CONTENTS

MPA Senior Management
MPA Organisation Structure
Future Ready Framework
Organisational Profile

01 LEADERSHIP

13 CUSTOMERS

19 STRATEGY

27 PEOPLE

35 PROCESSES

47 KNOWLEDGE

Glossary

SINGAPORE'S RAISON D'ÊTRE WAS ITS PORT. SINGAPORE MUST STRIVE TO REMAIN A MAJOR HUB PORT.

MR LEE KUAN YEW,
MINISTER MENTOR
MPA Senior Management
01 April 2019

Ms Quah Ley Hoon
Chief Executive

Ms Tan Woei Tyng
Deputy Director (International Maritime Centre)

Ms Caroline Goh
Deputy Director (Business Capability Development)

Ms Tan Beng Tee
Assistant Chief Executive (Development)

Ms Bernice Yeoh
Director (Strategy & Policy)

Ms Tan Beng Tee
Assistant Chief Executive (Development)

Mr Kenneth Lim
Director (Innovation, Technology & Talent Development)
Chief Technology Officer

Ms Angela Png
Director (International)

Ms Caroline Goh
Deputy Director (Business Capability Development)

Ms Cindy Sim
Director (Finance, Procurement & Admin) (till 28 Apr)

Ms Cindy Sim
Director (Finance, Procurement & Admin) (from 29 Apr)

Mr Tan Cheng Peng
Director (Special Project)

Mr Goh Chung Hun
Director (Shipping)
Director (Marine)

Captain Daknashamoorthy s/o Ganasen
Director (Operations & Marine Services)

Captain M Segar
Assistant Chief Executive (Operations)

Mr Tham Wai Wah
Director (Engineering & Project Management)
Chief Engineer

Mr David Foo
Director (Operations Technology)

Mr Kenneth Lim
Director (Innovation, Technology & Talent Development)
Chief Technology Officer

Mr Tan Suan Jow
Dean (MPA Academy)

Ms Caitlin Fua
Director (Communications & Community)

Ms Ong Seok Bin
Director (Human Resource)

Ms Yvonne Chan
Director (Finance, Procurement & Admin) (till 28 Apr)

Ms Yvonne Chan
Director (Finance, Procurement & Admin) (from 29 Apr)

Captain M Segar
Assistant Chief Executive (Operations)

Mr Tan Woei Tyng
Deputy Director (International Maritime Centre)

Mr David Foo
Director (Operations Technology)

Mr Tham Wai Wah
Director (Engineering & Project Management)
Chief Engineer

Mr Goh Chung Hun
Director (Shipping)
Director (Marine)

Ms Quah Ley Hoon
Chief Executive

Ms Tan Woei Tyng
Deputy Director (International Maritime Centre)

Ms Caroline Goh
Deputy Director (Business Capability Development)

Ms Tan Beng Tee
Assistant Chief Executive (Development)

Ms Bernice Yeoh
Director (Strategy & Policy)

Ms Caroline Goh
Deputy Director (Business Capability Development)

Ms Cindy Sim
Director (Finance, Procurement & Admin) (till 28 Apr)

Ms Cindy Sim
Director (Finance, Procurement & Admin) (from 29 Apr)

Mr Tan Cheng Peng
Director (Special Project)

Mr Goh Chung Hun
Director (Shipping)
Director (Marine)

Captain Daknashamoorthy s/o Ganasen
Director (Operations & Marine Services)

Captain M Segar
Assistant Chief Executive (Operations)

Mr Tham Wai Wah
Director (Engineering & Project Management)
Chief Engineer

Mr David Foo
Director (Operations Technology)

Mr Kenneth Lim
Director (Innovation, Technology & Talent Development)
Chief Technology Officer

Mr Tan Suan Jow
Dean (MPA Academy)

Ms Caitlin Fua
Director (Communications & Community)

Ms Ong Seok Bin
Director (Human Resource)

Ms Yvonne Chan
Director (Finance, Procurement & Admin) (till 28 Apr)

Ms Yvonne Chan
Director (Finance, Procurement & Admin) (from 29 Apr)

Captain M Segar
Assistant Chief Executive (Operations)

Mr Tan Woei Tyng
Deputy Director (International Maritime Centre)

Mr David Foo
Director (Operations Technology)

Mr Tham Wai Wah
Director (Engineering & Project Management)
Chief Engineer

Mr Goh Chung Hun
Director (Shipping)
Director (Marine)

Ms Quah Ley Hoon
Chief Executive

Ms Tan Woei Tyng
Deputy Director (International Maritime Centre)

Ms Caroline Goh
Deputy Director (Business Capability Development)

Ms Tan Beng Tee
Assistant Chief Executive (Development)

Ms Bernice Yeoh
Director (Strategy & Policy)

Ms Caroline Goh
Deputy Director (Business Capability Development)

Ms Cindy Sim
Director (Finance, Procurement & Admin) (till 28 Apr)

Ms Cindy Sim
Director (Finance, Procurement & Admin) (from 29 Apr)

Mr Tan Cheng Peng
Director (Special Project)
OUR FUTURE READY FRAMEWORK

To build a Future Ready Maritime Singapore, embodied in the six key thrusts below, MPA must reposition itself to be:

Relevant
- Well-equipped to fulfill our roles as Port Authority, Port Regulator, Port Planner, IMO Champion and National Maritime Representative

Responsive
- Receptive to feedback, with prompt and consistent service delivery to stakeholders, and a high level of operational readiness

Resourceful
- Innovative and efficient to carry out the functions of the organisation sustainably

Resilient
- Adaptable to challenges and able to recover quickly from potential setbacks

Organisational Profile

1. Organisational Description
2. Organisational Challenges

Vision

Mission

Values

Organisational Structure
Mission, Vision and Values (MVV)

Maritime and Port Authority of Singapore (MPA) was established in 1996 as a statutory board under the Ministry of Transport (MOT) to take up roles that were previously performed by the National Maritime Board, Marine Department and regulatory departments of the former Port of Singapore Authority. In 2004, MPA also took on the promotion of commercial shipping, which had previously been handled by IE Singapore.

Our Mission
To develop and promote Singapore as a premier global hub port and an International Maritime Centre (IMC), and to advance and safeguard Singapore’s strategic maritime interests.

Our Vision
A leading maritime agency driving Singapore’s global maritime aspirations.

Our Values
FIRST: Forward Thinking, Integrity, Respect, Service Excellence, Teamwork

Business Model
Future Ready Framework (see page VI)

MPA INNOVATION EXCELLENCE AWARD APPLICATION REPORT
Agreement on Combating Piracy and Armed Robbery against Ships in Asia (ReCAAP).

In its role as National Sea Transport Representative, MPA also actively champions green efforts nationally and internationally.

Overview of Key Maritime Cluster

Maritime Singapore is an important economic pillar anchored to Singapore’s global hub port and vibrant IMC. Singapore is a leading global hub port and has been regarded as one of the most complete IMCs. These qualities set Singapore apart from other maritime centres.

Based on the latest international benchmarking studies, Singapore has remained in the top 2 for the last 5 years in the Menon Report for Leading Maritime Capitals of the World, as well as the Xinhua-Baltic Exchange International Shipping Centre Development Index.

Due to its significant economic contributions, Maritime Singapore was one of the industries identified for Singapore’s wider economic restructuring, which was driven by the Committee on the Future Economy led by Minister Heng Swee Keat. The Sea Transport Industry Transformation Map (ITM) was developed in consultation with industry leaders from diverse fields to ensure that the industry continues to generate significant economic activities and provide good jobs for Singaporeans.

Organisational Challenges

1 Competitive Environment

- Describe the competitive position (e.g. relative size and growth) in the industries or markets served
- Outline the key success factors (e.g. productivity growth and innovation)
- Describe the key changes in the competitive environment and growth opportunities

Overview of Key Maritime Cluster

Maritime Singapore is an important economic pillar anchored to Singapore’s global hub port and vibrant IMC. Singapore is a leading global hub port and has been regarded as one of the most complete IMCs. These qualities set Singapore apart from other maritime centres.

Based on the latest international benchmarking studies, Singapore has remained in the top 2 for the last 5 years in the Menon Report for Leading Maritime Capitals of the World, as well as the Xinhua-Baltic Exchange International Shipping Centre Development Index.

Due to its significant economic contributions, Maritime Singapore was one of the industries identified for Singapore’s wider economic restructuring, which was driven by the Committee on the Future Economy led by Minister Heng Swee Keat. The Sea Transport Industry Transformation Map (ITM) was developed in consultation with industry leaders from diverse fields to ensure that the industry continues to generate significant economic activities and provide good jobs for Singaporeans.

In 2018, 7 key areas stand out in particular, as illustrated in Figure 2:

- International Shipping Centre Development Index.
- Due to its significant economic contributions, Maritime Singapore was one of the industries identified for Singapore’s wider economic restructuring, which was driven by the Committee on the Future Economy led by Minister Heng Swee Keat. The Sea Transport Industry Transformation Map (ITM) was developed in consultation with industry leaders from diverse fields to ensure that the industry continues to generate significant economic activities and provide good jobs for Singaporeans.

In 2019, 7 key areas stand out in particular, as illustrated in Figure 2:

- International Shipping Centre Development Index.
- Due to its significant economic contributions, Maritime Singapore was one of the industries identified for Singapore’s wider economic restructuring, which was driven by the Committee on the Future Economy led by Minister Heng Swee Keat. The Sea Transport Industry Transformation Map (ITM) was developed in consultation with industry leaders from diverse fields to ensure that the industry continues to generate significant economic activities and provide good jobs for Singaporeans.

2 Strategic Challenges

- Describe the key business, operational and human resource strategic challenges

Maritime Singapore faces strong headwinds and tailwinds as illustrated below in Figure 1:

- 2018 was a year of uncertainty. Global trade tensions intensified, and there was little sign that the China-US trade war would abate. Global trade volume suffered, with growth below the World Trade Organisation’s earlier projection of 4.4%. The Port of Singapore maintained a stable performance in 2018, with container throughput growing by 8.7% to 36.6 million twenty foot equivalent units (TEUs) and total cargo throughput remaining stable at 630 million tonnes. Singapore retained its position as the world’s leading bunkering port. It also remains home to a diverse range of maritime businesses, generating good jobs and contributing some 7% to Singapore’s GDP.

These developments did not happen by chance and should not be taken for granted. For Maritime Singapore to continue growing, it would need to continue to stay competitive and embrace the technology disruption. With Next Generation Port (NGP) 2030, IMC 2030 and the Sea Transport ITM, MPA has to transform organisationally as well, and is cognisant that in the change management journey, the storm comes before the dawn. With the war for talent, engaging MPA’s staff and aligning them to the longer term direction becomes increasingly critical.

In 2019, 7 key areas stand out in particular, as illustrated in Figure 2:

- International Shipping Centre Development Index.
- Due to its significant economic contributions, Maritime Singapore was one of the industries identified for Singapore’s wider economic restructuring, which was driven by the Committee on the Future Economy led by Minister Heng Swee Keat. The Sea Transport Industry Transformation Map (ITM) was developed in consultation with industry leaders from diverse fields to ensure that the industry continues to generate significant economic activities and provide good jobs for Singaporeans.
As the operating environment and challenges which MPA faces in this volatile era become more complex, MPA needs to remain focused on its core mission, achieve synergy across teams (both internal and external), drive success planning and enhance development exposure for its staff. These organisational priorities are summarised as the 3As:

- **Align**: To align MPA and its partners to the core mission of keeping Singapore waters safe
- **Ambition**: To entrench MPA's status as a Global Maritime Hub
- **Action**: To sharpen MPA's competitive edge in the long run

The strategic thrusts in the MPA Future Ready Framework support all of MPA’s missions:

**Conclusion**

The Maritime Singapore Future Ready 2030 initiative seeks to build upon the fundamentals of Singapore’s maritime cluster, while identifying new areas of strategic opportunity. As Singapore progresses, MPA will collaborate with the industry to develop and review initiatives to ensure it is aligned to its long-term vision and strategies, and stays ahead of competition so as to contribute to Singapore’s GDP and create good jobs for Singaporeans.
MPA’s Senior Management (SM) Team

MPA’s SM team is led by the organisation’s Chief Executive (CE), and comprises 2 Assistant Chief Executives (ACEs) and 15 Heads of Division. The SM is accountable to the Chairman of the MPA Board and the Permanent Secretary of MOT. Together, they work closely to lead MPA while being guided by MPA’s MVV.

Recognising innovation’s critical role in maintaining and enhancing Maritime Singapore’s competitiveness and world-class results, SM has provided strategic direction and leveraged on staff, partners and technology to steer MPA and Maritime Singapore towards greater heights. MPA has achieved many innovative firsts in port operations and cemented Maritime Singapore’s status as a one-stop destination and global hub for port and marine activities.

Mission, Vision and Values (MVV)

SM, together with the Board and MOT, collaborates actively to deploy and review MPA’s MVV. Clear alignment to Whole-of-Government (WOG) Strategic Outcomes (see Figure 1.1.1) is maintained to clarify how the organisation collaborates with other public service agencies to improve stakeholder experience.

Shipping will play an even bigger role in the economic well-being of countries as trade expands. We have an increasing stake in ensuring shipping remains the most secure, efficient and environmentally friendly mode of transport. The world’s maritime nations will need centres in Asia known for integrity, quality and neutrality to enable them to plug into Asia’s growth. Singapore hopes to be one such centre.

One of the unique things about Singapore is the close working relationship between industry and government. In Singapore, you can actually make a difference, you can make things happen if you are prepared to make the effort. I have sat on various committees in other countries and often, there is just talk and no results - which is a waste of time. On a national scale, there is this kind of engrained mentality that we always need to improve. No one sits down and says “Oh well, here we are.” They keep getting better because they are always looking for the next improvement.

Mr Lee Kuan Yew
Minister Mentor

Mr Khaw Boon Wan
Minister for Transport
Coordinating Minister for Infrastructure

Mr Esben Poulsson
Chairman, International Chamber of Shipping
President, Singapore Shipping Association
Chairman, Enesel Pte Ltd

Mr Kristian Siem
Founder & Chairman, Siem Industries

Singapore’s re-election to the IMO Council is certainly an affirmation from our many friends here at IMO. The re-election also acknowledges the hard work that the MPA team has put in to grow our maritime industry and to prepare it for the future. We will continue to work closely with IMO to future-proof itself as it pursues its vision of a secure, efficient and sustainable shipping.

Mrs Gina Lee-Wan
Chairman,
Legal & Insurance Committee,
Singapore Shipping Association

Singapore has many favourable attributes. It must play to its fantastic infrastructure. It remains well placed as a maritime centre.

At the core of MPA’s initiatives lies holistic innovation. MPA is committed in its efforts to source, design and engage safe and reliable systems that support the demands of the continually evolving global shipping industry. MPA constantly strives to seek ways to improve its suite of services and evolve for the future.

Mr Khaw Boon Wan
Minister for Transport
Coordinating Minister for Infrastructure

Mr Esben Poulsson
Chairman, International Chamber of Shipping
President, Singapore Shipping Association
Chairman, Enesel Pte Ltd

Mr Kristian Siem
Founder & Chairman, Siem Industries

Mrs Gina Lee-Wan
Chairman,
Legal & Insurance Committee,
Singapore Shipping Association

Ministry of Trade & Industry

Ministry of Transport

Sea Transport ITM

23 Industry ITMs

Next Generation Port 2030

International Maritime Centre 2030

A vibrant economy with opportunities for all
A cohesive, caring and inclusive society
A well-connected and green city, our endearing home
A safe, secure and credible nation
A better future through partnerships and good governance

Whole-of-Government

Mr Khaw Boon Wan
Minister for Transport
Coordinating Minister for Infrastructure

Mr Esben Poulsson
Chairman, International Chamber of Shipping
President, Singapore Shipping Association
Chairman, Enesel Pte Ltd

Mr Kristian Siem
Founder & Chairman, Siem Industries

One of the unique things about Singapore is the close working relationship between industry and government. In Singapore, you can actually make a difference, you can make things happen if you are prepared to make the effort. I have sat on various committees in other countries and often, there is just talk and no results - which is a waste of time. On a national scale, there is this kind of engrained mentality that we always need to improve. No one sits down and says “Oh well, here we are.” They keep getting better because they are always looking for the next improvement.

Mr Khaw Boon Wan
Minister for Transport
Coordinating Minister for Infrastructure

Mr Esben Poulsson
Chairman, International Chamber of Shipping
President, Singapore Shipping Association
Chairman, Enesel Pte Ltd

Mr Kristian Siem
Founder & Chairman, Siem Industries

Singapore’s re-election to the IMO Council is certainly an affirmation from our many friends here at IMO. The re-election also acknowledges the hard work that the MPA team has put in to grow our maritime industry and to prepare it for the future. We will continue to work closely with IMO to future-proof itself as it pursues its vision of a secure, efficient and sustainable shipping.

Mrs Gina Lee-Wan
Chairman,
Legal & Insurance Committee,
Singapore Shipping Association

Singapore has many favourable attributes. It must play to its fantastic infrastructure. It remains well placed as a maritime centre.

At the core of MPA’s initiatives lies holistic innovation. MPA is committed in its efforts to source, design and engage safe and reliable systems that support the demands of the continually evolving global shipping industry. MPA constantly strives to seek ways to improve its suite of services and evolve for the future.
The Future Ready Framework: Helping Maritime Singapore Navigate the Future

MPA’s latest top-level review took place in 2014, with the then-CE leading over 350 staff to identify a new way forward for Maritime Singapore amidst an increasingly challenging environment. This review resulted in the development of the Future Ready Framework (see Figure 1.1.2), while NGP 2030, IMC 2030 and the Sea Transport ITM were all developed to add specificities into roadmaps and facilitate execution.

As preparation for the new port at Tuas, MPA launched the NGP 2030 initiative as a WOG effort to drive the overall master planning and development of Singapore’s port. This initiative reaffirms MPA’s commitment as a leading maritime agency to driving Singapore’s global maritime aspirations.

Through a port systems roadmap, MPA has established several new systems. These include the Just-In-Time (JIT) Planning and Coordination and the MSW system, which will allow for seamless arrivals and departures from Singapore’s port, as well as potential manpower, time and cost savings for port users.

In 2018, MPA launched the Sea Transport ITM. Developed by MPA in partnership with the industry, trade associations and chambers, unions, Institutes of Higher Learning (IHLs) and other government agencies, the Sea Transport ITM serves as a blueprint for sectorial transformation over the next few years.

The Sea Transport ITM outlines strategies to embrace technology, enhance productivity and equip the maritime workforce with the necessary skills to support the growth of a more connected and innovative maritime ecosystem.

It also incorporates recommendations from the NGP 2030 Steering Committee and IMC 2030 Advisory Committee. Successfully transforming the Sea Transport industry requires strong partnerships with key stakeholders in the ecosystem. To achieve this, MPA leverages on a tripartite partnership consisting of industry stakeholders, unions and government agencies to increase awareness, drive implementation and monitor the progress of key ITM initiatives.

### Charting New Directions for the Next Generation Port – NGP 2030

**Innovation & Talent – IMC 2030**

- **Goal**: Promote a Pro-Enterprise & Sustainable Environment
- **Key Strategies**:
  - **Innovation**: Build a Vibrant Innovation Ecosystem to Drive Competitiveness & New Growth Areas
  - **Productivity**: Develop a Future Ready Maritime Workforce
  - **Jobs & Skills**: Strengthen Inter-linkages Between Maritime & Related Sectors
  - **Internationalisation**: Develop Manpower Capabilities for the Maritime Cluster

**Global Maritime Hub for Connectivity, Innovation and Talent – IMC 2030**

- **Expand & Deepen Our Maritime Cluster**
- **Transform the Maritime Cluster Through Digital Innovations**
- **Strengthen Inter-linkages Between Maritime & Related Sectors**
- **Develop Manpower Capabilities for the Maritime Cluster**

**Global Maritime Hub for Connectivity, Innovation & Talent – IMC 2030**

- **In 2017, an IMC 2030 Advisory Committee led by the Chairman of BW Group, Mr. Andreas Sohmen-Pao, submitted the IMC 2030 Strategic Review report to the Singapore Government, with a vision for Maritime Singapore to become the Global Maritime Hub for connectivity, innovation and talent.**
MPA’s SM provides 3 forms of leaderships – Organisational Leadership, Industry Leadership and International Leadership (see Figure 1.1.3). Organisational Leadership

SM deploys a wide range of communication platforms to lead the organisation (see Table 1.1.1).

<table>
<thead>
<tr>
<th>Mode</th>
<th>Platform</th>
<th>Objectives</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electronic &amp; Print</td>
<td>e-Connect Portal</td>
<td>Communicate MVV</td>
<td>Ongoing</td>
</tr>
<tr>
<td></td>
<td>Line from CE</td>
<td>Allow CE to communicate messages related to MVV to staff</td>
<td>Ongoing</td>
</tr>
<tr>
<td></td>
<td>Employee Engagement Survey (EES) &amp; Pulse Survey</td>
<td>Capture current staff engagement level and provide opportunities to improve work environment</td>
<td>Annual</td>
</tr>
<tr>
<td></td>
<td>Workplan seminar &amp; Management Advance</td>
<td>Communicate MVV, communicate and develop corporate workplans and discuss key projects</td>
<td>Annual</td>
</tr>
<tr>
<td></td>
<td>Townhall sessions</td>
<td>Showcase staff initiatives &amp; provide opportunities for open dialogue</td>
<td>Annual</td>
</tr>
<tr>
<td></td>
<td>Values Week</td>
<td>Communicate &amp; role model FIRST values</td>
<td>Annual</td>
</tr>
<tr>
<td></td>
<td>Staff events</td>
<td>Provide opportunities for staff bonding</td>
<td>Annual</td>
</tr>
<tr>
<td></td>
<td>CE’s tea/lunch sessions with staff &amp; programme foundation for new staff</td>
<td>Communicate &amp; solicit feedback on MVV &amp; strategic focus areas, &amp; welcome new staff</td>
<td>Quarterly</td>
</tr>
</tbody>
</table>

Face-to-Face

<table>
<thead>
<tr>
<th>Mode</th>
<th>Platform</th>
<th>Objectives</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Conversation with CE (new)</td>
<td>Communicate hot topics &amp; solicit feedback from staff</td>
<td>Quarterly</td>
</tr>
<tr>
<td></td>
<td>Divisional activity days &amp; divisional dialogue sessions</td>
<td>Communicate &amp; solicit feedback on MVV &amp; strategic focus areas</td>
<td>Quarterly</td>
</tr>
<tr>
<td></td>
<td>CE’s field trips</td>
<td>Communicate strategic focus areas &amp; understand field operations</td>
<td>Ongoing</td>
</tr>
<tr>
<td></td>
<td>Appreciation Hour</td>
<td>Recognise staff who have shown service excellence &amp; excellence in other projects</td>
<td>Ongoing</td>
</tr>
<tr>
<td></td>
<td>Festive celebrations</td>
<td>Communicate MVV &amp; provide opportunities for staff bonding</td>
<td>4 times a year to coincide with key festivals</td>
</tr>
<tr>
<td></td>
<td>Future Ready brainstorming sessions</td>
<td>Solicit ideas regarding strategic focus areas from staff</td>
<td>Ad-hoc</td>
</tr>
</tbody>
</table>

To promote Maritime Singapore, MPA also engages stakeholders through the following channels:

- Funding and development schemes through the Maritime Cluster Fund (MCF) and the Maritime Innovation and Technology (MINT) Fund
- Industry initiatives such as the Maritime Innovation Lab, Smart Port Challenge (SPC) and Port Innovation Ecosystem Remagined @Block 71 (PIER71) for technology start-ups
- Joint R&D partnerships with IHLs and Centres of Excellence (CoEs)
- Community engagement events such as the annual Amazing Maritime Race
- Forums and conferences such as the SMW and the Safety@Sea Week.

SMW is an annual event that reaches out to a broad spectrum of stakeholders. Since its inauguration in 2006, SMW has grown significantly and now attracts over 40,000 local and international participants per year. It supports Maritime Singapore’s vision to be a Global Maritime Hub for driving connectivity, innovation and talents through people, ideas and opportunities. It brings together regional and industry leaders, subject area experts, and other representatives from the maritime industry for a week of conferences, dialogues, exhibitions, learning journeys and social events.

International Leadership

Singapore is a small country highly dependent on international seaborne trade. The security, safety, sustainability and efficiency of international shipping is thus important to the nation. Furthermore, shipping is global in nature: Singapore thus needs to play its part in the maritime industry. To promote safe, secure, sustainable and efficient shipping.

With strong presence and an influential voice in international maritime affairs, Singapore is better positioned to safeguard its maritime interests. MPA spearheads Singapore’s efforts to advance and safeguard these interests through engagement channels such as:

- Inking bilateral agreements with RIs and port authorities for collaborative efforts
- Organising events that bring the international maritime community together, including forums, seminars, conferences and dialogues
- Presenting papers at and participating in international maritime meetings and working groups in order to learn from and share Singapore’s position on maritime issues with others
- Serving as council members of international maritime organisations

MPA actively participates and holds leadership positions in key international bodies such as the International Maritime Organisation (IMO), the International Hydrographic Organisation (IHO), the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA), and the Port Authorities Roundtable (PAR), among others.

Regionally, MPA also plays a leading role in key forums such as the Co-operative Mechanism on Safety of Navigation and Environment Protection in the SOMS, the ReCAAP, the ASEAN Maritime Transport Working Group (MTWG) and the APEC Port Services Network (APSN).

Table 1.1.1: Communication Platforms for Organisational Leadership

<table>
<thead>
<tr>
<th>Mode</th>
<th>Platform</th>
<th>Objectives</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electronic &amp; Print</td>
<td>Corporate website, SRS microsite &amp; e-Bulletin, presentations, videos &amp; social media</td>
<td>Communicate MPA’s MVV &amp; major initiatives to the public &amp; shipping community, &amp; facilitate platforms for electronic transactions</td>
<td>Ongoing</td>
</tr>
<tr>
<td></td>
<td>Corporate brochures, Singapore Nautica (quarterly magazine) &amp; annual report/integrated report</td>
<td>Communicate MPA’s MVV &amp; major initiatives to the public, &amp; report organisational performance</td>
<td>Ongoing</td>
</tr>
<tr>
<td></td>
<td>MOT Ministerial Staff Meetings (MSMs) &amp; Maritime Policy Forum (MPF)</td>
<td>Obtain buy-in of MPA’s MVV &amp; corporate workplans, &amp; provide updates on the progress of key initiatives to the Minister of Transport &amp; MOT Headquarters</td>
<td>Monthly</td>
</tr>
<tr>
<td></td>
<td>Board Meetings</td>
<td>Obtain buy-in of MPA’s MVV &amp; corporate workplans, &amp; provide updates on the progress of key initiatives to Board Members</td>
<td>Bimonthly</td>
</tr>
<tr>
<td></td>
<td>Singapore Maritime Week (SMW)</td>
<td>A week of flagship conferences, dialogues, exhibitions &amp; social events in celebration of maritime-related matters</td>
<td>Annual</td>
</tr>
<tr>
<td></td>
<td>MaritimeONE</td>
<td>Communicate MPA’s MVV &amp; gain an understanding of the industry’s manpower needs</td>
<td>Annual</td>
</tr>
</tbody>
</table>

Table 1.1.2: Communication Platforms for Industry Leadership

<table>
<thead>
<tr>
<th>Mode</th>
<th>Platform</th>
<th>Objectives</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electronic &amp; Print</td>
<td>Industry engagements (e.g. Singapore International Bunkering Conference (SIBCON), Safety@Sea Week, dialogue sessions &amp; consultations with the maritime community)</td>
<td>Share MPA’s MVV &amp; solicit feedback on strategic focus areas</td>
<td>Ongoing</td>
</tr>
<tr>
<td></td>
<td>Safety briefings</td>
<td>Communicate MPA’s MVV &amp; impart safety messages</td>
<td>Ad-hoc</td>
</tr>
<tr>
<td></td>
<td>Networking events such as lunch meetings &amp; tea sessions</td>
<td>Share MPA’s MVV &amp; solicit feedback</td>
<td>Quarterly</td>
</tr>
<tr>
<td></td>
<td>Singapore Maritime Gallery (SMG) &amp; documentary shows (e.g. National Geographic) inside Maritime Singapore</td>
<td>Cascade MPA’s MVV &amp; profile Singapore’s maritime industry</td>
<td>Ad-hoc</td>
</tr>
</tbody>
</table>
Since becoming an IMO Council Member in 1993, Singapore has chaired the IMO Council, the then Sub-Committee on Bulk Liquids and Gases and the then Sub-Committee on Flag State Implementation. Singapore has assumed the position of Vice-Chair of the Marine Environment Protection Committee, the Maritime Safety Committee and the Sub-Committee on Human Element, Training and Watchkeeping. To date, Singapore has ratified and implemented every major IMO convention in force relating to ship safety and the prevention of pollution from ships.

Singapore was re-elected to the IMO Council for a 13th consecutive term for 2018-2019, once again securing the highest number of votes in Category A.

### 1.1c Acts as role models and grooms future leaders

#### Leadership Competency Model

The leadership competency model guides MPA to develop leaders who are forward-looking, have a global outlook and are able to develop staff while delivering results. MPA leaders must demonstrate 5 leadership capabilities: Invest in Self, Shape the Future, Achieve Results, Develop People and Build Relationships. These interdependent competencies reinforce each other, helping MPA leaders to excel in their roles and enhancing individual and organisational performance.

It is imperative for MPA’s SM to be good role models who not only pay attention to individual achievements, but also encourage teamwork and co-operation, support others’ growth and development, and recognise the positive behaviours and attitudes they display (see Figure 1.1.5). Leaders are encouraged to nurture a learning culture with psychological safety, where staff are not afraid to speak up and change is embraced and highly encouraged.

#### MPA leaders

- Build internal and external relationships through positive influences and effective communication demonstrating openness, trust, respect and maturity. They promote the development of positive working relationships, respect diversity and develop team cohesiveness.

- Shape the future by committing to excellence, serving as role models to younger leaders through:
  1. Committing to excellence through personal example
  2. Committing to excellence through everyday actions

- Invest in self by committing to excellence, serving as role models to younger leaders through:
  1. Demonstrate self-awareness and seek continuous self-development to capitalize on their strengths and remain relevant to future MPA roles.
  2. Support others in developing their capabilities.

- Achieve results by committing to excellence, serving as role models to younger leaders through:
  1. Act as role models and grooms
  2. Demonstrate and reinforce MPA’s Culture of Excellence

- Develop people by committing to excellence, serving as role models to younger leaders through:
  1. Develop a culture that supports organisational mission, vision and values to drive growth
  2. Develop high potential talent and scholars
  3. Mentoring high potential staff and scholars

- Achieve results by committing to excellence, serving as role models to younger leaders through:
  1. Act as role models and grooms
  2. Demonstrate and reinforce MPA’s Culture of Excellence

#### Senior Leaders Walking in MPA Ground Officers’ Shoes

Service Day was introduced in 2017 for SM to better understand the work of ground officers. This enhances their effectiveness in engaging the ground as they role model the right behaviours and support ground officers physically, mentally and emotionally.

An organisational restructuring exercise was carried out in 2019 to enhance focus on MPA’s core mission, achieve synergy across teams, drive success planning and enhance development exposure for staff. Many young leaders took on Head of Division roles, and will continue to receive mentorship from senior leaders to become more effective for the future.

#### To groom its future leaders, MPA has implemented a comprehensive programme in line with the entire Public Service Talent Management Framework. Senior leaders play their part by having conversations with these future leaders, exposing them to different scopes of work and opportunities, and engaging them with projects that deepen their understanding of MPAs’ work.

#### 1.1d Demonstrates and reinforces their commitment to innovation excellence

Innovation Excellence is 1 of the 3 key pillars underpinning MPA’s Culture of Excellence, as reflected in MPA’s Future Ready Framework, the other 2 being Service Excellence and Enterprise Risk Management (ERM). To ensure that SM remains attentive to innovation matters, a Chief Innovation Officer has been appointed to drive innovation activities within MPA. The Chief Innovation Officer is also the Director of the Innovation, Technology and Talent Development Division (ITTD), which is responsible for developing Singapore as the Global Maritime Hub for innovation and talent. This ensures that MPA is internally aligned with external innovation efforts, with the support of a network of Innovation Champions, secretariat and taskforces.

SM clearly articulates MPA’s commitment to Innovation Excellence, and celebrates the organisation’s achievements in these areas at various platforms like the InnovFest, Workplan seminar and Townhall. This is necessary for innovation to take root in MPA’s culture.

SM regularly welcomes ideas from all sources, offering their support to ideas and projects surfaced via the iSuggest and Work Improvement Teams (WITs) platforms. Ideas that require additional funding for Proofs of Concept (POCs) can also tap on the internal MPA Innovation Fund (I-Fund). To ensure that innovation excellence is systemic and that a good part of their efforts focuses on innovations within their work areas, divisions within MPA explicitly state and explain their top 10 workplan items during the workplan cycle.

#### 1.2 Organisational Culture

##### 1.2a Develops a culture that supports the organisation’s mission, vision and values to drive growth

- The Innovation Officer is also the Director of the Innovation, Technology and Talent Development Division (ITTD), which is responsible for developing Singapore as the Global Maritime Hub for innovation and talent.

- SM regularly welcomes ideas from all sources, offering their support to ideas and projects surfaced via the iSuggest and Work Improvement Teams (WITs) platforms. Ideas that require additional funding for Proofs of Concept (POCs) can also tap on the internal MPA Innovation Fund (I-Fund).

- To ensure that innovation excellence is systemic and that a good part of their efforts focuses on innovations within their work areas, divisions within MPA explicitly state and explain their top 10 workplan items during the workplan cycle.

To groom its future leaders, MPA has implemented a comprehensive programme in line with the entire Public Service Talent Management Framework. Senior leaders play their part by having conversations with these future leaders, exposing them to different scopes of work and opportunities, and engaging them with projects that deepen their understanding of MPAs’ work.

SM regularly welcomes ideas from all sources, offering their support to ideas and projects surfaced via the iSuggest and Work Improvement Teams (WITs) platforms. Ideas that require additional funding for Proofs of Concept (POCs) can also tap on the internal MPA Innovation Fund (I-Fund). To ensure that innovation excellence is systemic and that a good part of their efforts focuses on innovations within their work areas, divisions within MPA explicitly state and explain their top 10 workplan items during the workplan cycle.
MPAs MVV are aligned such that the Mission helps to achieve the Vision, and the Values articulate the behaviours expected of MPA staff in the pursuit of MPAs Vision. MPAs FIRST Values are translated into guiding policies, behaviours and practices that foster the desired culture, which enables innovation, learning and the achievement of MPAs goals (see Table 1.2.1).

### Table 1.2.1 – Fostering a Robust Organisational Culture in MPA

<table>
<thead>
<tr>
<th>FIRST Value: Forward Thinking</th>
<th>Programmes/Practices</th>
</tr>
</thead>
<tbody>
<tr>
<td>We aim to be proactive &amp; innovative</td>
<td>MPA Innovation Framework, NGP 2030, IMC 2030, Sea Transport ITM</td>
</tr>
<tr>
<td>We will harness the best technologies &amp; practices so as to stay relevant, efficient &amp; competitive</td>
<td>Global perspective in environment &amp; industry sensing</td>
</tr>
<tr>
<td>• Set long-term goals</td>
<td>Division workshops, Workplan seminar &amp; Corporate Key Performance Indicators (KPIs)</td>
</tr>
<tr>
<td>• Think out of the box</td>
<td>Individual training roadmap including innovation training</td>
</tr>
<tr>
<td>• Embrace change &amp; innovation</td>
<td>Suggest, WITs, Learning Journeys &amp; Ideathons</td>
</tr>
<tr>
<td>• Anticipate problems &amp; explore possible solutions</td>
<td>Performance conversations &amp; feedback</td>
</tr>
<tr>
<td>• Transform current way of doing things</td>
<td>Innovation STEER process &amp; MPA Innovation Fund</td>
</tr>
<tr>
<td>• Adopt a risk-taking mindset</td>
<td>Ops-Tech &amp; digitalisation plans</td>
</tr>
<tr>
<td>• Be curious about the gaps</td>
<td>PIER71 &amp; SPC, MINT Fund &amp; MCF</td>
</tr>
<tr>
<td>• Reviewing and monitoring implementation for</td>
<td>Joint R&amp;D partnerships with IHLs &amp; industry</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FIRST Value: Integrity</th>
<th>Programmes/Practices</th>
</tr>
</thead>
<tbody>
<tr>
<td>We shall act responsibly, &amp; be honest &amp; morally courageous in carrying out our duties. We will be fair &amp; above board in all our business dealings &amp; relationships.</td>
<td>Corporate governance &amp; sustainability reporting</td>
</tr>
<tr>
<td>• Carry out duties in an ethical &amp; professional manner</td>
<td>Code of ethics and whistle-blowing policy</td>
</tr>
<tr>
<td>• Be fair &amp; above board in dealings with customers &amp; suppliers</td>
<td>Public Service IMs &amp; MPA Circulars</td>
</tr>
<tr>
<td>• Do not accept bribes or favours from anyone</td>
<td>ERM</td>
</tr>
<tr>
<td>• Take responsibility for actions</td>
<td>MPA conduct &amp; discipline</td>
</tr>
<tr>
<td>• Have courage to make difficult decisions</td>
<td>ISO 9001:2015 Quality Management System</td>
</tr>
<tr>
<td>• Show empathy to both internal &amp; external customers</td>
<td>Supplier management</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FIRST Value: Respect</th>
<th>Programmes/Practices</th>
</tr>
</thead>
<tbody>
<tr>
<td>We shall respect the feelings of the individual, his/her dignity &amp; self-worth, his/her time &amp; effort, &amp; his/her need to balance work &amp; family life.</td>
<td>Conversation with CE and Townhall, other engagement events</td>
</tr>
<tr>
<td>• Listen to colleagues’ views &amp; ideas with an open mind</td>
<td>Voluntarism &amp; Care Team</td>
</tr>
<tr>
<td>• Be flexible &amp; understand the work-life harmony needs of staff</td>
<td>HR Planning to be a Choicest Employer</td>
</tr>
<tr>
<td>• Create a sense of camaraderie at the workplace</td>
<td>People developer &amp; talent management</td>
</tr>
<tr>
<td>• Encourage colleagues &amp; recognise their efforts by praising them or giving them a “pat on the back”</td>
<td>Work-life &amp; staff wellness/well-being policies &amp; initiatives</td>
</tr>
<tr>
<td>• Treat everyone with respect &amp; dignity, his/her time &amp; effort, &amp; his/her need to balance work &amp; family life.</td>
<td>MPA Care crisis response team</td>
</tr>
<tr>
<td>• Show empathy to both internal &amp; external customers</td>
<td>Workplace safety &amp; health</td>
</tr>
<tr>
<td>• Be patient when servicing customer/requests</td>
<td>Appreciation Day</td>
</tr>
<tr>
<td>• Listen attentively to understand customer concerns</td>
<td>Rewards &amp; recognition</td>
</tr>
<tr>
<td>• Value customer feedback &amp; constantly look for ways to improve service</td>
<td>Strategic service intent</td>
</tr>
<tr>
<td>• Greet everyone with a smile</td>
<td>Service journey mapping</td>
</tr>
<tr>
<td>• Project a professional image in dealings with customers</td>
<td>Service competency &amp; MPA archetype training</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FIRST Value: Service Excellence</th>
<th>Programmes/Practices</th>
</tr>
</thead>
<tbody>
<tr>
<td>We shall strive to serve our customers competently, transparently &amp; efficiently. We shall persevere so as to excel in all areas of our work through continual learning &amp; a positive work attitude.</td>
<td>Industry engagement forums</td>
</tr>
<tr>
<td>• Show empathy to both internal &amp; external customers</td>
<td>Design Thinking &amp; co-creation with customers</td>
</tr>
<tr>
<td>• Be patient when servicing customers’ requests</td>
<td>Pro-Enterprise initiatives &amp; ranking survey</td>
</tr>
<tr>
<td>• Listen attentively to understand customer concerns</td>
<td>Customer feedback channels</td>
</tr>
<tr>
<td>• Value customer feedback &amp; constantly look for ways to improve service</td>
<td>Feedback &amp; complaint management process</td>
</tr>
<tr>
<td>• Greet everyone with a smile</td>
<td>Minimum service standards audit</td>
</tr>
<tr>
<td>• Project a professional image in dealings with customers</td>
<td></td>
</tr>
</tbody>
</table>

### Diving Deeper into Innovation Culture – The BMW Spirit

In response to feedback provided during 2018’s EES, the BMW (Breakthroughs, Meaningful Impact and Willpower) Spirit was defined to reinforce management support for MPAs innovation efforts, and cascade expectations on its innovation culture.

The BMW Spirit (see box story on Communication to Facilitate the Embracing of Organisational Changes) was developed to remind staff of the right spirit with which to drive innovation. It was first articulated during InnovateFest 2019.

#### 1.2c Embraces organisational change for sustainability

Since 2014, the Future Ready Framework co-created with staff has given the organisation clarity on the direction towards which MPA and Maritime Singapore are moving. NGP 2030, IMC 2030 and the Sea Transport ITM add further granularity to this direction. They have also been consistently used to provide staff with direction and insights on the future industry and operating environments. Governance platforms and the necessary resources are also in place to enable agile response to changes in the operating environment. This helps MPA and its staff to stay ahead of change.

MPAs innovation process “STEER” (see Figure 5.1.1) is also applied to the change management process to ensure that organisational change is embraced for sustainability. The process involves:

- Scanning the environment for opportunities and ideas
- Translating ideas into plans
- Evaluating and selecting the best plan to address the gaps
- Executing the action plan
- Reviewing and monitoring implementation for effectiveness and continuous improvement

### 1.2d Nurtures a culture that enables innovation

#### MPA Innovation Framework

MPAs FIRST Values, especially “Forward Thinking” drive MPAs innovation culture. Both top-down and ground-up innovation matter for MPA. The Innovation Framework has been developed to articulate MPAs approach to nurture a pro-innovation culture (see Figure 1.2.1). The framework comprises 3 key thrusts: Align, Ambition and Actions, which work in concert to innovate and create value for both internal and external stakeholders.

**Align:** MPA drives innovation amongst its staff by providing big picture goals through master plans and key strategies. These visions and strategies are formulated and realised by dedicated committees.

**Ambition:** MPA enables innovation by providing staff with the tools and resources to nurture innovative ideas. These tools and resources include funding, innovation workshops, sharing of innovation stories and a structured process to review and implement ideas.

**Actions:** MPA strives to create an environment where creativity and innovation can flourish by engaging its staff in the innovation journey. It does this through recognition/reward schemes and innovation events, as well as by continually celebrating innovation, reinforcing its messages and communicating its Vision.
Clarity of direction and communication is critical to help the organisation embrace change. Through InnovFest 2019, Conversation with CE and Workplan seminar 2019, CE rearticulated the Mission, key directions and ambitions of MPA. She explained the impetus for the upcoming changes and how they would be carried out. She shared that SM would be cascading the key points to the ground, and opened her doors to feedback and suggestions. As a follow up to concerns raised at the Conversation with CE, 4 work streams led by 6 Heads of Department (HODs) and sponsored by 6 different Division heads were commissioned to develop recommendations to facilitate organisational change.

HOW?

Communication to Facilitate the Embracing of Organisational Changes

**Workforce Transformation**

**Leadership**

- ONE PARTNERSHIP, ONE MPA, ONE SINGAPORE
- ONE SPIRIT, ONE MISSION, ONE PLAN
- ONE TEAM, ONE CULTURE, ONE SPIRIT
- ONE JOURNEY, ONE DIRECTION

**Job Redesign**

- Leadership
  - STRATEGIES
  - ROLES
  - COMPETENCIES

- Resources
  - COMPETENCIES
  - SYSTEMS & PROCESSES
  - TECHNOLOGY & INNOVATION

- Rewards & Recognition
  - EVENTS & PROGRAMMES
  - COMMUNICATIONS

1.3a Establishes a governance system to ensure accountability and transparency

MPA has a comprehensive Corporate Governance Framework to ensure good governance throughout MPA.

- Board & Committees
  - Governance
  - Stewards
  - Board
  - Committees

- GOALS & OBJECTIVES
  - Strategic
  - Performance
  - Operational

- STRATEGIC MANAGEMENT
  - Mission
  - Vision
  - Values

1.3b Implements policies and involves stakeholders to contribute to the community and the environment

**Mission Objectives**

- **STRATEGIC MANAGEMENT**
  - Mission
  - Vision
  - Values

- **GOALS & OBJECTIVES**
  - Strategic
  - Performance
  - Operational

- **STRATEGIC MANAGEMENT**
  - Mission
  - Vision
  - Values

**Vision**

MPA as a Champion of Good

MPA was recognised as a Champion of Good by the National Volunteer & Philanthropy Centre in 2018. As the leading driver of Singapore’s global maritime aspirations, MPA believes that this influence can be leveraged to encourage its staff and stakeholders (such as WOG partners, unions and maritime partners) to give back to society. In particular, MPA hopes to benefit its adopted charities Kids In Play (KIP) Programme and REACH Community Services Society.

The MPA Charity Flea Market held in 2019 saw the Care Committee marshaling the whole organisation to sell food and second-hand products to staff and partners (e.g. MOT) within the PSA Building (PSAB). There was also an e-bidding charity sale at the charity flea market. These efforts raised $226,620, which was wholly donated to beneficiaries. The process also brought together staff from different parts of MPA in a collective charitable endeavour.

---

*CE’s Speech at InnovFest 2019*
To lead in promoting sustainability practices in Environment, Economic, Social & Financial spheres, ensuring that the Maritime Industry is future-ready.

<table>
<thead>
<tr>
<th>Thrust</th>
<th>Environment</th>
<th>Economic</th>
<th>Social</th>
<th>Financial</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Water</td>
<td>SMI</td>
<td>People</td>
<td>Resource Management</td>
</tr>
<tr>
<td></td>
<td>Waste</td>
<td>Global Port</td>
<td>Charity</td>
<td></td>
</tr>
</tbody>
</table>

**Examples of Initiatives**
- Water efficiency programme
- Waste recycling efforts
- Maritime Singapore Green Initiative (MSGI) — IMO/SG (Ref: 2.1)
- IMO/SG Pilot Project
- Cargo damage prevention
- Green port installation
- Green ports

**Examples of Partners**
- Nature Society (Singapore), Singapore Environment Council, Singapore Reef & Marine Conservation Committee
- IMD, countries covered under geographical scope of MOU with IMO
- Singapore Maritime Community, The Salvation Army Prison Support Services Kids In Play, REACH Family Service Centre, Community Chest
- Singapore Exchange (SGX), Big 4 Accounting Firms

**Emphasising Environmental Sustainability**

**Maritime Singapore Green Initiative (MSGI)**

- In 2011, MPA pledged to invest up to S$100 million over a 5-year period to support 5 different programmes within the MSGI. Maritime companies were also invited to take the Maritime Singapore Green Pledge to demonstrate their commitment to promoting clean and sustainable shipping in Singapore.

**Advancing Leadership in Sustainability Reporting**

MPA also launched its Sustainability Reporting Co-Funding Scheme to encourage SGX-listed maritime companies to embrace SGX’s sustainability reporting requirement. In 2019, MPA and its industry and sustainability partners developed the Maritime Sustainability Reporting Guide, the first sectoral-driven sustainability reporting guide developed in Singapore, and amongst the first few guides in the world to be aligned to GRI Standards’ Sector Disclosure initiative.
Lloyd’s is very grateful for the support from MPA and the Monetary Authority of Singapore (MAS), and we will continue to work closely with both organisations to further develop our base here as the regional hub for the Asia-Pacific.

Mr David Chin
ex-Director General of Trade, Ministry of Trade and Industry
ex-Deputy CEO, Trade Development Board

MPA went beyond its role to acquire knowledge of the full commercial linkages and used it to expand our coverage of the maritime cluster. By doing so, MPA was able to ensure that we ring-fenced the incentives support while still complying with international tax procedures. This success was evident in Singapore being rated the Top Maritime City of the World for 8 continuous years, as shown in the Menon report.

Mr Kent Chaplin
CEO, Lloyd’s Asia Pacific

It is heartening that in the evolving maritime landscape, the Singapore government is galvanising the industry to embrace emerging technologies and retool their systems and processes to achieve greater efficiencies and optimisation. The development of the Sea Transport Industry Transformation Map is another testimony of the strong alignment between the government and industry in Singapore that has been and will continue to be the key to the success of Maritime Singapore.

Mr Esben Poulsson
Chairman, International Chamber of Shipping
President, Singapore Shipping Association
Chairman, Enesel Pte Ltd

Start-ups bring grit, agility and potentially disruptive innovation into an industry that is steeped in tradition and inefficiencies. The collaborative efforts amongst MPA and its industry partners in turn offer deep domain expertise and are great opportunities for start-ups to penetrate a relatively untapped and under-served market, which is a win-win scenario.

Mr Kelvin Ong
Partner, TNB Ventures

Lloyd’s is and continues to be a good listener and partner to the maritime finance industry - from attracting ship owners to Singapore to making the Singapore flag/registry ships even more attractive to supporting various shipping seminars and programmes.

Mr Lee Keng Mun
Head of Shipping Asia, HSH Nordbank AG, Singapore Branch

It is reassuring that in the evolving maritime landscape, the Singapore government is galvanising the industry to embrace emerging technologies and retool their systems and processes to achieve greater efficiencies and optimisation. The development of the Sea Transport Industry Transformation Map is another testimony of the strong alignment between the government and industry in Singapore that has been and will continue to be the key to the success of Maritime Singapore.

Mr Esben Poulsson
Chairman, International Chamber of Shipping
President, Singapore Shipping Association
Chairman, Enesel Pte Ltd

With its belief in Service Excellence, commitment to being pro-enterprise, and support for innovation, entrepreneurship, new business models and technological advancements, MPA has developed a Service Excellence Framework (see Figure 2.1.1) to anchor service delivery. This framework revolves around 3 customer management tenets:

- Stay close to customers' needs
- Go the extra mile
- No challenge too difficult; no task too small

MPA Service Excellence Framework

With its belief in Service Excellence, commitment to being pro-enterprise, and support for innovation, entrepreneurship, new business models and technological advancements, MPA has developed a Service Excellence Framework (see Figure 2.1.1) to anchor service delivery. This framework revolves around 3 customer management tenets:

- Stay close to customers' needs
- Go the extra mile
- No challenge too difficult; no task too small

2.1 Customer Requirements

MPA puts customers at the core of service delivery and constantly seeks feedback to better understand their concerns and needs. These feedback are received through platforms such as:

- Market surveys and studies: Pro-Enterprise Ranking (PER) Survey, Annual Marine Services Survey (AMSS) and other comparative reports on the maritime industry
- Direct engagements with customers at industry forums, conferences, events, dialogue sessions and company visits: SMW, SIBCON and Safety@Sea Week
- Feedback and complaints from the organisational website, e-service channels, one-to-one interactions and appeals

MPAs customers are segmented according to the key services it provides.

Understanding customer needs and emotions are crucial to create a positive customer experience. MPA is working on developing a more detailed service journey map to deepen its understanding of the end-to-end journey for its customers. This will provide additional data-points to identify and prioritise policies and services for review and redesign.

To deepen MPA’s understanding of its customers’ voice, the organisation embarked on a collaborative project with the Civil Service College (CSC) to develop 9 customer archetypes (see Figure 2.1.2). This crystallised the different archetypes’ needs, challenges and expectations of good service. This provides MPA with a better position from which to develop its service strategies to enhance customer service. To empower staff’s empathy with customers’ perspectives and enhance their ability to care for, listen to and understand customers’ needs and challenges, MPA also translated these 9 customer archetypes into a training programme.

With listening posts and processes in place, MPA will continue to validate its understanding of its customer segments and the operating environment, and use different methodologies to deliver better value and experiences to its customers.

2.1a Segments markets and customers and understands their current and future requirements
2.1b Incorporates market and customer requirements into strategic plans

MPR processes for incorporating customer requirements into strategic improvement plans is outlined in Figure 2.1.3.

Figure 2.1.4 illustrates how MPA has incorporated the requirements into its strategic plans.

2.2 Customer Experience

Apart from actively incorporating customer insights and expectations into the design of its touch points, products, processes and services, MPA also creates them with different customer segments and partners (see Table 2.2.1).

---

**Figure 2.1.2: MPA Customer Archetypes with an Example of the Voice of an Archetype**

**Figure 2.1.4: Examples of Strategic Plans Developed from Market and Customer Requirements**

---

### Table 2.2.1: Examples of Co-creation with Customers

<table>
<thead>
<tr>
<th>Co-creation Method</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formation of steering committee and working groups featuring industry players</td>
<td>Formation of the IMC 2030 Advisory Committee chaired by Mr. Andreas Scheden-Pau, Chairman of BW Group, to develop the IMC 2030 Strategic Review Report</td>
</tr>
<tr>
<td>Active engagement to solicit feedback</td>
<td>Active soliciting of industry feedback for Sea Transport ITM and the Maritime Industry Transformation Series</td>
</tr>
<tr>
<td>Soft launches, pilots and prototypes to get feedback</td>
<td>Pilot of blockchain-based maritime trade platform TradeTrust, which will initially focus on blockchain-powered electronic bills of lading (see box story on Blockchain in Category 5.1)</td>
</tr>
<tr>
<td>Co-funding and joint implementation of projects</td>
<td>Supporting start-ups from the SPC to work with maritime companies for prototype development</td>
</tr>
</tbody>
</table>

---

To enhance efficiency and effectiveness in handling customer information, which currently resides with various touch points, COMPASS was launched as a customer-relationship management (CRM) system. As a centralised information bank on customer interactions, it provides MPA with a 360° view of customers. This allows MPA to review and streamline its current processes and enable MPA staff to provide a more holistic customer experience while presenting a One MPA image. Furthermore, COMPASS ensures that customer information is retained when there are staff movements.
2.2c Provides ease of access for customers to seek assistance and information to enhance the customer experience

As part of the overall customer experience, MPA seeks to provide better accessibility for customers to seek assistance and information. Multiple touch points are made available, as shown in Figure 2.2.2.

A deep-dive study of MPA customers’ experiences revealed the following:

- Many queries managed by MPAs contact centre were actually straightforward and easily resolved online.
- Customers acknowledge that digitising processes have helped enhance their efficiency.
- They are open to digital options to carry out their transactions, but prefer dealing with MPA staff directly for exceptional cases.

As MPA continues its push towards digitalisation and improving customer experience, a 2025 goal of enabling customer self-help as the first option was set. To achieve this, MPA will continue to create intuitive and customer-centric digital options for customers, educate and nudge customers towards the digital options, and drive process improvements to simplify customer processes.

2.2d Sets performance standards at customer touch points to ensure consistent service delivery

MPA sets performance standards at its touch points to ensure consistency in service delivery. Corporate service standards (see Figure 2.2.3) ensure that MPA’s staff respond to customer enquiries speedily and efficiently.

Specific customer service standards are also set for each customer segment. These are regularly reviewed to ensure they meet the evolving needs and expectations of customer segments.

2.3 Customer Satisfaction

2.3a Determines and improves customer satisfaction for various customer segments

To ensure consistent and positive experiences at its touch points across various customer segments, MPA puts in place mechanisms to measure customer satisfaction and surface opportunities for improvement (see Table 2.3.1).

MPA continues to receive top honours in PEP-SBF PER Survey

MPA uses the PER Survey to monitor how its business has been in developing its regulatory and promotional functions. Drawing upon insights from the 2017 survey, MPA enhanced communications with its customer groups to ensure they understand how MPA was closing the loop to address issues. For its efforts, it regained its top ranking in 2018.
2.3b Determines current and future drivers of customer satisfaction

MPA takes reference from components of the PER survey to determine current drivers of customer satisfaction. They are as follows:

Customer Responsiveness
- MPA's awareness of customers' issues and responsiveness in addressing these issues

Transparency
- How clearly MPA communicates its regulations and decisions

Review of Rules and Regulations
- How often MPA reviews its regulations and whether it consults the public in these reviews

Pro-Enterprise Orientation
- How business-friendly MPA's policies are

Compliance Cost
- How costly it is to comply with MPA's regulations

To forecast the future requirements and expectations of its customers, MPA relies on:

Intelligence shared by industry partners, MOT and other government agencies

Papers presented at maritime conferences and industry events

Collaborations with IHLs, RIs and the industry

Benchmarking studies and learning journeys

Surveys about customers' future expectations

The key indicators of customer satisfaction and feedback are reviewed and evaluated for service improvement opportunities. Improvement plans are subsequently drawn up, endorsed by SM and incorporated into strategic plans.

2.3c Incorporates customer insights and feedback into the strategic improvement plans

The key indicators of customer satisfaction and feedback from customers are actively analysed to develop insights which will feed into MPA's strategic improvement plans (see Section 2.1b).

Enabling Maritime Singapore's Digitalisation Efforts

MPA, in partnership with the Infocomm Media Development Authority, Enterprise Singapore (ESG) and SkillsFuture Singapore (SSG), rolled out the Sea Transport Industry Digital Plan (IDP) for the ship agency and harbour craft sub-sectors.

Aligned to the Sea Transport ITM, the Sea Transport IDP provides Small and Medium Enterprises (SMEs) in the Sea Transport industry with an easy-to-use, step-by-step guide on the digital solutions to adopt at each stage of their growth.
The maritime industry continues to create good jobs and employs 170,000 people while contributing 7% to Singapore’s GDP. Singaporeans know that the port is important to us but I suspect many of us don’t realise how critical it is.

Mr Lee Kuan Yew  
Minister Mentor

Finance plays a critical role in the capital-intensive maritime industry. While the sector is presently facing headwinds, our listed maritime and offshore services companies raised nearly US$4 billion from 2013 to 2015 through IPOs, secondary fundraising and bond listing on SGX.

Mr Loh Boon Chye  
CEO, SGX

The successful growth of Singapore’s maritime sector over the past decade has been founded on a clear strategy, effective implementation and strong alignment between the government and the maritime community. These factors are even more relevant at a time where the outlook is less certain and where the emphasis is shifting from physical to virtual flows. Connectivity, innovation and talent are seen as the best ways to remain responsive to changing conditions.

Mr Andreas Sohmen-Pao  
Chairman, Singapore Maritime Foundation

As we grow and move towards innovation, we want to put the industry in a digitalisation and technology adoption phase. Unlike the aviation industry, ships are not manufactured by multiple companies. They are manufactured by multiple companies with multiple suppliers. From a ship management perspective, managing spares parts is a nightmare. Using technology, supplies can be printed on demand.

Mr Michael Phoon  
Executive Director,  
Singapore Shipping Association

MPA INNOVATION EXCELLENCE AWARD APPLICATION REPORT

The Port Authorities Roundtable (PAR) was initiated and inaugurated by MPA in 2015, facilitates the exchange of ideas and the learning of best practices. It is a key platform for leaders of port authorities to share and discuss issues of common interest openly, and seek mutually beneficial collaboration opportunities in today’s evolving maritime landscape. In 2018, the PAR was hosted by the Port of Long Beach, and was themed “The Port of the Future”. It was attended by 14 port authorities to share and discuss issues of common interest openly, and seek mutually beneficial collaboration opportunities in today’s evolving maritime landscape.

Mr Lee Hsien Loong  
Prime Minister

MPA INNOVATION EXCELLENCE AWARD APPLICATION REPORT

To better enhance its understanding of the environment, MPA has made a conscious effort to improve its interpretation of gathered data through:

- Deep-dive studies and analyses conducted internally or by research partners
- Comparative and benchmarking studies
- Learning journeys, industry engagements and round table discussions
- Data analytics and dashboarding

MPA signed a MOU with IBM to acquire data analytics skills in aspects such as safety, security and port operations (see Category 6 Box Story on SAFER). Additionally, MPA works closely with other national security agencies, such as RSN and PCG, to use analytics to predict hostile threats. To deepen MPA’s sense-making and data analytics capabilities, the Data Science and Artificial Intelligence Department was set up to drive focus and change in this area.

Enterprise Risk Management (ERM)  
To ensure that MPA is focused on its Mission and remains on course to fulfil its Vision, the organisation developed the ERM Framework (see Figure 3.1). The framework articulates a structured process to identify, assess and treat risks. This process is coordinated with MPA’s annual workplan. Insights gathered from environment scanning and sensing initiatives by SM, as part of the annual workplan cycle.

Port Authorities Roundtable (PAR)

3.1 Strategy Development

3.1a Determines organisational challenges and anticipates external changes and risks

MPA relies on environment scans, sense-making and analytics and ERM to determine organisational challenges and anticipate external changes and risks.

Environment Scans

MPA conducts regular environment scans based on a set of driving forces and the Future Ready strategic thrusts. The key challenges identified through such scans are then closely monitored and regularly reviewed by SM and relevant officers. A comprehensive environment scan is conducted annually, and the results are presented at the Management Advance for consideration when mapping out the upcoming year’s workplans.

History

The successful growth of Singapore’s maritime sector over the past decade has been founded on a clear strategy, effective implementation and strong alignment between the government and the maritime community. These factors are even more relevant at a time where the outlook is less certain and where the emphasis is shifting from physical to virtual flows. Connectivity, innovation and talent are seen as the best ways to remain responsive to changing conditions.
3.1b Develops long- and short-term strategies to address organisational goals

NGP 2030, IMC 2030 and Sea Transport ITM

The NGP 2030 master plan maps out MPA's developmental strategy towards Maritime Singapore's vision to be a Safe, Efficient and Sustainable Global Hub Port, while the IMC 2030 vision is for Singapore to be the Maritime Hub for Connectivity, Innovation and Talent. The Sea Transport ITM builds on these strategic long-term plans with specific initiatives to catalyse innovation, drive productivity improvements and enhance the skills of the maritime workforce (see Figure 1.1). MPA’s mandate is to ensure Maritime Singapore stays ahead of future competition, continues to remain a key pillar of Singapore's economy and generates good jobs for Singaporeans.

Workplan Cycle

While MPA's Future Ready Framework and long-term master plans guide its strategic direction, these must be translated into mid- and short-term milestone targets. MPA continuously reviews and updates its strategic priorities. The process is supported by the annual workplan exercise, where the organisation charts its workplans for the next 1 to 5 years against evolving developments. The workplan cycle begins with the Management Advance, where the participants collectively brainstorm how to refine MPA's focus areas. This is followed by the workplan exercise where all divisions in MPA develop and seek SME's endorsement of their plans for the upcoming years. The plans are consolidated into an organisational corporate workplan which is then endorsed/approved by the MPA Board. This governance process ensures that MPA remains aligned to its strategic direction and the WOG, moving together as “One MPA, One Partnership, One Maritime Singapore” to achieve its goals for 2030 and beyond.

3.1c Engages key stakeholders in the strategy development process

MPA engages key stakeholders through numerous platforms to keep abreast of sentiments and developments in the global maritime industry, and to solicit valuable feedback taken into consideration during strategy development. Platforms include SRS Forum, Steering Committee meetings for NGP 2030, PIER71 and MINT Fund, and also quarterly meetings with PSA Corporation (PSAC), Jurong Port Pte Ltd (JPPL) and Singapore Cruise Centre Pte Ltd.

3.1d Develops innovation strategies with clear goals and articulation of their intent and value to the organisation

The Sea Transport ITM provides the vision and strategies for transforming Singapore’s maritime industry. Innovation is a key pillar which aims to sharpen industry competitiveness, catalyse new growth areas, enhance productivity, create future jobs and skills, and encourage local companies to internationalise. It remains critical as Singapore strives to develop new industry capabilities and solutions that leverage on cutting-edge technologies such as AI, autonomous systems and robotics, big data analytics, cloud and mobile computing, and modelling & simulation.

MPA has consulted the industry, trade associations, unions and relevant agencies to craft the innovation strategies (see Table 3.1.1).

Table 3.1.1: MPA Innovation Strategies with Clear Intent and Value to MPA and Maritime Singapore

<table>
<thead>
<tr>
<th>Innovation Strategies</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Build a vibrant maritime innovation ecosystem</td>
<td>To promote industry digitalisation, MPA recently set up the Chief Digital Officer (CDO) Network, with the aim of creating innovation champions in maritime companies to help drive transformation through the adoption of technology and innovation. The first cohort of digital officers was formed by 23 maritime companies, and has since been expanded to 46 members. Going forward, MPA will set up a Chief of HR Officers Network, to work together with the CDO Network on the transformation of skills and support digitalisation of the sector.</td>
</tr>
<tr>
<td>Create an enabling environment for innovation</td>
<td>MPA has also launched the Sea Transport IDP initiative with MIDA, ESG and SSIG, as part of the SME Go Digital Programme that makes going digital simple for SMEs. The Sea Transport IDP for the harbour craft and ship agency sectors was developed to guide SMEs in their digital transformation efforts, and will be extended to other sub-sectors over time. In addition, MPA takes an active and targeted approach to strengthening local and international collaboration to further maritime industry innovation and capability development. This includes specific areas of innovation such as port technologies to improve terminal productivity and efficiency (through MOUs with PSA and JPL), digitalisation of trade and maritime documentation (through MOUs with SSIA, Singapore Customs and IMDA), and providing additive manufacturing (AM) for maritime processes (with PSA, SSA, NAMIC and 3DMetaltech). Through collaborations with technology providers (e.g. ST Electronics, M1 and Wartsila), classification societies and RIs, knowledge spill-overs, linkages and other collaborations in R&amp;D can take place. For example, RICs (e.g. Lloyds Register's Global Technology Centre and ClassNK's Global Research and Innovation Centre) have been set up in Singapore to facilitate industry innovation and industry-academia collaboration. These efforts support the deepening of maritime R&amp;D capabilities and value creation and capture for Singapore.</td>
</tr>
</tbody>
</table>

Within MPA, a robust process for developing innovation strategies and approaches also exists. Led by a Chief Innovation Officer who is also the director-in-charge of industry innovation, the IWC develops strategies to drive a culture of innovation within MPA. These strategies are discussed in detail at SMMS, SISC meetings, IWC meetings and project meetings. Through this process, the MPA Innovation Process, Innovation Culture, MPA Innovation Fund, Ops-Tech Roadmap, Digitalisation Plan and FST Strategy have been developed to guide MPA's innovation efforts. Port of Singapore as a Living Lab – The MLL serves as a technology collaboration platform where innovative projects such as next generation vessel traffic management concepts, remote piloting, Maritime Autonomous Surface Ships (MASBS), IoT port operations and other new innovative solutions are piloted. To encourage companies to embark on rapid innovation and experimentation, MPA put in place an enabling environment, infrastructure, data and smart regulations for innovation. Singapore has one of the world’s busiest hub ports and waterways, which presents the most demanding environment for spurring innovative ideas and solutions. The MLL, together with PSA Living Lab and Jurong Port Living Lab, aims to bring together process owners, technology providers and researchers to co-innovate, test-bed new systems in an actual operating environment, and bring these solutions closer to market. Some of these key innovation enablers are:

- Government co-funding through the MINT Fund
- Provision of test-butching areas in port waters, regulatory sandbox, wireless ship-to-shore communication infrastructure, and Maritime Innovation Lab co-working spaces
- Provision of data through SG-MDH
In order to become a global maritime knowledge hub and develop a long-term quality pool of maritime researchers and specialists, MPA and SMI have jointly established 3 maritime CoEs to develop long-term strategies in the following areas: (a) Next Generation Ports; (b) Maritime Energy and Sustainable Development; and (c) Maritime Safety. The CoEs seek to strengthen the collaboration between industry and the research community, develop innovative solutions for the port and maritime sector and accelerate technology transfer to the industry.

In addition, MPA and SMI launched the Maritime Transformation Programme (MTP), a key vehicle to implement the innovation initiatives under the Sea Transport ITM. The MTP will leverage the National Research Foundations (NRF’s) Research, Innovation and Enterprise Funds (REI Funds) to grow maritime R&D capabilities and transform the sector. The focus areas for the MTP are aligned with the 5 strategic areas of the Maritime R&D Roadmap as mentioned above.

MPA also works with the industry and overseas partners in the start-up ecosystem to grow start-ups for the maritime sector in Singapore. The PIER71 and SPC programmes aim to attract innovative start-ups from Singapore and overseas. These initiatives help develop solutions to industry issues and anchor the development of next generation maritime technology to deliver economic value for Singapore. Through attracting, connecting, developing global tech start-ups, entrepreneurship and private capital, MPA accelerates innovation and forays into adjacent/new growth areas, builds capabilities and solutions for Singapore’s maritime industry and strengthens Singapore’s status as a Global Maritime Hub for innovation and talent.

3.2 Strategy Implementation

To ensure that the risk management process is effective and remains aligned to the ERM Framework, MPA has created an ERM governance and reporting structure, which is guided by the ERM Steering Committee and MPA Board.

The ERM Steering Committee and Working Committee will meet at least once a year, and the meetings are aligned to the workplan cycle. To reinforce a culture of risk management, MPA continues to build its staff’s risk knowledge and competencies through training, communicating key risk issues as well as sharing lessons learnt through the Risk Digest, a regular newsletter published by MPA’s Internal Audit Department.

MPA ERM also interfaces with its Internal Audit, which factors the effects of relevant strategic, operational and corporate governance risks from the corporate risk matrix into its auditable processes. This process aids in prioritising the areas to be audited.

3.2c Allocates resources in a timely manner to achieve strategic goals

Financial Resources

During the annual workplan process, each division is required to state their budget requirements in their workplan submissions. The Finance department will then weigh the various budget submissions against the organisation’s strategic priorities and present them to the division for discussion and endorsement.

Other than planning for the annual distribution of financial resources, MPA ensures that it constantly reviews and optimises its financial resources through discussions and reporting.

Additionally, the Finance department ensures that the allocation of financial resources is optimised by:

- Actively managing reserves for higher returns
- Conducting regular fees and charges reviews to optimise cost recovery
- Regularly reporting budget utilisation to inculcate financial prudence
- Actively managing reserves for higher returns
- Conducting regular fees and charges reviews to optimise cost recovery
- Updating document all relevant information in the risk register

Figure 3.2.2: Risk Management Process
3.2f Cascades its innovation strategies

As MPA aspires to drive the development of Maritime Singapore as a knowledge and innovation hub, it is necessary for the organisation to effectively cascade its innovation strategies to employees and stakeholders.

External

To facilitate the communication of its innovation strategies, MPA has built a close-knit innovation ecosystem (see Figure 3.2.3) with partners, IHLs and RIs. This is done through dialogues and presentations, as well as joint R&D programmes.

Dialogues and Presentations

MPA cascades innovation strategies through dialogues and presentations with external parties such as the SMTC. Held in conjunction with SMW, the conference is a platform for MPA to profile and showcase prominent maritime and port industry trends and technological developments, with a focus on innovation projects that take into account recent trends like digitalisation and environmental care.

Joint R&D Programmes

To enhance the cascading of innovation strategies for the improvement of Singapore's maritime landscape, MPA has been actively engaging its partners in R&D. For example, MPA signed an MOU with PSA up till 2020. Known as the MPA-PSA Technology R&D Programme, this programme enhances collaborations in the research and testing of new technologies for the future Tuas Terminal. Another example is the MPA-Jurong Port Green Port and Productivity Solutions Programme, which supports the co-development of new technologies to enhance the productivity of multi-purpose terminals. An added incentive for such joint R&D programmes is the exchange of innovation strategies and cultures.

3.2g Allocates resources to achieve innovation strategies

MPA ensures adequate resources are allocated to achieve its innovation strategies. This ensures that an enabling environment for innovation is created, and that both external and internal stakeholders are able to develop and pursue innovative solutions.
The excellent labour management relations we enjoy today are a result of continuous commitment by MPA’s Management and AUSBE-MPA Branch’s Union Leaders, with the purpose of advancing the interests of MPA staff and union members. MPA also regularly engages unions across the maritime industry, from the ports to the seafaring sector. The policies rolled out for workers in the industry have always been done in tripartite collaboration, resulting in the inception of the Tripartite Maritime Manpower Taskforce for Seafaring and Shore-based sectors, formulating the Sea Transport Industry Transformation Map. Such good relations must not be taken for granted and we must continuously work on them. On behalf of the Labour Movement, we are deeply appreciative of MPA’s contributions towards our workers. With the strong foundation built by former Chief Executive Andrew Tan, we look forward to forging even stronger relations with current Chief Executive Quah Ley Hoon to advance tripartism and positively impact the lives of our workers in Singapore.

Ms Mary Liew
President, NTUC General Secretary, SMOU

As we prepare our workforce for the rapidly changing employment landscape, the Labour Movement recognises the importance of equipping our working people with the necessary and most updated skills and knowledge. SkillsFuture should play a key role in ensuring that our existing workforce, new entrants to the workforce, as well as those who have yet to join the workforce, all have equal opportunities at getting access to the necessary skills and knowledge. We are heartened to share that our bilateral ties are on an upward trend. Last year, our former CE Mr Andrew Tan was conferred the “Medal of Commendation (Gold)” award during NTUC’s May Day Award 2018. This year, we are proud to share that MPA has been conferred the “Plaque of Commendation (Gold)” award during NTUC’s May Day Award 2019. This is a testament to our achievements and “silent work behind the scenes” to make MPA a better agency that listens to our stakeholders and a platform such as AUSBE and MPA enjoy all-weather Labour Management Relations. This state of relations is not achieved overnight as it requires concerted and reciprocal effort to be invested by CE, Senior Management and AUSBE-MPA Branch’s Union Leaders. I am heartened to share that our bilateral ties are on an upward trend. Last year, our former CE Mr Andrew Tan was conferred the “Medal of Commendation (Gold)” award during NTUC’s May Day Award 2018. This year, we are proud to share that MPA has been conferred the “Plaque of Commendation (Gold)” award during NTUC’s May Day Award 2019. This is a testament to our achievements and “silent work behind the scenes” to make MPA a better organisation for our employees, an agency that listens to our stakeholders and a national standard bearer representing all maritime agencies in Singapore.

Mr Mohamad Arif Abdullah
Senior Vessel Traffic Officer, MPA

4.1 Human Resource Planning

4.1a Anticipates HR needs and develops HR plans and policies which are aligned to strategic goals and organisational values

One of the key thrusts in MPA’s Future Ready Framework is for the organisation to be a Choice Employer. To achieve this goal, MPA’s HR team has put in place 3 key strategies to ensure that it can meet the manpower challenges and operational demands of MPA (see Figure 4.1.1).

MPA embarked on a strategic organisational review in 2018 to prepare for transformations in the industry and operating environment. This review encompassed structure, operating models and people strategies as part of MPA’s Strategic Workforce Plan, and ensures that MPA operates with the Right Organisation, Right People and Engaged People.

The HR team works closely with SM, unions and staff to develop and implement strategic HR plans and policies that can adapt to changes in the external environment and anticipate future workforce needs. Table 4.1 summarises the different platforms that HR leverages to develop HR plans and policies.

Table 4.1: Platforms to Develop HR Plans and Policies

<table>
<thead>
<tr>
<th>Level</th>
<th>Platform</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Senior Management</td>
<td>HR Board Meetings</td>
<td>▪ Review corporate HR performance ▪ MPA talent development &amp; management</td>
</tr>
<tr>
<td></td>
<td>Review HR strategies, policies &amp; plans ▪ Review compensation &amp; benefits ▪ Discuss &amp; support succession planning</td>
<td>▪ Determine manpower profile to support MPA succession planning</td>
</tr>
<tr>
<td></td>
<td>MOT</td>
<td>▪ Review development of staff in professional tracks (Vessel Traffic Management (VTM) &amp; Mariners) ▪ MPA talent development &amp; management ▪ MPA succession planning</td>
</tr>
<tr>
<td>Supervisors</td>
<td>Staff Meetings</td>
<td>▪ Identify areas for improvement in HR matters &amp; development programmes within departments – staff engagement, core competencies, performance management etc.</td>
</tr>
<tr>
<td></td>
<td>Staff Appraisals</td>
<td>▪ Establish areas of development &amp; develop learning roadmaps for subordinates</td>
</tr>
<tr>
<td></td>
<td>EES</td>
<td>▪ Solicit feedback from staff</td>
</tr>
<tr>
<td></td>
<td>Staff Welfare &amp; Work Life Sub-Committees</td>
<td>▪ Identify areas of improvement for staff engagement</td>
</tr>
<tr>
<td></td>
<td>Union Meetings</td>
<td>▪ Collaborate to engage &amp; develop staff as One MPA</td>
</tr>
</tbody>
</table>
4.1b Establishes a recruitment and selection process to meet organisational needs

Before recruitment commences, HR evaluates the need for a vacancy to be filled and whether the job role remains relevant. At the interview, the panel focuses on the experience and competencies of the candidates in order to determine if they have the right skillsets and experience to perform well. Shortlisted candidates will be required to complete a psychometric test which provides insights in the following areas:

- Business attitude
- Motivational drives
- Reasoning capacity

The psychometric test helps HR to assess an individual’s FIRST competencies objectively. Details of the HR recruitment and selection process are illustrated in Figure 4.1.3.

4.1c Identifies and grooms employees for high performance

Talent Identification and Development

HR ensures that a leadership talent pipeline exists to provide a steady supply of leaders to support MPA’s Mission and Vision. It does so by creating a system to rigorously identify and groom talent.

Each year, MPA’s talents are identified by the annual ranking board based on performance and potential. To be identified as talents, staff have to meet strict qualifying criteria (e.g. show good performance and potential over a period of time). The list of talents is collated and reviewed by the ranking board annually.

High potential staff are placed on the LEAD programme to help widen their exposure and build their leadership skills.

Succession Planning

MPA charts its succession planning using succession plans with 3 different time horizons: immediate (within the next year), medium (within the next 2 to 4 years), and long term. These succession plans are discussed with ACEs and approved by the CE. For key management positions, succession plans are discussed with Senior Personnel Board and Permanent Secretary of MOT on an annual basis. HR consults the Directors to identify possible rotations and milestone developmental plans for nurturing potential successors along a structured development path.

Succession Planning

MPA charts its succession planning using succession plans with 3 different time horizons: immediate (within the next year), medium (within the next 2 to 4 years), and long term. These succession plans are discussed with ACEs and approved by the CE. For key management positions, succession plans are discussed with Senior Personnel Board and Permanent Secretary of MOT on an annual basis. HR consults the Directors to identify possible rotations and milestone developmental plans for nurturing potential successors along a structured development path.

4.2 Employee Learning and Development

4.2a Engages employees to identify current and new competencies required to achieve organisational goals

Learning Needs Analysis

MPA adopts both a top-down and bottom-up approach to identify staff learning needs (see Figure 4.2.1). Both approaches take into account MPAs’ Future Ready Framework, strategic thrusts and organisational and departmental workplans.

The top-down approach addresses organisational needs such as the push for digital skills. These needs are identified as emerging competencies that the organisation will require in order to achieve its objectives moving forward. Learning Roadmaps (LRMs) are then developed to guide staff in acquiring these competencies.

In the bottom-up approach, supervisors discuss learning needs with staff during ongoing developmental and appraisal conversations (see Figure 4.2.2). Feedback and inputs from staff are actively solicited through the MPA My Development Plan (MDP).

MPA reviews the competencies and LRMs on an annual basis, taking into consideration performance gaps, new work challenges and the coming year’s workplan. This results in an annual learning plan that caters to the needs of all staff and the organisation.

4.2b Engages employees to identify current and new competencies required to achieve organisational goals

Learning Needs Analysis

MPA adopts both a top-down and bottom-up approach to identify staff learning needs (see Figure 4.2.1). Both approaches take into account MPAs Future Ready Framework, strategic thrusts and organisational and departmental workplans.

The top-down approach addresses organisational needs such as the push for digital skills. These needs are identified as emerging competencies that the organisation will require in order to achieve its objectives moving forward. Learning Roadmaps (LRMs) are then developed to guide staff in acquiring these competencies.

In the bottom-up approach, supervisors discuss learning needs with staff during ongoing developmental and appraisal conversations (see Figure 4.2.2). Feedback and inputs from staff are actively solicited through the MPA My Development Plan (MDP).

MPA reviews the competencies and LRMs on an annual basis, taking into consideration performance gaps, new work challenges and the coming year’s workplan. This results in an annual learning plan that caters to the needs of all staff and the organisation.

4.2c Engages employees to identify current and new competencies required to achieve organisational goals

Learning Needs Analysis

MPA adopts both a top-down and bottom-up approach to identify staff learning needs (see Figure 4.2.1). Both approaches take into account MPAs Future Ready Framework, strategic thrusts and organisational and departmental workplans.

The top-down approach addresses organisational needs such as the push for digital skills. These needs are identified as emerging competencies that the organisation will require in order to achieve its objectives moving forward. Learning Roadmaps (LRMs) are then developed to guide staff in acquiring these competencies.

In the bottom-up approach, supervisors discuss learning needs with staff during ongoing developmental and appraisal conversations (see Figure 4.2.2). Feedback and inputs from staff are actively solicited through the MPA My Development Plan (MDP).

MPA reviews the competencies and LRMs on an annual basis, taking into consideration performance gaps, new work challenges and the coming year’s workplan. This results in an annual learning plan that caters to the needs of all staff and the organisation.

4.2d Engages employees to identify current and new competencies required to achieve organisational goals

Learning Needs Analysis

MPA adopts both a top-down and bottom-up approach to identify staff learning needs (see Figure 4.2.1). Both approaches take into account MPAs Future Ready Framework, strategic thrusts and organisational and departmental workplans.

The top-down approach addresses organisational needs such as the push for digital skills. These needs are identified as emerging competencies that the organisation will require in order to achieve its objectives moving forward. Learning Roadmaps (LRMs) are then developed to guide staff in acquiring these competencies.

In the bottom-up approach, supervisors discuss learning needs with staff during ongoing developmental and appraisal conversations (see Figure 4.2.2). Feedback and inputs from staff are actively solicited through the MPA My Development Plan (MDP).

MPA reviews the competencies and LRMs on an annual basis, taking into consideration performance gaps, new work challenges and the coming year’s workplan. This results in an annual learning plan that caters to the needs of all staff and the organisation.

4.2e Engages employees to identify current and new competencies required to achieve organisational goals

Learning Needs Analysis

MPA adopts both a top-down and bottom-up approach to identify staff learning needs (see Figure 4.2.1). Both approaches take into account MPAs Future Ready Framework, strategic thrusts and organisational and departmental workplans.

The top-down approach addresses organisational needs such as the push for digital skills. These needs are identified as emerging competencies that the organisation will require in order to achieve its objectives moving forward. Learning Roadmaps (LRMs) are then developed to guide staff in acquiring these competencies.

In the bottom-up approach, supervisors discuss learning needs with staff during ongoing developmental and appraisal conversations (see Figure 4.2.2). Feedback and inputs from staff are actively solicited through the MPA My Development Plan (MDP).

MPA reviews the competencies and LRMs on an annual basis, taking into consideration performance gaps, new work challenges and the coming year’s workplan. This results in an annual learning plan that caters to the needs of all staff and the organisation.
4.2b Provides learning and development opportunities to staff to achieve organisational and personal growth

MPA believes strongly in nurturing its human capital through employee learning and development. It therefore places a strong emphasis on both the professional development and personal growth of its staff. MPA also offers its existing staff opportunities to internships – for undergraduates to gain valuable opportunities – including exchange programmes and overseas. The scholarship programme offers exciting maritime industry, the MPA scholarship is offered to as part of efforts to continuously develop talent for the future of MPA. MPA also aims to prepare itself for its future mode of career pathway to a management track.

Leadership development plays a crucial role in nurturing a new generation of leaders to drive MPA forward. MPA has customised programmes to cater to different levels of leaders based on its leadership competencies, including supervisors, managers and directors. The programmes aim to equip MPA’s future leaders with competencies and skills that will empower them to motivate and guide their teams to handle the demands of the future.

To recognise and support the development of MPA’s specialised personnel, Specialist Tracks were launched in July 2018. These cater for specialised roles such as Marine Surveyors, Hydrographers, Port Chemists and Engineers. The tracks focus on building deep expertise in domain-specific skillsets, and allow for an alternative career pathway to a management track.

MPA also provides staff with numerous learning and development opportunities to build their competencies and capabilities. These include workshops and conferences to enable staff to keep abreast of the latest industry developments. Other developmental opportunities include overseas study trips, job rotation, sprints on cross-functional project teams and secondments to other government agencies.

MPA Scholarships

As part of efforts to continuously develop talent for the maritime industry, the MPA scholarship is offered to outstanding individuals to pursue their undergraduate studies in prestigious universities both locally and overseas. The scholarship programme offers exciting opportunities – including exchange programmes and internships – for undergraduates to gain valuable exposure to the thriving and diverse maritime industry.

MPA also offers its existing staff opportunities to undertake fully sponsored post-graduate studies. This aims to add diversity and depth to their professional training and prepare them for leadership roles in MPA.

Continuing Education

MPA supports continuing and lifelong learning by providing its staff with opportunities for personal and professional development through their vocational needs. For example, the MPA In-Service Sponsorship Scheme for Part-Time Studies helps staff to achieve higher professional qualifications.

Personal Development & Growth

As part of MPA’s efforts to support staff in realising their fullest potential, the UPGRADE Account was introduced to support lifelong learning and self-development. This supplementary learning opportunity goes beyond training of direct relevance to their job scopes, and empowers staff to take greater charge of their self-development.

Another initiative that encourages ownership of self-development is the MPA MDR. It was introduced as a first step for staff to plan their development journey by drawing up and structuring personal learning plans to meet their learning needs.

To supplement staff training beyond the classroom, MPA provides e-learning resources such as LinkedIn Learning, an on-demand library of instructional videos on the latest business, technology and creative skills. MPA has also launched LEARN.gov.sg in partnership with CSC to provide staff with access to bite-sized training materials across a range of topics, from digital awareness to effective communication. This allows staff to acquire new knowledge and skills on-the-go, and inculcates a digital learning mindset within MPA. In addition, these online platforms make learning more diverse and accessible for shift workers.

4.2c Determines employee learning and development needs to contribute to the innovation goals

Innovation is a key focus of Maritime Singapore to enable the development of future capabilities and solutions such as data analytics, robotics and AI. In view of rapid technological advancements in the maritime industry, MPA implemented the Data Analytics and Technology Roadmap to build and upskill the digital competencies of all staff. Courses to drive technology awareness and utilisation of data analytics were introduced to ensure that MPA and its staff have the knowledge and skills to leverage on upcoming technologies, and innovate to remain competitive and future-ready.

4.3 Employee Engagement and Well-Being

4.3a Supports individual and team participation to achieve organisational goals

The MPA Employee Engagement and Well-being Framework is key to ensuring that staff remain engaged and motivated. The framework drives MPAs engagement efforts, which are aligned with the organisation’s strategic goals and centred around 4 key engagement levers: WeShare, WeChat, WeCelebrate and WeAppreciate. Figure 4.3.1 provides examples of key engagement platforms that MPA leverages to reach out to staff.

At MPA, there are ample opportunities for staff to pursue further education and take charge of their professional development. One such example is Ms Chervl Wee, an Accounts Receivable Executive in the General Accounting Department. Chervl constantly pushes herself to excel in her work. She has been recognised by her superiors for how she constantly initiates improvements to work processes and enhances work productivity.

Chervl is very passionate about data analytics. As she matured in her understanding of the linkages between MPA’s finance and front-end operations, she was able to initiate and participate in many analytical projects. With a strong knowledge of Microsoft Excel and PowerPoint, she has used her creativity to translate huge amounts of data into informative and easy-to-digest presentations delivered on multiple occasions, including to SM and outside of MPA.

Because of her passion, good work ethic and demonstration of MPAs FIRST Values, MPA awarded Chervl a full sponsorship for the Bachelor of Science in Business Analytics at the Singapore University of Social Sciences in January 2018.
4.3b Develops a work environment that enhances employee health and well-being

A conducive and supportive work environment plays a key role in driving innovation. Engaged staff will expend their creative energies in ways that contribute to the organisation. Harmonious working relationships also facilitate collaboration on innovative solutions.

MPA adopts a structured and comprehensive approach in looking after the physical, emotional and social well-being of staff and their families, steered by the Work-Life Harmony Framework (see Figure 4.3.2).

4.3d Develops a work environment that encourages innovation

MPA believes that everyone can contribute to its innovation journey. There are various platforms available to encourage bottom-up innovation. For example, Ideathon sessions provide staff with the opportunity to network and brainstorm ideas on a thematic basis. Staff are also encouraged to learn from the best practices of other organisations through innovation learning journeys. Viable ideas from Ideathon and learning journeys are then refined and piped into Division workplans to be implemented as innovative projects.

The SISC was set up to drive innovation and service excellence initiatives within MPA in a coordinated and collaborative manner. The Innovation Working Committee (IWC) drives innovation in MPA and puts in place various initiatives under the MPA Innovation Framework (see Figure 1.2.1) to achieve MPA’s Vision, facilitate MPA’s transformation into a cutting-edge organisation and drive a culture of excellence. IWC is supported by a taskforce which ropes in staff from various departments to provide creative inputs for the organisation on various innovation initiatives.

To encourage collaborations between divisions/ departments and foster a culture of innovation, MPA is also designing and creating a new open concept office space. The open concept design will provide more communal spaces and encourage staff interaction and ideation across all Divisions.

These measures should move MPA’s innovation culture in the right direction. Apart from the EES which measures MPA’s innovation climate, output indicators such as participation in innovation initiatives and the receipt of national/international awards and recognition, prove that MPA is on the right track.

4.4 Employee Performance and Recognition

4.4a Supports high performance, productive and innovative behaviours to achieve organisational goals

In 2018, MPA participated in the WOQ EES with questions that were designed differently from before. The intention was to allow all government agencies to participate in the EES within a common timeframe, allowing for more accurate comparison of data and trends across the entire Public Service.

Leadership

SM will engage as people developers to motivate, inspire and bring out the best in staff. As MPA’s CE is newly appointed, the organisation is also taking the opportunity to organise a leadership retreat to build common understanding, facilitate communications and set direction.

Figure 4.4.1 illustrates how MPA manages staff performance to achieve strategic goals.

The Performance Management Process was sharpened in 2018 to allow for greater alignment of the individual officer’s KPIs with those at the department, Division and corporate levels, so that all efforts are aligned to help MPA achieve its Mission and Vision.

The enhanced Performance Appraisal Form allows for a more comprehensive performance assessment that takes into account MPA’s Core Values (FIRST) and the leadership competencies key to MPAs success.
MPA also recognises staff who provide excellent service to external customers through the Service Star Awards. Both the FIRST Champion and Service Star Award winners are featured during MPA Values Week and in internal publicity materials. Sharing these achievements serves to inspire staff to strive for excellence in their work.

### 4.4c Rewards and recognises employees to achieve organisational goals

MPA has put in place a myriad of monetary and non-monetary rewards to encourage staff to strive for continual improvement, not just in their work performance but also in demonstrating organisational values. Figure 4.4.2 summarises the various staff performance and recognition mechanisms used by MPA.

### 4.4d Recognises and rewards individuals and teams for contributing to the innovation goals

At MPA, there are various awards and incentives to recognise and reward individuals and teams for their innovation achievements (see Table 4.4.1).

---

**Table 4.4.1: Rewards & Recognition**

<table>
<thead>
<tr>
<th>Team</th>
<th>Individual</th>
</tr>
</thead>
<tbody>
<tr>
<td>International Level</td>
<td>• ExCEL Innovation Champion</td>
</tr>
<tr>
<td>National Level</td>
<td>• Commonwealth Association of Public Administration and Management (CAPAM) International Innovation Award</td>
</tr>
<tr>
<td>Agency Level</td>
<td>• Value-for-Money (VFM) Award</td>
</tr>
</tbody>
</table>

**MPA also recognises staff who provide excellent service to external customers through the Service Star Awards. Both the FIRST Champion and Service Star Award winners are featured during MPA Values Week and in internal publicity materials. Sharing these achievements serves to inspire staff to strive for excellence in their work.**

---

**MPA’s Mission, Vision & Strategic Thrusts**

- Annual Corporate Workplan
- Departmental Workplan
- Individual Targets

**Performance**

- Year-end appraisal
- Open appraisal
- Discussion with HOODs
- Inputs from Chairs of secondary appointment/project work

**MPA Wide**

- Moderate performance and potential
- Ranking Committees chaired by CE and ACEs

**Outcome**

- Performance grading
- Performance bonus
- Performance award
  - Promotion
  - Job rotation/posting
  - Training needs
  - Nomination for awards

**Philosophy**

Inclusive, performance-based, competitive, aligned with best practices from the public and private sector

---

**Process Management**

**Business Continuity**

5.1 Innovation Capabilities

5.2 Process Management

5.3 Supplier and Partner Management

---

**Value Creation**
In close collaboration with EDB, we have learned that the era of Additive Manufacturing is demonstrating pervasive importance for industry transformation. Within the maritime sector, we foresee widespread adoption on the immediate horizon. I am heartened that PSA, alongside MPA, NAMIC and 3D MetalForge, can be a pioneer in developing this technology for use in the industry. Creating new innovations, including digitising inventories, will create opportunities to raise maritime productivity to the next level.

Mr Ong Kim Pong
Regional CEO Southeast Asia, PSA International

Mr Patrick Poon
Honorary Secretary and Chairman, Singapore Shipping Association

Jurong Port is honoured to be one of MPA’s partners for the Smart Port Challenge 2017. The involvement of start-ups in the new format introduced this year will potentially allow participants to go further beyond ideation and towards a more sustained and successful post-event implementation.

Mr Ooi Boon Hoe
CEO, Jurong Port

All these initiatives to encourage digitalisation gears the industry up to look at technology. It makes us realise that actually, with support from MPA, this might not be so difficult. After all it is not easy to say ‘no’ to digitalisation because it is coming right at our faces.

Mr Matthias Cher
Chairman, Eastport Maritime

I was pleasantly surprised at the good/strong calibre of start-ups at the Smart Port Challenge, including the large amount of hard work that had gone into it prior. A great indicator was that in subsequent conversations with venture capitalists, there was interest in the start-ups themselves. The journey towards getting corporates engaged is a long and hard one, but you are, as I see it, making great headway.

Mr Michael Pomerleau
Partner and Co-founder, Rainmaking Innovation

We have been fostering strategic partnerships to help bridge and provide platforms for start-ups to engage with the flagship industries. The maritime sector plays a crucial role in Singapore’s economy, but is known for being somewhat resistant to innovation and digitalisation. As such, it is heartening to see tech-savvy start-ups work with larger, well-established maritime corporates to catalyse the digital transformation of the industry and create new opportunities for innovation-driven growth.

Dr Lily Chan
CEO, NUS Enterprise

Jurong Port Innovation Framework

The Jurong Port Innovation Framework guides our organisation towards building innovation capabilities that create value for both internal and external stakeholders.

Mr Ong Kim Pong
Regional CEO Southeast Asia, PSA International

MPA continues to rank high within the maritime industry because it consistently exhibits innovation in its service as an authority and agency. For example, its strategic decision to set aside funds to promote IT and technological solutions in hackathons and PIER’71 has led to many outlets for tech start-ups to generate solutions for the shipping community. The online booking of passenger launches is a good example, whereas the initiative to implement Mass Flow Meters for bunkering is a major milestone to uphold bunkering standards.

MPA Innovation Excellence Award Application Report

MPA Innovation Fund

MPA has set aside $100,000 per year to encourage its staff to test-bed innovative ideas/projects through POCs or prototyping. One recent project that was granted funding was the “Detection of Dark Smoke Emissions from Vessels in Port of Singapore”.

MPA Innovation Framework

The Innovation Framework (see Figure 1.2.1) guides the organisation towards building innovation capabilities that create value for both internal and external stakeholders.

Ideation to Reality – The Next Generation Patrol Craft

Built to meet the increased operational demands of NGP 2030, the Next Generation Patrol Craft will increase the efficiency and effectiveness of conducting patrols. It will leverage on the future Intelligent Port System – which is integrated with a wide range of sensors and systems – to provide situational awareness, data-driven targeted enforcement and incident management capabilities. To develop the Next Generation Patrol Craft, MPA will disburse an estimated $79.6 million of funds over a period of 10 years. At the initial ideation stage, an innovation learning journey to the Singapore Civil Defence Force (SCDF) was conducted to inspire new ideas. This was followed by an Ideathon to realise some of the ideas developed.

Ideation to Reality – The Next Generation Patrol Craft

We have been fostering strategic partnerships to help bridge and provide platforms for start-ups to engage with the flagship industries. The maritime sector plays a crucial role in Singapore’s economy, but is known for being somewhat resistant to innovation and digitalisation. As such, it is heartening to see tech-savvy start-ups work with larger, well-established maritime corporates to catalyse the digital transformation of the industry and create new opportunities for innovation-driven growth.

Dr Lily Chan
CEO, NUS Enterprise

MPA Innovation Excellence Award Application Report
5.1b Involves key stakeholders in generating and implementing innovative ideas and solutions

As a sectoral lead for the port and maritime industry, one of MPA’s roles is to position Singapore as a vibrant and innovative maritime hub. To do so, MPA adopts an ecosystem approach to innovation (see Figure 5.1.2), seeking to build a vibrant innovation ecosystem to drive competitiveness and new growth areas. In consultation with the industry and relevant agencies, three strategies were developed to achieve this under the Sea Transport ITM – create an enabling environment for innovation, grow maritime technology enterprises to develop innovative solutions, and deepen maritime R&D capabilities. Key stakeholders are engaged at every point of the way to enable the generation and implementation of ideas and solutions within the ecosystem.

// Fig 5.1.2 MPA Ecosystem Approach to Innovation //

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Key Initiatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create an enabling environment for innovation</td>
<td>The MLL created a real operating environment with sufficient scale, which technology developers and other industry stakeholders can plug into for the co-development and piloting of innovative solutions in 4 focus areas.</td>
</tr>
<tr>
<td>Deepen maritime R&amp;D capabilities</td>
<td>Work with partners to set up CoEs to deepen maritime R&amp;D competencies in 4 focus areas, with funding support through</td>
</tr>
</tbody>
</table>

Many of MPA’s innovation projects are guided by the principles of the STEER process, allowing the organisation to bring new ideas to fruition quickly and effectively. Figure 5.1.3 below highlights some notable examples.

// Fig 5.1.3 Examples of Innovation Projects which Adopted the STEER Process //

A maritime sense-making project undertaken in collaboration with IBM. Leverages on data analytics to develop and test-bed technologies that enhance port operations. Seeks to improve port operations and enforcements via measures such as a unified dashboard, predictive analytics, fusion analytics and sense-making (see box story on SAFER in Category 6.2c) Awarded the MOT Minister’s Innovation Award 2017 Distinguished Award

Electronic Certificates (e-Certs) for SRS

e-Certs reduce the administrative burden of using hard copies, save time and cost, and reduce the risk of fraud. About 8000 e-Certs have been issued to SRS Ships Awarded the Pro-Enterprise Award in 2017
5.2 Process Management

5.2a Manages key and support processes to meet customer and operational requirements

5.2b Drives process improvement to enhance productivity and achieve higher organisational performance

5.2c Evaluates the value of innovations based on organisational objectives

MPA constantly looks for how it can incorporate emerging trends into its efforts to drive innovation. This fact is clearly articulated in the STEER process (see Figure 5.2.1). Some indicative examples are listed in Table 5.1.1.

To increase the number of companies using digitalisation to trim processes and increase efficiency

MPA has linked up with A*STAR, industry partners, and local universities to test-bed new capabilities within a regulatory sandbox. There are three specific technological areas:

- Maritime Autonomous Surface Ships (MASS): MPA has partnered SSA to push for the adoption of Tuas Port based on the 4 key thrusts.
- 3D Metalforge: MPA has collaborated with PSA, NAMIC, and RSAF on a nation-wide Centralised Flight Management System for a clearer overview of airspace management. It will be operational by end-2019.
- Drones: Riding on Singapore’s status as a hub for marine services and innovation, MPA has partnered A*STAR, industry partners, and local universities to test-bed new capabilities within a regulatory sandbox.

MPA sets goals and devises divisional workplans to achieve each key and support process. To ensure that the processes are heading in the right direction and performing well, MPA sets KPIs to:

- Monitor the success of initiatives and schemes launched
- Track whether a particular key or support process is fulfilling MPA’s strategic thrusts or meeting customers’ expectations
- Measure the productivity of key and support processes

Towards a Future-ready MPA & Maritime Singapore

MPA’s strategic thrusts or support process is fulfilling and enhancing productivity and achieving the IMC. The Sea Transport ITM’s key thrusts are to catalyse innovation and drive productivity improvements for both Maritime Singapore and MPA.
MPA INNOVATION EXCELLENCE AWARD APPLICATION REPORT

Next Generation Vessel Traffic Management System (NGVTMS)

The NGVTMS will leverage on innovative solutions to detect possible collisions. It will enable the seamless exchange of information across the maritime eco-system.

MPA is leveraging on technology to further enhance vessel safety and protect Singapore’s marine environment.

New Satellite Technology to Enhance Search and Rescue Capabilities

CAAS and MPA have invested in a new Medium-altitude Earth Orbit Search and Rescue (MEOSAR) ground system. MEOSAR will enhance search and rescue capabilities in Singapore’s maritime and aeronautical Search and Rescue Regions (SRRs). The MEOSAR ground system has been fully operational since 2018.

Enhancements to the Annual Administrative Fee (AAF) scheme

The AAF scheme was introduced on 1 January 2014 to provide an alternative payment mode for registration and crew-related services. It was enhanced 3 years later when the single flat fee of $800 was replaced with a tiered fee based on ship size.

On 1 July 2017, the AAF scheme was further enhanced to include coverage for Seafarer Certification Services and an optional Tanker Endorsement Fee to apply for and issue tanker endorsements.

To facilitate smart shipping, the NGVTMS will also be capable of communicating with and handling unmanned vessels.

New technologies such as camera-armed aerial drones and ship-inspecting robots are increasingly being used for ship surveys. These remote inspection methods are safer and save time and money for ship owners by eliminating the need for traditional survey methods.

Leveraging on Technology for Use in Port

MPA is also exploring the use of electronic bunker delivery notes for bunkering.

For bunkering, MPA is now extending the mandatory use of MFMs for distillate deliveries from 1 July 2019. The use of MFMs will provide greater assurance to both suppliers and customers on the quantity delivered, ensuring that Singapore remains a reputable port and the risk of fraud while allowing for the instantaneous and simultaneous transmission of documents.

RPA technology has been successfully used in recent years across various industries to automate administrative tasks. With RPA, repeatable and rule-based workflows can be automated to provide fast and accurate services that customers have come to expect. As a quality and customer-oriented registry aiming to continuously deliver better services to shipowners, the SRS has also started exploring the use of RPA in some of its work processes.

In 2018, MPA has conducted 2 POCs for SRS processes:

1. POC with Gietelers - The Wreck Removal Convention (WRC) Certificate is renewed on a yearly basis, and the SRS receives more than 2000 such applications per year. MPA successfully completed a POC with Gietelers, winner of the 2017 SPC, to automate the verification checks required before the WRC certificates are issued.

2. POC with NCS - MPA receives an average of 120 COE applications per day. These COEs are Singapore’s endorsement of foreign Certificates of Competency (COC) issued by other flag administrations, and are required for seafarers officers to sail onboard Singapore ships. To assist with the volume of applications processed by staff on a daily basis, MPA successfully completed a POC with NCS using RPA to verify COE applications submitted for COCs issued by China, the Philippines, Indonesia and India.

MPA will be putting up a tender to build and implement an RPA solution for the 2 above mentioned processes. The RPA solution is expected to be implemented in 2019.

Service Enhancements on the Singapore Registry of Ships (SRS)

More than 4,600 ships benefited from service enhancements introduced in November 2017.

News 24/7 Hotline

Since 1 November 2017 owners, managers and operators of Singapore-registered ships requiring urgent assistance after office hours have been able to call MPA’s new 24/7 customer service hotline at (+65) 6-CALL-SRS (6-2255-777).

e-Certs

MPA started issuing e-Certs directly to Singapore-registered ships. e-Certs save time and cost as they reduce the need for hard copies and the risk of fraud while allowing for the instantaneous and simultaneous transmission of documents.

Expansion of Marinet

MPA expanded the Marinet to include 2 new online services: ship registration application and application forms for various documents issued by SRS. The expansion will improve the timeline for issuing certificates and declarations to vessels.

New Technologies for Ship Surveys

New technologies such as camera-armed aerial drones and ship-inspecting robots are increasingly being used for ship surveys. These remote inspection methods are safer and save time and money for ship owners by eliminating the need for traditional survey methods.

Figure 5.2.3: MPA Crisis Management

Strategic

EOC Incident Manager: Port Masters MPA Operational Representatives

Operational

CMO/EOC Secretariat Inter-Agenty Ops Rep

Tactical

Cell Support

Operations & Planning Logistics

Ships & Surveys Manpower

Technology & Infrastructure Information Management

International Relations

5.2c Sustains key processes in times of emergency to ensure business continuity

Singapore is one of the world’s busiest ports. Ensuring that MPA and its partners have the means and ability to respond to any emergencies and contingencies is key for business continuity.

Headed by the CE and comprising the various Directors (see Figure 5.2.3), the MPA Crisis Management Group (CMG) provides policy guidance to the Emergency Operations Committee (EOC) on the conduct of rescue operations, as well as exercises command and control over all assigned resources.

Additionally, auxiliary members will join the EOC depending on the nature of the crisis. These members can include representatives from government and commercial resources.

In the event of a major maritime emergency, it is usually the stricken vessel’s responsibility to provide the first-wave of response, unless events escalate to a level high enough to warrant the activation of the contingency plan. MPA has adopted a phased approach to crisis management with clear lines of responsibility and established protocols for prompt and coordinated response.

5.2c Sustains key processes in times of emergency to ensure business continuity

Singapore is one of the world’s busiest ports. Ensuring that MPA and its partners have the means and ability to respond to any emergencies and contingencies is key for business continuity.

Headed by the CE and comprising the various Directors (see Figure 5.2.3), the MPA Crisis Management Group (CMG) provides policy guidance to the Emergency Operations Committee (EOC) on the conduct of rescue operations, as well as exercises command and control over all assigned resources.

Additionally, auxiliary members will join the EOC depending on the nature of the crisis. These members can include representatives from government and commercial resources.

In the event of a major maritime emergency, it is usually the stricken vessel’s responsibility to provide the first-wave of response, unless events escalate to a level high enough to warrant the activation of the contingency plan. MPA has adopted a phased approach to crisis management with clear lines of responsibility and established protocols for prompt and coordinated response.

Figure 5.2.3: MPA Crisis Management

Strategic

MPA CMG

Crisis Manager: CE MPA Directors of MPA

Operational

EOC Incident Manager: Port Masters MPA Operational Representatives

Tactical

Cell Support

Operations & Planning Logistics

Ships & Surveys Manpower

Technology & Infrastructure Information Management

International Relations

MPA has put in place a comprehensive Business Continuity Management (BCM) Framework (see Figure 5.2.4) to ensure business continuity in the event of crises.

MPA has been participating in annual exercises both as the lead and a participating agency to test inter-agency readiness in responding to the different emergency scenarios, and also to share best practices and test new technologies (e.g. for combating oil spills). In 2017-2018, MPA organised 10 such exercises and participated in 18 others.
To prepare better for such situations, MPA has also identified response contractors to assist its response during emergencies. They are listed below:

- Oil-clean-up and chemical spill operations: Singapore Oil Spill Response Centre (SOSRC), Ardent Maritime
- Pandemic virus operations: Parkway Chye Thiam Maintenance Pte Ltd (cleaning/decontamination)
- Infectious disease pandemic operations: Parkway Shenton Pte Ltd (temperature screening), Chye Thiam Maintenance Pte Ltd (cleaning/decontamination)
- Marine oil spills: Singapore Pte Ltd, Oil Spill Response Ltd (OSRL), Singapore Salvage Engineers Pte Ltd (SSE)
- Port Terminal strikes: Marine oil spills: Singapore Pte Ltd, Oil Spill Response Ltd (OSRL), Singapore Salvage Engineers Pte Ltd (SSE)
- Port Terminal strikes: marine oil spills: Singapore Pte Ltd, Oil Spill Response Ltd (OSRL), Singapore Salvage Engineers Pte Ltd (SSE)
- Terrorist attacks on port facilities: Singapore Pte Ltd, Oil Spill Response Ltd (OSRL), Singapore Salvage Engineers Pte Ltd (SSE)
- Industrial port accident: Singapore Pte Ltd, Oil Spill Response Ltd (OSRL), Singapore Salvage Engineers Pte Ltd (SSE)
- Weak port enforcement regime: Singapore Pte Ltd, Oil Spill Response Ltd (OSRL), Singapore Salvage Engineers Pte Ltd (SSE)
- Maritime regulations: Singapore Pte Ltd, Oil Spill Response Ltd (OSRL), Singapore Salvage Engineers Pte Ltd (SSE)

5.3 Supplier and Partner Management

5.3a Identifies and manages key suppliers and partners to achieve organisational goals

MPA works with suppliers to enhance its capabilities and efficiency, as well as to realise its Mission and Vision. One of its core principles is to identify key partners and suppliers to align their organisational objectives with MPA’s Mission and Vision.

MPA works with 2 groups of partners: capability development partners and regulated partners (see Figure 5.3.1).

Capability development partners are organisations that MPA collaborates with to develop the capabilities of Maritime Singapore. In particular, MPA works with tertiary and research institutes to enhance its maritime R&D capability and innovation yields. Regulated partners are associates that MPA manages in its role as industry regulator. They are required to meet key performance indicators.

5.3b Engages key suppliers and partners to co-create products and services

To ensure the optimal balance of benefits and costs on the basis of total cost of ownership, MPA procures from sources that best meet its requirements and offer the best value. Value for money is derived from the optimal balance of benefits and costs on the basis of total cost of ownership. As such, a tender does not necessarily need to be awarded to the lowest bidder.

Suppliers play a key role in intensifying, developing and sustaining Singapore’s maritime ecosystem. MPA has a pool of key suppliers, consultants and contractors involved in implementing its projects and supporting its activities.

All Government Procuring Entities (GPEs) purchasing goods and/or services by contractual means operate within the system of Government Procurement (GP). MPA adheres to GP’s 3 key principles:

- Transparency
- Open and Fair Competition
- Value For Money

Suppliers subscribe to an open and transparent regime across all stages of the procurement cycle. MPAs procurement objectives, criteria and procedures are made known to suppliers as far as possible.

MPA has a structured process in place to engage partners to co-create innovative products and services for the industry (see Figure 5.3.3).

MPA’s procurement guidelines have been updated to facilitate the procurement of products and services for developing innovation solutions (see Figure 5.3.4).
The delivery of many of MPA’s innovative products and services have been made possible due to collaborations and co-creations with key suppliers and partners.

Key Innovations Used to Construct the Next Generation Port

Innovations in the construction of the Tuas Terminal include the usage of caissons, and a specially designed and fitted vessel called the “TEMAROCK,” a next-generation, all-in-one rock mound construction vessel.

The caisson is a prefabricated box-like concrete structure, around the height of a 10-storey HDB block, that creates deep foundational results and improves the quality of the wharf structure. The caisson fabrication facility pre-fabricates the structures on land before they are transported offshore.

The “TEMAROCK” vessel automates rock laying, rock compacting and underwater surveying, resulting in safer operations, less manpower costs (including a 75% reduction in diving time), reductions in material wastage and a 50% reduction in caisson installation time. Cost savings achieved are expected to be around S$2 billion.

These were done in partnership with Surbana Jurong Infrastructure Pte Ltd and DIAP-Daelim.

The project was awarded the MOT Minister’s Innovation Award 2018 Distinguished Award.
Proper recordkeeping is an important business function to support not only MPAs’ core business but Singapore’s national interests as well. Information and records are important assets that provide critical evidence of past decisions and actions. I recall in our territorial dispute with one of our neighbours, MPAs’ past records were effectively used to back Singapore’s claim to its rights over Pedra Branca. As more and more records are being created in a fast-paced work environment, MPA is proactive in implementing best recordkeeping practices for instance, by ensuring that important records are identified upfront for permanent preservation through National Archives’ approved Records Retention Schedule and by complying with the requirements set out in IM4L. I congratulate MPA for persevering in this endeavour!

In all of SMU’s interactions with MPA, whether in offering the Maritime Economics track or the Maritime Business and Operations track, I have found the MPA team and leaders to be most innovative in their ideas, involved and responsive in interactions and definitely very industry-focused when it comes to building impact and relevance for the maritime sector. Maritime Sector Cyber-Readiness Maturity is assessed to be above average when compared to other Critical Information Infrastructure sector leads.

It is impossible to imagine the growth of any maritime country without a strong, safe, secure, green and community-oriented port. Through the sharing of collaborative experiences via interactive platforms such as lectures and roundtable discussions, we can expand on solutions for the development of our ports. Throughout our long-standing partnership with MPA, we’ve shared the goals of leveraging technologies and the exchange of new ideas to develop cutting-edge solutions for the port industry.

Mr Allard Castelein
President, Port of Rotterdam

Ms Kwek-Chew Kim Gek
Senior Archivist/Records Management, National Archives Singapore

Prof Annie Koh
Vice President of Business Development, V3 Professor of Family Entrepreneurship & Professor of Finance (Practice), Singapore Management University

Rear Admiral Angel Alfredo Yello Girardi General Director, Coast Guard Operations, Commander Forces & Coast Guard (Peru)

Mr S.Iswaran
Minister for Communication & Information, Minister-in-Charge of Cybersecurity

Knowledge Management (KM) Framework
For effective strategy development, decision-making and organisational learning, MPA has established a KM Framework to structure the way it collects and manages information and knowledge (see Figure 6.1.1).

6.1a Collects and manages information for strategy development, decision-making and organisational learning

Framework to structure the way it collects and manages information and knowledge.

Oral History and MPA Senior Executive Alumni (SEA) Network
Lessons learnt and experiences from the past remain relevant to Maritime Singapore despite changes in its operating environment. MPAA documents oral history interviews with key maritime pioneers and personalities to capture and archive their tacit knowledge. These accounts are then stored in NAS for ease of reference.
6.1b Ensures the accuracy, accessibility and security of information

The MPA Systems Architecture ensures that the flow of data and information within MPA is managed effectively, only a single source of truth exists for organisational/ customer data, and stakeholders have access to the information that they need.

Accuracy of Information

Apart from ensuring compliance to WOG guidelines (e.g. IM4L, 1MB and other GovTech requirements), issues on data integrity and protocol, accessibility, integration, retention time frame and disaster recovery are deliberated upon and monitored by the KM working committee and guided by MPA’s KM Instruction Manual.

Accessibility

MPA communicates and makes information accessible to both external and internal stakeholders to facilitate business operations, decision-making and engagement (see Tables 1.1.1 and 1.1.2). MPA continues to review these processes to ensure ease of access.

Security

Apart from ensuring security of information, MPA also leads the way within the maritime sector for cyber security. The Maritime Cybersecurity Operation Centre (MCOC) was established in 2018 by MPA to lead the maritime sector in enhancing its response against cyber threats. The MCOC augments MPA’s capabilities for early detection, monitoring, analysis and response to cyber-attacks, and also oversees the protection of the maritime industry’s critical information infrastructures (CIIs). With Maritime Singapore’s rapid pace of digitalisation, a new “Security by Design” approach has been introduced and integrated with new Infocomm Technology projects to minimise system vulnerabilities and points of attack.

To maximise cyber security efforts, MPA also included PSAx and Jurong Port’s CIIs within the expanded monitoring scope of its 24/7 Maritime Cybersecurity Operation Centre. Additionally, a 2-day cyber readiness exercise, known as Cyber Ark, was conducted by the Cyber Security Agency (CSA) for Maritime CI to assess its cyber security capabilities and surface areas for improvement. To educate and shape the right behaviours for its staff, MPA has also been organising Cyber Security Awareness Courses.

6.1c Captures information and knowledge related to innovation

To provide a clear focus for investing the industry’s innovation resources and efforts, information and knowledge from stakeholders, business operations, service journeys and big data are synthesised and challenge statements are developed (see Figure 5.3.3). This enables the tech industry to participate in the innovation process.

MPA also shares data and information it owns with the rest of industry to facilitate developments of new applications, products and services to address the business needs of Maritime Singapore. This is done through exhibitions, forums and other platforms such as the SG-MDH.

6.1d Protects knowledge and the intellectual property generated from innovation projects

Government IM2L clearly spells out the provisions and guidelines for staff to obtain formal IP rights registration (e.g. patents, trademarks and industrial designs) for innovations, and the circumstances where staff should receive a portion of the commercialisation revenue. Staff and vendors are also reminded to abide by Singapore’s Copyright Law, IP Management Guidelines for the Public Sector and the Official Secrets Act.

Collaborations with IHLs and RIs on innovation projects and initiatives are formalised either through MOUs or innovation procurement processes (see Figure 5.3.4). Rights to IP are protected in these contractual arrangements. MPA and the involved parties protect intellectual property through patents to prevent exploitation.

An MOU defines the expectations and responsibilities of MPA and its partners, ensuring that the knowledge and IP of innovation projects are kept between the involved parties. A recent example is the MOU signed between MPA and Lloyd’s Register on Maritime Technologies R&D. This MOU will build upon strong existing collaborations on ship sustainability and safety, and optimise design for real-time monitoring, unmanned systems and robotics. Through this MOU, MPA is able to safeguard its IP and knowledge.

6.2 Analytics for Performance Management

MPA constantly leverages on information and knowledge to create value for the maritime industry. Some examples are listed in Table 6.2.1.

<table>
<thead>
<tr>
<th>Project</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>e-Navigation</td>
<td>A harmonised digital information exchange system that improves the organisation and exchange of data between systems on ship and shore. The system can lead to improved global navigational safety, protect the marine environment and reduce maritime incidents.</td>
</tr>
<tr>
<td>VDES</td>
<td>VDES facilitates real-time data transfer between shore and ships in the port. With better data exchange infrastructure, VDES allows for the development of predictive analysis to forecast traffic hotspots and collisions. It also enables shared situational awareness pictures between shores and ships, thereby enhancing navigational safety.</td>
</tr>
<tr>
<td>To complement terrestrial VDES, MPA is supporting research and innovation to develop satellite VDES under the Maritime Transformation Programme. Working in partnership with IHLs, RIs and local industry partners, the satellite VDES will complement terrestrial VDES and allow the VDES as a whole to have global coverage. MPA plans to deploy the VDES solutions to plot real-time maritime traffic and asset tracking. VDES will complement and progressively replace AIS over the next 10 years, enabling two-way data exchange and unlocking new applications such as e-Navigation. These enhancements will improve safety &amp; security at sea and enhance the operational efficiencies of shipping and port.</td>
<td></td>
</tr>
<tr>
<td>Both the terrestrial and satellite VDES will benefit the shipping community as they allow two-way communications, are more cost-effective and can transfer data faster between ship and shore.</td>
<td></td>
</tr>
<tr>
<td>MPA readily shares its knowledge through outreach and awareness events. In conjunction with the Singapore Bicentennial this year, one such event is the launch of a new SMT. Building upon the SMT 1 and 2, SMT 3 will explore Singapore’s Maritime Legacy. This trail will explore the influence of maritime trade and activities that have shaped Singapore’s culture, language and identity, focusing on the areas of Telok Ayer and Kampong Glam.</td>
<td></td>
</tr>
</tbody>
</table>

MPAA, the training arm of MPA, was repositioned in 2014 as a full-fledged academy with a dedicated premise and a focus on global maritime leadership training. MPAA creates knowledge through pulling together the industry’s thought leadership and expertise, experiences and tacit knowledge in the form of oral history and case studies. These are then disseminated and delivered through flagship programmes and events to build industry capabilities, as well as create greater awareness about the maritime industry and the key issues it faces locally and globally. These flagship programmes train up maritime leaders and align interests to promote safe, secure, sustainable and efficient shipping. Some examples of these programmes and talks include the Advanced Maritime Leaders Programme (AML), Maritime Public Leaders’ Programme (MPLP), Port Management Programme (PMP) and MPA Academy Distinguished Speaker Series.

---/ Table 6.2.1 Examples of How MPA Leverages on Information and Knowledge to Create Value /---
6.2b Uses comparative and benchmarking knowledge to improve performance

MPA regularly conducts benchmarking exercises and comparative analysis to set performance standards that help to better gauge and improve its performance. Findings and best practices from such exercises are assimilated into workplans where appropriate.

Comparative and benchmarking studies are vital to the improvement of MPA’s performance and the attainment of new levels in performance and drive innovation.

In addition, MPA has organised several study missions and learning journeys, both abroad and within Singapore to learn about and adopt relevant and useful practices or cultures. To enhance its understanding of other organisations’ innovation capabilities, MPA conducted learning journeys to innovative organisations like 3M (2016), the State Courts and Cold Storage (2016), Singapore Civil Defence Force (2017), National Library Board (2018) and Land Transport Authority (2019). These journeys have enriched staff’s perspectives and infused fresh ideas to help MPA navigate towards the future.

6.2c Uses comparative and benchmarking information to drive innovation outcomes

Comparative and benchmarking exercises are vital to the improvement of MPA’s performance and the attainment of new levels in performance and drive innovation.

In addition, MPA has organised several study missions and learning journeys, both abroad and within Singapore to learn about and adopt relevant and useful practices or cultures. To enhance its understanding of other organisations’ innovation capabilities, MPA conducted learning journeys to innovative organisations like 3M (2016), the State Courts and Cold Storage (2016), Singapore Civil Defence Force (2017), National Library Board (2018) and Land Transport Authority (2019). These journeys have enriched staff’s perspectives and infused fresh ideas to help MPA navigate towards the future.

6.2d Analyses data and information of current performance to identify opportunities for innovation

To level up whole-of-MPA capability development for data analytics and build a professional core analytics team, MPA is embarking on a 5-year Data Analytics implementation plan that focuses on big data systems and infrastructure. This plan is aligned with the WOG Digital Government Blueprint in areas like Ministry Family Digitalisation Plans, Government Data Strategy and End-to-end Digital Government Services.

The Data Analytics implementation plan is also aligned with MPA’s key objectives, supporting key pillars of Maritime Singapore such as the NGP 2030, IMC 2030, and the Sea Transport ITM.

Some examples of the innovative outcomes are projects such as the SG-MDH and JIT Planning and Coordination System. SG-MDH facilitates data sharing amongst the industry and aims to promote co-development of innovative digital services and applications with industry-wide benefits. The JIT is a platform that shares critical information amongst stakeholders in the vessel passage plan. This includes MPA, ICA, ship agents, marine service providers and terminal operators. The end goal is to allow ships to berth on arrival, consume services in time and enjoy faster turnarounds.

Sense-making Analytics for Maritime Event Recognition (SAFER)

Project SAFER is a collaboration between MPA and IBM to develop and test new analytics-based and machine-learning technologies. It is aimed at improving port operations and enforcements to support Singapore’s growth in vessel traffic and ensure that the Port of Singapore is safe, secure and efficient.

SAFER is an analytics-based system that integrates real-time data from multiple sources to help the POCC make better decisions. Predictive analytics will help forecast vessel arrival timings and traffic density. By applying advanced data analytics, sense-making, fusion and machine learning technologies, the system can also uncover new ways of detecting the unusual behaviour of ships, preventing illegal activities.

SAFER has been recognised both internationally and locally:
- CAPAM Innovation Incubation programme – 1 of 3 finalists
- INFORMS Innovative Application in Analytics Award – Awarded the 2nd prize
- Minister’s Innovation Award 2017 Distinguished Award
- ExCel Innovation Project Award 2018

Project SAFER was featured at the PST Exhibition 2018 held at Resorts World Convention Centre, as well as in the local production ‘Destiny of a Maritime Nation’.
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAF</td>
<td>Annual Administrative Fee</td>
</tr>
<tr>
<td>ACE</td>
<td>Assistant Chief Executive</td>
</tr>
<tr>
<td>AGV</td>
<td>Autonomous Guided Vehicle</td>
</tr>
<tr>
<td>AIS</td>
<td>Automatic Identification System</td>
</tr>
<tr>
<td>AM</td>
<td>Additive Manufacturing</td>
</tr>
<tr>
<td>AMLP</td>
<td>Advanced Maritime Leaders Programme</td>
</tr>
<tr>
<td>AMSS</td>
<td>Annual Marine Services Survey</td>
</tr>
<tr>
<td>AO</td>
<td>Action Officer</td>
</tr>
<tr>
<td>APSN</td>
<td>APEC Port Services Network</td>
</tr>
<tr>
<td>ARFO</td>
<td>Association of Regional Ferry Operators</td>
</tr>
<tr>
<td>*STAR</td>
<td>Agency for Science, Technology and Research</td>
</tr>
<tr>
<td>AtNo</td>
<td>Aids to Navigation</td>
</tr>
<tr>
<td>AUSBE</td>
<td>Amalgamated Union of Statutory Board Employees</td>
</tr>
<tr>
<td>BCC</td>
<td>Bunker Certificate Certificate</td>
</tr>
<tr>
<td>BCM</td>
<td>Business Continuity Management</td>
</tr>
<tr>
<td>BOA</td>
<td>Berthed on Arrival</td>
</tr>
<tr>
<td>BSC</td>
<td>Balanced Score Card</td>
</tr>
<tr>
<td>CAAS</td>
<td>Civil Aviation Authority of Singapore</td>
</tr>
<tr>
<td>CAG</td>
<td>Changi Airport Group</td>
</tr>
<tr>
<td>CAPAM</td>
<td>Commonwealth Association of Public Administration and Management</td>
</tr>
<tr>
<td>CDO</td>
<td>Chief Digital Officer</td>
</tr>
<tr>
<td>CE</td>
<td>Chief Executive</td>
</tr>
<tr>
<td>CII</td>
<td>Critical Information Infrastructure</td>
</tr>
<tr>
<td>CLC</td>
<td>Civil Liability Convention</td>
</tr>
<tr>
<td>CMG</td>
<td>Crisis Management Group</td>
</tr>
<tr>
<td>COC</td>
<td>Certificate of Competency</td>
</tr>
<tr>
<td>COE</td>
<td>Centre of Excellence</td>
</tr>
<tr>
<td>CoC</td>
<td>Centre of Excellence</td>
</tr>
<tr>
<td>CPF</td>
<td>Central Provident Fund Board</td>
</tr>
<tr>
<td>CRM</td>
<td>Customer-Relationship Management</td>
</tr>
<tr>
<td>CRR</td>
<td>Cost Recovery Ratio</td>
</tr>
<tr>
<td>CSC</td>
<td>Civil Service College</td>
</tr>
<tr>
<td>DD</td>
<td>Deputy Director</td>
</tr>
<tr>
<td>DSTA</td>
<td>Defence Science and Technology Agency</td>
</tr>
<tr>
<td>EES</td>
<td>Employee Engagement Survey</td>
</tr>
<tr>
<td>ENC</td>
<td>Electronic Navigational Chart</td>
</tr>
<tr>
<td>EOC</td>
<td>Emergency Operations Committee</td>
</tr>
<tr>
<td>ERM</td>
<td>Enterprise Risk Management</td>
</tr>
<tr>
<td>ESG</td>
<td>Enterprise Singapore</td>
</tr>
<tr>
<td>FEREX</td>
<td>Ferry Rescue Exercise</td>
</tr>
<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>GHG</td>
<td>Greenhouse Gas</td>
</tr>
<tr>
<td>GP</td>
<td>Government Procurement</td>
</tr>
<tr>
<td>GPe</td>
<td>Government Procuring Entities</td>
</tr>
<tr>
<td>GPP</td>
<td>Green Port Programme</td>
</tr>
<tr>
<td>GRI</td>
<td>Global Reporting Initiative</td>
</tr>
<tr>
<td>GT</td>
<td>Gross Tonnage</td>
</tr>
<tr>
<td>GTP</td>
<td>Green Technology Programme</td>
</tr>
<tr>
<td>HOD</td>
<td>Head of Department</td>
</tr>
<tr>
<td>HR</td>
<td>Human Resources Information System</td>
</tr>
<tr>
<td>IALA</td>
<td>International Association of Marine Aids to Navigation and Lighthouse Authorities</td>
</tr>
<tr>
<td>ICA</td>
<td>Immigration and Checkpoints Authority</td>
</tr>
<tr>
<td>IDP</td>
<td>Industry Digital Plan</td>
</tr>
<tr>
<td>IE</td>
<td>International Enterprise Singapore</td>
</tr>
<tr>
<td>IG &amp; I</td>
<td>Institute of Higher Learning</td>
</tr>
<tr>
<td>IHO</td>
<td>International Hydrographic Organisation</td>
</tr>
<tr>
<td>IM</td>
<td>Instruction Manual</td>
</tr>
<tr>
<td>IMCA</td>
<td>International Maritime Centre</td>
</tr>
<tr>
<td>IMDA</td>
<td>Info-communications Media Development Authority</td>
</tr>
<tr>
<td>IMO</td>
<td>International Maritime Organisation</td>
</tr>
<tr>
<td>IP</td>
<td>Intellectual Property</td>
</tr>
<tr>
<td>IRAS</td>
<td>Inland Revenue Authority of Singapore</td>
</tr>
<tr>
<td>IRCC</td>
<td>Inter-Regional Coordinating Committee</td>
</tr>
<tr>
<td>ISO</td>
<td>International Organisation for Standardisation</td>
</tr>
<tr>
<td>ISP</td>
<td>International Ship and Port Facility Security</td>
</tr>
<tr>
<td>JTI</td>
<td>Just-In-Time</td>
</tr>
<tr>
<td>JPL</td>
<td>Jurong Port Pte Ltd</td>
</tr>
<tr>
<td>KDE</td>
<td>Key Domain Expertise</td>
</tr>
<tr>
<td>KP</td>
<td>Kids In Play</td>
</tr>
<tr>
<td>KM</td>
<td>Knowledge Management</td>
</tr>
<tr>
<td>LSC</td>
<td>Liner Shipping Connectivity Index</td>
</tr>
<tr>
<td>LTA</td>
<td>Land Transport Authority</td>
</tr>
<tr>
<td>MAFS</td>
<td>Maritime Autonomous Surface Ships</td>
</tr>
<tr>
<td>MCF</td>
<td>Maritime Cluster Fund</td>
</tr>
<tr>
<td>MCF-B</td>
<td>Maritime Cluster Fund-Business</td>
</tr>
<tr>
<td>MFM</td>
<td>Mass Flow Metering</td>
</tr>
<tr>
<td>MOF</td>
<td>Ministry of Finance</td>
</tr>
<tr>
<td>MOH</td>
<td>Ministry of Health</td>
</tr>
<tr>
<td>MOM</td>
<td>Ministry of Manpower</td>
</tr>
<tr>
<td>MOT</td>
<td>Ministry of Transport</td>
</tr>
<tr>
<td>MOU</td>
<td>Memorandum of Understanding</td>
</tr>
<tr>
<td>MPA</td>
<td>Maritime and Port Authority of Singapore</td>
</tr>
<tr>
<td>MPA</td>
<td>Maritime and Port Authority of Singapore</td>
</tr>
<tr>
<td>MPF</td>
<td>Maritime Policy Forum</td>
</tr>
<tr>
<td>MPP</td>
<td>Maritime Public Leaders’ Programme</td>
</tr>
<tr>
<td>MSA</td>
<td>Maritime Safety Committee</td>
</tr>
<tr>
<td>MSSI</td>
<td>Maritime Singapore Green Initiative</td>
</tr>
<tr>
<td>MSI</td>
<td>Maritime Singapore Incentive</td>
</tr>
<tr>
<td>MSI-AIS</td>
<td>Maritime Singapore Incentive - Approved International Shipping</td>
</tr>
<tr>
<td>MSL</td>
<td>Maritime Singapore Incentive – Maritime Leasing</td>
</tr>
<tr>
<td>MADC</td>
<td>Maritime and Port Authority of Singapore</td>
</tr>
<tr>
<td>MCF</td>
<td>Maritime Cluster Fund</td>
</tr>
<tr>
<td>MCF-B</td>
<td>Maritime Cluster Fund-Business</td>
</tr>
<tr>
<td>MFM</td>
<td>Mass Flow Metering</td>
</tr>
<tr>
<td>MOF</td>
<td>Ministry of Finance</td>
</tr>
<tr>
<td>MOH</td>
<td>Ministry of Health</td>
</tr>
<tr>
<td>MOM</td>
<td>Ministry of Manpower</td>
</tr>
<tr>
<td>MOT</td>
<td>Ministry of Transport</td>
</tr>
<tr>
<td>MOU</td>
<td>Memorandum of Understanding</td>
</tr>
<tr>
<td>MPA</td>
<td>Maritime and Port Authority of Singapore</td>
</tr>
<tr>
<td>MPA</td>
<td>Maritime and Port Authority of Singapore</td>
</tr>
<tr>
<td>MPF</td>
<td>Maritime Policy Forum</td>
</tr>
<tr>
<td>MPP</td>
<td>Maritime Public Leaders’ Programme</td>
</tr>
<tr>
<td>MSA</td>
<td>Maritime Safety Committee</td>
</tr>
<tr>
<td>MSSI</td>
<td>Maritime Singapore Green Initiative</td>
</tr>
<tr>
<td>MSI</td>
<td>Maritime Singapore Incentive</td>
</tr>
<tr>
<td>MSI-AIS</td>
<td>Maritime Singapore Incentive - Approved International Shipping</td>
</tr>
<tr>
<td>MSL</td>
<td>Maritime Singapore Incentive – Maritime Leasing</td>
</tr>
<tr>
<td>MADC</td>
<td>Maritime and Port Authority of Singapore</td>
</tr>
<tr>
<td>MCF</td>
<td>Maritime Cluster Fund</td>
</tr>
<tr>
<td>MCF-B</td>
<td>Maritime Cluster Fund-Business</td>
</tr>
<tr>
<td>MFM</td>
<td>Mass Flow Metering</td>
</tr>
<tr>
<td>MOF</td>
<td>Ministry of Finance</td>
</tr>
<tr>
<td>MOH</td>
<td>Ministry of Health</td>
</tr>
<tr>
<td>MOM</td>
<td>Ministry of Manpower</td>
</tr>
<tr>
<td>MOT</td>
<td>Ministry of Transport</td>
</tr>
<tr>
<td>MOU</td>
<td>Memorandum of Understanding</td>
</tr>
<tr>
<td>MPA</td>
<td>Maritime and Port Authority of Singapore</td>
</tr>
<tr>
<td>MPA</td>
<td>Maritime and Port Authority of Singapore</td>
</tr>
<tr>
<td>MPF</td>
<td>Maritime Policy Forum</td>
</tr>
<tr>
<td>MPP</td>
<td>Maritime Public Leaders’ Programme</td>
</tr>
<tr>
<td>MSA</td>
<td>Maritime Safety Committee</td>
</tr>
<tr>
<td>MSSI</td>
<td>Maritime Singapore Green Initiative</td>
</tr>
<tr>
<td>MSI</td>
<td>Maritime Singapore Incentive</td>
</tr>
<tr>
<td>MSI-AIS</td>
<td>Maritime Singapore Incentive - Approved International Shipping</td>
</tr>
<tr>
<td>MSL</td>
<td>Maritime Singapore Incentive – Maritime Leasing</td>
</tr>
<tr>
<td>MADC</td>
<td>Maritime and Port Authority of Singapore</td>
</tr>
<tr>
<td>MCF</td>
<td>Maritime Cluster Fund</td>
</tr>
<tr>
<td>MCF-B</td>
<td>Maritime Cluster Fund-Business</td>
</tr>
<tr>
<td>MFM</td>
<td>Mass Flow Metering</td>
</tr>
<tr>
<td>MOF</td>
<td>Ministry of Finance</td>
</tr>
<tr>
<td>MOH</td>
<td>Ministry of Health</td>
</tr>
<tr>
<td>MOM</td>
<td>Ministry of Manpower</td>
</tr>
<tr>
<td>MOT</td>
<td>Ministry of Transport</td>
</tr>
<tr>
<td>MOU</td>
<td>Memorandum of Understanding</td>
</tr>
<tr>
<td>MPA</td>
<td>Maritime and Port Authority of Singapore</td>
</tr>
<tr>
<td>MPA</td>
<td>Maritime and Port Authority of Singapore</td>
</tr>
<tr>
<td>MPF</td>
<td>Maritime Policy Forum</td>
</tr>
<tr>
<td>MPP</td>
<td>Maritime Public Leaders’ Programme</td>
</tr>
<tr>
<td>MSA</td>
<td>Maritime Safety Committee</td>
</tr>
<tr>
<td>MSSI</td>
<td>Maritime Singapore Green Initiative</td>
</tr>
<tr>
<td>MSI</td>
<td>Maritime Singapore Incentive</td>
</tr>
<tr>
<td>MSI-AIS</td>
<td>Maritime Singapore Incentive - Approved International Shipping</td>
</tr>
</tbody>
</table>
MPA IN THE NEWS

MPA INNOVATION EXCELLENCE AWARD APPLICATION REPORT

MPA inks contract for Tuas Terminal Phase 2

Ports will tap tech, data to optimise ops

The strong, silent type

Singapore’s smart port initiative attracts more start-ups

Installing the caisson seawall

Phase 1 of Tuas port on course for 2021 launch

Innovation key to transforming sector

Digital innovation key to maritime industry’s future

Maritime and Port Authority of Singapore supports use of drones for trial maritime delivery

MPA, Namic ink MOU to develop 3D printing applications for maritime sector

MPA to set up new cybersecurity centre to enhance response against threats

SINGAPORE: The Maritime and Port Authority of Singapore (MPA) and Namic Industrial Printing (S) Pte Ltd will set up a joint centre of excellence to develop a range of digital and advanced manufacturing solutions for the maritime sector.

The new centre will facilitate the development of solutions that can help improve operational efficiency, reduce costs and increase productivity in the maritime industry.

Namic Industrial Printing is a Singapore-based company that specialises in 3D printing and additive manufacturing technologies.

The centre will be located at Namic’s premises in Singapore’s Maritime Gateway Park and will focus on areas such as 3D printing of marine components, on-site repairs and maintenance, and the development of customised solutions for the maritime industry.

The centre is expected to contribute to the growth of Singapore’s maritime sector and support the country’s vision to become a global leader in maritime innovation and technology.

MPA and Namic signed a Memorandum of Understanding (MOU) in September 2023 to establish the centre.

The MOU was signed by Haji bin Abdul Rahman, Director of Marine and Port Technology at MPA, and Mr. Ray Lim, Managing Director of Namic.

The centre will provide a platform for MPA and Namic to collaborate on research and development projects, as well as share knowledge and expertise to drive innovation in the maritime industry.

The centre will be supported by the Maritime and Port Authority of Singapore (MPA) and will be open to industry partners, academia and government agencies.

The centre will conduct a wide range of activities, including research and development, training and education, and business development.

The centre will provide a platform for MPA and Namic to collaborate on research and development projects, as well as share knowledge and expertise to drive innovation in the maritime industry.

The centre will be supported by the Maritime and Port Authority of Singapore (MPA) and will be open to industry partners, academia and government agencies.

The centre will conduct a wide range of activities, including research and development, training and education, and business development.

The centre will provide a platform for MPA and Namic to collaborate on research and development projects, as well as share knowledge and expertise to drive innovation in the maritime industry.

The centre will be supported by the Maritime and Port Authority of Singapore (MPA) and will be open to industry partners, academia and government agencies.

The centre will conduct a wide range of activities, including research and development, training and education, and business development.

The centre will provide a platform for MPA and Namic to collaborate on research and development projects, as well as share knowledge and expertise to drive innovation in the maritime industry.

The centre will be supported by the Maritime and Port Authority of Singapore (MPA) and will be open to industry partners, academia and government agencies.

The centre will conduct a wide range of activities, including research and development, training and education, and business development.

The centre will provide a platform for MPA and Namic to collaborate on research and development projects, as well as share knowledge and expertise to drive innovation in the maritime industry.

The centre will be supported by the Maritime and Port Authority of Singapore (MPA) and will be open to industry partners, academia and government agencies.

The centre will conduct a wide range of activities, including research and development, training and education, and business development.

The centre will provide a platform for MPA and Namic to collaborate on research and development projects, as well as share knowledge and expertise to drive innovation in the maritime industry.

The centre will be supported by the Maritime and Port Authority of Singapore (MPA) and will be open to industry partners, academia and government agencies.

The centre will conduct a wide range of activities, including research and development, training and education, and business development.

The centre will provide a platform for MPA and Namic to collaborate on research and development projects, as well as share knowledge and expertise to drive innovation in the maritime industry.

The centre will be supported by the Maritime and Port Authority of Singapore (MPA) and will be open to industry partners, academia and government agencies.

The centre will conduct a wide range of activities, including research and development, training and education, and business development.

The centre will provide a platform for MPA and Namic to collaborate on research and development projects, as well as share knowledge and expertise to drive innovation in the maritime industry.

The centre will be supported by the Maritime and Port Authority of Singapore (MPA) and will be open to industry partners, academia and government agencies.

The centre will conduct a wide range of activities, including research and development, training and education, and business development.

The centre will provide a platform for MPA and Namic to collaborate on research and development projects, as well as share knowledge and expertise to drive innovation in the maritime industry.

The centre will be supported by the Maritime and Port Authority of Singapore (MPA) and will be open to industry partners, academia and government agencies.

The centre will conduct a wide range of activities, including research and development, training and education, and business development.

The centre will provide a platform for MPA and Namic to collaborate on research and development projects, as well as share knowledge and expertise to drive innovation in the maritime industry.

The centre will be supported by the Maritime and Port Authority of Singapore (MPA) and will be open to industry partners, academia and government agencies.

The centre will conduct a wide range of activities, including research and development, training and education, and business development.

The centre will provide a platform for MPA and Namic to collaborate on research and development projects, as well as share knowledge and expertise to drive innovation in the maritime industry.

The centre will be supported by the Maritime and Port Authority of Singapore (MPA) and will be open to industry partners, academia and government agencies.

The centre will conduct a wide range of activities, including research and development, training and education, and business development.

The centre will provide a platform for MPA and Namic to collaborate on research and development projects, as well as share knowledge and expertise to drive innovation in the maritime industry.

The centre will be supported by the Maritime and Port Authority of Singapore (MPA) and will be open to industry partners, academia and government agencies.

The centre will conduct a wide range of activities, including research and development, training and education, and business development.

The centre will provide a platform for MPA and Namic to collaborate on research and development projects, as well as share knowledge and expertise to drive innovation in the maritime industry.

The centre will be supported by the Maritime and Port Authority of Singapore (MPA) and will be open to industry partners, academia and government agencies.

The centre will conduct a wide range of activities, including research and development, training and education, and business development.

The centre will provide a platform for MPA and Namic to collaborate on research and development projects, as well as share knowledge and expertise to drive innovation in the maritime industry.

The centre will be supported by the Maritime and Port Authority of Singapore (MPA) and will be open to industry partners, academia and government agencies.

The centre will conduct a wide range of activities, including research and development, training and education, and business development.

The centre will provide a platform for MPA and Namic to collaborate on research and development projects, as well as share knowledge and expertise to drive innovation in the maritime industry.

The centre will be supported by the Maritime and Port Authority of Singapore (MPA) and will be open to industry partners, academia and government agencies.

The centre will conduct a wide range of activities, including research and development, training and education, and business development.

The centre will provide a platform for MPA and Namic to collaborate on research and development projects, as well as share knowledge and expertise to drive innovation in the maritime industry.

The centre will be supported by the Maritime and Port Authority of Singapore (MPA) and will be open to industry partners, academia and government agencies.

The centre will conduct a wide range of activities, including research and development, training and education, and business development.

The centre will provide a platform for MPA and Namic to collaborate on research and development projects, as well as share knowl
Harness technology, go where the trade flows are: Chan Chun Sing

Fund to help ship agency, harbour craft sectors with digital solutions

Innovation among key issues at S’pore Maritime Week

Singapore unveils innovation lab for self-sailing ships

MPA investing $650k in 13 start-ups to solve maritime challenges

S’pore maritime sector looks ahead

Innovation is key for Maritime Singapore to stay ahead

S’pore tops maritime capital ranking again

Positioning Singapore’s maritime sector for the future

Ship agency and harbour craft SMEs can tap $3.7m digitalisation fund

MPA invests $7.2m in projects on autonomous shipping