

SINGAPORE. AN INTERNATIONAL MARITIME CENTRE

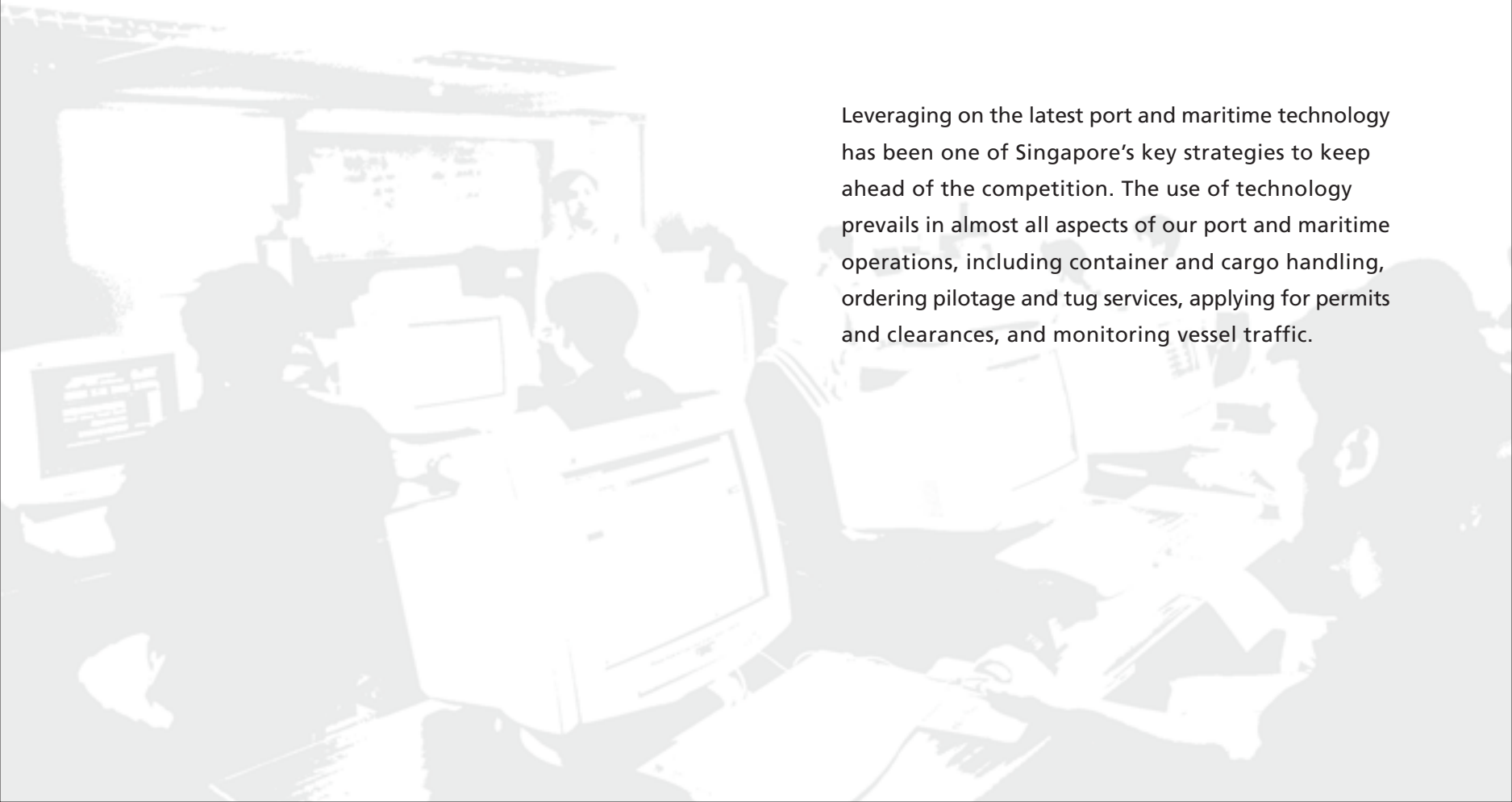
MARITIME R&D AND TECHNOLOGY





MARITIME R&D AND TECHNOLOGY

Leveraging on the latest port and maritime technology has been one of Singapore's key strategies to keep ahead of the competition. The use of technology prevails in almost all aspects of our port and maritime operations, including container and cargo handling, ordering pilotage and tug services, applying for permits and clearances, and monitoring vessel traffic.



TECHNOLOGY FOR MARITIME BUSINESS

Over the years, the MPA has developed and implemented an interconnected host of IT applications to enhance the efficiency and effectiveness of maritime business operations in Singapore.

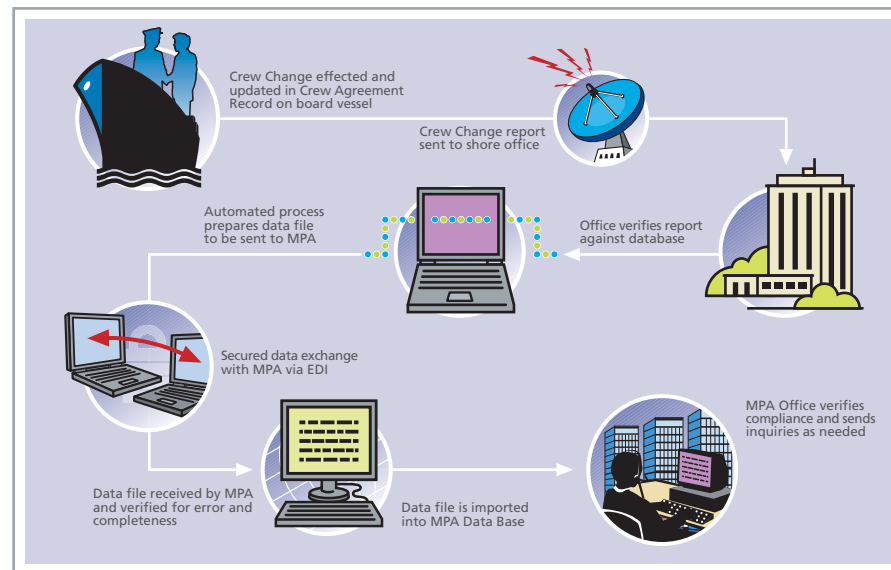
A PAPERLESS PORT

MARINET is an integrated e-commerce system developed by the MPA to deliver e-services to the maritime community. Using it, the maritime community can easily interact and transact with us anytime, anywhere. Among other things,

it can be used to submit statutory declarations, process crew manning documentations, request for port services and apply for permits, all through a few simple mouse clicks.

MARINET's uniqueness lies in marrying several functions required by the maritime community into a ubiquitous community network. It helps to simplify business processes, remove duplication in information submissions, cut costs and cycle time, and provide up-to-date vessel information.





B2B (BUSINESS-TO-BUSINESS) INTEGRATION

By making use of the versatile EDI (Electronic Data Interchange) technology, companies can link up their business processes electronically with the MPA to facilitate information exchange and sharing. This partnership effectively minimises manual work processes and reduces business costs for the companies when transacting with us.

► CREW MANNING

A ship management company connected with the MPA through EDI can easily and speedily keep us informed of all crew changes, opening and closing of crew agreements, and renewal of crew agreements. They can extract the relevant information from their own internal IT systems and send the information directly to us, without the need for any human intervention. This helps to improve data accuracy and eliminates processing delays.

► FINANCIAL EDI

The MPA has also established EDI interconnectivity for financial and billing processes, which enables companies transacting with us to obtain electronic copies of our bills for accounting and automatic bill reconciliation purposes. This eliminates the need for our customers to re-enter the billing information into their own backend financial and accounting systems.

WEB PORTAL SERVICES

Through the Internet, the maritime community has a wide range of maritime information and services literally at their fingertips.

► SINGAPORE MARITIME PORTAL

The Singapore Maritime Portal (www.singaporemaritimeportal.com) provides a convenient one-stop Internet gateway to information and services for the local and international maritime community. It is organised into five main sections:

- **E-Market**

Links to real-time trading of maritime goods and services

- **Community Networks**

Quick access to key port systems, namely MARINET, PORTNET, JP Online and Tradenet

- **Information Services**

Offers a wide range of information such as shipping schedules, tide tables, digital tidal atlas, marine weather, port statistics and much more.

- **Maritime Connections**

A comprehensive directory of maritime service providers in Singapore, covering over 28 sectors. It also has links to news headlines and other useful sites.

- **About Our Port**

General information on Singapore's port and maritime development, port procedures and guidelines, and MPA's circulars and notices.



- **I-TRACK**

The MPA has developed an Internet-based vessel tracking system (I-TRACK) to help marine service providers such as bunker suppliers, towage companies and ship chandlers, better manage their fleets. Using a scaled-down electronic chart and relevant data from our radar systems and AIS infrastructure, I-TRACK displays the positions of their vessels at close to real-time, via an Internet browser. This lets the service providers track the locations of their vessels visually and in doing so, better plan their operations and deploy their resources.



MOBILE SERVICES

We have also leveraged on wireless communications technologies to develop innovative mobile services for the shipping community. These services allow users to access to-the-minute vessel information through mobile phones or pagers.

► VESSEL MOVEMENT ALERT

The Vessel Movement Alert service allows users to be kept informed of changes to a vessel's Estimated Time of Arrival (ETA), and when the ship has arrived, berthed, anchored or departed. Users would first indicate the vessels and types of events that are of interest to them through MARINET. They would then be alerted automatically through their mobile phones or pagers when the selected events occur.

► VESSEL MOBILE

The Vessel Mobile service allows the user to select a specific vessel using his mobile phone, and request for the latest information on that vessel. The information will be sent to him almost instantly via SMS (Short Message Service).

MERIT PROGRAMME

To support our push to further enhance the IT connectivity of Singapore's port and maritime industry, the MPA established a S\$20 million Maritime Enterprise IT Development (MERIT) programme to help maritime SMEs (Small & Medium Enterprises) upgrade their IT capabilities. Companies can tap into the programme to defray the costs incurred when they modernise and upgrade their operations using IT, or develop and

implement new IT systems to enhance their business processes, reach out to new markets and provide better customer services.

Since its launch in February 2004, the programme has benefited a number of maritime SMEs in different sectors including ship owning, ship broking, ship building/repair, ship chandling, bunkering, marine engineering and marine surveying. These companies made use of the programme to develop IT systems according to their business needs, such as IT systems for e-commerce, enterprise resource planning, supply chain management, finance and billing, ship management and vessel tracking.

TECHNOLOGY FOR THE FUTURE

As part of our strategy to develop Singapore as an international maritime centre and to ensure that Singapore remains at the forefront of maritime technology development and application, the MPA has set out to make Singapore an international centre for research and development (R&D) in port and maritime technologies. Our role is to nurture a strong maritime technology cluster in Singapore by encouraging R&D partnerships between our local tertiary and research institutions (TRIs) and the maritime industry and seeking

opportunities for our local institutions and companies to collaborate with established foreign counterparts in maritime R&D.

MARITIME TECHNOLOGY CLUSTER DEVELOPMENT ROADMAP

To spearhead this drive, a Maritime R&D Advisory Panel, drawn from prominent personalities in the maritime industry, academia and public agencies, was

formed in March 2002. Through the efforts of the Panel, a Maritime Technology Cluster Development Roadmap was formulated and adopted in September 2003 to steer Singapore's maritime R&D development.

The two key thrusts of the Roadmap are firstly, to enhance the maritime R&D capabilities of the local TRIs and secondly, to develop a vibrant technology cluster within the port and maritime industry. This is built around a R&D value chain that comprises education and training





for R&D manpower development; R&D to generate intellectual property and results; test-bedding of R&D prototypes; and commercialisation of R&D products.

For the local TRIs, we will seek to generate research manpower and develop their maritime R&D capabilities. For the industry, we will facilitate greater academia-industry interactions at various levels, promote industry R&D and encourage the setting up of maritime technology companies.

The Roadmap also identifies broad technology areas that could be developed into maritime technology sectors to support the maritime technology clusters of Singapore. These are:

- Maritime transport and logistics
- Marine environment and resources
- Offshore and marine engineering
- Ship, terminal and port operations and security
- Maritime IT and communications

MINT FUND

A S\$100 million Maritime Innovation and Technology (MINT) Fund was established to support the operationalisation of the Maritime Technology Cluster Development Roadmap. The MINT Fund programmes are aimed at developing new capabilities and value-added technology products and services with commercial value for the maritime industry.

The MINT Fund programmes and schemes include:

► MARITIME TECHNOLOGY PROFESSORSHIPS

The Maritime Technology Professorships will match the industry's funding contributions to the Professorship secured by the local universities to encourage R&D relevant to the maritime industry. The programme can be used to support visits by prominent professors or renowned experts who will participate in joint industry-university maritime R&D initiatives and projects.

► MARITIME INDUSTRY ATTACHMENT PROGRAMME

The Maritime Industry Attachment Programme aims to introduce students from the local TRIs to the maritime industry and the opportunities that it offers. It encourages students to come up with ideas for maritime R&D projects, which could be undertaken by the students as their final year or post-graduate projects, after the attachments.

► JOINT TRI-MPA R&D PROGRAMME

The Joint TRI-MPA R&D Programme is used to encourage TRIs to undertake joint maritime-related R&D projects with MPA and the industry. The projects should be relevant to the maritime industry and the deliverables should be technologies or innovations with potential to be developed into commercial products, systems or services.

► MARITIME INCUBATION ASSISTANCE SCHEME

The Maritime Incubation Assistance Scheme encourages researchers or entrepreneurs to form business start-ups to transform novel R&D results and ideas into maritime-related products and services. It helps to defray part of the costs of the start-ups during the initial stage.

The National University of Singapore and the Nanyang Technological University have collaborated with MPA to jointly set up maritime incubation facilities at their premises to encourage their students, researchers and staff to commercialise their ideas and R&D results.





► TRIDENT PLATFORM

TRIDENT or Test-bedding, Research and Innovation Development for New-maritime Technologies is jointly established by the MPA and the Singapore Economic Development Board (EDB) for the development and test-bedding of maritime innovations. The platform supports companies and TRIs to undertake maritime-related R&D using Singapore's port and maritime facilities as test-beds.

► MARITIME START-UP SEED FUND

The Maritime Start-up Seed Fund provides assistance to maritime-related start-ups in the form of equity financing by matching dollar-for-dollar, up to a maximum of S\$300,000, equity financing raised from third party investors.

► MARITIME TECHNOLOGY FUND

The Maritime Technology Fund aims to assist local and foreign companies that are either interested in venturing into

developing technologies that have applications in the maritime and port industry, or are keen to commercialise their maritime-related technologies. For foreign companies, it would be used to help set up facilities in Singapore to develop or commercialise their technologies. Funding is in the form of equity financing to companies that are or will be incorporated in Singapore.

LOCAL COLLABORATION

MPA has developed collaborative partnerships with various local TRIs such as the National University of Singapore (NUS), Nanyang Technological University (NTU), Singapore Polytechnic (SP), Tropical Marine Science Institute (TMSI) and Institute of High Performance Computing (IHPC). We have signed Memorandums-of-Understanding (MOU) with these tertiary and research institutions for joint co-operation in maritime R&D.

Our partnership with the local TRIs have proven to be fruitful, resulting in useful applications that are being employed by the MPA today. These include an Electronic Enforcement System for Regional Ferries, a Maritime Conflict Prediction System and a Sea-Space Capacity Model.

In 2001, the MPA and NTU jointly set up a Maritime Research Centre in NTU to undertake joint port and maritime R&D. It is the first such research centre in Singapore, focusing on port and maritime

technology R&D. In 2004, we jointly set up a Maritime and Port Research Programme with NUS in the university's Centre for Offshore Research and Engineering, to focus on leading edge R&D projects in maritime technology.

OVERSEAS COLLABORATION

We also seek to create fruitful partnerships with overseas TRIs and companies in maritime R&D.

Recognising that Singapore and Norway face similar challenges in the maritime field and the significant pool of maritime expertise residing in both countries, the MPA signed a MOU with the Research Council of Norway (RCN) on maritime R&D, education and training. The MOU, which is the first to be established between Singapore and Norway for the maritime industry, provides a framework for the MPA, the RCN, TRIs and industry players in both countries to collaborate on maritime projects that are business and user-oriented.



The MPA thanks the following organisations for the use of images in this brochure:
• Nanyang Technological University • PSA Corporation Limited

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AND MARITIME R&D:**

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