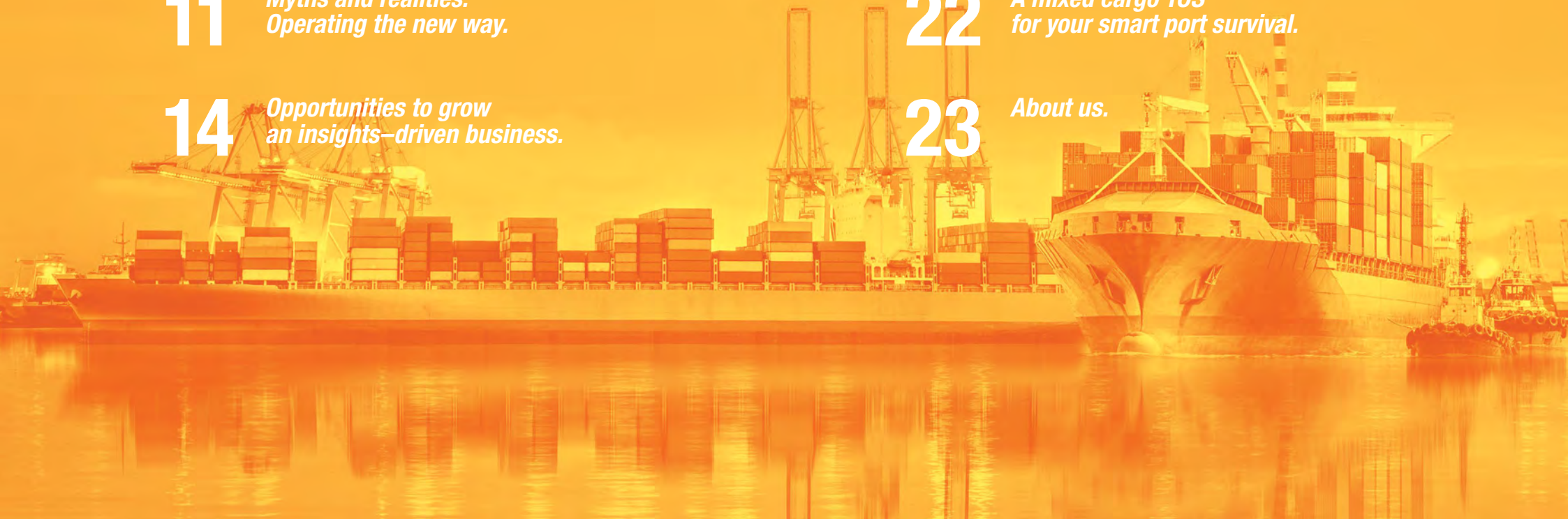
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# Introduction: Facing digital transformation.



Mixed cargo ports play a key role in the global supply chain, but are challenged to keep up with ever-increasing vessel sizes and cargo volumes, along with complex customer demands. To remain competitive, ambitious ports need to continue to contain costs and improve operational efficiencies, while responding to new customer service, visibility and value demands.<sup>1</sup>

Technological innovation can provide answers to these challenges and provide opportunities for ports to secure their future, but which is the right path to take? With terms such as artificial intelligence, automation and machine learning constantly being bandied around as the latest must-have capability, terminal operators are reluctant to embrace the new digital future for fear that it's the wrong path. Many assume that a digital transformation is only for ports with big budgets and big IT teams that can handle the change and complexity; however, that's not true. The opportunity to invest in this digital future is a real possibility for all ports—the choice of where and how to invest is yours.

*THE OPPORTUNITY TO INVEST IN  
THIS DIGITAL FUTURE IS A REAL  
POSSIBILITY FOR ALL PORTS.*

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The logistics industry is in the midst of a technical, data-driven digital transformation. Data is generated from all technologies and ports of all sizes have the opportunity to capitalize on this. Ambitious mixed cargo ports must plan now to improve the flow of accurate and connected information around their port ecosystem, beginning with a clear IT strategy.

Terminal operators that can leverage their port's data will be better positioned to make strategic decisions, improve operational efficiencies, identify new business strategies and revenue streams, and drive sustainable growth and innovation. An analysis of your current processes and operations, along with a roadmap of where you want to see your port in the future, will help you to filter through the available technology options to find a solution that best suits your business needs and budget.

In a recent study by *Logicalis Group* of 890 CIOs and IT Directors, 44% of respondents felt that complex legacy technology was the chief barrier to digital transformation. 51% of those respondents said that they planned to adapt or replace existing infrastructure as a means of accelerating their transformation.<sup>2</sup>

The central theme of your IT strategy should be to improve the technical core of your port—your terminal operating system (TOS). It is imperative that your TOS fits your port's operational needs exactly. Managing uniform boxes is far less complicated than managing a variety of cargo types within one system. To manage mixed cargo effectively, you need a TOS that has been designed specifically for mixed cargo. This will ensure that you make the best use of your terminal footprint while providing a simple and consistent approach to handling general cargo, as well as containers and RORO (Roll-On/Roll-Off) cargo.

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**INSIGHT:** *Data is the driving force behind the digital transformation.*



**Drive a  
smart IT  
game plan.**

# Managing your operations: What are your TOS options?



**Many mixed cargo ports currently manage operations using paper-based processes or a legacy TOS. While this approach to operations may have been adequate thus far, increasing customer demands and technological innovation are quickly shaping a new way of operating, leaving mixed cargo ports at the crossroads.**

According to the *PwC CEE Transport & Logistics Trend Book 2019*, the number one force transforming transport and logistics is digitalization, driven by changing consumer behaviors, technology and regulations.<sup>3</sup> Your entire port ecosystem is demanding better efficiency, value and service. Harnessing data from your port is key to meeting these demands and your IT strategy should reflect this requirement.

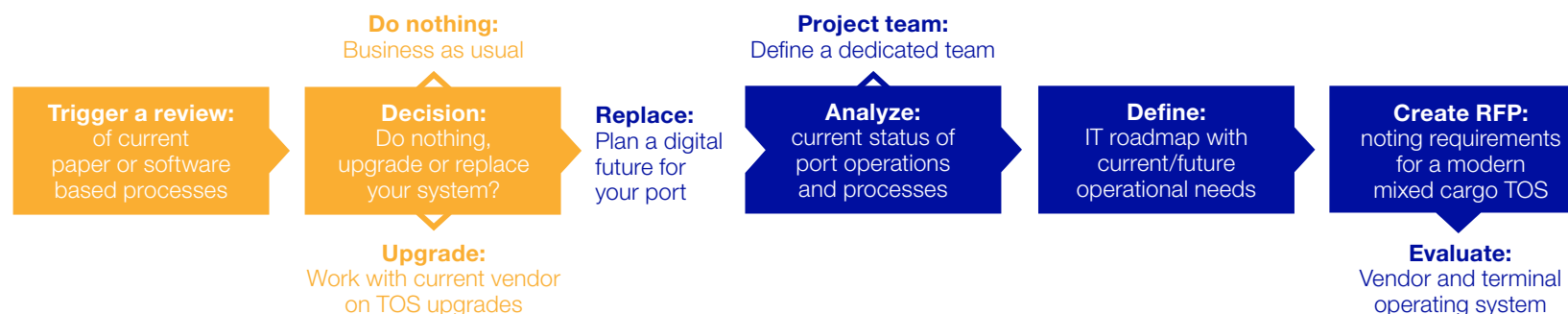
Mixed cargo ports with paper-based processes or aging terminal operating systems, whether in-house or third party supplied, report similar challenges: information silos, a lack of flexibility or scalability, a lack of real-time data and event tracking. These challenges result in a port that is unable to

accurately capture the cost of moving cargo, to respond to business opportunities, or to meet emerging market demands.

Ports experiencing these challenges should undertake an internal review of their current systems and processes for managing terminal operations. While the driver for such a review may differ for each port—new management, inadequacy of paper-based systems in a changing world, software support ending, slowing trade, pressure from within your ecosystem, or system administration staff leaving—the options to progress your port into a digital future will be the same:

- Do nothing, *or*
- Upgrade your TOS, *or*
- Replace your current paper-based or legacy system.

*The options to progress your port into a digital future.*



**Do nothing** – Following your system and process review, your team may decide that the challenges with your current systems and processes don't outweigh the risks of upgrading or changing to a new TOS entirely. Doing nothing is a valid option and will result in business as usual, including any challenges you're experiencing. However, you miss the opportunity to address current limitations and to plan for business changes that would secure your place in the logistics ecosystem.

This option has the lowest short-term risk, but the highest long-term risk: operating a business that is unable to evolve or grow.

**Upgrade your TOS** – You may decide to continue working with your current terminal operating vendor or in-house developers to address any limitations or bottlenecks and to review TOS enhancements that will help you reach the long-term goals for your business.

- *With current vendor:* Compare your current system to other terminal operating systems on the market to identify any desired features that are missing in your current product. How often are new software versions with new features released? Does the vendor have a roadmap for their product? The development response time is crucial when planning your port's future capability to respond to market changes.
- *With in-house developers:* Do you have staff available to update and maintain your in-house system? Do you have a business continuity plan in place for knowledge transfer, should staff leave your port?

Reduce the risk of down-time during the upgrade process by ensuring that you have an extensive change management plan in place to assist staff in the new and improved ways of working.

### **Replace your current paper-based or legacy system –**

You may decide that the only way to ensure your mixed cargo port's future is to replace your current system. While this decision involves the greatest change and perceived risk, it can deliver the greatest rewards if managed well.

To successfully change your business, you must first establish a dedicated project team who understand and can communicate the budget, scope and schedule status throughout the project. This temporary redirection of personnel resource is a critical factor for success, as a focussed team can reduce the potential for lengthy delays, errors and miscommunication caused by a team stretched trying to juggle regular operating activities and project tasks.

The process begins with the analysis of your port's operations and processes, taking into account the IT strategy and any operational requirements for your port. These requirements should be noted in a request for proposal (RFP) for a modern digital TOS for your mixed cargo port.

Finally, the project team will conduct vendor evaluations, taking into consideration the TOS, the relationship fit between yourself and the vendor, the vendor's mixed cargo experience, and their implementation record and support offering.

No question about it, implementing a new TOS can be a significant undertaking, but with the right partner by your side you can experience a seamless transition to working smarter, faster.

>> **For the purposes of this eBook, we assume that you have decided to replace your paper-based processes or legacy TOS and plan to invest in a modern digital TOS.**

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**INSIGHT:** *To benefit from the digitalization revolution, you must have a TOS that can generate accurate real-time data.*



**Moving to  
a modern  
digital TOS.**

## Myths and realities: Operating the new way.



As you begin the project to replace your current system, you may hear the following myths.

### *Digital terminal operating systems are expensive*

The upfront capex costs associated with a new TOS are traditionally in the form of licensing, scoping and implementation, with support costs constituting on-going opex. With operational costs rising and competition growing, mixed cargo ports are forced to find more cost-effective ways of doing everything.

Any new investment needs to have a clear value with a fast return on investment (ROI). By investing in the right TOS you are working smarter. With a minimal capital outlay you can use software to make the assets you currently have work harder and extract more value.

Different systems on your port can be integrated for greater cargo information visibility and transparency, and the availability of more accurate data may also provide new revenue opportunities for your business now and in the future.

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**INSIGHT:** *Purchasing a TOS provides a faster ROI and a more streamlined operation than just investing in tangible capital assets.*

### ***A new TOS introduces business risk***

Time is critical in the global logistics industry. Delays can result in a loss of business, revenue and reputation, so it's imperative you get any change right the first time. Partnering with a vendor who has a strong mixed cargo port background and a proven implementation record can mitigate potential risks while delivering your TOS solution.

A TOS built on industry-wide best practice presents an opportunity for you to reflect on, and possibly adapt, your business processes to match. This should be balanced with the ability to customize TOS functionality to meet the unique needs of your port.

Deciding to not transition to a new digital TOS carries potential risks too, including:

- loss of knowledge when personnel change
- reputational damage and/or loss of trade if your port is perceived as being unreliable and incapable of delivering customer value
- expensive and delayed TOS enhancements, reducing your ability to adapt quickly to industry changes
- minimal back up and support

### ***It's hard to implement a mixed cargo TOS***

The complexities of managing a mix of general cargo—bulk, break bulk and project cargo—are managed with ease by a TOS that has been designed from the ground up with this in mind. A general cargo add-on to a solution designed for containers is unlikely to handle the intricacies of your business as easily.

Likewise, implementing a TOS at a mixed cargo port requires specific logistics experience and a robust implementation methodology to deliver a seamless transition to your new port operations. The faster you get to Go Live and begin to take advantage of the benefits of your new TOS, the faster you can recoup your costs.

Managing your new intuitive and user-friendly TOS shouldn't require a large team of IT experts either; all staff should be able to receive system training with ease.

Establishing a comprehensive change management plan is imperative to implementation success as most internal resistance to change is related to a fear of job loss. This can be easily managed with a plan that helps guide staff through any operational changes.

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***INSIGHT:*** *Vendors with proven mixed cargo experience can mitigate the risks during implementation and get you to Go Live faster.*



**The first step  
on the  
digital ladder.**

# Opportunities to grow an insights-driven business.



An intelligent TOS at the centre of your mixed cargo port is the first step on to the digital ladder. Choosing a TOS with flexibility and scalability will enable you to grow your business at a pace you set.

While the first step towards digitalization may be replacing paper-based processes, a long term goal of your IT strategy may be to establish an Internet of Things (IoT) that connect, interact and exchange data. Eventually, your modern TOS will generate a pool of powerful data that, when aggregated in certain ways, can be turned into valuable insights<sup>4</sup> that influence the way you manage your operations.

A modern digital TOS presents a number of opportunities for long-term value, including greater visibility, improved customer experience, reduced operating costs and increased agility.

*A MODERN TOS CAN GENERATE A POOL OF POWERFUL DATA THAT CAN BE TURNED INTO VALUABLE INSIGHTS.*

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**INSIGHT:** *Smart ports will benefit from leveraging their data in innovative ways across their logistics ecosystem.*

***Improve visibility and transparency over your operations so you can make more informed decisions***

It's critical that your business can extract better value from all existing investments and eliminate revenue leakage and resource wastage. This includes using reporting to identify bottlenecks, using automation where possible to reduce errors, establishing a proactive maintenance plan for safer operations and fewer unexpected delays, and establishing a port-wide integration of systems (beyond the TOS) for streamlined back-office operations.

A modern TOS enables you to capture and record all events and data in real time, ensuring a more accurate flow of cargo information between parties along the supply chain. The *GEODIS 2017 Supply Chain Worldwide Survey* stated that "77% of the firms asked have no visibility or a restricted view... only 6% have complete [end-to-end] visibility [over the supply chain]." <sup>5</sup> Extended visibility is a growing ambition among stakeholders in the supply chain who are aware that it leads to closer collaboration with partners, better risk anticipation, enhanced flexibility, elevated customer satisfaction and higher profitability. This remains one of the top customer demands trending now.

***Provide better customer experience and value by extending services and reducing errors***

Meet and exceed your customer's increasing expectations of reliability and compliance while building your reputation as an innovative port that can adapt easily to changes in the industry. Customers must be confident in your ability to turn cargo around quickly, safely and accurately. Anything you can do to reduce the risk of errors and penalties, along with your ability to resolve issues swiftly, is a positive. A TOS can help you to accurately record cargo movement and capture billable transactions for cargo on your port, adding accountability and assurance for stakeholders.

The need to extend services along the supply chain is increasing. A modern TOS can facilitate information transparency for cargo authenticity. Web applications enable TOS functionality to be extended to your customers' customers. A TOS that can handle a variety of cargo, enable efficient cargo movement, facilitate excellent customer service offerings, and improve supply chain visibility will consistently deliver higher customer value.

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**INSIGHT:** *Extending services to your customer's customers delivers high value and efficiency for the entire ecosystem.*

***Reduce your operating costs and capture additional revenue streams to support your future growth***

A modern digital TOS helps to automate operations—improving cargo movement, resource allocation and traffic flows—to extract better value from your existing equipment and to reduce risk. Reporting functionality can help you to identify and resolve operational bottlenecks.

A TOS can help your port capture all revenue by mapping cargo transactions to invoice lines using a flexible tariff engine. This ensures that all activities are captured for invoicing and there is no revenue leakage.

Cost savings made will allow you to plan for and invest in future growth—be it personnel, machinery or services—when your business needs change. While striving to reduce costs, many terminal operating systems feature functionality such as the ability to provide warehousing facilities which can help you attract new business and generate additional revenue streams. Non-THC (terminal handling charges) income can represent an additional 10-20% of a port's annual income.

***Increase the agility of your business with a TOS that can adapt as requirements and industry demand change***

In response to market changes, your business must adapt, whether by supporting different cargo types and mixes, handling increased cargo volumes, or supporting new services. A modern TOS will facilitate these changes easily within a single system that provides operational flexibility and scalability.

Future agility is guaranteed through the adoption of a modern digital TOS—a semi-automated port management solution—that will help you extend your business beyond the port “walls” through the ability to share all data. The ability to remove information silos and encourage information sharing internally and externally will add value to your wider port community.

Data management has been identified as the “technological priority”<sup>6</sup> by supply chain stakeholders and the use of innovative and intelligent TOS technology facilitates this priority to help mixed cargo ports remain agile and competitive.

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***INSIGHT:*** *The ability to capture all non-THC income can represent an additional 10-20% of a port's annual income.*

**Partner with the  
best and grow  
your business.**



## What to look for in a TOS for mixed cargo ports.



Historically, mixed cargo ports have endured TOS solutions designed for containers but sold as a solution for mixed cargo through the addition of an ill-fitting general cargo add-on. Now there are multiple TOS options designed specifically for mixed cargo. Discover the TOS that best fits your business, by looking for these key features from the top mixed cargo TOS vendors.

### *Is it designed to cater for all cargo types?*

Managing mixed cargo is complex and requires intelligent functionality and the ability to configure the TOS to the port's unique requirements. A consistent user interface for managing all cargo types ensures a user friendly experience. Warehousing, stuffing and unstuffing, packaging and handling functionality is required to fully support mixed cargo operations. If available, graphical views provide easy real-time monitoring and management.

### *Is it reliable and secure?*

Mission-critical operations require a TOS with a high level of security, backed by full disaster recovery. A modern TOS provides the ability for each port to customize access control to authorized users and secure active data links through the use of HTTPS and SSL technology. Cloud-based technology is available but brings a degree of risk and unreliability for any location with unstable infrastructure. Local servers provide far greater stability and reliability.

### *Is it scalable and flexible?*

A modern, digital TOS that is scalable, flexible and configurable can easily support changes in port operations—such as an increase in cargo volume or a change in the mix of cargo types—as a result of new industry and customer demands.

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**INSIGHT:** *If your port manages mixed cargo, ensure your TOS has been designed specifically for mixed cargo.*

***Is it based on industry best practice?***

A TOS well suited to ports is one based on the industry leading process benchmarks and best practices. The trick to getting the most out of your TOS is to strike a balance between customizing a TOS to fit your operations, and adapting your operations to reflect industry best practices.

***Does it support flexible working environments?***

Your business model may change over time in response to changes in the industry and economy. It is important to select a TOS that can manage all styles of ports, from intermodal to inland ports, and single to multi-terminal ports, all within a single system. Check if the TOS supports multiple time zone functionality—traversing dates and locations from a single application and server instance for even greater flexibility.

***Does it have real-time connectivity?***

A TOS that is designed to provide a real-time view of port operations and cargo activity will deliver accurate, up to date information upon which you can make insights-based decisions to improve your business. Real-time connectivity is important for collaboration between stakeholders.

***Is it easily accessible?***

A powerful TOS offers easy access via desktop applications, mobile applications in operational areas and a web portal that provides visibility for the extended supply chain.

***Does it have flexible reporting and invoicing?***

Ambitious ports must be able to produce regular, accurate reports of all operational activities. A TOS with a powerful reporting module will enable mixed cargo ports to better manage their cargo, identify issues and opportunities across the port, and track progress on business initiatives. Integrated invoicing functionality ensures that ports can generate charges and invoices for all chargeable activities.

***Does it meet health and safety levels?***

All ports are required to meet levels of safety for personnel. Ensure the safety on your yard by using a TOS that can schedule works to separate man and machine. Machine lockouts can be put in place to restrict an operator's access to cargo and terminal areas. Mobile applications, if available, will further improve health and safety operations by providing TOS access direct to the workers on a port.

***Is integration easy?***

Modern ports are an ecosystem of various elements—there is no single solution that does everything—so it's important for your port to find the best solution for each domain of activity and that these solutions are capable of working together. An integrated ecosystem of solutions will ensure you have a complete view of your port's operations.

To ensure a seamless and accurate flow of information across your port's ecosystem, ensure the TOS can integrate with other systems in your port, such as your general ledger system, port hardware, peripherals and Customs. Query the capability to export data directly to third-party systems including SQL, web services and external enterprise solutions, and check if standard EDI formats are supported. EDI systems are less error-prone and more efficient than manual data transfers.

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**INSIGHT:** *A modern TOS enables ports to quickly, easily and accurately report what is happening in the port, enabling faster and smarter operational and strategic decision making.*

# How to identify the best mixed cargo TOS vendor.



Choosing the TOS that best fits your business requirements is a critical decision that will shape the future of your mixed cargo port. Who you choose to partner with is a large part of this decision as this relationship lasts beyond the implementation phase and continues into business as usual.

## *Proven experience in the mixed cargo market*

With a myriad of TOS providers on the market, choose a partner with a proven history of designing and implementing solutions at mixed cargo ports around the world. Each implementation is unique but vendors with vast mixed cargo experience can provide insight and expertise based on decades of knowledge that new players simply cannot.

## *Employees with strong logistics industry background*

Choose a solution that has been designed by people who are not only software experts, but who also have extensive knowledge of logistics, shipping and mixed cargo port operations.

## *Levels of support provided*

Time is money and when your port can't operate, penalties will be incurred (not to mention likely further ramifications). Ensure that you have tiers of support available to cater for low-risk system enhancement requests through to critical high-risk issues that need immediate resolution. A vendor with a support record you can rely on is crucial.

## *A proven and robust implementation methodology*

A smooth implementation depends on a robust methodology. A thorough plan reduces the risk of delays and resource waste, while ensuring your port is up and running as fast as possible.

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**INSIGHT:** *Your chosen TOS vendor will be your port's most influential partner.*



**Time to invest  
in your port's  
digital future.**

# A mixed cargo TOS for your smart port survival.



**For mixed cargo ports to survive in the rapidly evolving logistics industry, they must embrace new technology and ways of working.**

The key objectives of a port are shifting from a focus on cost to a focus on value for customers and the wider port community. To meet these objectives, a thorough analysis of your current operations must be completed along with defining a roadmap to your desired future state. These will inform the smart IT strategy driving your digital transformation.

Data is driving insights and innovations the world-over, and ports are no exception. Terminal operators must be able to collect, analyze and share data from their port in order to make informed decisions and build an agile port that adapts easily to change. Innovative TOS technology at the centre of your mixed cargo operations can facilitate and manage the data loop between the physical and digital worlds. This data loop informs your business to deliver optimized operations and offer improved value-add services to your entire port ecosystem.

The challenges to change will always be present; however, the opportunities from change will exist only for ports ambitious and agile enough to get ahead of the crowd. The most effective TOS solution is one that has been designed specifically for mixed cargo and customized to meet your port's unique requirements.

It is no longer enough to measure success on throughput alone. In the words of Prof. Dr. Olaf Merk: "smart ports are the only ports who will survive."<sup>8</sup>

**The time to invest in your port's digital future is now.**



## About us.



Master Terminal™ from Jade Logistics is the digital TOS solution that is powering the growth of ambitious mixed cargo ports around the world.

With a system that is built on the foundations of industry-wide best practices, yet is flexible enough to be able to incorporate the unique needs of each port that it is implemented at, Master Terminal is the trusted and robust solution of choice for port authorities and terminal operators.

**CLICK HERE** to arrange a consultation with one of our industry experts.

<sup>1</sup> GEODIS. (2017). 2017 Supply Chain Worldwide Survey [Insights about the supply chain challenges].

<sup>2</sup> "Logicalis CIO Survey 2017-2018 | Think Hub". www.logicalis-thinkhub.com. October 2017. Retrieved 2019-04-24.

<sup>3</sup> PwC. (2018, October 24). PwC CEE Transport & Logistics Trend Book 2019: Five Forces Transforming Transport & Logistics [Five key forces transforming the T&L segment.]. Poland.

<sup>4</sup> Berns, S., Dickson, R., Vonck, I., & Dragt, J. (2017). Deloitte Port Services; Smart Ports – Point of View [Developing insight driven solutions and IoT applications for seaports.]. The Netherlands.

<sup>5</sup> GEODIS. (2017). 2017 Supply Chain Worldwide Survey [Insights about the supply chain challenges].

<sup>6</sup> GEODIS. (2017). 2017 Supply Chain Worldwide Survey [Insights about the supply chain challenges].

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