

SMART PORT **CHALLENGE** **2017**



ABOUT SMART PORT CHALLENGE 2017

Smart Port Challenge 2017 (SPC 2017) is an initiative by Maritime and Port Authority of Singapore (MPA) to promote maritime start-ups and digital transformation in the maritime industry, to enhance the safety, efficiency, and productivity of our port and maritime services. SPC 2017 will provide opportunities for technology companies, industry partners and start-ups to harness the digital technologies for collaborations that will add value to the maritime logistics value chain, in areas such as Internet-Of-Things, Blockchain, Automation, Data Analytics and Artificial Intelligence.

Funding support of up to \$50,000 will be provided by MPA and PSA Unboxed to selected start-ups to develop their prototypes. There will also be further funding opportunities by TNB Ventures and other VC(s). Enterprises with potential ideas are eligible to apply for support through MPA's Maritime Innovation and Technology (MINT) Fund for carrying out test-bedding or product development.

SPC 2017 PROGRAMME PARTNERS

SPC 2017 partners include MPA, Port of Rotterdam, Batam Fast, CMA CGM, Hong Lam Marine, Jurong Port, Kanlian, NYK Line, Pacific International Lines, PSA Marine, PSA unboxed, Symphony Creative Solutions and Synergy Marine Group.



Asia's Favourite Fast Ferry Operator



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CHALLENGE STATEMENTS

In collaboration with SPC 2017 Program Partners and TNB Ventures, SPC 2017 will capture & nurture the next wave of maritime solutions focusing on three key pillars: Smart Port, Smart Shipping, and Smart Marine Logistics.



Port-to-Port data exchange to facilitate faster port clearance and just-in-time vessel arrivals

With every port call, the ship masters and agents will have to prepare documentation and submit relevant statutory ship certificates to facilitate port entry, ship's operations and ship inspection by Port State Control. We are seeking for ideas that can help sharing all these information in an efficient manner. Could a digital platform with port-to-port linkages help to facilitate the sharing of information in advance for faster port clearances and just-in-time vessel arrivals? Can the preparation of these information be automated and shared with port authorities in a secure manner? How can port authorities verify the authenticity of the information submitted automatically?



Tools and technologies for 'Engineer of the Future'

What technologies could be applied to create an 'engineer of the future' to be more effective in conducting maintenance of cranes, trucks, forklifts and other heavy machinery used in container terminal operations?

Other challenges:

Using Augmented and Reality and Virtual Reality to reduce training and certification cost

PSA University conducts around 765,000 hours of training every year for its own staff. Similarly, it takes 2 years of training for a Marine Assistant to be a certified Launch Master, and every 2 years, pilots need to undergo simulation training to maintain their certification. Such training programs for pilot add huge costs to the various parties involved in the maritime sector. How can the application of augmented and virtual reality could support in reducing the training and certification costs and prepare the workforce to be ready for the future maritime industry?

Ensuring the safety of Port Users in an automated & heavily industrial environment

How can port operators ensure safety of port users, especially in an automated & heavily industrial environment? There is currently no effective method to track workers on ships or throughout the port environment. PSA would be interested to explore asset / manpower tracking technologies which could be applied to improving safety standards, collect data from the various data work process data points to build up machine learning / AI capabilities in the future.



Intelligent software/algorithms to manage and monitor our port waters more effectively

Singapore has a heavy maritime traffic presence with more than 1000 ships in the port in any one time, 900 intra-port movements and 100 vessels transiting our sea channels each day. With the impending consolidation of our terminal operations at Tuas Port, the expected increase in marine traffic with possibly less anchorage space; it is imperative for MPA to prevent any serious incidents, such as ships' collision from occurring within our port waters; as such incidents would have dire consequences leading to the loss of life, pollution, reputation and business due to the closure of port waters. How can MPA make use of the intelligent software/algorithms to help us in managing and monitoring our port operations and marine enforcement of our port waters more effectively so as to ensure its' safety and security in the face of a manpower crunch?

The intelligent software/algorithms could provide advanced warning to vessel traffic operators to prevent collision, congestions and to give advanced requests to ships to delay their arrival so as not to worsen the congestion in our port waters.

Other challenges:

Training support using Augmented Reality (AR) for Operators

Application of new tech such as Augmented Reality (AR) could help to improve safety standards as it can simulate various unsafe scenarios to better prepare the operators prior to encountering any challenge. Currently, simulators are being used to train and upgrade skills which has proven to reduce failure rate. However due to long lead times between each simulation, training can be disruptive and lead towards higher operating and manpower costs required to meet to the high demand for training courses.

Helping Seafarers' to stay connected to home

Crew members who spend most of their time aboard ships, experience a lack of available solutions to stay connected to family, friends and colleagues due to poor connectivity out at sea. Currently most crew members will only have access to data coverage once they reach the port of the country where their SIM card is purchased from as there is a lack of available solutions to help facilitate cross border data access for these crew members (most of whom earn only minimum wages). Improving their standard of living while they are on the ships, could help to reduce marine assistant turnover which currently sits at approximately 2 years.



SMART PORT



Jurong Port

A collaboration tool for terminals, lighters and trucks to improve productivity

With no proper channel to share information amongst the various stakeholders, which currently results in loss of time, under-utilization of lighters and trucks due to unnecessary waiting time for one another in the terminal, and the eventual congestion issues within the terminal, Jurong Port is interested to source for creative solutions to tackle this challenge with the use of technology.

Other challenges:

Resource and integration management to improve productivity and efficiency

How can technology help to streamline and tighten work processes in the port? Currently there is a lack of coordination of cargo and resources like staff, ship and berth. Jurong Port is interested to explore technology that tracks resources in real time, and integrates multiple control check points to seamlessly coordinate the resources. More efficient workflow means optimal use of manpower resources to handle larger amount of cargo.

SMART SHIPPING



Improve handling process of dangerous / valuable goods at transshipment hubs

There should be a better method to manage dangerous goods. How can the handling process be improved further, or would there be any technologies/applications which could help ensure that the transshipment process is altered to better handle fragile, valuable and/or dangerous goods?

Other challenges:

Communicate and collaborate to provide JIT services

Currently bunkering companies face recurring conflicts between the scheduling proposed by port operators which are more concerned on container loading efficiency versus the scheduling of bunkering. Hence are there ways to create a more transparent communication between port operators and bunkering companies to present more precise berth stay lengths and locations ahead of time.



Using automation to help ships meet regulatory clearance for ships

Currently there are too many documents required for clearing ships to enter various ports which leads to longer lead times and can even increase operational expenses as ships may need to wait several days before it can enter the port. Is it possible to build a semi-automated software to complete these various forms and meet the clearances for the ships to enter the port? The solution would hence assist to increase port and shipping operations, as well as reduce unnecessary expenses incurred by all parties and reduce 'wasted' manpower hours.



Decision Support Tool for Ship Captains

Captains at times can become overloaded with too many tasks, as there is currently no real support structure in place to help captains prioritise tasks as make the right decision. The implementation of a machine decision-making assistant can help captains focus on prioritising their time to solve critical / complex issues while assisting to ease the load of smaller / easily resolved tasks in a more efficient manner without increasing manpower requirements.

Other challenges:

Maximise scheduling capabilities to improve operational efficiency

Coordinating and sequencing issues of multiple vessels arriving at the destination harbour can lead to heavy delays. The current methodology of confirming and scheduling a vessel is performed manually. Automation in this sector can reduce downtime and expenditures resulting from unnecessary fuel consumption and longer anchorage periods at the port. As Singapore is a main trans-shipment hub, maximising scheduling capabilities is crucial to operational smoothness.



Power of machine learning and predictive analytics to provide trade insights and forecasts

With an incredibly complex shipping and logistics environment, many companies are challenged with the goal of using the power of machine learning and predictive analytics to help recognize and trade flow patterns and provide insightful forecasts. CMA CGM has been collecting data for several years to better understand the market and apply predictive forecasting tools using their own internal datasets. However, with so many external variables which currently cannot be incorporated (due to unavailable datasets for example), there are limitations to the accuracy of their forecasts. CMA CGM is looking to apply solutions which would assist to further refine their forecasting capabilities, hence improving their booking shortfalls, as well explore how to incorporate relevant datasets and technologies to achieve this goal.

Other challenges:

Increased visibility of the maritime logistic supply chain data from ships, cargo and containers to improve efficiency of global operations

With a complex system in place to manage the arrival of vessels, logistical resources to coordinate the cargo movement of the cargo, as well as the communications between all parties involved, there is a need for automation to help resolve inefficiencies. Increased visibility of trucks, available container depots, systems which allow for more accurate ETA and forecast delays, and even the application of chatbots to manage dispute settlement & relationships with customers could substantially improve CMA CGM's global operations.



Asia's Favourite Fast Ferry Operator

Using AI and Chatbots to provide different service channels

Batam Fast is a high speed passenger ferry service provider operating ferry services between Singapore, Bintan and Batam. Daily, we receive numerous phone calls and emails from customers, varying from general information about Batam or Singapore and business specific queries such as how to place a reservation and make a booking. The limited manpower resources (customer service personnel) are stretched to respond to the customers' satisfaction. In addition, our customer service do not operate 24/7, hence unable to respond to customers' needs and queries at customers' convenience. We are looking for solutions that can respond to customers' queries instantly, such as a chatbot. As artificial intelligence improves, we believe chatbot will raise as the solution for standardized communication channels.

Other challenges:

Biometric recognition for crew clearance at Immigration Checkpoints

There are 50 over ferries plying between Singapore, Bintan, Batam and Karimun (BBK). In average, there are 150 ferry arrivals into Singapore from various ports of BBK. The ferries must submit, immediately upon departure from BBK ports, the crew's manifest to the Immigration and Checkpoint Authority of Singapore (ICA). Upon arrival at the Singapore port, the crew shall report to ICA office for face-to-face verification against the submitted manifest. This process, particularly during peak periods, delays the ferries' subsequent departures which affects the customers' overall experience and causes a negative impact to Singapore's image. In collaboration with ICA and Maritime and Port Authority of Singapore (MPA), Batam Fast is keen to explore the use of technologies such as biometric recognition to develop alternative solutions for the face-to-face verification at Singapore for ferry crew. The alternative solution could be leveraged for other categories of vessels arriving into Singapore.



Improve transparency of bunker market for both the buyers and sellers

With a market mostly driven by personal connections, the 'true' price of fuel becomes less transparent and can vary from deal to deal. Checking of credit ratings between both buyer and seller could resolve this issue, but with such a tight market and a demand for speed of transactions, bunkering companies are dissuaded from doing this. Hong Lam Marine is interested to explore technologies / platforms which would aim to combine all sellers and buyers, and hence take care of background checks and credit ratings to essentially make the market more transparent in its practices.

Other challenges:

Technologies to enhance detection, repair and maintenance of these vessels and their engines

Most engines are old and need manual work to monitor the current status and conduct a defect scanning. That implies that the vessel must be physically accessed by a trained engineer to adjust, repair and make changes to the engine. How can this process be improved, and what kinds of technologies would be applied to enhance detection, repair and maintenance of these vessels and their engines?



"Uberisation" to improve customer experience

Improving customer experience for passenger vessels is critical to Kanlian's strategic business direction. With interest to build an intuitive 'uber' for ferry application which would allow for their customers to easily book, manage, pay and even track in real-time the location of the ferry and its expected departure (taking into consideration delays). Such an application would resolve many challenges currently faced by the operations team which handles many enquiries manually and does not leverage from an integrated platform to communicate with customers.

Other challenges:

Platforms and technologies to meet the maritime & shipping needs

Presently there is no comprehensive HR / Payroll system that has been implemented across the maritime & shipping industry which is able to meet the needs of today's cargo and shipping companies.

- Current scheduling / employee roster is done manually
- Communications with employee regarding work is done via calls to confirm assignment
- Not enough data about employees has been collected to easily create a smart scheduling systems

INSPIRED TO BUILD TOGETHER

Calling out to all aspiring startups & Enterprises looking to boost their innovation engine.

Please submit your proposals to www.f6s.com/smartportchallenge2017 or apply directly to applications@tnb.vc.

Only shortlisted submissions will be contacted.

If you have any queries please contact info@tnb.vc for clarifications.

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