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PSA BDP AND A*STAR IHPC PARTNER TO ADVANCE MARITIME RESILIENCE WITH AI INNOVATION

PSA BDP, a leading global logistics and supply chain solutions provider and a member of the PSA Group, and A*STAR Institute of High Performance Computing (A*STAR IHPC) have embarked on a three-year joint research initiative to strengthen Singapore's position as a resilient maritime hub and empower more adaptive and secure global supply chains. A*STAR IHPC is a research institute under the Agency for Science, Technology and Research (A*STAR), Singapore's lead public-sector R&D agency.

The collaboration combines PSA BDP's global logistics expertise with A*STAR IHPC's capabilities in advanced artificial intelligence (AI), modelling and simulation technologies to detect disruption, assess their downstream impact on shipping operations and propose potential risk mitigation strategies.

<u>Applying AI to Real-World Maritime Challenges</u>

Global shipping networks are constantly influenced by factors such as congestion, regulatory changes, climate events, and shifting supply chain flows. These dynamics highlight the need for adaptable shipping routes, agile port operations, and secure flow of goods, energy, and food worldwide.

To address this, PSA BDP and A*STAR IHPC are jointly developing an AI model under the project "AI-based Event Mining and Impact Evaluation of Maritime Shipping Disruptions".

By enabling earlier detection and faster response during unforeseen events, the AI model aims to help logistics providers, shipping lines, and port operators maintain supply chain continuity and operational resilience.

The system draws data sources such as the Automatic Identification System (AIS) and other publicly available sources to provide clearer insights into terminal capacity and utilisation, helping companies better anticipate and manage disruption risks. It will also explore the use of large language models (LLMs) to analyse unstructured information, such as news or regulatory updates, complementing maritime data.

By combining simulation with AI-driven insights, stakeholders from Beneficial Cargo Owners and PSA terminals will be able to make more informed decisions when managing

disruptions. The AI model will be tested and validated in Singapore, one of the world's busiest transshipment hubs[1], before expanding to other commercial markets globally.

"At PSA BDP, we empower global shippers to anticipate supply chain disruptions, evaluate alternative scenarios, and act with confidence through data-driven, AI-powered insights and simulation. Our collaboration with A*STAR IHPC strengthens this vision through deep research efforts to bring to life the next generation of analytics solutions to unlock new efficiencies, drive tangible value for our customers, and reinforce our commitment to innovation and partnership. By enhancing connectivity across the supply chain, we aim to facilitate seamless trade and enable smarter, more agile decision-making," said Neil Wheeldon, Chief Digital Innovation Officer, PSA BDP.

"Big data and AI have the potential to transform how shippers and solution providers manage risk and build resilience across global shipping networks. This is especially important for Singapore, a key node in the international maritime system to maintain its reliability amid a rapidly changing environment. We are pleased to partner with PSA BDP, applying A*STAR IHPC's deep expertise in AI, modelling and simulations," said Dr Su Yi, Executive Director, A*STAR IHPC.

This research initiative is funded under the SMI grant on "Maritime AI Research for Shipping Disruption Evaluation, Launch Boat Optimisation and Digital Testing of Vessel Predictive Maintenance" as part of Phase 2 of the Maritime AI Research Programme, with the support from MPA.

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                                                       COMPUTING (A*STAR IHPC)

About PSA BDP
PSA BDP is a leading provider of globally integrated and port-centric supply chain, transportation, and logistics solutions. It serves a wide range of multinational customers across diverse industry verticals, providing services that include lead logistics (LLP) and fourth party logistics (4PL) solutions; ocean, air, rail and road transportation; barge services; complementary port services; origin management, export freight forwarding; import customs clearance and regulatory compliance; trade compliance, analytics and optimization solutions; contract logistics; project logistics; warehousing, and supply chain visibility and predictive ETA tracking through proprietary Smart technology and applications. Headquartered in Philadelphia, USA, PSA BDP is the brand of BDP International, Inc. BDP International Inc. is a unit of PSA International, a leading global port operator and trusted partner to cargo stakeholders. Read more: https://psabdp.com/

About A*STAR IHPC
A*STAR Institute of High Performance Computing (A*STAR IHPC) was established in August 1998 to provide leadership in computational modelling, simulation and AI to solve major scientific, industrial and societal challenges. It seeks to promote and spearhead scientific advances and technological innovations through multidisciplinary R&D, and to develop impactful applications to further economic growth and improve lives. Our research focuses are in computing science and AI; large scale complex systems modelling; social and cognitive computing; computational engineering mechanics, fluidic dynamics, electronics

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[1] Global Connectivity | Maritime & Port Authority of Singapore (MPA)

and photonics, materials science and chemistry. These core capabilities enable A*STAR IHPC to tackle real-world challenges in physical and human systems, such as in manufacturing, energy, transportation and urban systems, environmental sustainability and healthcare. For more information on A*STAR IHPC, visit www.a-star.edu.sg/ihpc

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