



Singapore, 17 November 2022 | **For immediate release**

21 aspiring seafarers awarded financial incentives through the SailMAP scheme

RightShip recognises the Singapore Registry of Ships “Green” Notation

An inaugural batch of 21 seafarers were awarded the Sail Milestone Achievement Programme (SailMAP) financial incentives worth \$126,000 at the Singapore Registry of Ships (SRS) Forum 2022 held today. The SailMAP provides each eligible local seafarer up to \$50,000 when they attain key milestones in their seafaring training leading to the Certificate of Competency Class 1, the highest level of shipboard competency.

Sail Milestone Achievement Programme (SailMAP)

2. The MPA, e2i¹, Singapore Shipping Association (SSA), Singapore Maritime Officers’ Union (SMOU), and Singapore Organisation of Seamen (SOS) announced the launch of SailMAP in May 2022. The SailMAP incentives include waiver of fees for the first examination attempt for the Certificate of Competency Class 3/5², a monthly allowance of S\$1,000 while studying, and also bonuses of up to S\$10,000 on completion of each shipboard training milestone.

3. “As decarbonisation and digitalisation are multi-year opportunities, our seafarers can participate in SailMAP that is structured as a multi-year programme to incentivise them to upskill so that they possess the relevant skillsets to stay ahead. MPA and the tripartite partners³ will support our aspiring seafarers in their training to make seafaring an attractive long-term career choice,” said Mr Teo Eng Dih, Chief Executive of MPA.

Green Ship Programme (GSP)

¹ e2i is a tripartite initiative of the National Trades Union Congress (NTUC) set up to support nationwide manpower and skills upgrading initiatives.

² COC 3 refers to COC Class 3 Deck Officer, COC 5 refers to COC Class 5 Marine Engineer Officer. The COC 3 examinations include both the oral and simulator components, while the COC 5 examination only has the oral component.

³ The tripartite partners refer to industry and union partners, namely, e2i, Singapore Shipping Association (SSA), Singapore Maritime Officers’ Union (SMOU), and Singapore Organisation of Seamen (SOS).

4. Delivering the opening address at the SRS Forum, Mr Teo said that while Singapore is vulnerable to the impact of climate change, there are many opportunities to seize during the energy transition. Singapore will continue to work with the SRS community on attracting more sustainability and R&D themes in global shipping and to grow the green fleets through its Green Ship Programme (GSP).

5. Launched in 2011, the GSP is a programme under the Maritime Singapore Green Initiative which provides incentives and reductions of fees for ship owners who voluntarily adopt solutions that enable ships to exceed environmental regulatory standards set by the International Maritime Organization.

6. This year, a total of 29 Singapore-flagged ships from 17 companies received Green Ship certificates under the GSP for their efforts in reducing the environmental impact of their fleet, including using low-carbon fuels such as methanol and energy efficient technologies that enabled the ships to exceed the Energy Efficiency Design Index requirements mandated by the International Maritime Organization. Since 2011, a total of 666 ships have been recognised as green ships.

RightShip to recognise the SRS “Green” notation

7. Additionally, the world’s leading ship vetting company, RightShip, will recognise the SRS “Green” notation. From 1 January 2023, RightShip will display the SRS “Green” notation on its environmental, social and governance-focused digital maritime platform.

8. The inclusion of the SRS “Green” notation⁴ on Rightship’s digital maritime platform affirms the notation’s quality standards and will encourage more vessel owners to be accredited through implementing low-carbon energy-efficient solutions on their Singapore-flagged ships.

Top Net Tonnage Contributor

9. Mr Teo also presented the SRS Top Net Tonnage Contributor Award 2022 to Evergreen Marine Corporation (Taiwan) Ltd with a contribution of 1.02 million gross tons. The SRS continues to rank Top 5 globally with a total tonnage at 94.2 million gross tonnage as of October 2022.

⁴ The SRS “Green” notation is part of the SRS Notation initiative, an accreditation system for Singapore-flagged vessels implemented in November 2021. Since then, seven vessels have been awarded the SRS “Green” Notation. The SRS Notation covers four categories, namely the “Smart” notation, “Cyber” notation, “Welfare” notation and “Green” notation. Singapore-flagged vessels that fulfil the requirements for each of the categories will be issued a certificate of recognition and their details will be published on MPA website to enhance their commercial attractiveness.

10. The annual SRS Forum gathered more than 350 participants, comprising industry players such as ship owners, managers, operators, and classification societies. In addition, speakers from the Centre of Excellence in Maritime Safety, Singapore Polytechnic, Australian Maritime Safety Authority, as well as MPA's Sustainability Office, Shipping and Information Technology Divisions shared their insights on maritime energy transition, fleet quality improvement, flag and port state control, cyber security and shipping operational safety, as well as Maritime Singapore's decarbonisation strategies.

Annex A: Shipping Circular No.9 of 2022 on the information of SailMAP

Annex B: Profiles of SailMAP awardees for media interviews

Annex C: List of companies and individuals recognised at the forum

Annex D: Quotes by Mr Teo Eng Dih, Chief Executive of the Maritime and Port Authority of Singapore and Mr Steen Lund, Chief Executive Officer of RightShip on the collaboration

Annex E: Opening Address by Mr Teo Eng Dih, Chief Executive of MPA, at the SRS Forum 2022

<End of Release>

About the Maritime and Port Authority of Singapore (MPA)

MPA was established on 2 February 1996 with the mission to develop Singapore as a premier global hub port and international maritime centre, and to advance and safeguard Singapore's strategic maritime interests. MPA is the driving force behind Singapore's port and maritime development, taking on the roles of port authority, port regulator, port planner, international maritime centre champion and national maritime representative. MPA partners with industry and other agencies to enhance safety, security and environmental protection in our port waters, facilitate port operations and growth, expand the cluster of maritime ancillary services, and promote maritime R&D and manpower development. MPA is responsible for the overall development and growth of the Port of Singapore. In 2021, Singapore remained as the world's busiest transshipment hub with a container throughput of 37.5 million 20-foot equivalent units (TEUs).

For more information, please visit <https://www.mpa.gov.sg>

About RightShip

Established in 2001, RightShip is the world's leading ESG focused digital maritime platform, providing expertise in global safety, sustainability and social responsibility practices. Founded with the mission to drive operational improvements in the global shipping industry, more than 620 customers use RightShip's due diligence,

environmental and inspections services to help them manage risk and improve overall maritime safety standards.

For details, visit <https://www.rightship.com>

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Annex A: Shipping Circular No.9 of 2022 on the information of Sail Milestone Achievement Programme (SailMAP)

SAIL MILESTONE ACHIEVEMENT PROGRAMME (SailMAP)

As the lifeblood of the international shipping industry, Singapore recognises the importance of grooming interested individuals to pursue a long-term career in seafaring. To provide more support for our local seafarers, MPA, e2i, Singapore Shipping Association (SSA), Singapore Maritime Officers' Union (SMOU), and Singapore Organisation of Seamen (SOS) have launched the Sail Milestone Achievement Programme (SailMAP) to provide each local seafarer with up to S\$50,000 when they attain key milestones in their seafaring career. This programme aims to encourage local seafarers to sail to the highest level of competency (i.e. Certificate of Competency (COC) Class 1).

2 The details of SailMAP are as follows.

Eligibility	<p>Singapore Citizen or Singapore Permanent Resident who possesses a Singapore-issued COC and has graduated from any one of the following courses:</p> <ul style="list-style-type: none">• Diploma in Nautical Studies (DNS) from Singapore Maritime Academy (SMA)• Diploma in Marine Engineering (DMR) from SMA• Tripartite Nautical Training Award (TNTA) from Wavelink Maritime Institute (WMI)• Tripartite Engineering Training Award (TETA) from WMI <p>Scholars under the Tripartite Maritime Scholarship (TMSS) are not eligible for SailMAP.</p>
Incentives	<p>a) Waiver of COC 3/5⁵ MPA examination fee for <u>first attempt only</u></p> <p>b) Sign on⁶ first ocean-going ship⁷ while holding valid COC 3/5: S\$10,000</p> <p>c) Clock required qualifying sea-going service⁸ while holding valid COC 3/5 and obtain Letter of Eligibility for COC Class 2 MPA examination: S\$10,000</p> <p>d) Attend COC 2/1 preparatory course conducted by SMA: S\$1,000 monthly allowance (capped at 6 months)</p> <p>e) Attain COC 2⁹: S\$4,000</p> <p>f) Sign on first ocean-going ship¹⁰ while holding valid COC 2: S\$5,000</p> <p>g) Clock required qualifying sea-going service while holding valid COC 2 and obtain Letter of Eligibility for COC Class 1 MPA examination: S\$10,000</p> <p>h) Attain COC 1⁵: S\$5,000</p> <p>Please refer to Annex A for an overview of SailMAP.</p>

⁵ COC 3 refers to COC Class 3 Deck Officer, COC 5 refers to COC Class 5 Marine Engineer Officer.

⁶ Completion of minimum 3 months contract.

⁷ No prior sea service in the last 12 months as a COC 3/5 holder.

⁸ Minimum 12 months from 1 June 2022.

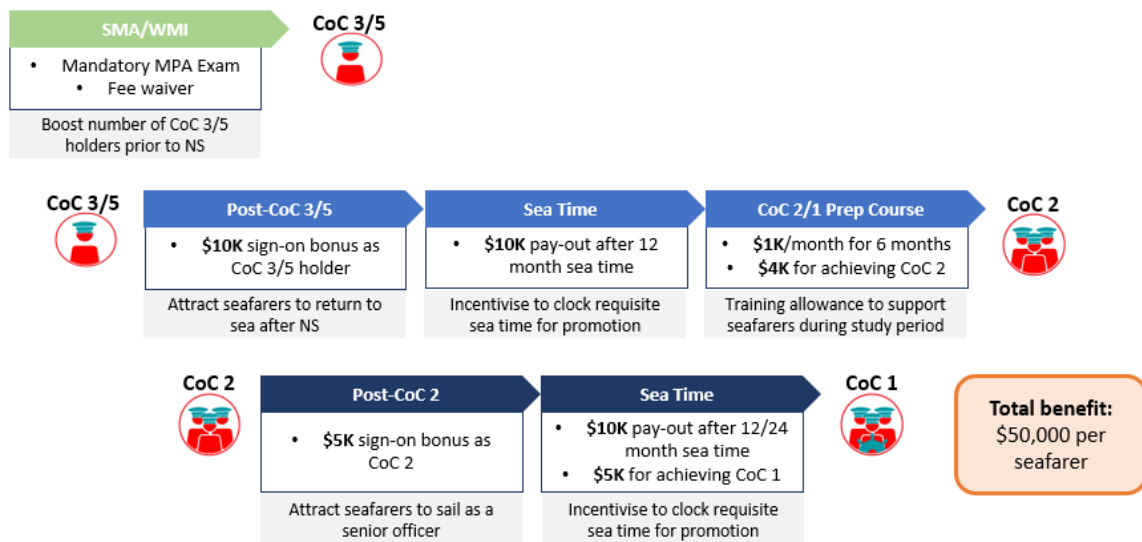
⁹ Application to be made within 4 weeks from qualifying date.

¹⁰ No prior sea service in the last 12 months as a COC 2 holder.

Application	<p>Application commences on 1 June 2022.</p> <p>Applicants must <u>commence</u> each milestone on/after 1 June 2022 to be eligible for the corresponding incentive.</p> <p>To apply, please complete the online application form at this link: https://www.go.gov.sg/sailmap</p> <p>Please refer to Annex B for the supporting documents required to be included in your application.</p> <p>Kindly note that you are not eligible to receive incentives that are not relevant to your current status. For example, if you are sailing on your second ship as a COC 3/5 holder, you will not be eligible for the incentive “b) Sign on first ocean-going ship while holding valid COC 3/5” but can still enjoy the subsequent benefits.</p>
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3 Any queries relating to this circular should be directed to MPA’s Seafarers Management Department at mmo@mpa.gov.sg.

Overview of SailMAP



Annex B: Profiles of SailMAP awardees for media interviews

Mr Norhakim Bin Mohamed Sanwan, Age 30

Attainment of Certificate of Competency (COC) Class 1

Norhakim graduated with a Diploma in Marine Engineering from the Singapore Maritime Academy at Singapore Polytechnic in 2011. He comes from a family of seafarers, and his grandfather and uncles often told him stories of their seafaring lives since he was young. Norhakim then decided to turn his passion for the sea into reality and join the ranks of his family to be a seafarer. He enjoys his work on ships as he feels that the shipping industry has lots of potential and the career prospects for seafarers are plenty, whether offshore or onshore.

With the attainment of the COC Class 1, Norhakim will receive a S\$5,000 cash incentive from the SailMAP scheme. This incentive will come into handy to pay for the course fees for his certification renewal and other training courses.

Ms Nur Farhana Binte Omar, Age 33

Attainment of Certificate of Competency (COC) Class 1

Nur Farhana graduated with a Diploma in Nautical Studies from the Singapore Maritime Academy at Singapore Polytechnic in 2009. Throughout secondary school, she was active and passionate in her sailing club CCA. This CCA went on to ignite her passion for the sea, seeing anchored vessels along East Coast waters pique her interest on how they navigate and operate. While seafaring may be a male-dominated job, Nur Farhana set out to debunk the myth that seafaring is only a men's job. Seafaring is an illustrious experience with many opportunities for career growth and advancements. She highly encourages that more young people consider joining the industry to have fulfilling and well remunerated jobs.

With the attainment of the COC Class 1, Nur Farhana will receive a cash incentive of \$5,000 from the SailMAP scheme. She is planning to pursue Master of Science in Maritime Studies at Nanyang Technological University, and the incentive will come in handy to offset her study costs.

Mr Koh En Rong Elijah, Age 33 (Chinese Name: 许恩荣)

Attainment of Certificate of Competency Class 1

Elijah graduated from the Singapore Maritime Academy, Singapore Polytechnic, in 2010, with a Diploma in Marine Engineering. Since then, he has been on an adventure during his ten years of sailing. The work as a seafarer may not be the easiest job. However, Elijah has found it a joy to work with seafarers from all over the world. Some of his most memorable experiences were learning about diverse cultures and practices

first-hand from his fellow seafarers and even tasting cuisine from around the world on the ship. Most importantly, Elijah would like to encourage all aspiring seafarers to chart their own adventure.

With the attainment of the COC Class 1, Elijah will receive a S\$5,000 cash incentive from the SailMAP scheme. He will use the incentive to offset the cost of training and seafaring certification courses taken.

Annex C: List of companies and individuals recognised at the SRS Forum 2022

Top Net Tonnage Contributor Award 2022

- Evergreen Marine Corporation

Green Ship Programme Award Winners

- A.P. Moller-Maersk
- BW Group
- Byzantine Maritime Corporation
- E4C Shipping
- Fortune VGas Holding
- IMC Shipping Co
- Kawasaki Kisen Kaisha
- Leif Hoegh
- MISC Berhad
- NYK Bulkship
- Nova Shipping & Logistics
- PSA Marine
- SBI Leasing Services
- Shandong Marine Group
- VLK Traders
- Wan Hai Lines
- Wideshine Enterprises

SailMAP Award Winners

- **First ocean-going ship voyage after obtaining COC 3/5**
 1. Chan Wai Kit
 2. Soh Tze Shing
 3. Yap Cheng Hong
- **Monthly allowance while attending COC 2/1 prep course**
 4. Chia Zhi En
 5. Daniyal Ur Rehman
 6. Elijah Jordan Q Villavieja
 7. Lee Hao Yang
 8. Manprit Singh
 9. Muhammad Naim Bin Ramli
 10. Navendran S/O Rajandran
 11. Siti Nasuha Binte Abdul Rahman
 12. Tan Chin Huat

- **Attainment of COC 2**

- 13. Abdul Jalil Bin Sunario
- 14. Abdul Malek Bin Redzwan
- 15. Muhamad Fareez Bin Haris

- **Attainment of COC 1**

- 16. Chua Bing Xiang Kenny
- 17. Koh En Rong Elijah
- 18. Mohamed Shariff S/O Khaja Rizwan Ali
- 19. Norhakim Bin Mohamed Sanwan
- 20. Nur Farhana Binte Omar
- 21. Putera Muhammad Ali Ya Hakim Bin Ahmad

Annex D: Quotes by Mr Teo Eng Dih, Chief Executive of MPA and Mr Steen Lund, Chief Executive Officer of RightShip on the collaboration

Quote by Mr Teo Eng Dih, Chief Executive of MPA

Singapore's efficient infrastructure and business-friendly environment continue to attract ship owners worldwide to register their vessels under the Singapore flag. As a quality shipping registry, the SRS also sees the importance of new solutions that enhance environmental protection and sustainability.

We thank the shipowners, operators, and managers for their continued support for SRS and SRS Notations. We also look forward to further collaborations with RightShip in the future.

Quote by Mr Steen Lund, Chief Executive Officer of RightShip

The SRS Notation scheme is a fantastic initiative on the part of MPA and the Singapore flag State, as it encourages vessel owners to implement efficient, safe environmental practices - all of which align with our vision of a maritime industry that causes zero harm.

We want to see vessels across the world working to decrease their environmental impact and the recognition of those efforts, represented by SRS Green Notation initiative, absolutely meets the same objective. We look forward to expanding this partnership further as we explore ways to incorporate the other notations included within the SRS scheme so that we see even safer vessels, safer seas and safer crew on board.

SPEECH BY CHIEF EXECUTIVE, MARITIME AND PORT AUTHORITY OF SINGAPORE, MR TEO ENG DIH, AT THE SINGAPORE REGISTRY OF SHIPS (SRS) FORUM 2022, 17 NOVEMBER 2022

Distinguished Guests,
Ladies and Gentlemen,

Introduction

1. Good afternoon everyone.

A warm welcome to the Singapore Registry of Ships Forum 2022 (or SRS Forum in short). I am happy to see many familiar faces of our SRS partners today.

Special thanks to those who have travelled from overseas to attend this forum and to those who are attending virtually.

SRS and achievements

2. The SRS was established in 1966 shortly after independence. It was not long after the Geneva Convention on the High Seas came into effect, requiring states to effectively exercise its jurisdiction and control in administrative, technical and social matters over ships flying its flag. This principle was also repeated in the UN Convention of the Law of the Sea or UNCLOS which Singapore played a role in bringing together the global community.

This gathering is thus timely given the 40th anniversary of UNCLOS this year.

3. In the earlier days, our SRS was an open registry¹¹ without set requirements. Substantial efforts were made by the Singapore Maritime Officers Union (SMOU) and the Singapore Organisation of Seamen (SOS) for the International Transport Worker's Federation to recognise Singapore as a non-flag of convenience, and this became the SRS that the audience is familiar with today from 1989.

4. Today, the SRS is known as a young and quality registry known for its reliability, efficiency and professionalism.

We are also the first registry worldwide to give recognition to shipowners who pursue sustainable shipping, digital transformation and promote the well-being of seafarers.

5. Within a short time, we already have multiple applications for all categories of the SRS Notations. Our SRS has made good progress this year. This year there are more than 20 new companies who have registered almost 300 vessels with us, with a

¹¹ There were no set requirements regarding ownership, management, and manning of ships

net growth of more than 1 mil GT in less than a year. We have also continued to keep up our good reputation for low detention¹² and low incident rates. And to keep ahead of the curve for the future, MPA and the SRS community will need to work together to address the twin challenges of decarbonisation and digitalisation which the audience is no stranger to, as these themes will fundamentally reshape global shipping.

Decarbonisation

6. First on decarbonisation. As a small, low-lying country with an open economy, Singapore is particularly vulnerable to the adverse impact of climate change. At the same time, there will be many opportunities in the green economy as we embark on the energy transition. We are therefore a strong supporter of global efforts to tackle climate change, and the recent announcement to raise our climate ambition to achieve net-zero emissions by 2050 provides a clear target for businesses and MPA to work towards. This joins more than 70 countries globally which have a net-zero target by 2050 or earlier. It positions Maritime Singapore as the choice location for global investors and stakeholders keen to be part of a growing green economy.

7. A net-zero emissions commitment guides our maritime efforts for our port infrastructure, logistics and domestic harbour craft sector. And our commitment anchors the stance and trajectory of efforts to decarbonise our maritime sector.

8. At the company level, the demand of sustainable shipping is a key driver. Companies are seeking to minimise their Scope 3 emissions along their supply chains and individuals are looking to buy their goods with a reduced carbon footprint. I will not be surprised if the international organizations overseeing international transport emissions will raise their level of commitment in time to come, consistent with what the science requires to address climate change, as the costs and impact for not doing so will be far higher. Therefore, from a life cycle perspective to avoid stranded assets, the port terminals, harbour craft sector¹³ and the international shipping community will need to be clear-eyed about future investments. Work on decarbonising the existing stock and upskill our workforce to seize opportunities from this transition.

9. Our port terminal operators PSA Corporation and Jurong Port Pte Ltd have net-zero targets for 2050 and have been harnessing solar energy to generate green electricity to support the electrification of port equipment. Smart grid systems, complemented by battery energy storage solutions, are developed to address intermittency from renewable sources and to store green harvested energy that serves as buffers during periods of peak power demand.

¹² Whitelisted in Tokyo and Paris MOUs and requalifying for USCG QualShip 21

¹³ Include pilotage and towage services

10. The full electrification of harbour craft is on the horizon to reach net-zero emissions. Prices for batteries have fallen more than 85% since 2011¹⁴ and this is an encouraging trend for us. What we need to work on is to optimise the energy rating and density of the batteries safely to keep them light and compact for ship vessels. I am glad that many companies¹⁵ are taking part actively in these exciting testbeds which MPA will continue to facilitate. Our collective experience in the design of various propulsion configurations and operating profiles for the shipboard systems will provide a reference for us to work with industry to design the charging capacity and locations of shore charging infrastructure along our fairways and channels.

Green Transition for International Shipping

11. Turning to the international shipping sector, carbon emissions are continuing to grow and high energy costs in the short-run are likely to impede green transition efforts. We need to incentivise businesses and consumers to take into consideration the actual cost of using the resources and avoid excessive consumption or waste.

12. I have three suggestions on how the international shipping community can work on the green transition collectively. First, reduce consumption to curb energy-related emissions. Businesses can review their energy consumption within the vessel, and energy used for trips to-and-from the port, identify carbon-and energy-intensive processes, and take steps to change these processes to reduce or avoid emissions. Many more companies are also looking at optimising route planning between ports. Such measures to reduce energy will result in direct fuel savings and business costs for our companies.

13. Second, design new builds to cater for a decarbonised future given their lifespans and raise energy efficiency substantially. With vessels having a multi-decade lifespan, what we invest in this decade will have a bearing on the emissions profile in the next decade and beyond. The move to pivot away from short-term returns and towards the longer game of environmental sustainability will help to avoid stranded assets or legacy lines of production that may eventually be rendered obsolete as the world heads toward a low and zero-carbon economy.

14. Many ocean-going vessels are actively enhancing their energy efficiency for their engines, attaching solar panels, testing out attaching a modern kite, or rotors to capture cross-winds to harness wind energy and reduce fuel consumption. If we do these well, these measures which require some additional upfront investments will have paybacks over the lifespan of the vessel.

15. Third, to use new maritime fuels such as biofuels, green ammonia, methanol and hydrogen. There are still gaps in understanding these fuels for the maritime sector

¹⁴ <https://www.statista.com/statistics/883118/global-lithium-ion-battery-pack-costs/>

¹⁵ MPA and SMI Joint Call for Proposals 2020 on Harbour Craft Electrification

such as the mechanics, training for seafarers and engineers for shipboard engine to combust ammonia safely for instance.

16. An immediate option is biofuels where we have now developed the world's first provisional standard for maritime biofuels and the tests for drop-in biofuels up to B50 have been very reassuring. We will work actively on methanol, ammonia and hydrogen and have formed several industry consortiums to turn these gaps into opportunities, and help our shipping community adopt these fuels as soon as they are commercially viable and available.

17. The SRS is also working with like-minded flag States such as Denmark and various class societies in the mutual recognition of alternative ship designs for vessels equipped with energy efficient technologies. We hope that MPA's cooperation with various flag States will spur shipowners to develop green technologies, retrofit them in our shipyards and deploy them onboard our SRS vessels.

18. At the heart of this transition to green ammonia, methanol and hydrogen, we need more cost-effective options to produce and supply these green fuels.¹⁶ As Singapore has limited access to alternative energy, MPA will work closely with our sister agencies and partners, and our industry to aggregate demand, and look for new fuel sources to add to the vibrancy and resilience of our maritime sector.

Digitalisation

19. The second challenge is on digitalisation. There are encouraging signs for autonomous¹⁷ ships to be powered differently by green fuels, and navigated and steered with higher level of automation. These predictions may come sooner than many would have thought.

20. I had the opportunity to visit Japan with our tripartite partners in September this year. Japan, like Singapore, is facing the issue of low birth rates and has turned this challenge into opportunity – testing several autonomous vessels in their waters.

21. In our waters, MPA has also been supporting the developments and enabling trials for autonomous vessels to take place within our port waters. One of our SRS tug boats, MAJU 510, owned and operated by Keppel Smit Towage, is one of the first in our region that can be operated by joystick control. The tug is fitted with state-of-the-art systems and technologies which fuses data from different sources to conduct risk assessment, make decisions and to automate navigational observations. The tug also

¹⁶ International Renewable Energy Agency (IRENA) *Global Hydrogen Trade to Meet the 1.5°C Climate Goal – Trade Outlook for 2050 and Way Forward Part 1*, p. 97. To supply these green fuels progressively, the production of renewable energy needs to be at least triple from today's 290 gigawatts (GW) per year to more than 1 terawatt (TW) per year by mid 2030s

¹⁷ <https://www.weforum.org/agenda/2018/01/why-the-future-of-shipping-is-looking-green-and-autonomous>

has a digital twin which simulate vessel behaviour in multiple scenarios and is the first vessel globally to receive the ABS Remote Control Navigation Notation and the SRS Smart (Autonomous) Notation.

Enhancing Cyber Resilience

21. Increasing automation and digitalisation of the maritime sector also means that we will increase the surface for potential cyber-attacks. A reported 400 percent increase in maritime cyberattacks in 2020, at the back of a 900 percent increase in attacks targeting operational technology systems in the preceding three years, point to a maritime industry in the crosshairs of malicious cyber actors.¹⁸ Many major shipping lines had their share of cyberattacks in recent years. Our challenge lies in securing our digital domain to ensure a trusted cyberspace for 24/7 real-time operations. Imagine one of your tug boats, where the tug operator's identity is spoofed and one accidentally clicks on a phishing email with voicemail-themed attachment. This was how the cyberattack on a tug boat in the US was done in 2020.

22. This shows that our seafarers and crews will need to be supported with training in cyber hygiene. We will need to work with the global technology teams of shipping companies on threat assessments, threat-hunting and incident responses, particularly as we implement 5G over our southern port waters in a few years' time.

23. In collaboration with MPA, SMI awarded S\$4.77 million to iTrust, the Centre for Research in Cyber Security at the Singapore University of Technology and Design to develop a Maritime Testbed of Shipboard Operational Technology (MariOT) system, in partnership with the American Bureau of Shipping and Singapore Polytechnic's Centre of Excellence in Maritime Safety. To replicate the onboard experience remotely, the MariOT system will take reference of the ship blueprint with key features such as the propulsion, machinery and power system as well as the navigation, cargo management and communication system. This offers a realistic yet effective testing environment without disrupting any actual vessel operations, and serve as a platform to train maritime professionals and students through cyber exercises and drills.

Developing Digital Twins

24. As we develop the cyberspace, we are currently working with our Institutes of Higher Learning to develop a digital twin model for our port and port waters. One can visualise this - digital twins over three layers – the sea surface, the air above and subsea layers, where we aggregate various geospatial data together into visualisation models for real-time operations. For example, we are testing the use of aerial delivery drones for maritime services for cases beyond the visual-line-of-sight such as sending 3D-printed parts for maintenance and testing of bunker samples.

¹⁸ Cooperation on Maritime Cybersecurity. Atlantic Council in-depth research and reports, Oct 2021.

25. Having a digital twin integrated with the layers from sea surface and air will help our start-ups and enterprises optimise the design of drone flight paths, taking into the safety considerations. The digital twin serves as a “living laboratory” for service and solution providers to develop, test and validate new technologies and solutions in real-world setting before implementing them. Such a seamless maritime picture – intertwined with sea surface, air, subsea and cyber domains will drive the digital efforts for our collective future. With 5G coverage over our anchorages, fairways, port terminals, and boarding grounds by 2025, there will be many technology and economic opportunities for our companies and Maritime Singapore.

Key Enabling Factors to Decarbonise and Digitalise

26. You may ask how will MPA and Maritime Singapore enable the decarbonisation and digitalisation efforts? I have met many of you with the MPA team in the past few months and with our tripartite partners, we had a fruitful trip to Japan and I have just returned from the Eisenhower Fellowship to the US where I spent several weeks with the HQs of our US-based companies in the maritime sector, government agencies and the research community on clean energy and hydrogen, and developing our green and digital corridor with the US. Our MPA team is at the UN Climate Change conference in Egypt right now seeking global solutions. As we head overseas, we will also visit the research community and government authorities to address the green and digital challenges, and likewise when we visit your HQs in Europe, Asia and Oceania next year., we will continue to evolve, update our approach and build on our ecosystem. I will summarise our ideas briefly:

27. First, for nascent technologies, we will continue to work with our Institutes of Higher Learning, the global R&D community and your technology and R&D leads to push the boundaries and unlock green growth possibilities. In the US for instance, nanoscientists have demonstrated the use of new catalysts that can convert ammonia into hydrogen fuel at ambient pressure using light energy where this is done usually at high temperatures and pressures. Hydrogen engines for aviation are no longer a distant dream, as companies are developing such engines for deployment in a few years’ time. Engines for new maritime fuels are not far from commercialisation. We will work closely with your R&D teams to support the deployment of new engines and technologies.

28. Second, for maritime solutions and technologies that are near or ready for deployment, we will actively pursue pilots with industry, develop standards and an enabling-regulatory environment, aggregate demand and study enabling infrastructure to improve commercial viability. Precisely because both decarbonisation and digitalisation are multi-year opportunities, our seafarers can participate in SailMAP that is structured as a multi-year programme to incentivise them to upskill so that they possess these specialised skill sets to stay relevant. We will also work with our

engineers, surveyors and the broader maritime community to support this transition. I thank many of you for coming forth with vessels, global expertise and encourage all of you to continue to bring your global experts in sustainability and new maritime fuels, and digital domains to come to Singapore, and work on projects with us.

29. Third, we need to proliferate and scale the deployment of new technologies and solutions which can benefit the regional and global community. When more venture and equity capital, or private financing flows into sustainability and digital projects, marinetech startups and companies, both local and overseas, can help to accelerate deployment and drive new business opportunities. For instance, MPA is engaging financiers to draw their interests to invest in the green technologies for our domestic harbour craft, which will enable our SMEs and shipping companies to electrify their fleets. We are also actively developing a number of green and digital corridors with overseas partners. We have signed such an arrangement with the Port of Rotterdam and just last week, announced that we have begun formal discussions with the Port of Los Angeles and Port of Long Beach which we hope to conclude next year. Several more are in the pipeline. These will help to build institutional capacities strengthening Singapore and the global network, harmonise standards for new fuels, enhance digital and cybersecurity efforts and provide many exciting opportunities for the R&D community and industry. We will also expand such collaboration and efforts in support of the IMO and key maritime institutions.

30. To this end, we have reviewed our Green Ship Programme this year to increase the incentives for vessels running on low- and zero-carbon fuels, with up to 100% reduction in initial registration fees and 100% rebates in annual tonnage taxes for vessels running on zero-carbon fuels such as ammonia. I am heartened to see that 29 ships coming from 17 of our SRS owners have been awarded the Green Ship Programme over the past year, with two from the NYK Group running on Methanol.

31. The SRS is the first ship registry globally to introduce notations for our registered vessels. RightShip, the world's largest maritime due diligence organisation, has recognised the SRS Green Notation¹⁹. Our SRS ships that have been awarded with the Green Notation will have the notation proudly displayed on RightShip's platform. I would like to encourage everyone here to work on registering more green and automated vessels with the SRS. This can be those which can run on dual fuels, those fitted with wind-assisted sails, or those that will use the green maritime fuels, and work with like-minded technology and commercial developers to conduct trials.

Conclusion

32. Ladies and gentlemen, the SRS serves as a core backbone of Maritime Singapore, and MPA will continue to work with you to enhance our pro-enterprise

¹⁹ The SRS Notations were announced at the SRS 55th Anniversary Forum and was launched in November 2021. The SRS was the first ship registry in the world to introduce notations for its vessels and there are 4 categories of the SRS Notations, namely Cyber, Green, Smart and Welfare.

environment to attract ship owners worldwide to register more vessels under the Singapore flag. I encourage all of you to also help us convey to your global Headquarters our strong commitment to work with your teams in Singapore to deepen our partnership and collaboration, and to chart the future together with you, and your global R&D and technology teams for decarbonisation and digitalisation, and have more of your Sustainability and Technology teams based in Singapore.

33. On this note, I would like to congratulate the Evergreen Group for registering the highest nett gross tonnage with the SRS over the past year, and we look forward to growing your fleet further with us.

34. Our shipping sector is a vibrant and forward-looking community. This is why we host the Singapore Registry of Ships Forum so that stakeholders like yourself can gather and to meet in person. Thank you for joining us today, and our SRS partners for your continued support in keeping our SRS flag high. To our overseas guests, enjoy the food in Singapore and fair winds and following seas for your return journey. I wish all of you an invigorating and fruitful session ahead. Thank you.

Translated Terms

Singapore Registry of Ships (SRS)	新加坡船舶登记注册局 Pendaftaran Kapal Singapura
Sail Milestone Achievement Programme (SailMAP)	新加坡海员结业持证奖励计划
SRS Notation	新加坡船舶登记注册标志 Tatatanda Kapal Negara Singapura
SRS “Green” Notation	新加坡船舶登记注册“绿色”标志