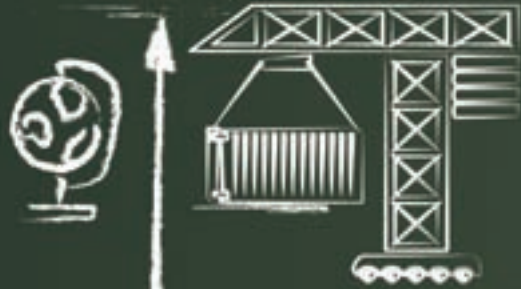




MPA R+D FRAMEWORK

BEST OVERALL DESIGN (SILVER) Magnum Opus Awards 2011



EDUCATION+TRAINING



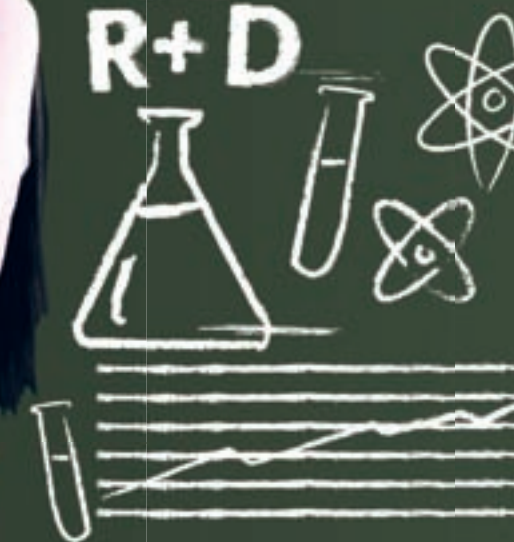
TEST-BEDDING



COMMERCIALISATION



R+D



▶ maritime singapore R&D landscape
▶ drawing on seafarer tales ▶ rebranding
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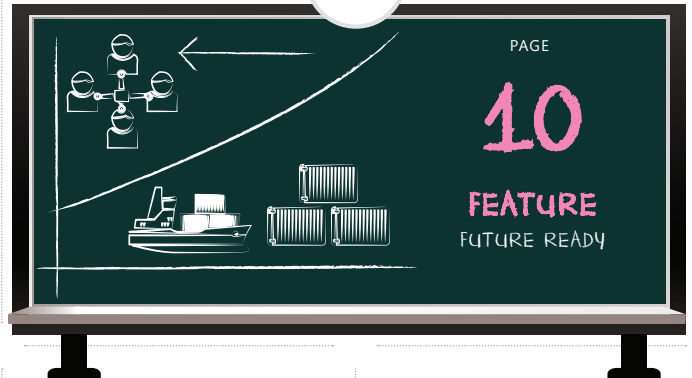
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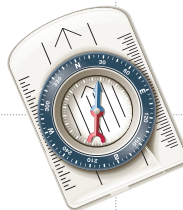
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GOING SOLAR

publisher



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New ideas

New products, new ideas, new businesses. These are all offshoots from research and development, and in this issue of *Singapore Nautilus*, we put Singapore's efforts in maritime R&D in the spotlight. Our main feature introduces MPA's approach to R&D in Maritime Singapore, and we feature a number of projects involving clean energy and green shipping, the use of liquefied natural gas, and marine environment technology.

Driving R&D in areas such as green shipping, maritime logistics and operations, the Singapore Maritime Institute would be helping to groom the next generation of maritime talent. You can find out more on the Singapore Maritime Institute's inception and plans for the future in the Community Talk section.

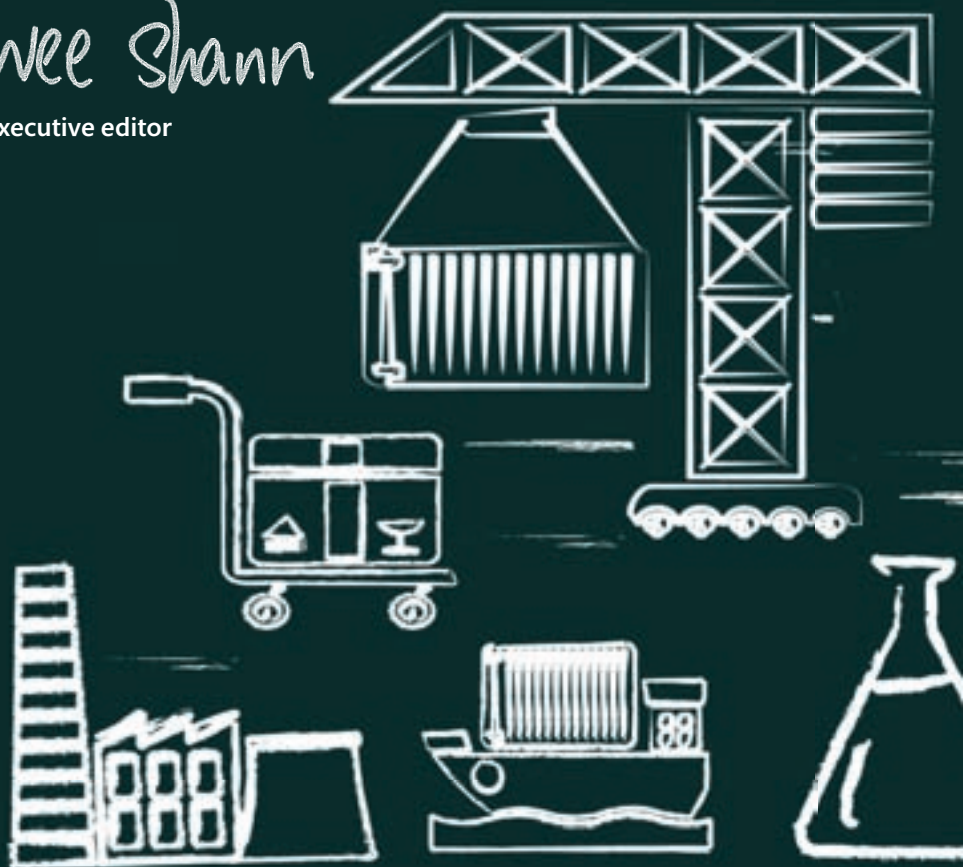
Staying at the forefront of the marine and offshore sector's trends and innovations, Keppel FELS and Sembcorp Marine introduce select rig designs and construction

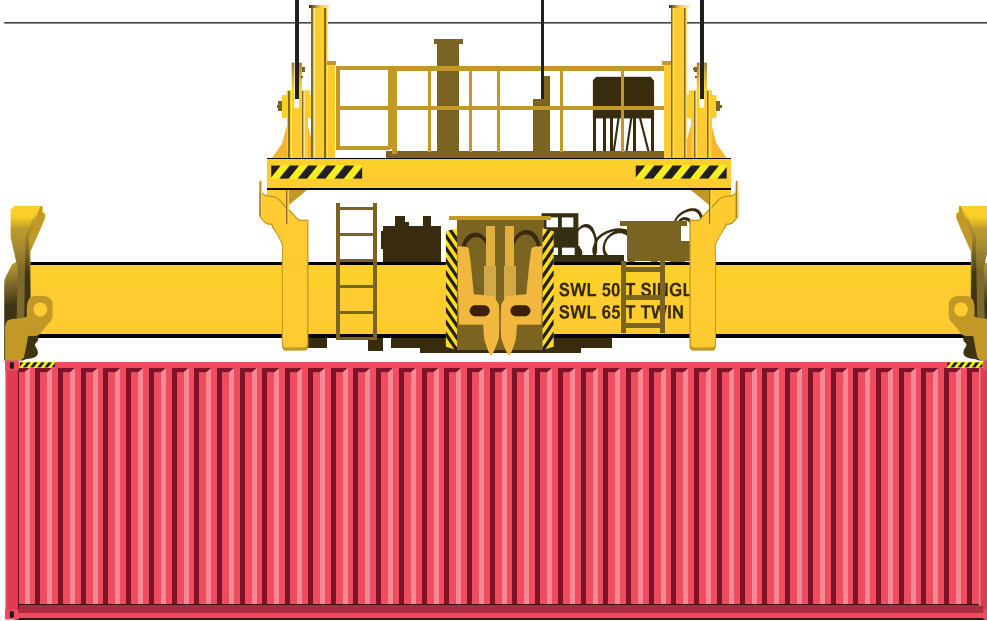
capabilities in our Port & Starboard section. And as the challenges of environmental sustainability become more pressing, Jurong Port shares with us in our Technology section what their plans are to reduce carbon emissions.

In the Commentary section, Prof Ma Shuo, a professor of Maritime Economics and Vice-President at the World Maritime University, gives his insights on the state of the maritime industry.

Wee Shann

executive editor





Singapore re-elected to IMO Council

► During the 27th session of the Assembly of the International Maritime Organization (IMO) in November 2011, Singapore was re-elected to the IMO Council for the 10th consecutive time since 1993. Singapore's membership in the council has enabled the Republic to contribute significantly toward advancing the efforts of the international maritime community and the IMO. Mr Lui Tuck Yew (below), Singapore's Minister for Transport and Second Minister for Foreign Affairs, who led the Singapore delegation – comprising officials from the Ministry of Transport (MOT) and MPA – said: "Singapore is honoured to be re-elected to the council and is grateful for the support of our fellow IMO Member States. We are heartened that our contributions to the IMO over the years are valued and recognised by the international community."



Next generation port challenge by SMI, MPA

► The first major project undertaken by the Singapore Maritime Institute (SMI) to support its strategy of "research and development (R&D) for breakthrough applications" is the Next Generation Container Port (NGCP) Challenge.

Mr Lui Tuck Yew, Minister for Transport and Second Minister for Foreign Affairs, announced SMI's plans for this international competition that aims to spearhead innovation and raise R&D awareness within the maritime industry.

Jointly organised by SMI and the Maritime and Port Authority of Singapore (MPA), the NGCP Challenge will encourage participants from all over the world to submit innovative proposals on how to plan, design and operate the next generation of container ports that

exemplify performance, productivity and sustainability.

A cash prize of US\$1 million (S\$1,292,000) awaits the winner of this international competition.

The problem statement for the Challenge will be announced during Singapore Maritime Week (SMW) 2012, which will take place in April 2012.

Submissions will be judged by an international panel of representatives from the Singapore government, the maritime industry and academic institutions. The winner of the NGCP Challenge will be announced during SMW 2013.

Mr Lam Yi Young, MPA's Chief Executive, said: "The NGCP Challenge is one of the first major projects undertaken by SMI since it was set up. Besides this competition, I am sure that SMI will continue to work on new programmes

to develop Singapore as an international maritime R&D and knowledge hub."

Aside from its involvement with the NGCP Challenge, SMI has developed strategies to achieve its vision of a thriving maritime industry in Singapore, driven by knowledge and innovation.

Mr Teo Siong Seng, Chairman of the Board and Governing Council of the SMI, said: "The creation of SMI as a joint effort by three government agencies – MPA, the Agency for Science, Technology and Research (A*Star) and the Economic Development Board (EDB) – demonstrates the importance of the maritime industry, and the commitment of Singapore to strengthen our position as a leading international maritime centre through knowledge and innovation."

Recognising seafarers on World Maritime Day



► In celebration of World Maritime Day, the Maritime and Port Authority of Singapore (MPA), the Singapore Maritime Officers' Union (SMOU) and the Singapore Organisation of Seamen (SOS) jointly distributed 600 hampers to ships that call at Singapore.

Started in 2003, this initiative recognises the important contributions of seafarers in the maritime industry, and demonstrates the strong cooperation between MPA and the seafarer unions in promoting the interests and welfare of the seafarers. The hampers will reach some 12,000 seafarers.

To mark the event, Mrs Josephine Teo, Minister of State, Ministry of Finance and Ministry of Transport, presented the hampers to some 30 representatives from the shipping industry. Present at the ceremony were representatives from the shipping community, seafarer unions, and seafarer missions.

MPA works closely with the seafarer missions to promote the welfare and well-being of seafarers. At the event, MPA Chief Executive Lam Yi Young presented a financial

grant of \$100,000 to the four seafarer missions in Singapore. The annual grant supports a wide range of welfare services for seafarers, ranging from ship visitations to counselling services and pastoral care at the mission centres.

"Seafarers play significant roles in world trade, as more than 90 per cent of it is carried by ships. The hampers serve as a small token of our appreciation to seafarers for their dedication and service. MPA is committed to working in close partnership with the industry, unions and missions to enhance the welfare of seafarers and to attract new talents into the industry, and will continue to do so," said Mr Lam.

World Maritime Day is an annual celebration, initiated by the International Maritime Organization (IMO). It focuses on the importance of shipping safety, maritime security and the marine environment with a different theme each year that emphasises a selected aspect of IMO's work.

MPA and NTU to develop future generation of maritime leaders

► The Maritime and Port Authority of Singapore (MPA) and the Nanyang Technological University (NTU) signed a two-year collaboration agreement to organise the Maritime Public Leaders Programme (MPLP). The inaugural MPLP was held in July 2011 at NTU.

Set to be conducted at NTU's Maritime Studies and Infrastructure Systems Divisions, School of Civil and Environmental Engineering, the MPLP is an executive programme for maritime officials from around the world. Offering both educational and networking opportunities, the programme is an illustration of Singapore's important contributions to the maritime community.

It covers a range of topics from port planning and management, shipping economics and finance, as well as maritime law

and security, to public leadership and governance, and aims to strike a balance between maritime-related and public administration topics. The MPLP is also structured to be relevant and applicable to daily operations. It provides varied learning opportunities like lectures, case studies, visits to Singapore's terminals and port operations centres, and sessions with prominent industry leaders.

The MPLP will help to achieve one of the objectives of the SMI, which is to develop Singapore as a centre for maritime education and training.

The MPLP will replace the defunct Graduate Diploma in Maritime and Port Management. It is also supported by the Ministry of Foreign Affairs under the Singapore Cooperation Programme.



MPA's 15th Anniversary Go-Kart Challenge



As part of its 15th anniversary celebrations, MPA organised a 15th Anniversary Go-Kart Challenge at Kartright Speedway to thank associates and partners from the maritime community, and to raise money for Community Chest. The event saw participation from over 30 organisations, and a total of \$65,000 was raised.

Visit by Bahrain Coast Guard



Delegates from the Bahrain Coast Guard pay a visit to MPA's Port Operations Control Centre in Changi.

MPA's Maritime Visitor's Programme



Visit from Chile



Dr Martin Stopford, Managing Director of Clarkson Research, visits MPA under the Maritime Visitor's Programme.

Mr Alfonso Mujica, President of Port of Valparaiso, and HE Fernando Danus, Ambassador of Chile, pay MPA a visit.

Visit by Brazil Ministry of Ports



The Brazilian Minister of Ports, Mr Leonidas Cristino, visits MPA.

DESIGN &

FROM A SMALL REGIONAL SHIP REPAIR AND BUILDING CENTRE TO A GLOBAL MARITIME HUB, SINGAPORE'S OFFSHORE AND MARINE ENGINEERING INDUSTRY HAS SEEN IMPRESSIVE GROWTH. BY JACQUELINE CHIA

From 2005 to 2009, the offshore and marine sector's compound annual growth rate of 18 per cent made it one of the fastest-growing areas in the Singapore manufacturing sector. It even managed to increase its gross revenue to a record \$16.83 billion in 2009 (when most industries were struggling with the economic downturn).

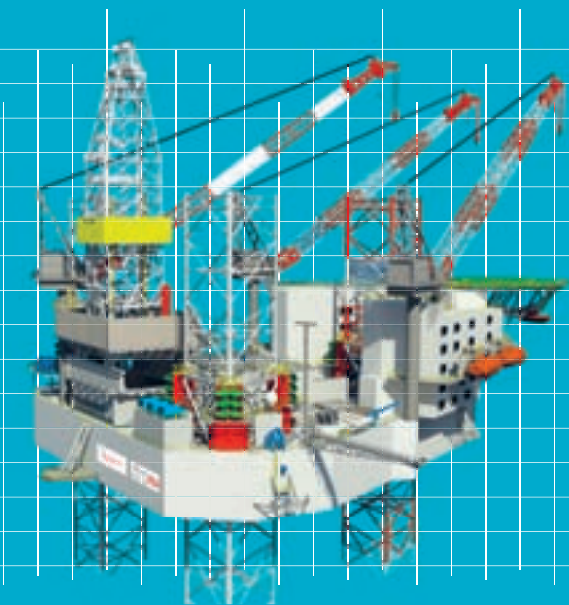
A 2010 Credit Suisse report on the industry shows that the offshore and

marine sector has contributed strongly to Singapore's economic growth as it produces 6 per cent of the total manufacturing output and employs 22 per cent of the manufacturing workforce. The two organisations pioneering the growth of this sector are Keppel and Sembcorp Marine, who have been pushing the boundaries with new innovations and designs.

Building on Design

In 2011, Keppel FELS, a wholly-owned subsidiary of Keppel Offshore & Marine, introduced a much-anticipated enhancement to its A Class design, the Super A Class, for Enscoplac and Discovery Offshore. The KFELS Super A Class rig can operate in water depths of 400 feet and drill to depths of 40,000 feet.

Engineered to provide operators with a viable and cost-effective solution for



KEPPEL FELS SUPER A CLASS:

- A proprietary jack-up rig
- Can operate in water depths of 400 feet and drill to depths of 40,000 feet
- Features advanced drilling systems with 2.5 million pounds of static hook load
- Offline stand building capacity to handle drill pipes efficiently, boosting overall rig performance
- Can accommodate a 150-person crew



KEPPEL DSSTM 38:

- A deepwater drilling rig
- Designed to maximise uptime with reduced emissions and charges
- Rated to drill 30,000 feet below mud line in over 9,000 feet water depth
- Operational displacement of over 38,000 tonnes
- Can accommodate a 130-person crew

CONQUER

harsh environments and cold climate areas, the Super A Class rig is well-suited to operate in various parts of the world including the UK, and Danish and Dutch sectors of the North Sea.

Keppel's DSSTM Series of semis, developed in partnership with Marine Structure Consultants, is one of the most technically advanced deepwater drilling rigs to be designed.

Their DSSTM 38 rig is equipped to handle the operational requirements in the deepwater "Golden Triangle" region, comprising Brazil, Africa and the Gulf of Mexico.

It is also rated to drill some 30,000 feet

below mud line in over 9,000 feet water depth and can accommodate up to 130 persons.

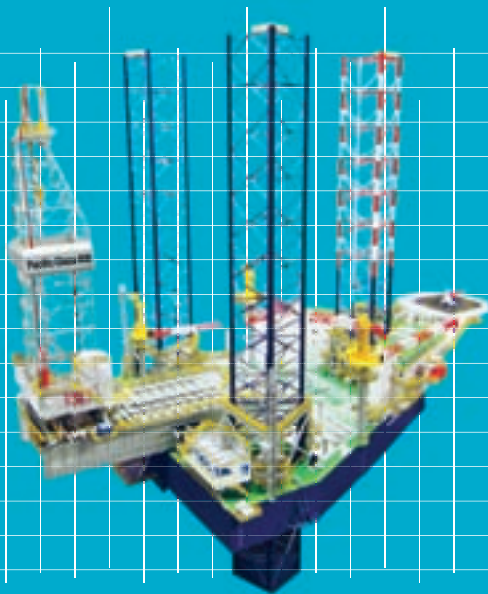
Innovating for Success

Sembcorp Marine's proprietary Pacific Class 400 jack-up rig design is an extension of the Group's popular Pacific Class 375 series. The Pacific Class 400 rig is capable of operating in water depths of 400 feet and drilling to depths of 35,000 feet with improved efficiencies and enhanced features.

High-specification rigs and platforms which work well in harsh conditions are also being built by the Group. Along with

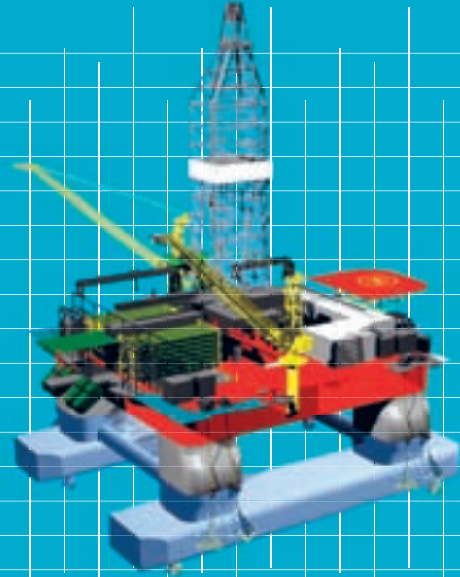
Noble Corporation and rig designer Friede & Goldman, subsidiary Jurong Shipyard designed the JU3000N harsh-environment jack-up which can operate in water depths of 400 feet and drill up to 35,000 feet, with an enlarged hull and strategic layout for enhanced operational benefits.

Sembcorp Marine's Jurong Shipyard also conceived and patented the "Load-out and Mating-in-dock" and "Transverse Skidding" techniques, which enable the simultaneous construction and sequential assembly of multiple semi-submersibles with greater quality, precision and safety.



SEMBCORP MARINE PACIFIC CLASS 400 JACK-UP RIG:

- A proprietary high-specification jack-up drilling rig
- Operates in water depths of 400 feet and drills to depths of 30,000 feet
- Improved drilling efficiency and offline pipe-handling
- simultaneous operations support
- An extension of the Pacific Class 375 jack-up rig, capable of drilling at 30,000 feet and operating in 375 feet water depth
- Can accommodate a 150-person crew



SEMBCORP MARINE INNOVATIVE SEMI-SUBMERSIBLE CONSTRUCTION:

- Proprietary "Load-out & Mating-in-dock" and "Transverse Skidding" techniques enable simultaneous fast-track construction and sequential assembly of multiple semi-submersible rigs
- Speeds up process and optimises yard's ability to build two or more semi-submersibles in a year
- Since 2005, 11 units of Friede & Goldman ExD ultra-deepwater semi-submersible drilling rigs were successfully delivered

FUTURE READY

SINGAPORE'S MARITIME R&D LANDSCAPE IS A RICH AND DIVERSE ONE, AND HELPS DRIVE THE LOCAL MARITIME CLUSTER TOWARDS INNOVATION AND GREATER HEIGHTS.

BY VINCENT WEE

► Corporations and governments around the world spend a good deal of effort and resources on research and development (R&D), knowing that the fruits of R&D can lead to innovative solutions and competitive advantages. For Maritime

Singapore, many players join hands to drive R&D in maritime to greater heights. The industry, tertiary and research institutions, and the government work together to secure the future by ensuring that Singapore stays on top of all the technological advances

that are taking place in the maritime sector.

It is in this context that the R&D framework put together by the Maritime and Port Authority of Singapore (MPA) becomes significant. The framework helps focus R&D efforts within Singapore's

diverse maritime cluster and provides the tools and settings to turn Singapore into an international centre of excellence for maritime R&D.

The R&D framework is developed around a value chain that involves four areas: education and training

RE



to develop R&D expertise; generating intellectual property and results; test-bedding for prototypes from R&D; and commercialisation of the developed products and services.

Linkages with tertiary and research institutions

and the maritime industry form the backbone of the framework. The National University of Singapore's (NUS) Offshore Technology Research Programme (OTRP), the Nanyang Technological University's (NTU) Maritime Clean Energy Research

Programme (MCERP) and the Institute of High Performance Computing (IHPC) are the marquee initiatives thus far.

Funding

The meat on the bones of the R&D framework is MPA's \$100 million Maritime Innovation and Technology (MINT) Fund. This is the means through which MPA implements the schemes and programmes under this framework and aims to meet the needs of the maritime industry within the Singapore maritime cluster.

Port, shipping, and offshore and marine engineering have been earmarked as the three main sub-clusters within the local maritime cluster that

R&D efforts have been geared towards. To this end, funds and efforts are appropriately channelled between various organisations and research bodies to best achieve these goals.

Port development

Singapore's two port operators, PSA and Jurong Port, are the epicentre around which the entire maritime leadership is based. Both are working towards developing new technologies. Under the Port Technology Research and Development Programme, MPA and PSA are collaborating to conduct research and test new technologies for future container terminals.

“ The R&D framework is developed around a value chain that involves four areas: education and training to develop R&D expertise; generating intellectual property and results; test-bedding for the prototypes from R&D; and commercialisation of the developed products and services. ”

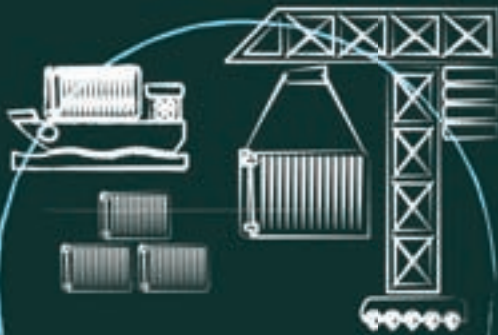


SHIPPING

- Ship Management Services
- Ship Broking & Chartering Services
- Shipping Lines / Ship Owners
- Ship Agency Services
- Cruises

SINGAPORE MARITIME CLUSTER MAP





PORT

- Cargo / Passenger Terminals
- Ship Charters
- Ship Bunkering
- Inland Water Transport



OFFSHORE & MARINE

- Wholesale / Retail of Marine Equipment / Accessories
- Shipbuilding & Repair



MARITIME SERVICES

- Insurance, Reinsurance & P&I
- Maritime Legal Services
- Maritime-related Finance
- Government Agencies
- Education & Training
- Maritime-related R&D / IT
- Maritime Logistics & Supporting Services
- Class Societies & Marine Surveying Services

The five-year programme focuses on three broad areas, namely automated container port systems, advanced container port optimisation techniques and technologies, and green port technologies. The programme will see MPA, PSA, equipment and technology providers, local institutions and other companies coming together to develop advanced port technologies for Singapore's container terminals.

MPA is funding the Programme with up to \$10 million over five years from the MINT Fund. PSA, together with local institutions and other industry partners will provide co-funding and resources of

up to \$10 million over the same period.

Jurong Port, meanwhile, is working with MPA in the Green Port and Productivity Solutions Programme. Co-funded by MPA's MINT Fund and Jurong Port, the programme will see both organisations commit \$6 million each over five years to embark on green technology and productivity projects in the port.

Marine Environment Technology

Shipping does impact the marine environment and MPA has earmarked much technology and research towards preserving and

MPA R&D FRAMEWORK

DEVELOPED AROUND A VALUE CHAIN THAT INVOLVES:

- Education and training to develop R&D expertise
- R&D to generate intellectual property and results
- Test-bedding for the prototypes from R&D
- Commercialisation of the developed products and services





NUS' OFFSHORE TECHNOLOGY RESEARCH PROGRAMME (ORTP)

LAUNCHED IN 2007 WITH FUNDING OF \$10 MILLION EQUALLY FUNDED BY NUS AND THE AGENCY FOR SCIENCE, TECHNOLOGY & RESEARCH (A*STAR)

COMPANIES PARTICIPATING:

- Keppel Offshore and Marine
- Sembcorp Marine
- Lloyd's Register Asia
- American Bureau of Shipping (ABS)
- WorleyParsons
- J Ray McDermott Asia Pacific
- Cameron International

ACHIEVEMENT

- Research into super-large floating container terminals, modelling and mitigation of LNG sloshing in membrane tanks, steel and concrete-steel sandwich systems for marine and offshore applications and research into the feasibility of using underground space under Singapore's container ports.



MPA MINT FUND

ESTABLISHED: SEPTEMBER 2003

HOW MUCH: \$100 MILLION

PURPOSE: TO SUPPORT DEVELOPMENT PROGRAMMES FOR THE MARITIME CLUSTER

- Acquaint engineering, IT and science students with the maritime industry
- Co-funding joint maritime-related R&D projects
- Setting up research professorships to support further initiatives in joint maritime R&D programmes
- Funding for proof-of-concept projects, test-bedding and establishing commercial viability



protecting the marine environment. MPA supports projects such as the home-grown team led by Professor J. Paul Chen of NUS in the development and realisation of the BlueSeas Ballast Water Management System. With an estimated 10 billion tonnes of ballast water transferred across international seas annually, the innovative system uses direct current to produce chlorine from seawater, which can help get rid of potentially harmful organisms that might threaten the biodiversity of native marine environments.

Another recent effort is the partnership with local firm NewEarth, whose pioneering Crystallisation Technology can recycle maritime and other industrial waste products into value-added construction materials. The company's factory will be able to take in 85,000 tonnes of waste from various industries annually, and produce 55,000 tonnes of material that can be used to substitute granite, cement and other road-making components.

Clean Energy

NTU has the MCERP with MPA, which focuses on research platforms that promote green, carbon-neutral, energy management solutions. Research funding of up to \$15 million is available over five years and the research is conducted through the Centre for Maritime Energy Research, a new centre under the Energy Research Institute at NTU (ERI@N).

The programme leverages on activities within other

centres in ERI@N and aims to develop system-level solutions in the green shipping and green port domain.

According to MCERP programme manager Koh Eng Kiong, the initial phase of the programme saw 10 projects being awarded while another six are pending final approval for the next round in 2012.

Most of the projects deal with clean energy and better energy management on board ships and in ports as well as the handling of emissions. Geared towards commercial application, they are pitched to ship owners and terminal operators.

Koh sees the programme's role within the maritime R&D framework as "providing clean energy solution to ship owners through the use of technology". While most of the research is geared towards energy management solutions, Koh also sees potential in new power and propulsion systems.

LNG Technology

Among private organisations, Det Norske Veritas (DNV) is one that stands out with its commitment to research. Its Clean Technology Centre's (CTC) partnership agreement with MPA to initiate and promote research, development and test-bedding projects in the areas of maritime environment and clean technologies shows its commitment to Singapore's goal of developing into a global maritime knowledge hub.

"The MPA partnership was crucial in our decision to set up the CTC, which is

"The most exciting project Clean Technology Centre is working on is about the use of liquefied natural gas to fuel ships. This has been its most successful joint industry project."

BJORN TORE MARKUSSEN,
MANAGING DIRECTOR, CLEAN TECHNOLOGY CENTRE



our maritime R&D centre here in Singapore," says CTC managing director, Bjorn Tore Markussen. "We established the CTC to build competencies and high knowledge base capabilities for Asia and also enable us to exercise maritime thought leadership in that cluster," says Markussen.

Among the most exciting projects CTC is working on is with the use of liquefied natural gas (LNG) to fuel ships.

This has been its most successful joint industry project so far and saw 14 organisations working successfully together.

Another interesting development in the works is an LNG bunkering project that could be approved in January, according to Markussen. "We hope that funding and the number of participants will be enough to go ahead," he adds.

Offshore and marine

With the offshore and marine sector contributing 7% of Singapore's GDP, the OTRP, a programme under NUS's Centre for Offshore Research and Engineering (CORE), was launched in 2007 with S\$10 million in funding.

Since its launch, the programme has seen the participation of seven major offshore marine players, including Keppel Offshore and Marine and Sembcorp Marine.

The OTRP has conducted various research projects on its own. These include a project on very large floating structures (VLFS) which proposes using super-large floating container terminals as a possible solution to land-based ports in land-scarce Singapore.

While Singapore companies currently

NTU'S MARITIME CLEAN ENERGY RESEARCH PROGRAMME (MCERP)

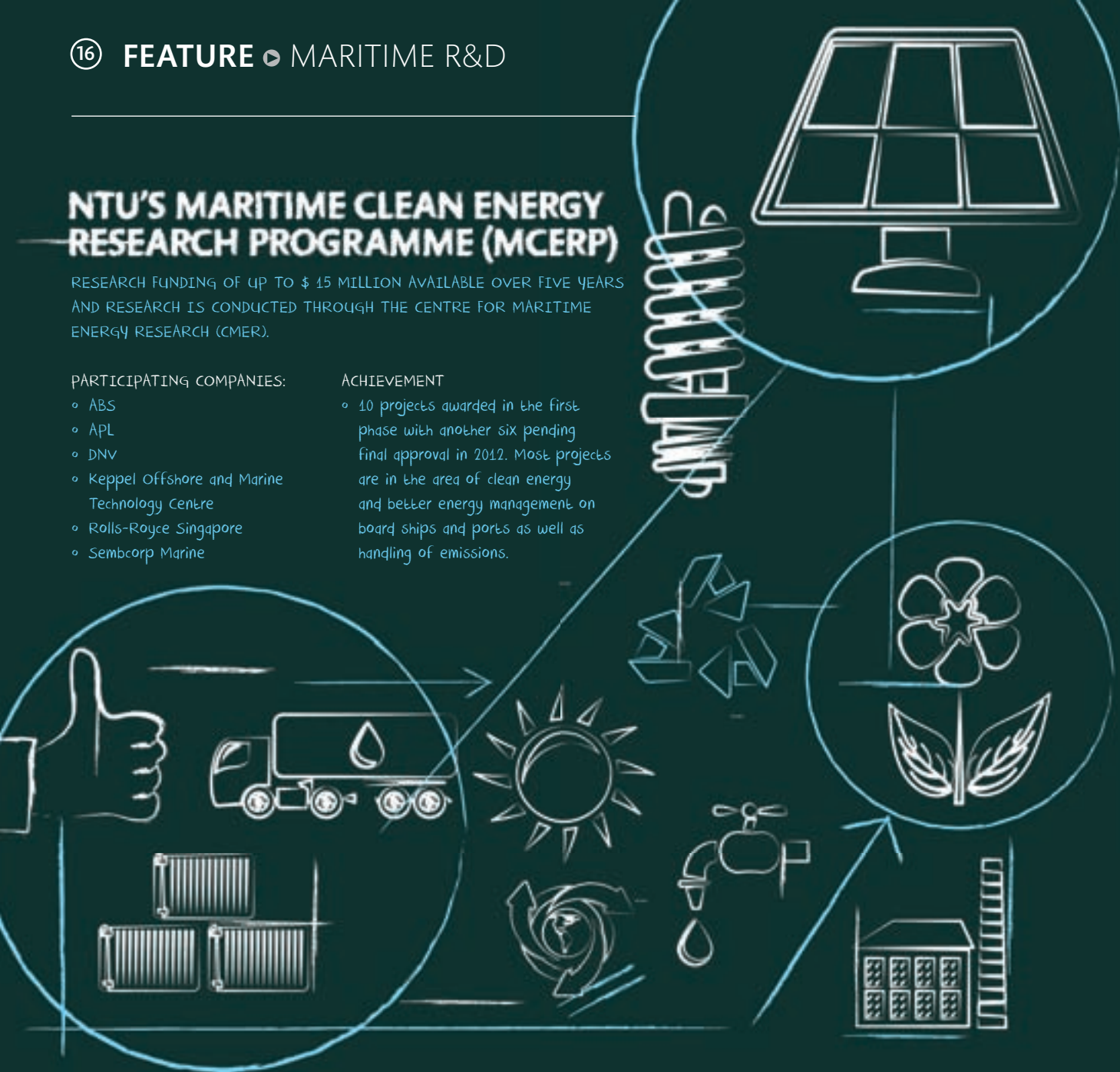
RESEARCH FUNDING OF UP TO \$ 15 MILLION AVAILABLE OVER FIVE YEARS AND RESEARCH IS CONDUCTED THROUGH THE CENTRE FOR MARITIME ENERGY RESEARCH (CMER).

PARTICIPATING COMPANIES:

- ABS
- APL
- DNV
- Keppel Offshore and Marine Technology Centre
- Rolls-Royce Singapore
- Sembcorp Marine

ACHIEVEMENT

- 10 projects awarded in the first phase with another six pending final approval in 2012. Most projects are in the area of clean energy and better energy management on board ships and ports as well as handling of emissions.



dominate 80 per cent of the global market in new build jack-up rigs, competition is growing, especially from the Chinese and South Korean yards, says OTRP's Prof Chow Yean Khaw.

"There is, therefore, scope for more active support for these Singapore companies through R&D by developing niche capabilities," Prof Chow adds. "These R&D activities can potentially be used to enhance the design of premium jack-ups and add to

the competitive advantage of our Singapore companies." In fact, the centre and Keppel have gone on to patent some of the results of these projects.

Another key area of research is the development of practical methods to re-assess and reinforce aged or damaged offshore platforms.

These projects will be increasingly important as older existing offshore platforms in Southeast Asia become due for

refurbishment as well as for the repair of hurricane-damaged platforms.

The OTRP has developed improved and new methodologies such as the "smart" sensing and system identification for offshore structures, the retrofitting of offshore platforms, and fracture resistance and repair of joints in offshore structures.

These projects include participants from classification societies such as the American Bureau of Shipping, DNV and

Lloyd's Register Group, and can potentially influence industry practice.

Subsea engineering is also expected to be one of the biggest growth areas of offshore technology in the coming years as exploration and production is now venturing further offshore and into deeper waters, according to Prof Chow.

The programme's latest batch of projects will be focusing on deepwater technology.



PORT DEVELOPMENT

- The Port Technology Research and Development Programme is a collaboration between MPA and PSA to conduct research and test bed new technologies for future container terminals.
- MPA funding \$10 million over five years and PSA matching an equivalent through partners and co-funding.
- Green Port and Productivity Solutions Programme: MPA and Jurong Port (JP) partnering for research on green technology and productivity projects in the port.
- MPA & JP commit \$6 million each over a period of five years.

International tie-ups

In addition to the various initiatives in Singapore, MPA has partnerships with various overseas bodies as part of its R&D outreach programme. These include an agreement with the Research Council of Norway – a partnership that has yielded innovative solutions such as membrane technology for the efficient treatment of wastewater, and wireless broadband coverage up to 100km from Singapore port waters.

As part of a collaboration with the Port of Rotterdam, MPA jointly organises the biennial International Maritime-Port Technology and Development Conference (MTEC) which brings together the global maritime industry and research community to exchange ideas, showcase R&D results, network and form collaborations to further R&D in maritime technologies.

As a boy, Andreas Nordseth was often fascinated by tales of the sea. “Meeting family friends at parties and hearing them talk about life at sea and their travels to exotic lands made me curious about seafaring,” he recalls. “When I turned 12, I firmly told my mother I wanted to be a seafarer, much to her surprise.”

At 16, Nordseth opted for a vocational training stint on-board a cargo vessel. Wobbly legs and first-time jitters notwithstanding, the young Nordseth was convinced that he was going to be a ship’s cook. “I trained on-board a ship for one

“As a business, the Danish maritime industry needs to look at how to position itself, identify key markets and implement effective business models. In some cases, we’ve had to work with Danish maritime companies with long histories, which tend to be more inward looking to challenges at an international level,” he elaborates. This serves as an important strategy to grow Danish shipping. Today, Denmark is home to over 1,000 maritime-related businesses.

Present business concerns aside, piracy presents a major challenge today,

continue to make efforts to eliminate these sub-standard practices,” he says. Cementing this commitment, Denmark ratified the Maritime Labour Convention in 2011.

Blue Denmark

The Danish maritime industry relies on core maritime activities such as shipping and maritime transport, maritime services, shipbuilding, maritime equipment, and offshore oil and gas extraction. This cluster of Danish maritime sectors is often referred to as Blue Denmark.

As a nation with a strong seafaring tradition, Denmark has been committed to upholding good maritime standards. In 2006, Denmark was the first country to be audited by the United Nations’ International Maritime Organization (IMO) and this has set the benchmark for a high standard of maritime practices. This commitment is also set out in the Danish government initiative, The Blue Denmark, based on the twin philosophies of identifying growth opportunities and business sustainability for the future. Nordseth also identifies the inevitability of a balanced struggle.

Lessons from Singapore

Visiting Singapore under MPA’s Distinguished Visitors Programme has been a valuable learning experience, says Nordseth. “It was interesting to see the port operations in Singapore first-hand, and to learn that despite being so far apart, we share the same ambitions and challenges.

“For example, every time a ship docks, it has to coordinate between many different authorities and partners, and we all deal with facilitating that. We’ve been able to share our experiences on how we, as administrators, can integrate and streamline these processes.”

As for changes closer to the heart, Nordseth reflects: “Looking back on my career, I am happy to have made a difference playing a part in shaping some of the strategies and training initiatives that will help bring the hundred years of Danish shipping forward into the future.”

SEAFARER STORIES

TALES OF THE SEA INSPIRED ANDREAS NORDSETH,
DIRECTOR GENERAL OF THE DANISH MARITIME
AUTHORITY, TO JOIN THE PROFESSION. BY SHERALYN TAY

week and was absolutely convinced it would be my career,” he says, smiling at the recollection. That would have been the extent of his ambition had Nordseth not been told to explore other seafaring career options. “I did,” he adds with a chuckle. “But I am still a good cook!”

Shaping Danish Shipping

With more than two decades of experience as a maritime educator, trainer and examiner, Nordseth has overseen the development of a range of Danish maritime-related areas in education and training, certification and manning, and operational issues such as navigational safety. Emphasis on these areas is part of the Danish maritime industry’s efforts to prepare for the future.

notes Nordseth. Some headway has been made in this regard. In 2010, Denmark expanded its network for combating piracy and joined the Regional Cooperation Agreement on Combating Piracy and Armed Robbery against Ships in Asia (ReCAAP), which promotes and enhances cooperation against piracy in Asia through information sharing and capacity building.

Another area that Nordseth highlights as a challenge is maintaining good labour and welfare standards. “Because of increasingly tough commercial competition, sub-standard operators try to reduce their overheads by compromising on social conditions and welfare. This is a challenge for administrations and operators, and we



PASSAGE

INDIA'S GROWING MARITIME INDUSTRY AND ITS TIES WITH SINGAPORE WERE THE FOCUS OF THE VISIT OF K MOHANDAS, SECRETARY OF INDIA'S MINISTRY OF SHIPPING. BY PRISCILLA WONG

▶ With 12 major ports covering majority of India's 7,500km-long coastal line and the Jawaharlal Nehru Port standing at the 30th position of the top 100 container ports in the world, India is a significant player in the maritime community. In 2011, under the Maritime and Port Authority of Singapore's (MPA) Distinguished Visitors Programme, Singapore played host to K Mohandas, secretary of India's Ministry of Shipping.

"Through this visit, we hope to build closer ties, both personal and professional, between MPA and the Indian Ministry of Shipping," says Lam Yi Young, Chief Executive, MPA.

Mohandas agrees: "Singapore has a dynamic maritime industry and a robust maritime management system. And both Singapore and India have strong partnerships in several areas in the maritime sector."

The India-Singapore Shipping Ties

The Indian Ministry of Shipping estimates that close to 70 per cent of the value of India's international trade – and 90 per cent of its volume – moves through the country's maritime transport. The shipping ministry is

constantly seeking greater efficiency in streamlining operations, and growing its network of international shipping trade partners.

With this visit, Mohandas explores the possibilities of greater cooperation and shipping trade between Singapore and India, and addresses critical issues such as shipping-related greenhouse gas emissions.

Over the past few decades, India has maintained strong relations with Singapore in several trade areas, including shipping. According to Mohandas, it is the goal of the Indian ministry to further develop these ties, to encourage deeper understanding and facilitate increased trade between the two nations.

Growth Areas

With such keen focus on growth, Mohandas shares that the shipping ministry has identified some priority areas to work on, including basic legislative reforms as well as public policies. These were initiated to increase port efficiency, attract regional partners and investors, and reach its proposed milestone of 3.2



TO INDIA

billion tonnes in terms of cargo-handling capacity by 2020 under the Indian Maritime Agenda.

To ensure smoother operations, the Indian government has since rolled out plans to update lighthouse management systems and other major structural works following the successful implementation of a traffic-monitoring system in most of India's major ports. The inaugural India Maritime Week is being launched in 2012 to build on the collective knowledge in the Indian shipping industry.

Mohandas also cites the importance of developing the population of Indian seafarers, "which make up at least 7 per cent of the total seafaring population" through the implementation of training initiatives.

Mohandas observes that with the rapid growth of China and the rest of Asia, India is in a good position to service the global shipping trade. By 2014, the Indian ministry expects to launch a new terminal which would double the port capacity of Jawaharlal Nehru – one of the largest developing port areas – as part of a private-public sector model.

"The upcoming changes will be exciting to watch," claims Mohandas, "although we should expect a fair bit of challenges to come our way."

The Challenger

Mohandas should have no qualms dealing with challenges, having spent

close to 40 years in various ministries within the Indian government.

The 59-year-old graduated with a Bachelor's degree in Chemistry from the University of Kerala and Master's degree in Finance from the University of Strathclyde, United Kingdom.

He followed that with an illustrious career in the Indian Administrative Service and accumulated invaluable experience in finance, industrial development, education and urban development, including administration in public policy.

Mohandas has served as special secretary in the Department of Revenue within India's Ministry of Finance.

While he values his well-acknowledged experiences in the Indian government, nothing brings about greater "sunshine to life" than the thought of his family.

"My daughters and their children keep me very busy," says the affable gentleman with a laugh. Even as an experienced and influential bureaucrat, Mohandas still prioritises his family in his life. He also credits his grandfather and father, and the warmth of a close-knit family as being the source of his mental strength.

Authors such as Nikos Kazantzakis, Franz Kafka and the plays of Shakespeare are Mohandas' poetic and existential inspiration. These works act as a constant reminder that surmounting challenges, albeit difficult, are always entirely possible.

"One should constantly be learning – that is life," surmises Mohandas.

"Such face-to-face dialogue is not just beneficial, it promotes efficiency in understanding. We can work out our synergies as both Singapore and India maritime industries still have a lot of potential for further growth."

IN THE THICK OF THINGS

WHEN LLOYD'S DECIDED TO ESTABLISH ITS PRESENCE IN ASIA WHERE IT HAD BEEN SERVICING BUSINESSES FOR DECADES, SINGAPORE WAS THE NATURAL OPTION FOR BEING A REGIONAL SPRINGBOARD. **BY RAHITA ELIAS**

► Recognising Asia's strong potential for growth, Lloyd's, the world's specialist insurance market, decided it needed to be right in the middle of the action - Lloyd's had been reinsuring businesses in the region for decades long before it established its first offices in Asia.

"We already enjoyed strong relationships with brokers, insurance companies and ship owners. However, we realised that there was a need to be closer to our policy holders, the brokers and the insurance companies to be where the action is and to be able to respond to their needs in the same location and time zone. And that is why we decided to move to Asia," says Singapore-based Kent Chaplin, Managing Director of Lloyd's Asia.

Chaplin explains how Lloyd's is different from other insurance brands - it is not a company, but a partially mutualised market where its members join together as syndicates to insure and reinsure risk. A syndicate, he explains, is "a group of specialist underwriters, who price, underwrite and handle any claims in relation to a risk".

Where the action is

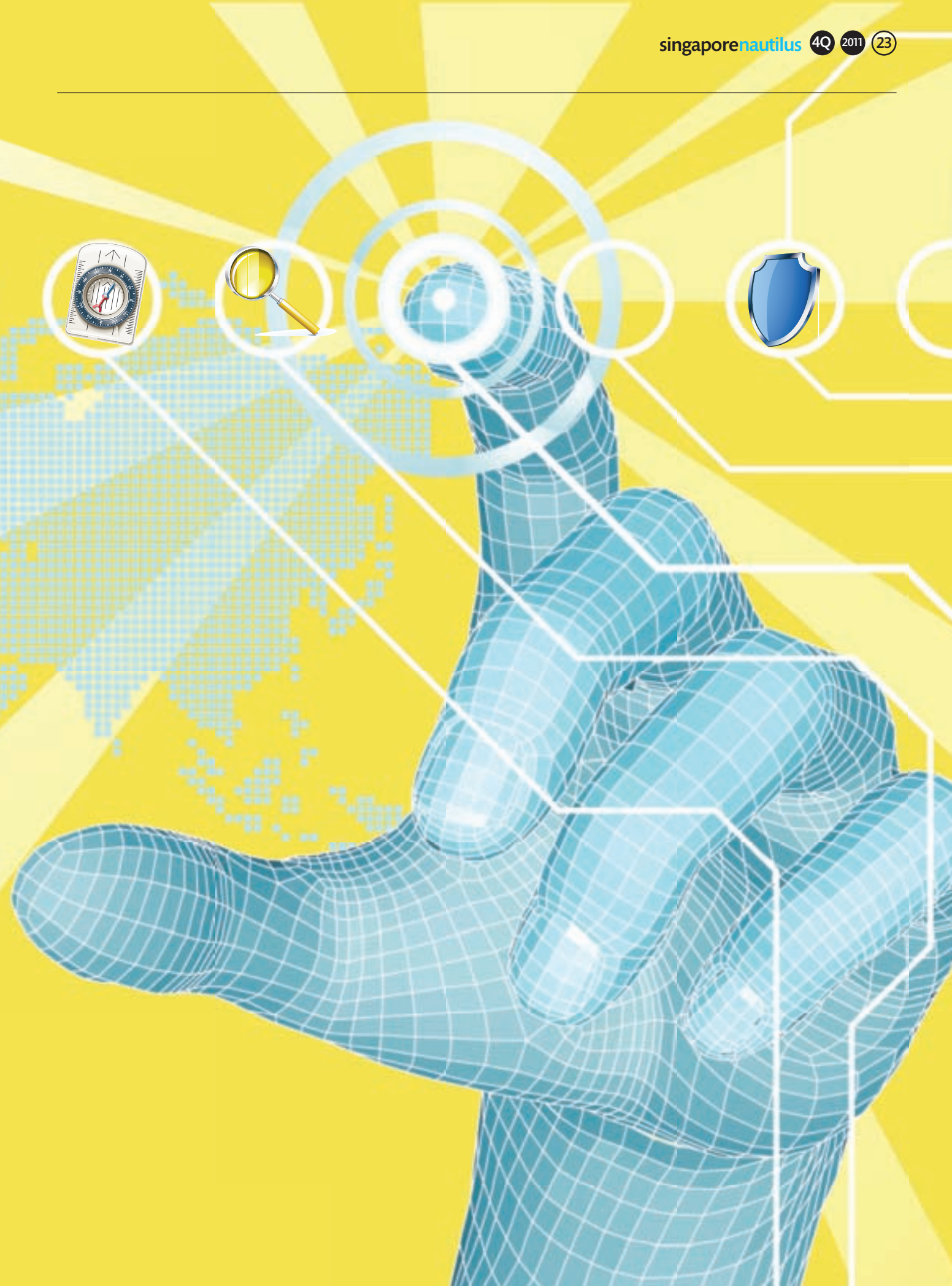
In the late 1990s, Lloyd's first established offices in Asia in Japan, Hong Kong and Singapore in quick succession. In 2004, it opened another office in Asia - this time in Shanghai, China.

However, Lloyd's still had work to do on raising its profile in the region.

"Although Lloyd's has an established reputation and is well known, perhaps best known in maritime circles, it was not necessarily as well understood in Asia, so we are working hard to raise our profile and promote our brand here. We are also working on improving people's understanding of who we are and how they can access us."

Its move to Asia has proven to be a success. For example, its Singapore office, which serves as Lloyd's regional base, has expanded exponentially.

"In 1999, we started off with a couple of syndicates underwriting approximately US\$2 million, the majority of which was marine. By the end of 2010, we had 21 syndicates underwriting US\$327 million.





We started off pretty modestly in the marine and energy sectors, but today underwrite almost all the traditional classes of businesses that Lloyd's does in London," says Chaplin.

Chaplin adds that of the business done from Singapore one-third is marine-related, which includes hull, cargo and liability as well as the more specialist marine lines.

Growth spurt

Chaplin also discloses that growth for

Lloyd's in Singapore has been particularly strong in the past few years. Between 2006 and 2010, gross premiums soared 477 per cent from US\$68.6 million to US\$327.4 million.

Chaplin further explains: "The exponential growth we experienced reflects the growth of the Singapore insurance and reinsurance market, generally."

The growth spurt came on the back of an influx of capital into the Asian insurance and reinsurance market as insurers sought


to diversify their geographical risk profile and as a consequence of the growth of the Asian economies.

Lloyd's choice

Having decided on moving to Asia, Lloyd's chose Singapore to be its regional springboard.


Chaplin, who relocated to Singapore in January 2011, says that Singapore was the logical choice for a host of reasons.

"For one, it is a centre of excellence for financial expertise and has world-class



“Singapore is a centre of excellence for financial expertise and has world-class sea and air infrastructure. It is also the reinsurance and wholesale pricing hub for the region. All of the major international carriers and brokers have established a presence here.”

Kent Chaplin, Managing Director, Lloyd's Asia



In November 2011, Lloyd's moved to the brand new Asia Square Tower 1 in the heart of Singapore's business district. Its 65,000 sq ft office houses about 260 people, with 18 service companies co-located and contiguous within the area.

“When an insurance broker comes to our office, he or she has a wide choice of syndicates to choose from – all of which compete with each other. This is Lloyd's unique strength as we offer a cohesive subscription market – where a number of syndicates can take a share of the same risk. We need to promote this uniqueness to maintain an advantage.”

Beyond physical size and presence, Lloyd's has also actively developed the depth and breadth of expertise among its people.

“We have been actively nurturing talent and building the underwriting expertise here, and have been working closely with the General Insurance Association of Singapore,” says Chaplin, who began his career as a barrister and solicitor in New Zealand.

Long-term commitment

Looking ahead, he says: “We want to encourage new syndicates to start up or move to Singapore. However,

these syndicates must add value to the market by offering complementary and innovative products, bringing additional underwriting expertise.”

For Lloyd's itself, he adds: “We have a long-term commitment to Singapore. We want to do more here and strengthen our relationship with the industry and the regulatory authorities.”

Chaplin also says that with global macro-economic conditions expected to remain challenging in 2012, discernment and discipline will be essential for continued success.

“We will continue to concentrate on managing the Lloyd's Asia platform as effectively and efficiently as possible, ensuring that we are agile, flexible and able to manage complex, large and specialist risks, including marine risks as well as we do in London.

“The big challenge ahead is to stick to underwriting profitably. Therefore, discernment and discipline are essential. We have to be in Asia on the ground to better understand the risks we are underwriting and make decisions locally to be in a position to attract and retain profitable business. But, crucially, we also need the discipline to walk away if it doesn't make sense.”

sea and air infrastructure. It is also the reinsurance and wholesale placing hub for the region,” he says.

“In addition to this, all of the major international carriers and brokers have established a presence here. We have to be here to maintain as well as grow our business,” Chaplin says.

He adds that the Republic's pro-business approach and strong government support, coupled with the well-regulated business environment were also major pull factors.



It is the right time and the right place to be in Singapore for recently rebranded SIVA Shipping. The company is the result of a well-timed and well-executed acquisition by India's SIVA Group, an international conglomerate headquartered in Chennai.

J.B. Ugland Shipping was acquired by the SIVA Group in 2008 and continued to do business under this name until it was renamed and rebranded as SIVA Shipping in 2011. SIVA Shipping's core strength is its modern fleet of some 30 vessels including crude oil tankers, product tankers, LPG carriers, chemical carriers and bulk carriers that came from the J.B. Ugland Shipping acquisition. SIVA Shipping

remains an owner/operator with a strong Norwegian base. During the past year it has further strengthened its management team in Oslo.

Its dry bulk arm started life as Crossbridge Shipping Singapore Limited in 2009 and was renamed as SIVA Bulk Limited in 2011. This company has become a respected freight provider in the dry bulk commodities sector. Its initial focus was the transport of coal to India from South Africa and Indonesia, however, it now moves a variety of dry bulk cargoes across a number of trade routes. During 2010, SIVA Bulk moved some seven million tonnes of cargo and is believed to be the fourth largest carrier of coal

into India. It operates out of Singapore, Mumbai, Dubai and Oslo.

The final piece in the expansion plan was SIVA Offshore which brought together SIVA Shipping's investments in the offshore sector. These include a 33 per cent stake in Swiber PJW 3000, a large derrick pipe lay barge used in the offshore oil and gas sector, two 5,000dwt platform supply vessels (PSVs) and two 8,000bhp anchor handling tug and supply (AHTS) vessels.

Alongside the rebranding, SIVA Shipping's management team has been strengthened with Michael Valentin (formerly from A.P. Moller-Maersk) joining as CEO and Henrik Ness (formerly from Norsk Hydro) as COO.

The company places great value on its unique heritage and diversity, John Fawcett-Ellis, SIVA Shipping, Head of Singapore Office, shares with *Singapore Nautilus*. SIVA Shipping has a strong foundation and is well positioned both in Scandinavia and in Asia to further develop and grow its business.

On the lookout

"While SIVA Shipping has just completed its rebranding exercise and is consolidating all its investments from the past three years, it is actively on the lookout for new opportunities," says Fawcett-Ellis. "For example the offshore sector is of particular interest to us. Singapore is strong in this sector and this gives rise to

BUILDING BLOCKS

CREATED THROUGH A SERIES OF STRATEGIC ACQUISITIONS, SIVA SHIPPING HAS JUST COMPLETED ITS REBRANDING EXERCISE AND IS NOW LOOKING AT NEW OPPORTUNITIES IN SINGAPORE. **BY VINCENT WEE**

Assets that are attractive are those that provide security of employment or are readily marketable.

John Fawcett-Ellis, SIVA Shipping, Head of Singapore Office

potential opportunities for us," he adds.

"We are looking at building synergies with us as a strategic partner and offshore companies with excellent operational capabilities." He cites SIVA's co-investment with Swiber and Maas Capital in *Swiber PJW 3000* as an example of a successful joint venture: "That was a substantial investment for us and we've been very pleased. We believe there are other opportunities out there in a similar vein." These include floating supply and offloading (FSO) projects and a variety of other support vessels that operators may find attractive.

SIVA Offshore looks for partners that have a good track record, operational excellence and a strong market presence, he points out. Assets that are attractive are those that provide security of employment or are readily marketable. Getting these fundamental factors in place is critical before moving forward, he says. Growth segments for SIVA Shipping are not just offshore but also include dry

bulk and chemical tankers.

Perfect place

Singapore's development as a maritime hub has made it the perfect place for SIVA Shipping to grow its business, Fawcett-Ellis says. "Singapore has come a long way since I first came here almost 10 years ago. There's a wide choice of service providers as well as other shipping and offshore companies here and we will work that to our advantage."

He notes that there has been a big increase, especially on the dry bulk side, in the number of traders operating here on a major scale. SIVA Shipping is also among those that have increased their presence and expanded their own

capabilities. They now have a full-fledged dry bulk team, boosted core competence in tanker operations and moved their finance and headquarters functions here. Headcount has grown from five in 2008 to 20 now.

"On top of this, all the well-known reasons for being in Singapore such as the ability to harness business opportunities, ease of doing business, support from the authorities, the practicalities of the ships calling at Singapore port and so on, still hold good. We're looking forward to growing along with Singapore's burgeoning maritime scene," Fawcett-Ellis concludes.



THE SHIPPING INDUSTRY NEEDS TO MAKE SOME TOUGH DECISIONS TO FACE THE PRESENT CRISIS, SAYS PROFESSOR MA SHUO OF THE WORLD MARITIME UNIVERSITY. BY VINCENT WEE

THE END IS NIGH

► “The end is nigh!”, pessimists may conclude as the shipping industry is pulled along with the world economy slowdown. But Prof Ma Shuo, Vice-President of the World Maritime University, shares that the age-old shipping industry is one that thrives on inherent cycles of boom and bust, and the current downturn is far from the end of the world.

Prof Ma, who is a Professor of Maritime Economics and Policy, has been focusing recently on the nature of the cyclical rise and fall of the shipping market. The dry bulk market’s sudden and sharp bust for example, should not be blown out of proportion as what preceded was a long and prosperous boom, and

this bust would be shorter and sharper.

“The cycle itself is not necessarily shorter but the boom stage was drawn out and the decline stage briefer,” Prof Ma tells *Singapore Nautilus*. Some of the main reasons for this are the unusual pattern of demand which over-relied on China’s demand and the speculative trading of shipping freight derivatives such as forward freight agreements (FFAs). As

neither of these elements existed in the previous cycles, they exaggerated the market’s movements this time around.

Yet, Prof Ma maintains that there is no reason to





The shipping industry is established and mature enough to sort things out by itself. This economic downturn is not the first time and it won't be the last.

Professor Ma Shuo, Vice-President, World Maritime University

lose hope: "It is, of course, unrealistic to claim that a depressed market never recovers."

"Rising and falling markets are at the base of the shipping industry, and this is what has happened throughout history. And while the market adjusts, entrepreneurs find ideas; speculators meet opportunities;

manpower get trained, and the shipping industry is optimised," he said.

Searching for answers

Prof Ma observed that an erroneous perception arose among some circles in the shipping community that trade would never stop growing and that the market was infallible. As freight continued to hit new heights, this belief was reinforced and accepted by an increasing number of

people. Greater numbers of ships in increasingly larger sizes were ordered, and shipyards thought they had their order books full.

"The oversupply now is simply too overwhelming for the market," says Prof Ma. He sees little incremental growth from China, and little hope for higher demand from other markets. "China's expected slowdown without a similar heavyweight such as India taking over will certainly affect the whole shipping market for years to come. However, we should consider that the

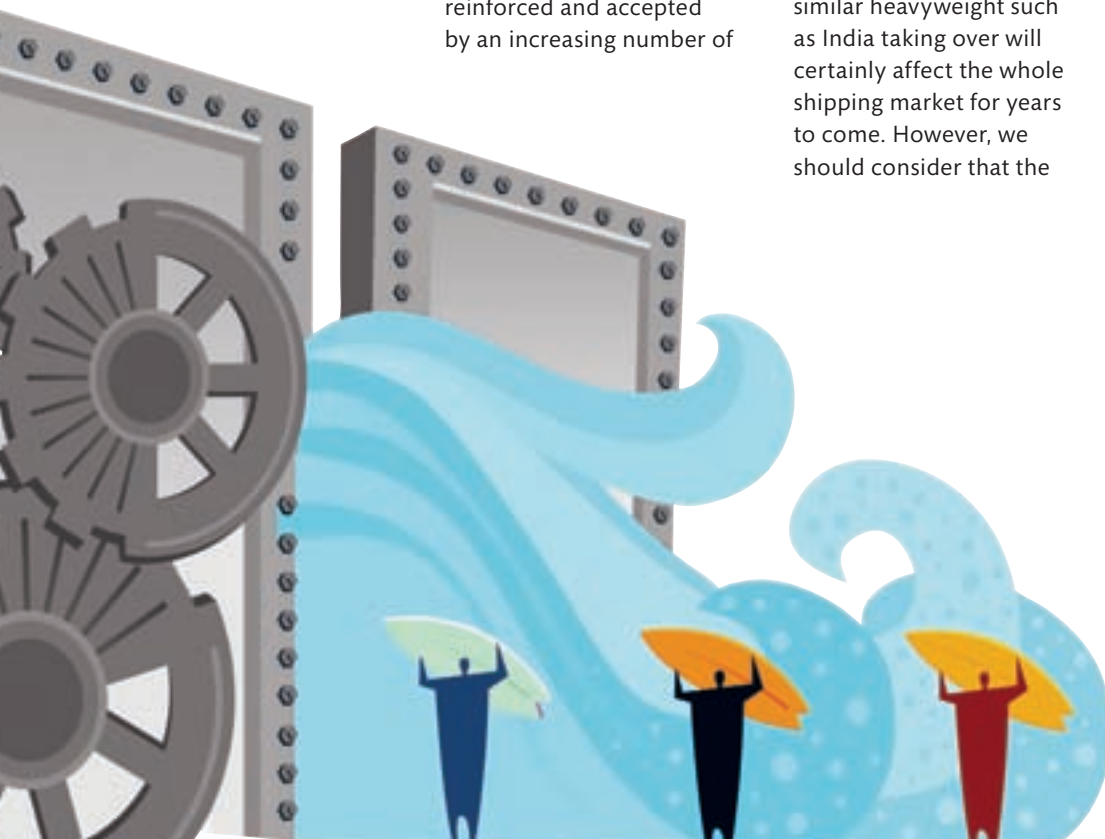
boom years we have been experiencing were abnormally drawn out, and the situation is simply reverting to normalcy."

He adds: "All other sectors are experiencing overcapacity as well. A balanced situation or short supply is an exception rather than the norm."

Prof Ma also questions the large outlays required for building ships: "Whose money is used to produce ships that would be poorly utilised during these tough times? It is surprising that some financial institutions are still lending money to build more ships. They are simply running big risks."

He is also not optimistic about proceeding with technological advances in shipping during this period, describing some of the big players who have gone out on a limb with risky gambles. Commenting on Maersk's decision to build new Triple E Class ships and Vale S.A.'s introduction of the Valemax bulkers, Prof Ma says: "These bold decisions have earned much admiration. But as the demand situation is getting gloomier, this looks to me more like gambling than carefully calculated strategies."

"In any case, these are brave companies who are pushing new boundaries with these ships. This time they may still get it right. My worry is when someone gets it wrong, similar to what has happened before with the



tanker industry," he adds.

With shipyards continuing to overwhelm themselves with new build orders, Prof Ma feels that the only solution to this situation would be to work on the supply side.

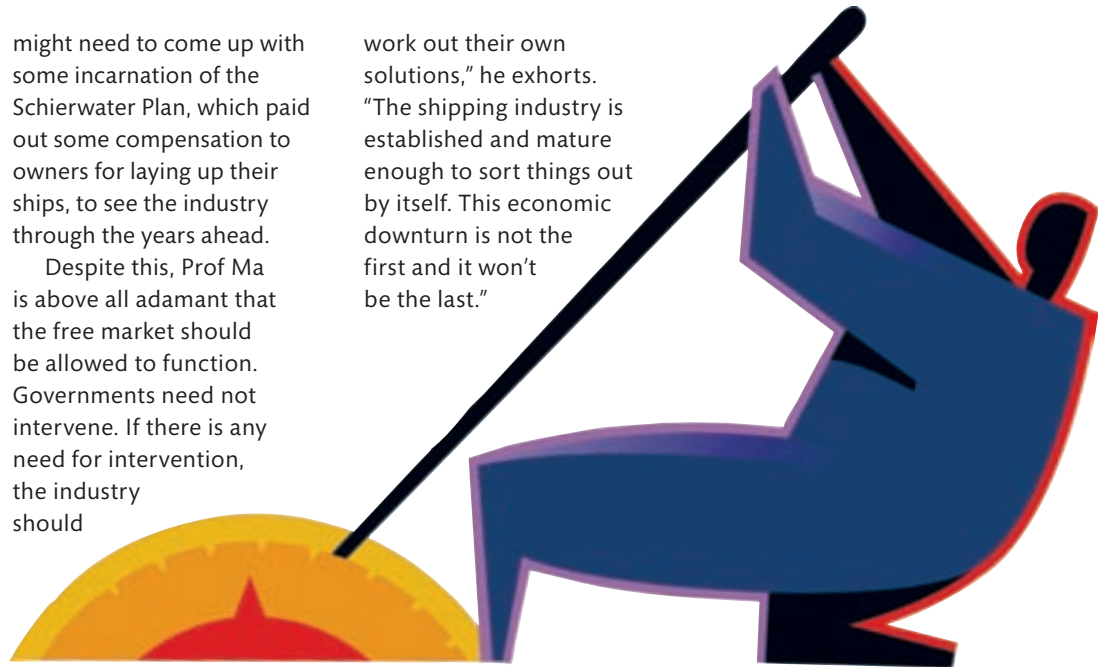
To this end, Prof Ma sees little alternative except the laying up of ships. Pointing out the supply conundrum, he says: "Once built, ships will be around for 20 years or so, no matter how much re-organisation, bankruptcy, or mergers and acquisitions happen in the industry," Prof Ma suggests that the industry

might need to come up with some incarnation of the Schierwater Plan, which paid out some compensation to owners for laying up their ships, to see the industry through the years ahead.

Despite this, Prof Ma is above all adamant that the free market should be allowed to function. Governments need not intervene. If there is any need for intervention, the industry should

work out their own solutions," he exhorts.

"The shipping industry is established and mature enough to sort things out by itself. This economic downturn is not the first and it won't be the last."



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► According to a study conducted by the International Maritime Organization in 2009, international shipping was estimated to have emitted 870 million tonnes, or about 2.7 per cent of total man-made emissions of CO₂

globally in 2007. Despite shipping being the most eco-friendly transport industry available, the industry is still working out various means to reduce its carbon footprint on the environment.

Recently, the efforts of Jurong Port and the

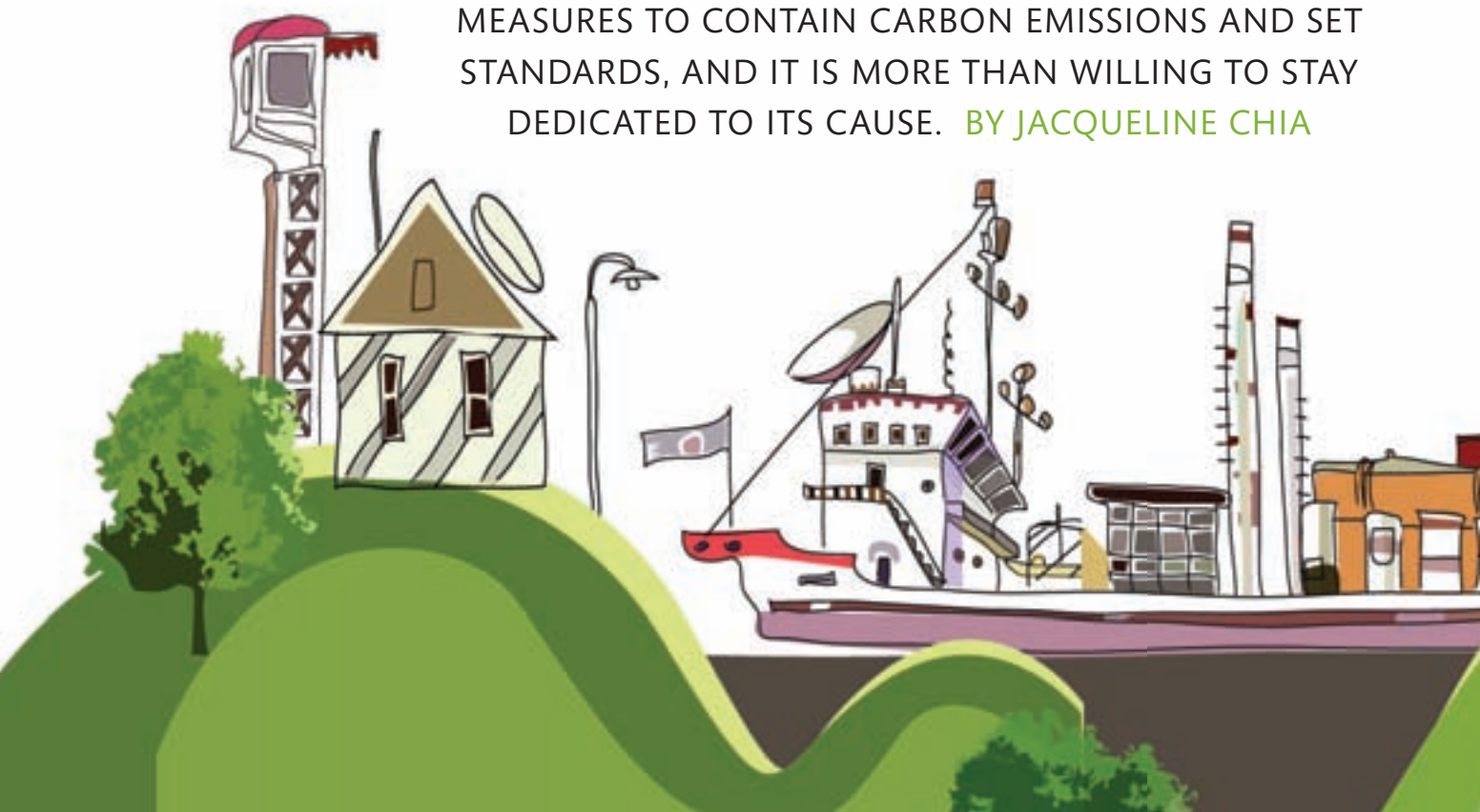
Maritime and Port Authority of Singapore (MPA) set off on a new path in the green movement with the launch of the Green Port and Productivity Solutions (GPPS) Research and Development Programme.

Both organisations

signed a Memorandum of Understanding (MOU) in October 2011, which will see each party investing \$6 million over the next five years to embark on green technology and productivity projects in the port. Jurong Port is eager to begin this

RARING TO GO GREEN

FOCUSING ON MAKING THE SHIPPING INDUSTRY ECO-FRIENDLY, JURONG PORT IS BUSY CHARTING OUT MEASURES TO CONTAIN CARBON EMISSIONS AND SET STANDARDS, AND IT IS MORE THAN WILLING TO STAY DEDICATED TO ITS CAUSE. **BY JACQUELINE CHIA**



series of projects and believes that a good way to start is to look at the ways in which technology can help create and support more efficient processes to reduce the port's carbon footprint.

The MOU dovetails with the Maritime Singapore Green Initiative, a \$100 million scheme also introduced in 2011. It aims to promote clean and green shipping in Singapore by reducing the environmental impacts of shipping and its related activities. Under the initiative, three main programmes will help to categorise the different aspects of the projects involved: the Green Ship Programme, the Green Port Programme and the Green Technology Programme.

Green Audit

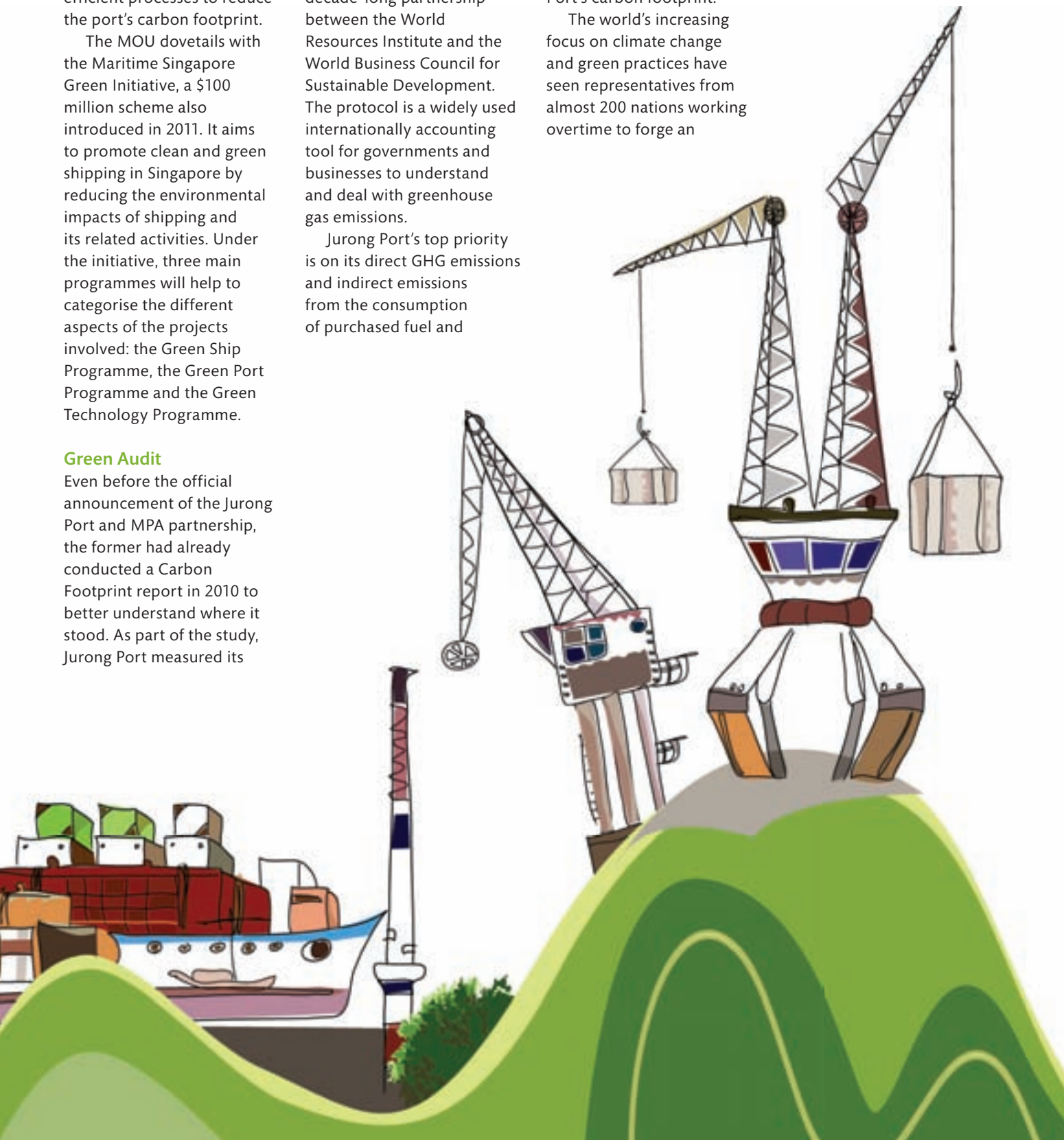
Even before the official announcement of the Jurong Port and MPA partnership, the former had already conducted a Carbon Footprint report in 2010 to better understand where it stood. As part of the study, Jurong Port measured its

carbon footprint for 2009 according to three different scopes defined by the Greenhouse Gas (GHG) Protocol, effected by the decade-long partnership between the World Resources Institute and the World Business Council for Sustainable Development. The protocol is a widely used internationally accounting tool for governments and businesses to understand and deal with greenhouse gas emissions.

Jurong Port's top priority is on its direct GHG emissions and indirect emissions from the consumption of purchased fuel and

electricity. Indirect sources as a consequence of port activity not within the organisation's control make up 88.3 per cent of Jurong Port's carbon footprint.

The world's increasing focus on climate change and green practices have seen representatives from almost 200 nations working overtime to forge an



Jurong Port is eager to begin this series of projects and believes that a good way to start is to look at the ways in which technology can help create and support more efficient processes to reduce the port's carbon footprint.

international climate deal that will deal effectively with surmounting environmental problems - at Copenhagen in 2009, and at Cancun in 2010. Most recently, in Durban, South Africa, a UN Marathon Climate Conference approved a landmark road map that will unite all major emitters of greenhouse gases under a single legal pact.

The treaty has not yet been approved since there are still many details that need ironing out over the next few years. But if it is indeed good to go as scheduled in 2015, the pact aims to effect a significant positive change to the climate. The current Kyoto

Protocol states a non-binding agreement between countries to limit global warming to less than 2 deg C above pre-industrial levels, which the world is yet to achieve.

Singapore initiatives

Back in Singapore waters, the Government has plans to reduce carbon footprint by 7 to 10 per cent by 2020's Business-As-Usual levels. If the new legally binding agreement moves ahead, the target will be increased to 16 per cent with the possibility of rolling out a carbon tax on companies.

With the start of GPPS, funded by MPA's

Maritime Innovation and Technology (MINT) Fund, Jurong Port will look at research, development and test-bedding activities to reduce carbon emission and improve productivity for its existing and future terminals. Major operational challenges such as rising labour costs, limited waterfront space and high energy consumption currently stand in the way of improving the port's green practices, but these are challenges in which Jurong Port is more than ready to deal with.

For Jurong Port, the first

step of going green is to critically look at its existing processes to enhance productivity and efficiency, thereby consuming less energy and resources. Technology is likely to play a big part in these initiatives, and the GPPS will be a great help to implementing them.

As CEO Matthew Chan puts it: "Jurong Port is raring to go. We can't wait to dive into our R&D on Green Technology. We've already completed a study on our carbon footprint. Now we will develop and implement major green projects with MPA's funding support."



THE SINGAPORE MARITIME INSTITUTE (SMI) WAS FORMED TO BETTER ALIGN SINGAPORE'S RESEARCH AGENDA WITH THE NEEDS OF THE MARITIME INDUSTRY AND THE MARITIME AND PORT AUTHORITY OF SINGAPORE.

BRAINS & IDEAS

Formed in January 2011 by the Maritime and Port Authority of Singapore (MPA), the Agency for Science, Technology and Research (A*STAR) and the Economic Development Board (EDB) in close partnership with local institutes of higher learning, the Singapore Maritime Institute is borne out of a hope for the future of maritime, to further develop the academic, policy and R&D aspects of the industry. *Singapore Nautilus* speaks to some of the key people behind SMI to find out about its inception, aims and hopes for the future.



LAM YI YOUNG,
CHIEF EXECUTIVE OF MPA



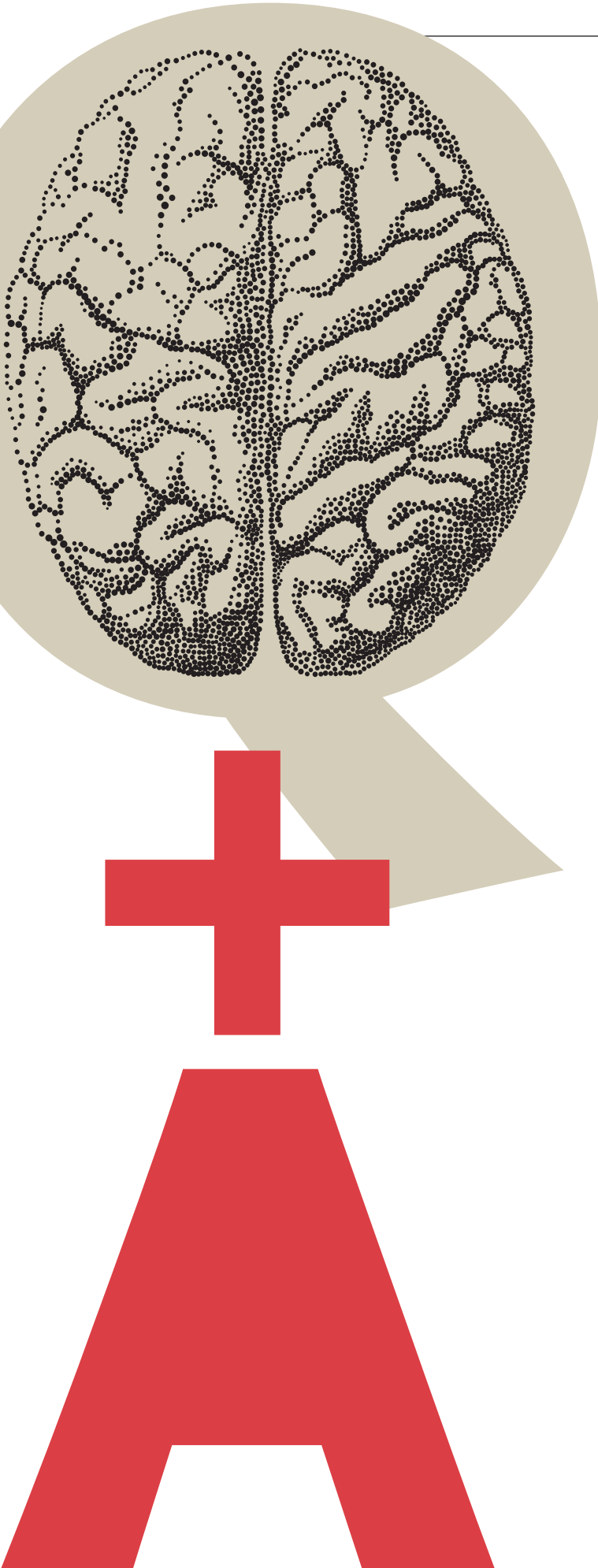
TEO SIONG SENG,
CHAIRMAN OF SMI
GOVERNING COUNCIL



HENG CHIANG GNEE,
EXECUTIVE DIRECTOR OF SMI



PROF LOW TECK SENG,
MANAGING DIRECTOR OF A*STAR



SINGAPORE NAUTILUS: Can you give us a brief history of the Singapore Maritime Institute (SMI) and how it was formed? What was the impetus behind its inception?

LAM: In 2009, MPA's Third Maritime R&D Advisory Panel recommended that Singapore establish a dedicated maritime institute as a centre of excellence for advanced maritime research, in support of our vision to be a leading international maritime centre. As we worked to develop the idea further, we found significant synergy between what we wanted to do and what A*STAR and EDB were planning to do, and so we decided to come together to set up the Singapore Maritime Institute as a national institution to spearhead R&D and education in all maritime areas, including shipping, port operations and marine and offshore.

LOW: The idea of a central body to manage and ensure the implementation of Singapore's R&D agenda is strongly supported by EDB and A*STAR through the Marine and Offshore Task Force (MOTF). Such an initiative will certainly boost Singapore's Marine, Offshore and Oil & Gas Equipment and Services industry and help us achieve a strong and sustainable competitive advantage. With A*STAR's involvement in the formation of SMI, we envisioned that large-scale offshore and marine projects – similar to A*STAR's previous R&D programmes in Ruggedised Electronics, Multiphase Flow Analysis and Materials for Marine and Offshore Equipment – could be

centralised through a national entity such as SMI.

What is the role of SMI? How different does this make SMI from organisations such as Singapore Maritime Federation (SMF) and MPA?

TEO: SMI is a Whole-of-Government effort by MPA, A*STAR and EDB in partnership with Institutes of Higher Learning (IHLs), both local and overseas, to develop strategies and programmes related to education & training, policy and R&D in the maritime industry. We will drive and coordinate the education and training and research activities residing within the local IHLs and research institutes. SMI also aims to complement the existing efforts of MPA and SMF to strengthen Singapore as an international maritime centre through developing manpower knowledge and innovation. SMI will also be working with other stakeholders in the maritime industry (i.e. SMF, Singapore Shipping Association, Association of Singapore Marine Industries, etc).

What are some of SMI's projects and goals in the near future?

LAM: MPA and SMI are jointly organising the Next Generation Container Port (NGCP) Challenge, which was announced in October 2011. The NGCP Challenge is an exciting global competition where participants will be invited to submit innovative and "out of the box" ideas and proposals on how best to plan, design and operate the next generation of container ports. A cash prize of US\$1 million awaits the winning team

whose proposal best meets the challenge's requirements.

HENG: SMI will work with our stakeholders to drive some of SMI's strategies in the areas of education & training, R&D and policy research. One of the first programmes includes the Maritime Institutes @ Institutes of Higher Learning programme, where satellite maritime institutes would be established in IHLs with significant maritime activities. These centres aim to drive and coordinate maritime and identify cross-disciplinary projects. The next phase plans to see new initiatives in growing quality including maritime academia in the IHLs, and R&D thematic grant calls in the areas of green shipping and offshore engineering as well as policy research projects.

How will SMI work with the maritime community to strengthen the R&D and training landscape?

TEO: Beyond the active engagement of the maritime industry by SMI, we also encourage the industry to work with SMI and tap on the funding made available to grow and develop the maritime cluster. Such a collaboration would not only help the industry to meet its manpower needs and product development in the short-term, but also cultivates a ready pool of quality manpower as well as technology know-how in the long term to be competitive globally. Such collaboration in maritime education & training as well as R&D will benefit both the industry and help to build specialised knowledge and expertise within our local research facilities and academic

facilities. We are also planning workshops for the industry and academia to get together to share their expertise and feedback on their needs.

LAM: SMI will work closely with the industry and other stakeholders to ensure that SMI's work and projects are in line with and meets the needs of the industry. This will be through various means and a good example is the inaugural SMI Forum 2011 held in October 2011. The forum was a good platform for the industry and academia to exchange views and enhance understanding. During the two breakout discussions at the forum, a number of issues concerning the industry surfaced, forming a good starting point for SMI to explore how it can add value to the industry in these areas.

LOW: A*STAR and EDB will link SMI up with international offshore & marine companies to identify their R&D needs, and support the IHLs through funding to develop the necessary capabilities and expertise in order to deliver solutions to the industry. SMI is already working with various government agencies to conduct a feasibility study on the development of deepwater offshore & marine testing facilities. Under this study, SMI together with an engaged consultant have interviewed about 40 companies in the sector for their R&D and future business needs. The development of such testing facilities and infrastructure in consultation with the industry will help the local industry grow and strengthen their capabilities and competitiveness.

We will drive and coordinate the education and training and research activities residing within the local IHLs and research institutes. SMI also aims to complement the existing efforts of MPA and SMF to strengthen Singapore as an international maritime centre through developing manpower knowledge and innovation.

Teo Siong Seng, Chairman, SMI Governing Council



DHI SERVICES

Initial Technology Assessment
Pilot Testing (10-50m³/h)
Land Based Testing (200-500m³/h)
Ship Board Testing
Commissioning Testing
Eco-toxicology Testing
Risk Assessment
Computational Fluid Dynamics
Environmental Technology Verification

► Ship charterers liaise with cargo and ship owners through ship brokers to charter ships and deliver cargo on time and in the most cost-effective manner. By matching ships with suitable cargoes, they function as a point of contact for brokers, ship owners, suppliers and agents alike.

Singapore Nautilus speaks to Christopher Lim, a chartering manager at EMAS to find out more about the nature of his job and the qualities one needs to possess in order to organise voyages and develop market-suitable offers to stay on top.

What made you seek out a career in the maritime industry?

A good friend introduced me to the field and I have not regretted the decision since. I love challenges and

my job at EMAS gives me the opportunity to manage a young and growing fleet. It is quite a responsibility to ensure that the utilisation rate of the fleet of vessels is at optimum level.

How does one become a charterer?

There are many training options available for a charterer. The Nanyang Technological University, where I graduated from, offers a postgraduate programme that provides good grounding for such a foray into the maritime industry.

EMAS has a maritime academy (EMAS Academy Training and Simulation centre) that develops specialised training and

asset-specific simulation programmes. These aim to equip trainees with the latest technology and operational requirements that are set against international standards. These facilities also support live simulation in a wide range of operational environments.

There are also workshops conducted by The Baltic and International Maritime Council (BIMCO) that provide good insights and relevant information on the maritime industry. Beyond the structured training, I have also gained invaluable experience and knowledge through on-the-job exposure and guidance from veterans in this field.

What do you love most about your job?

I enjoy meeting people and this job gives me plenty of opportunities to meet people of different cultural backgrounds from all over the world. I am always intrigued by sophisticated Multi-purpose Support Vessels such as EMAS' *Lewek Fulmar*. This vessel can support highly complex operations such as deepwater drilling and exploration. All this keeps me motivated.

What do you like least about it?

The downside is that I spend a fair amount of time away from home. My wife complains about my frequent travelling schedule at times



CHARTERING HIGH SEAS

AFTER A STINT IN THE HEALTHCARE INDUSTRY, CHRISTOPHER LIM CROSSED OVER TO THE MARITIME SECTOR TO BE A CHARTERING MANAGER AT EMAS. BY JACQUELINE CHIA

as it can be difficult to stay contactable when I am on the road, especially when I visit countries with huge time differences.

What qualities should a ship charterer possess?

Ship charterers need to be able to multitask and keep up with the latest development of the industry and current social, economic and political climate because we need to be at the forefront of the business. We also play an intermediary role, facilitating communication and negotiation between clients and the various departments within the organisation.

I strongly believe that every successful ship

charterer must have the basic integrity to command respect and trust. One should constantly strive for operational excellence, enjoy teamwork and have a "never give up" attitude. When a charter opportunity goes awry it just means that another one is on the way.

How do you keep yourself updated on all the changes happening around you?

Staying in touch with my local and international friends and business associates helps to keep me in tune with the latest developments and happenings in the industry. You can read all the trade

publications and periodicals but nothing beats having someone in the know giving you a call to inform you about the latest happenings that can impact the business.

What do you do in your spare time?

My wife works in the arts sector and we enjoy attending performances and concerts. We are also eagerly expecting our first child in a couple of months, so all my recent weekends are spent shopping for baby essentials and attending antenatal classes with my wife. I am likely to spend all my free time changing diapers and bathing my son when he is born.



GOING SOLAR

PlanetSolar's *Turanor* is on its way to becoming the first solar-powered boat to circumnavigate the globe. Driven by a silent, pollution-free electrical engine that is powered exclusively by solar energy, the PlanetSolar team

has already visited Miami, Cancun, Brisbane, Hong Kong, Vietnam, Philippines and Singapore.

This is the world's largest solar-powered boat, and measures around 101 feet in length and 49 feet in width.

The \$26 million *Turanor* can transport 50 passengers comfortably. Its name is derived from the *Lord of the Rings* saga by J.R.R. Tolkien and translates to: "the power of the sun", or simply "victory".

The Swiss-designed, German-built ship is powered by over 5,380 sq ft of solar panelling. It has since travelled more than 40,000km without using a single drop of fuel or emitting any carbon dioxide.



Stretching wings: Can be adjusted to get extra solar surface or reduce boat size when mooring.



Rear wing: Can be adjusted according to the sun's position to maximise yield of solar energy.



Propellers: Motors drive two 2m-wide carbon propellers, which have five blades each.



Cockpit: Modern navigation technology, radio communication systems, two seats for the pilots.





About the Singapore Maritime Week

Singapore Maritime Week (SMW) is the leading maritime event in Singapore. Driven by the Maritime and Port Authority of Singapore (MPA), SMW gathers the international maritime community in Singapore for a week of conferences, dialogues, exhibitions and social events in celebration of all things maritime. The range of activities and events organised by MPA, the industry, and research and educational institutions, as well as the cosmopolitan profile of participants, reflects the vibrancy and diversity of Singapore as a major international maritime centre.

SMW has grown in size and significance since the inaugural event in 2006, and is attracting more participants and event organisers from around the world. Participants can experience something new every year, as activities are added to the line-up, and as eminent speakers share their insights and participate in dialogues on topical maritime issues. This dynamism and the good range of issues discussed during SMW are major draws for maritime decision-makers, as are the many business networking platforms.

This is why Singapore Maritime Week is all about PEOPLE, IDEAS and OPPORTUNITIES for the maritime community.



SingTel's Innovations in ICT Augments Connectivity, Experience and Returns

Innovations Driving Crew Welfare and Crew Retention



CrewXchange Portal

- › One-stop portal for entertainment, social activities and personal enrichment needs
- › Lightweight, bandwidth optimized content for cost management
- › Industry's first Push to Talk feature integrated
- › Private community to facilitate conversations between shore and crew
- › 5,000 visits with 50% returning visitors; effectively connecting seafarers and their families

Innovations Enhancing Efficiencies and Control



AIO Connect Services

- › 8 concurrent voice calls with Multi-VoIP Connect
- › 3 call qualities dynamically controlled by user drives cost management for crew



Remote Diagnostics

- › Enables out-of-band management for Maritime VSAT system via auto failover to L-band system
- › Collects information from relevant equipment to determine time and cause of failure



e-Surveillance

- › Digital video recording function for playbacks.

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