KEYNOTE ADDRESS BY MR FREDERICK CHEW, CHIEF EXECUTIVE OFFICER OF A*STAR, AT THE SINGAPORE MARITIME INSTITUTE FORUM 2019 ON 9 OCT 2019 AT MARINA MANDARIN SINGAPORE

Dr Lam Pin Min, Senior Minister of State for Transport and Health,
Your Excellency Mrs Dorte Bech Vizard,
Ambassador of Denmark to Singapore,
Dr Sanjay Kuttan, Executive Director of the Singapore Maritime Institute,
Distinguished Guests,
Ladies and Gentlemen,

Introduction

1. A very good morning to all of you. I'm very glad to have this opportunity to address the maritime community gathered here today.

2. Over the years, the Singapore Maritime Institute (SMI) Forum[1] has served as an essential platform to discuss matters impacting the future of Singapore's maritime sector. In particular, SMI Forum brings together leaders from industry and academia, as well as government agencies, to discuss innovations, technology and R&D trends for the maritime industry.

3. This year's theme on "Maritime Transformation: Risks, Challenges and Rewards" is a very timely one. To look forward,

[1] This is the 9th edition of the SMI Forum, with the 1st edition back in 2011. It is SMI's flagship event.

let us first look back and take stock of Singapore's maritime history as a free port and its growth over the years to become a leading maritime capital.

4. This year is Singapore's bicentennial year. 200 years ago, the British founded modern Singapore, establishing it as a free port and leveraging its strategic geographical location between India and China. Today, geopolitical sands are shifting, yet the strategic importance of the sea endures. The seas remain global arteries for trade and travel, particularly so for maritime nations like Singapore.

5. Countries continue to recognise the critical importance of the sea, and articulate various forms of a national maritime strategy. To cite one example, in January this year, the UK government announced "Maritime 2050", which articulated ambitions for the future of the British maritime sector, with special focus on accelerating innovation and attracting talent for the sector. On a broader scale, the strategy also envisions the upgrade of the UK's port infrastructure as part of an advanced and integrated supply chain by 2050. This is very ambitious. Other aspects of the plan include embracing a new generation of digital navigation and communications technologies, drawing up a framework for autonomous vehicles, diversification of the maritime workforce and measures to address climate change.

Singapore's strategy to meet the challenges of the transforming maritime sector

6. For Singapore, the importance of the maritime sector to our economy cannot be overstated. The sector employs about 170,000 people in over 5,000 maritime establishments, contributing about 7 per cent of Singapore's GDP. This supports more than 130,000 vessels that enter Singapore's ports every year or about 1,000 vessels in our ports at any given time[2], making us one of the world's busiest ports. Last year, container throughput grew by 8.7 per cent to 36.6 million twenty-foot equivalent units (TEUs). Singapore continues to be the world's leading bunkering port[3].

7. The position Singapore is in today is not a given. Maritime city-states like Venice have come and gone. Singapore will only be able to maintain this pole position if we are able to look ahead and adapt quickly for the future. As a (maritime) saying goes: "time and tide waits for no man". The growing prospect of a viable Northwest Passage is an example of how fast things are changing, and can change. Another is the growing prospect of the age of renewable energy, phasing out the age of hydrocarbons, which much of today's offshore industry, including that in Singapore, is predicated on. At this year's Singapore Maritime Lecture, Minister Chan Chun Sing stated that Singapore needs to reposition itself as not just a port operator but also a "global maritime platform", transcending our dependence on its geographical advantages. To move forward, Singapore will have to become an adopter of, and also a

[2] Source: MPA Website. https://www.mpa.gov.sg/web/portal/home/maritime-singapore/introduction-to-maritime-singapore/facts-and-trivia
[3] Source: MPS Website. https://www.mpa.gov.sg/web/portal/home/media-centre/news-releases/detail/2f020aa2-cb44-4496-bab6-a73df5a5d619

leader in developing new technologies to transform our maritime industry[4].

8. To achieve these goals, the government has drawn up the Sea Transport Industry Transformation Map[5] to drive innovation, productivity and human capital development for sector transformation.

9. Singapore has also continued to invest in talent and training to groom a pool of talent that is equipped to keep pace with technological advancements.

- The SkillsFuture Singapore (SSG), Workforce Singapore (WSG), Economic Development Board (EDB) and Enterprise Singapore launched the Skills Framework for Marine and Offshore, to help chart out career pathways and training for sector employees to progress in their careers.

- WSG also rolled out three Professional Conversion Programmes (PCP) to help professionals, managers, executives and technicians who are entering the industry or taking on different job scopes.

- The SSG, Maritime and Port Authority of Singapore (MPA) and Singapore Maritime Officers' Union (SMOU)

[4] Source: Minister Chan Chun Sing's speech at Singapore Maritime Lecture, April 2019. https://www.mti.gov.sg/Newsroom/Speeches/2019/04/Speech-by-Minister-Chan-Chun-Sing-at-the-Singapore-Maritime-Lecture-2019
[5] Source: MPA Website. https://www.mpa.gov.sg/web/portal/home/media-centre/news-releases/detail/83647952-0b16-4a15-ba04-32f14ba29bb2

have also increased their funding for two maritime cadet training programmes.[6]

These are very good programmes that we need to keep up.

10. But whatever we do in the aforementioned areas, others can copy. So most importantly, we need to continue to invest in science, technology and innovation for our maritime sector – that will be our source of long-term competitive advantage. Under the national five-year Research, Innovation and Enterprise Plan, or RIE2020, the Maritime Transformation Programme has been developed as a key vehicle to implement the innovation thrust of the Sea Transport transformation map[7].

S&T to provide long-term competitive advantage for Singapore's Maritime Sector

11. The public R&D community stands ready to support Singapore's maritime sector's transformation, and is deepening R&D capabilities in strategic areas like Next Generation Ports; Maritime Energy and Sustainable Development; Maritime Safety; and Smart Fleets & Autonomous Vessels. Centres of Excellence have been established for these identified areas. Singapore will be building up a critical mass of relevant capabilities over the next few years, ranging from advanced sensors and communications, big data analytics, artificial intelligence, to advanced materials.

[6] Source: Business Times. Feb 20, 2018. https://www.businesstimes.com.sg/transport/two-maritime-cadet-training-programmes-to-receive-s126m-in-3-year-funding

[7] The Maritime Transformation Programme is funded by RIE2020 white space funding.

12. I would like to elaborate a little on one of our more recent initiatives in the ecosystem – the Technology Centre for Offshore and Marine Singapore, or TCOMS, which was set up in 2016. TCOMS is working to complete a state-of-the-art deepwater ocean basin that the Marine & Offshore Engineering industry will be able to tap on and be proud of. The Centre of Excellence for Autonomous & Remotely Operated Vessels (CEAOPS, pronounced “sea-ops”) launched earlier will work closely with industry to apply this know-how and contribute to the development of maritime autonomous vessels. There will be a strong emphasis on “green” technologies for offshore.

13. Technologies developed by the R&D ecosystem in Singapore are already being deployed. For example, Jurong Port has test-bedded a cargo forecasting prediction tool in its decision-making process for future port resources planning. This tool was co-developed by A*STAR’s Institute for High Performance Computing (IHPC), Singapore Management University (SMU) and Fujitsu.

14. ST Engineering, IHPC and the MPA Living Lab are also working closely to develop next generation vessel traffic management systems. Other initiatives by the MPA, Jurong Port and PSA Living Labs have also been established to bring together industry stakeholders, technology providers and research performers to co-innovate, test-bed new systems, and bring technological and engineering solutions closer to market.

15. Our R&D institutions are not just focusing on the big companies. To help maritime SMEs embrace digitalisation, the Singapore Sea Transport Digital Plan (STIP) was rolled out recently by SMS Lam.

16. Having been six months on the job at A*STAR, I've come to realise that our local S&T and R&D ecosystem performers are all working very hard, doing good work. Everyone is busy with a lot of activities. But if we take a step back, we need to ask ourselves: are we sometimes guilty of doing a bit of everything? I think we can do better, by being targeted, emphasising more teamwork and translation. We are a small country with limited S&T resources: those resources need to be focused on areas that move the needle, if we are to succeed in building Singapore's future maritime economy.

17. On being targeted, there is this doctrine in the military called "concentration of firepower". For a smaller force to overwhelm a larger force, concentrating resource and efforts is critical. Singapore is a small force. We account for a small percentage of global R&D maritime spending. Where do we place our bets? What are our comparative strengths? Are there areas of synergies we are missing out on between our local research performers? Are there unnecessary areas of duplication? We have to think sharply to ensure that our R&D money is well spent.

18. On teamwork, every stakeholder in the maritime value chain is integral to the success of Singapore's maritime transformation, not within just the maritime industry but also adjacent sectors

supported by a vibrant R&D ecosystem. For example, there are potential synergies between the defence and civilian side of the house, particularly for fleet management, predictive maintenance and autonomous vessels. The military has been conducting research in such areas for years. Over time, I hope the defence-civilian R&D nexus will be stronger. From shipping companies to port operators to land logistics, we need to create a culture of teamwork not only within the maritime industry itself but also with all adjacent sectors, supported by a vibrant R&D ecosystem.

19. Last but not least, the S&T and R&D that the research institutions and IHL work on must lead to translation. We need to match supply from research performers, and demand from industry, well. We need to cross the valley of death, to realise commercial outcomes for Singapore. We need to look at how we can make our local companies (large and small) strong, and become regional champions. Our research performers should start with the end in mind, in order to help to catapult our companies from “good to great”.

Conclusion

20. In conclusion, this conference programme is a very exciting one, covering a wide range of topics on disruptive technologies on maritime trade to next generation communication

21. Transformation, risks and challenges are the correct issues to grapple with today for Singapore’s maritime sector. I have every confidence that by being targeted, by building teamwork, and by

focusing on translation, the Singapore maritime sector will be able to ride the waves of change, and ride them well.

22. On this note, I wish everyone here a fruitful forum. Thanks for being here today.