

MAAT

Maritime Autonomy
Assurance Testbed

NPL



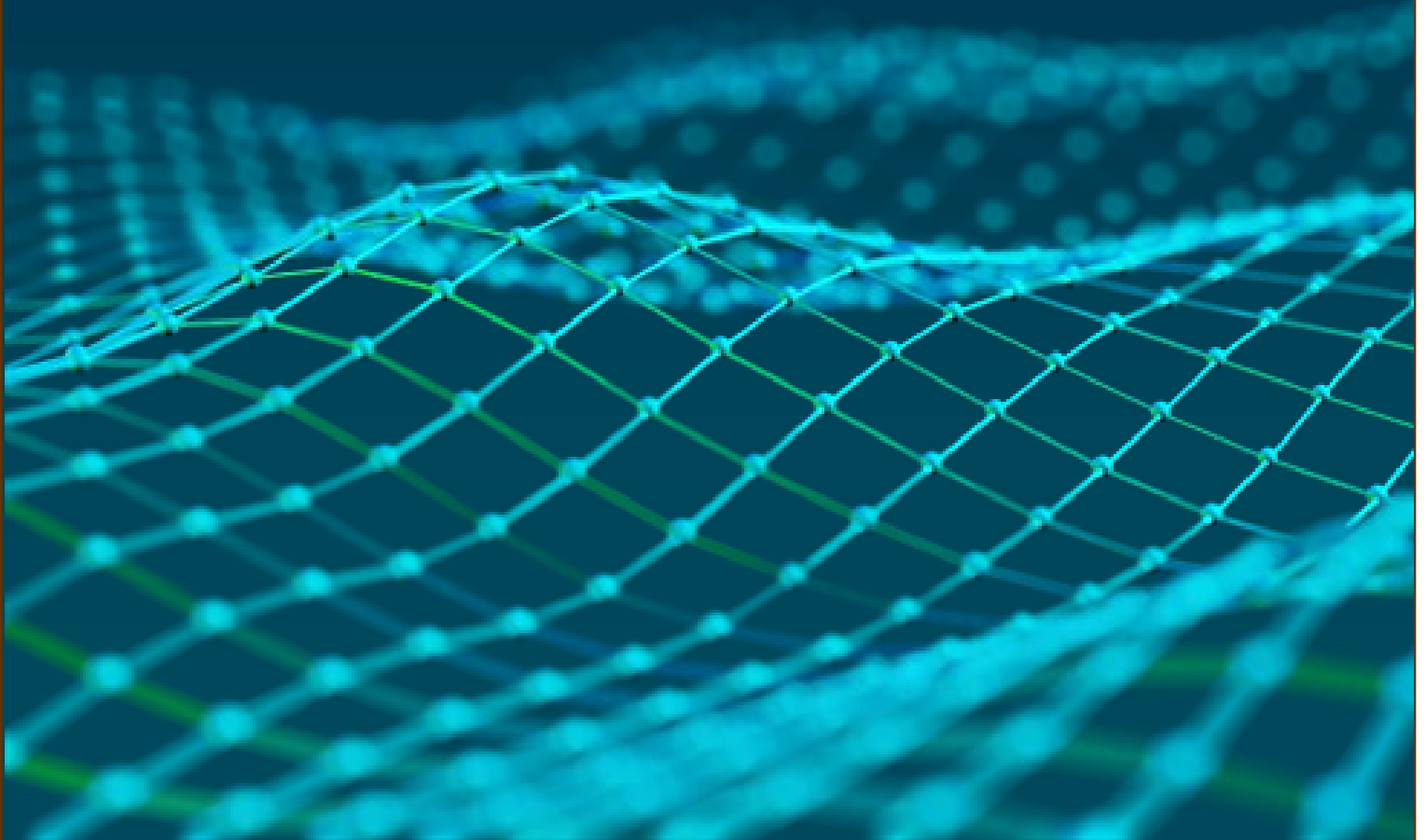
National Physical Laboratory

**UK Summit in partnership with Singapore on
maritime autonomous technologies, innovations,
and standards**

and

UK maritime reception

Thursday 18 April 2024



UK Summit in partnership with Singapore on maritime autonomous technologies, innovations, and standards

Location: Level 3, Suntec Singapore Convention & Exhibition Centre
1 Raffles Boulevard Singapore, 039593 Singapore

Date: Thursday 18 April 2024
During Singapore Maritime Week <https://www.smw.sg/> (15-19 April 2024)

Time: 08:15 GMT+8 to 16:00 GMT +8 – Summit
16:15 GMT+8 to 18:15 GMT +8 – Networking reception

[Click here to go to the agenda](#)

[Click here to go to the speaker biographies](#)

Introduction

This UK-led summit and networking reception during Singapore Maritime Week is hosted by the National Physical Laboratory (NPL) in partnership with the UK Government's Department for Science, Innovation and Technology (DSIT) and Singapore.

This one-day summit brings together international stakeholders and thought leaders from over 20 organisations to share the latest insights on developments in Maritime Autonomous technologies and operational use cases, with headline speakers including the CEO's of Lloyd's Register, the Maritime and Port Authority of Singapore (MPA), NPL, the Technology Centre for Offshore Marine, Singapore (TCOMS), the A*STAR (Singapore's Agency for Science, Technology and Research)'s National Metrology Centre(NMC). Participants will learn about outputs from existing research on testing, standards, and assurance, and opportunities to foster international collaborations. The event programme will focus on developing an internationally integrated strategy to achieve Maritime Autonomous Surface Ships (MASS) adoption at a scale where the true economic and security benefits can be realised. International participants from countries across Asia-Pacific, Americas and Europe will be attending.

The networking reception afterwards will feature special addresses from His Majesty's High Commissioner and Trade Commissioner.

The Summit follows the signing of an agreement between NPL, TCOMS, and A*STAR's NMC in 2023 to collaborate on research into MASS and remotely operated vessels*.

The event highlights the aims of the MAAT (Maritime Autonomy Assurance Testbed) programme, an initiative established in the UK to develop an accessible and usable test and certification approach to assure the safety and reliability of MASS globally. It is recognised that the MAAT objectives are best achieved through international collaboration. The MAAT programme has been established by NPL and Lloyd's Register, and several of the UK's leading research organisation and national agencies, including the UK Hydrographic Office, the Met Office, WMG/University of Warwick, Plymouth Marine Laboratory, University of Plymouth.

*A Memorandum of Understanding (MOU) was signed in November 2023 between NPL, TCOMS and A*STAR's NMC to develop collaborative research projects on Maritime Autonomy, as part of MAAT. The MOU was signed in the presence of British High Commissioner, H.E. Kara Owen and Chairman of the Singapore Maritime Institute, Professor Low Teck Seng.

Summit agenda

Time	Agenda
UK Summit in Partnership with Singapore on maritime autonomous technologies, innovations and standards Venue: Level 3, Room 331, Suntec Singapore https://www.suntecsingapore.com/	
08:15 – 09:00	Registration and welcome coffee
Opening session	
09:00 – 09:05	Welcome: Introduction & today's agenda Event Chair: Andre Burgess, Partnerships lead, Assured Autonomy, National Physical Laboratory (NPL)
09:05 – 09:35	Opening Keynotes <ul style="list-style-type: none">- Professor Peter Thompson FREng FInstP FRSC, Chief Executive Officer, National Physical Laboratory (NPL)- Chakib Abi-Saab, Chief Technology and Innovation Officer, Lloyd's Register
Morning session	
09:35 – 10:15	Pioneering collaboration between UK and Singapore to realise a MASS future <ul style="list-style-type: none">- Assuring successful MASS operations: Introducing the Maritime Autonomy Assurance Testbed programme Andre Burgess, Partnerships lead, Assured Autonomy, National Physical Laboratory (NPL) Tony Boylen, Principal Specialist Assurance of Autonomy, Lloyd's Register

<p>09:35 – 10:15</p> <p>Continued</p>	<ul style="list-style-type: none"> - Understanding the complexity of MASS operations in congested waterways Professor Chan Eng Soon, Chief Executive Officer, Technology Centre for Offshore Marine, Singapore (TCOMS) - Metrology for Maritime Autonomy Assurance Professor Gregory Goh, Executive Director, the National Metrology Centre, Agency for Science, Technology and Research (A*STAR)
<p>10:15 – 10:30</p>	<p>Morning break</p>
<p>10:30 – 11:45</p>	<p>Pioneering innovation in MASS standards, for data, testing and security to deliver safe navigation</p> <p>Presentations on current research activities</p> <ul style="list-style-type: none"> - Realising the port of the future: Study on close encounters Dr Bhushan Taskar, Scientist, Technology Centre for Offshore Marine, Singapore Dr Keramat Hasani, Senior research fellow, Department of Industrial Systems Engineering & Management at NUS. - Developing a common taxonomy to understand the true performance of autonomous systems Professor Siddartha Khastgir, Head of Safe Autonomy, WMG, University of Warwick - Development of recommendations for Digital Testing of MASS, prior to Sea Trials Captain Savio Coutinho, Assistant Director, Centre of Excellence in Maritime Safety, Singapore Polytechnic - Managing cyber risk in Maritime operations Dr Kimberly Tam, Associate Professor, Cyber-SHIP project, University of Plymouth & Alan Turing Institute

<p>10:30 – 11:45</p> <p>Continued</p>	<p>Includes panel Q&A</p> <p>Moderator: Duncan Duffy, Global Head of Technology, Electrotechnical Systems & Digitalisation, Lloyd’s Register</p>
<p>11:45 – 13:10</p>	<p>Pioneering innovation in MASS standards – Quality Assuring situational awareness</p> <p>Presentations on current research activities</p> <ul style="list-style-type: none"> - A common approach to MASS Sensor Performance testing and operational assurance Dr Richard Dudley, Principal Scientist, Electromagnetic Technologies, National Physical Laboratory (NPL) Kimberley Eastaugh, Marine Applications Foundation Scientist, the Met Office - Data-Driven Sensing Quality Assurance Dr Cui Shan, Head, Acoustic, Chemical and Temperature Metrology, National Metrology Centre, Agency for Science, Technology and Research (A*STAR) - Machine intelligibility of Navigation / Chart data Dr Maurizio Bevilacqua, Senior Engineer / Technical Lead Assured Autonomy & Autonomous Vehicle Metrology, Data Science Department, National Physical Laboratory (NPL) Paul Burton, MASS Technical Engagement Manager, the UK Hydrographic Office (UKHO) - Maritime big data analytics and AI modelling for Maritime Autonomous Surface Ship Development Xiuju Fu, Director of Maritime AI Programme, Senior Principal Scientist II, Institute of High Performance Computing (IHPC), Agency for Science, Technology and Research (A*STAR) <p>Includes panel Q&A</p> <p>Moderator: Kevin Forshaw, Director of Industrial and Strategic Partnerships, University of Plymouth</p>

13:10 – 14:00	Networking lunch break
Afternoon session	
14:00 – 14:10	<ul style="list-style-type: none"> - Navigating the Waters of Maritime Autonomy Kenneth Lim, Assistant Chief Executive (Industry & Transformation), Maritime and Port Authority of Singapore
14:10 – 14:35	<ul style="list-style-type: none"> - The perils of the sea should not include autonomy A recipe for commercial success in assurance, certification and operation of autonomous systems Duncan Duffy, Global Head of Technology, Electrotechnical Systems & Digitalisation, Lloyd’s Register Joseph Morelos, Maritime AI Test and Evaluation Innovation Leader, Lloyd’s Register
14:35 – 16:00	<p>MASS on the international stage - driving innovation and enhancing trade, prosperity and security</p> <p>Highlighting diversity of use cases, shared agendas, and opportunity.</p> <ul style="list-style-type: none"> - Looking Beyond Assurance: Trustworthy Autonomy Nathanael Tan, Head Technology, Unmanned Systems Business Unit, ST Engineering Unmanned & Integrated Systems Pte. Ltd., Singapore - Autonomous Navigation – A Perspective of Energy Saving Jinmo Park, Head of Autonomous Control, Avikus Co., Ltd. (Hyundai Heavy Industries Group), Republic of Korea - Developing an agnostic and open remote operations capability Professor James Fishwick, Director - National Centre for Coastal Autonomy, Plymouth Marine Laboratory, UK. - Open innovation in the development of autonomous ships in the NYK Group – the MEGURI 2040 initiative Captain Jun Nakamura, Manager, Autonomous Ship Team, Maritime & Logistics Technology Group, MTI Co., Ltd (NYK Group), Japan

<p>14:35 – 16:00</p> <p>Continued</p>	<ul style="list-style-type: none"> - Developing an agnostic and open remote operations capability Professor James Fishwick, Director - National Centre for Coastal Autonomy, Plymouth Marine Laboratory, UK. - Open innovation in the development of autonomous ships in the NYK Group – the MEGURI 2040 initiative Captain Jun Nakamura, Manager, Autonomous Ship Team, Maritime & Logistics Technology Group, MTI Co., Ltd (NYK Group), Japan - Leveraging international collaboration for innovation in maritime autonomy David Hull, Founder and CEO, HydroSurv Unmanned Survey (UK) Ltd, UK - Operational safety Assurance of MASS Makoto Yamaguchi, Executive Fellow, Mitsui O.S.K. Lines Ltd, Japan <p>Includes panel Q&A</p> <p>Moderator: Andre Burgess, Partnerships lead, Assured Autonomy, National Physical Laboratory (NPL)</p>
<p>16:00 – 16:05</p>	<p>Closing remarks</p> <p>Professor Neil Stansfield, Head of Security and Resilience, National Physical Laboratory</p>

UK maritime reception

Venue: Level 3, Concourse 2&3, Suntec Singapore <https://www.suntecsingapore.com/>

<p>16:15 – 18:15</p>	<p>Addresses (start 16:30)</p> <p>H.E. Kara Owen CMG, British High Commissioner to Singapore</p> <p>Professor Low Teck Seng, Chairman, Singapore Maritime Institute (SMI)</p> <p>Martin Kent, His Majesty’s Trade Commissioner for Asia Pacific</p> <p>Professor Peter Thompson FEng FInstP FRSC, Chief Executive Officer, National Physical Laboratory (NPL)</p>
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Speaker biographies

Andre Burgess

Strategic Partnerships Manager, Assured Autonomy, Partnerships Directorate, Security and Resilience

National Physical Laboratory (NPL)



Working within the resilience and security national challenge team, Andre has led the creation of NPL's Assured Autonomy Programme, which brings together disciplines across Data Science, Time and Frequency, Electro-Magnetic technologies, and Dimensional metrology. His work on Autonomous Transport Systems has focused on delivering confidence in the adoption of emerging technologies. This includes building collaborations across the UK's mobility sector (Land, Sea and Air) to establish an integrated digital measurement infrastructure and technical framework to underpin the testing ecosystems – real and virtual - for autonomous systems at all Technology Readiness Levels.

He has over 20 years' experience in the TMT sector having worked across Tier 1 Telecoms operators as well as setting up an international digital services company and supporting the launch of several start-ups.

Professor Peter Thompson FREng FInstP FRSC

Chief Executive Officer

National Physical Laboratory (NPL)



Professor Peter Thompson FREng FInstP FRSC is CEO of NPL, a national laboratory spanning science, innovation and technology and the UK's National Metrology Institute (NMI).

In 2015 Peter joined NPL as CEO and has overseen the laboratory's development and growth in recent years aligned to the UK's National Challenges. This has included providing strategic leadership and oversight of NPL-led programmes including the Cancer Research UK Rosetta Cancer Grand Challenge, National Timing Centre programme, Quantum programme, Measurement for Recovery programme, the Advanced Machinery and Productivity initiative and the UK Telecoms Lab (UKTL).

For outstanding leadership of the National Physical Laboratory and the sustained impact of metrology on UK prosperity and quality of life, Peter was awarded the Institute of Physics 2022 Richard Glazebrook medal and award. He also holds a number of advisory positions, in areas such as the National Quantum Technologies Programme (NQTP).

Peter brings a passion for diversity and inclusion in science and engineering and a focus on maximising impact for end users. His previous roles include strategic advisor to MOD's Chief Scientific Adviser, Board Member and Deputy Chief Executive of Dstl and Head of the Counter Terrorism, Science and Technology Centre.

Peter is a Visiting Professor at the University of Surrey, a Non-Executive Director of the High Value Manufacturing (HVM) Catapult and a Trustee of the Institute of Physics. He is the recipient of two MOD Chief Scientific Advisor Commendations and the US National Intelligence Meritorious Unit Citation (NIMUC) award.

Chakib Abi-Saab

Chief Technology and Innovation Officer

Lloyd's Register



Chakib Abi Saab is a visionary leader who spearheads business transformation and digital innovation as the Chief Technology and Innovation Officer for Lloyd's Register. With a wealth of experience in process automation, logistics, and transportation, he has a proven track record of driving productivity, collaboration, and revenue growth through the effective implementation of new technologies. As a Group Chief Technology Officer for several renowned global organizations, such as Bahri, OSM Maritime Group, and Bumi Armada Berhad, Chakib has a knack for creating new revenue streams and turning around businesses. He excels at identifying new technology trends, implementing successful business transformation strategies, and creating administrative policies that drive significant revenue growth. Chakib's leadership extends beyond LR as he serves as Chairman of Safetytech Accelerator in London, a member of the Technology Advisory Panel at the Singapore Maritime Institute, and an advisor for the Motion Ventures investment fund in Singapore. He has a strong grasp of emerging technologies, market trends, and their business implications, making him an invaluable asset to these organizations. Driven by his passion for innovation, Chakib holds a Bachelor of Business Management (BBM) and a Master of Business Administration (MBA) in International Business from Letourneau University in Texas, USA.

Tony Boylen

Principal Specialist, Assurance of Autonomy

Lloyd's Register



Tony Boylen began his Maritime Autonomy career in the UK Ministry of Defence in 2005. He led the conceptualisation of the (Autonomous) Maritime Mine Countermeasures Programme, going on to deliver more than a decade of technology and capability concept demonstrators in evidencing capability potential.

Since 2019, he has been the LR Principal Specialist for the Assurance of Autonomy. In recognising the depth of the assurance challenge and the need for a highly structured approach, he instigated and has lead development of the programme proposal of the Maritime Autonomy Assurance Testbed (MAAT). Building on LR's unique capabilities, he is bringing together leading external subject matter experts to operationalise the highly advanced test and evaluation framework.

More widely, Tony is globally responsible for LR Autonomy in providing technical advice, supporting and collaborating with stakeholders as the marine industry develops its' technology pathway. He has been an active contributor to the Cross-Domain (Land, Air, and Marine) Safety Assurance of Automated Systems development and also conducts a strategic and technical governance role for the University of York's Assuring Autonomy International Programme (AAIP).

Professor Chan Eng Soon

Chief Executive Officer

Technology Centre for Offshore Marine, Singapore (TCOMS)



Professor Chan Eng Soon is the Chief Executive Officer of the Technology Centre for Offshore and Marine, Singapore (TCOMS). He is also the Director of Research at the Office of Deputy President (Research & Technology) at the National University of Singapore (NUS).

Prior to his current appointments, he held several key appointments in NUS, including being the Vice Provost (Special Duties) in the Provost Office, Keppel Chair Professor at the Department of Civil & Environmental Engineering, Dean of Engineering, Head of the then Civil Engineering Department, Director of the Tropical Marine Science Institute, Executive Director of the Centre for Offshore Research and Engineering at NUS and the Director of the Offshore and Marine Programme at the Science and Engineering Research Council, Agency for Science, Technology and Research (A*STAR).

He has also served in the Management Board of several institutions and research laboratories/centres, including the Centre for Remote Imaging, Sensing and Processing, Institute for Mathematical Sciences, Temasek Laboratories, Temasek Defence Systems Institute and the Tropical Marine Science Institute.

Professor Chan received his Bachelor of Engineering and Master of Engineering degrees from the University of Singapore/NUS in 1980 and 1982 respectively. He received his Doctor of Science degree from the Massachusetts Institute of Technology in 1986. Professor Chan's research interests and activities are focused on marine processes, including marine hydrodynamics, wave-structure interactions, wave actions and coastal protection.

Prof Chan is a Fellow of the Singapore Academy of Engineering and the Institution of Engineers, Singapore.

Professor Gregory Goh

Executive Director

The National Metrology Centre, Agency for Science, Technology and Research (A*STAR)



Professor Goh is the Executive Director of the National Metrology Centre (NMC) at A*STAR and represents the Singapore Government at the quadrennial General Conference on Weights and Measures (CGPM), the intergovernmental forum that ensures the propagation and improvement of the International System of Units, crucial for international trade, safety and health. He is also the Singapore Focal Point for the Expert Group on Metrology that is part of the Sub Committee on S&T Infrastructure and Resources Development under the ASEAN Committee on Science, Technology and Innovation (COSTI). Locally, Professor Goh is the A*STAR management representative on both the Singapore Standard Council and Singapore Accreditation Council. He also holds an adjunct Professorship with the School of Mechanical and Aerospace Engineering, Nanyang Technological University.

Before his move to NMC in 2020, Professor Goh was Deputy Executive Director of the Institute of Materials Research and Engineering, A*STAR, and had held appointments such as Director of the Strategic Research Office and also Head of the Ceramics Materials department. During this period, he was the Covering Focal Point for the Sub Committee on Materials Science and Technology under the ASEAN COSTI. He also held an adjunct Professorship in the School of Materials Science and Engineering, Nanyang Technological University from 2005 to 2021.

In 2017 to 2019, Professor Goh held a concurrent appointment as Director of Special Projects in the Science and Engineering Research

Council, A*STAR, where he scoped future R&D programmes and also oversaw electrification of transport and related matters in the Urban and GreenTech Office. He also represented A*STAR on various working committees such as Land and Liveability, Smart Urban Habitat and the biennial MND Urban Sustainability R&D Congress. In addition, Professor Goh was the founding chair of the Singapore Battery Consortium.

In the years before taking up management responsibilities, Professor Goh led R&D projects under the 1st and 2nd Joint A*STAR-MND Green Building Thematic Strategic Research Programmes and also served as the Programme Manager for the 2nd programme. His research focused on the deposition of functional and electroceramic films and nanostructures which can be utilized in self-cleaning, heat reflection and also electrochemical applications. Professor Goh has published 90 papers in peer reviewed journals with an h-index of 24 and his research has been highlighted on journal covers and also by The American Ceramic Society, Plastics Today, Chemical Daily, Asian Scientist, Science Daily, Straits Times and Business Times. He has delivered over 30 invited lectures and has served on the Scientific Advisory Committees of international conferences in Asia and Europe. He is an inventor of several Singapore, PCT, Japan and US patent applications.

Dr Bhushan Taskar

Scientist

Technology Centre for Offshore Marine, Singapore



Dr Bhushan Taskar is a scientist at Technology Centre for Offshore and Marine, Singapore. His research is currently focussed on autonomous and smart solutions including performance optimization, digital twinning of ships and vessel motion prediction. He obtained his Bachelors and masters in Ocean Engineering and Naval Architecture from Indian Institute of Technology, Kharagpur. Dr Bhushan Taskar did his PhD from the Marine Technology department of Norwegian University of Science and Technology. He spent 3 years at Technical University of Denmark as a post-doctoral fellow developing a software for voyage performance prediction.

Dr Keramat Hasani

Senior research fellow

Department of Industrial Systems Engineering & Management at NUS



Dr Keramat Hasani is a Senior Research Fellow at the Centre of Excellence in Modelling and Simulation for Next Generation Ports (C4NGP), within the Department of Industrial Systems Engineering & Management at NUS. He received his Ph.D. in Computer Science from the National Academy of Sciences of Belarus in 2014. His research interests include discrete optimization, scheduling theory, rostering, timetabling, approximation algorithms, heuristics, and machine learning. Some of his research papers have been published in journals such as Computers & Operations Research, International Journal of Production Research, Information Processing Letters, and Engineering Optimization.

Captain Savio Coutinho

Assistant Director

Centre of Excellence in Maritime Safety, Singapore Polytechnic



As the Deputy Director at the Singapore Maritime Academy with 16 years of experience in education, Captain Savio Coutinho's expertise lies in the dynamic fields of simulation practice and the human element in maritime operations. He has had the privilege of leading exciting research on MASS as part of his role at the Centre of Excellence in Maritime Safety, Singapore Polytechnic. With a passion for advancing maritime technology and safety, Savio is always on the lookout to connect with the wider community and exchange perspectives on the future of maritime.

Professor Siddhartha Khastgir

Head of Safe Autonomy

WMG, University of Warwick



Professor Siddhartha Khastgir is the Head of Safe Autonomy at WMG, University of Warwick. He leads several collaborative R&D projects with industrial and academic partners nationally and internationally. His research focuses on generating safety evidence and arguments, test scenario generation, simulation-based testing, and safety of AI systems. Leveraging the cross-domain nature of safety, he is involved in safety research in land, aviation and marine autonomy. He has been appointed as a member of the Department for Transport's Science Advisory Council.

Siddhartha is an active member of various national and international standardisation and regulatory groups, including ISO, SAE and ASAM. Currently, he represents the UK on several ISO technical committees and is the lead author for two new ISO standards for aspects of automated driving systems. He sits on the United Nations Economic Commission for Europe (UNECE) committees on safety of automated driving.

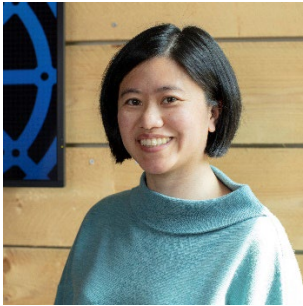
Prior to joining WMG, Siddhartha was with FEV GmbH in Germany, leading automotive software development and testing for series production projects.

He has received numerous national and international awards for his research contributions, including the prestigious UKRI Future Leaders Fellowship in 2019 focused on safety evaluation of CAVs.

Dr Kimberly Tam

Associate Professor, Cyber-SHIP project

University of Plymouth & Alan Turing Institute



Dr Kimberly Tam gained a B.S in Computer and System Engineering at Rensselaer Polytechnic Institute in the USA and a PhD in Information Security from Royal Holloway University of London in the UK. She is currently an associate professor at the University of Plymouth and researches the area of maritime cyber-security including autonomy and AI. She is currently the academic lead for the Cyber-SHIP project, PI of a Maritime Autonomous System AI security project, and co-I in a number of other maritime cybersecurity projects across a number of topics including security of vessels, ports, and offshore platforms. She is also the theme lead for Marine and Maritime at the Alan Turing Institute.

Dr Richard Dudley

Principal Scientist, Electromagnetic Technologies

National Physical Laboratory (NPL)



Richard is science area leader in Electromagnetic Technologies at NPL and has expertise from semiconductor physics, terahertz measurements, opto-electronics and sensor applications in sport, agriculture, industry and most recently autonomous vehicles for land, air and sea.

Richard has a Ph.D. in applied physics from the University of Essex, U.K and joined the National Physical Laboratory (NPL) in 1996 to transfer his research in high-speed electrical signals into commercial services. Work extended into the measurement of microwave-integrated circuits and on-wafer probing using network analysis to 110 GHz including free-space electric field measurement.

In 2005, established the NPL terahertz activities and has developed measurement and calibration services for the frequency band 100 GHz–4 THz. Including the calibration of microwave radiometer satellite payloads, for the accurate measurement of the Earth near-surface temperature from space.

In 2008 moved into Precision Agriculture developing & deploying measurement systems for field grown crop analysis, automated harvesting and sorting to animal fat thickness measurement.

Since 2019 transferred sensor knowledge to the development of metrology and assurance of sensor platforms deployed on air, land and sea (full EM spectrum, RF to optical) – with a focus on performance degradation within situational awareness generation.

Kimberley Eastaugh

Marine Applications Foundation Scientist

Met Office



Kimberley joined the Marine Applications team in March 2024, where she is responsible for developing and delivering operational products and consultancy services to enable the metocean industry to better manage the impact of weather and climate on their activities, having previously spent two years in the broader Industry Science & Consultancy area analysing future climate events/extremes of significance to the UK. Prior to joining the Met Office, Kimberley worked as Geodetic Technical Advisor at the UK Hydrographic Office (UKHO) supporting maritime shipping and navigation. Whilst working full-time and in her own time, Kimberley pursued and completed a PG Certificate in Climate Change Management with the University of Edinburgh, achieving a Distinction in June 2020. This supplements the BSc in Oceanography that Kimberley achieved with the University of Southampton back in June 2012.

Dr Cui Shan

Head, Acoustic, Chemical and Temperature Metrology

The National Metrology Centre, Agency for Science, Technology and Research (A*STAR)



Dr Cui Shan is a Principal Scientist and Head of Acoustic, Chemical and Temperature Metrology Cluster at the National Metrology Centre (NMC), Agency for Science, Technology and Research (A*STAR), Singapore. With more than 14 years' experience in establishing metrological standards and provide measurement solutions to the industry, she has developed a method for autonomous and data-driven calibration of sensor networks, namely self-diagnosis and self-healing (SDSH), to ensure measurement accuracy and autonomously compensate sensor drift while minimising lab-based calibration. She is the Chair Elect of the Asia Pacific Metrology Programme's Focus Group on Digital Transformation in Metrology. Her current research work and interest is on measurement quality assurance of sensor networks, virtual reference standard and testing, and uncertainty quantification of complex computer models.

Dr Maurizio Bevilacqua

Senior Engineer / Technical Lead Assured Autonomy & Autonomous Vehicle Metrology, Data Science Department

National Physical Laboratory (NPL)



Maurizio Bevilacqua is a Senior Engineer for the Informatic group in Data science at NPL, and for the past three years was involved in project for Data management, Digital Calibration certificate, and he is the technical leader for the informatic group on projects under the Assurance autonomy framework.

Maurizio holds a PhD in Information Engineering from Salerno University in Italy, focusing primarily on contactless measurement systems, instrumentation, and automation.

He joined Cranfield University in 2014 as Postdoc, and he had experience working on National (EPSRC) and International (Horizon2020 and Bill & Melinda Gates foundation) research projects on wireless sensors network systems. Leaving academia, Maurizio had acquired relevant experience in automotive consultancy working on modelling, testing and simulation of optical systems such as Lidars and camera for the realization of ADAS application within a driving simulator. Most recently, he worked as Vision Expert at former L3Harris, now Leidos.

Paul Burton

MASS Technical Engagement Manager

The UK Hydrographic Office (UKHO)



Paul 40 years' experience in the hydrographic domain having joined the UK Hydrographic Office (UKHO) in 1984.

Over his career he has been involved in the transition from hand-drawn nautical chart compilation, through digital chart production systems, to the design and implementation of the first-generation digital maritime navigation products and services extant today.

He has led in the specification of maritime geospatial standards including the development of the NATO S-57 Additional Military Layers (AML) specification and early work on the International Hydrographic Organisation (IHO) S-100 framework.

Other areas of expertise covered during his career are deep-water surveying capability, bathymetric handling techniques and specialist underwater navigation products.

Since the beginning of 2023 he has taken up the role of Maritime Autonomous Surface Ships (MASS) Technical Engagement Manager at the UKHO. The role will cohere the UKHO involvement in the maritime autonomous domain. This will ensure the UKHO can enable and support the standards, maritime geospatial data provision and legislative requirements, both nationally and internationally, to make autonomous shipping a safe and effective reality.

Dr Xiuju Fu

Director of Maritime AI Programme, Senior Principal Scientist II

Institute of High Performance Computing (IHPC), Agency for Science, Technology and Research (A*STAR)



Dr Xiuju Fu is the Director of the Maritime AI Research Programme and Senior Principal Scientist 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 AI in the maritime industry.

Kevin Forshaw

Director of Industrial and Strategic Partnerships

University of Plymouth



Kevin Forshaw is Director of Industrial and Strategic Partnerships at the University of Plymouth and has been working with shipping operators, ship builders and equipment manufacturers to build reliance against maritime cyber-attacks using world-leading thinking from the University. He is also Chair of Maritime UK South West, a clustering organisation that brings R&D active businesses together with Research base support, while working with Government to develop effective policy and support for the Region.

Previously at the UK's National Oceanography Centre and the University of Southampton, Kevin has always been at the interface between Industry and Academia, securing many millions of pounds of UK and EC R&D funding for collaborative research for the Maritime Sector in areas including maritime cyber, green shipping and marine autonomous systems. Driving innovation for new product development, Kevin set up and launched many initiatives including the UK's Marine Robotic Innovation Centre which was used as a case study by the OECD's Ocean Economy team, the outputs from which were presented at locations including the UN, and during the key note at Ocean's Week Canada 2018.

Kenneth Lim

Assistant Chief Executive (Industry & Transformation)

Maritime and Port Authority of Singapore



Kenneth is the Assistant Chief Executive (Industry & Transformation) of the Maritime and Port Authority of Singapore (MPA) since 1 Jan 2021. Kenneth has built up a strong network of maritime Singapore industry players, including digitalisation and HR innovators of shipping companies and the startup community. He currently oversees the Transformation Office, International Maritime Centre, Business Capability Development, as well as Innovation, Technology, and Talent Development.

Kenneth was seconded from the Government Technology Agency (GovTech) in 2017 as Chief Technology Officer. In GovTech, he was the Cluster Director tasked with harnessing information and communications technology and related engineering for public sector transformation, covering 10 public agencies' CIO teams.

Kenneth has over 25 years of technology-related experience, starting his career as a programmer in PSA, and becoming Vice President of Technology Development, Trade & Logistics in CrimsonLogic, and Senior Vice President in the Energy Market Company before joining the public sector in 2011. His professional experience covers sectors in the Sea Port, Logistics IT, and Energy industries.

Kenneth was awarded the "Supply Chain Asia – Visionary of the Year" in 2019 and is a frequent speaker at many conferences and events advocating digitalisation. He was also awarded the "The Public Administration Medal (Silver) (COVID-19)" in 2022 for his outstanding contributions to Singapore's fight against COVID-19.

Duncan Duffy

Global Head of Technology, Electrotechnical Systems & Digitalisation

Lloyd's Register



Duncan Duffy is a Chartered Electronics and Electrical Engineer with more than 30 years' experience of the marine and offshore industries, with a focus on the safe and successful integration of complicated and complex systems across the maritime industry.

During his career with Lloyd's Register (LR), Duncan moved from the southern UK offshore sector to spend eleven years as part of LR's South Korea operations team, working in survey, project management and leadership roles with responsibility for technical standards across service delivery, training, business assurance, technical investigations, and safety. In 2011, he returned to manage the UK Engineering Systems Product Development team, developing Rules for machinery, electrotechnical and the human element subject areas. He became LR's first Rules Architect in 2013 and led changes to integrate goal-based regulation and systems-thinking into the LR Rules product. Subsequently, he managed the in-service Classification team for LR's fleet of Dry Cargo vessels with responsibility for strategy, policy, and decision making. He served as a member of LR's Classification Executive, the body that oversees global governance of risk in the fleet.

In 2019, Duncan was appointed as LR's Global Head of Technology for Electrotechnical Systems in LR's Marine & Offshore business. Now reporting directly to LR's Technical Director and with added responsibilities for digitalisation, he and his team work to support and collaborate with clients and stakeholders as the marine industry faces new safety, environmental and efficiency challenges related to the electrification aspects of the Maritime energy transition and to the digital transformation of the ocean economy.

Joseph Morelos

Maritime AI Test and Evaluation Innovation Leader

Lloyd's Register



Joseph Morelos is a mechanical engineer with more than 20 years of design, test and evaluation, risk consultancy and regulatory experience in the marine and offshore industries. Joseph works in Lloyd's Register (LR) innovation team dealing with the test and evaluation of system health management technology including anomaly detection, fault detection and isolation, diagnostics, prognostics, fault tolerance and failure recovery capabilities. He led the development and implementation of LR's Digital Compliance framework, the first verification and validation service for digital twins and advance monitoring technology in the maritime industry.

Joseph began his career with LR as an engineering specialist in the London design support office carrying out type-approval of equipment and design review of essential engineering systems. Through-out his career Joseph has contributed to the development of requirements (rules) and methods of safety analysis for novel maritime technology such as passenger ship Safe Return to Port SRtP in 2009-2010 and the implementation of liquefied natural gas as a ship fuel in 2011-2016. Prior to joining LR's innovation team Joseph was the technical authority for the design review and safety analysis of LNG fuel systems. Joseph was appointed as LR's maritime AI test and evaluation Innovation Leader in 2022 to engage internal and external stakeholders in developing and commercialising test and evaluation services for AI systems in the maritime domain.

Nathanael Tan

Head Technology

Unmanned Systems Business Unit, ST Engineering Unmanned & Integrated Systems Pte. Ltd.,
Singapore



Nathanael is a roboticist who believes in the inevitable symbiosis between man and unmanned machines in our autonomous world of tomorrow. As Head of Technology, Nathanael conceptualises, develops and fields new capabilities in the area of perception and manned-unmanned teaming to continually tackle the ever-green challenge of safe autonomous navigation. He is especially passionate about maritime vision-centric intelligence, solutions for end-to-end deployment of Unmanned Surface Vessels as well as autonomy assurance for true L4 and L5 autonomous system.

Jinmo Park

Head of Autonomous Control

Avikus Co., Ltd. (Hyundai Heavy Industries Group), Republic of Korea



Jinmo Park has background in naval architecture and ocean engineering, with an educational foundation from Seoul National University where he achieved both his Bachelor and Master of Engineering, focusing on Autonomous Underwater Vehicle (AUV) dynamics and control.

His career began at Hyundai Heavy Industries as a researcher mainly focused in ship dynamic system identification. where he contributed from 2015 to 2020. As a Senior Researcher at Hyundai Global Services' Digital Innovation Center, driving digital transformation in maritime operations until 2022 with developing smart ship solution of HHI group. Currently, he is working as Head of Autonomous Control Research at Avikus, leading efforts to advance autonomous maritime navigation in commercial shipping and recreational boat side.

Professor James Fishwick

Director

National Centre for Coastal Autonomy, Plymouth Marine Laboratory, UK



Professor James Fishwick is a highly regarded Merit Technologist/Scientist at Plymouth Marine Laboratory (PML) where he is Director of the National Centre for Coastal Autonomy (NCCA). The NCCA deploys marine autonomous capability to be the UK's first fully integrated net zero autonomous observing and monitoring network. In addition to his role at the NCCA, James heads up Smart Sound Plymouth, an academic and commercial consortium facilitating a 350 square mile, fully instrumented proving ground for innovative marine technologies.

James chairs the Future Autonomous at Sea Technologies (FAST) cluster, a group of over forty industry leading companies and organisations working towards the delivery of autonomous at sea solutions. He is currently engaged in several key projects to deliver both marine autonomy regulatory frameworks and assurance testbeds. James is a Fellow of the Institute of Marine Engineering, Science and Technology (IMarEST) and has gained chartered status as both a Marine Technologist and Scientist.

Captain Jun Nakamura

Manager, Autonomous Ship Team

Maritime & Logistics Technology Group, MTI Co., Ltd (NYK Group), Japan



He joined Nippon Yusen Kabushiki Kaisha (NYK Line) in 2005 as a Third Grade Navigation Officer and was promoted to Master in 2020. The vessels He have served on are LNG carriers, LPG carriers, container carriers, car carriers, heavy lift carriers and dry bulk carriers. On shore, He have been involved in the Dry Bulk Marin Quality Control Group and the Cape Size Bulker Group.

He was seconded from NYK to MTI in 2018 to work on the development of autonomous vessels.

In the development of autonomous vessels, he conducted demonstration tests using a remotely operated tugboat in 2019 and a domestic crewless vessel in 2022 at MEGURI 2040.

David Hull

Founder and CEO

HydroSurv Unmanned Survey (UK) Ltd, UK



David Hull is an entrepreneur working in the field of Uncrewed Surface Vessel (USV) technology. In 2019, David founded HydroSurv, a research-informed provider of USV solutions focused on impact-led use cases harnessing the potential of surface robotic systems. Under David's leadership, HydroSurv has delivered more than 65 projects, including design, construction and deployment of more than 22 USVs to customers in the UK, Europe, North America and the Asia Pacific region. Currently, David's focus lies in developing large scale pilots and industrial deployment of sustainable technologies for natural capital assessment, hydrographic survey and asset inspection.

Makoto Yamaguchi

Executive Fellow

Mitsui O.S.K. Lines Ltd, Japan



Makoto Yamaguchi is an Executive Fellow of Mitsui O.S.K. Lines, Ltd.. He is working for expanding the wind propulsion technology and accelerating the usage of the hydrogen energy in Maritime industry. MOL aims to realize the target of CO2 net zero emission by 2050 with the study of the various technology as well as the wind propulsion and hydrogen usage technology as an incorporated in the project “Wind Challenger” and “Wind Hunter”.

Since he joined to MOL in 1991, he has been heavily involved in working for improvements in ship quality and the technical competitiveness of all MOL ships, drawing on his engineering experience working as the supervisor of ship design. In addition, he gained experience as a Superintendent of LNG carriers in a ship management company.

His work experience outside Japan includes London, UK, in the business development of FSRU together with an engineering partner from 2008 to 2011; and Shanghai, China, together with a Chinese ship owner, as the project manager of a new building LNG carriers project from 2012 to 2015.

He was appointed as General Manager of the Technical Division in April 2017. While he was working as the General Manager, he oversaw the introduction of the new “Offshore Technical Division” in 2020, which handles the development and execution of FSRU and Offshore business. From 2021, he was assigned as Executive Officer and leading the Technical Division, the Offshore Technical Division, and the Smart Shipping Division as Chief Technical Officer and Director General of Headquarters of Technology Innovation.

He received a Naval Architect bachelor degree at the Yokohama National University in 1991.

Professor Neil Stansfield

Head of Security and Resilience

National Physical Laboratory (NPL)



Neil Stansfield is Head of Strategy, Head of Digital Technologies, and Head of Security and Resilience programmes at the National Physical Laboratory (NPL). Neil is responsible for identifying and harnessing emerging and disruptive technologies in the Digital Sector, including quantum technologies, AI, autonomy, and future comms. Neil works across the Government agenda, in collaboration with industry and academia. This takes account of a wider view on HMG priorities, setting National strategy for understanding the implications of digital technologies on UK societal and economic priorities. In addition, Neil leads on driving innovation programmes to exploit technology for societal advantage and wealth creation.

Prior to this, Neil has spent twenty-five years in a range of senior defence and security policy, strategy, and science and technology roles, working across Government and the private sector, nationally and internationally. Areas of responsibility have included chemical and biological defence, arms control, ballistic missile defence, MoD's maritime S&T programme, and as Deputy Director in the Office of Security and Counter-Terrorism.

In 2007 Neil had the privilege of spending a year at the Royal College of Defence Studies, MoD's most senior leadership development programme. From 2012 until joining NPL Neil led innovation for MoD and the wider National Security infrastructure.

Find out more about Maritime Autonomy Assurance Testbed (MAAT) and how to contact us, by scanning the QR code below or following the link to the webpage.



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