

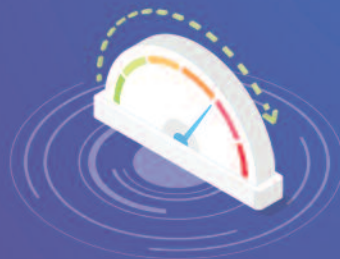
WAVES

The word 'WAVES' is written in a large, white, sans-serif font. The letter 'S' is stylized with three blue, wavy lines extending from its right side, representing waves.

What's on the Horizon?



Machine learning algorithms. Use of digital twin to arrive at accurate estimates to minimize emissions and the fuel consumption.



Equipment performance rating, trends, performance indicators, fault diagnostics, predicted due date for next maintenance actions.



Vessel performance diagnosed at synoptic times resulting in KPI. Providing alerts for deviation outputs.

Fleet Performance Solutions

MariApps' flagship product smartPAL is a fully web-based and mobile compliant digital solutions suite. It is designed for high performance, quick implementation, and simple maintenance. To comply with class and regulatory body requirements, ship managers and owners have several initiatives to partake in to reduce carbon emissions. These initiatives would require intensified measuring and monitoring to improve efficiency of hull, propeller, main propulsion engine, power plant and boilers. MariApps' solutions are equipped with tools to achieve better efficiency on all relevant fronts of fleet performance. In 2018, MariApps went into a joint venture with Finnish Marine Cleantech company, Navidium, to co-develop vessel performance solutions based on high frequency telemetry data (Big Data and IOT solutions) from ships and to expedite products. With an inhouse Vessel Operation Centre, MariApps provides round-the-clock operational, digital support, and real-time data to our global customers. It enhances communication between crew and shore staff, ensuring personnel safety and risk prevention and route planning and optimization. These fleet performance modules will also review vessel operations against the model of vessels and equipment based on design/model/trial data to indicate the key performance indices of vessels and its equipment. This data will also help to predict and advise speed, power and RPM profiles our customers' vessels should adhere to to minimize fuel consumption. It also helps compare different route options available and chooses the most efficient against the speed profiles, therefore saving fuel and reducing emissions.

Some of the key USPs we offer to customers if they choose the vessel performance solutions are:

- End-to-end solutions support customers who seek services from multiple vendors (Telemetry to analyze)
- High level of accuracy in ETA and fuel consumption prediction (AI and ML models)
- Fuel savings of 3 - 10% through optimized passage planning and weather routing
- IMO regulation compliance on monitoring, reporting, and verification of CO2 emissions from maritime transport (EU-MRV regulations)
- Automate vessel reporting (Huge savings in automation of noon reports)



To know more about digital solutions from MariApps, please visit www.mariapps.com or contact Khalil Rehman Aziz: khalilrehman.aziz@mariapps.com

Foreword

Dear members,

Moving into the second half of the year, the pandemic continues to hold the world in its grip. With evolving measures to curb the spread of the virus and its emerging variants, many of us are also making changes and adapting to new regimes.

Speaking of change, we are pleased to share that the Association successfully conducted our Annual General Meeting digitally and elected a new Council for the Term 2021/2023. President Caroline Yang remains in the post for another two years, along with many of the previous Council Members. We are also pleased to welcome some newcomers.



The composition of the new SSA Council 2021/2023 reflects the diversity of the shipping industry, with different genders and nationalities, as well as representatives of multinationals working alongside those from small to medium-sized enterprises. Each Council Member brings with them different domain expertise, experience and interests. You can read about their aspirations for SSA and the future of Maritime Singapore in our Thought Leadership article.

We are also delighted that two members of the SSA Young Executives Group (YEG) whom the Association nominated to be IMO Goodwill Maritime Ambassadors (GMA) have been officially appointed into the roles. Akanksha Batura Pai and Jonathan Choo talk about their hopes for the IMO GMA programme in Singapore in this issue of Waves.

As a new edition of PIER 71 Smart Port Challenge (SPC) is launched, another of last year's finalists explains how their intelligent robotic system is set to create a new era for underwater inspections and interventions. The range of new technology to come out of last year's challenge has been extraordinary and we are anticipating exciting innovations from this year's PIER 71 SPC contestants.

René Piil Pedersen

SSA Vice President & Honorary Secretary,
General Affairs Committee Chairman

THOUGHT LEADERSHIP



5

The new Council members each lay out their key priorities for the coming year

TECHNOLOGY



Trailblazing a New Era of Underwater Inspections and Interventions

12

FEATURE



Spreading the word about maritime

16

NEWS



20

Caroline Yang Returns as President while the new SSA Council reflects diversity in shipping



21

Refreshed logo to Navigate the Future



21 Smart Port Challenge 2021 Launched with new Venture Capital Partners



24 The Information Fusion Centre 38th Shared Awareness Meeting



25 Tech Talk Thursdays – The Failure of Eco-Systems and Digital Platforms

OTHER

New Members 28

Executive Development Programme 29



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Notice to all SSA members – stay in contact

As you are aware, the SSA Secretariat often sends out email circulars to inform you, our members, of SSA's events and the latest developments in the industry. We have noticed that some of you may not be receiving the email circulars sent out by the SSA Secretariat – as your office email server may have classified our emails as spam.

To resolve such issues, kindly include SSA's domain name ssa.org.sg into your email whitelist/safelist so that you remain in our communication channel. Thank you for your kind attention.

Event Calendar

August

sun	mon	tue	wed	thu	fri	sat
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

August 2021

09/08

Public Holiday: National Day

30/08-02/09

International Safety@Sea Week (MPA)

September

sun	mon	tue	wed	thu	fri	sat
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

September 2021

30/08-02/09

International Safety@Sea Week (MPA)

10/09

SSA Tech & Demo Day – Visionary Shipping

11/09

Maritime Decarbonisation Symposium Part 1 (SMF & NUS)

16/09

SSA Tech Talk Thursday – Successful HR Digital Transformation for Sustainability

17/09

SSA Educational Talk Q3: Topic TBC

18/09

Maritime Decarbonisation Symposium Part 2 (SMF & NUS)

21-23/09

Sea Asia 2021

28-30/09

SSA Sustainability Workshop

30/09

World Maritime Day

October

sun	mon	tue	wed	thu	fri	sat
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

October 2021

01/10

MSC Maritime Career Fair 2021 (SMF)

01/10

SSA Educational Talk Q4 - Topic TBC

07/10

SSA & RMSC Joint Webinar – Towards Sustainable International Ecosystem

08/10

55th SRS Forum (MPA)

14/10

Shared Awareness Meeting (IFC)

21/10

SSA YEG Educational Talk - Overview & Trend of Tanker, Bulker and Container Markets

22/10

The Maritime Educators Programme (SMF)

*TBC

+ Information correct as at 18 August 2021 and subject to change.

The new Council members each lay out their key priorities for the coming year



Caroline Yang

SSA President

From the time I first took on the role of President of the SSA, my goal has been that SSA should play a key part in

ensuring that Maritime Singapore remains always at the forefront of relevance. Singapore has always benchmarked itself at the very top, or near to the top, of all the maritime centres in the world and strives to maintain that position. By adhering to that goal, we have found that business comes naturally to our companies, bringing with it jobs for our people, continuously deepening our knowledge and expertise as a maritime nation.

Throughout this coming term I will be taking two broad pillars which will remain as constant milestone markers for SSA's success and bring wide-ranging benefits to our member companies.

First SSA will be seeking the active participation of a large majority of our members so that we will know, understand and articulate their collective representative views. We aim not only to raise and solve challenges but also to be ahead, by identifying future solutions, so that we can then bring these solutions, in a coherent and structured manner, to every member company of SSA.

Secondly, we have achieved great things working collaboratively over the past two years and will ensure that this collaboration continues through a close working relationship with our regulatory authority, MPA, and the other major stakeholders in Singapore including SMF, SMOU, SOS and others.



René Piil Pedersen

*SSA Vice President & Honorary Secretary,
General Affairs Committee Chairman*

Having had the honour to serve on the SSA Council for a number of years and being

Vice President since 2019, my focus for the coming term will be on competitiveness of the Singapore International Maritime Centre (IMC) and our success as a maritime nation. Building on decades of success as a maritime nation it is crucial to challenge ourselves to ensure we develop Singapore's vision and value propositions to continue attracting businesses here. This will need the collaboration and attention from all maritime stakeholders.

For the more immediate term, the COVID-19 pandemic continues to be a challenge to the shipping industry. Continued focus on our seagoing colleagues is needed both in respect of catering for crew change and securing all seafarers access to vaccination, especially those seafarers coming from

countries without a sustainable vaccination program.

The rise of a new COVID-19 variant has made the challenges more difficult. Many port states are taking a firm stance on travellers, including seafarers, from certain countries. Stricter controls and travel restrictions from key crew supply countries have impacted crew change and shipping operations. We will continue to engage the authorities to search for practical solutions to facilitate safe crew change and accelerate plans to vaccinate international seafarers. As a vital force propelling shipping and global supply chains, it is critical that they must be protected against the virus. The sooner seafarers are vaccinated, the sooner we can expect smoother crew change and lesser disruptions in shipping.



Katie Men

Vice President and Honorary Treasurer

As SSA's Vice President and Honorary Treasurer, there are two key areas where I feel SSA needs to be seen as an invested stakeholder in Maritime Singapore.

Sustainability - Going green and paperless contributes to sustainability, and one of the many bricks laying the foundation for this will be digitization. To this end, SSA has been moving towards online transactions with many members using such e-platforms for our finance-related matters. We will be progressively moving into the cyberspace to engage with our members, such as updates and reports on the work by the respective SSA committees. It is hoped that these actions will help inspire our SME members to follow suit.

Talent - Even as the shipping industry is increasingly embracing digitalization and technology, it has not been able to attract such "new" skilled talents. Therefore, we must continue and commit to invest in our future workforce, one that

consists of a mix of talents possessing shipping expertise and new digital/technological skills

As part of our commitment to nurture maritime talents, SSA awards scholarships for deserving and promising students pursuing nautical and maritime studies. While the SSA Scholarships seek to build the future talent pipeline, the current SSA Executive Programme, as well as initiatives such as apprenticeship and SG-United Skills Programme, will support and fulfill immediate and near horizon skills.

I believe these two goals will help sustain and hold Singapore as the premier shipping capital of the world.



Colin de Souza

Chair of the International Committee

I consider it a privilege to chair the International Committee for the 2021-2023 Term. To properly discharge my responsibilities, it is important to understand the issues that are current and critical to Singapore's standing as the premier International Maritime Centre (and Global Hub) and how the International Committee can support this.

The maritime industry is facing significant changes and challenges especially in the areas of decarbonisation and legislation (incl. taxation).

Decarbonisation - Singapore, as the world's largest bunkering hub, is positioning itself as a leader in the race to decarbonise the maritime sector. It has co-sponsored an IMO supervised, industry financed programme to drive the progress needed for decarbonisation and which needs to be shared widely and promoted.

From regulatory uncertainty to the availability of zero-carbon solutions, the International Committee would be best placed to keep the local industry abreast of latest developments both at an international (IMO) level and in terms of Singapore's role as a Global Maritime Decarbonisation Centre and as co-sponsor of the IMRB initiative.

Legislation - Singapore Block exemption Order (BEO). The CCCS is currently deliberating on the renewal of the BEO for liner shipping which will have an impact on Singapore as a global hub and for the liner shipping industry.

It would therefore be appropriate for us to focus on these key issues as a matter of priority.

Its further extension of BEO underlines the important contributions liner shipping makes in maintaining Singapore's advantage as the premier maritime hub. We are well placed to support and enlist the support of other associations or bodies in highlighting to the CCCS the benefits of continuing with this practice.

I will endeavour to ensure that the Committee continues to remain active and engaged in making a valuable contribution.



Nitin Mathur

Chair of the Services Committee

The global crew change situation remains challenging with new COVID-19 variants causing more variables and disruptions. As Chair of the SSA Services Committee, one of my key priorities is the stoic work to ensure smooth crew change can take place in the port of Singapore amid such developments. We are also engaging the authorities on a proposed vaccination programme to protect an important group of frontline maritime workers – our seafarers.

We hope this initiative can take off soon as the earlier our seafarers are

vaccinated, the safer it will be for both them and the wider community.

Another focus area is enhancing the safety and service delivery standards of vessel operations in the port of Singapore. We will continue discussions with port stakeholders to improve the vessel turnaround time at the different terminals. Equally important is the constant engagement to ensure that best practices are observed throughout the port and a safety culture is embraced by all port stakeholders.



Lee Keng Lin

Chair of the SSA Offshore and Renewable Energy Committee

I am delighted to chair the Offshore and Renewables Committee as the SSA

strives to contribute to Singapore's national development goals while also playing a leading role in putting Singaporean expertise at the heart of the shift in global energy priorities.

One of my goals is to help Singapore's offshore companies pivot to offshore renewables while supporting the government's Green Plan 2030 and net-zero ambitions. I trust my experience in the offshore wind segment, through POSH Kerry Renewables, will help steer this conversation.

Developing a "Singaporean core" focusing on environmental, social and governance (ESG) priorities is another goal. We need to grow and nurture local talent to underpin our green transition. I see opportunities in

initiatives like the INSEAD Partner Programmes and collaboration with the MPA as key pathways to develop future leaders.

I plan to pursue an annual SSA Offshore Wind Day bringing together Singapore and international firms – offshore developers, operators, brokers, investors, bankers, and lawyers – to connect and discuss priorities for our sector. This aligns with SSA's objectives and our responsibility to support the government's environmental commitments.

We should all be excited at what SSA can contribute to Singapore's ambitions as an international maritime centre and a global role model for a renewable future.



Gina Lee-Wan

Chair of the Legal & Insurance Committee

As chair of the Legal & Insurance Committee, a key priority for the

Committee in the coming years will be to drive the digitalisation efforts of the Singapore War Risks Mutual (the "SWRM"). Throughout the last decade, we have seen how the emergence of digital technology has brought about a net benefit to the general public. To defend and build upon the SWRM's competitive edge against other offerings in the region, it is important that the SWRM leverages on such technologies to transform its existing operating model into a user-friendly digital platform where transactions and inquiries can be made. The potential advantages of operating a digital platform are clear – members stand to benefit from reduced costs of delivering war risks products, improved service levels and data driven solutions.

Another item high on the Committee's agenda will be to continue promoting Singapore as a premier dispute resolution centre for maritime and shipping related disputes. Following Singapore's adoption of the UNCITRAL Model Law on Electronic Transferable Records under the Electronic Transactions Act in the first quarter of 2021, Singapore now joins the ranks of only a handful of countries in the world which legally recognise electronic bills of lading as equivalents to physical bills of lading. The Committee will be looking to further engage with industry and government agencies in order to conceive and implement strategies that allow Singapore to capitalise on this exciting development.



Ng Ee Ping

Vice-Chair of the International Committee

My priorities for the current term are Sustainability and Digitalisation as these two issues can, and have, caused a lot of disruption in our industry. In my background as an

SME, we have limited resources and these issues are much harder for us to achieve without some outside help.

Looking at sustainability, it is not enough to view it from a green viewpoint, we also have to factor in costs and benefits for the future. The scope of sustainability is dependent on many socio-economic and market related factors that together serve to define the goals of each organisation. There are several factors in play here, we need to be in compliance with environmental regulations, create a sustainable work environment, increase vessel efficiencies and look for sustainable fuel alternatives. In my current role I hope to be able to work together with the various stakeholders, organisations and agencies to protect our members' interests as well as to help member companies understand

and adopt sustainable frameworks and implement best practices for sustainable shipping.

Digitalisation and new technical developments in the field of artificial intelligence, blockchain, IOT and automation are becoming more relevant to the maritime industry. These help to create new business opportunities, streamline existing processes and transform supply chains and trade geography. Despite the potential benefits, they also entail risks and costs to maritime companies who might not have the same access to funds and resources to implement. I hope to be able to play my part in levelling the playing field for our member companies and allow them to better understand digitalisation, as well as to adopt and advance their digitalisation journey.



Teo Teng Seng

Chair of the Digital Transformation Committee

In recent years, digitalisation has become more prominent in the maritime industry. COVID and the maturing of maritime technologies has further propelled the pace of digitalisation. It is crucial that SMEs, being a significant force in the maritime industry, keep in pace with digitalisation. As such, I am taking a keen interest in the promotion and realisation of digitalisation in maritime SMEs. SME's challenges are varied. To address these challenges, the Digital Transformation Committee hopes to take a holistic approach by understanding SMEs' pain points and addressing the pain points in a manner that is practical and sustainable.

My other interest and priority is in maritime start-ups. Start-ups often inject new ideas and applications to the industry. They not only bring a vibrant vibe but also open a different maritime dimension to the younger generation. With our domain knowledge, I know we can assist promising start-ups to help shorten the learning curve and improve the success rate. This is a field where the Digital Transformation Committee would like to create a positive impact. I hope in the coming months to discover practical approaches to this area.



Akanksha Batura Pai

Chair of the Young Executives Group (YEG)

I recall joining the industry back in 2014 and tentatively attending my first meeting of SSA's Young Executives Group (YEG) as an

uninitiated newbie. I quickly learnt how instrumental and significant the YEG was in not just strengthening my understanding of the industry, but also providing me with a close-knit community of trusted confidants as well as career progression opportunities. Now years later, as I take on the honour of being the Chairperson of the YEG, my goal is to provide these same tools to young professionals in the industry. I aim for YEG to be synonymous with a sense of kinship, camaraderie and a place young professionals in the industry can turn to for trusted guidance.

To keep the YEG dynamic yet relevant, I will work with our Committee Members to further engage the young professionals currently employed at Member Companies. We need these

young professionals to not merely attend YEG events, but to actively volunteer their time and contribute cutting-edge ideas as part of the Committee in order for the YEG to always plan pertinent and engaging events for the community.

As the International Maritime Organization's (IMO) Goodwill Maritime Ambassador representing Singapore, I am also keenly passionate in youth outreach; we need a constant influx of young talent and bright minds to keep our industry vibrant. Hence, I will carve out opportunities to get our maritime professionals to interact with youth to deepen the latter's appreciation of the maritime sector and educate them about the myriad of fulfilling job opportunities available in this industry.



Apostolos Boutos

Chair of the Marine Fuels Committee

The Marine Fuels Committee priorities for 2021-2023 will be based on present challenges as well as future prospects and trends shaping the bunkering market. As technology is changing various industries, one of the priorities will be to focus on digitalization in the bunkering process and how this will affect bunkering operations end-to-end in Singapore. There are various elements including building up industry's confidence as well as developing a wider acceptance of electronic processes and documentations for bunkering in Singapore.

In line with Singapore's pledge under the Paris Agreement to reduce national domestic emissions and MPA's Maritime

Singapore Decarbonisation Blueprint 2050, another key priority will be alternative fuels and bunkering standards. We will focus on raising awareness about alternative fuels for our members, identifying challenges in the process, availability issues and implementation. We also aim to increase engagement with our members, and key stakeholders in the industry, with various initiatives so that we cover the many different challenges. Apart from technical perspectives which are fundamental, the Committee will focus a lot on commercial aspects in the marine fuels market in Singapore. Our overarching objective is to maintain Singapore's competitiveness as a leading global bunkering port.



Gerbrand Vroegop

Chair of the Shipping Finance Services Committee

To promote shipping finance, one of the three pillars to grow Singapore as a leading International Maritime Centre, the working group

established in 2015 was upgraded to a full services committee in 2019 to support this purpose. For the new term, in my role as Chairman of the the Shipping Finance Services Committee, I will build on the direction set by my predecessor Boey Yin Chong and thank him for his contribution and the opportunity he gave me to be part of his committee over the past two years.

The shipping sector, being highly volatile and capital intensive, requires a diverse and deep pool of funding sources providing liquidity through the cycles. My first priority for the committee is offering the members an insight in the available funding sources and possible uses. This to include the different financial market and banking products. The

second priority is the education of the members about the important trends and developments affecting shipping finance. Sustainability, digitalization, IBOR transition, compliance (KYC, tax) and Basel 4 are some of the important topics.

I am delighted that I will be joined in the Shipping Finance Services Committee by a highly experienced and knowledgeable group of member representatives from different backgrounds. Together we look forward to supporting the members in their understanding of the shipping finance market and using this to manage the financial requirements of their respective businesses, and so strengthening Singapore's position as a vibrant and globally leading ship finance location.

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✓ **Automated stock reconciliation**

✓ **Accurate real-time spare lifecycle tracking using RFID**

✓ **Digitised equipment manuals**

✓ **Total vessel coverage with offline and intrinsically safe tablet**

✓ **Find misplaced spares using the tablet as a radar**

Trailblazing a New Era of Underwater Inspections and Interventions

Underwater inspection and maintenance services are generally performed by highly trained human divers using specialised equipment. These operations are associated with high risks, and service providers are looking increasingly towards the use of robotics to reduce the reliance on costly and often scarce divers. Overall adoption across the industry, however, is slow due to limitations of existing solutions. Could Hovering Autonomous Underwater Vehicles (HAUVs) be a game-changer?

Complex set-up and training

A key barrier to using remotely-operated vehicles (ROVs) is the initial set-up and training. Before sending these underwater robots out to work, they need to be fitted with appropriate sensors, which could take operations teams 1-2 weeks including testing. They then face on-site challenges such as launching them in the water and manoeuvring them in different conditions including strong currents and low visibility.

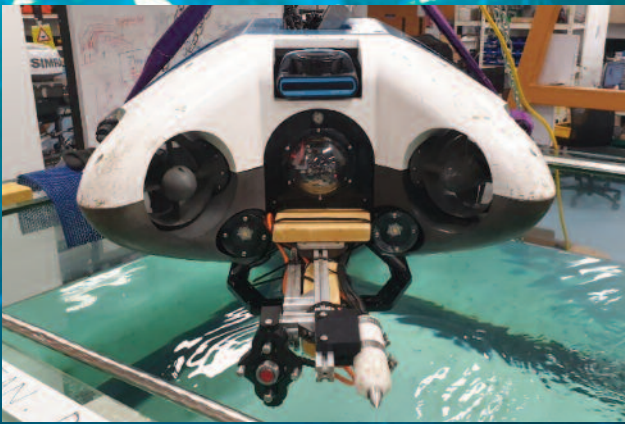
“Existing robots require a lot of work upfront. In addition to evaluating which robot to buy, service providers need to pair it with the correct sensors and other add-ons, and then obtain approvals to operate these systems. Most importantly, they need to invest in training, re-training, and retention of highly experienced pilots and technicians,” explained Grace Chia, CEO and Co-Founder of BeeX, a Singapore company which designs and manufactures HAUVs.

The complex processes and climbing costs before seeing revenue returns are some of the reasons why BeeX sees intelligent vehicles like their HAUVs as a sustainable way forward for scaling underwater operations.

A.IKANBILIS

In recognition of the humble yet extremely versatile anchovy which packs a powerful punch of flavour, BeeX’s flagship HAUV is named A.IKANBILIS. A fully autonomous robot, A.IKANBILIS has a “brain” that improves over time by remembering the paths it has flown before, and constantly analysing the data.

Compared to regular AUVs, A.IKANBILIS is designed to offer stability during underwater inspections. With equal forward and side thrusts, it is able to maintain its hover state even in two knots of cross current. Capable of more than General Visual Inspections (GVI), A.IKANBILIS also has a payload bay for additional probes and



A fully autonomous robot, A.IKANBILIS has a “brain” that improves over time by remembering the paths it has flown before, and constantly analysing the data.

sensors. This allows BeeX to offer service providers with a same-day turnaround for adding new sensors and seamless integrations without testing costs and delays.

To date, it has conducted Cathodic Protection (CP) probe checks, Ultrasonic Probing (UTG) on piles and vessels, seabed bathymetry, and 3D water quality profiling in tanks, using multi-parameter sondes. The data is fused with the positioning of the vehicle to provide a comprehensive understanding of the asset.

To overcome the lack of GPS underwater, BeeX has analysed more than 500 hours of operational data to understand how various sensors from innovative manufacturers around the world perform when integrated with each other, and near structures. This underwater positioning capability is key to enabling the vehicle to fly by itself.

Breaking free from existing limitations

“Our focus at BeeX is to enable service providers to break free from constant operator control and tethered operations, because of the complexities and costs involved,” explained BeeX’s CTO Goh Eng Wei. “We believe that hardware and software need to be fully integrated by a multi-disciplinary engineering team to achieve out-sized performance.”

This technology leap is made possible with BeeX’s experience of working with self-driving cars. Their Engineering Team pioneered the deployment of both a Graphics Processing Unit (GPU) and Central Processing Unit (CPU) on-board for real-time inference in underwater vehicles 8 years ago. A.IKANBILIS has deep neural nets running advanced perception algorithms simultaneously on both the real-time imaging multibeam

sonar and its HD camera. This removes latency issues faced by traditional ROVs where processing is done back on the boat.

Amongst other software optimisation challenges, they also overcame hardware reliability concerns induced by vibration and temperatures up to 65 degrees in tropical countries.

“When a vehicle is manually flown by a pilot, he is correcting for the sensor’s errors, based on his interpretation of the camera feedback. It is easier to do this when the water visibility is good, but for the customers we serve, they are working in low visibility waters with suspended particles, making our sonar-optical perception stack a key enabler,” Grace added.

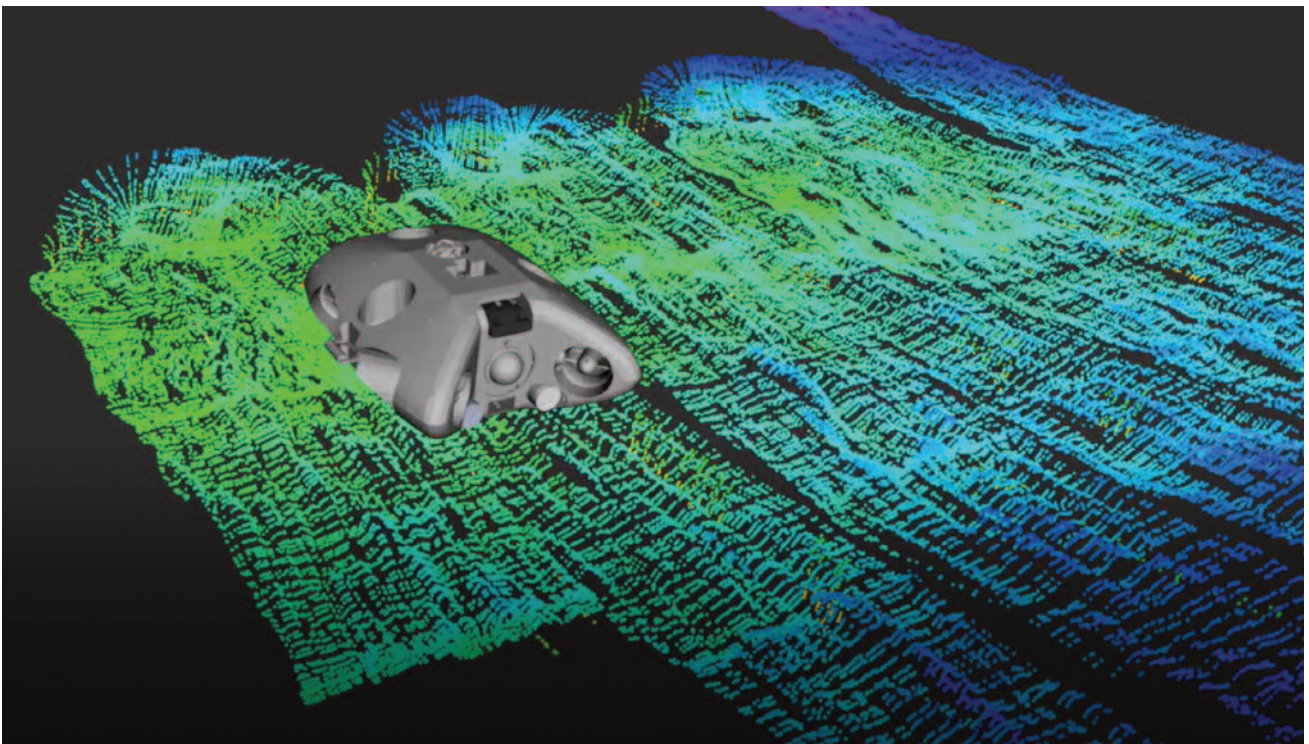
Advanced reporting

A.IKANBILIS’ on-board computing allows service providers to expedite the process from conducting inspections to providing deliverables to any collaborator who needs it, be it the Professional Engineer who



certifies the findings, the team continuing the operations the next day, or the asset owners. The geo-referencing allows asset owners to quickly assess the changes that are happening over time, to make more targeted and proactive decisions.

Instead of having separate computers running standalone programmes on top-side, A.IKANBILIS has an industrial 1TB data storage on-board, which can sync data snapshots directly to the cloud upon surfacing.



These snapshots are compressed data packets that are less than 100MB/day of intervention operations, a greatly reduced amount compared to the hundreds of GBs stored across multiple computers.

Unlocking new possibilities

BeeX's A.IKANBILIS has streamlined underwater operations, saving service providers much needed time and money, reducing the risk profile, while increasing revenue and profitability. The HAUV's intelligence at subsea unlocks many new possibilities unthinkable a few years ago, and the team is doubling down on achieving untethered operations in new environments.

By capturing comprehensive data in challenging environments in a much better way, BeeX is staying true to its vision of trailblazing a new era of underwater inspections and interventions. This will only grow as

highly anticipated software products like 3D Sonar Scans and new autonomous behaviours are released, with priority access to owners of A.IKANBILIS.

BeeX was the winner of PIER71's Smart Port Challenge 2020 and was recently awarded with a grant from MPA to pilot a project for improving hull cleaning with A.IKANBILIS. To find out more, please contact them at grace@beex.sg. They are also hiring to meet the international demand of their vehicles!

The geo-referencing allows asset owners to quickly assess the changes that are happening over time, to make more targeted and proactive decisions.



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 <p>Patrick Lee Chief Executive Officer Singapore Standard Chartered</p>	 <p>Tan Chong Meng Group Chief Executive Officer PSA International</p>	 <p>Esben Poulsen Chairman, International Chamber of Shipping (ICS), Executive Chairman Enesol Pte Ltd</p>
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STRATEGIC
Centre staging industry leaders' views on changing trade flows and what the future economy leads to, and practical pathways to decarbonisation.

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Spreading the word about maritime

Singapore appoints two IMO Goodwill Maritime Ambassadors



As part of its remit to promote excellent external relations between the maritime sector and the wider community, the IMO has set up a Goodwill Maritime Ambassador Scheme which has been developed to promote the many opportunities available for young people in the maritime sector.

The scheme involves participants from all the major maritime centres worldwide and SSA has nominated two members of its Young Executives Group (YEG) to take on this important role within Singapore. Both of the Goodwill Maritime Ambassadors are passionate about the industry but their journeys into the sector couldn't be more different.

As Akanksha Batura Pai explains, "I think I was born with sea water in my veins rather than blood! My father was a ship's captain and my mother sailed with him when they married right up until the point that they had me. My father then set up a shipping agency in Singapore so that he could be shore-based but I still grew up with discussions of shipping to the extent that it became second nature to me."

Jonathan Choo credits his path into maritime to Gina Lee-Wan. "When I joined Allen & Gledhill LLP I was unsure of the area of practice I would specialise in but Gina's passion and enthusiasm for the maritime industry stoked my interest."

A common element

There is however one common element in both their early careers in maritime and that is the decision to join YEG and to take on an active role in the organisation. It gave them the opportunity to meet with like-minded peers in the industry and to collaborate and plan meaningful networking, educational and community events with the various YEG committee members.

"Many members of the YEG have since become close friends in the industry," adds Jonathan. It has been beneficial to Akanksha as well, "Not many industries have such an active wing that is dedicated to its youth, it is a fantastic platform that encourages people to join the industry."



Akanksha Batura Pai

"I think I was born with sea water in my veins rather than blood! My father was a ship's captain and my mother sailed with him when they married right up until the point that they had me."

YEG also gave both of the IMO Goodwill Ambassadors the opportunity to take on leadership roles at a relatively young age giving them both deeper insights into the maritime sector while also developing their personal skills.

The role of the Goodwill Ambassador

As IMO Goodwill Ambassadors, Jonathan and Akanksha will be advocating for the maritime industry within the wider Singapore professional community with the support of SSA and MPA. The pair will also be extending their outreach to students and young professionals, taking the opportunity to educate about the career options open to them within the wider maritime sector. Says Akanksha, "There are so many silos when you combine working at sea and shore and we need to expose young people to the possibilities. Jonathan and I both bring different experiences, my role as Head of Strategy and Growth at Sinoda Shipping Agency means I have experience with crewing and seafarers while he is closely involved in the legal side of shipping and based onshore."

Adds Jonathan, "I am hoping to reach out, engage with and inspire students and young professionals to consider maritime careers. On a personal level this is an opportunity for me to return the kindness shown to me by the various maritime professionals who guided me, and continue to mentor me."

Another common thread in their maritime journey is that both Akanksha and Jonathan attended the National University of Singapore (NUS) and both have taken the opportunity to promote the maritime sector to their alma mater. Explains Jonathan, "As a maritime lawyer and alumnus of NUS, I was given the chance by the Centre for Maritime Law at the NUS Faculty of Law to participate in their annual student engagement events to encourage NUS law students to consider shipping and maritime law as a career practice upon graduation."

This is an opportunity that shouldn't be missed according to Akanksha, "I graduated from NUS and not a single one of my peers went into maritime. It seems that people switch into the sector further into their careers, so we need to put shipping onto the radar of young people at an earlier stage."



Jonathan Choo

"I am hoping to reach out, engage with and inspire students and young professionals to consider maritime careers."

New blood

And of course, the more people that are attracted to the maritime sector, the greater the benefits to Singapore Maritime and the industry as a whole. Currently there are approximately 170,000 people in Singapore whose employment relies on shipping. Akanksha continues, "But we want to get more new blood into the sector and we want to educate the general public about how maritime in Singapore works and how efficient it is. We want to appeal to graduates from the best universities."

"It is a big honour for me. I have such a passion for this industry and it is wonderful to be given this platform

“Jonathan and Akanksha were both nominated for the IMO Goodwill Maritime Ambassador Scheme because of their passion for maritime and their willingness to talk to a people about the myriad opportunities in shipping.”

and a legitimate reason to share my passion and explain to people just how important seafaring and shipping are to the world economy.”

Jonathan feels just as strongly about his participation in the programme. “I am certain my role as an IMO Goodwill Maritime Ambassador will further entrench my passion for the maritime industry, and provide me the opportunity to meaningfully contribute towards the efforts of the international maritime community in promoting maritime and seafaring professions, as well as supporting Maritime Singapore as an International

Maritime Centre. It is a most worthwhile endeavour and I am excited for what lies ahead.”

The final word goes to Michael Phoon, Executive Director of the SSA Secretariat, “Jonathan and Akanksha were both nominated for the IMO Goodwill Maritime Ambassador Scheme because of their passion for maritime and their willingness to talk to young people about the myriad opportunities in shipping. I am really looking forward to seeing what they can achieve as they engage the people who will make up the next generation of maritime professionals.”



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Caroline Yang returns as President while the new SSA Council reflects diversity in shipping

At its 25th Annual General Meeting (AGM), held on 24th June 2021, The Singapore Shipping Association (SSA) elected seven members into the SSA Council for the 2021/2023 term. The AGM was held digitally for the second year running.

Immediately after the AGM, the SSA Council held its first meeting and unanimously elected Ms Caroline Yang to lead the Association for another term. The Council also elected Mr René Piil Pedersen, Managing Director of AP Moller Singapore Pte Ltd, as Vice President and Honorary Secretary, as well as Ms Katie Men, Managing Director of Iseaco Investment Pte Ltd, as Vice President and Honorary Treasurer. The Council has co-opted four members, with diverse expertise and experiences, and will be co-opting another two members to form a 13-member strong Council. The Council will be supported by the SSA Secretariat headed by Mr. Michael Phoon.

The composition of the new SSA Council reflects the diversity of the shipping industry, with different genders and nationalities, as well as representatives of multinationals working alongside those from small to medium-sized enterprises, giving authority to its position as a collective representative voice for the maritime sector.

On her successful re-election, Ms Yang said, "I am humbled and grateful for the support and trust that SSA members and the Council have in me. We are still reeling from the economic repercussions of COVID-19. The global crew change crisis remains a focal point on our radar. We are pushing hard to have our seafarers vaccinated as a priority. At the same time, a key priority will be that SSA continues to grow as a trusted partner for Maritime Singapore and the international maritime community. Digitalisation and decarbonisation will remain high on the agenda. This is where SSA will

continue to provide our thought leadership, proactively engage the authorities and other maritime stakeholders, and convert adversity into opportunities. I am excited to lead the Council team for this new term, to bring greater value to our members as we work together for the betterment of SSA and Maritime Singapore."



Refreshed logo to navigate the future



To coincide with the election, at its 25th AGM, of its new Council for the term 2021/2023, the SSA has also introduced a refreshed logo to reflect the experience and vibrancy of the association.

The addition of a dash of red to its current logo makes it more distinctive and signifies its links to Singapore and the Red Ensign of Singapore registered ships.

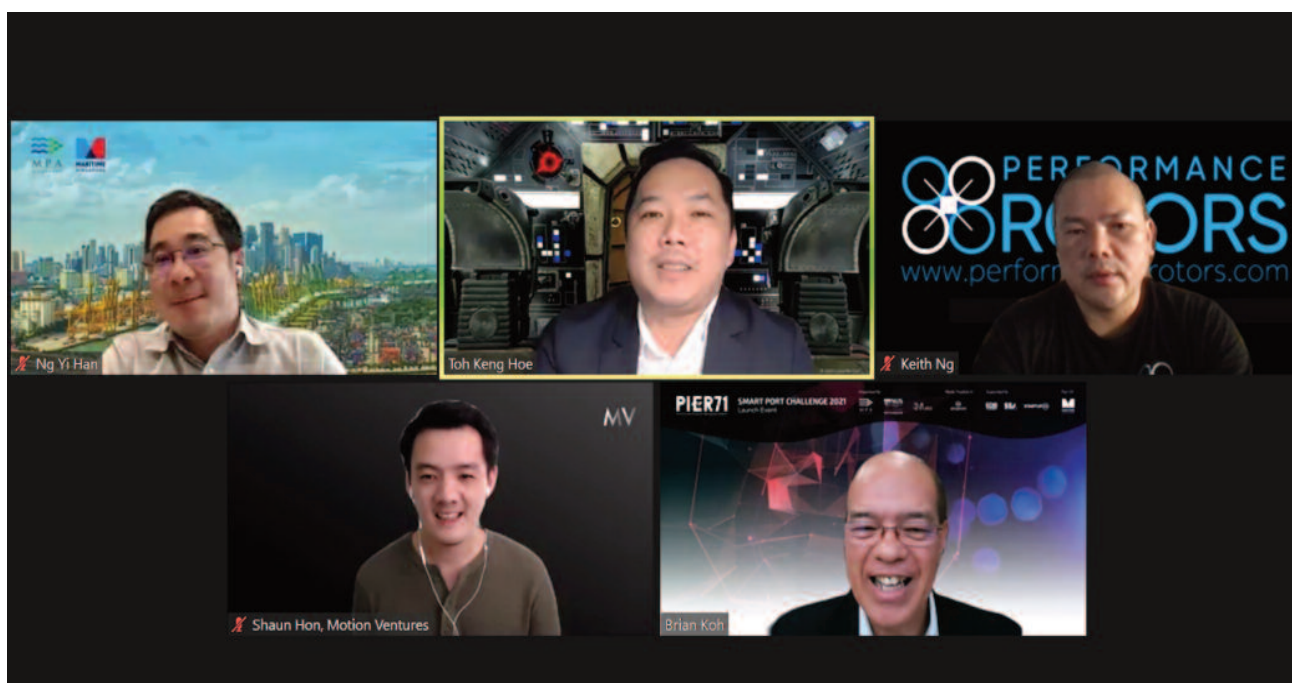
The red triangle, with its tip pointing North, together with the blue triangle below, with the tip pointing South, resembles a compass needle. The compass is synonymous with providing direction and this highlights the Association's mission to engage maritime stakeholders, promote the interests of shipping in Singapore and the rest of the world, and together, navigate the future.

Smart Port Challenge 2021 Launched with new Venture Capital Partners

The fifth edition of Smart Port Challenge (SPC) was officially launched on 18 June 2021 with an opening

address by Guest-of-Honour, Mr Chee Hong Tat, Senior Minister of State, Ministry of Transport. This is the fourth





year that PIER71, a joint collaboration between the Maritime and Port Authority of Singapore (MPA) and NUS Enterprise, the entrepreneurial arm of the National University of Singapore (NUS), is running the start-up competition aimed at boosting innovation in the maritime industry.

The 17 innovation opportunities for this year's SPC have been co-created with 21 maritime corporates and focus on five key areas:

- (1) **Smart Port**
- (2) **Smart Ship**
- (3) **Crew Safety, Training and Wellbeing**
- (4) **Smart Maritime Services and Logistics**
- (5) **Green Technology**

Open to tech start-ups around the world, SPC offers shortlisted finalists privileged access to PIER71's network of corporate, venture capital (VC) and other industry partners, a mentor-guided market validation and customer discovery programme, cash prizes of up to S\$10,000, eligibility for grant applications of up to S\$50,000, as well as continued entrepreneurial and technical support beyond SPC.

The launch event also saw the announcement of three VC partners to PIER71's network. Maritime technology start-ups will be able to tap into S\$30 million of potential funding from individually-managed funds of IMC Ventures, Motion Ventures and MOL PLUS.

Other investment partners that PIER71 start-ups have access to include Bernhard Schulte INNOPORT, KSL Maritime Ventures, PSA unboxed and TNB Aura. SEEDS Capital, the investment arm of Enterprise Singapore, also provides joint investments with VC partners to maritime technology start-ups outside of PIER71.

This influx of investment interest in maritime start-ups has added to the vibrancy of the maritime innovation landscape in Singapore and was recognised in a recent report by Inmarsat Maritime. The highlight of the launch event was a panel session that brought out different perspectives on the key factors driving this vibrancy. Brian Koh, Director, Corporate Partnerships at NUS Enterprise, moderated this panel which included Ng Yi Han (Director, Innovation, Technology and Talent Development at MPA), Toh Keng Hoe (Business Development Director, Digital at Inmarsat Maritime), Shaun Hon (General Partner at Motion Ventures) and

Keith Ng (CEO & Co-Founder at Performance Rotors, SPC2019 finalist).

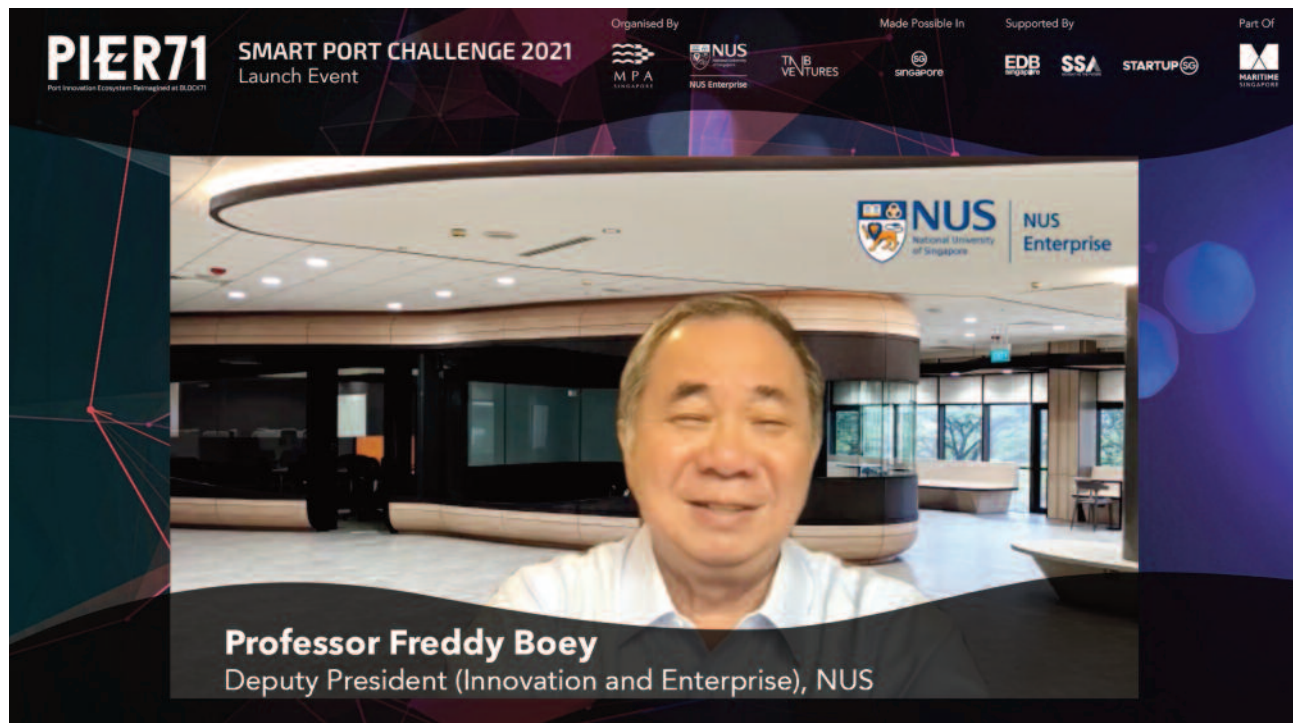
Riding on the launch of SPC 2021, PIER71 also announced the seven start-ups from last year's SPC that have been awarded with MPA's start-up grant for prototype development and test-bedding. They are BeeX, LEDR Technologies, Moaah, MRC Hosting (groundup.ai), mVizn, Vebits AI and Vulcan AI. Over the next 12 months, these start-ups will collaborate with PIER71's maritime corporate partners on pilot projects that focus on the use of autonomous robotics, vision analytics, virtual reality and artificial intelligence among others.

“PIER71 continues to attract start-ups and other key stakeholders that make the maritime innovation ecosystem as vibrant as it is today.”

Professor Freddy Boey, NUS Deputy President (Innovation and Enterprise), said, “PIER71 continues to attract start-ups and other key stakeholders that make the maritime innovation ecosystem as vibrant as it is today. As part of our larger effort in developing deep-tech and industry-relevant programmes, NUS sees this collaboration with MPA as an important driver in bridging innovation solutions with the wider industry needs. In the coming months, the PIER71 programme will be further enhanced with activities in the areas of technology commercialisation, internationalisation and talent development.”

Following the launch, PIER71 ran a series of roadshows that offered a deeper look at the innovation opportunities for start-ups looking to submit proposals. The application window for SPC 2021 is now closed. Shortlisted finalists will be announced by the end of September on <https://www.pier71.sg/smart-port-challenge/smart-port-challenge-2021/>.

A recording of the SPC 2021 virtual launch event is available on <https://pier71.sg>.



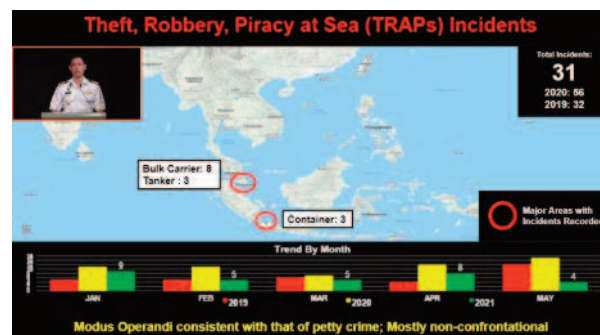
The Information Fusion Centre 38th Shared Awareness Meeting

The Information Fusion Centre (IFC) conducted the 38th Shared Awareness Meeting (SAM) on 8 July 2021 which was attended by more than 180 participants from military and law enforcement agencies, regional fusion centres and the shipping industry.

During SAM, speakers were invited to share MARSEC situational updates in the IFC's Area of Interest which covered seven MARSEC threat categories, Gulf of Aden and Gulf of Guinea. New speakers were also invited to the 38th SAM; EU NAVFOR presented on Operation ATALANTA and MPA, together with CAAS, briefed on the proper usage and regulations of commercial drone activities in Singapore.

The eastbound lane of Singapore Strait, off Pulau Bintan area, continues to be a concern for the maritime industry due to the increase of sea robbery and theft incidents. LTC Daniel Ng, Deputy Head IFC, advised that these

incidents are typically petty crime and perpetrators are largely non-confrontational. To address these MARSEC threats, the IFC works closely with the Indonesian and Malaysian navies and coastguards, and the local authorities to exchange information and strengthen cooperation. The shipping industry can help to ensure MARSEC in this region by being vigilant, taking preventive measures and providing timely reports to the authorities so that operational responses can be taken.



Tech Talk Thursdays – The Failure of Eco-Systems and Digital Platforms

The second episode in our 2021 series, covered the Failure of Eco-Systems & Digital Platforms. Joining our host, Ms Nalini Thite of Novigo Solutions were Anthon Hollstein Ivarson, SparesCNX, Rod Steel, China Navigation, Nakul Malhotra, Wilhelmsen Group, and Kok Ken Chin, RINA Singapore Together they addressed the rarity of successful ecosystems, how and when ecosystems fail and what you can do about it. The talk also covered the differences between ecosystems and partnerships, the pandemic's effects on ecosystems, how to have a better approach to building an ecosystem, futuristic views that need to be considered when building an ecosystem, the lack of sufficient training, programmes that ensure standardisation in the industry concerning digital platforms and ecosystems, the slow pace of adapting these ecosystems and critical success factors for ecosystems and digital platforms.

Ecosystem or partnership?

The first question was addressed to Nakul regarding the differences between ecosystems and partnerships. Nakul stated that partnerships tend to be more formal and transactional whereas ecosystems tend to be looser in terms of their engagement. With that said, he also stated that good ecosystems have many different

partnerships within them. The analogy he gave was that if partnerships were families in a community, ecosystems were the community itself.

The second question was to Rod, enquiring if the maritime industry requires a large, complex ecosystem and if he had noticed any impact the pandemic may have had on ecosystems. He stated that the key factor in determining the size of an ecosystem in the shipping industry is the number of parties involved in making the industry function.

Taking it into a global context, he stated that the flows of information are prolific but this is not present in the shipping industry. In terms of the pandemic, he stated that it has had several impacts on the ecosystems, such as digital gaps that could not be supported in the Work-From-Home (WFH) arrangement. However, he believes that this has a positive effect as it has forced businesses and companies to digitalise in ways they had previously resisted, which contributes to the overall digital ecosystem. Another effect he had stated was that it heightened the desire to accelerate the deployment of digital solutions. Anthon added that whilst he agreed with Rod, he believes that the problem was that instead of developing programmes that make data processing easier, the people producing the data may not have the tools or capability to do so in the first place.

“The key factor in determining the size of an ecosystem in the shipping industry is the number of parties involved in making the industry function. ”

Classification societies

Nalini then asked Ken if he could share some information about the digital platforms he is using as a classification society. He was also asked if he had seen failure in this area during the pandemic, how it is overcome, and what will be the ramification if those digital platforms fail. He stated that all class societies are a part of an ecosystem, but they are also like an



“All class societies are a part of an ecosystem, but they are also like an ecosystem providing different digital solutions for their clients”

ecosystem providing different digital solutions for their clients, such as automated performance recording and fleet management software amongst others. They facilitate digitalisation in terms of their classification services such as the introduction of digital certificates, 3D models and the adoption of remote surveys, especially during the pandemic period. With regards to the failure of ecosystems, he believes that there is a lack of adoption of these tools.

Adding value

The next question was to Anthon on how people could drive a better approach from the beginning and what

are some failures developers are not bringing to the table. Anthon stated that developers need to create systems that add value to customers and end-users. The way to do that is to ensure that the system needs to solve an actual problem or pain point instead of it being internally driven and this can be achieved by getting customers involved to get a better grasp of the value of their services. Companies also need to find ways to measure value as he believes that cost is very important for shipping companies when it comes to developing solutions.

Considerations for the future

Rod was asked to discuss futuristic views that companies need to consider. He stated that whilst he believes that adopting digital platforms is the way to go for the future, he also added that it could play out in a few ways. If a single platform becomes dominant through extensive integration across world trade, the likely consequence would be the failure of other digital platforms. Another scenario he brought up was that existing platforms would compete with their own proprietary communications protocols, which would

“Companies need to start with customer needs and pain points to become successful “

“lock” their customer bases to them. The third scenario would be where different systems could communicate with each other and making them publicly available to utilise, which he believes could open the door to disruption as seen in other industries such as banking, thus enabling new platforms to address opportunities that they identify with relative ease.

Nakul led the discussion about the lack of handholding and sufficient training in the industry and he firmly believes that there is never enough evangelism in ecosystems and there is a need for more ambassadors to speak up. Instead of having a “winner takes all” mindset, he stated that there needs to be mentorship in developing ecosystems as sharing experiences is the best way to move forward. He likened it to social media in the sense that the collaboration to developing ecosystems needs to be a habit rather than an effort.

“Digital solutions are not going to solve problems by themselves and that there needs to be an emphasis on the processes behind the scenes. “

Standardisation

Ken and Rod were asked about programmes that ensure the standardisation concerning digital platforms and ecosystems in the industry, and Rod stated that standardisation was what facilitated communication amongst ecosystems which makes them work effectively. To achieve that standardisation, there needs to be a simplification of the processes carried out. Ken brought up the Maritime Digitalisation Playbook as an example of standardisation in the industry.

Anthon gave his opinion on the slow pace of adoption of new technology in the industry and how it can be changed, and he stated that the industry needs to try to become more attractive and exciting for younger people to join. Another point he brought up was how the industry can bring in workers from other industries, such as the tech industry.

Critical success factors

The final question, which was open to all speakers, was on the critical success factors for ecosystems and digital platforms. Nakul stated that product-market fit was crucial for ecosystems and he brought up the understanding that it would not be an easy fix, like how a company does not start innovating in one quarter and immediately becomes a tech company in the next. Rod expressed that digital solutions are not going to solve problems by themselves and that there needs to be an emphasis on the processes behind the scenes.

Ken stated that the motivation to change is a critical factor and there need to be leaders to collaborate such as ship owners, developers etc. to drive change. Anthon stated that companies need to start with customer needs and pain points to become successful. He added that companies need to be receptive to change and have the flexibility to their approach as companies may not end up achieving their expected end goal and that they must be ready for that change.

The episode ended with a presentation by Novigo Solutions on business ecosystems, covering the characteristics, challenges, and failure of ecosystems.



Catch the replay of the episode on our website:
<https://www.ssa.org.sg/happenings/tech-talk-thursdays.html> or scan the QR code.

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Pertamina International Shipping Pte Ltd was incorporated in 2018 as an overseas subsidiary of PT Pertamina International Shipping, which headquarters in Jakarta.

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Training Calendar | AUG - OCT 2021

				FEES* (SGD)	
				*Second figure shown is after grant	
Course Title	Start Date	End Date	Duration	SSA Members	Non-SSA Members
Principles of Shipping Documentation	03/08	06/08	4 Days	\$834.60/\$444.60	\$1251.90/\$666.90
Principles of Shipping Operations & Practices	16/08	19/08	4 Days	\$834.60/\$444.60	\$1251.90/\$666.90
Introduction to Shipping (Masterclass)	25/08	26/08	2 Days	\$642/\$342	\$963/\$513
Intermediate Course on Shipping Documentation - Bills of Lading	30/08	31/08	2 Days	\$601.34/\$320.34	\$902.01/\$480.51
Principles of Shipbroking & Chartering	02/09	04/09	2.5 days	\$642/\$342	\$963/\$513
SS600 & Basic SS648 in the Bunker Industry	16/09	17/09	2 Days	\$856/\$136	\$1284/\$204
Maritime Labour Convention 2006 - A Concise Perspective	22/09	22/09	1 Day	\$385.20/\$205.20	\$577.80/\$307.80
Introduction to LNG as Fuel in Shipping	28/09	28/09	1 Day	\$428/\$228	\$642/\$342
Maritime HR Management	29/09	30/09	2 Days	\$642/\$342	\$963/\$513
Marine Insurance	13/10	14/10	2 Days	\$481.50/\$256.50	\$722.25/\$384.75
Alternative Gas Fuel - Design & Safety Management for Vessels & Terminals	28/10	29/10	2 Days	\$963/\$513	\$1605/\$855

**Fees subject to prevailing GST. MCF Training Grant is available for eligible participants. MCF Training Grant is not available for the courses – "Understanding Import/Export Techniques and Documentation" and "Effective Written Communication in the Shipping Industry". Please refer to www.mpa.gov.sg/mcf for more information. Dates may be subject to change. Download the course registration form at: <http://www.ssa.org.sg/images/ssa/pdf/Course%20Application%20Form-20Sept2016.pdf> and for further enquiries, please contact Kuna at 6305 2267 or email kuna@ssa.org.sg*



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**Source: Euroconsult, Prospects for Maritime SATCOM, 2020, market share VSAT units