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

An initiative by:  
Sector lead:  
Supported by:
Sea Transport Industry which comprises the port, port services, shipping and maritime services sub-sectors, is a key pillar of Singapore’s economy.

- Employed about 170,000 workers
- Contributed 7% to Singapore’s GDP\(^1\)
- Handled 36.6 million TEUs\(^2\) in container volume in 2018
- Home to more than 5,000 Maritime establishments

\(^1\)GDP refers to Gross Domestic Product  
\(^2\)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).

**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.

Source: Maritime & Port Authority of Singapore (MPA)

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
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.

3 STEPS TO GO DIGITAL

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? Contact the nearest SME Centre for support.

Support available
- Consultancy Services (SME Digital Tech Hub)
- Government Grants (e.g. Productivity Solutions Grant - PSG)
- Project Management Services
- Pre-Approved Solutions
- Start Digital Pack

For more information
Scan the QR code or visit www.imda.gov.sg/SMEsGoDigital

SMEs Go Digital comprises the following:

**Industry Digital Plan (IDP)**
Guide on digital solutions and training required for each stage of your business growth.

**Consultancy Services (SME Digital Tech Hub)**
Expert advice you can tap on, to transform your business using digital technologies.

**Project Management Services**
Project managers with expertise to support you in implementing the digital solutions.

**Pre-Approved Solutions**
Proven SME-friendly digital solutions pre-approved by IMDA to meet your business needs. Government grants such as Productivity Solutions Grant (PSG) are available for the adoption of these solutions.

**Start Digital Pack**
Foundational digital solutions for new SMEs, to help you get a head start in going digital.
DIGITAL ROADMAP FOR HARBOUR CRAFT
This digital roadmap serves as a guide for you to follow on your digital journey.

**STAGE 01**
GETTING DIGITAL ECONOMY READY
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.
**Vessel Management**

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

**BENEFITS**

- 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.

**BENEFITS**

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

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**ADVANCED VESSEL MANAGEMENT**

**DIGITAL SOLUTION**

**Advanced Vessel Management**

**SOLUTION DESCRIPTION**

Advanced features to Vessel Management.

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

**BENEFITS**

- Optimised vessel performance and maintenance to reduce operating cost
**LEAPING AHEAD**

**Autonomous Operations, Intelligent Business**
Use autonomous robotics and advanced technology to make your business smart

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**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

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**DIGITAL SOLUTION**

- **Autonomous Piloting**

**SOLUTION DESCRIPTION**

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

**BENEFITS**

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

**DIGITAL SKILLS NEEDED**

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)

- Improved safety and reduced number of incidents
- Increased productivity with reassignment to do higher value-added tasks
DIGITAL SKILLS NEEDED
DIGITAL ROADMAP ON TRAINING – HARBOUR CRAFT

STAGE 01
GETTING DIGITAL ECONOMY READY

"TECH BASICS" COURSES
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

STAGE 02
GROWING IN THE DIGITAL ECONOMY

STAGE 03
LEAPING AHEAD

"TECH ADVANCED" COURSES
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 Passenger / Load (Supply) and Inventory Management

Vendor Solution Specific Training

Application of Drones and Autonomous Piloting for Maritime Operations (I)

Vendor Solution Specific Training

Application of Drones and Autonomous Piloting for Maritime Operations (II)

Vendor Solution Specific Training

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

Course Directory: https://www.sp.edu.sg/pace/sea-transport-industry-digital-plan
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.

2. **How do you get started?**
   Visit the [MPA](#) website to contact solution providers to purchase and implement digital solutions. If funding support is required, apply for Sea Transport IDP Grant.

3. **Where can you get help?**
   - Make an appointment with a Business Advisor at your nearest SME Centre for digital advice, or be referred to the Principal Consultants at the SME Digital Tech Hub for more advanced digital needs.
   - Contact [Singapore Manufacturing Federation (SMF)](#) for digital project managers who can help you implement your digital solutions.
This Industry Digital Plan is part of the SMEs Go Digital Programme
For programme information and feedback: https://www.imda.gov.sg/SMEsGoDigital
The content of this guide is provided for informational purposes only and is correct as of April 2019.