MPA ACADEMY SINGAPORE

HORIZON

MPA ACADEMY NEWSLETTER **NOV 2022**

SHIPPING IN A DIGITAL AGE

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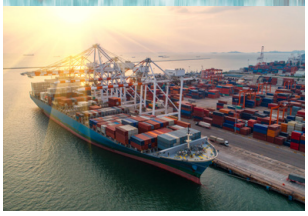

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EDITOR'S NOTE

SHIPPING IN A DIGITAL AGE

Along with the recent advancements of technology in the 21st century, maritime administrations and shipping companies are embarking on their respective digitalisation journeys. At MPA Academy (MPAA), we are pleased to support these digitalisation efforts through important programmes such as our inaugural Maritime Transformation and Innovation Programme (MTIP), and the Maritime Cybersecurity Dialogue. With a focus on digitalisation, the present issue of MPAA's newsletter will cover the aforementioned programmes, among other exciting articles.

In Feature, we interviewed participants from MPAA's Port Management Program (PMP) conducted from 29 August – 2 September 2022. Mr Rui António da Silva from the Port and Maritime Institute of Guinea-Bissau and Mrs Agnieszka Michalak-Pochylska from the Maritime Economic Department, Ministry of Infrastructure, Poland shared their key takeaways from the PMP, and their hopes for the digital transformation journeys of the maritime sector in their countries.

This issue of Horizon includes an article on the MTIP, the first in-person training programme to be held by MPAA since the pandemic, held from 4 – 8 April 2022. The MTIP, which focused on Singapore's experience in driving innovation and transformation, was attended by participants from Asia, Africa, the Americas, and the Middle East. This article details the various activities which formed part of the MTIP programme,

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including the Singapore Maritime Lecture and the Maritime Transformation and Innovation Dialogue Session among others.

Key discussion points from a recent workshop on Maritime Singapore Decarbonisation Blueprint 2050: Advancing Harbour Craft Electrification in Singapore will also be covered in this issue. More than 120 industry players participated in the workshop, which sought to raise awareness of the maritime decarbonisation plan and initiatives. The event included speakers from MPA, EnterpriseSG, industry experts and technology leaders.

We are pleased to publish an important article by Mr Punit Oza, CEO of WIZ Bulk and Senior Adjunct Fellow at MPAA, where he contributed his thoughts on business ecosystems, eco system leadership and key factors that contribute to successful ecosystems. In his article, Mr Punit Oza also shared about his own journey in building and growing maritime business ecosystems, including his experiences at WIZ Bulk.

In Highlights, we focus on the Maritime Cybersecurity Dialogue: Cyber Safety@Sea, which was held as part of the Safety@Sea Week. The dialogue, which was organised by MPAA, served as a platform to discuss the pros and cons of the varying cyber risk management approaches needed to safeguard shipping infrastructure. Speakers for the event included Mr Lionel Chew, Senior IT Manager, MPA, Mr Terence Yeo, Assistant Vice President, Infrastructure & Cyber Security Architecture, PSA Corporation Ltd, and Prof Sudipta Chattopadhyay, Assistant Professor, Singapore University of Technology and Design. The panel discussion was moderated by Mr Michael Phoon, Executive Director, Singapore Shipping Association.

We hope that you will enjoy reading this issue of HORIZON. If you have any comments or suggestions for future issues, please send us an email at MPA_Academy@mpa.gov.sg.

We wish you safe and well.

Tan Suan Jow
Dean, MPA Academy

FEATURE

CONVERSATIONS WITH MPAA ALUMNI

by Rahita Elias

Mr Rui António da Silva

Focal Point to International Maritime Organization

Port and Maritime Institute of Guinea-Bissau

The PMP turned out to be an eye-opening experience for Rui Antonio, who hails from the West African nation of Guinea-Bissau. From the programme, he gained new insights to major global maritime trends such as digitalisation as well as new and invaluable contacts from around the world.

When I began working in the maritime industry, I heard about the great regional training programmes in Singapore – and about how this small country was doing amazing things in the international port and maritime arena.

When I received an email from Ms. Sharon Wong from the Maritime and Port Authority of Singapore Academy (MPAA) about the Port Management Programme (PMP), I immediately seized the opportunity to learn from the best and gain access to a great networking opportunity. I knew that as a PMP participant I would get to learn about Singapore's maritime operations and broad planning strategies, and that I would have the invaluable opportunity to exchange ideas and network with my peers from around the world.

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I believed that the knowledge and networking opportunities that I would get from the PMP would help me in my role as Director of Technical Cooperation and International Relations for the Port and Maritime Institute of Guinea-Bissau.

One of my main responsibilities is to provide the International Maritime Organization (IMO) Secretariat, through the IMO Regional Coordinator for West and Central Sub-Region of Africa (Anglophone) as well as any other maritime administrations, the names and contact details of maritime stakeholders in Guinea-Bissau. I also provide technical input for the development of strategies, programmes, plans, documents, reports, projects and advice to the Director General of the Port and Maritime Institute of Guinea-Bissau. I am involved in the decision-making process for maritime matters on a national level. I also take part in the IMO Assembly and Council every two years.

As I expected, I learnt a great deal from the PMP which I could apply to my job. The PMP content was great, and the facilitators were excellent. Following the programme, I now know whom to contact when I come across issues or situations similar to those that were taught.

I think my main take-away from the programme was how well the Academy was linked to other departments and maritime institutions. The level of communication and coordination during the programme was exceptional. I thought that the Crisis Communications Workshop was the best topic in the programme.

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Another really interesting topic was MPA's Digital Transformation Journey, which was covered on the first day.

When it comes to the digitalisation of operations, I would simply say that my country still has a long way to go. We have yet to introduce any digitalisation programme. So our main challenge is to get the ball rolling, and start our digitalisation journey.

I know that while it is not easy to embrace change, digitalising our nation and our maritime industry is something that needs to be done.

During the programme, I wondered when are we, Guinea-Bissau, going to start digitalisation. I believed that at some point when we do start on our digitalisation voyage, those who have already charted a course into this exciting area, like Singapore, will happily support those who are struggling to go digital.

All in all, the PMP was really informative and useful. I have already recommended the PMP to my colleagues. Because I know how important this programme is, I have not kept it to myself and have shared the content of the PMP with them. Unfortunately, not all understand English as our country's official language is Portuguese. However, because the information is so useful, I have translated the information for them.

Mrs Agnieszka Michalak-Pochylska

Head of Maritime Transport Unit

Maritime Economy Department

Ministry of Infrastructure, Poland

Agnieszka, who attended the latest PMP event, firmly believes that digitalisation is the way forward for the shipping industry, and that the Maritime Single Window is the most important digitalisation development.

I decided to attend the 8th Port Management Programme, organised by the Maritime and Port Authority in Singapore, based on recommendations made by my colleagues who had attended this programme as well as the Maritime Public Leaders' Programme.

What is more, the substantive context of the program corresponded to my professional duties.

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Professional duties and responsibilities

As Head of Maritime Transport Unit in the Maritime Economy Department in the Ministry of Infrastructure, my main responsibilities concern the functioning of the maritime port and the single window development.

I implement the European Union regulation to the national law and participate in the procedure of ratification of international legal acts. I also represent Poland in different international forums, including International Maritime Organization (IMO), and I am responsible for matters relating to social issues, public aid schemes, passenger rights as well as the registration of persons sailing on board passenger ship, and ship registration matters.

Forum for idea, experience exchange

As I am responsible for maritime port growth and maritime single window development, the PMP was an incredible opportunity to exchange experiences in this area.

First of all, the programme allowed us to make new acquaintances in the port sector which will be valuable for the future, especially for international cooperation as well as the exchange of views and information on various topics. Indeed, having the opportunity to expand one's network of contacts as the participants come from all over the world is one of the biggest benefits of the PMP. We got to exchange views, experiences and solutions on different subjects with other participants and the trainers.

Learning best practices, new skills

At PMP, we got to learn best practices in the areas of port development, digitalisation, and maritime safety.

Moreover, events such as the crisis communication workshop, gave us new practical skills and boosted our confidence in dealing with the media. Personally, this benefitted me as one of my responsibilities is to prepare and provide written information for the media.

The unquestionable takeaway from PMP is the knowledge we received from the experienced and professional lecturers about the development and functioning of the port of Singapore, being the one of the biggest ports in the world, as well as information on its future plans, which should be treated as a best practice and an example to follow.

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The importance of digitalisation

Information on the digitalisation process was most valuable to me as I am the Polish representative to the European Commission Subgroup for the European Maritime Single Window environment and the Digital Transport and Trade Facilitation Committee, as well as the IMO Facilitation Committee.

Over the years, the shipping industry has undergone a lot of changes. For instance, the shipping and port industry is becoming increasingly digitalised, and therefore more reliable, efficient and sustainable. During this digital transformation, new challenges and threats are emerging. As a result, preventive measures and an effective response and recovery plan to deal with these new risks and potential crises need to be formulated.

Maritime Single Window – opportunities and challenges

In terms of digitalisation developments in shipping, the most crucial, in my opinion, was the development of the Maritime Single Window.

This concept opens the way for further development of digital shipping corridors and maritime space without barriers. In the long run, the benefits for industry and administrations will be colossal.

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Just to name a few, the most important advantages of the Maritime Single Window are the quicker and more efficient exchange of standardised information, simplification of administrative procedures, less bureaucracy, and environment protection.

Nevertheless, the development of Maritime Single Window poses a host of new challenges. One of the most important challenges is the standardisation of the data provided to the Maritime Single Windows across the different countries so that the electronic exchange of information would facilitate, not hinder, the workings of the shipping industry.

The solution is to develop and approve international standards regarding the exchanged data. The other issues that need to be addressed are the authentication of and liability for the reported data. The interoperability of the different systems used across the world, although very beneficial, poses a big challenge too and will be the topic for the future discussions.

However, the real threat inherently related to the digitalisation is cyber-attacks. The cyber security and safeguard of the data should be a priority while developing such systems.

The Port Management Programme I attended comprehensively addressed the topic of the digitalisation of Singapore port, the ongoing work on international level on Maritime Single Window and cybersecurity.

What was underlined during the programme was that the future proper functioning of a port hinges on its resistance to cyber threats. This is patently clear when we look at how the world has changed and how technology continues to advance.

PMP participation recommended

Overall, I would absolutely recommend the Port Management Programme to my colleagues. The programme is a great place to establish business contacts with administration and port representatives from other countries as well as International Maritime Organisation. The presence of Singapore's port terminal operators representatives in the programme, who readily shared information on port operations and future development plans, also added value to the programme.

Moreover, the agenda of the programme is both wide and deep. As participants, we were able to learn more about our respective areas of expertise as well as learn new ones. The key to the programme's success also lies in the port side visits and practical workshops. What is more, the Port Management Programme enabled participants to observe the workings of the one of the biggest ports in the world.

FEATURE

INAUGURAL MARITIME TRANSFORMATION AND INNOVATION PROGRAMME

by Rahita Elias

Twenty maritime leaders from 15 countries and the International Maritime Organization attended the inaugural Maritime Transformation and Innovation Programme (MTIP).

The event, held between 4th and 8th April 2022, was the first physical training programme to be held by Maritime and Port Authority of Singapore Academy (MPAA) since the pandemic. The MTIP was specially designed for maritime or senior port officers overseeing technology, innovation, and change management. Participants for this first round came from Asia, Africa, the Americas, and the Middle East.

Platform for networking and idea exchange

The Programme focused on sharing Singapore's experience in driving innovation and transformation. It provided participants with an unparalleled networking platform to exchange ideas and best practices with industry practitioners and peers worldwide. The attendees were also able to gain insights into effective transformation and change management strategies.

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At the opening ceremony of MTIP, Ms Quah Ley Hoon, who was then Chief Executive of MPA, said, "We hope that the sharing and the network that participants built during the programme will be helpful in their leadership and organisations' transformation journey. Maritime is a global business. Therefore, we must work together to share ideas and best practices to address our common set of challenges as one community"

Experiencing SMW

Since the MTIP was held during the Singapore Maritime Week (SMW), its participants were able to take part in the activities held during the iconic international shipping event.

MTIP delegates attended the opening ceremony for SMW, which was followed by The Singapore Maritime Lecture. They had the opportunity to listen to the keynote address, which was delivered by Deputy Prime Minister of Singapore, Mr Heng Swee Keat.

In his keynote address, Mr Heng highlighted three key areas that the global maritime sector must focus on and how Singapore can contribute to these transformation efforts - the need for continuous maritime investment, digitalisation for efficiency, and decisive green transition.

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The MTIP delegates also witnessed the Signing of a Memorandum of Understanding between International Chamber of Shipping (ICS) and MPAA. Under the MOU, the two partners will work together to establish the ICS Academy in Singapore. They will also jointly develop suitable training and professional development programmes for shipping professionals, as well as accreditation for ICS Academy courses and certifications.

Another event on the agenda for MTIP delegates was the Maritime Transformation and Innovation Dialogue Session, held on 8 April 2022. The session brought together leading practitioners to discuss issues on Trust, Talent and Technology, which all play a crucial role in the successful transformation of the maritime sector. It also took stock of where the industry was in terms of expanding public-private-people partnerships to drive change and movement. The panel speakers not only looked back at the lessons learnt from the experience of other industries and countries but also looked forward on what the next steps need to be.

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The panel comprised Mr Thomas Ting, current Chief Technology Officer in Maritime and Port Authority of Singapore, Dr Jasmine Lam, Associate Professor, School of Civil and Environmental Engineering and Centre Director of Maritime Energy and Sustainable Development Centre of Excellence, Nanyang Technological University Singapore, Mr Kwek So Cheer, a partner at PricewaterhouseCoopers, and Mr Steen Lund, Chief Executive Officer of RightShip, who is also an MPAA Adjunct Fellow. Prof Annie Koh, Professor Emeritus of Finance (Practice) at Lee Kong Chian School of Business, Singapore Management University, was the moderator.

Additionally, MTIP participants had the unique opportunity of participating in the MarineTech Conference which featured global leaders of industry speaking about trending and important technology in the global maritime industry. They also participated in important discussions on decarbonisation held during the IMO-Singapore Future of Shipping Conference, and attended site visits to Pier71™ and PSA Horizons.

FEATURE

GOING GREEN WITH FULL-ELECTRIC HARBOUR CRAFT

by Rahita Elias

Singapore is advancing the electrification of harbour craft deployed in its waters as part of the Maritime Singapore Decarbonisation Blueprint 2050. The electrification efforts will mean that existing conventional harbour craft, largely the launches, lighters, passenger ferries will gradually be phased out and replaced with zero emission full electric vessels.

Raising awareness, creating opportunities

In line with this goal, the Maritime and Port Authority of Singapore (MPA) and Enterprise Singapore (EnterpriseSG) jointly organised the workshop on Maritime Singapore Decarbonisation Blueprint 2050: Advancing Harbour Craft Electrification in Singapore. Held on 28 July 2022, the workshop was attended by more than 120 participants.

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The workshop sought to raise awareness of the maritime decarbonisation plan and initiatives. It also provided a platform for the electric harbour craft (eHC) consortiums, project groups and stakeholders to discover and connect with potential partners and resources, as well as facilitate business opportunities for Small and Medium Enterprises (SMEs) within and beyond the maritime sector.

The workshop was kicked off by MPA and EnterpriseSG speakers who presented on the decarbonisation blueprint for Maritime Singapore and the process towards the development of a charging standard for electric vessels. This was followed by five industry experts and technology leaders who shared their knowledge and experience with the delegates.

Blueprint to go green

First up on the lectern was Er Tham Wai Wah, Chief Sustainability Officer at MPA, who presented on how the Blueprint would catalyse green growth opportunities for the shipping sector, while being aligned with climate change mitigation efforts. He outlined the Blueprint's four-pronged strategy.

Firstly, the Blueprint aims to reduce greenhouse gas (GHG) emissions at Singapore's port terminals, with its initial target to lower emissions at terminals by 60% from 2005 levels by 2030 and achieve net zero emissions by 2050 through the adoption of clean energy, automation and digitalisation.

Secondly, the Blueprint guides the transition of about 1,600 domestic harbour craft to greener options. These include low and zero-carbon energy solutions such as biofuels, full electric propulsion and net zero fuels. To accelerate this transition, three industry-led consortiums were awarded R&D grants to research, design, build and operate full electric harbour craft in the Port of Singapore with interoperable charging stations by 2025.

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Thirdly, Singapore will be ready for a multi-fuel bunkering transition to support international shipping to supply to the industry a comprehensive range of low- and zero-carbon marine fuels ranging from biofuels to e-methanol, ammonia and potentially hydrogen, as well as enabling green technologies, regulation and standards for safe bunkering and infrastructure of these fuels.

Lastly, the Blueprint sets our ambition to establish Singapore as a green maritime finance hub by strengthening carbon accounting and reporting capabilities, and promoting green financing for the maritime sector.

Promoting standards development

Taking the podium after Er Tham was Mr Kok Yixiong, Deputy Director of IT, Electrical and Infrastructure at EnterpriseSG. He explained that both the industry and the government agencies use Standards and Conformance as a tool to address industry challenges.

In the case of a private-public sector partnership, standardisation is based on a host of principles ranging from openness to market relevance. Mr Kok shared that standards supports technology adoption and business development, helps to build trust in local businesses' products and operations. In addition, it enables companies to tap into international opportunities, while upholding public safety and ensuring environmental protection. He pointed out that the working groups developing the standards are using a consensus building approach. As a result, these groups, which comprise diverse stakeholders from industry associations and research institutes, can tap into a wealth of ideas while addressing their common and differing concerns.

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Piloting end-to-end solutions for electric harbour craft

The third speaker at the seminar was Mr Ong Teng Ho, Senior Lead of Keppel Digi at Keppel Offshore & Marine (Keppel O&M). He talked about the Keppel O&M-led consortium's pilot project to convert a passenger ferry to be full-electric powered. The consortium is developing end-to-end solutions for an operational electric vessel. The project aims to address issues surrounding the electrification of harbour craft, ranging from route limitation to the charging speed.

The consortium's work packages cover development of a compact scalable shore charger that delivers small footprint and enhanced performance, an electric craft shipboard kit, as well as interoperability and standards to facilitate unification of connection. Lastly, in advancing business case scale-up, the consortium will replicate successful business cases.

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Winning combination of battery-based and renewable energy

Up next was Mr Brent Perry, CEO of Shift Clean Energy. He talked about the work being carried out by SeaTech Solutions consortium, in which Shift Clean Energy is a member. The consortium has been developing a full electric lighter vessel named Hydromover, and would set up a charging facility at the Penjuru Lighter Terminal in collaboration with Jurong Port.

Mr Perry further explained to delegates how battery-based energy storage systems (ESS) could provide the marine industry with economical zero emission energy while enabling significant carbon savings, citing the pay-as-you-go PwrSwäp energy service that Shift has developed, which utilises swappable battery ESS Pods that can deliver energy to vessels within three minutes. There are also provisions to include renewable energy sources, such as solar, to charge the swappable battery.

Mr Perry shared that swappable battery services could eliminate both the high upfront capital expenditure costs of transition to electric power and the accompanying commercial risk. In addition, the fire-safe ESS Pods can be used to power on-land applications, such as the electrification of ports and terminals, to support cargo movement activities.

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Developing electric ro-ro vessels

The fifth speaker of the day was Ms Chew Sia Ni, Manager of Research and Development at Sembcorp Marine. She touched on the Sembcorp Marine consortium's plan to develop a roll-on/roll-off (ro-ro) electric vessel for transferring vehicles.

The project planned to set up a shore charging facility at the terminal, convert a ro-ro to plug-in battery electric propulsion. Interoperability and commercial viability would also be part of the project consideration.

Going fully electric for Pulau Bukom ferries

Mr Manish Singal, Technology Manager of APME at Shell Eastern Trading, took the stage after Ms Chew. He said Shell would be switching to electric ferries to transport passengers to Shell Energy and Chemicals Park Singapore on Bukom.

Shell has commissioned Penguin International to design, build and operate these full electric ferries. Expected to be operational in mid-2023, the ferries will have the capability to transport some 3,000 staff within three hours. The full-electric ferries are powered by a lithium-ion battery system with a capacity of 1.2 MWh and run at speeds of over 20 knots with zero emissions and noise.

When berthed at the Shell Energy and Chemicals Park Singapore, the ferries will receive fast charging during peak hours, and slow charging during off-peak hours and overnight. As these charging stations have spare capacity, Shell is offering this spare charging capacity to other harbour craft operators in the future to encourage electrification of harbour craft.

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Coastal sustainability ecosystem

Tying up the seminar was Mr George Lee, CEO of Sea Forrest Technologies, a member of Coastal Sustainability Alliance (CSA) who spoke about the CSA's efforts to create Singapore's coastal sustainability ecosystem to accelerate decarbonisation.

Mr Lee said that marine electrification faces several challenges, ranging from the myriad considerations for marine shore chargers, to the chicken-and-egg dilemma regarding charging infrastructure and electric fleets. Recognising this, the CSA will focus on building charging infrastructure, developing new capabilities in marine logistics, strengthening green supply chain resilience, and driving workforce reskilling.

In addition, Sea Forrest has been collaborating with its CSA partners to develop solutions, ranging from Na-ion marine batteries to wireless charging systems. Moving forward, the CSA will be building partnerships to co-design the fully electric PXO vessels, which aligns with the maritime industry's transition to a sustainable, circular economy.

The workshop concluded with three breakout sessions for industry participants to provide inputs to various topics covering electric harbour craft charging standards and interoperability, charging infrastructure planning and other challenges, and to identify collaboration opportunities in decarbonising the harbour craft sector. Following the workshop, EnterpriseSG with the support from MPA and industry has formed a task force to study the scope for development of electric harbour craft charging standard.

CONTRIBUTION

THE FUTURE OF LEADERSHIP IN MARITIME INDUSTRY: LEADING AN ECOSYSTEM

by Mr Punit Oza

Mr Punit Oza is currently the CEO of WIZ Bulk, a "born digital" dry bulk operator with a vision to simplify bulk shipping through technology.

Punit is a Senior Adjunct Fellow at MPA Academy. He is also a Fellow of the Institute of Chartered Shipbrokers and currently the Vice Chairman of the Singapore Branch of the Institute. He has over 30 years of experience in Dry Bulk Shipping, holding senior management positions in some leading shipping companies including Precious Shipping, Noble & Klaveness. Punit spearheaded the digital transformation of Klaveness Dry Bulk and is currently one of the SSA-MPA Maritime Digitalization Playbook Ambassador. He is also an investor and advisor in Motion Ventures as well as an Affiliated Research Fellow & Guest Lecturer at Singapore Management University.

CONTRIBUTION

At the outset, I would like to thank Dr Arnoud De Meyer, whose lecture on business ecosystems during the SMU course on "Digital Transformation" set me thinking on this article.

I remember reading a quote which has stuck in my mind ever since – "Sharing among an entire ecosystem of innovative partners is a crucial step for modernization". While this sounds very nice in theory, what does it mean in practice and also what does it mean today in context of maritime industry, an industry that I am deeply involved, and which is changing at a rapid pace.

This article is my take on topics such as what constitutes an ecosystem, the key ingredients that make it successful, how a different style of leadership is needed to build & grow a successful ecosystem and finally my own continuing journey of building & growing maritime business ecosystems.

Ecosystem: starting from the start

Though sounding like a complex concept, each of us work and live in multiple ecosystems throughout our lives. Your family, your school, your friend circle, other support systems and finally your workplace constitutes not just one but multiple ecosystems. The key feature of a successful ecosystem is that the value created by the ecosystem is greater than the sum of all the individual values of the ecosystem partners – this simply means that only by working together, they create this additional value but if they provided their value propositions on their own, the value creation will be lesser or lost altogether. This is important to remember all the time – United We Win, and Divided We Lose – as it is likely the competitors may be coming together in an ecosystem and if they forget this simple truth, the ecosystem & its value creation ceases. There are multiple examples of business ecosystems including Alibaba, Amazon and DBS Bank. In maritime context, shipping pools, such as the Maru-Klav Baumarine Pool of Torvald Klaveness, are a good example of a business ecosystem as they bring competitors and variety of other players together along with other support ecosystem partners to deliver greater composite value to the end customers. The pool managers are both aggregators as well ecosystem leaders.

What makes an ecosystem successful?

Having established the concept of a business ecosystem, let us try to figure out what makes such an ecosystem successful? Remember, the ecosystem is a loosely coupled network, with diverse interests among the partners. The very first ingredient for any business ecosystem to succeed is to scale up as fast as possible. To succeed, they must scale fast enough and in such a diverse fashion so as to service the customer with multiple touch points and produce both value & stickiness, eventually scaling up across customers. While we associate scaling up with start-ups, it is the same with a business ecosystem as well. The solution must be as widely applicable as possible.

Internally, the most important ingredient is trust and a very high degree of trust. The partners should feel comfortable in sharing, learning & working towards a common goal to service the customer and scale up. A lot of the ecosystem partners will also be operating in the same

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"An ecosystem leader needs to embody collaborative leadership but also go beyond that. We are talking the ability to actively network, command trust of the partners, develop a clear goal and strategy and embrace differences and diversity. "

— **Mr Punit Oza,** CEO of WIZ Bulk

market and competing with the other partners of the same ecosystem, but they need to trust that the knowledge shared by them is secure enough and will not be misused. There is of course no guarantee of that.

Another key ingredient is deciding clear high-level outcomes. The ecosystem must aim to solve a tangle and scalable pain point of the customer be it visibility, resilience, efficiency, or value creation. Continuing with the example of Shipping Pools, it is focussed on minimizing geographical risk, maximising earning potential and providing access to market intelligence and analysis. This is what will eventually crystalize into a customer-centric offering.

Given the nature of ecosystem partners and the loose structure, clear communication is another vital ingredient. The communication extends to all stages. During the pre-formation stage, communicating the key desired outcomes, the strategies involved and the expectations from the partners in terms of deliverables is crucial. Once in operation, the update on the progress, key milestones achieved, and the path ahead, needs to be communicated to maintain the participation and contribution of the partners.

Keeping the partners together – both in spirit and in person is another key ingredient. The key is to have one or multiple collaborative platform(s) which could range from monthly meet ups to digital platforms and dashboards to provide real time updates to partners on the progress and achievements. The ability to provide feedback and act on it should be possible on such collaborative platforms.

Being an informal and loose network, the importance of good governance standards cannot be emphasised enough in an ecosystem. Common standards and an ability to maintain and arbitrate any conflicts will not only create confidence in the ecosystem, but also be welcomed by the partners, who truly wish the solution to succeed.

The final ingredient which is in fact the most crucial one is the ability to monetize the ecosystem offering. After establishing the Unique Selling Point or Keystone of the value proposition, without which the ecosystem cannot deliver value, the monetization can take form of risk margins or licence fees or royalties or other form of fixed charges. Without a clear plan to generate a monetary stream, the ecosystem cannot operate in practice but is only a theoretical or conceptual exercise.

The future is here: ecosystem leadership

The person who brings all these ingredients together and drives the ecosystem forward is the ecosystem leader. However, we must understand that a different level of skill will be needed to lead an ecosystem. We need a leader who does not just lead but carries a diverse set of partners towards the purpose. A proven leader who manages an in-house team of people

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reporting into him or her and over whom he has a great degree of control may struggle with leading an ecosystem, where the partners have their own agendas as well as actions. An ecosystem leader needs to embody collaborative leadership but also go beyond that. We are talking the ability to actively network, command trust of the partners, develop a clear goal and strategy and embrace differences and diversity. Ecosystem leadership is the skill that future leaders will have to acquire, and the Maritime industry is no exception.

Maritime industry ecosystems

Currently there are two urgent themes requiring the Maritime industry's attention – Digitalization & Decarbonization. Neither of these can be holistically addressed by any individual company. To create any scalable solution, the industry partners will need to come together to create an ecosystem and therefore will need ecosystem leaders to take them forward. Maritime and Port Authority of Singapore (MPA) has taken such a lead to set up a Global Centre for Maritime Decarbonization (GCMD) here in Singapore, but it is driving an entire ecosystem forward on this issue. There are other examples that we can find across the globe. These will require a completely different approach to leadership compared to managing a team within your own organization.

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WIZ Bulk's vision: an exciting journey

This brings me to my current position as the Chief Executive Officer of WIZ Bulk. A newly set up company with a vision to simplify bulk shipping. WIZ, as a group, has been quite successful in container freight, air freight as well as land transport and warehousing but its key differentiator is the digital platform (WIZ Freight) which is a one-stop solution for the customers to secure container freights. While it is complicated to build a similar solution for bulk customers due to the fragmented and non-standardized nature of the bulk shipping industry, we have embarked on a journey to build an ecosystem with partners across the technology as well as shipping space with few clear objectives: simplify the processes, create a single platform for all relevant data required for decision making and automate as many processes as possible. The key aim is for the team to rely on the system for the quantitative aspects so that they can focus on the qualitative aspects of the deal and that they spend less time searching for information and more time using and analysing it. The larger vision of WIZ is to transform trade through technology and therefore the larger ecosystem will be encompassing land transport, deep sea shipping as well as cargo handling and warehousing, providing unparalleled visibility in real-time to customers. We are taking this forward through an ecosystem approach, currently at an early stage, but expect it to mature over the next few months.

To conclude, the future is not going to be a competition between companies but ecosystems. The sooner we learn to collaborate and equip the leaders in our industry with an ability to lead an ecosystem, the better it will be for all of us. The "life" of a "lifeline" industry is about to change forever!

HIGHLIGHTS

MARITIME CYBER SECURITY DIALOGUE

by Rahita Elias

On 31 August 2022, about 200 participants attended the Maritime Cybersecurity Dialogue: Cyber Safety@Sea. The event, organised by Maritime and Port Authority of Singapore (MPA), provided the different stakeholders with a platform to discuss the pros and cons of the varying maritime cyber risk management approaches needed to safeguard shipping infrastructure.

Panel Members for Maritime Cybersecurity Dialogue: Cyber Safety@Sea

Mr Lionel Chew
Senior IT Manager
Maritime and Port Authority of Singapore

Mr Terence Yeo
Assistant Vice President
Infrastructure & Cyber Security Architecture
PSA Corporation Ltd

Prof Sudipta Chattopadhyay
Assistant Professor
Singapore University of Technology and Design

Mr Michael Phoon
Executive Director
Singapore Shipping Association
Moderator

HIGHLIGHTS

Multi-pronged strategy for effective maritime cybersecurity risk management

Mr Chew from MPA said the industry needs to adopt a pragmatic approach to be able to effectively tackle cyber risks, especially since maritime cyber incidents have been on the rise over the past decade.

In safeguarding Singapore's maritime interests as a global hub port, the cyber threats to our shipping ecosystem, which range from enterprise IT systems to shore-based port operations and marine services systems, must be identified and addressed.

Mr Chew also pointed out that maritime cybersecurity has no single solution, or a "silver bullet". Instead, the industry needs a multi-faceted risk management approach that focuses on four key areas.

MARITIME CYBERSECURITY RISK MANAGEMENT

01 **Governance and risk management:** In addition to its own National Cybersecurity Strategy, Singapore also adopts international standards such as those prescribed by the International Maritime Organization (IMO).

02 **C-suite support** is critical to establishing a cybersecurity management programme for cyber resiliency.

03 **Promoting information sharing:** Collaboration among stakeholders and developing cybersecurity networks will help to address information and time gaps. In addition, strong international partnerships, such as the Port Authorities CIO Cybersecurity Network (PACC-Net), facilitate a collective response to potential cyber threats.

04 **Practising incident response**, such as through sectoral tabletop exercises (TTX), and business continuity plans, strengthens industry preparedness while mitigating business disruptions.

Following his presentation, Mr Chew answered questions from the floor. Responding to a query about the prevalence of cyberattacks that had impacted safety at sea, Mr Chew said much of the brunt of incidents, such as GPS spoofing and those affecting internal shipboard IT systems, were mitigated by vigilant operators. However, the risks of safety incidents arising from cyber-attacks remain a concern in an increasingly connected, digitised and automated field. Especially when cyber means are accessible to actors seeking to benefit from illicit activity at sea.

On how the government is helping businesses adopting cybersecurity standards, Mr Chew said that MPA has co-developed the International Association of Ports and Harbors (IAPH) cybersecurity guidelines and supported SUTD's cyber risk management research. The government has also implemented the Singapore Registry of Ships (SRS) Cyber Notation to encourage local ships to implement measures to protect their shipboard Operational Technology (OT) systems from cyber-attacks. Mr Chew added that the government will continue reviewing how it can advance the conversation on regulator-business relationships.

Total security convergence approach for port operators

The second speaker, Mr Yeo, shared how PSA's Total Security Convergence (TSC) cyber risk management strategy enables the port operator to systematically manage cybersecurity hazards in tandem with its adoption of emerging technologies.

HIGHLIGHTS

Increasing digitalisation and automation are expected to radically change the way port users, such as shipping lines and their crew, interact with the modern port ecosystem. This, in turn, creates potential cyber risks that need to be managed.

TSC is addressing these issues and is striving to harmonise external regulatory requirements with internal organisational standards, which are benchmarked against industry best practices.

As a cyber mindset, TSC aims to elevate PSA's cybersecurity posture and has five pillars, namely:

01 Technology and architecture planning, which maintains technical oversight of IT and OT, and physical cyber projects, and involves charting technology roadmaps for better synergy

02 Compliance operationalisation, which translates the multiple security standards into actionable work streams while enabling the operational team to harmonise implementation

03 Cybersecurity-risk synchronisation, which aligns security governance with regulations and standards

04 Identity/access administration and governance, which strives to level up identity management practices, such as multi-factor authentication technology, to guard against credential theft

05 Enhancing competency, skills, and awareness through coordinating regular outreach programmes for internal stakeholders and improve cyber resilience.

Alongside this, PSA recognises the importance of championing collaboration among its key stakeholders, ranging from customers to regulators and solution providers, to secure a cyber-safe tomorrow.

Engaging in stakeholder collaborations, such as cyber supply chain assessments, builds trust during peacetime, and validates sectorial resilience and helps each stakeholder understand the role they can play during a crisis.

Mr Yeo also answered questions raised by delegates, including how the TSC could benefit SMEs. He said that PSA would notify shipping SMEs if it came across any malicious maritime cyber threats. It has also introduced multi-factor authentication to protect the SMEs, shippers and liners connected to its online port system.

Another question was asked about how cybersecurity approaches such as Defense in Depth could guard against an infected electronic device either corrupting or hacking into ship-to-shore bayplan transfers. Mr Yeo said that currently the ship's USB thumb drive was checked at physical scanning stations onshore prior to uploading. However, with wireless bayplan transfers via 5G or Wifi 6 in future, virtual scanning stations will do the checking.

Charting a maritime cybersecurity roadmap

The final speaker, Professor Chattopadhyay, touched on how SUTD's 10-year roadmap for cybersecurity focuses on research and development (R&D) capability development to safeguard maritime infrastructure.

Developed by SUTD's centre for research in cybersecurity, iTrust, the roadmap is divided into three phases.

Phase 1 saw the completion of a comprehensive guideline for cyber risk management focusing on shipboard OT systems in early 2022. The guideline filled an information gap. Prior to this, Singapore lacked its own guidelines that maritime authorities and shipowners could easily adopt. The 85-page report listed detailed attack vectors against various components of maritime OT systems and discussed the potential severity and likelihood of each cyber threat.

Phase 2, which is currently underway, focuses on establishing the world's first cyber-physical maritime testbed of shipboard OT systems (MariOT testbed). Apart from training maritime professionals, the MariOT testbed's other objectives include creating realistic platforms for cyber exercises and technology validation. Expected to be launched by end-2024, the testbed will raise the cybersecurity posture of the local shipping community and spur the growth of R&D in cybersecurity technologies for the maritime sector.

Phase 3, which will start in 2024, will concentrate on discovering vulnerabilities in shipboard OT systems and developing security solutions to protect maritime infrastructure.

In response to a question, Professor Chattopadhyay said that the MariOT testbed is open to all to develop new cybersecurity solutions. He added that the industry could use MariOT to validate cybersecurity technologies, and train maritime professionals.

Answering another question, Professor Chattopadhyay said that the MariOT testbed will train maritime professionals, including those non-technical experts. Training efforts could include connecting the MariOT testbed to the maritime simulator at Singapore Polytechnic, which will help to raise awareness of cyber-attacks among the Polytechnic's students.

HIGHLIGHTS

Towards a more proactive approach

To round off the workshop, the speakers were asked how organisations can be less reactive and more proactive in cybersecurity.

Professor Chattopadhyay said that when building security systems, companies should assume that vulnerabilities already exist and develop appropriate fallback solutions to counter them. Mr Chew added that being prepared makes one proactive, which improves the incident response time. Mr Yeo said that taking control of the type of assets that the organisation has and understanding its vulnerabilities and available defences will help team members know what to do when cybersecurity incidents occur.

UPCOMING EVENTS

TRAINING COURSES

FOR MPA OFFICERS IN 2023

SHIPPING DIVISION

- Internal Auditor ISM, ISPS, MLC Course
- Decarbonisation course
- Fire Investigation Specialist Course
- Train the Trainer
- Commercial Shipping terms and concepts (insurance/claims/law/brokering/chartering)
- LNG- System
- LNG as ship fuel/Alternative fuels
- Emergency Occupational Safety and Survival Revalidation Course
- GMDSS GOC
- Medical Care On Board Ship Refresher Course
- Operational Use of ECDIS (IMO Model Course 1.27)
- Ship Security Officer
- Proficiency In Designated Security Duties
- Bridge and Engine Room Resource Management (Management and Leadership Skills)
- Engine-room Resource Management - Leadership and Teamwork (Management Level)
- Medical First Aid On Board Ship
- High Voltage Installations Management
- Personal Survival Techniques
- Ocean Learning (E-learning course)
- Investigation courses:
  - Investigative Interview Techniques
  - Incident investigation and root cause analysis
- CIL Law of the Sea Course
- Model course 3.11

UPCOMING EVENTS

OMS DIVISION

- Internal Auditor ISM, ISPS, MLC Course
- Decarbonisation course
- Fire Investigation Specialist Course
- Train the Trainer
- Commercial Shipping terms and concepts (insurance/claims/law/brokering/chartering)
- LNG- System
- LNG as ship fuel/Alternative fuels
- Emergency Occupational Safety and Survival Revalidation Course
- GMDSS GOC
- Medical Care On Board Ship Refresher Course
- Operational Use of ECDIS (IMO Model Course 1.27)
- Ship Security Officer
- Proficiency In Designated Security Duties
- Bridge and Engine Room Resource Management (Management and Leadership Skills)
- Engine-room Resource Management - Leadership and Teamwork (Management Level)
- Medical First Aid On Board Ship
- High Voltage Installations Management
- Personal Survival Techniques
- Ocean Learning (E-learning course)
- Investigation courses:
  - Investigative Interview Techniques
  - Incident investigation and root cause analysis
- CIL Law of the Sea Course
- Model course 3.11

UPCOMING EVENTS

EPM DIVISION

- BIM
- EIA & EMMP
- Soil Investigation (in-house/BCA)
- Contract Management courses (BCA / CSC/ external consultant)
- Construction Safety Course for Project Managers
- Project Management Professional Course
- GMAP-Certification Course for Green Mark Accredited Professional (4.5 days)
- Mike 21
- SARMAP/OILMAP
- Berth Capacity Simulation
- Port Planning training by international experts
- Climate Change Related Training
- Port operations, management and technology
- EIA framework in Singapore
- Urban infrastructure planning
- Introduction to Smart Building Management for FM Practitioners
- Strategies for Smart Facilities Management (FM) and Maintainability
- BIM For Building Lifecycle And Facility Management
- Energy Efficiency For Electrical Systems
- Real Estate Development And Investment
- Exit & Protective Strategies For Commercial Tenancies
- Planning and Design of Sewerage Works
- Planning and Design of Drainge Works
- Dispute resolution for PSSCOC contracts (conducted by Edwin)
- COTMA and related claims focusing on F2 and f3 (conducted by Edwin)

UPCOMING EVENTS

HYDROGRAPHY DIVISION

- Basic Hydrographic Survey Course
- IHO / FIG Category A Hydrographic Survey Course (Overseas)
- IHO / FIG Category B Hydrographic Survey Course (Conducted by STET)
- Basic Occupational Safety & Security Training (BOSST)
- WSQ Operate Forklift (2 Days)
- Shipyard Safety Supervisor Course
- Perform Work at Height
- Supervise Construction Work for Workplace Safety and Health (e-learning)
- Supervise Work in Confined Space Operation
- IALA Level 1.1 AtoN Manager Course
- IALA Level 2 Technician Course
- IALA Master of AtoN Management Course
- ANF Technical Workshop on Aids to Navigation in the Straits of Malacca and Singapore
- FIG/IHO/ICA Cat 'B' Geospatial Marine Analysis and Cartography, UKHO
- Basic Cartography Course for Cartographers
- Certified Scrum Product Owner (Singapore)
- Certified in Risk and Information Systems Control (CRISC) (Singapore)
- Introduction to ArcGIS Maritime (Singapore or Overseas)
- Coastal and Marine GIS Training (Online)
- FIG/IHO/ICA Cat 'B' Marine Geospatial Information Programme, KHOA
- Appropriate cybersecurity courses with no technical knowledge.
- Project Management courses
- Internal Audit Courses

PORT SYSTEM DIVISION

- Basic Hydrographic Survey Course
- IHO / FIG Category A Hydrographic Survey Course (Overseas)
- IHO / FIG Category B Hydrographic Survey Course (Conducted by STET)
- Basic Occupational Safety & Security Training (BOSST)
- WSQ Operate Forklift (2 Days)
- Shipyard Safety Supervisor Course
- Perform Work at Height
- Supervise Construction Work for Workplace Safety and Health (e-learning)
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- Appropriate cybersecurity courses with no technical knowledge.
- Project Management courses
- Internal Audit Courses

UPCOMING EVENTS

OPS PLANNING DIVISION

- Oil Spill Response Management Course (IMO Level 3 Equivalent) OR On-Scene Commander Course (IMO Level 2 Equivalent)
- Business Continuity Management BCM-5000
- Crisis Management CM-5000
- Risk management course
- Mastering Agile for Managers
- Data visualisation for Effective Communications
- ASEAN Regional Forum (ARF) Training Series and Best Practices Manual on ISPS Code
- Port Security Expert Meeting
- Port Facility Security Officer (PFSO) course
- ISPS Auditor course
- Technical-related courses such as access control. Perimeter fencing, lightings
- Digitalisation and data analytics

IT DIVISION

- AZ-303 Microsoft Azure Architect Technologies
- AZ-304 Microsoft Azure Architect Design
- AZ Microsoft Azure AdministratorAZ-104
- NICF - ITIL® Foundation Certificate in IT Service Management (SF)
- Nutanix Enterprise Cloud Administration
- GCC Administration
- Become A F5 Load Balancer Administrator
- Apache Kafka Administration by Confluent
- Procurement e-learning 1.1
- IM8 Fundamentals
- Veeam Certified Engineer (VMCE v11)
- NICF – NoSQL Fundamental with MongoDB for Beginners
- Red Hat System Administration
- Red Hat System Administration II with exam (RH135)
- Docker Certified Associate with exam
- Kubernetes Administration with exam
- Microsoft Azure Fundamentals (AZ-900)
- IM8 Proficiency Development Programme
- ISACA CISM - Certified Information Security Manager with Exam
- ICS/OT Ethical Hacking
- Fundamentals of ICS Security
- (ISC)² Systems Security Certified Practitioner Common Body of Knowledge (SSCP CBK) Training Seminar
- ICT Security Risk Assessment & Security By Design Course
- CISSP - Certified Information Systems Security Professional
- Certified CISO course
- Evaluating Software Architecture
- AZ-305 Designing Microsoft Azure infrastructure Solutions
- AZ-104 Microsoft Azure Administrator
- AZ-204 Microsoft Developing Solutions for Microsoft Azure
- AZ-305 Designing Microsoft Azure Infrastructure Solutions

UPCOMING EVENTS

- Devops Foundation
- Containers for Deploying and Scaling Apps
- Managing Digital Products
- Digital User Experience Design
- Certified Scrum Master
- Operations Management Essentials for Application Services
- Agile Funding & Procurement Workshop
- IM8 Fundamentals
- IM8 Proficiency Development Programme
- Procurement e-learning 1.1
- Product Management - Enhanced Project Development Methodology
- CIO Milestone Module 1 - CIO Leadership in Digital Age
- CIO Milestone Module 2 - User-Centric Design & Product-Centric Agile Delivery
- CIO Milestone Module 3 - Data Architecture, Implementation & Exploitation
- CIO Milestone Module 4 - Digital Solutions
- CIO Milestone Module 5 - Sourcing Strategy
- CIO Milestone Module 6 - Finance Strategy

BCD DIVISION

- Budget 2023 seminars
- Income Tax Programme Level 3: Advanced Tax Programme (Registration for next intake in Jan/Feb 2023)
- Other relevant ad-hoc tax and accounting courses
- RPA for personal productivity
- Fraud detection, prevention and investigation
- Relevant courses conducted by Civil Service College or courses customised with training providers

IMC DIVISION

- Principles of Vetting for Senior Officers
- Fundamentals of Editing
- Content Marketing Strategy
- Digital Marketing Analytics
- Digital Marketing Analytics
- Protocol, staffing, and engagement skills
- Industry knowledge - to zoom in on one segment e.g. FFAs, deep dive into tanker industry etc
- Sustainability and maritime decarbonisation (deep dive into a particular segment - e.g. green fuels)

UPCOMING EVENTS

STRATPOL DIVISION

- [Virtual] Data Visulisation for Effective Communications
- [Virtual] Introduction to behavioural insights
- Predictive Analytics Made Easy (with Excel)
- Public Policy in Practice
- Fundamentals of Data Wrangling, Analysis & Visualisations
- From Data to Visualisation
- Analytics for Enterprises
- FutureCraft 201: Scenario Planning
- Public Policy in Practice
- Cost Benefit Analysis Workshop for Beginners/Practitioners
- Basic Systems Thinking (using 3Quest)
- Process Improvement 101
- Introduction to Effective Writing in Public Service
- FutureCraft 102
- Principles of vetting for senior officers
- Giving a Voice to your Data – From Spreadsheets to Data Telling

ITTD DIVISION

- Fundamentals of Cybersecurity
- Innovation Thinking & Change Management
- Venture Capital Financing for Start ups
- Design Thinking
- Innovation Thinking & Change Management
- Fundamental of Project Management
- Strategic Talent Analytics
- Masterclass in Decision-making with Data Analytics
- MySQL
- Text Analytics
- Predictive Analytics - Insights of Trends and Irregularities
- Tableau Intermediate + Advance
- Business Management
- IPR Management
- Governance
- Enterprise Risk Management
- Value Chain Analysis
- API Strategy and Management
- Digital Supply Chain Management
- Ecosystem of Across Border trade - Bill of Lading

UPCOMING EVENTS

UPCOMING EVENTS IN 2023

BY INVITATION

5th Advanced Maritime Leaders' Programme – APRIL 2023

Participants: Senior maritime officials heading port or maritime administrations

15th Maritime Safety Management Course conducted by MPA and Japan Coast Guard – Q2 2023

Participants: Maritime officials

9th Port Management Programme – Q3 2023

Participants: Port masters, harbour masters, middle management personnel

13th Maritime Public Leaders Programme – Q4 2023

Participants: Senior maritime officials

World Maritime University Study Visits for MSc Students Specialising in Shipping Management and Logistics, as well as Port Management – Q3/4 2023

Participants: WMU MSc students specialising in Shipping Management and Logistics, and Port Management

HORIZON
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ABOUT US

As the training arm of the Maritime and Port Authority of Singapore (MPA), the MPA Academy was repositioned in 2014 to be a full-fledged academy with a dedicated premise with a focus on global maritime leadership training. The academy's vision is to be a global learning centre for maritime and port administration. The academy's mission is to enhance the skills and knowledge of MPA officers and to conduct flagship training programmes for overseas port and maritime officials, including supporting the training needs of the International Maritime Organization (IMO) as a Council member. The MPA Academy's dedicated facility is located at mTower and was officially launched in October 2015.

SUBSCRIBE

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