



NPL, TCOMS and A*STAR partner to advance the development of international maritime autonomy assurance and standards for autonomous maritime systems

Collaboration on the development of international maritime autonomy assurance and common taxonomies, definitions, guidelines and standards to facilitate the international adoption of autonomous maritime systems

(SINGAPORE) The National Physical Laboratory (NPL), Technology Centre for Offshore and Marine, Singapore (TCOMS) and Singapore's Agency for Science, Technology and Research (A*STAR) have signed a Memorandum of Understanding (MOU) to foster Research & Development (R&D) collaboration with the aim to advance the global development of Maritime Autonomous Surface Ships (MASS) and other smart maritime systems.

The MOU was signed by the Chief Executive of TCOMS, Professor Chan Eng Soon, Executive Director of A*STAR's National Metrology Centre (NMC), Professor Gregory Goh, and Professor Neil Stansfield, Head of Security and Resilience, NPL, on behalf of Dr Peter Thompson, Chief Executive Officer, NPL, who joined the signing virtually in the UK, on 23rd November 2023 and in the presence of British High Commissioner Kara Owen and Chairman of the Singapore Maritime Institute, Professor Low Teck Seng.

The agreement covers areas of research involving maritime autonomy assurance to verify and validate the true performance and limitations of systems in trusted, repeatable and replicable ways, and the development of common taxonomies, definitions, guidelines and standards to facilitate the international adoption of autonomous maritime systems through international platforms such as the International Maritime Organisation.

This MOU was developed in connection with the United Kingdom's Maritime Autonomy Assurance Testbed, or MAAT, a programme that seeks to deliver an accessible and usable test and certification approach to assure the safety and reliability of Maritime Autonomous Systems, including remotely operated systems, in the UK and internationally.

British High Commissioner Kara Owen said “The UK and Singapore are maritime hubs with formidable research and development capabilities. This partnership will harness our combined expertise to chart a course towards the adoption of maritime autonomy in the most secure, efficient and sustainable way so that the benefits of this critical technology can be scaled globally. This is a concrete example of the commitment our two Prime Ministers made in September when they launched the UK Singapore Strategic Partnership. We will continue to pursue projects like this that bring benefit to our own two economies, but also make a broader and potentially global societal impact.”

Chairman of the Singapore Maritime Institute (SMI), Professor Low Teck Seng, said “To maintain its position as a premier global hub port and an international maritime centre, Singapore constantly seeks the development of capabilities that enhance the overall competitiveness of our local maritime industry. Maritime autonomy is one such enabler where operational safety and port efficiency can be significantly enhanced with the use of MASS and other smart systems. We welcome this cross-border collaboration by TCOMS, NMC and NPL on the maritime autonomy assurance framework as it would leverage the active maritime R&D ecosystem in Singapore to foster common standards and inter-operability between Singapore and the UK, and ultimately the global markets.”

Dr Peter Thompson, CEO of NPL said “We are establishing a national measurement infrastructure to support the reliable development, testing and validation of autonomous systems. I am delighted that NPL is entering into a partnership with the Technology Centre for Offshore and Marine, Singapore (TCOMS) and the National Metrology Institute (NMI) of Singapore’s Agency for Science, Technology and Research (A*STAR) to further strengthen confidence in autonomous systems”.

Professor Chan Eng Soon, CEO of TCOMS, said “TCOMS is delighted to partner UK’s National Physical Laboratory (NPL) and the Agency for Science, Technology and Research (A*STAR) to advance the development of an international testing and assurance framework for autonomous maritime systems. We look forward to furthering our digital twinning technologies to create virtual environments that stress test the navigational intelligence of MASS vessels in multiple operational and edge scenarios. As Singapore’s national platform dedicated to the maritime and other ocean sectors, we will also seek to harness the collective strengths of our public research ecosystem, including the A*STAR Research Institutes and the Institutes of Higher Learning, to contribute to this endeavour.”

“As the national measurement institute of Singapore, we seek to advance measurement science and technologies to lay the foundation for which assurance models, technical standards and test capabilities can be standardised and trusted. We aim to further strengthen Singapore’s measurement standards through digital transformation to meet the needs of maritime autonomous system testing. This is by building virtual test references, remote and data-driven sensing quality assurance and

uncertainty quantification capabilities for better trust and confidence in maritime autonomous systems,” said Professor Gregory Goh, Executive Director of A*STAR’s NMC.

As a result of this MOU, NPL in collaboration with TCOMS, A*STAR’s NMC, SMI and partners from the UK based MAAT consortium - Lloyd’s Register, UK Hydrographic Office, Met Office, Plymouth Marine Labs, University of Plymouth and Warwick Manufacturing Group - will be organising a full-day summit on the theme of the future regime of testing, standards and assurance to deliver Maritime autonomy globally on 18th April 2024 as part of the activities of the Singapore Maritime Week 2024. International participants from countries across Asia-Pacific, Americas and Europe are expected to attend this summit.

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About NPL

[NPL](#) is the UK’s National Metrology Institute, providing the measurement capability that underpins the UK’s prosperity and quality of life.

From new antibiotics to tackle resistance and more effective cancer treatments, to secure quantum communications and superfast 5G, technological advances must be built on a foundation of reliable measurement to succeed. Building on over a century’s worth of expertise, our science, engineering and technology provides this foundation. We save lives, protect the environment and enable citizens to feel safe and secure, as well as support international trade and commercial innovation. As a national laboratory, our advice is always impartial and independent, meaning consumers, investors, policymakers and entrepreneurs can always rely on the work we do.

Based in Teddington, south-west London, NPL employs over 800 scientists and engineers. NPL also has regional bases across the UK, including at the University of Surrey, the University of Strathclyde, the University of Cambridge and the University of Huddersfield’s 3M Buckley Innovation Centre.

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About TCOMS

The Technology Centre for Offshore and Marine, Singapore (TCOMS) is a national R&D centre dedicated to the Marine & Offshore Engineering, Maritime and other

Ocean sectors. It integrates research and industry expertise to co-create, validate and stress test innovative concepts and solutions to address real world challenges. A core feature of TCOMS is the next-generation ocean basin facility which is equipped with advanced wave and current generation systems to simulate physical ocean environment and complex scenarios that offshore platforms, ships and underwater systems operate in. TCOMS brings together researchers from the public sector, academia and industry, and fosters R&D capabilities to position Singapore as a global hub that creates, builds and manages future ocean systems and solutions.

TCOMS is a joint venture between the Agency for Science, Technology and Research (A*STAR) and the National University of Singapore (NUS), supported by Singapore Economic Development Board (EDB) and Maritime and Port Authority of Singapore (MPA).

About the Agency for Science, Technology and Research (A*STAR)

The Agency for Science, Technology and Research (A*STAR) is Singapore's lead public sector R&D agency. Through open innovation, we collaborate with our partners in both the public and private sectors to benefit the economy and society. As a Science and Technology Organisation, A*STAR bridges the gap between academia and industry. Our research creates economic growth and jobs for Singapore, and enhances lives by improving societal outcomes in healthcare, urban living, and sustainability. A*STAR plays a key role in nurturing scientific talent and leaders for the wider research community and industry. A*STAR's R&D activities span biomedical sciences to physical sciences and engineering, with research entities primarily located in Biopolis and Fusionopolis. For ongoing news, visit www.a-star.edu.sg.

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Annex: Picture of MOU signing between NPL, TCOMS and NMC on 23 November 2023



Caption:

Signing of MOU in Singapore by Executive Director of A*STAR's NMC, Professor Gregory Goh, Chief Executive of TCOMS, Professor Chan Eng Soon and Head of Security and Resilience NPL, Professor Neil Stansfield, on 23 November 2023 in the presence of British High Commissioner Kara Owen and Chairman of the Singapore Maritime Institute, Professor Low Teck Seng, with Chief Executive of NPL, Dr Peter Thompson joining online from the UK.