

# SEA TRANSPORT HARBOUR CRAFT | INDUSTRY DIGITAL PLAN

A Guide for Small and Medium Enterprises (SMEs) to Assess Their Digital Readiness and Opportunities to Go Digital



Sector lead:



In support of:



Supported by:



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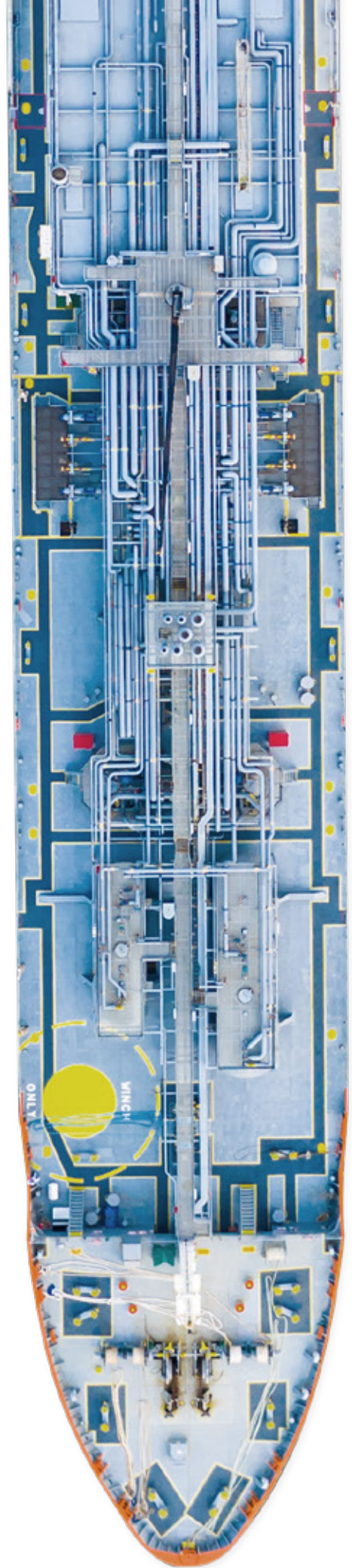
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# OUR SEA TRANSPORT INDUSTRY

Sea Transport Industry which comprises the port, port services, shipping and maritime services sub-sectors, is a key pillar of Singapore's economy.



<sup>1</sup>GDP refers to Gross Domestic Product  
<sup>2</sup>TEUs refers to Twenty-foot Equivalent Units

Source: Maritime & Port Authority of Singapore (MPA)

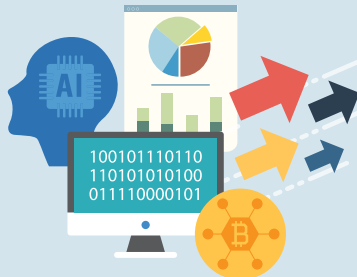
## TRENDS IMPACTING SEA TRANSPORT INDUSTRY



### Intensifying competition from key ports and maritime centres

Drives the need for our sea transport sub-sectors to improve operational efficiency amid expansion plans by regional ports (e.g. Klang, Tanjung Priok) and increased efforts from aspiring maritime centres (e.g. Dubai, Shanghai).

Source: Maritime & Port Authority of Singapore (MPA)



### Accelerating pace of technological advancements

Disrupts existing business models and brings opportunities for greater productivity through the use of technology e.g. Data analytics, Internet-of-Things, artificial intelligence, blockchain, smart sensors, robotics process automation.



### Shrinking local workforce with rising costs and more educated workforce with higher aspirations

Increases the need for better-skilled and trained manpower to leverage technology to achieve more by optimising limited resources, streamlining and simplifying business processes.

## INDUSTRY TRANSFORMATION MAP (ITM)

The Sea Transport Industry Transformation Map (ITM) was launched in January 2018. Developed by the Maritime and Port Authority of Singapore (MPA) in partnership with the industry, unions and other government agencies, the Sea Transport ITM builds on MPA's strategic long term plans to develop Singapore's next-generation port and strengthen our International Maritime Centre (IMC). Specific initiatives have been laid out under the Sea Transport ITM to catalyse innovation, drive productivity improvements and enhance the skills of the maritime workforce.

Source: Sea Transport Industry Transformation Map



Click [here](#) or scan this QR code for more details on the Sea Transport ITM

## SMEs GO DIGITAL

Aligned to the ITM, the Industry Digital Plan (IDP) is part of the SMEs Go Digital Programme that helps to make going digital simple for SMEs.



SMEs GO DIGITAL

### 3 STEPS TO GO DIGITAL



#### For more information

Scan the QR code or visit  
[www.imda.gov.sg/SMEsGoDigital](http://www.imda.gov.sg/SMEsGoDigital)

#### Support available

- Chief Technology Officer-as-a-Service (CTO-as-a-Service)
- Industry Digital Plans
- Pre-Approved Solutions
- Start Digital
- Grow Digital
- Advanced Digital Solutions
- Government Grants e.g. Productivity Solutions Grant (PSG)

#### 1 | Is your business digital-ready?

Find out using the Industry Digital Plan (IDP) for your sector.

#### 2 | How do you get started?

Take up pre-approved solutions with grant support.

#### 3 | Where can you get help?

Access the CTO-as-a-Service for support.

### SMEs Go Digital comprises the following:

#### CTO-as-a-Service

Assess your digital readiness, explore digital solutions and request for digital advisory and project management services.

#### INDUSTRY DIGITAL PLANS (IDP)

Step by step guide on digital solutions and training required at each stage of your business growth.

#### PRE-APPROVED SOLUTIONS

Proven off-the-shelf digital solutions pre-approved by IMDA to meet your business needs. Government grants, e.g. Productivity solutions Grant (PSG), are available for the adoption of these solutions.

#### START DIGITAL

Foundational digital solutions for new SMEs to get a head start in going digital.

#### GROW DIGITAL

Leverage Business-to-Business (B2B) and Business-to-Consumer (B2C) e-commerce platforms to go international, without a physical presence overseas.

#### ADVANCED DIGITAL SOLUTIONS

Advanced and integrated digital solutions to help you strengthen business continuity and build longer term resilience.

# DIGITAL ROADMAP FOR HARBOUR CRAFT

This digital roadmap serves as a guide for you to follow on your digital journey.

## STAGE 01

### GETTING READY FOR THE DIGITAL ECONOMY

Streamlined Operations  
Optimised Resources



Vessel Management



Order Booking and Deployment Management



Video Surveillance and Monitoring

## STAGE 02

### GROWING IN THE DIGITAL ECONOMY

Integrated Insights  
Collaborative Ecosystem



e-Procurement



Advanced Vessel Management

## STAGE 03

### LEAPING AHEAD

Autonomous Operations  
Intelligent Business



Drones for Maritime Operations



Autonomous Piloting

### BUSINESS CAPABILITIES

Human Resource, Payroll, Accounting, Resource Management, Training Management

Note: This roadmap will be updated over time as digitalisation of the industry progresses and new technologies are introduced to the industry.

# STAGE 01

## GETTING READY FOR THE DIGITAL ECONOMY

### Streamlined Operations, Optimised Resources

Streamline and integrate business processes to enhance productivity and efficiency



#### DIGITAL SOLUTION



#### Vessel Management

#### SOLUTION DESCRIPTION

Manage vessel fleet with an integrated system.

Key features include:

- Real-time vessel tracking and monitoring with historical records
- Vessel deployment scheduling/crew assignment
- Document management
- Inventory management on-board vessel/storage
- Communication platform between vessels and main office
- Integrate with other systems e.g. order booking and deployment management, accounting

#### BENEFITS

- Improved access to real-time monitoring of vessel fleets
- Optimised vessel utilisation through effective planning and deployment
- Easier access to records and information



#### Order Booking and Deployment Management

Manage customer's booking and deployment of vessel/crew electronically.

Key features include:

- Integration with real-time vessel location tracking
- Real-time update of estimated time of arrival (ETA)/location of customer's vessel
- Customer sign-off upon completion of order and billing to customers
- Integrate with other systems e.g. accounting, payroll

- Removed data entry error of physical booking forms
- Easier scheduling and deployment of vessel/crew
- Improved operation efficiency



#### Video Surveillance and Monitoring

Manage external/internal surveillance of vessels with tamper-proof cameras provisioned with night vision capability. Key features include real-time off-site/on-demand monitoring.

- Improved access to real-time monitoring of vessel fleet
- Minimised disputes in event of incident and insurance claims
- Reduced pilferage of cargo/fuel

# STAGE 02

## GROWING IN THE DIGITAL ECONOMY

### Integrated Insights, Collaborative Ecosystem

Integrate insights and collaborative ecosystem to improve your profit



#### DIGITAL SOLUTION



**e-Procurement**  
(For harbour craft operators as a customer)

#### SOLUTION DESCRIPTION

Allow harbour craft operators to source and buy components, spares, tools and supplies through e-Commerce platforms.

#### BENEFITS

- Reduced cost with availability of more supply options
- Easier sourcing of supplies



**Advanced Vessel Management**

Advanced features to Vessel Management.

Key features include:

- Monitoring of fuel consumption, speed, travel distance, engine performance, engine vibration, sound, temperature
- Maintenance record management

- Optimised vessel performance and maintenance to reduce operating cost

STAGE  
03

## LEAPING AHEAD

### Autonomous Operations, Intelligent Business

Use autonomous robotics and advanced technology to make your business smart



#### DIGITAL SOLUTION



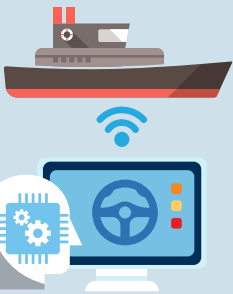
Drone for Maritime Operations

#### SOLUTION DESCRIPTION

Deploy unmanned drones to assist in maritime operations such as the delivery of small packages and conduct surveillance.

#### BENEFITS

- Improved manpower productivity with job redesign to perform higher value-added tasks
- Developed capabilities for new business opportunities



Autonomous Piloting

Use machine learning and artificial intelligence to enable autonomous vessel piloting.

- Improved safety and reduced number of incidents
- Increased productivity with job redesign to perform higher value-added tasks

## DIGITAL SKILLS NEEDED

Digital skills are required for all harbour craft job roles, to varying levels of proficiency. All job roles may require upskilling to support your digitalisation journey.



### ALL USERS

Require broad-based digital literacy and awareness

### ADVANCED USERS

Require higher proficiency digital skills

### “TECH BASICS” COURSES

**Broad-based innovation mindset and digital literacy/awareness**

SSG funded broad-based courses e.g. Skills Future for Digital Workplace

**Solution-specific user level digital skills**

Vendor solution-specific training

### “TECH ADVANCED” COURSES

**Higher proficiency level digital skills**

Training mapped to the Skills Framework for Sea Transport and Information and Communication Technology (ICT)



Frontdesk Operation



Harbour Pilot



Technician









Port Limit Engine Driver

# DIGITAL SKILLS NEEDED

## DIGITAL ROADMAP ON TRAINING – HARBOUR CRAFT



	STAGE 01 GETTING READY FOR THE DIGITAL ECONOMY	STAGE 02 GROWING IN THE DIGITAL ECONOMY	STAGE 03 LEAPING AHEAD
<b>“TECH BASICS” COURSES</b> Require broad-based digital literacy and awareness	 Introduction to Harbour craft Operations with Digital Operations (I) Benefits of Using Analytics for Start-ups and SMEs Vendor Solution Specific Training	 Leveraging Digital Platforms for Passenger / Load (Supply) and Inventory Management Vendor Solution Specific Training	 Application of Drones and Autonomous Piloting for Maritime Operations (I) Vendor Solution Specific Training
<b>“TECH ADVANCED” COURSES</b> Require higher proficiency digital skills	 Introduction to Harbour craft Operations with Digital Operations (II) Hands-On Data Protection Officer Training Introduction to Data Analytics	 Leveraging Digital Platforms for Procurement and Advanced Vessel Management	 Application of Drones and Autonomous Piloting for Maritime Operations (II)

Training programmes aligned to **Skills Framework** and emerging areas under **SkillsFuture Series**

LEGEND



CLASSROOM



+ BLENDED LEARNING

## GET STARTED TODAY

You will be supported at every stage of your digital journey, through three simple steps:

### 1 | Is your business digital-ready?

Find out if you are digital-ready by using the IDP resources [here](#) or scan the QR code.



Sea Transport IDP



CTO-as-a-Service



Maritime & Port Authority of Singapore

### 2 | How do you get started?

- Tap on the [CTO-as-a-Service](#) to complete your Digital Readiness Self Check in the web app and select from the recommended digital solutions that best meet your business needs.
- Visit the [MPA](#) website to contact solution providers to purchase and implement digital solutions. If funding support is required, apply for MPA SME Grant.

### 3 | Where can you get help?



SME Centre

- Tap on the [CTO-as-a-Service](#) for digital consultancy and project management services.
- Visit [SME Centre](#) if you require business advisory.



## ADDITIONAL INFORMATION



### FOR SME

#### DIGITAL CONSULTANCY & SOLUTIONS

##### CTO-as-a-Service

[go.gov.sg/CTOaaS](https://go.gov.sg/CTOaaS)

##### SMEs Go Digital

<https://imda.gov.sg/SMEsGoDigital>

##### GoBusiness Gov Assist

<https://www.gobusiness.gov.sg/productivity-solutions-grant/>

##### MPA Website

<https://www.mpa.gov.sg/web/portal/home/maritime-companies/research-development/industry-digital-plan>

##### Be Safe Online

[https://www.csa.gov.sg/~media/csa/documents/publications/be\\_safe\\_online/be\\_safe\\_online\\_handbook.pdf](https://www.csa.gov.sg/~media/csa/documents/publications/be_safe_online/be_safe_online_handbook.pdf)

#### BUSINESS ADVISORY

##### SME Centres managed by trade associations:

- Association of Small and Medium Enterprises (ASME)
- Singapore Chinese Chamber of Commerce & Industry (SCCCI)
- Singapore Indian Chamber of Commerce & Industry (SICCI)
- Singapore Malay Chamber of Commerce & Industry (SMCCI)
- Singapore Manufacturing Federation (SMF)

<https://www.enterprisesg.gov.sg/smecentre>  
Enterprise Infoline: +65 6898 1800

### FOR INDIVIDUALS

#### CAPABILITY UPGRADING & CAREER FACILITATION

##### Institute of Higher Learning

<https://www.sp.edu.sg/pace/sea-transport-industry-digital-plan>

##### Course Directory

<https://www.myskillsfuture.gov.sg/content/portal/en/training-exchange/course-landing.html>

##### Fundamentals for Future Economy

<https://www.skillsfuture.gov.sg/digitalworkplace>

##### Skills Framework

<https://www.skillsfuture.gov.sg/skills-framework>

##### TechSkills Accelerator (TeSA)

<https://www.go.gov.sg/TeSA>

##### WSG's Careers Connect

<https://www.wsg.gov.sg/career-services.html>

##### WSG PCP

<https://conversion.mycareersfuture.sg/Portal/ProgramListing.aspx?source=PCP>

##### e2i Centres

<https://e2i.com.sg/app>

### FOR ICM VENDORS

##### SMEs Go Digital

<https://www.imda.gov.sg/icmvendors>

This Industry Digital Plan is part of the SMEs Go Digital programme  
For programme information and feedback: <https://imda.gov.sg/SMEsGoDigital>

# #SGDIGITAL

Singapore Digital (SG:D) is a nation-wide movement to unify Singapore's digitalisation efforts. Whether it is help for different industries to start their digitalisation journeys, or creating new ecosystems, opportunities and capabilities for the future, SG:D is set to take us ahead as a leading digital global node. The :D smiley face icon in the logo signifies the optimism of Singaporeans advancing together with digital innovation. As we progress into the digital economy, it is all about the people – the heart of all we do.



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The content of this guide is provided for informational purposes only and is correct as of February 2022.