Annex B: Smart Port Challenge 2019 Cohort

ABEJA, Japan Grand Finalist

ABEJA is one of the first start-ups specialising in Machine Learning (ML) and Deep Learning (DL) in Asia, with a track record in various industries with computer vision solutions. For the maritime industry, ABEJA is using video analytics combined with deep learning to improve port operations, in particular the manual and tedious process of getting support. Invested in by Google/Nvidia/Salesforce, ABEJA is the only Japanese company among the Top 100 AI companies by CB Insights.

ASA Development, Singapore

ASA Development, through a decade of refinement and testing, has created the Contego Productivity Platform, a tool that has helped many organisations improve their operational efficiency, through standardisation of process and centralisation of data from remote sites. Contego Audit has helped many offshore and maritime companies make sense of previously fragmented processes. Contego Document Management has enabled organisations to mobilise management systems so all company information is at the fingertips of the people who need it the most. ASA's team is dedicated to making the maritime industry more efficient through the use of tools that make life easier.

BlockTEST, USA Grand Finalist

Active bunker players currently face challenges such as counter-party risks, operational inefficiencies as well as compliance. BlockTEST is re-engineering the bunkering value chain by offering an automated trade/financing settlement platform. Early trials have shown a reduction of operational costs by up to 50%, improvement in risk perception, strengthening of credit support and compression of settlement cycles from weeks to hours.

Cerekon, Singapore

Efficiency, safety and productivity are key concerns when it comes to the inspection and maintenance of vessels, particularly entire fleets. As a smart wearables solution provider, Cerekon's "Voice-driven Handsfree Inspection & Remote Support System" enables field personnel to conduct inspections and audits, diagnose problems and train staff. By wearing the specially designed glasses, personnel can access information by using simple human voice commands and live stream their work to seek remote assistance without the need for bulky devices, leaving their hands free to carry tools or hold on to hand rails for safety.

C-LOG, Denmark Grand Finalist

C-LOG is pioneering data collaboration in the maritime industry by making inter-organisational sharing of crew documentation easier and faster while respecting the data privacy of the seafarer. Addressing a challenge to develop a crew-centric platform that supports self-management and career development within the maritime industry, C-LOG is creating a solution that digitises current paper-based processes by leveraging blockchain and artificial intelligence (AI). This would save the maritime industry between 30-50% of costs related to handling crew documentation.

Delvify, Hong Kong SAR, China

Delvify uses Artificial Intelligence (AI) discovery tools including computer vision, natural language processing and automated speech recognition to help maritime enterprises categorise and analyse their data to optimise operational processes. By combining advances in computing with past data and human experience, Delvify aims to build better predictive models to improve forecasting, decision-making and optimisation of vessel space.

Dravam, Singapore Winner

Dravam's innovative fuel quality monitoring solution is a real-time early detection system for marine fuel quality, installed seamlessly onto a vessel. This patented solution is aimed at ensuring the quality of the fuel that is bunkered and addresses the industry's need for quicker bunker quality testing. Singapore's port already has the ability to ensure accuracy of the quantity of fuel bunkered, so the additional ability to measure quality as well will strengthen Singapore's position as the world's largest bunkering port.

Gotrix, Singapore

The maritime industry relies on a wealth of information and knowledge to operate, maintain and repair vessel equipment. Gotrix is introducing a solution that uses a chatbot as the means for users and custodians of a vessel's equipment to access any information they need to diagnose or troubleshoot failures. Gotrix's solution collates and organises the mass of information from a range of sources, and runs on context recognition, natural language programming, machine learning and optimisation, and provides Just-in-Time information.

H3 Zoom.AI, Singapore

After gaining success in the built environment, having inspected over 162 buildings, H3 Zoom.AI is extending its artificial intelligence (AI) insights platform to the maritime industry by developing an automated defect inspection and reporting solution. With the use of drones and Remotely Operated Vehicles (ROVs), this solution automatically detects defects and anomalies on vessel hulls, and generates an inspection report for review. Not only does this digitise and streamline the process, it also reduces the operational costs of using divers for hull inspections.

Kanda, Singapore Grand Finalist

Kanda is using virtual-augmented and mixed-reality platforms, coupled with machine learning to address the high costs associated with hiring and training within the maritime industry. Using a photorealistic digital twin of an entire tanker, Kanda is building a virtual reality training session that allows crew members to move around the simulated tanker. Kanda has also created a unique technique that uses machine learning and situational judgement to validate how well a candidate's response correlates to performance as part of the recruitment process.

KoiReader Technologies, USA Runner-Up

Checking and cross-referencing financial and declaration documentation is a labour-intensive process in the maritime industry. KoiReader has developed an innovative machine learning visual recognition system that extracts unstructured textual data from images and translates them into usable structured data. This improves the accuracy of filling up logistics data for regulatory clearance and reduces the risks associated with mis-declaration of dangerous goods.

Langzou, China

Langzou is bringing its computer vision and 3D computer graphics enabled operation platform for smart cities to the maritime industry. Using networked cameras coupled with artificial intelligence capabilities to detect surrounding vessels or other obstacles, Langzou's real-time video analytics solution reduces the risk of accidents caused by human error due to limited visual feedback.

Marified, Singapore Grand Finalist

Building on the success and traction its parent company, Edufied, had gain with its blockchain-based storage and verification solution for the education industry, Marified has created a digital wallet that secures a seafarer's certifications against forgery and is accessible from anywhere in the world. This could reduce the administrative loads of Flag States, port clearance authorities, ship owners, ship management companies and training

centres by 90-97%. The use of blockchain technology also reduces the risks associated with hacking of current digital solutions.

Megapixel, Singapore

A massive amount of communication goes on as part of daily vessel operations. However, the absence of a system to track and tag real-time and past information makes the retrieval of historical data difficult and time consuming. Harnessing its rich development experience, Megapixel has developed a solution called Globarius which has already been successful in the construction industry and is being adapted for the maritime industry to provide port/terminal operators with a knowledge repository, using progress tracking tools to collect, organise and report data. This leads to better analysis and prediction of data, faster and safer operations, reduced downtime as well as costs.

Odyssea, Singapore Grand Finalist

While hull cleaning is a vital process to keep vessels running efficiently, it relies heavily on manpower. Odyssea aims to automate this by using a dual-propulsion technology that can perform hull inspection as well as cleaning services in water. The design also allows expansion to fly the device as a drone. Although there are existing Remotely Operated Vehicle (ROV) solutions, Odyssea's amphibious modular design aims at making the device functional both in water and in air.

Performance Rotors, Singapore Grand Finalist

In-hull ship inspections are both time-consuming and risky due to confined spaces and heights. By bringing their confined drone technology with AI defect identification and non-destructive testing (NDT) to the maritime industry, Performance Rotors can help to minimise such risks and costs. Their method uses NDT technology instead of video to allow for digitalisation, data science and management, which leads to easier comparison of results for better prediction and maintenance programme formulation.

Red Jasper, Singapore

Red Jasper has developed a visualisation system that tracks and quantifies bulk assets at ports. Using a combination of sensor, image processing and data analytics, this will allow port operators to find, store, retrieve, recognise and count anything, anytime, anywhere. Moving forward, the sensor will be attached to Automated Guided Vehicles (AGVs) and/or drones.

Sensefinity, Norway

Sensefinity offers full-stack and modular solutions for Internet of Things (IoT) transformation. The Internet of Cargo is Sensefinity's industrial solution to standardise the way assets communicate with logistics processes. They help customers to integrate all of their assets into their IT systems to gain insights and allow the optimisation of their business.

SkyTrek, Singapore

Last mile delivery between ship and shore currently relies on whole boats regardless of item sizes, often resulting in inefficiencies and bottlenecks due to the slow sailing speed of these boats. SkyTrek is developing a fully autonomous drone delivery system to handle transportation of items to as far as 5km. With built-in artificial intelligence, their drone is able to take-off and land on dynamic platforms. This solution will reduce operational costs by a factor of 100 and delivery times by a factor of 3.

Teqplay, Netherlands 2nd Runner-Up

Teqplay is a context broker providing information and tools to empower the shipping industry to make smarter and better informed decisions in both planning, execution of port calls and maritime supply chain. They have developed a platform that collects, bundles and refines public data. Combining this data with machine learning and artificial intelligence creates a shared picture which results in better informed decision-making, and ultimately faster and cheaper port calls.

The Barell, Singapore

The Barell offers an online platform for bunkering on-demand services which allows ship owners anywhere in the world to source refuelling services directly from licensed suppliers in Singapore's port. This secure and convenient service also digitalises document flow and optimises the bunker delivery and payment processes, thereby increasing transparency and efficiency. This digital transformation is also a step towards transition to cleaner fuels.

Tropical Renewable Energy Engineering (TREE), Singapore

TREE supports Singapore's green port initiative by providing novel and innovative solutions for marine asset health monitoring with real-time capability. TREE's underwater drone-based solution aims to minimise downtime of marine assets by providing information on potential failures at the incipient stage, allowing remedial actions to be taken much faster than conventional methods.

VisionTech, Singapore

To reduce the number of unlawful practices involving fraudulent certificates by seafarers, as well as to digitise the processing and authentication of certificates, VisionTech is providing a one-stop HR Management and Engagement platform called MarinePort. Built on MarineTrust Blockchain to store, authenticate and access maritime records quickly and securely, MarinePort aims to bring about greater trust, productivity and connectivity to the maritime industry.

WeavAir, Canada

Recognising the need to optimise the operation of air-conditioning equipment to manage air quality in building, WeavAir has developed the world's first device module that can be added to air ventilation systems. This networked sensor add-on tracks the environmental infrastructure and human occupancy factors, and uses artificial intelligence (AI) to detect and prevent indoor contamination, prevent system failure, save operations and maintenance costs. Due to the fact that the system uses analytic methodology to monitor chemical compositions in the air, they are extending their solution to the maritime industry for monitoring presence of chemicals in enclosed spaces on a vessel.