



UNLOCKING MARITIME OPPORTUNITIES

02/2017 no.39



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CONTENTS

PAGE
04

SHIP'S LOG
news and happenings
at MPA

PAGE
14

FEATURE
riding the
next big wave

PAGE
20

MARITIME SERVICES
tech for
the future

PAGE
23

PORT & STARBOARD
innovation-based
ecosystems

PAGE
26

PERSONALITY
building
resilience

PAGE
28

PERSONALITY
being
ship smart

PAGE
30

COMPANY SPOTLIGHT
growing with
and in Asia

PAGE
32

TECHNOLOGY
dipping
into AI

PAGE
34

COMMUNITY TALK
leveraging
partnerships

PAGE
38

CAREERS
high-tech
hull cleaning

PAGE
40

THE BACK PAGE
maritime
capital

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Maritime Singapore represents the diverse and vibrant eco-system of Singapore's maritime industry. The industry plays a vital role in global trade, contributing 7% of Singapore's GDP. With over 5,000 maritime establishments and more than 170,000 professionals, a sea of opportunities awaits you at Maritime Singapore.

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Looking into the future

Having a positive outlook can help turn challenges into opportunities. How the maritime industry chooses to face the impending digital revolution is essential to it being future-ready.

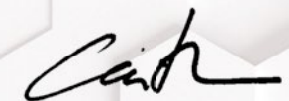
Singapore Maritime Week (SMW) 2017 was a huge success, with a record high of 34 events and close to 42,000 participants. Themed "Navigating Through Challenging Times", this annual platform for the international maritime community, driven by the Maritime and Port Authority of Singapore, addressed critical issues impacting the sector as well as possible solutions. This issue features highlights from the region's leading maritime event, and brings together varied perspectives and insights from industry experts on what goes into developing a future-ready port and maritime ecosystem.

Under the spotlight in our Personality section are Lloyd's Asia Pacific CEO Kent Chaplin and Wallem Group (Singapore) Managing Director Nitin Mathur. Mr Chaplin shares how his company, a leader in marine insurance, is responding to developments in the sector and strategising for the future, while Mr Mathur shares experience and insights from his company's responses to the maritime digital revolution.

This issue will shed light on Thomas Schulte Ship Management Asia's expansion plans in Asia. It will also explore how artificial intelligence and other technological innovations can improve efficiency and accuracy in shipping and port operations from MOL Information Systems' and IBM's viewpoints.

Don't miss The Back Page, where you can pick up some facts and figures, gleaned from the 2017 Leading Maritime Capitals Of The World report conducted by Menon Economics, on what makes Singapore a leading maritime capital.

We hope you will enjoy this issue of *Singapore Nautilus*.



CAITLIN FUA
EXECUTIVE EDITOR



SINGAPORE SCORES GLOBAL TOP SPOT HAT TRICK

Norwegian consultancy firm Menon Economics' third Leading Maritime Capitals Of The World report (Menon Report) named Singapore its overall winner for the third time running, at its launch during Singapore Maritime Week 2017. Notably, the city-state's three-place jump from fifth to second position in the Maritime Technology category affirmed its calculated focus on technology, research and development.

With the Singapore Registry of Ships holding position among the world's five largest ship registries, sustained growth in the Port of Singapore's annual vessel arrival tonnage (2016 saw a 6.3 per cent increase to 2.66 billion gross tonnes), and new companies continually choosing to establish regional headquarters here – more than 140 shipping companies are currently represented – it is no surprise that most industry experts predict the country's strong showing to continue uncontested in the near future.

Mr Andrew Tan, Chief Executive of the Maritime and Port Authority of Singapore (MPA), said, "We are deeply honoured, yet humbled by this recognition from the international maritime industry. This will spur us to work harder to make Maritime Singapore a global maritime hub of choice. We are truly grateful to all our partners and stakeholders for walking with us every step of the way."

Testament to this statement is the upcoming Sea Transport Industry Transformation Map that MPA is driving, with the aim to spur innovation and productivity, and equip the local maritime workforce with value-adding skills; it affirms the Menon Report's finding that most industry experts are convinced that Singapore is among the most prepared and ready maritime capitals for the coming industry-wide digital revolution.

RIGHT, CLOCKWISE FROM TOP Mrs Josephine Teo, then Senior Minister of State, Ministry of Transport, MPA Chairman Mr Niam Chiang Meng (fifth from right), and MPA Chief Executive Mr Andrew Tan (sixth from left) with IMA 2017 winners; Mr Patrick Phoon, Deputy Managing Director of Evergreen Shipping Agency, and Mr Makoto Hashizume, Director, President and CEO of "K" Line Pte Ltd, receiving their awards from guest of honour Mrs Teo.

"K" LINE AND PATRICK PHOON WIN TOP HONOURS AT IMA 2017



The 12th Singapore International Maritime Awards (IMA), which honours industry partners that have made outstanding contributions to Singapore's development as a premier global hub port and a leading international maritime centre, saw 10 winners selected from over 100 nominations. "K" Line Pte Ltd received the International Maritime Centre (Corporate) Award, while the International Maritime Centre (Individual) Award went to industry veteran Mr Patrick Phoon.

Kawasaki Kisen Kaisha ("K" Line)'s shipping operations in Singapore span container transportation, bulk carrier, car carrier and tanker operations. Since the establishment of its Singapore office ("K" Line Pte Ltd) in 2001, it has demonstrated commitment to

developing local manpower. Its local manpower investments include sponsorship of MaritimeONE scholarships and the opening up of overseas attachment opportunities to promising local staff.

Mr Phoon's shipping career has spanned over 40 years and various sectors. As the Singapore Shipping Association's (SSA) longest-serving Council member (24 years; the last four as President), he contributed to the SSA's identification of the finance and insurance sectors as keys to Singapore's development as a leading international maritime centre. He was also instrumental in the establishment of the Singapore War Risks Mutual, which helps safeguard Singapore's and shipowners' strategic maritime interests.

MPA SIGNS FIVE MOUS AT THE SINGAPORE MARITIME TECHNOLOGY CONFERENCE (SMTC)

On April 27, during the SMTC, held from April 26 to 28, the Maritime and Port Authority of Singapore (MPA) signed five Memorandums of Understanding (MOUs) as part of its efforts to drive research, innovation, and the adoption of emerging technologies to enhance information flow and connectivity within the maritime industry.

Said Mr Andrew Tan, MPA's Chief Executive, "These MOUs are in line with our efforts to take the maritime sector into its next stage of development, where data analytics, intelligent systems, and the Internet of Things will open up new opportunities for our port operators, Singapore-based companies, and research institutions to develop innovative solutions. We believe the time is ripe to leverage new technologies to ensure Maritime Singapore stays ahead of the curve as a world-class port and international maritime centre."

The MOUs inked were for: an Extension of the MPA-PSA Port Technology Research and Development Programme, with PSA; a Next-Generation Multipurpose Port Programme, with Jurong Port; Maritime R&D and Innovation, with ST Electronics; Maritime Technologies R&D, with Lloyd's Register; and the joint establishment of a Centre of Innovation as well as the undertaking of collaborative research, with Alpha Ori, Lloyd's Register, and the NUS Technology Centre for Offshore and Marine Singapore.



RECORD-BREAKING NUMBERS AT MPA GLOBAL INTERNSHIP AWARD 2017



The Maritime and Port Authority of Singapore (MPA) Global Internship Awards (GIA) was launched in 2013 to provide final-year local undergraduates with both local and overseas internship opportunities in maritime companies, so that they can gain practical insights into the global maritime industry. The 2014 ceremony saw 23 recipients, and numbers have increased every year – this current batch of 39 recipients and 27 participating companies marks a new high.

The MPA GIA programme has been receiving steady support from companies in various industry sectors, including shipping, technical management, shipbroking, offshore, finance and marine

insurance, since its launch. The Shipowners' P&I Club, for example, appreciates the opportunity to assess interns' aptitude and attitude, said Ms Jasna Chua, its office manager. "We have been impressed by the calibre of our interns over the years and are delighted to continue partnering MPA on this excellent programme to groom and nurture local talents with strong interests in the maritime industry."

Mr Andrew Tan, MPA's Chief Executive, commented that "the strong interest in this year's GIA shows that despite the current challenges facing the industry, the maritime sector continues to [successfully] invest in future talent".

LEFT Mrs Josephine Teo, then Senior Minister of State, Ministry of Transport, was the guest of honour and an observer at the signing of the five MOUs.

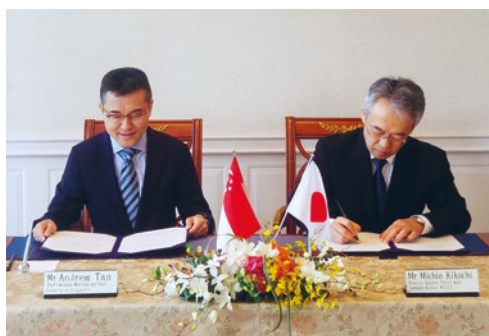
ABOVE Award recipients, representatives of participating companies, and Sea Transport Sectoral Tripartite Committee members at the MPA GIA presentation ceremony.

MPA INKS MOC WITH JAPAN'S PORTS AND HARBOURS BUREAU

To enhance the already significant level of cooperation, information exchange and partnership between Singapore and Japan, the Maritime and Port Authority of Singapore (MPA) and the Ports and Harbours Bureau of Japan's Ministry of Land, Infrastructure, Transport and Tourism (MLIT) signed a Memorandum of Cooperation (MOC) on April 3.

Mr Michio Kikuchi, Director-General of the Ports and Harbours Bureau, MLIT, said, "The situation surrounding port sectors is dramatically changing. For the Asian region to develop, it is very important that Japan and Singapore address common issues in a collaborative manner. Based on this MOC, we are striving to forge a closer partnership with MPA to contribute to the sustainable development of ports in Japan and Singapore."

MPA Chief Executive Mr Andrew Tan said, "The signing of the MOC is timely given the changes taking place in the maritime sector with the advent of new technologies, the rise of the digital economy, and shifts in world trade. New activities envisaged under the MOC include... collaboration between port operators and entities such as research institutes. We also look forward to working with leading ports such as Yokohama to promote LNG bunkering in the region."



ABOVE Mr Andrew Tan and Mr Michio Kikuchi signing the MOC that will enhance Japan-Singapore cooperation.

RIGHT, FROM TOP SLNG and MPA staff celebrating the launch of Singapore's first LNG Truck Loading Facility; an aerial view of the newly launched LNG Truck Loading Facility.

SINGAPORE'S FIRST LNG TRUCK LOADING FACILITY READY FOR OPERATIONS



Singapore LNG Corporation Pte Ltd (SLNG) and the Maritime and Port Authority of Singapore (MPA) jointly launched Singapore's first Liquefied Natural Gas (LNG) Truck Loading Facility at a ceremony on April 12, at the SLNG Terminal. Officiated by Mr John Ng, CEO of SLNG, and Mr Andrew Tan, Chief Executive of MPA, the launch marks the facility's operational readiness.

Mr Tan said, "As the world's leading bunkering hub, we need to ensure that we cater to the future energy needs of the global shipping industry by providing cleaner, alternative sources of fuel. While it may take time for LNG to take off as a marine fuel

globally, we have taken steps to kick-start LNG bunkering in Singapore."

Located within Jurong Island's SLNG Terminal, the single-bay facility is an important first step towards developing the LNG trucking business in Singapore, which also helps to facilitate truck-to-ship LNG bunkering. The facility allows small quantities of LNG to be transported overland to just about any location where it may be needed. Mr Ng said, "While it is still too early to tell how fast or how far [LNG-related businesses] will grow, the prospects look good. ...The SLNG Terminal's design master plan provides for at least another four truck-loading bays to be built."

NEW APPRENTICESHIP SCHEME FOR JOBSEEKERS

Developed by the Tripartite Maritime Manpower Taskforce for Seafaring, the Maritime Apprenticeship Scheme puts jobseekers on a three-day foundational maritime training course and a month-long shipboard work trial with local harbour craft employers, allowing them to pick up vocational skills and gain insights into what a seafaring career entails. It also provides their potential employers opportunities to assess their aptitudes and attitudes, allowing both sides to make informed decisions and ensuring a better job fit should formal long-term employment follow.

Announced on April 27 at the graduation ceremony for the Certificate of Competency Class 5 (Special Limit) programmes, the new apprenticeship scheme will train up to 50 candidates a year, with monthly training costs as well as an allowance, of up to S\$2,600 per trainee for Singaporeans, and up to S\$1,940 for Permanent Residents. The familiarisation course will be conducted by ST Electronics (Training & Simulation Systems).

LAUNCH OF SINGAPORE'S FIRST STANDARD FOR LNG BUNKERING

Singapore's first Technical Reference (TR) for Liquefied Natural Gas (LNG) Bunkering, TR 56, was launched on April 28 by the Maritime and Port Authority of Singapore (MPA), SPRING Singapore and the Standards Development Organisation @ Singapore Chemical Industry Council (SDO@SCIC).

MPA's pilot LNG bunkering programme, which commenced early this year, utilises TR 56 in guiding the implementation of operational protocols by licensed bunkering suppliers. Captain M Segar, MPA's Assistant Chief Executive (Operations), said, "While it may take time for LNG to take off as a marine fuel globally, we have taken steps to kick-start LNG bunkering in Singapore.

...[TR 56] will ensure Pavilion Gas and Fuel LNG, MPA's two appointed LNG bunker supplier licensees, conduct bunkering operations of high quality with regards to safety as well as quantity and quality assurance."

Singapore's ascension to the world's top bunkering port has been supported over the past 30 years by a strong quality and standards ecosystem, and tools such as standards and accreditation schemes being built into the country's regulations. The Singapore Government has been working closely with industry players to advance development in this area, as a robust LNG bunkering sector will also unlock new business opportunities in related services, such as LNG trading and storage.

DENMARK, NORWAY AND SINGAPORE SIGN MOU ON USE OF E-CERTIFICATES



On April 24, the Danish Maritime Authority (DMA), the Maritime and Port Authority of Singapore (MPA), and the Norwegian Maritime Authority (NMA) signed a Memorandum of Understanding (MOU) to promote the adoption of E-Certificates (E-Certs) for the shipping community. It is believed to be the world's first MOU between maritime authorities of European nations and an Asian country that promotes the acceptance and use of E-Certs over the hard copies relied on by the shipping community today. Stakeholders such as flag administrations, classification societies, seafarers and shipowners currently incur considerable manpower and financial costs in preparing, printing and delivering hard-copy certificates.

HE Tormod C. Endresen, Norwegian Ambassador to Singapore, said, "The time is now ripe to pursue the rewards that can be realised by the prospects of extending the use of, and capitalising on, the information technology in the maritime shipping industry."

Mr Andreas Nordseth, Director General of the DMA, said, "The reduction of paperwork benefits all stakeholders, as it makes the entire maritime sector more efficient. We hold high hopes that this Memorandum of Understanding will encourage many countries to complete a similar transition."

The success of E-Certs is contingent on its acceptance by the global maritime community. Singapore, Denmark and Norway are optimistic that their use is a game changer that will become the norm in the near future.

ABOVE (From left) Mr Andreas Nordseth, MPA Chief Executive Mr Andrew Tan, and HE Tormod C. Endresen at the signing of the MOU to promote the adoption of E-Certs.

SINGAPORE MARITIME GALLERY GETS A FACELIFT



The Singapore Maritime Gallery, which had just undergone an impressive refresh, was officially reopened on April 17 by Mrs Josephine Teo, then Senior Minister of State, Ministry of Transport.

MINISTRY OF FOREIGN AFFAIRS' (MFA) PROGRAMME FOR FOREIGN DIPLOMATS



On May 16, the Maritime and Port Authority of Singapore (MPA) hosted a group of visiting foreign diplomats at the newly refreshed Singapore Maritime Gallery under MFA's Programme for Foreign Diplomats. The delegates were here to gain insights into the workings of the Port of Singapore.

LAUNCH OF SMART PORT CHALLENGE



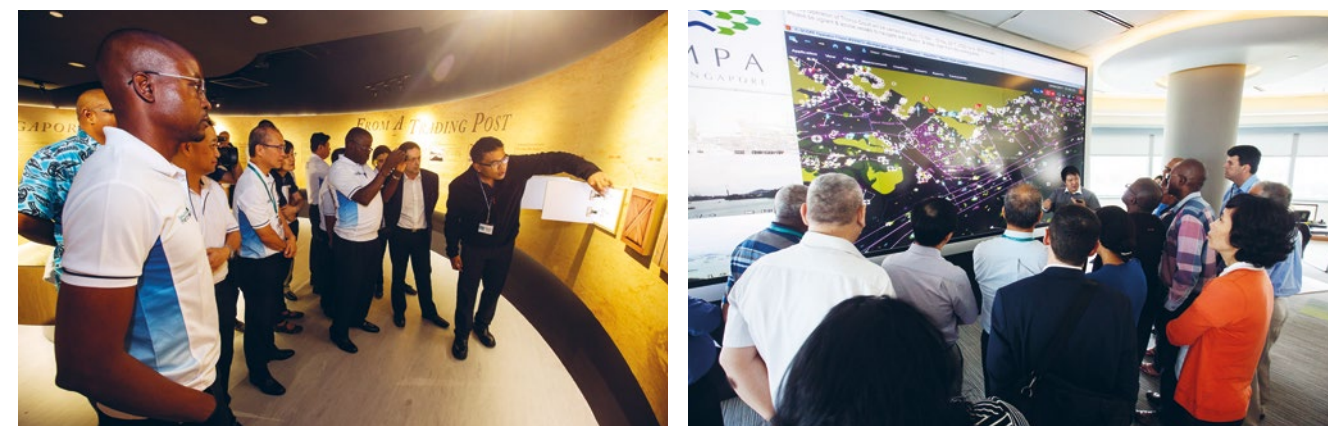
MPA launched the six-month Smart Port Challenge on June 5 with a view to boost collaboration between organisations and start-ups, and drive innovation, digital transformation, and the development of new solutions to challenges in the maritime industry.

MPA'S 3RD INTERNATIONAL MARITIME CENTRE (IMC) 2030 MEETING



In line with its purpose to review Singapore's developmental strategy to enhance the city-state's long-term competitiveness and value proposition as an International Maritime Centre, the IMC 2030 Advisory Committee convened for the third time on May 12.

2ND ADVANCED MARITIME LEADERS' PROGRAMME (AMLPL)



The second edition of the AMLP, designed to facilitate higher-level peer-to-peer sharing, learning and networking among senior maritime leaders, with a focus on transformational leadership, was run from April 20 to 25 at the MPA Academy.

SMW 2017

Driven by the Maritime and Port Authority of Singapore (MPA), the 12th Singapore Maritime Week (SMW), held from April 22 to 28, saw close to 42,000 public participants and members of the international maritime community attending the region's biggest maritime event. Themed "Navigating Through Challenging Times", this year's exciting lineup ranged from exhibitions and conferences to social activities and outreach initiatives. *Singapore Nautilus* brings you some of the highlights.



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PEOPLE

SMW LAUNCH AND EXHIBITION



Mrs Josephine Teo, then Senior Minister of State, Ministry of Transport, officially opened SMW 2017, MPA's flagship event, on April 23. The launch was held at Marina Square, the site of the week-long SMW 2017 Exhibition, We Are Maritime Singapore. Open to the public, the exhibition aimed to give the general public insights into the lives of the people working to build a vital, versatile and resilient Maritime Singapore.

SMW MPA LEARNING JOURNEYS



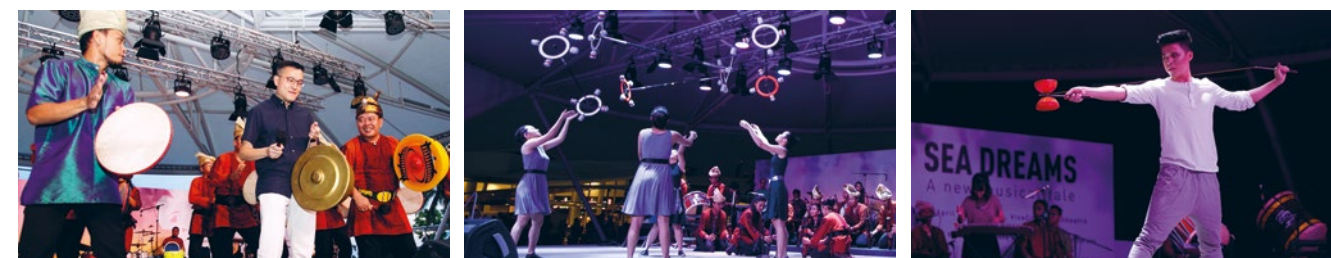
To raise awareness of the maritime industry, SMW MPA Learning Journeys participants were taken on guided tours of various historical landmarks and modern maritime facilities, including the Raffles Lighthouse, the Integrated Simulation Centre, the Port Operations Control Centre, and the Singapore Maritime Gallery.

AMAZING MARITIME CHALLENGE 2017



This year's Amazing Maritime Challenge, held on April 23, saw teams racing to complete four fun challenges – and three optional bonus challenges – that gave them insights into Maritime Singapore while testing them physically and mentally. Winning teams were rewarded with attractive cash prizes.

SEA DREAMS CONCERT



SMW's first arts event, Sea Dreams, was an exciting public concert that fused dramatic rhythms with elements of musical theatre and circus arts in telling the story of a young woman with maritime aspirations who hears the call of the sea. It was held at the VivoCity Amphitheatre on April 22 and 23.

4TH CERTIFICATE OF COMPETENCY (COC) GRADUATION CEREMONY



On April 27, the latest graduates from the CoC (Special Limit) Officer and Tug Master training programmes received their certificates from Mr Andrew Tan, Chief Executive of MPA.

INTERNATIONAL SPORTSWEK FOR SEAFARERS



To promote goodwill and sportsmanship among seafarers of different nationalities, cultures and backgrounds, seafarers from across the shipping community came together to participate in various fun sporting events from April 24 to 27.

IDEAS

10TH INTERNATIONAL CHEMICAL AND OIL POLLUTION CONFERENCE & EXHIBITION (ICOPCE)



The 10th biennial ICOPCE, organised by MPA from April 25 to 28, saw over 200 maritime-industry professionals gathering to network, and discuss preparedness and response strategies for oil and chemical spills, hazardous cargo operations, and more. It also featured keynote speeches by veteran industry professionals.

CHEMSPILL EXERCISE 2017



Simulating a collision between a chemical tanker and a bunker barge off Raffles Reserved Anchorage, this year's multi-agency Chemspill exercise tested and demonstrated Singapore's readiness to tackle oil and chemical spills. The tabletop and seaward exercises involved 150 personnel from 25 agencies.

11TH SINGAPORE MARITIME LECTURE



Close to 400 senior maritime professionals gathered for the 11th edition of the annual Singapore Maritime Lecture on April 24 to glean and share insights into the key drivers of today's logistics industry. Dr Detlef Trefzger, CEO of Kuehne + Nagel International AG, delivered the keynote address.

OPPORTUNITIES

SINGAPORE MARITIME TECHNOLOGY CONFERENCE (SMTC) 2017



Held in conjunction with SMW from April 26 to 28 at Marina Bay Sands, Singapore, this year's edition of the biennial SMTC saw more than 500 participants from over 20 countries coming together to learn more about and discuss the digital revolution in the maritime industry.

OPENING OF SEA ASIA 2017



Sea Asia 2017, Asia's premier maritime and offshore conference and exhibition, was launched on April 25 at Marina Bay Sands, Singapore, and ran till April 27. The next edition, co-organised by Seatrade and the Singapore Maritime Foundation, and supported by MPA, will be held from April 9 to 11, 2019.

Themed "Navigating Through Challenging Times", Singapore Maritime Week (SMW) 2017, held from April 22 to 28, provided a platform for the international maritime community to come together to think of how it can address critical issues impacting the maritime industry and turn the challenges it faces into opportunities. Now into its 12th year, SMW featured a record number of 34 events this year, comprising 20 business forums, eight networking receptions, and six community outreach programmes.

Spearheaded by the Maritime and Port Authority of Singapore (MPA), this year's SMW drew close to 42,000 people, including maritime thought leaders who networked and exchanged knowledge on ways to prepare the industry for the future, as well as members of the public who gained better insights into the inner workings of the maritime industry.

Andrew Tan, Chief Executive of MPA, said: "Given fundamental shifts in the economy and technological advances that are transforming the maritime industry at an unprecedented pace, the future is in the hands of those who can tap the opportunities presented by rapid industry developments. SMW 2017 brings to the table in-depth insights that allow participants to sharpen their understanding of the dynamic maritime landscape, which in turn equips them with readiness and in-depth knowledge with which to navigate these challenging times."

riding the next big wave

Sol E Solomon reports on the highlights of the 12th edition of Singapore Maritime Week, which saw the international maritime community converge in Singapore for a week of dialogues, exhibitions and conferences

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LEVERAGING TECHNOLOGY

This sentiment was echoed by Dr Detlef Trefzger, Chief Executive Officer of global freight forwarding and logistics giant Kuehne + Nagel International AG, in his keynote address on the logistics industry during the 11th Singapore Maritime Lecture. An anchor event of SMW, the lecture was attended by about 400 senior maritime representatives.

Dr Trefzger, who is also a member of the International Maritime Centre (IMC) 2030 Advisory Committee, which charts the future of Singapore as an IMC, said that end consumers' ever-changing needs will be a key driver of all activities in the value chain. Their current expectation of same- or next-day delivery has fundamentally changed how activities in the supply chain, from production to consumption, are designed and executed.

Dr Trefzger said that as with other industries, the logistics industry is increasingly being influenced by technology, data, and predictive analytics, which increase capacity and productivity. This means that future success depends on mastering these digital tools, to provide better information and enable the industry to make the right decisions. He also pointed out that although the recent wave of consolidation among container shipping lines has brought about fundamental changes in the carrier landscape, there are still opportunities for transformation, especially through digitalisation.

Digitalisation also featured prominently at the biennial Sea Asia Exhibition and Conference, another SMW flagship event. Speaking at its opening, Mr Khaw Boon Wan, Singapore's Coordinating Minister for Infrastructure and Minister for Transport, noted that the maritime landscape is changing rapidly. He said: "Digitalisation is disrupting and transforming global transportation and supply chains. No one can predict exactly how these developments will pan out, or what the future will look like. What is certain is that we will have to change the way we think about connectivity and transport."

Minister Khaw outlined how Maritime Singapore is riding on the industry's transformation, and encouraged stakeholders to come together to think about how it can stay relevant and continue to grow. He added: "Periods of change and disruption are fraught with risks and challenges. But they are also periods of renewal and rejuvenation. They herald new opportunities for new players, and also for incumbents who are nimble and flexible enough to adapt."

This year's Singapore Maritime Institute (SMI) Seminar, organised in conjunction with SMW 2017, focused on the impact that augmented reality and artificial intelligence (AI) may have on the maritime industry, as well as the challenges, and research and development (R&D) opportunities they bring. Speaking at the event, Wong Weng Sun, Chairman of the SMI Board and Governing Council, highlighted the importance of R&D and technology in enabling a future-ready maritime industry. He added: "Beyond embracing these technologies, new mindsets and global partnerships in R&D are essential, to innovate and create more value for the maritime industry."

Agreeing, Alvin Foo, Vice-President of Singapore Terminals 2 Engineering at port operator PSA Corporation, shared during the SMI Seminar that PSA has been looking into leveraging smart systems and AI to optimise its processes. It has also been examining the potential impact of AI on its workforce by helping each worker identify his or her skills and capabilities, and looking at how to redesign job functions to meet future demands and challenges.

Held in conjunction with SMW 2017, the biennial Singapore Maritime Technology Conference (SMTC) featured prominent maritime

and port industry trends as well as technological developments from 14 countries. Attended by more than 500 participants from over 20 countries, the presentations during SMTC focused on the maritime digital revolution, innovation in smart ships and ports, green shipping, and cyber security.

To ride on the digitalisation wave, MPA also inked five Memorandums of Understanding (MOUs) with local and international partners at SMTC. These partners include port operators PSA and Jurong Port, and classification society Lloyd's Register. The MOUs will help to catalyse research and innovation, as well as pilot the adoption of emerging technologies, and enhance information flow and connectivity in the maritime community.

MPA's Tan said: "These MOUs are in line with our efforts to take the maritime sector into its next stage of development, where data analytics, intelligent systems, and the Internet of Things will open up new opportunities for our port operators such as PSA and Jurong Port, and Singapore-based companies and research institutions to develop innovative solutions. We believe the time is ripe to leverage new technologies to ensure Maritime Singapore stays ahead of the curve as a world-class port and International Maritime Centre."

FUTURE-READY WORKFORCE

Amid the move to digitalise the maritime industry, maritime thought leaders attending SMW 2017 also emphasised the need for greater recognition of the industry's human element and for more effort to be invested in human capital to ready the maritime workforce for its digital transformation.

In his opening address at Sea Asia 2017, Minister Khaw pointed out that the jobs of tomorrow will be markedly different from those of today. "They will be more knowledge-intensive, and require new skill sets and mindsets. But what exactly will the jobs of tomorrow look like? How different will they be? I doubt we can go into specifics, but we can go back to basics and ensure that the next generation is flexible, nimble, and resilient," he said.

Panellists at the Sea Asia Global Forum also noted the need to provide an enabling environment that will allow the maritime workforce to learn and be comfortable with the idea of digitalisation in the industry. One of the panellists, Piyush Gupta, who is Chief Executive Officer of leading financial services group DBS Group, argued the need to change people's mindsets and make them feel confident about working with the changes taking place within the maritime industry.

During the Singapore Maritime Lecture, Dr Trefzger also stressed that people remain at the heart of the logistics business despite technological advancements. "Our logistics system cannot work without people," he said, adding that job scopes will change as the adoption of technology intensifies and there is a shift towards knowledge-based activities. For instance, a forwarder will have to transform into an "e-warder", equipped with know-how and experience in predictive analytics, as well as expertise in data-driven supply chain management.

To help Singapore's workforce access opportunities within the maritime industry, MPA launched two manpower initiatives during SMW 2017. The first: the Maritime Apprenticeship Scheme, which matches jobseekers with potential employers. The scheme was launched by MPA, e2i (the Employment and Employability Institute), the Singapore Organisation of Seamen, and Workforce Singapore at the graduation ceremony for the Certificate of Competency (CoC) (Special Limit) and Port Limit Tug Master programmes.





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22 - 28 April 2017
Marina Square

Under this scheme, jobseekers will be placed on month-long shipboard work trials with local harbour craft employers. They will also undergo a three-day foundational maritime training course to get familiarised with basic shipboard safety and seamanship. Upon completing a trial, a suitable candidate may be offered a job with the company he or she interned with and undergo further training to become a steersman, an engine driver, a tug master, or even a CoC (Special Limit) officer, which would allow him or her to work on board ships operating up to 30 nautical miles off Singapore waters.

The other initiative, announced at the Singapore International Maritime Awards 2017, is the Skills Framework for Sea Transport. It provides an overview of the career development pathways and skills required for 48 different jobs in the sea transport sector, as well as information on trends in the sector so prospective and existing workers can upgrade their skills and prepare for their desired jobs. This is jointly developed by MPA, SkillsFuture Singapore, and Workforce Singapore, in consultation with industry stakeholders.

COMMUNITY OUTREACH

To generate awareness and interest in the maritime sector, which would help in building a maritime workforce for the future, SMW 2017

also featured various public outreach activities. These include the SMW 2017 Exhibition, which highlighted the capabilities of Singapore's ports as well as its marine engineering and maritime services sectors via on-site simulators and interactive panels. Titled "We Are Maritime Singapore", the exhibition comprised four interactive zones showcasing everything maritime, from the different vocations in the industry to new and emerging maritime technology.

Close to 1,200 participants, in teams of two, competed in the Amazing Maritime Challenge 2017. The teams took part in a series of maritime-themed challenges at various locations around Singapore. Those with the highest scores won cash prizes ranging from S\$750 to S\$2,000.

The Sea Dreams musical also made its debut during SMW 2017, kicking off the week of activities. Held at VivoCity's rooftop amphitheatre, Sea Dreams fused storytelling elements and circus arts, as well as rhythms and beats from South-east Asia, to narrate the story of a young girl's journey to achieve her maritime aspirations. The concert was watched by a total of 1,400 people over SMW's opening weekend.

Throughout the month of April, MPA also conducted SMW MPA Learning Journeys, which gave members of the public opportunities to learn the story behind Singapore's progress in the maritime industry via guided tours of maritime facilities, some of which, such as the Raffles Lighthouse on Pulau Satumu, are not usually accessible to the public. MPA also partnered marine services company Swire Pacific Offshore to provide a special edition of SMW MPA Learning Journeys to ITE students of the Swire Marine Training Centre.

During SMW 2017, Singapore scored a hat trick when it was once again named the top maritime capital of the world in The Leading Maritime Capitals Of The World 2017, an annual report put out by Norwegian consultancy firm Menon Economics. The study, developed by Menon Economics, looked at 24 indicators and garnered survey responses from more than 250 industry experts globally.

Singapore previously clinched top position in the 2012 and 2015 editions of the report. This year, the country ranked first in three categories as well: Shipping, Ports and Logistics, and Attractiveness and Competitiveness.

"GIVEN FUNDAMENTAL SHIFTS IN THE ECONOMY AND TECHNOLOGICAL ADVANCES THAT ARE TRANSFORMING THE MARITIME INDUSTRY AT AN UNPRECEDENTED PACE, THE FUTURE IS IN THE HANDS OF THOSE WHO CAN TAP THE OPPORTUNITIES PRESENTED BY RAPID INDUSTRY DEVELOPMENTS."

ANDREW TAN, CHIEF EXECUTIVE OF MPA

Current challenges in the maritime industry put economic pressures on ports to find economies of scale, and generate new services and revenue sources. Technology plays a significant role in addressing these challenges. So as smart, next-generation ports and shippers get more efficient, responsive and proactive, they'll rely heavily on digitisation and automation.

IBM is one of the technology providers working on innovative research projects with key players in the global maritime industry. Its collaboration with the Maritime and Port Authority of Singapore (MPA) to research, conceptualise, design, develop, and live test the Project SAFER system demonstrates how advanced cognitive analytics can dramatically improve operations and reduce costs. Cognitive analytics refer to the various analytical strategies that are used to learn about certain types of business-related functions.

SAFER comprises sense-making and predictive

technologies that improve efficiency in maritime event response. These enhance and augment the ability of MPA operators to understand and respond to events in Singapore waters – from uncovering infringements to automatically identifying vessel movements and validating the service level quality of maritime service providers.

According to Robert Morris, Vice-President of Global Laboratories at IBM Research, this automated machine-learning-based system frees human operators from tasks that the system can effectively and accurately perform, allowing the latter to focus instead on important things concerning the safety of Singapore's port.

"MPA-IBM Project SAFER demonstrates that many advanced technologies such as big data and data analytics can be applied in existing port operations and business processes to deliver transformative improvements in efficiency," Morris says.

Some modules of the SAFER system were deployed as part of the live trial in the first half of this year and the remaining components will be launched over the second half.

SECURE SHARING

In another collaboration, IBM and Maersk are working on a global trade digitisation system to improve the global supply chain. Built within a robust technology environment, it provides security, confidentiality, auditability, reliability, and scalability. This system leverages the blockchain technology for sharing events, messages, and documents across all participants and systems, with detailed information only visible to owners and parties as necessary. This information is shared selectively on a need-to-know basis across the ecosystem.

Blockchain is an emerging technology that enables trusted networks between known

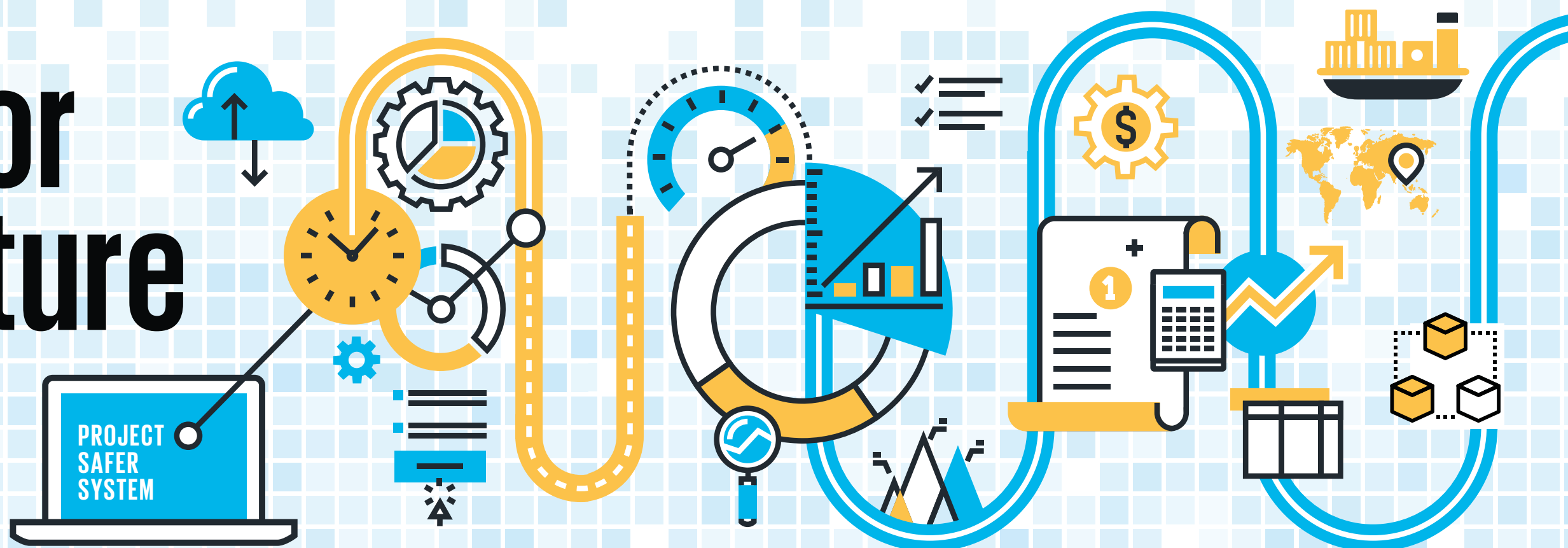
participants who have been given the proper permissions. This ensures that data and transactions are protected and consistent. Morris explains that trust in this design pattern is supported by it having an open-source, openly governed ledger – in IBM's case, Hyperledger – that allows for governing transparency.

In the maritime industry, blockchain can be used by shipping lines, port authorities, freight forwarders, logistics services providers, and government authorities such as customs. They can share information about trade transactions, carry out financing operations, coordinate logistics operations (as they are kept aware of a large variety of shipping events), and manage documents such as letters of credit, bills of lading, port manifests, and customs clearance documents.

Shippers can thus reduce trade documentation and processing costs, and eliminate delays associated with errors in the physical movement

tech for the future

Sol E Solomon finds out how IBM collaborates with industry stakeholders to propel ports and shippers into an increasingly digital future



of paperwork. Customs authorities get real-time visibility into shipments, which helps increase safety and security, and efficiency in border inspection clearance procedures.

"The maritime industry is beginning to use blockchain to improve the digitisation of decades-old practices and document workflows. Our project will transform the shipping industry by increasing trust, reducing fraud and waste, and offering massive cost-savings potential," says Morris.

"OUR PROJECT WILL TRANSFORM THE SHIPPING INDUSTRY BY INCREASING TRUST, REDUCING FRAUD AND WASTE, AND OFFERING MASSIVE COST-SAVINGS POTENTIAL."

ROBERT MORRIS, VICE-PRESIDENT OF GLOBAL LABORATORIES AT IBM RESEARCH

BLOCKCHAIN INNOVATION

IBM has also announced a new project to test blockchain for international trade and logistics. The IBM Center for Blockchain Innovation (ICBI) is its first blockchain innovation centre in Singapore for developing applications based on enterprise blockchain, cyber security, and cognitive computing.

ICBI's first project focuses on trade technologies designed and developed in Singapore that use blockchain to improve the efficiency of multi-party trade finance processes and transactions.

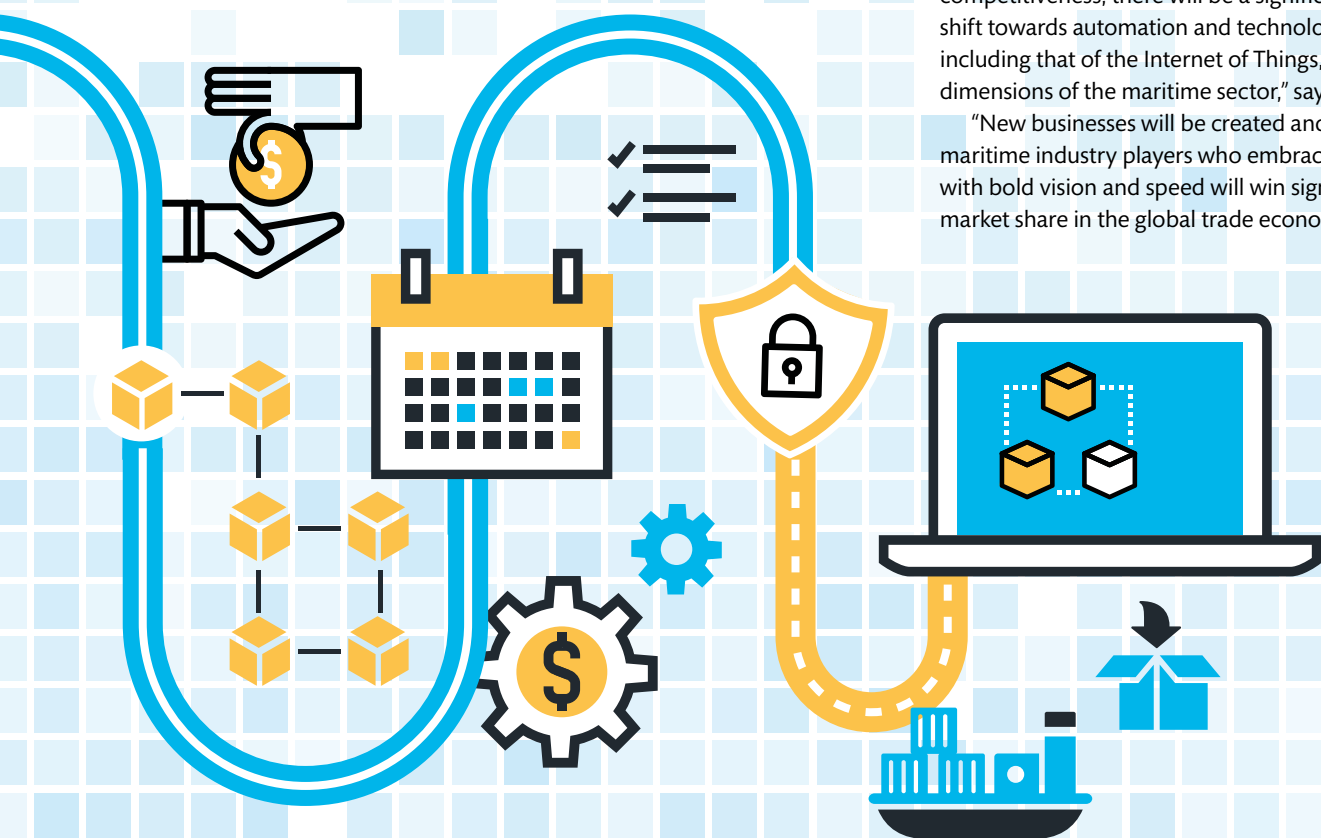
A spokesperson for IBM says that the tech giant will also work with PSA Singapore terminals and others to create a trade ecosystem that connects emerging financial technologies to the physical world of global trade and logistics. This will lead to new business models and attract more global trade and finance to Singapore.

BEING FUTURE-READY

A smart, next-generation port will be more efficient, responsive and proactive.

"To ensure safety, efficiency and competitiveness, there will be a significant shift towards automation and technology use, including that of the Internet of Things, across all dimensions of the maritime sector," says Morris.

"New businesses will be created and the maritime industry players who embrace shifts with bold vision and speed will win significant market share in the global trade economy."



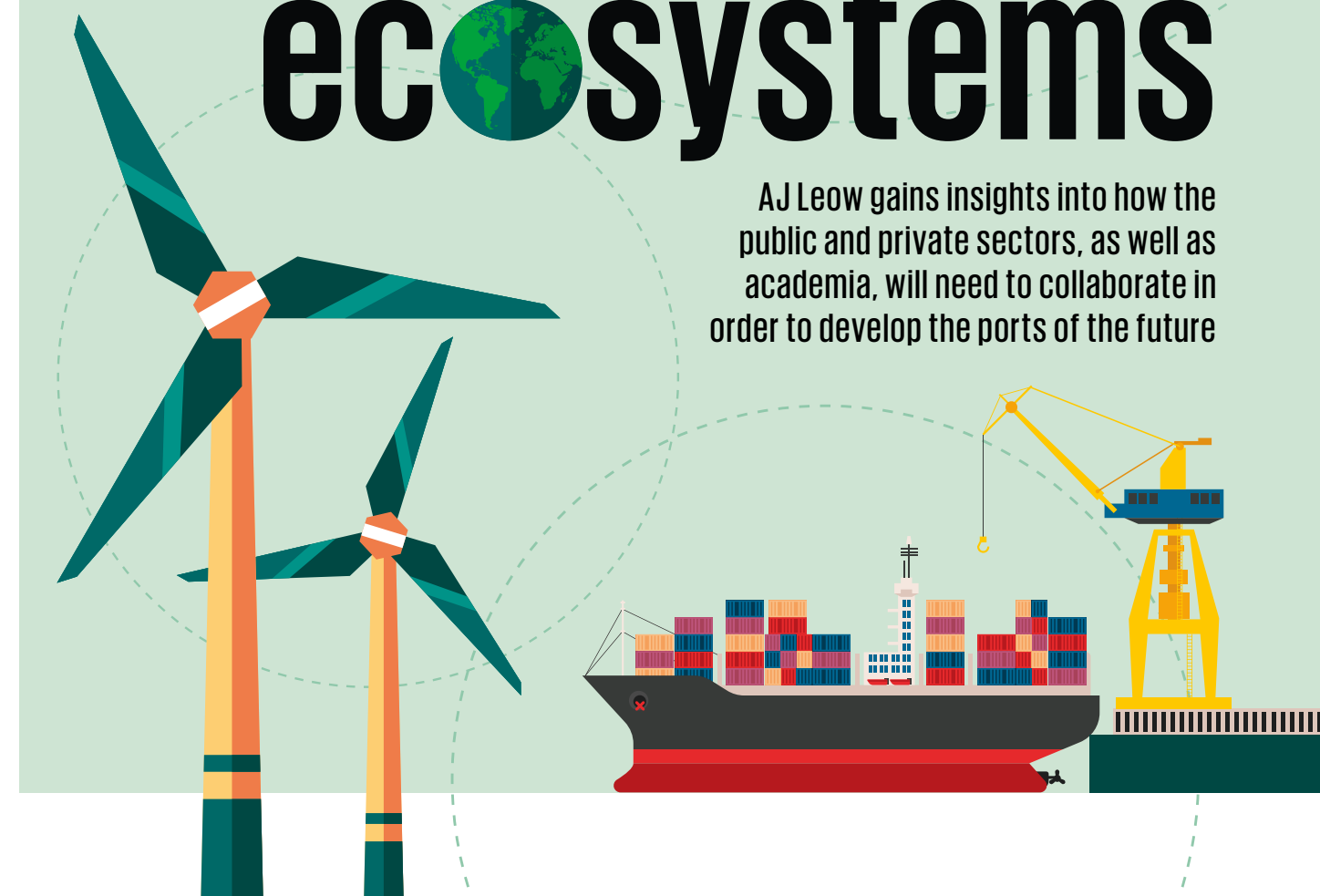
As more than 80 per cent of global trade is transported by ships, ports of the future cannot be developed as standalone projects. This is especially true in the face of rapidly changing and highly disruptive technologies and the growing interface between the Internet of Things (IoT), automation, and global digitalisation under the Fourth Industrial Revolution or Industry 4.0. This is leading to dramatic changes not only in manufacturing and service processes and digital connectivity, but also existing business models. The ports of the future will have to play a leading role in creating not just innovation hubs but entire innovative ecosystems that expand beyond port limits and operations to the larger community.

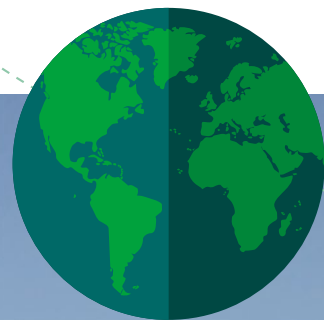
This means that a country's public and private sectors – from port, municipal, and regional authorities, to business associations, investors, and even academic researchers – will have to work closely in collaborative partnerships to ensure and manage a port's quantum leap into the future, noted Marjolein Boer, Innovation Manager at the Port of Rotterdam, who was one of the featured speakers and panellists at the recent Singapore Maritime Technology Conference.

"The Port of Rotterdam is working to create a mentoring network that supports all phases of innovation in the form of an innovation ecosystem – from ideation, to validating with proof of concepts, to acceleration and growth

innovation-based ecosystems

AJ Leow gains insights into how the public and private sectors, as well as academia, will need to collaborate in order to develop the ports of the future





through adoption in the marketplace, to realise the vision of a port of the future. We do this by taking the lead on major trends such as the energy transition and digitalisation, and by facilitating others to innovate with us. We are facilitating greater interaction among various parties – port operators, existing technology suppliers, new innovative start-ups, businesses (including manufacturers), seed and growth funds, and academics – to [encourage them to] innovate together and bring ideas into fruition through a knowledge-driven sharing platform, before scaling these up for market deployment,” says Boer.

One such example, according to Michiel Jak, Managing Director at SmartPort – a collaboration between the Port of Rotterdam, Deltalinqs, the Rotterdam municipality, Erasmus University Rotterdam, and Delft University of Technology – is the ongoing technical trials in truck platooning, a

new technology by which a group of trucks can travel closely together in response to electronic signals from the lead vehicle. This can have economic, environmental and safety benefits.

“It’s experimental at the moment, with three to five trucks per platoon; the aim is for 100 platoons, or 300 to 500 trucks a day, by 2020. As vehicle volume goes up, prices will fall by about \$100,000 (per vehicle), which will attract the attention of truck manufacturers. So it’s not just an experiment or a technology demonstration, but a drive towards making it a business reality – in other words, from ideation to real growth,” says Jak.

Another new initiative is the Rotterdam Additive Manufacturing Lab (RAMLAB), which is spearheading the port’s first steps towards the use of 3-D printing technology. It comprises hardware and software providers, end users, knowledge institutes, and certification bodies. The

goal is to build a complete digital manufacturing infrastructure within three to five years that has the ability to design and produce parts on demand for the maritime and offshore industry.

Tan Wee Meng, Chief Technical Officer, Jurong Port, concurs, adding that ideas and the disparate components of a port ecosystem, as well as external research input, will need to move in lockstep to ensure proof of concept success and commercial viability. “The range of technological possibilities is huge but at the same time requires stakeholder engagement and an understanding of the requirements and the different interests.”

Tay Eng Kng, Vice-President (Container Terminal Engineering) at PSA Corporation, says the key to success for ports of the future will depend on their ability to harness information and technology to enable all stakeholders to achieve win-win outcomes. “The port should have close ties and facilitate trials with research institutions to embrace the latest in advanced technologies that will raise the efficiency, safety, and sustainability of the operational environment,” he said, adding that PSA is already embarking on various initiatives in

the area of data analytics, and various automation technologies, including environmentally friendly battery powered AGVs. “We have two berths dedicated to automation development at our PSA Living Lab; they are set up to operationalise some of these concepts ahead of the commencement of operations at our mega port in Tuas in 2021. The things we are implementing include automated yard cranes, remotely operated quay cranes, platooning technology, and automated pre-emptive maintenance to enhance equipment reliability and raise workforce productivity.”

Tan adds that Jurong Port has made headway in solar power generation – it currently provides some 60 per cent of the port’s energy requirements. Handling of bulk cargo has also improved with the consolidation of common facilities for the cement industry; similar plans are in the pipeline for steel cargo. “We plan to build an ecosystem within or near the port, to reap greater efficiencies through industrial co-location and reducing the travelling time between supply chain nodes.”

While labour dependency will be lowered, Tan notes that a larger technical team will be required to support greater automation and mechanisation, paving new career paths for port workers. One can expect the ports of tomorrow to be hives of activity for robots, and digital and autonomous technology, all integrated and coordinated by intelligent systems that are driven by advanced data analytics, planning, controlling and executing both manned and unmanned operations.

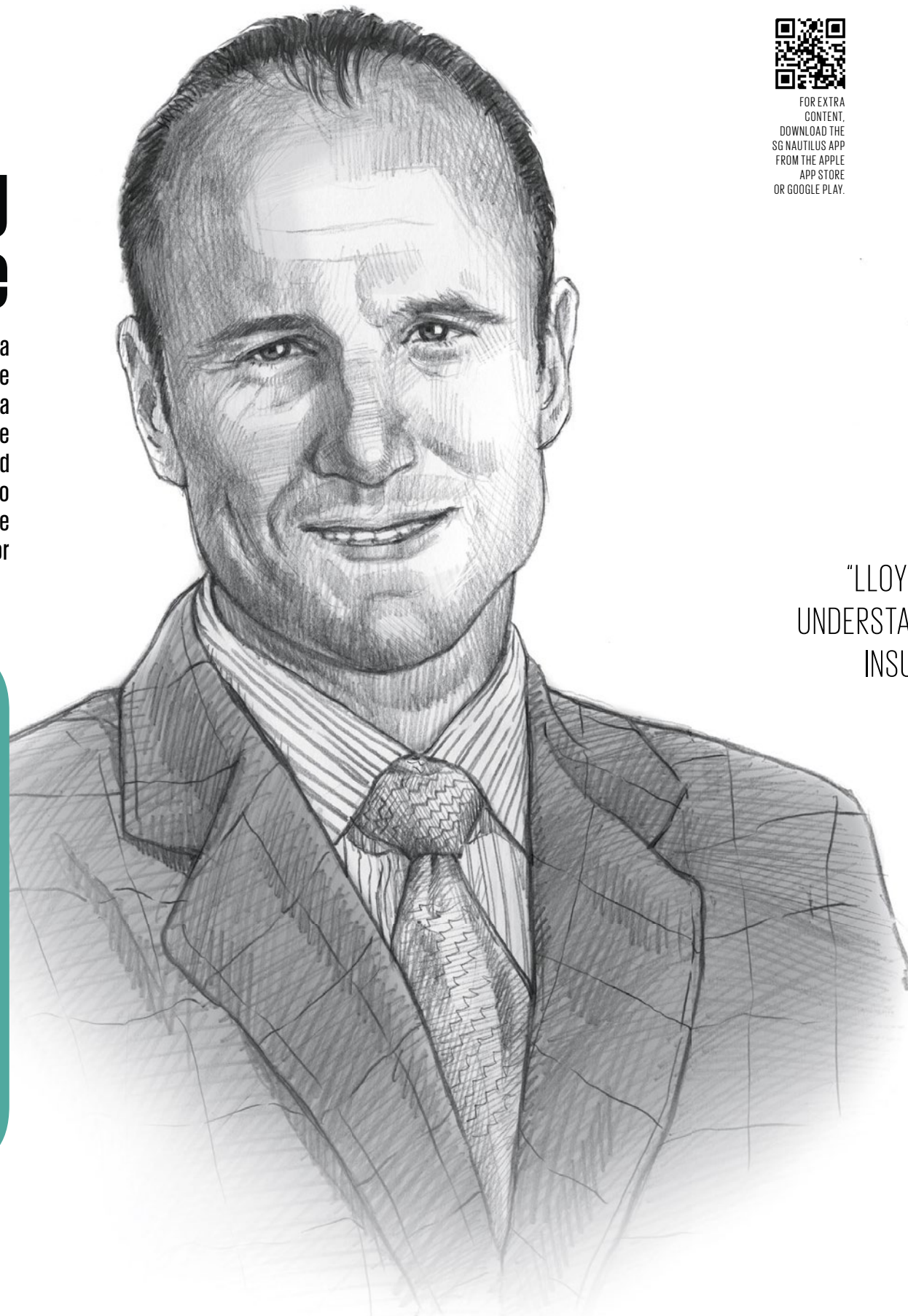
To successfully realise and deploy these ports of the future, involving the entire ecosystem is crucial.



building resilience

Kent Chaplin, Lloyd's Asia Pacific Chief Executive Officer, shares with Audrina Gan the company's future growth strategies and how it is responding to developments within the marine insurance sector

Driven by rapidly growing economies, the non-life insurance industry in Asia-Pacific grew 10 per cent annually over the past decade; this is projected to continue in 2017. Established in Singapore since 1999, British insurance giant Lloyd's of London's Asia platform (Lloyd's Asia) is well positioned to tap growth opportunities here. Today, it is a regional insurance and reinsurance hub; 20 of its 21 service companies write marine and offshore energy classes of business, making it Lloyd's largest hub outside London. Kent Chaplin, Lloyd's Asia Pacific Chief Executive Officer, talks about Lloyd's Asia's growth strategies in the region, as well as future challenges and opportunities within the marine insurance market.



FOR EXTRA CONTENT, DOWNLOAD THE SG NAUTILUS APP FROM THE APPLE APP STORE OR GOOGLE PLAY.

WHAT FACTORS HAVE ENABLED SINGAPORE TO BECOME LLOYD'S LARGEST UNDERWRITING PLATFORM OUTSIDE OF LONDON? HOW CAN THIS MOMENTUM BE MAINTAINED?

Over the past decade, the Lloyd's Asia platform has grown at a compounded annual growth rate of 23 per cent to reach an overall premium base of about S\$800 million in 2016. Lloyd's Asia's annual premium from its marine business has grown steadily to reach almost S\$290 million.

Singapore is a key market for Lloyd's insurance and reinsurance business in Asia. Its insurance industry evolved into a regional (re)insurance hub by lifting its closed-door policy on direct insurers, as well as removing foreign ownership limits in 2000. The Monetary Authority of Singapore envisions Singapore as the leading (re)insurance hub in Asia by 2020, a situation in which local underwriting expertise and authority would enable decisions to be made in, and insurance programmes to be underwritten out of, Singapore.

"LLOYD'S ASIA IS WORKING TO ENHANCE UNDERSTANDING OF RISK MANAGEMENT AND INSURANCE IN THE MARITIME SECTOR."

KENT CHAPLIN, LLOYD'S ASIA PACIFIC CHIEF EXECUTIVE OFFICER

As Asia's cities expand, the volume and value of assets and infrastructure requiring protection also increase. We see significant potential for further development in specialist lines of insurance such as marine, property, power, and construction.

Many industries and business sectors face significant exposures as Asia is more vulnerable to natural catastrophes than any other part of the world, yet there is significant underinsurance in the region. The Lloyd's City Risk Index 2015-2025 study, which analyses the potential impact of 18 man-made and natural threats on the economic output (GDP@Risk) of 301 of the world's major cities, found that cities across Asia-Pacific have a potential S\$2.1 trillion GDP@Risk over the next 10 years. This accounts for almost half of the total global GDP@Risk.

Lloyd's Asia brings an innovative approach, specialist knowledge, and strong financial security to businesses in the region, helping them build greater resilience to the above-mentioned threats.

Lloyd's Asia has specialist underwriters with knowledge of the local risk landscape who can cover a wide breadth of business classes stationed across Asia – local and regional clients will no longer have to look to London for such services.

WHAT ARE LLOYD'S ASIA'S FUTURE STRATEGIES TO ENSURE THE GROWTH OF ITS MARINE INSURANCE BUSINESS IN SINGAPORE AND THE ASIA-PACIFIC REGION?

To supplement our marine insurance business, we provide complementary insurance coverage for the marine industry in areas such as Kidnap & Ransom and Political Risk & Trade Credit risks. In 2015, Lloyd's Asia offered marine risk protection amounting to a sum insured of US\$42.7 billion (roughly S\$58 billion).

In collaboration with marine and shipping associations in Singapore and the Maritime and Port Authority of Singapore, and through our emerging risks research programme, Lloyd's Asia is working to enhance understanding of risk management and insurance in the maritime sector.

Engagement of the shipping community is a key component in spreading the word on the importance of insurance. For instance, in 2016, we conducted the inaugural Lloyd's and Singapore Shipping Association (SSA) Open Day on Nov 2, at which 70 SSA members learned more about marine liability, marine hull, kidnap and ransom risk issues, and Lloyd's unique history and structure. Lloyd's Asia also promotes the development of the marine insurance sector through our weekly Marine Open Trading Hours, where insurance brokers meet underwriters on Lloyd's Asia's trading floor to discuss marine risks face to face. We look forward to more of such engagements with the industry in future.

WHAT CHALLENGES DO MEGASHIPS POSE TO THE MARINE INSURANCE INDUSTRY?

The development of megaships and super yards requires the necessary expertise and infrastructure support to serve the needs of larger vessels and automated ports. These require sophisticated specialist marine underwriting teams who are able to understand and underwrite the risks well. Lloyd's Asia is working with the industry to support and extend training and development schemes to enhance marine insurance expertise in Singapore by reaching out to underwriters, claims professionals, risk engineers, and loss adjusters.

being ship smart

Nitin Mathur, Managing Director of Wallem Group (Singapore), shares with AJ Leow how the company is responding to the challenges and opportunities posed by smart shipping

Headquartered in Hong Kong, Wallem Group is a global maritime solutions provider with presence in 49 locations in 19 countries, including Singapore. Its range of services includes ship management and technical services, ship agency, and commercial management of a wide range of vessels. Nitin Mathur, Managing Director of Wallem Group (Singapore), shares his views on the impact of smart shipping on Wallem and the global maritime industry.

WHAT ROLES DO THE GROUP'S MAIN CENTRES OF OPERATIONS PLAY IN ITS GLOBAL PLANS?

Hamburg, Hong Kong and Singapore are our main centres for ship management, with support offices in various other locations. Our offices work together so that seamless and cost-effective services can be provided to ships and shipowners who are geographically dispersed. Customers also benefit from a wide range of in-house services including newbuilding supervision, dry dock support, and marine procurement. Our focus is on sustainable organic growth across all sectors of our business; our size allows us to reduce costs for owners, minimise waste, and improve operational efficiencies while maintaining attention to safety.

HOW HAS SMART SHIPPING CHANGED THE BUSINESS MODEL?

The biggest risk for the shipping industry is inaction. With the world changing rapidly, it is crucial that shipping keeps pace. The maritime and ship management services business, in particular, needs to be agile, to adapt and transform to meet the needs of our customers. We also need to keep abreast of technological advances in our clients' businesses so that we can innovate and transform our business models to match their needs. In commercial shipping, we are seeing the use of online platforms by charterers. There are merits in trading ships and cargo on platforms and exchanges, but relationships will continue to play a very important role in this business.

WHAT DOES SMART SHIPPING MEAN TO YOU? HOW HAS WALLEM EMBRACED IT?

Digitalisation is transforming tasks and processes, and bringing greater visibility and better data clarity, thus enabling ship and shore staff to make more informed decisions. We see smart shipping as a means to improve productivity and efficiency, and minimise human error. With shipping services becoming more commoditised, we are looking at all aspects of our business to see where we can improve systems and processes, both in the short and longer term, so as to gain sustainable competitive advantage.

At Wallem Ship Management, we are working in two stages. First, we are focusing on the collation, enrichment, and processing of data. Secondly, we are moving towards predictive analysis via simulation and optimisation. We are also investing in a fully integrated cloud-based crew management system, which will give us full

visibility of the whole marine human resource function. This will help to relieve our masters' burden on board, while giving our seafarers access to information related to training courses and travel schedules when they are on leave. It will transform ship to shore communications, and increase the level of engagement with seafarers.

Wallem Commercial Services also worked with the Maritime and Port Authority of Singapore to improve productivity, via a new customised solution which enhances processes and workflow in our commercial management business.

HOW DOES WALLEM BALANCE DIGITALISATION AND THE MARITIME INDUSTRY'S MANPOWER NEEDS?

At Wallem, our people are our biggest asset and their safety remains our primary concern. We are committed to new technology, which can improve safety and efficiency of operations on board.

Wallem officers and seafarers are trained in state-of-the-art navigating bridge and engine room simulators at our eight global training centres. Our training takes a blended approach with extensive use of simulators to create "incidents" in real time for learning purposes. Classroom-based learning is combined with e-learning, including webinars and virtual classroom learning via Skype. We have recently started using 3-D animation and are trialling new and exciting training technologies such as video gaming and virtual reality to better engage younger generations. Training at Wallem is also designed to help seafarers develop business acumen as well as management and leadership skills to ensure quality service for both Wallem and our customers.

We are also looking at ways to better support our seafarers in their day-to-day roles, with particular focus on relieving our masters of paperwork, such as dealing with payrolls, crew movement, and portage bills. By moving these online, they can focus on important decision-making processes, mentoring their crew, and ensuring that their ships run safely and efficiently.

HOW DOES WALLEM MANAGE THE VARIED NEEDS OF ITS GLOBAL CLIENTELE?

We do so by gaining a thorough understanding of our customers' business and specific expectations, so that we can tailor our services to meet their exact needs. However, it is our strong focus on safety and operational efficiency, and our core values, such as taking ownership of our work, that set us apart from our competitors.

Thomas Reckfuss, Division Head at Thomas Schulte Ship Management Asia, says the Thomas Schulte Group is expanding its ship management business. Thomas Schulte Ship Management's focus is laying on bulk ships, from handy to Cape Size Vessels, as well as container ships up to 10,000 TEUs. As more Asian companies and organisations now own ships, he adds, it makes sense for the group to set up shop in the region.

SINGAPORE - THE LOGICAL CHOICE

Reckfuss says the Lion City is the most logical site for the company's springboard to the region.

"Once you decide to set up an office in Asia, there is no need for much discussion on where to be. Singapore is a major shipping hub. Within a radius of 6,000km lives half the world's population. As people here become more wealthy, more goods need to be transported within the region. This leads to more transport and therefore more shipping. We can benefit from being here, much closer to our clients than in Germany."

Registered in June 2016, the company opened its doors in January 2017. In the process, Reckfuss says, it received invaluable help from the Maritime and Port Authority of Singapore (MPA). The company is benefiting from two MPA schemes: the Maritime Sector Incentive - Shipping-related Support Services, and the Maritime Cluster Fund - Business Development. The former is a tax incentive for qualifying income while the

latter provides support for the set up of a new office in Singapore. "I hope that our already-close cooperation can become even closer," he says.

ONE-STOP CENTRE

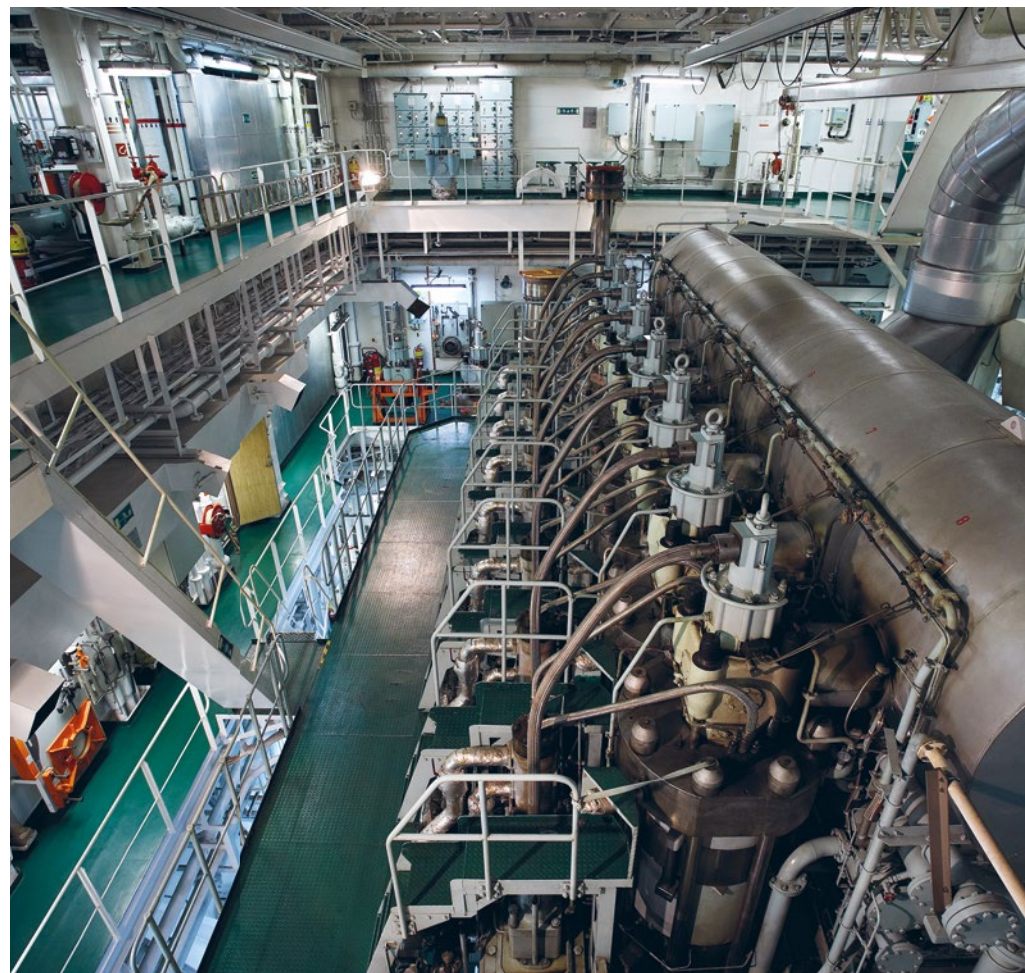
Reckfuss and his team have been introducing themselves and the company's services to both the Asia and Middle East markets. "Our clients in these regions now have a single point of contact for the entire Thomas Schulte group. Whatever they need, we can serve them from here."

He says the company aims to extend its quality service to companies in Asia, pointing out that since the Group started out as a shipowner, it understands first-hand what an owner wants and needs from a ship manager. Such expertise is needed by companies that have not traditionally owned ships, but found themselves owning ships as a result of the recent industry crisis.

"Some companies, including banks, have become accidental shipowners. They require the full range of services that we offer - asset, commercial, technical and newbuilding, and crew management. For them, it is vital that they have a proven team managing their ships," Reckfuss says.

PROVEN TRACK RECORD

Thomas Schulte Ship Management was one of the very first ship managers certified under the DNV GL Excellence Program in 2008. "We are also ISO 9001 and 14001 certified, which assures our



clients that they can trust us," Reckfuss adds.

In recent years, Thomas Schulte has also taken part in independent market reviews, such as the well-known Boston Consulting Group Study on Ship Management, in which Thomas Schulte Ship Management has come out tops every time. Says Reckfuss: "We have consistently outperformed our competitors in terms of operating costs, port or flag state deficiencies, and number of insurance claims."

The company also has an excellent track record - the ships in its care are maintained at 99.9 per cent technical readiness. This means off-hire times are kept at a minimum and ships can continuously ply trading routes. "Our goal is to keep [our clients'] ships running. Things break down for a variety of reasons, but we have proven that we are able to foresee such events and address them at an early stage so that the ships can remain operational."

The Singapore outfit is now managing a number of ships for non-European owners and funds. All are currently trading in Asia, with all but one calling at Singapore. "Being here definitely raises the quality of service we can offer to our clients," Reckfuss says. "Now, our superintendents can visit the ships nearly every week rather than every few months."

STRONG AND STEADY GROWTH

Reckfuss hopes to double or even triple the number of ships being managed from Singapore within a year. "[But] we are not looking to manage, say, 500 ships from here, because then we can't offer our good, personalised management, which is highly appreciated by our clients. We want to maintain personal relationships with our customers. If we over-expand too quickly, it is hard to do this, and our high standards become harder to achieve. What we are aiming for is steady, smooth growth."

"As the number of ships under our care grows, so will our manpower and other resources. We have three people here at the moment, and we will add two or three more by the end of the year."

On prospects for the shipping industry, he says the market remains uncertain, but adds: "I think the container feeder market (of up to 4,500 TEUs) will be an interesting one. Many of the smaller tonnage ships (up to 2,500 TEUs) in this segment are about 17, 18 years old, and they will have to leave the market because of the new regulations. This means that we will see further movement in the market. This provides new opportunities, maybe even for newbuilding, which is also a key service provided by Thomas Schulte Ship Management."

"SINCE THE GROUP STARTED OUT AS A SHIPOWNER, IT UNDERSTANDS FIRST-HAND WHAT AN OWNER WANTS AND NEEDS FROM A SHIP MANAGER."

THOMAS RECKFUSS, DIVISION HEAD AT
THOMAS SCHULTE SHIP MANAGEMENT ASIA



growing with and in
asia

Hamburg-based Thomas Schulte Ship Management sets up in Singapore to capitalise on the still-growing Asian market. Rahita Elias finds out why and how



dipping into AI

Sol E Solomon finds out the benefits that artificial intelligence, a new player in the shipping industry, promises for the sector

Artificial intelligence (AI) is gaining importance in marine applications, as the use of smart systems driven by AI can lead to continuous workforce efficiencies and operational improvements for the maritime industry.

People and AI can coexist because AI plays a supporting role, says Hideyuki Ogamae, General Manager, ICT Strategy Department, MOL Information Systems (MOLIS).

MOLIS, a wholly owned subsidiary of Mitsui OSK Lines (MOL), develops and maintains systems and networks throughout the MOL Group, providing information systems support such as network construction, software development, and hardware and software maintenance.

"AI can be a tool and solution for tasks that people find difficult to handle," says Ogamae. "It is not just an alternative to doing something, but a brand new solution to a problem." He explains that AI is useful for determining trends through large data analysis. Big data refers to extremely large data sets that, analysed computationally, may reveal patterns and associations.

One area in which MOL is leveraging AI is the early detection of engine abnormalities, using a condition-based engine-monitoring system. In this area of smart shipping, it partners Mitsui Engineering & Shipbuilding (MES). About 60 of MOL's ships are equipped with Fleet Monitor, an Internet-based ship-to-shore ship operation monitoring system developed by MES that monitors and diagnoses a vessel's performance at sea by analysing big data. Fleet Monitor even takes external factors such as the current environment and weather conditions into consideration.

AVENUES FOR GROWTH

The use of AI in shipping is still in its nascent stage, says Ogamae. Among its challenges is the maintenance of quality broadband communications between sea and shore. Security management, which is also very important, currently still poses a challenge.

"AI CAN BE A TOOL AND SOLUTION FOR TASKS THAT PEOPLE FIND DIFFICULT TO HANDLE. IT IS NOT JUST AN ALTERNATIVE, BUT A BRAND NEW SOLUTION."

HIDEYUKI OGAMAE, GENERAL MANAGER,
ICT STRATEGY DEPARTMENT, MOLIS

Last year, MOL and Yokohama National University (YNU) launched a joint study on the analysis and use of big data in shipping. Together, they are developing a capability that can analyse data related to economics and maritime affairs. This AI-based tool, which is still being piloted, will enable greater accuracy in forecasting both bunker prices and changes in the ocean shipping market. This will help ocean shipping companies reduce bunker costs.

As bunker consumption occupies a large portion of their operating costs, ship operators sometimes make hedging transactions. But while hedging reduces one's exposure to market fluctuations, it does not guarantee good results. So if bunker forecasts can be improved, these companies can make transactions at the best timing for them, leading to good and stable operating profits.

"When we enjoy good and stable operating profits, we can pass on part of the cost reductions as better service quality, which means more convenient and stress-free service for our customers," says Ogamae.

MOL and YNU will be conducting other new studies to develop management support tools, and Ogamae expects AI adoption in the industry to grow.

"AI will have a big impact in the maritime industry. I think that it will not be in any specific area, such as ocean shipping market forecasting, but in every area. The speed of AI adoption in shipping will accelerate."



leveraging partnerships

Participants of the second Advanced Maritime Leaders' Programme share insights on how maritime leaders can work together to advance maritime goals

CLOCKWISE FROM TOP LEFT
Amane Fethallah, Director General of Merchant Marine Directorate, Morocco; Eko Santoso Budianto, Deputy Chairman of Batam Indonesia Free Zone Authority, Indonesia; Eduardo De Carvalho Lago Filho, Chief Executive Officer of the Port of Itaqui, Brazil; Pinehas Auene, Acting Director of Maritime Affairs, Ministry of Works and Transport, Directorate of Maritime Affairs, Namibia.

The second Advanced Maritime Leaders' Programme (AMLP), held in Singapore from April 20 to 25, brought together 19 senior maritime and port officials from around the world. Organised by MPA Academy – the training arm of the Maritime and Port Authority of Singapore (MPA) – the AMLP helps participants build new capacity to transform their organisations through peer-to-peer sharing and learning on topics such as transformational leadership, strategic management, and crisis communications, and also provides opportunities for them to network with global maritime leaders.

SINGAPORE NAUTILUS (SN): WHAT ARE SOME KEY INSIGHTS THAT YOU EXCHANGED WITH FELLOW AMLP PARTICIPANTS?

AMANE FETHALLAH (AF): We talked about the need to manage our teams and the leadership required to ensure everyone shares the same vision. Key things included the importance of teamwork and the ability of leaders to engage their teams. Leaders must constantly renew their knowledge and set benchmarks for best practices for their colleagues.

I shared my experience as a woman: This sector is challenging for women, but technology provides opportunities for us to work in jobs traditionally performed by men and be deployed in decision-making positions. In ports, women and men can now perform the same tasks with the help of technology.

EKO SANTOSO BUDIANTO (ESB): I don't come from a maritime background, so I see this as an opportunity to learn from organisations such as MPA and port operator PSA, as well as my fellow classmates who come from different countries with different backgrounds.

I think one of Singapore's key success factors is that it has a very thorough long-term plan and it sticks to the plan. Even though the government here communicates closely and frequently with the business community, it is not directed by vested interests. So a key takeaway for me is that one should have a long-term vision, anticipate problems instead of being reactive, and make a plan and follow it in a disciplined and persistent manner.

PINEHAS AUENE (PA): A gathering of experts from various fields within the industry is an opportunity to share insights and experiences,

become aware of cultural issues, and understand that no solution can fit all countries because of different cultural and social contexts.

Most countries have a problem ensuring that their maritime administrations are financially sustainable. Only when you have a sustainable model are you able to fully fulfil your international obligations and develop quality human capital, among other things.

I learned at the AMLP that in Singapore and Iran, port and maritime governance are handled by a single entity. In Namibia and other countries, the two are handled by separate entities: the port authority is generally well resourced because it has a sustainable commercial revenue base, while the maritime authority generally relies on parliamentary appropriations because, among other reasons, it has a weak revenue base. This model is characterised by a weak maritime authority that is not fully capable of performing its flag, port, and coastal state obligations. So perhaps countries such as Namibia can consider adopting the Singapore or Iranian model in order to take full advantage of the natural synergies and complementarities of the two, in terms of operating environment and human capital requirements, in order to ensure a strong and sustainable maritime administration.

EDUARDO DE CARVALHO LAGO FILHO (EDC): Meeting other heads of departments for port and transportation, we discovered that we share common problems and face common situations, and that we can also share common solutions. As CEO of a state-owned port, I was able to share experience and exchange ideas with other public ports.

The lessons we took home from Singapore were important for me. I had the opportunity to meet the CEO of Jurong Port, which, like the Port of Itaqui, handles things such as general cargo and bulk cargo. It was a unique experience to hear from other leaders, especially those from Singapore. It gave me new ideas to implement back home.

SN: THE AMLP TOUCHED ON TRANSFORMATIONAL LEADERSHIP. WHAT DOES THAT MEAN TO YOU?

AF: It is the ability to continually adapt procedures to ensure the safety and security of

the work environment, tapping technology and lifelong learning. It's easy to manage machines; it's not easy to ensure people share the same vision, or to engage them and help them do their work well.

ESB: In most businesses, you first need to listen to what your customers are saying and find out their concerns. You also need to anticipate the industry's development, direction, and long-term trends, and develop response plans, so that when a situation arises, you are prepared, if not already ahead. What I call market intelligence also plays an important role – you have to know what your competitors as well as other countries are doing (such as China's One Belt, One Road initiative), and anticipate how such developments will impact you.

PA: For me, it's about having a clear understanding of the strategic issues facing the maritime transport system as a whole and coming up with strategies to address them. One has to understand historical issues and how they have evolved over time, as well as current and future issues. That way, you can really position yourself to not only be ready to address issues in the future, but also be able to manage existing issues more effectively. It's about having a high-level understanding of issues, and putting mechanisms and measures in place to ensure that you are future-ready.

Q & A



“WE SHOULD LOOK INTO DEVELOPING REGIONAL MARITIME CLUSTERS. INSTEAD OF COMPETING WITH ONE ANOTHER, WE SHOULD IDENTIFY OUR STRENGTHS AND JOIN FORCES TO MAXIMISE THEM.”

EKO SANTOSO BUDIANTO, DEPUTY CHAIRMAN OF BATAM INDONESIA FREE ZONE AUTHORITY, INDONESIA

EDC: The world is transforming very quickly. We are now seeing how disruptive technology can be in this sector. To lead in a transforming world, you have to adapt to new realities quickly and be flexible – without compromising your basic values and leadership profile.

SN: WHAT IS ONE CHALLENGE SPECIFIC TO YOUR COUNTRY THAT YOU FEEL YOU ARE BETTER EQUIPPED TO ADDRESS AFTER THE AMLP?

AF: Morocco's vision is to build ports with different specialisations and promote them as platforms for trade between Africa, Europe and Asia. Some ideas from Singapore can help us develop this sector quickly; one is how Singapore promotes learning through maritime courses. Another is the passion with which Singapore promotes its maritime sector locally. A third is the capacity to work as one team. Fourth is Singapore's long-term vision.

ESB: For us, it's really important to conduct a thorough market analysis and develop a plan that will address our issues not just for the next five to 10 years but way beyond that. We should focus our efforts on reducing logistics costs for shipping domestically and catering to Indonesia's domestic needs, instead of competing with Singapore in the transshipment sector.

PA: My understanding of, and insights into, a key issue has improved. This issue, faced by the maritime transport chain as a whole, concerns the ageing workforce and young people not wanting seafaring careers. This is a problem in many countries because at the end of the day, even shore-based jobs will be affected – there are critical shore-based positions that require seagoing experience. I think the initiatives that Singapore has embarked upon to establish itself as an international maritime centre, especially its efforts to educate young people about the importance of the maritime economy and how a seagoing career can be rewarding and exciting, are some things that I will try to implement back home.

EDC: The tackling of environmental issues, which is now more strictly monitored and regulated. Society is also looking more closely at its impact. Development brings positives such as job creation, but as CEO of a port, I have to consider how we can minimise environmental

impact, especially in planning expansion and new projects. The AMLP also touched on crisis management, which I will address with my staff back home to find out how we can be more prepared for and responsive to situations with the use of technology and better knowledge. Instead of being reactive, we want to look at preventive measures, such as ensuring all operating procedures are implemented and followed by everyone in our port community, so that we don't have to deal with the consequences of not doing so.

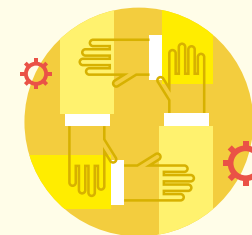
SN: THE GLOBAL MARITIME INDUSTRY IS CURRENTLY FACING DISRUPTION FROM DIGITAL TECHNOLOGY AND INNOVATION. HOW SHOULD MARITIME LEADERS RESPOND TO AND NAVIGATE THIS DEVELOPMENT?

AF: They need to keep a close watch over the rapid and continuing changes within the sector. They need to continually adapt their procedures, prepare their teams for transition, and share knowledge with the maritime community to ensure a safe and secure environment for all.

ESB: This is an eventuality that we cannot run away from, so we have to embrace technology and make the most of it. One key trend will be the digitisation of maritime processes on common platforms. If a port doesn't embrace this, there is a risk that ships wouldn't want to come in because it is too much of a hassle or will lead to higher costs due to delays.

PA: We are a traditional industry that thought it was future-proof; however, new players have come in, and developed new tools and innovations that are disrupting our thinking and our way of doing business. We should find ways and create space to innovate on our own, by investing in research and development. We will then be able to position ourselves to take better advantage of the opportunities that innovations and digitisation present, as well as tackle the risks that emanate from them, such as cyber threats.

EDC: The first step is to understand how technology can work for us, not just disrupt the way we have been doing things. We need to invest in technology and automation, and adapt our ports to new technologies. We also need to be prepared for related issues such as cyber



"WE HAVE TO SHARE EVERYTHING WE LEARN BECAUSE WE ALL OPERATE IN THE SAME ENVIRONMENT. WE CAN ALSO WORK THROUGH THE IMO TO FORM PARTNERSHIPS BETWEEN COUNTRIES, PORTS AND ADMINISTRATIONS TO SHARE BEST PRACTICES."

AMANE FETHALLAH, DIRECTOR GENERAL OF MERCHANT MARINE DIRECTORATE, MOROCCO

security, and think about how we can use things such as blockchain technology to protect our information.

SN: DESPITE UNCERTAINTIES IN THE GLOBAL ECONOMY, WHAT ARE THE WAYS IN WHICH MARITIME LEADERS CAN WORK TOGETHER TO ENSURE A BETTER FUTURE FOR ALL?

AF: We can prepare ourselves for every possibility. We have to share everything we learn because we all operate in the same environment. We can also work through the International Maritime Organization (IMO) to form partnerships between countries, ports and administrations to share best practices. Now that technology has made the world a smaller place, it's possible for us to share and

work together even if we are far apart, like Singapore and Morocco.

ESB: We should look into developing regional maritime clusters. Instead of competing with one another, we should identify our strengths and join forces to maximise them. For example, Batam and Singapore can look into working together on developing international shipping routes. We don't have enough capital to catch up with Singapore on this front, and there is also competition from Johor. We should better use our capital for more productive and higher-return projects, such as establishing Batam as a gateway port for goods coming into the island.

PA: There's a need for us to work closely together. Singapore has a very good example of this in its tripartite arrangement in which workers are involved through unions, MPA represents the Singapore Government, and associations represent industry players. That is a very good model. We could use this type of collaborative arrangement at the international level, especially from a policy and legal perspective. For example, the IMO can ensure that whatever laws we make to govern shipping are uniform in development and implementation. Other forums and arrangements at the regional, sub-regional and national levels could also be used to advance the interests of the entire maritime transport chain. It is extremely important at this time that the industry works as one because the challenges we face do not only affect shipping companies and their intermediaries, but also all stakeholders, including governments, ports and workers.

EDC: We need to think out of the box, about not only port operations and management, but also the world economy as a whole, so we can anticipate negative impacts and adapt solutions before they happen. I think the way Singapore uses macroeconomics to predict how a recession will impact container movements is useful.

Technology is another important area. We have to be connected – more so if we want to be more efficient, for instance, if we want to reduce the time for customs clearance and the duration that ports take to handle cargo. Communications is also a very important area.

Environmental issues are important too, as they affect us all. We can assess common challenges and problems, and deal with them as a group.

high-tech hull cleaning

This isn't your everyday cleaning job, as it involves live camera and data feeds and remote-controlled equipment. AJ Leow finds out more from ROV Pilot Syahrul Hatta

Syahrul Hatta, 32, has a job that is unique even in the local maritime industry, which employs more than 170,000 people. He is a remotely operated vehicle (ROV) Pilot with C-Leanship, which performs underwater hull cleaning for vessels passing through the Port of Singapore. C-Leanship currently has two ROV teams and one ROV engineering team manning its hull cleaning activities and operations here.

Hull cleaning is traditionally done by diving teams in shallow water. Using ROVs allows the job to be carried out at any time, without disruption to



PHOTOGRAPHY: ZAPHS ZHANG. GRAPHICS: 123RF



a vessel's normal operations. It also reduces the risk of mishaps, including fatalities to personnel performing underwater tasks. The use of a suction manifold allows the biofouling debris to be collected, keeping the waters in the port clean.

Each cleaning job is normally conducted by a three-man team. Two members are stationed in a 20-foot-long container on board a workboat, which serves as an operations room; the third operates a winch tethered to the workboat, which supplies power and communications to the ROV. Each team typically works 12-hour shifts, and sometimes rotates duties. Syahrul notes that 400m-long container ships can typically be cleaned within a single port call.

The process is controlled by a lead pilot, who operates the ROV and its water jets, navigating remotely via a screen in the cabin. He is assisted by a co-pilot who monitors real-time data on cleaning operations, power consumption, and other operating parameters. Live feeds from the ROV's eight cameras facilitate each cleaning operation, as does feedback from the subsea navigational and positioning system that incorporates a 3-D electronic chart of the ship's hull form on which the ROV's movements are monitored in real time.

Says Syahrul, "The on-site operations are not only confined to underwater cleaning. They also

require the ability to read and interpret vessel drawings for the setup of the 3-D navigational system, and continual assessment of system health and performance. Planned maintenance between jobs and improvement/development activities require a solid technical understanding.

"The administrative part of the job starts with risk assessments, job planning and securing permits from the Maritime and Port Authority of Singapore (MPA) and/or PSA; it culminates with a job completion report to the customer and an internal debriefing. There are a lot of concurrent plans and activities as each team typically handles two to three hull cleaning jobs a week, at different locations in Singapore, such as the PSA terminals or the eastern and western anchorages."

Syahrul finds satisfaction in executing and completing each cleaning job safely and efficiently, and in contributing to the enhancement of the vessels' performance; a clean hull lowers fuel consumption and hence, carbon footprint. He also finds it fulfilling to help keep the waters environmentally clean – since debris from the cleaning process is automatically collected, it helps mitigate the global migration of invasive species of marine life.

Previously, when he was working in offshore construction, Syahrul had seen ROVs in action (his previous job required three- to four-month offshore stints in the Gulf of Mexico or North Sea). "I was always intrigued by how they were deployed in pipe-laying, or underwater surveying of offshore structures," he says. It was while he was on shore leave back home that Syahrul chanced upon a job advertisement for an ROV pilot. He contacted C-Leanship, took an online test, was interviewed, and got hired.

It took him about a year to learn the ropes before becoming a full-fledged pilot; he later became a team leader. He currently enjoys being able to offer input and contribute to the design of newer ROVs by SAAB Technologies, which C-Leanship hopes to add to its current fleet. The company structure is dynamic, and there are opportunities for ROV pilots to become ROV engineers and be involved in the development of future ROVs, and vice versa. For now, Syahrul still wants to pilot ROVs as far as possible.

On his days off, Syahrul likes playing sports and computer games to develop his psychomotor skills, and catching movies with his colleagues. "I enjoy our camaraderie, which is important as we often have to work in close quarters."

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