



Kale Logistics

Technology that Transforms



Maritime Single Window

Connecting the World of Maritime

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Executive Summary

As digitalisation is gaining ground rapidly, the idea that cross-industry data sharing helps create safer, cleaner and more efficient shipping is indisputable. In fact, more and more territory should be delved into when it comes to exploring the benefits of data exchange and holistic solutions that drive digital maturity and shape the connected environment. Engaging all stakeholders together is vital, as is keeping up with the regulatory framework governing data-sharing practices in the Maritime industry.

The International Maritime Organization (IMO) has pitched for time-bound action plans and the adoption of a Maritime Single Window system as part of the digitisation of the shipping industry. IMO's Convention on Facilitation of International Maritime Trade, or Facilitation Convention, has made electronic data exchange mandatory since 2019. Most recently, new amendments coming into effect from 1 January 2024 will make it mandatory for public authorities to establish, maintain and use single window systems for the electronic exchange of information required on arrival, stay and departure of ships in Ports.

With this global vision, Kale Logistics Solutions is working to ensure that Maritime industry can adopt the digital revolution - while ensuring safety, boosting environmental protection and managing cyber security risks. This paper details the Maritime Single Window (MSW) system developed by Kale on the IMO e-FAL guidelines will be vital to drive the digitalisation of shipping, enhance its efficiency and sustainability, and therefore facilitating trade and fostering economic prosperity

The document is not only limited to defining MSW but also includes the participating stakeholders, processes involved, and necessary functions involved. It details the cooperation between all relevant stakeholders, from shipping, Ports and Logistics service providers.



Need Making Digitisation a Priority for the Industry – Challenges and Needs

With the increase in Maritime trade and cargo volumes, the dependency on human resources is expensive and time-consuming for quick cargo processing. Maritime cargo movement accounts for 70% of the overall cargo movement across the globe among different modes of transport. However, this accounts for only 30% of the overall cost of transportation.



International Maritime Trade, selected years (millions of tons loaded)

Year	Tanker	Main bulk	Other dry cargo	Total cargo
1970	1440	448	717	2605
1980	1871	608	1225	3704
1990	1755	988	1265	4008
2000	2163	1186	2635	5984
2005	2422	1579	3108	7109
2006	2698	1676	3328	7702
2007	2747	1811	3478	8036
2008	2742	1911	3578	8231
2009	2641	1998	3218	7857
2010	2752	2232	3423	8408
2011	2785	2364	3626	8775
2012	2840	2564	3791	9195
2013	2828	2734	3951	9513
2014	2825	2964	4054	9842
2015	2932	2930	4161	10023
2016	3058	3009	4228	10295
2017	3146	3151	4419	10716
2018	3201	3215	4603	11019
2019	3163	3218	4690	11071
2020	2918	3196	4531	10645
2021	2952	3272	4761	10985

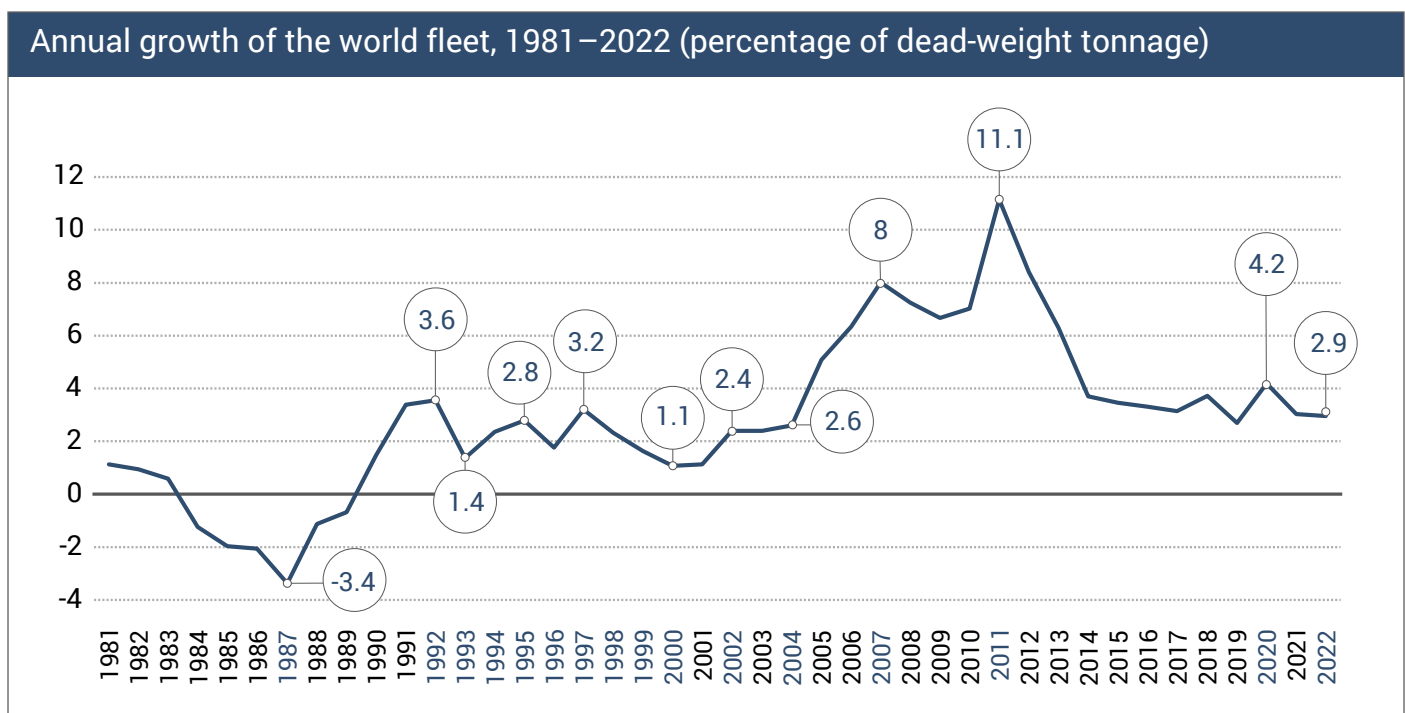
The above table indicates an increasing volume of cargo transported via the ocean. Although global shipping routes were disrupted due to the COVID-19 pandemic, the trend shows a steady volume increase.

Maritime transport has become the most reliable and cost-effective cargo movement. Benefiting from this trend, Shipping Lines have started focusing on new routes and fleet expansion.

A recent study shows an increase of 2-3 per cent in fleet size for 2022 compared to 2021. Although there is a slight increase in the passenger fleet segment, most of them have only been around the cargo carriers.

World fleet by principal vessel type, 2021–2022 (thousand dead-weight tons & % change)

Principal types	2021	2022	% change 2022 over 2021
Bulk carriers	913 175 42.75%	946 135 43.02%	3.61%
Oil tankers	619 331 28.99%	629 014 28.60%	1.56%
Container ships	281 825 13.19%	293 398 13.34%	4.11%
Other types of ships	243 949 11.42%	251 742 11.45%	3.19%
Offshore supply	83 805 3.92%	84 281 3.83%	0.57%
Liquefied gas carriers	77 458 3.63%	83 770 3.81%	8.15%
Chemical tankers	49 055 2.30%	49 662 2.26%	1.24%
Other/n.a.	25 443 1.19%	25 690 1.17%	0.97%
Ferries & passenger ships	8 188 0.38%	8 340 0.38%	1.85%
General cargo	77 910 3.65%	78 819 3.58%	1.17%
World total	2 136 190	2 199 107	2.95%





While the Ports adapt to these trends and develop the capabilities to handle the additional vessels, the internal processes remain the same. These processes include internal formalities at each Port, complying with the regional rules and regulations, following the customs protocol at these Ports, etc.

Although it is important to follow these processes, it is observed that these standards have proven to be the bottlenecks delaying cargo movement. Vessels lose significant time to comply with these processes and obtain clearance. This time could be from a few hours to a few days depending on the size and capacity of the Ports.

It is advisable to adopt and use technology solutions like Maritime Single Window (MSW), as suggested by the IMO, to speed up the advanced information and clearance processes for vessels and cargo at the Port. MSW will help the Ports create a standard for vessel declarations and clearances. It has been built with the capacity to not just manage the above challenges, but also improve the overall operational productivity of the Ports.

In other words, MSW is a neutral platform that allows electronic information exchange between various stakeholders. They are an increasingly important part of simplifying cross-border trade. Overall, MSW plays a key role in boosting productivity in the world's most cutting-edge Ports. It only brings together the stakeholders of the Maritime sector onto a single platform. It also facilitates government-to-business, business-to-government and business-to-business transactions in a highly secured environment.

Customs, Forwarders, Shippers, Shipping Lines, Terminal Operators, inspection agencies, hauliers and other stakeholders need access to smart, and real-time information. The platform aims to provide the business community with a streamlined process for submitting Export and Import information to customs and other government agencies.



International Maritime Organization

Driving Digital Maturity

IMO – the International Maritime Organization is the United Nations specialized agency responsible for the safety and security of shipping and preventing Marine and atmospheric pollution by ships. Shipping is a truly international industry, and it can only operate effectively if the regulations and standards are agreed upon, adopted and implemented on an international basis. And IMO is the forum at which this process takes place.

International shipping transports more than 80 per cent of global trade to people and communities worldwide. Shipping is the most efficient and cost-effective method of international transportation for most goods; it provides a dependable, low-cost means of transporting goods globally, facilitating commerce and helping to create prosperity among nations and people.

The world relies on a safe, secure and efficient international shipping industry, and this is provided by the regulatory framework developed and maintained by IMO. IMO measures cover all aspects of international shipping—including ship design, construction, equipment, manning, operation and disposal – to ensure that this vital sector remains safe, environmentally sound, energy-efficient and secure.

Shipping is an essential component of any programme for future sustainable economic growth. Through IMO, the Organization's Member States, civil society and the shipping industry are already working together to ensure a continued and strengthened contribution towards a green economy and growth in a sustainable manner. The promotion of sustainable shipping and sustainable Maritime development is one of the major priorities of IMO in the coming years.

As part of the United Nations family, IMO is actively working towards the 2030 Agenda for Sustainable Development and the associated SDGs. Indeed, most of the elements of the 2030 Agenda will only be realized with a sustainable transport sector supporting world trade and facilitating the global economy. IMO's Technical Cooperation Committee has formally approved linkages between the Organization's technical assistance work and the SDGs.

While the ocean's goal, SDG 14, is central to IMO, aspects of the Organization's work can be linked to all individual SDGs. Energy efficiency, new technology and innovation, Maritime education and training, Maritime security, Maritime traffic management, and the development of the Maritime infrastructure: the development and implementation, through IMO, of global standards covering these and other issues will underpin IMO's commitment to providing the institutional framework necessary for a green and sustainable global Maritime transportation system.



INTERNATIONAL
MARITIME
ORGANIZATION



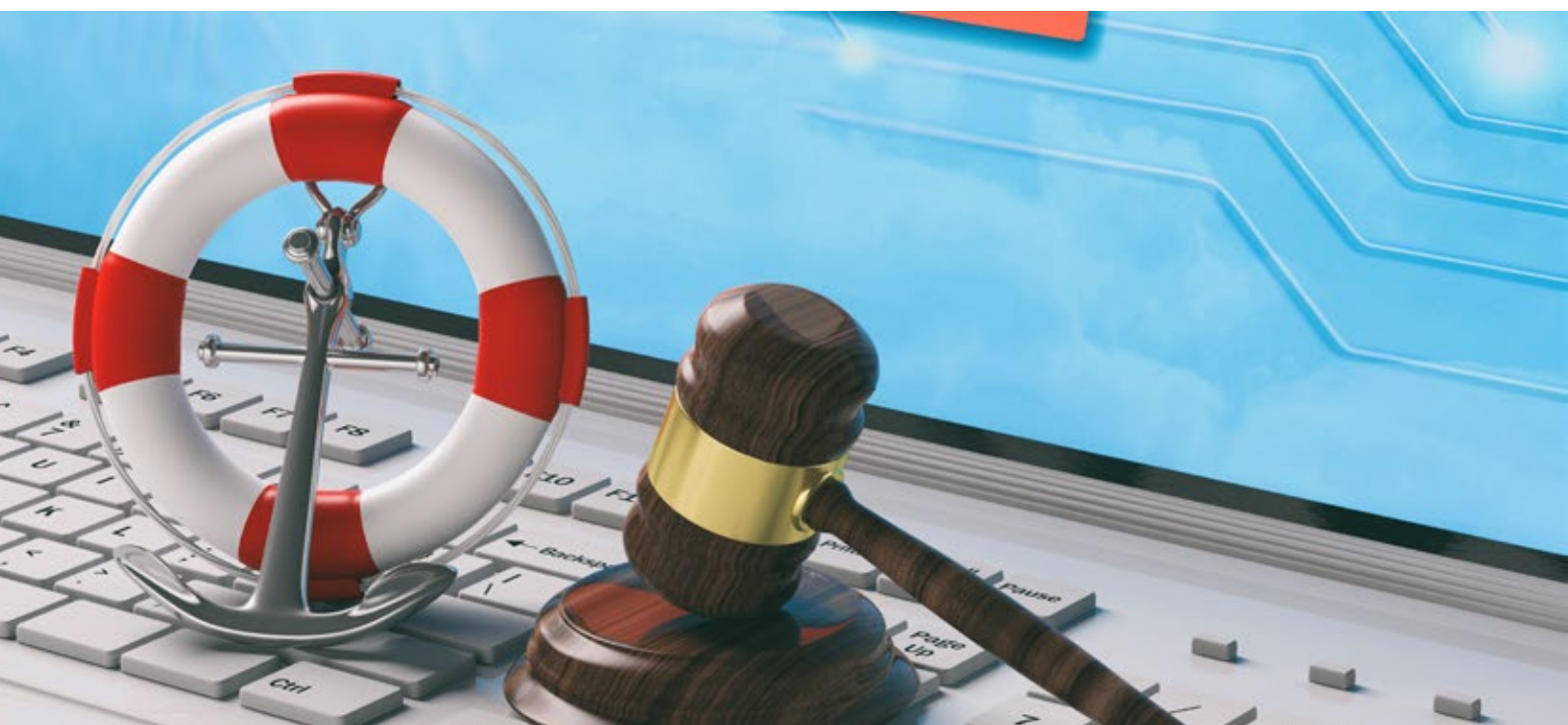
IMO's Amendment to FAL Mandate

IMO's Facilitation Committee has adopted amendments to the Facilitation (FAL) Convention that mandates a single window system for data exchange in Ports worldwide. Thus marking a significant step in the acceleration of digitalisation in shipping.

These amendments were adopted at the Facilitation Committee (FAL 46) session, which met from 9 to 13 May 2022 and is expected to enter into force on 1 January 2024. The amendments update the provisions of the FAL Convention on the mandatory use and maintenance of single window systems for the electronic exchange of data in Ports for ship clearance.

This exchange of information is required on arrival, stay and departure of ships in Ports. In addition, public authorities will have to combine or coordinate the electronic transmission of the data to ensure that information is submitted or provided only once and reused to the maximum extent possible.

The Facilitation Convention was adopted in 1965 and contained standards and recommended practices and rules for simplifying formalities, documentary requirements and procedures prior to ships' arrival, stay and departure. The Convention has been updated continuously, embracing digitalisation and automation for operations.



Maritime Single Window

Shaping the Connected Environment

Maritime Single Window is a technology-neutral platform that includes integrated electronic data exchange before the arrival, stay, and departure of ships, persons, and cargo at Ports.

In other words, Maritime Single Window is a single point of data entry for documentary requirements and procedures in Maritime transport. It can significantly change the information exchange process between Maritime stakeholders and the seaport business community.

Implementing a Maritime Single Window as a single-entry point can harmonise and standardise the information exchange. And it can provide fast, reliable, paperless, and efficient transactions.

Following are the major stakeholders involved in MSW: -

Maritime Stakeholders



Vessel
Operator



Shipping
Agent



Port
Authority



Terminal
Operator

Regulatory Bodies



Port
Health



Marine
Department



Port State
Control



Coast
Guard



Port
Security

Government Agencies



Customs

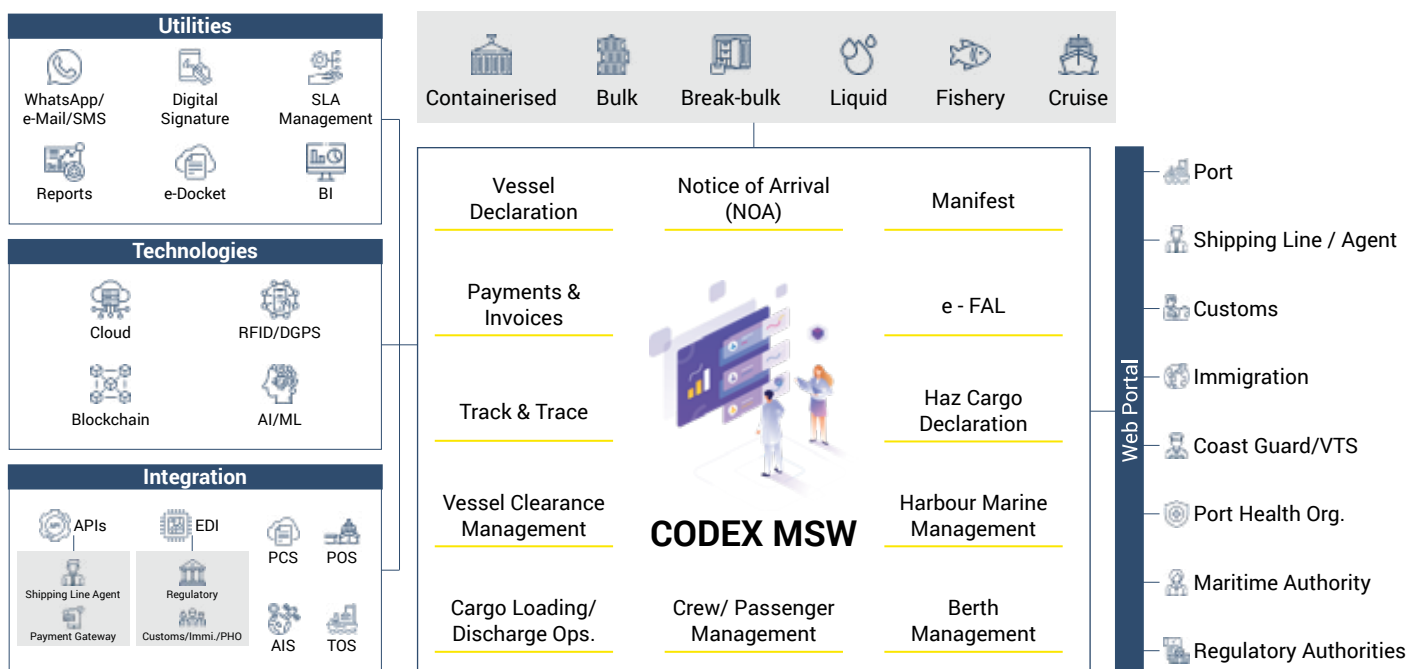


Immigration

Functional Architecture of MSW

Modules and Context

This section provides an overview of the key components, attributes, technologies, and participants in the MSW system. The below functional overview diagram illustrates that the MSW consists of an environment whereby stakeholders can perform various documentation processes and obtain confirmation from the system. The system will be developed using the latest technology, be open to integration, and provide a single login for all stakeholders.



The following sections explain the MSW system's distinctive functional capabilities:



Notice of Arrival (NOA):

Provision to submit e-Notice of Arrival (Vessel) to multiple stakeholders like - Ports, Customs, Immigration, PHO, and Regulatory agencies.



Vessel Declaration:

Provisions for Shipping Line Agent to capture vessel particulars, submit vessel, crew, passenger declaration to Port / Terminal, and obtain the Vessel Calling No.



e-FAL:

Digitally submission of IMO complied FAL forms and certificates to Ports, Customs, Immigration, PHO and Regulatory agencies and obtain e-approvals.



Vessel Clearance:

Obtaining vessel clearance from multiple agencies such as Ports (No Dues), Customs (Arrival Clearance, Departure Clearance, Port Clearance), PHO, and other regulatory agencies.



Arrival/ Departure Information:

Provision to update and view timely information about ETA (Estimate Time of Arrival), ATA (Actual Time of Arrival), ETD (Estimate Time of Departure) & ATD (Actual Time of Departure).



Manifest:

Ability to upload or generate import & export manifest files and files it with the Customs Authority digitally.



Track & Trace:

End-to-end tracking of vessel operations on various milestones like - Arrival at Anchorage, Navigation Chanel movement, Berthing, Shifting, Sailing, etc.

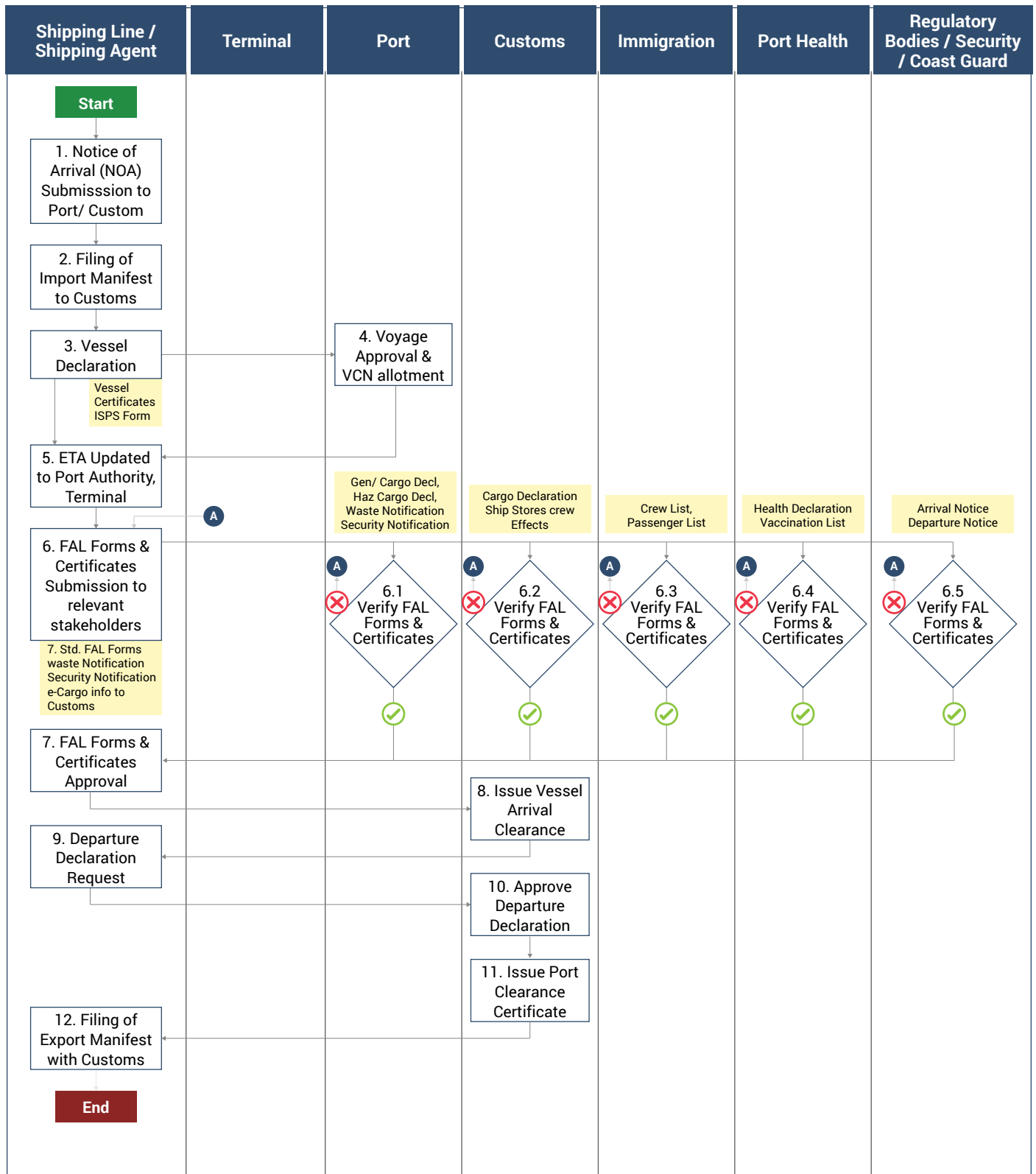


Integration:

Ability to integrate the MSW data information with MSW stakeholder's systems via API, FTP Folder Mechanism etc.

Process Flow

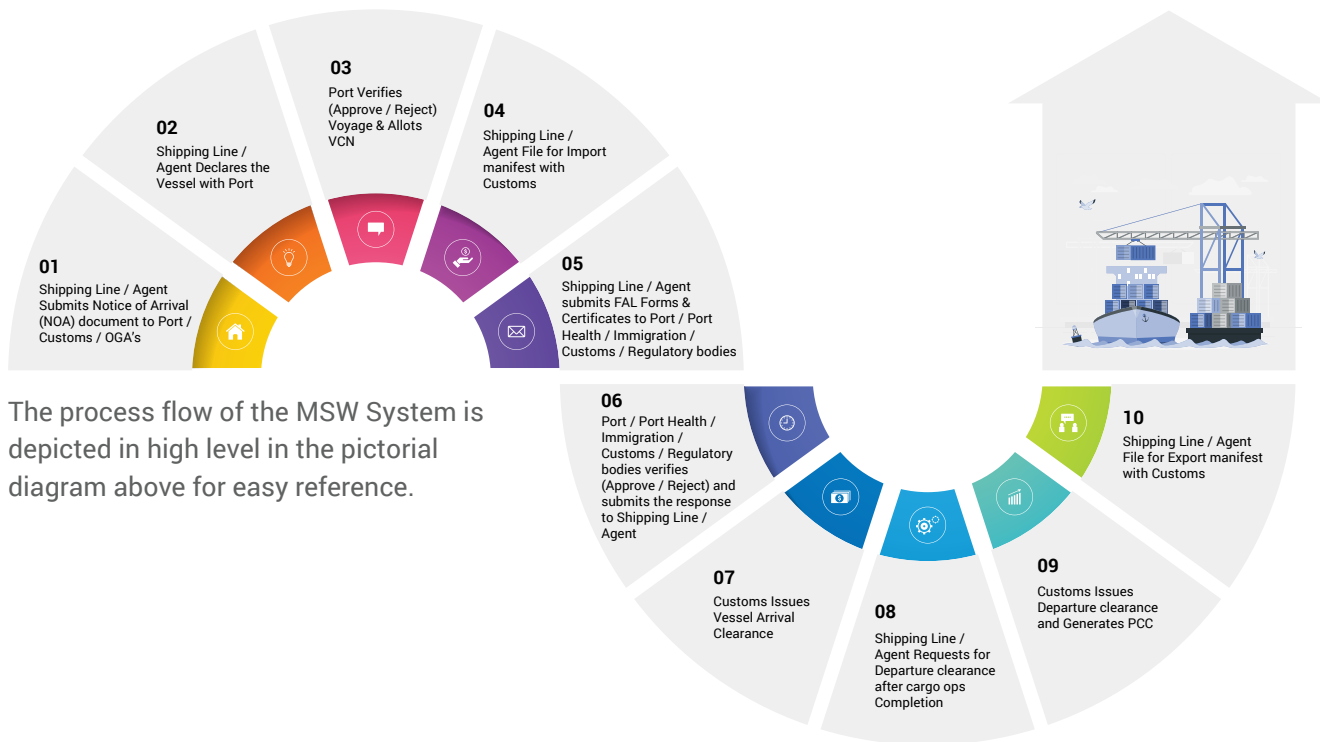
This section contains the detailed process flow diagram that explains in-depth understanding of MSW, key stakeholders involved in the process and the documents exchanged between the relevant stakeholders.



Stakeholder Interaction

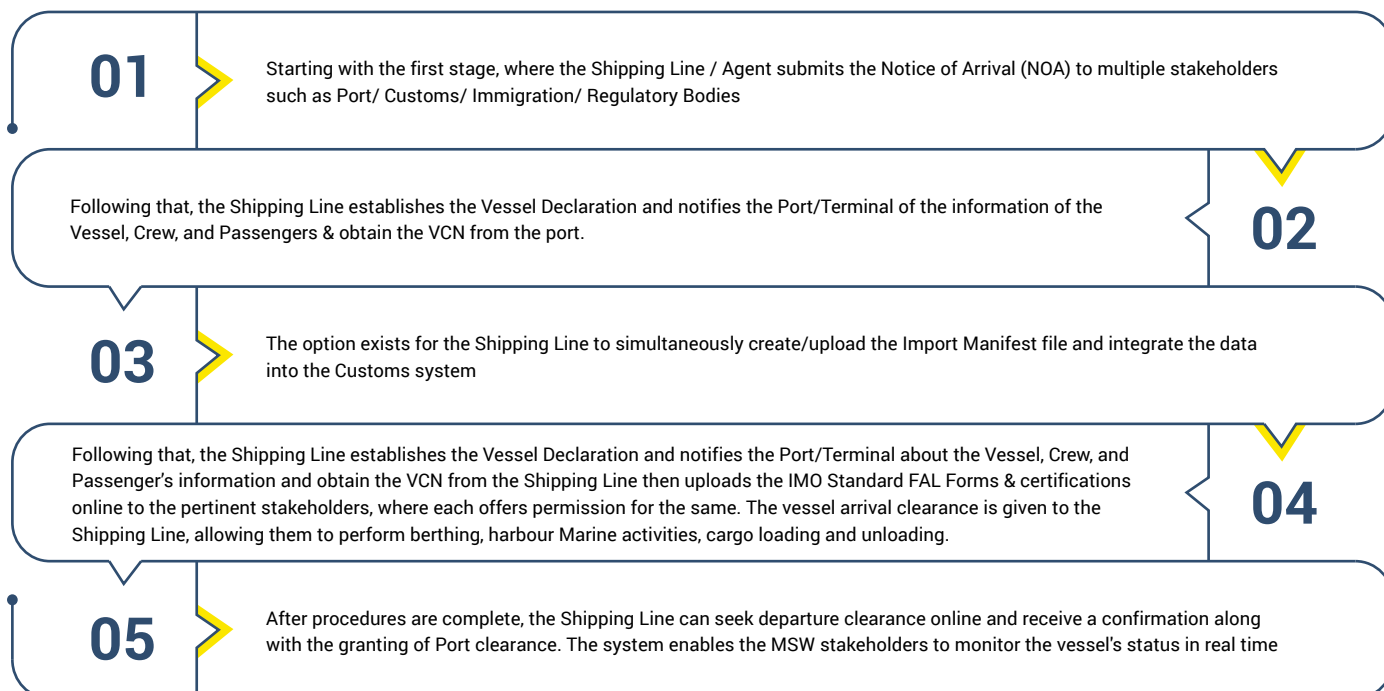
High level Process flow

The section covers the high-level process flow of the Maritime Single Window (MSW), which involves important stakeholders.





The process flow of the MSW System is depicted in high level in the pictorial diagram above for easy reference.


The key stakeholders involved in the process flow are Shipping Line / Agent, Port, Terminal, Customs, Immigration, Port Health, Regulatory Authorities & Coast Guard/ Security. The high level step-wise process flow explanation is given below:



Information / Data Exchange

The following section discusses the documents that are exchanged between stakeholders during the entire MSW process and the current system in existence.

Service/ Process Name	Stakeholders Involved	Documents Exchanged	Mode of Docs Exchange
Vessel Arrival Info	Shipping Line / Agent / Port/ Customs / Immigration / Regulatory Authorities	Notice of Arrival	 
Vessel Registration	Shipping Line / Agent / Port	Vessel Certificates	 
Voyage Registration	Shipping Line / Agent / Port	VCN Allotment	 
Import Manifest	Shipping Line / Agent / Customs	Manifest File	 
FAL Forms	Shipping Line / Agent / Customs / Port Health / Immigration / Maritime & Regulatory Authorities	IMO Standard FAL Forms Waste Notification Security Notification	 
FAL Certificates	Shipping Line / Agent / Customs / Port Health / Immigration / Maritime & Regulatory Authorities	IMO Standard Vessel Certificates	 
Vessel Arrival Clearance	Shipping Line / Agent / Customs / Port	-	 
Departure Clearance	Shipping Line / Agent / Customs / Port	Port Clearance	 

Ledger
 Email
 Form
 SMS

Business Benefits to Stakeholders

Below mentioned are some of the key benefits stakeholders experience by implementing MSW:



Ensuring crew and cargo safety:

Minimizing incidents at the Ports with advance information sharing



Unaffected Global Supply Chains:

Ports can remain fully operational during public health emergency to ensure complete functionality of global supply chains



Data Harmonisation:

It will bring about greater harmonisation and better sharing of the relevant data across governmental systems, bringing meaningful gains to all parties involved in cross-border trade



Combat Illegal Trade:

Prevention and suppression of the smuggling of wildlife and cargo theft on ships from mislaid, mislabelled containers.



Malpractices associated with ship-shore interface:

Auto-System clearance leading to faster no manual approvals. It can enhance the availability and handling of information, thereby simplifying and expediting information flows between trade and Government



Standardisation of processes:

With the single window coming into the picture, all the information and data exchange between the shipping lines / vessel operators and other stakeholders is shared through a single channel only ensuring complete standardisation of the processes.



Reduction in cargo and vessel turnaround time:

Due to quick vessel clearances, the vessel berthing and unberthing is quick. This is directly affects the overall vessel dwell-time followed by cargo dwell-time.



Elimination of physical processes and paperwork:

With digitised processes capable to operate in an pandemic situation, all the human involvement is avoided along with emilination of papers. Each declaration contributes to a set of copy which is avoided using MSW.

Implementation Guidelines & Proof of Concepts

This section covers the following implementation strategy that is recommended for successful implementation to convert current reporting and vessel clearance processes into a Maritime Single Window.

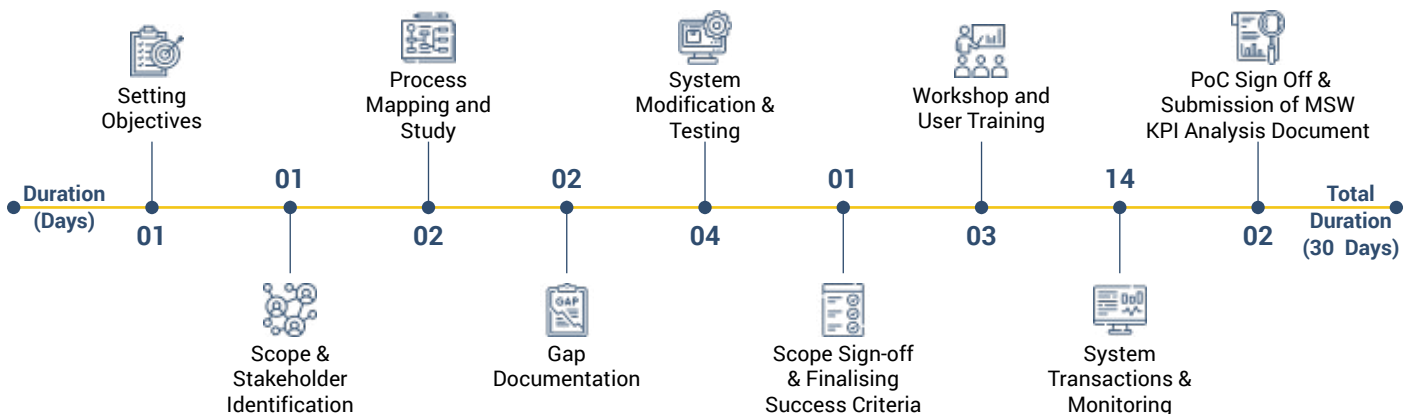
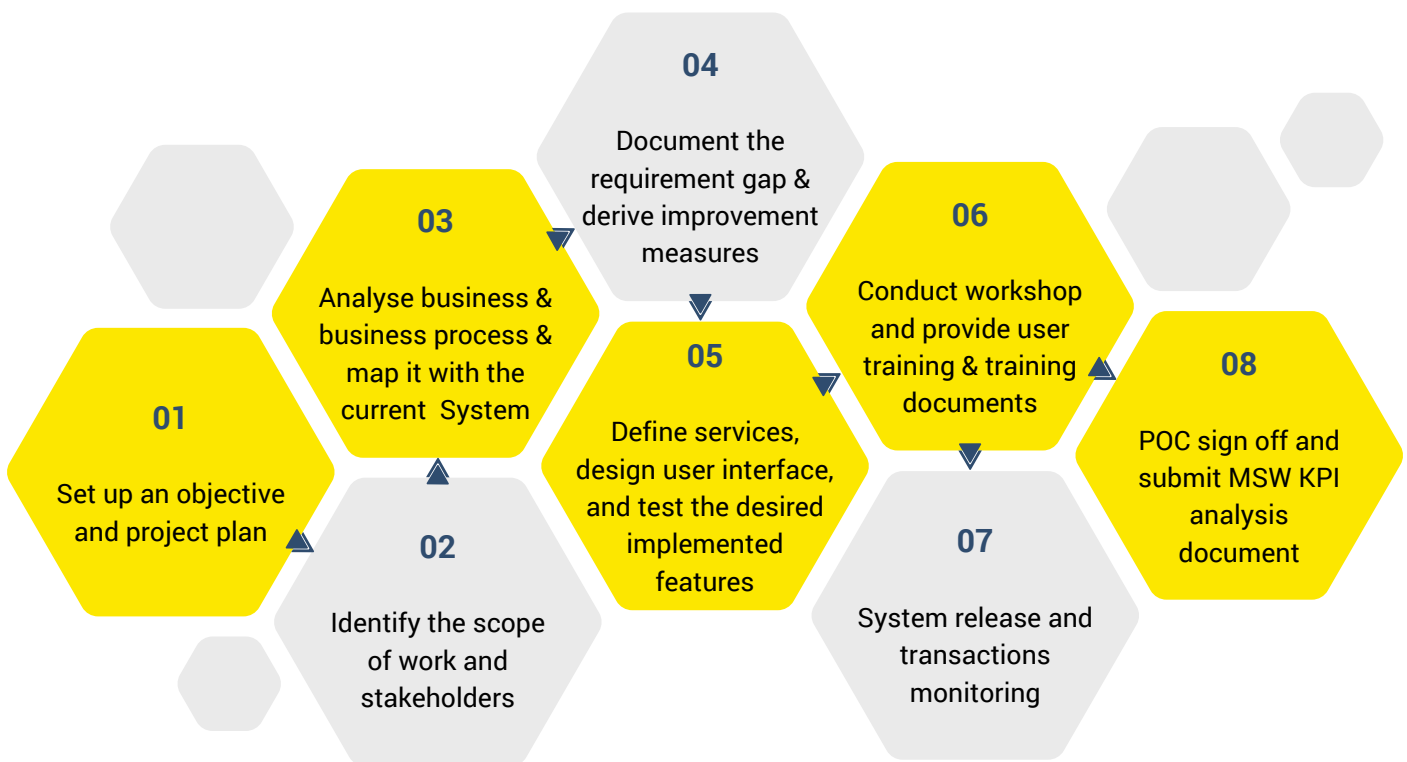
Implementation Guidelines

This section outlines the approaches and procedures for implementing a Maritime Single Window, which should consider the following high-level steps into account:




Proof of Concept (PoC) Service

It is advised to begin with a PoC because implementing the complete project can be challenging, time-consuming, and involve numerous stakeholders. A proof of concept is a small project used to validate technical & functional ideas, including integration, technology, and processes. The intention is to evaluate the idea's viability and confirm the underlying presumptions. A Proof of Concept (PoC) can be a crucial tool to show the software's capabilities and its compatibility with the stakeholder's needs. A successful proof of concept (PoC) connects expectations and reality. It is not only the ideal technique to explain features, functions, and benefits but also ensures that the finished product meets the MSW user's expectations. The following flow outlines the processes required for setting up an MSW based on prior experience.



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Terminologies

This section includes commonly used terms when describing a Maritime Single Window (MSW) application.

01	MSW	Maritime Single Window
02	PCS	Port Community System
03	POS	Port Operating System
04	TOS	Terminal Operating System
05	UNECE	United Nations Economic Commission for Europe
06	UN/EDIFACT	United Nations Electronic Data Interchange for Administration, Commerce and Transport
07	IPCSA	International Port Community Systems Association
08	KPI	Key Performance Indicator
09	BL	Bill of Lading
10	VCN	Vessel Call Number
11	PHO	Port Health Organisation
12	IMO	International Maritime Organization
13	NOA	Notice of Arrival
14	BI	Business Intelligence
15	PCC	Port Clearance Certificate
16	ETA	Estimated Time of Arrival
17	ATA	Actual Time of Arrival
18	ETD	Estimated Time of Departure
19	ATD	Actual Time of Departure
20	API	Application Programming Interface
21	FTP	File Transfer Protocol
22	PoC	Proof of Concept
23	ICT	Information and Communications Technology

About the Author



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Kale Logistics Solutions

Umesh Kurlekar brings with him more than 20 years of experience from Port operations and shipping lines. He spearheads the CODEX Port Community System (PCS) development for global markets. Executed under his leadership, CODEX has been recognized by esteemed institutions like the United Nations, Asian Development Bank and CII for its innovation in Trade Facilitation.

About Kale Logistics Solutions

Incorporated in 2010, Kale Logistics Solutions is a trusted global IT solutions partner for several Fortune 500 companies worldwide, offering a comprehensive suite of IT solutions for the Logistics industry.

With in-depth domain knowledge and technical expertise, Kale has created a suite of comprehensive IT Enterprise Systems and Cargo Community Platforms, which offer a single electronic window capable of supporting operational flows, percolating data to various stakeholders, and facilitating the paperless exchange of trade-related information between stakeholders.

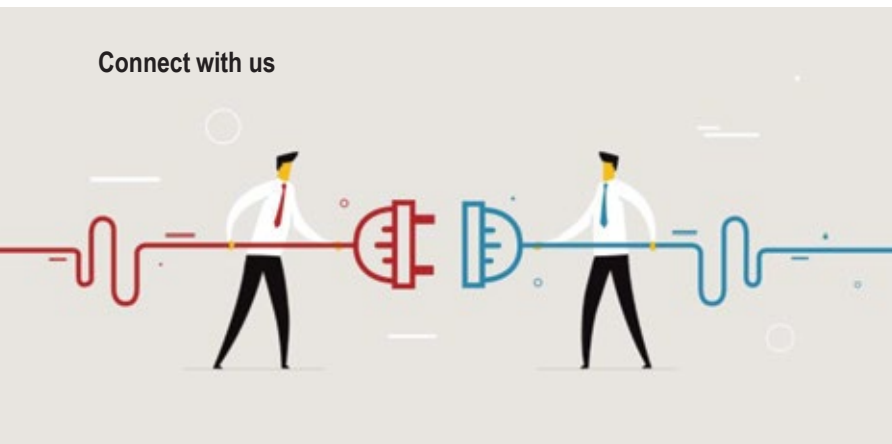
Kale's community and enterprise solutions cater to a wide network of Logistics Service Providers (LSPs) and help strengthen and improve their operational and business capabilities.

With offices in Mumbai, Delhi, Dubai, Kenya, Netherlands and USA, and 5500+ clients worldwide across 30+ countries, Kale Logistics Solutions is a major player in the industry who is recognised by global bodies like United Nations, Asian Development Bank, KPMG, Kellogg Business School, Global Ports Forum, etc.

Kale's solutions help Ports, Shipping Lines, Container Yards, Container Freight Stations, Airports, Cargo Ground Handlers, Airlines, Freight Forwarders, Customs Brokers, 3PL Providers, Transportation Providers, Warehouse Operators, and other Regulatory bodies achieve faster growth, standardise processes, and operational efficiencies with Digitisation and Automation.



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