JOINT MEDIA RELEASE

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PIER71™ Commemorates 5th Anniversary of Nurturing MarineTech Start-ups

The Maritime and Port Authority of Singapore (MPA) and National University of Singapore (NUS) commemorated the 5th anniversary of PIER71™[1] at the inaugural PIER71™ Great Circle 2023 event held today at Suntec Singapore Convention and Exhibition Centre.

2. The event comprised the 7th edition of the Smart Port Challenge Grand Finals, a MarineTech Start-up Innovation Showcase, and the inaugural PIER71™ Ascend. PIER71™ Great Circle 2023 event draws inspiration from the practice of great-circle navigation and reflects the efforts by PIER71™ to help start-ups get on the most direct route to deliver maritime innovation.

Five Years of Nurturing MarineTech Start-ups

3. Since its establishment in 2018, PIER71™ has nurtured close to 110 MarineTech start-ups with the support of 62 corporate partners. MPA's Maritime Innovation and Technology (MINT) Fund has supported over 50 start-up projects, with 26 solutions already deployed by the industry[2]. These start-ups have also raised over S$65 million in investments from venture capital (VC) partners to support their expansion. Five foreign MarineTech start-ups have also expanded to Singapore[3], and four start-ups including three from Singapore have been acquired by corporates[4].

4. MPA and NUS have expanded PIER71™ initiative in 2023 to connect shortlisted start-ups to overseas markets, government stakeholders, and prospective maritime customers through the PIER71™ Ascend 12-month programme. The first cohort comprising four start-ups was unveiled today, and they will be working closely with PIER71™ to sharpen their growth strategy in 14 overseas markets[5] which they are operating in.

[1] Port Innovation Ecosystem Reimagined @ BLOCK71 (PIER71™) was jointly established in 2018 by MPA and NUS Enterprise

[2] Annex A – Project Description of Technology Deployment

[3] Annex B – Expansion of Overseas PIER71™ Start-ups to Singapore

[4] Annex C – PIER71™ Start-ups Acquisitions

[5] BeeX (operating in Singapore, Germany, Netherlands, and United States of America), Portcast (operating in China, India, Malaysia, Singapore, Philippines, Netherlands, Turkey, United Kingdom, and Vietnam), Riverr (operating in Philippines and Singapore), and WeavAir (Operating in Canada, Singapore, and South Korea).

Winners of the Smart Port Challenge Grand Finals 2023

5. 18 finalists were shortlisted from a pool of 150 applications from 30 countries[6], and the top three winners were selected by a judging panel comprising Mr Koh Yong Ping, Chief Executive of Bureau Veritas Marine and Offshore, Professor Chai Kah Hin, Associate Professor of the Department of Industrial Systems Engineering and Management of NUS, and Mr Ng Yi Han, Director (Innovation, Technology and Talent Development) of MPA. Measure.AI, CRecTech, and Rux Energy emerged as the first, second, and third winners respectively, and MicroSec received a Special Mention by the judges[7]. The evaluation criteria was based on quality of the innovation, business model, market potential, industry relevance, and the team's capability including tech development and design skills.

6. Close to 50% of the submissions received were related to maritime digitalisation, and 40% were related to maritime decarbonisation. These include solutions to support maritime clean fuels operations, carbon-value chain, electrification, and green maritime supply chain. The emphasis on digitalisation and decarbonisation reflects the increasing attention by the industry and urgency to accelerate the green energy transition. The 18 finalists have also completed PIER71™ Accelerate, an eight-week market validation and customer discovery programme and are now eligible to apply for a grant of up to S$100,000 from MPA to embark on pilot projects with maritime companies.

7. Mr Teo Eng Dih, Chief Executive, MPA, said, "Technology and innovation will play a pivotal role as the global shipping community and Maritime Singapore accelerates digitalisation and decarbonisation efforts. The PIER71™ programme partnership among MPA, NUS Enterprise, and industry collaborators has helped to nurture Singapore's maritime innovation ecosystem, incorporating clean alternative fuels and green maritime technologies. As we commemorate PIER71™ 5th anniversary, we will also strengthen PIER71™'s international linkages, expand the search for innovative solutions beyond our shores, and leverage the Port of Singapore as a Living Lab to pilot new ideas".

8. Professor Chen Tsuhan, Deputy President (Innovation and Enterprise), National University of Singapore (NUS), said, "Celebrating its 5th anniversary, PIER71™ has transformed the global maritime landscape through experiential initiatives like the Smart Port Challenge. Its Accelerate and Ascend programmes continue to strengthen start-ups in market validation and scaling up for sustainable growth. As a founding partner, NUS Enterprise champions innovation and entrepreneurship at the university and beyond. We support PIER71™ in leveraging NUS Enterprise's entrepreneurial programmes, including the Graduate Research Innovation Programme (GRIP) and NUS Overseas Colleges (NOC), as well as the global BLOCK71 network, extending valuable resources and growth opportunities to maritime talents and start-ups. This collaborative effort with MPA not only fosters innovation in enterprises, but also leaves a lasting impact on the maritime industry."

[6] The countries include Australia, Brazil, Canada, China, Croatia, Estonia, Finland, France, Germany, Iceland, India, Indonesia, Ireland, Israel, Italy, Jamaica, Japan, New Zealand, Norway, Philippines, Poland, Russia, South Africa, South Korea, Spain, Sri Lanka, Thailand, United Kingdom, United States of America, and Uruguay

[7] Annex D – List of Winners for Smart Port Challenge 2023

9. A recording of the PIER71™ Great Circle event will be available on the PIER71™ Youtube channel, and more details are available on the PIER71™ 2023 Great Circle microsite at www.greatcircle2023.pier71.sg.

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About PIER71™

Founded by the Maritime and Port Authority of Singapore (MPA) and the National University of Singapore (NUS), through its entrepreneurial arm NUS Enterprise, PIER71™ (Port Innovation Ecosystem Reimagined at BLOCK71) aims to grow Singapore's maritime innovation ecosystem. PIER71™ boosts innovation in the maritime and maritime-related industries by attracting talents, creating opportunities for the exchange of knowledge and ideas, attracting investments into start-ups and accelerating ventures.

PIER71™ designs and delivers programmes to uncover opportunities within the industry and supports entrepreneurs from ideation to acceleration of their ventures. PIER71™ provides access to various markets, demand drivers, technology solution providers, investors and more. PIER71™ also represents a budding and increasingly vibrant ecosystem of stakeholders who are keen to digitalise and create the next wave of maritime innovation.

For more information, please visit https://pier71.sg

About the Maritime and Port Authority of Singapore (MPA)

MPA was established on 2 February 1996 with the mission to develop Singapore as a premier global hub port and international maritime centre, and to advance and safeguard Singapore's strategic maritime interests. MPA is the driving force behind Singapore's port and maritime development, taking on the roles of port authority, maritime and port regulator and planner, international maritime centre champion, national maritime representative and a champion of digitalisation and decarbonisation efforts at regional and international fora such as at the International Maritime Organization. MPA partners industry, research community and other agencies to enhance safety, security and environmental protection in our waters, facilitate maritime and port operations and growth, expand the cluster of maritime ancillary services, and develops maritime digitalisation and decarbonisation policies and plans, R&D and manpower development. MPA is responsible for the overall development and growth of the maritime domain and Port of Singapore. In 2022, Singapore remained one of the world's busiest transshipment hubs with a container throughput of 37.3 million 20-foot equivalent units (TEUs).

For more information, please visit https://www.mpa.gov.sg

About National University of Singapore (NUS)

The National University of Singapore (NUS) is Singapore's flagship university, which offers a global approach to education, research and entrepreneurship, with a focus on Asian perspectives and expertise. We have 16 colleges, faculties and schools across three campuses in Singapore, with more than 40,000 students from 100 countries enriching our vibrant and diverse campus community. We have also established more than 20 NUS Overseas Colleges entrepreneurial hubs around the world.

Our multidisciplinary and real-world approach to education, research and entrepreneurship enables us to work closely with industry, governments and academia to address crucial and complex issues relevant to Asia and the world. Researchers in our faculties, research centres of excellence, corporate labs and more than 30 university-level research institutes focus on themes that include energy; environmental and urban sustainability; treatment and prevention of diseases; active ageing; advanced materials; risk management and resilience of financial systems; Asian studies; and Smart Nation capabilities such as artificial intelligence, data science, operations research and cybersecurity.

For more information on NUS, please visit www.nus.edu.sg.

About NUS Enterprise

NUS Enterprise, the entrepreneurial arm of NUS, plays a pivotal role in advancing innovation and entrepreneurship at NUS and beyond. It actively promotes entrepreneurship and cultivates global mindsets and talents through the synergies of experiential entrepreneurial education, active industry partnerships, holistic entrepreneurship support and catalytic entrepreneurship outreach. Its initiatives and global connections support a range of entrepreneurial journeys and foster ecosystem building in new markets. These initiatives augment and complement the University's academic programmes and act as a unique bridge to industry well beyond Singapore's shores.

For more information, please visit https://enterprise.nus.edu.sg.

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Annex A – Project Description of Technology Deployment

No.	SPC Cohort	Start-Up	Industry Partner(s)	Project Description
1	2017	Simplus Pte Ltd	Jurong Port Pte Ltd	Information Sharing and Resource Tracking System
2	2017	Glee Trees Pte Ltd	Singapore Shipping Association	A Shipping Agency Tool using AI-Robotic Automation Processing
3	2018	Aeras Medical Pte Ltd	OMC Shipping Pte Ltd	Remote health-monitoring of seafarers while on-board the ship
4	2018	Tagvance Pte Ltd	Jurong Port, Keppel Shipyard Ltd	Industrial Workforce Tracking System
5	2018	AIDA Technologies Pte Ltd	Pacific Carriers Limited	AI-based Prediction Engine for Vessel Arrival Time
6	2018	Portcast Pte Ltd	Symphony Creative Solutions Pte Ltd	Cargo Predictability and Carrier Analytics Solution
7	2018	ENT-Vision Pte Ltd	Winspec Logistics Services Pte Ltd	ENT-Vision Ship Supplies Distribution Platform to improve productivity and efficiency of the ship supplies industry
8	2018	Threatspan Pte Ltd	Teekay Navion Offshore Loading Pte Ltd	Improve the cyber resiliency of ships
9	2018	Ship Supplies Direct	Anchor Marine Supplies Pte Ltd, PSA Singapore,PSA Unboxed	FleetShare Platform to improve productivity for ship chandlers and visibility of ship supplies
10	2018	Claritecs Pte Ltd	Sinanju Tankers Holdings Pte Ltd, Sentek Trading & Marine Pte Ltd, Global Energy Trading Pte Ltd, New Maritime Pte Ltd, United Maritime Pte Ltd	BunkerMAESTRO: An innovative solution to achieve bunker scheduling efficiency
11	2019	Dravam Pte Ltd	Sinanju Tankers Holdings Pte Ltd (Sinanju Tankers)	An innovative solution to provide continuous quality monitoring of bunker fuel constituents
12	2019	KoiReader Technologies Pte Ltd	GeTs Asia Pte Ltd (GeTs)	Use of automation to accelerate the processing and completion of trade finance documentation
13	2019	Performance Rotors Pte Ltd	Bernhard Schulte (Singapore) Holdings Pte Ltd (BSH)	Drone Thickness Measurement Probe Improvement – Varying Diameter Adaptability
14	2019	Riverr Pte Ltd	BW Group (BW)	A blockchain based platform that enhances security, safety and well- being of seafarers and lowers the cost of verifying documentation
15	2019	Tropical Renewable Energy	Ocean Network Express (ONE) Lita Ocean Pte Ltd (Lita Ocean)	ROV based hull and propeller inspection and anti-fouling solution
16	2019	ABEJA Singapore Pte Ltd	Vopak Terminal Singapore Pte Ltd (Vopak)	Development of a lightweight deep learning model for intrusion detection
17	2019	Delvify Labs Pte Ltd	Ocean Network Express Pte Ltd (ONE)	Development of a machine learning model for vessel space control by mimicking human decisions
18	2019	Kanda Pte Ltd	Teekay Marine (Singapore) Pte Ltd (Teekay Marine)	Development of a virtual reality (VR) lock out tag out (LOTO) training module

No.	SPC Cohort	Start-Up	Industry Partner(s)	Project Description
19	2019	Cerekon Pte Ltd	Thome Group (Thome) Teekay Marine (Singapore) Pte LTd	Development of a handsfree vessel inspection system
20	2019	ASA Development Pte Ltd	Thome Group (Thome)	Development and Integration of live video and voice streaming capabilities for the Contego Software to support improved vessel inspections
21	2020	Moaah Pte Ltd	World Maritime Consultancy & Services, Thurtlestone shipping singapore, Amarante shipping, Seal Oil Petroleum, Trade flow capital management, Propel Shipping, Carbon Shipping, Kraken Pte Ltd	Third party due diligence platform for maritime trade
22	2020	BeEx Pte Ltd	Hydrov Pte Ltd	Digital Tracking of Hull Cleaners
23	2020	Vebits Pte Ltd	Ocean Network Express (ONE)	Virtual Walk-Through for Vessel Inspection
24	2020	mVizn Pte Ltd	PSA Corporation Pte Ltd	Proof of Concept (POC) on Accurate Identification and Location Feedback for Container Fitting and Proof of Concept (POC) on Quay Crane Gantry Path Machine Vision Safety System
25	2021	MagicPort Pte Ltd	Scorpa Pranedya (S) Pte Ltd, SOCAR Trading Pte Ltd	Digital Procurement and Collaboration Platform for Ship Supplies and Services
26	2021	MAGES Studio Pte Ltd	Uniteam Marine	Serious Game for Seafarer’s Onboarding Training

Annex B – Expansion of Overseas PIER71™ Start-ups to Singapore

No.	SPC Cohort	Start-ups	Country of Origin	Description
1	2018	Tagvance Pte Ltd	Turkey	Tagvance platform enables real-time location tracking, environmental monitoring and data mining services.
2	2019	Riverr Pte Ltd	Denmark	Riverr connects the world's health data. The vision is to make healthcare data more understandable, interoperable and secure for healthcare stakeholders.
3	2019	Delvify Pte Ltd	China (Hong Kong SAR)	Streamlining fabric sourcing workflows by empowering materials library and partners.
4	2021	eyeGauge	France	EyeGauge's platform offers a range of services like automated monitoring, fuel savings data, key performance indicators and reports for the maritime industry and cold chain monitoring, energy savings, HVAC monitoring for facility management and more, enabling clients to get equipped with actionable insights that allow them to in increase efficiency and create more value and better user experiences.
5	2021	WeavAir	Canada	WeavAir provides end-to-end software & hardware solution for air distribution systems that prevent air contamination and infections.

Annex C – PIER71™ Start-ups acquisitions

No.	SPC Cohort	Start-ups	Country of Origin	Description
1	2018	AIDA Technologies	Singapore	Jan 2021 – Acquired by AIA's Amplify Health
2	2018	BunkerEx	UK	May 2021 – Acquired by USTC
3	2019	Performance Rotors	Singapore	May 2023 – Acquired by Xtend
4	2022	GotSurge	Singapore	Aug 2023 – Acquired by Yinson Green Technologies

Annex D – List of Winners for Smart Port 2023

No.	Ranking	Startup	Country	Description
1	Winner	Measure.AI	Singapore	Measure.AI makes novel, low-cost, reusable and highly sensitive real-time gas sensors. We use a patented a novel method of making various unique of gas sensors. Their sensors are non-specific and the gases or gas mixtures are identified and quantified based the unique changes in the electrical properties of an array of sensors upon gas exposure.

2	Second place	CRecTech	Singapore	CRecTech developed a novel catalyst coating for biogas reforming that greatly enhances its resistance against carbon and CO2 poisoning, and is capable of breaking down and utilizing CO2 in biogas. This breakthrough enables a revolutionary one-step biogas reforming process, converting CO2-rich biogas into low-carbon hydrogen and syngas for green methanol in a subsequent process.
3	Third place	Rux Energy	Australia	Rux Energy is an Australian advanced materials startup aiming to double the volumetric efficiency and halve the cost of dispatchable hydrogen storage for bulk distribution, refuelling, heavy mobility and aviation. Their goal is to be directly responsible for 50 million tonnes of CO2 abatement, each year, every year, by 2030.
4	Special Mention	MicroSec	Singapore	MicroSec is a deep technology IIoT and OT cybersecurity company that provides an integrated cybersecurity platform for enabling protection and monitoring its state. The platform facilitates automated security assessment from user inputs & network capture. It provides a federated machine learning based 24×7 monitoring, detection, response, and remediation method, that not only reduces the false positives but increases the detection rate and helps to distribute the information across the whole supply chain. It detects anomalies, intrusion, malware, insider and zero-day attacks by enabling zero trust architecture, and then takes actions to prevent attacks via controlling network assets.
5	Grand Finalist	3Y Energy	Singapore	3Y Energy's innovative system integrates with current engines, a one-stop solution for integrating alternative fuels (specifically ammonia, methanol, and hydrogen) into existing marine or heavy-duty engines. The modular design of the system incorporates fuel supply, combustion control and online monitoring. The design also ensures optimal combustion without any output degradation. Users can flexibly adjust the CO2 reduction range to meet regulatory standards, achieving up to 90% reduction with ammonia and a complete 100% with hydrogen. 3Y Energy's solution is estimated to be 10%-20% of a conventional engine of similar capacity.
6	Grand Finalist	Accumulus	Singapore	With Accumulus AI solutions, maritime operators can unlock new ways to make their operations more efficient and sustainable. They will gain real-time awareness of dynamic information, critical for proactive and well-informed decision-making, to enhance their operational acumen and efficiency throughout their organisations, enabling them to optimise their planning and operational processes to maximise whole-of-network and whole-of-ecosystem outcomes.
7	Grand Finalist	BetterSea	Portugal	BetterSea's platform offers a comprehensive roadmap to navigate through key regulations: CII, EU ETS, and FuelEU. Enhanced with advanced real-time analytics,

				BetterSea delivers immediate insights into each vessel's environmental stance. Their recommendation engine then tailors precise solutions, ensuring vessels not only achieve but surpass their sustainability benchmarks. BetterSea's solution comprises of integrated emission trading capabilities further empower ships to sail cleaner and with greater profitability.
8	Grand Finalist	Navigandi	Brazil	Navigandi Orbis is a high precision Portable Pilot Unit (PPU) capable of measuring both the vertical and horizontal movements of the maneuvered vessel in real-time. This information is sent to the Navigandi Pilot which is a navigation software that shows all the relevant navigation information for the maritime pilot including: distance to the obstacles; bathymetric overlays; berthing speed, optimal navigation routes and so on. Aimed with this technology, the conscientious awareness of the maritime pilot is enhanced during the maneuver, increasing the navigation safety.
9	Grand Finalist	Reperion	Singapore	Reperion is a next generation security business that protects transportation assets across sea, land, and air from cyberattacks and critical infrastructure from drone attacks.
10	Finalist	Everimpact	France	Everimpact's real-time tracking of GHG emissions ensures trustworthy carbon footprint reporting and empowers businesses to evaluate the effectiveness of their decarbonization efforts. This data-driven approach also opens doors to climate finance, attracting investments for sustainable projects.
11	Finalist	Logipeace	Singapore	Logipeace empowers port operators to work smoothly, enhancing productivity, and building a collaborative Smart Port community. Their flagship product, Shipeace serves as a standardized, unified, and user-friendly communication solution that connects all stakeholders involved in port operations, whether internal or external. By eliminating the confusion of multiple communication methods, it ensures that critical information is accessible and visualized in real-time on any device.
12	Finalist	Nautisense	Singapore	NautiSense has developed the concept and prototype of iBot™ a maritime conversational bot that can automate digital tasks as well as provide recommendations to decision makers upon being asked based on any particular scenario. The iBot sits on top of a Maritime Large Language Model (MLLM) that is being built by the company which is a repository of diverse datasets from vessels, ports, flag states, class and other sources of key maritime data.
13	Finalist	SeaLor Tech	Singapore	SeaLor Tech specialise in delivering state-of-the-art digital twin technologies tailored to the maritime industry. Their solutions are designed to enhance the efficiency and impact of port operations, warehouse management, and cargo logistics.
14	Finalist	Senquire	Singapore	Senquire™'s EaglAI Platform has a ready software that can detect objects of varied colours and classify them separately, through a video stream that is already present.

				EaglAI can interface easily with a wide range of cameras (industrial, CCTV, Infrared, thermal etc.), run high speed inferences on the incoming streams, and communicate detections / decisions over to PLCs, other machine to machine communication devices and via email / SMS / Phone calls. Except for the latter communication aspect, the entire detection apparatus (including the software, AI models and hardware) are all present in a small form factor Edge computing device, which can be placed either on ship or shore, and has the capability to work completely offline, i.e. without an internet connection.
15	Finalist	Tathya.earth	India	Tathya.earth uses Alternative data like Satellite data to provide real time insights on Mining, Production and Inventory of Metals and Coal. Their products help in understanding real time the demand and supply of commodities thus providing customers actionable insights on physical trading, freight planning and procurement, bringing in efficiency in their supply chain management. Tathya.earth is building a SaaS platform with demand and price forecasting for global supply chain of commodities including climate risk such as Emissions and Water Stress.
16	Finalist	Verily Vision	Thailand	Inefficient integration leads to a lack of coordination, hindering overall supply chain performance. Planning becomes complex, and risk management becomes challenging due to disconnected data streams. Verily Vision addresses this issue by leveraging innovative technologies such as the Internet of Things (IoT), CCTV A.I. analytics, and a robust visibility platform. This comprehensive solution harmonizes physical and digital components, creating an efficient supply chain ecosystem. It empowers businesses to navigate modern supply chain challenges confidently and with improved planning efficiency and risk management.
17	Finalist	Zupports	Thailand	ZUPPORTS provide end-to-end Procurement to logistics solutions, helping to connect importers and exporters with Freight forwarders via the ZUPPORTS web application. ZUPPORTS™ Customers can reduce their work processes and can reduce transportation costs by up to 24%.