

All Hands on Deck: *Engineering a Green and Resilient Maritime Future*

14 August 2026, 9.00am - 4.30pm | Orchard Hotel, Ballroom 1-2

Synopsis:

The maritime sector is undergoing significant transformation driven by climate change, decarbonisation imperatives, rapid technological advancements, and increasing global uncertainties. Central to this transformation is the need for robust engineering capabilities to design resilient and future-ready infrastructure, as well as to integrate innovative engineering solutions to enhance the sustainability and efficiency of operations across the entire maritime value-chain.

This seminar will bring together industry leaders, policymakers, engineers and researchers to explore the key developments driving Singapore's maritime and port transformation journey. Through expert presentations and panel discussions, participants will gain valuable insights into critical areas such as *addressing climate change in Maritime Singapore, strengthening maritime engineering capabilities and talent pipeline, advancing the future of maritime operations through digitalisation and AI, and innovations shaping the next chapter of Singapore's maritime and port transformation.*



GUEST OF HONOUR

Mr Ang Wee Keong

Chief Executive
Maritime and Port Authority
of Singapore (MPA)

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Students: \$25

*Registration fee subjected to 9% GST



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All Hands on Deck: Engineering a Green and Resilient Maritime Future

DISTINGUISHED SPEAKERS



Er Tan Chun Yong
Group Director
*Building and
Construction
Authority (BCA)*



Mr Ng Yihan
Senior Director & Chief
Transformation Officer
*Maritime and Port
Authority of Singapore
(MPA)*



Mr Ridzuan Ismail
Director of the Flood
Resilience Planning
Department
PUB, Singapore



Er Albert Cheng
Director (Port &
Infrastructure
Development)
*Maritime and Port
Authority of
Singapore (MPA)*



A/Prof Xudong Qian
Director
*NUS Coastal Protection
and Flood Resilience
Institute (CFI)*



Er Gan Chin Hwi
Managing Director,
TY Lin



Mr Alvin Foo
Head of Group
Engineering &
Technology and
Sustainability
PSA International



Mr Tan Cheng Peng
Director of Applied
Research Partnership
*Singapore Institute of
Technology (SIT)*



Mr Tan Wee Meng
Chief Projects Officer
*Global Centre for
Maritime
Decarbonisation
(GCMD)*



Ms Karen Kee
Deputy Director
(Digital Twin)
*Maritime and Port
Authority of
Singapore (MPA)*



Dr Li Haobin
Director
*NUS Centre of
Excellence in Modelling
and Simulation for
Next Generation Ports
(C4NGP)*



Dr Xiuju Fu
Director (Maritime
AI Research
Programme)
*Institute of High
Performance
Computing, A*Star*



**Ms Cynthia Mark
Mohan**
Asst. Vice President &
Head of Digitalization
Jurong Port



Mr Tan Kian Chong
Senior Manager
*Singapore Maritime
Foundation (SMF)*



Mr Ho Wen Yao
Asst. Vice President
(Tuas Digital
Excellence)
PSA Singapore



SESSION 1

Navigating Climate Change for Maritime Singapore – Adaptation and Mitigation Strategies, Regulatory Requirements based on latest Code of Practice for Coastal Protection (CP COP)



Er Tan Chun Yong
Group Director
Building and Construction Authority



Mr Ridzuan Ismail
Director of the Flood Resilience Planning Department
PUB, Singapore



Mr Tan Wee Meng
Chief Projects Officer
Global Centre for Maritime Decarbonisation (GCMD)



A/Prof Xudong Qian
Director
NUS Coastal Protection and Flood Resilience Institute (CFI)



Er Gan Chin Hwi
Managing Director,
TY Lin

SESSION 2

Industry Leaders' Perspectives: Shaping the Future of Port Development, New Capabilities, and Talent Pipelines in Maritime Singapore



Mr Ng Yihan
Senior Director & Chief Transformation Officer
Maritime and Port Authority of Singapore (MPA)



Mr Alvin Foo
Head of Group Engineering & Technology and Sustainability
PSA International



Mr Tan Cheng Peng
Director of Applied Research Partnership
Singapore Institute of Technology (SIT)



Mr Tan Kian Chong
Senior Manager
Singapore Maritime Foundation (SMF)

SESSIONS 3 & 4

- **Reimagining the Future of Maritime Operations through Digitalisation and AI**
- **Embracing Innovation for the Next Chapter of Singapore's Port Development**



Er Albert Cheng
Director (Port & Infrastructure Development)
Maritime and Port Authority of Singapore (MPA)



Dr Li Haobin
Director
NUS Centre of Excellence in Modelling and Simulation for Next Generation Ports (C4NGP)



Dr Xiuju Fu
Director (Maritime AI Research Programme)
*IHPC, A*Star*



Ms Cynthia Mark Mohan
Asst. Vice President & Head of Digitalization
Jurong Port



Ms Karen Kee
Deputy Director (Digital Twin)
Maritime and Port Authority of Singapore (MPA)



Mr Ho Wen Yao
Asst. Vice President (Tuas Digital Excellence),
PSA Singapore

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SEMINAR PROGRAMME

Time	Description	Format
9:00am - 9:20am	Opening Address by Guest-of-Honour Mr Ang Wee Keong, Chief Executive, Maritime and Port Authority of Singapore (MPA)	Opening Address
9:20am - 10:20am	<u>Session 1: Navigating Climate Change for Maritime Singapore – Adaptation and Mitigation Strategies, Regulatory Requirements based on latest Code of Practice for Coastal Protection (CP COP)</u> Panellist: • Er Tan Chun Yong, Group Director, BCA • Mr Ridzuan Ismail, Director, PUB • Tan Wee Meng, Chief Projects Officer, Global Centre for Maritime Decarbonisation (GCMD) • A/Prof Qian Xudong, Director, NUS Coastal Protection and Flood Resilience Institute (CFI) • Er Gan Chin Hwi, Managing Director, TY Lin Moderator: Mr Eugene Khoo, Head (Engineering Design & Systems Integration), MPA	Panel Discussion
10:20am - 10:40am	<i>Refreshment Break</i>	-
10:40am - 11:40pm	<u>Session 2: Industry Leaders' Perspectives: Shaping the Future of Port Development, New Capabilities, and Talent Pipelines in Maritime Singapore</u> Panellist: • Mr Ng Yihan, Senior Director (ITTD) / Chief Transformation Officer, MPA • Mr Alvin Foo, Head of Group Engineering & Technology and Sustainability, PSA International • Mr Tan Cheng Peng, Director of Applied Partnership, SIT • Mr Tan Kian Chong, Senior Manager, SMF Moderator: Associate Professor Tay Chuan Beng, Engineering Cluster, SIT	Panel Discussion
12:00pm - 1:30pm	Lunch & Lunchtime presentations by sponsors	-

Time	Description	Format
Session 3: Reimagining the Future of Maritime Operations through Digitalisation and AI		
1:30pm – 1:45pm	<u>Session 3a: Maritime Digital Twin - Bridging Digital & Reality</u> Speaker: Ms Karen Kee, Deputy Director (Digital Twin), MPA	Technical Presentations
1:45pm – 2:00pm	<u>Session 3b: Digital Twins in Maritime Systems Transformation: Applications, Capabilities and Future Directions</u> Speaker: Dr Li Haobin, Director, NUS Centre of Excellence in Modelling and Simulation for Next Generation Ports	
2:00pm – 2:15pm	<u>Session 3c: AI and Big Data Intelligence for Next-Generation Maritime Operations</u> Speaker: Dr Fu Xiuju, Director (Maritime AI Research Programme), IHPC, A*Star	
2:15pm – 2:30pm	<u>Session 3d: Jurong Port Digital Twin – JP Glass</u> Speaker: Ms Cynthia Mark Mohan, Assistant Vice President & Head of Digitalisation, Jurong Port	
2:30pm – 3:00pm	Refreshment Break	-
Session 4: Embracing Innovation for the Next Chapter of Singapore's Port Development		
3:00pm – 3:15pm	<u>Session 4a: Beyond Conventional Reclamation: Building the Next-Generation Port</u> Speaker: Er. Albert Cheng, Director (Port & Infrastructure Development), MPA	Technical Presentations
3:15pm – 3:30pm	<u>Session 4b: PSA's Automated Container Terminal Operations at the Next Generation Tuas Port</u> Speaker: Mr Ho Wen Yao, Assistant Vice President (Tuas Digital Excellence), PSA Singapore	
3:30pm – 4:00pm	Q&A for Sessions 3 & 4	-
4:00pm – 4:15pm	Group Photo-taking & Presentation of Token of Appreciations to Speakers	-
4:15pm – 4:30pm	Closing Remarks by IES Technical Committee Chairs	-

SPEAKER PROFILE



Er Tan Chung Yong

Group Director
Building and Construction
Authority (BCA)

As Group Director of Building Engineering Group in BCA, Chun Yong's role is to plan, direct and manage the operation of the Building Engineering Group in administering the provisions under the Building Control Act and Regulations to safeguard the structural safety of all new building design and construction in Singapore so as to achieve BCA's critical mission of a safe built environment.

He is a registered Professional Engineer and Accredited Checker in Singapore and a Chartered Structural Engineer in the UK.



Mr Ridzuan Ismail

Director
Flood Resilience Planning
PUB, Singapore

Ridzuan Ismail is the Director of the Flood Resilience Planning Department of PUB, Singapore's National Water Agency. He oversees an integrated planning function that covers both inland and coastal flood resilience, enabling more holistic planning and implementation of inland drainage and coastal protection infrastructure. In this role, he leads whole-of-nation efforts to safeguard Singapore from the threats of sea level rise and more extreme weather brought about by climate change, overseeing the formulation of the policy and regulatory framework, developing strategies to address Singapore's unique challenges, and establishing design standards and guidelines tailored to the urban context.



Mr Tan Wee Meng

Chief Projects Officer
Global Centre for Maritime
Decarbonisation (GCMD)

Wee Meng is the Chief Projects Officer at the Global Centre for Maritime Decarbonisation.

At GCMD, he leads the Projects team and provides strategic oversight on the centre's key initiatives and projects. He works closely with the leadership team in aligning, resourcing, and driving projects to deliver on strategic outcomes.

Before joining GCMD, he was the Chief Technical Officer and Chief Sustainability Officer of Jurong Port responsible for shaping and execution of its ESG strategy.

Wee Meng is a member of the Technical Committee for Bunkering (Ambient Liquid Fuels), part of the Chemical Standards Committee of the Singapore Standards Council, and also a member of the Maritime Engineering Technical Committee of the Institution of Engineers, Singapore.

Wee Meng holds a Bachelor's Degree of Engineering (Electrical Engineering) from the National University of Singapore. He has also completed the General Management Programme at Harvard Business School.

SPEAKER PROFILE



A/Prof Xudong Qian

Director

NUS Coastal Protection and
Flood Resilience Institute (CFI)

A/Prof. Xudong Qian is Associate Professor in the Department of Civil and Environmental Engineering at the National University of Singapore (NUS), where he also serves as Dean's Chair in the College of Design and Engineering. He is the Director of the Centre for Offshore Research & Engineering (CORE) and Director (Strategy, Partners & Technology Translation) at the Coastal Protection and Flood Resilience Institute Singapore (CFISG). In addition, he serves as Deputy Head (Administration & Finance) of the Department of Civil and Environmental Engineering.

His research interests include fatigue and fracture of steel structures, structural integrity assessment, offshore and marine structures, digital twins, and AI-enabled predictive maintenance systems. His recent work focuses on physics-informed machine learning for fatigue prognosis, digital twin frameworks for welded joints, offshore renewable energy systems, and coastal resilience infrastructure. He has published extensively in leading international journals and actively contributes to the international research community through editorial appointments, keynote lectures, and professional committee service in structural and offshore engineering



Er Gan Chin Hwi

Managing Director
TY Lin

Er. Gan Chin Hwi is a Professional Engineer (Civil) and Specialist Professional Engineer (Tunnelling) in Singapore, with close to 40 years of experience in civil, structural, and geotechnical engineering. He holds a Bachelor's degree in Civil & Structural Engineering (First Class Honours) and a Master's degree in Geotechnical Engineering from Nanyang Technological University.

Currently serving as Managing Director at TYLin International Pte. Ltd., Er. Gan has extensive experience in both maritime and underground infrastructure projects. His maritime work includes land reclamation, port and terminal developments, shipyard, wharf and jetty structures, and coastal protection systems, with involvement in major projects such as the Pasir Panjang and Tuas Mega Port and Jurong Island Westward Extension developments.

Er. Gan he has contributed to significant tunnelling and underground works, including major rail transit projects and a 4-in-1 mega depot, transmission cable tunnels, and underground cavern developments. His experience spans both design and project management roles, supporting the delivery of complex infrastructure projects in Singapore and the region.

SPEAKER PROFILE



Mr Ng Yi Han

Senior Director (Innovation,
Technology & Talent
Development),
Chief Transformation Officer
Maritime and Port Authority
of Singapore (MPA)

Yi Han is the Senior Director of the Innovation, Technology and Talent Development (ITTD) Division and Chief Transformation Officer in the Maritime and Port Authority of Singapore (MPA).

Prior to his current role, he was in the Sea Transport Division under the Singapore Ministry of Transport overseeing maritime policies and programmes. Yi Han graduated with a bachelor's degree in Computer Engineering under the National University of Singapore and holds an MBA from the Massachusetts Institute of Technology. His experience covers R&D promotion, manpower development and strategic planning.



Mr Alvin Foo

Head of Group Engineering &
Technology and
Sustainability,
PSA International

Alvin Foo is currently the Head of Group Engineering, Technology & Sustainability at PSA International.

As Head of Group Engineering, Technology & Sustainability Solutions, Alvin drives the strategy, formulation and standardisation Equipment and Civil Engineering and Sustainability Solutions development and implementation across global business units. These smart and green capabilities are enabled through internal domain expertise, external collaboration & RIE (Research, Industry & Enterprise) ecosystem partnerships. The key focus areas of future ready technology capabilities include advanced crane automation, autonomous horizontal transport, Embodied AI and Robotics for wharf and vessel stevedoring activities, green mobility and infrastructure, Smart Grid & BESS as well as battery value chain.

He is also responsible in delivering key sustainability solutions such as low carbon pathways and energy transition, new energy vectors, SMR for port applications as well as green energy infrastructure development to optimise LCOE for hard-to-abate regions. Carbon insets programme to catalyse and drive business values will be a key interest area.

Alvin holds degrees in Mechanical Engineering and Electrical Engineering respectively from NUS and The University of Newcastle, Australia. He is also a certified productivity & innovation manager, and an IES Chartered Engineer in Port Engineering.

SPEAKER PROFILE



Mr Cheng Peng

Director of Applied Research
Partnership,
Singapore Institute of
Technology (SIT)

Transitioned to join the Singapore Institute of Technology (SIT) in the Applied Research Partnership office. Helping the young and hungry university grow its applied research portfolio, partnerships and track records in the maritime space, as the up and coming University for the industry.

Ended my third year milestone as Executive Director, Singapore Maritime Institute (SMI) in Sep 2024. Launched three new R&D programmes in maritime.AI with IHPC/A*STAR, Future Ships and Systems Design with the Singapore Institute of Technology (SIT), and Project Mariot with the Singapore University of Technology and Design (SUTD)- a shipboard OT systems physical-cybersecurity testbed facility. Renewed R&D phase two five-year fundings for SMI's four Centres of Excellence at NUS, NTU and SP. Initiated seven MOUs/LOIs R&D collaborations with Sweden, Finland, Norway, Denmark, France, Australia and China.

Previously, more than 12 years work experience at the Maritime and Port Authority of Singapore (MPA) as Director Policy, Port Policy and Special Projects. Responsible for port policies, planning, regulations, licensing and international engagements and collaborations in the port and shipping sectors. Elected and served 8 years as VP at the APEC Port Services Network (APSN) and ex-Board member representative for Singapore at the International Association of Ports and Harbour (IAPH).

Served more than 20 years in the SAF in various staff and leadership positions in intelligence and operations. Awarded military scholarships and obtained first class honors in B. Sc (Eng) from NUS and master in Public Policy from Harvard KSG/LKY School of Public Policy, NUS. Awarded National Day Award, Military (Bronze) for distinguished service.

SPEAKER PROFILE



Mr Tan Kian Chong
Senior Manager,
Singapore Maritime
Foundation (SMF)

Kian Chong is a Senior Manager at the Singapore Maritime Foundation (SMF). Prior to his secondment to SMF, he was with the Maritime and Port Authority of Singapore (MPA), where he worked on strategy and policy, corporate planning, and manpower development for the maritime industry. At SMF, he leads the MPA–SMF Joint Office for Talent and Skills, which was established in 2025 on the recommendation of the Tripartite Advisory Panel (TAP). In this role, he drives initiatives to aggregate demand for training programmes in emerging areas such as data analytics, artificial intelligence, and sustainability. He also spearheads efforts to tackle talent challenges through industry consultation and partnerships, ensuring that the maritime workforce remains industry-ready.



Ms Karen Kee
Deputy Director (Digital Twin)
Maritime and Port Authority
of Singapore (MPA)

Karen serves as the Deputy Director for Digital Twin at the Maritime and Port Authority of Singapore (MPA) and the Head of Digital Translation at the Singapore Maritime Institute (SMI). In these dual roles, she bridges the gap between research and real-world application, spearheading efforts to leverage advanced technologies to drive maritime innovation. Karen is currently leading the development and operationalisation of the Maritime Digital Twin, a strategic initiative by MPA designed to catalyse digital transformation across Singapore's maritime ecosystem.

Session 3A: Maritime Digital Twin - Bridging Digital and Reality

Developed by the MPA, the Maritime Digital Twin integrates real-time and historical data with advanced simulation tools to empower agencies, industry, and researchers. As a robust platform for operational planning and rapid prototyping, it allows stakeholders to stress-test concepts and optimize workflows in a virtual environment. By enabling the validation of new solutions before live implementation, the Maritime Digital Twin serves as a critical innovation sandbox, helping the maritime ecosystem scale new capabilities with precision and confidence.

SPEAKER PROFILE



Dr Li Haobin

Director, NUS Centre of Excellence in Modelling and Simulation for Next Generation Ports (C4NGP)

Dr Haobin Li is a Senior Lecturer in the Department of Industrial Systems Engineering and Management at the National University of Singapore, Academic Director of Master of Science Program in Maritime Technology and Management (MSc MTM), and Co-Director of the Centre of Excellence in Modelling and Simulation for Next Generation Ports (C4NGP). His research focuses on discrete-event simulation, simulation-based optimisation, digital twins, and their applications in port operations, maritime logistics, warehouse systems, and complex industrial systems. He is the developer of the O2DES framework, an object-oriented discrete-event simulation framework designed to support modular, extensible, and decision-centric modelling of complex operational systems.

Dr Li has led and contributed to multiple industry-oriented research projects on port and logistics digital twins, including modelling and simulation studies for next-generation ports, global shipping networks, warehouse operations, and maritime logistics ecosystems. His work emphasises the use of simulation not only as a performance evaluation tool, but also as a transparent and reusable experimental testbed for analysing system structure, operational behaviour, decision logic, and system-wide consequences. He is currently a Council Member of the INFORMS Simulation Society and an overseas member of the Technical Committee on Port and Shipping Economic Systems Engineering under the Systems Engineering Society of China (SESC).

Session 3B: Digital Twin for Port Operations - Digital Twins in Maritime Systems Transformation: Applications, Capabilities and Future Directions

Digital twin technologies are playing an increasingly important role in the transformation of maritime systems, enabling enhanced visibility, simulation, data integration and decision support across port operations, infrastructure planning, asset monitoring and shipping networks.

Drawing on practical experience from the development of digital twins for port operations, this presentation will examine different maritime use cases and the varying technical capabilities required to support them. The session will also discuss implementation challenges, system-level considerations and the potential of digital twins to improve operational efficiency, resilience and strategic decision-making within the maritime industry.

SPEAKER PROFILE



Dr Xiuju Fu

Director (Maritime AI
Research Programme), IHPC,
A*Star

Dr Xiuju Fu is the Director of the Maritime AI Research Programme and Group Manager under Systems Science Department at Institute of High Performance Computing, Agency for Science, Technology and Research (A*STAR) in Singapore. With expertise in AI, big data intelligence, simulation, and optimization techniques, she focuses on advancing complex system management and enhancement. Recognized for her contributions, she was honored as an SMI Fellow in 2023. Currently, she spearheads the Maritime AI Research Programme in Singapore, driving research and development initiatives in maritime data excellence, AI modeling excellence, maritime AI computing, and application excellence. Her efforts aim to foster the development and application of big data and AI in the maritime industry.

Session 3C: AI and Big Data Intelligence for Next-Generation Maritime Operations

In this talk, several key research findings and AI applications developed under the Maritime AI Research Programme will be presented. The research highlights the transformative potential of AI in maritime shipping, spanning traffic safety enhancement, maritime decarbonisation, and the optimisation of operational resilience and efficiency. The session will explore how AI is reshaping the maritime industry through intelligent decision support, predictive analytics, and next-generation digital capabilities.

In addition, the talk will introduce the System for Maritime AI Excellence (MAX) framework being developed by A*STAR. This strategic initiative aims to unify, scale, and elevate maritime AI capabilities across the ecosystem, supporting the development of trustworthy, impactful, and operationally deployable AI solutions for the future maritime sector.



SPEAKER PROFILE



Ms Cynthia Mark Mohan
Assistant Vice President &
Head of Digitalization
Jurong Port

Ms Cynthia Mark Mohan is the Assistant Vice President and Head of Digitalization at Jurong Port, where she spearheads digital transformation initiatives that support the port's operational excellence and innovation journey.

With extensive experience in the maritime, transportation and technology sectors, Cynthia has led projects in digitalisation, business transformation, customer experience and enterprise strategy. Her expertise lies in leveraging technology and data-driven solutions to improve operational performance, enhance user experience and drive sustainable business growth.

Session 3D: Jurong Port Digital Twin - JP Glass

As Jurong Port advances its digitalisation journey, JP Glass has emerged as a key platform providing a unified operational view across the port ecosystem. Developed as a digital twin solution, JP Glass integrates data from multiple sources to deliver near real-time visibility of vessel movements, cargo operations, resource deployment, warehouse activities and yard utilisation.

This presentation will share the development and implementation of JP Glass, highlighting how digital twin technology supports operational decision-making, enhances situational awareness and improves coordination across port operations. Participants will gain insights into Jurong Port's approach towards leveraging geospatial technologies and data-driven solutions to optimise productivity, safety and resource management.

The session will also explore the future evolution of JP Glass, including the transition towards enhanced 3D visualisation capabilities and the role of digital twins in supporting next-generation port operations and maritime innovation.



SPEAKER PROFILE



Er Albert Cheng

Director (Port & Infrastructure Development)
Maritime and Port Authority
of Singapore (MPA)

Er. Albert is the Director (Port and Infrastructure Development) in MPA and he currently oversees the whole reclamation and infrastructure works of Tuas Port by MPA. He is a certified professional engineer with Singapore PE Board since 2002 and had vast experiences in managing various building, civil engineering and coastal development projects in Singapore as well as in the South-East Asia region when he was working as a consultant in the private sector.

Session 4A: Beyond Conventional Reclamation: Building the Next-Generation Port

As future port developments become larger, deeper and more sustainable, and increasingly constrained by time and environmental demands, the industry faces a fundamental question – can tomorrow's ports still be built using yesterday's methods?

This presentation explores how Singapore is redefining the future of port development and land reclamation through innovation, advanced construction technologies and sustainability-driven solutions. Transforming reclamation from a conventional construction activity into a highly connected and intelligent ecosystem where autonomous technologies, predictive analytics and adaptive construction systems optimise the way we plan, construct and manage maritime infrastructure development.



Mr Ho Wen Yao

Assistant Vice President (Tuas Digital Excellence)
PSA Singapore

Wen Yao is Assistant Vice President (Tuas Digital Excellence) at PSA's Regional IT Southeast Asia, leading the development of next-generation Terminal Operating Systems (TOS) for the next phase of Tuas Port operations in 2028.

Previously, he served as Terminal Manager for Tuas Phase 1, overseeing the start-up, stabilization, and ramp-up of terminal operations.

Session 4B: PSA's Automated Container Terminal Operations at the Next Generation Tuas Port

Drawing from his operational experience at Tuas, Wen Yao will share how does the automated operations look like at Tuas Port, and delve into how automation, digitalisation, and systems integration are transforming modern port operations at scale.