



No port is an Island.

Integrating core information systems is key to improved efficiency and growth for mixed cargo ports.

Ports, more than most enterprises, understand the interdependent nature of business. They are literally hubs of economic activity, linking commercial communities throughout the world and interacting with a broad range of organizations in their supply chain from end customers to shipping companies, stevedores, regulators, labor unions, and trucking companies.

While this physical integration with the transport chain has been the focus of ports for thousands of years, increasingly it is the digital integration that is becoming critical. How well your terminal operating system (TOS) communicates and shares data securely with other systems is the key to improving efficiency and opening up opportunities for innovation and growth.

In a typical port, cargo planning and operations are centered around the TOS software, but ports also use other software solutions, such as systems for financial management, procurement and inventory, asset management, human resources and payroll, crane control, DGPS, weighbridges and gate control.

What's the business case for integration, and how can you approach it in a way that minimizes operational risk?

How well your TOS communicates and shares data securely with other systems is key to improving efficiency.

All about efficiency

At the heart of the drive to integration is a port's ongoing quest for improved efficiency from greater automation.

The goal of integration is to increase the speed of operations. By reducing the delays of exchanging data between systems, and improving the accuracy of that data, ports can eliminate bottlenecks, reduce errors and the time taken to correct them, and identify areas for improvement.

Securely bringing together data from multiple systems within the port and the port supply chain in real time, puts more comprehensive and up-to-date information in the hands of decision makers widening their view of port operations.

An effective approach to integration allows ports to more quickly deploy changes, and integrate new software, people and process into the business. Integration can also provide a low-cost way to extend the life of legacy systems where the return on investment from replacing them is low.

A good integration strategy also creates a platform to introduce new innovations. It means your TOS remains the 'brain' of your port operations, while you can be flexible about introducing new efficiency gaining or revenue generating opportunities; for example, using RFID tags to track break bulk cargo, or OCR to scan container numbers.

The future is clear

Increasingly integration will be about improving visibility along the supply chain. Customers have been empowered by the access to information that the Internet gives them. There is rising demand for greater transparency and better service at more affordable prices. Ports and the shipping industry are not immune from this pressure.



Take food as an example. The consumer and regulatory pressure to be able to trace food products from source to plate is growing rapidly and extends to the shipping journey that food produce takes. This is resulting in broad awareness and acceptance of the need to improve the global supply chain, to provide customers with faster movement of goods at a cheaper price with greater visibility and therefore confidence.

The 'table stakes' remain of course. The historical supply chain standard of OTIF (On-Time, In-Full) remains a primary goal, as does cost reduction. What is becoming increasingly important, according to industry studies, is visibility.

Visibility of the movement of goods can transform the efficiency of supply chains, and therefore better meet growing customer demands. This is where industry has a major challenge. The GEODIS: 2017 survey of 623 global supply chain professionals from 17 countries showed that 77% of firms have either no visibility or a restricted view over their supply chain. Only 6% have complete visibility.

Integrating systems across a port, and a port community, is a key step to improving this visibility.

A solid foundation is having a TOS that is an integrated system rather than a set of disparate modules.



A central brain and strong connectors

The place to start building effective integration is the operational brain of a port, the TOS. An integrated TOS is a solid foundation. Modular systems that operate as standalone applications typically require each module to be upgraded separately, and the challenge of integrating with systems outside the TOS is made more complex and laborious.

Your TOS needs to support a wide range of mechanisms for connecting to third-party software and systems. These should include:

- EDI, with support for EDIFACT and X12 standards, and a wide range of data types including user-defined formats, and over multiple transport protocols. EDI is the communication standard for the shipping industry.
- Interfaces to financial management systems such as SAP, Microsoft Navision/ Dynamics Nav, Oracle, and JDE, using XML and/or CSV.
- Web services (XML, SOAP, WSDL) that expose a broad range of TOS functionality.
- Database access via ODBC.
- Exporting data to an SQL server for archiving, data warehousing, or processing by other systems.
- Real-time TCP/IP connections, for example, to REFCON, RFID readers, boom gates, weighbridges, in-machine electronic scales, and external gate systems.
- Exporting event information in near-real time, to enable external systems to respond to events as they occur.
- Custom reports in PDF, XML, CSV, and custom file formats.

What do you need to watch out for?

While integration delivers clear benefits to any mixed cargo port operation, there are also a number of risks that can erode this value.

Key risks to be aware of

Too many integration points:

Trying to integrate many systems at once increases the risks, due to the complexity and large number of interdependencies. The best approach is to scale down the scope of initial integration projects and focus on quick wins.

Data security:

The security of any data being exchanged is paramount—the data is core to your business. The system architecture and security protocols need to be in line with the sensitivity of the data being exchanged.

Changing requirements:

When the business case for an integration hasn't been carefully thought through, requirements can change frequently and create chaos in a port integration project. Without undermining agility, investing time in the requirements gathering and planning phases to gather the best requirements for your project lowers your risk.

Technical complexity:

Where possible you should use standardized interfaces and communications protocols for integrations, avoiding the cost and risk of custom programming or complex middleware technology.

Overly aggressive timetables:

Realistic expectations need to be set by developing an accurate estimate of the integration efforts required for each project.

Including the right people:

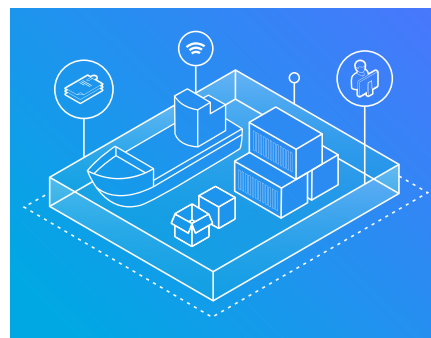
It is really important to involve people from along the flow of data and experts for each system involved. This level of collaboration is necessary for success but requires an investment of time from the project manager.

Change management:

A formal process to manage change requests is key to avoiding problems that flow from changing requirements during the project.

Inadequate testing:

Introduce testing early and often; don't tack testing on at the end of the project.



Ready to connect?

Key activities within the Jade Logistics Methodology are outlined here to help you deliver a successful integration:

Solution Design

Preparation	<ul style="list-style-type: none"> Understand the business objectives and why we are integrating Understand the system landscape along with the data security requirements Decide on which systems need to change and what the integration method will be
Configuration	<ul style="list-style-type: none"> Conduct some basic integration testing to confirm connectivity Develop or configure the necessary changes in the respective systems
Super User Training & Solution Confirmation	<ul style="list-style-type: none"> Jointly conduct basic functional testing Conduct iterations with different data from different scenarios

Solution Delivery

User Acceptance Testing (UAT) & End User Training	<ul style="list-style-type: none"> Conduct end-to-end testing across all systems involved Provide any further training or support to the team who will operate the system
Go Live	<ul style="list-style-type: none"> Develop a Go Live plan, considering implications for all stakeholders Run a trial Go Live to identify and resolve issues, and make the final Go Live a low risk event
Transfer to Operations	<ul style="list-style-type: none"> Full responsibility transfers to the operational team and the project is reviewed to document learnings for future integration projects

Port communities have always been closely connected in a commercial sense; it's the nature of the business. Connecting all systems within the port, and then with those of your port community, is increasingly critical to be a confident and growing operation.

About Master Terminal from Jade Logistics Group

Designed to handle all cargo types in one integrated system, Master Terminal is the world's leading terminal operating system (TOS) for mixed cargo ports.

Master Terminal is licensed at over 120 terminals worldwide, from vehicle terminals in Italy to steel terminals in North America.

Implementation is the key to success, and our implementation record is second to none in the industry. Our proven and robust methodology, partnership approach, thorough training and unrivaled implementation timeframes deliver tangible results fast.

Jade Logistics has been designing, building, and supporting innovative logistics software since 1993. Our experienced people understand the global logistics industry and are the foundation on which we build long-term relationships with our customers.

We have offices in New Zealand, Australia, USA, the Netherlands, the United Arab Emirates, and Indonesia.

For more information, visit us at **jadelogistics.com**