The Australian Maritime College has reported higher numbers of students in its seafaring courses

Australian Maritime College

Welcome to the real world

Cross-border maritime education and sophisticated training technology are broadening horizons for students and mariners, **Abby Williams** writes

Simulators appear to be bringing the maritime world closer together. Bigger ships, wilder weather and the wave of realisation that the industry needs more people – and fast – means more mariners are training on bridges that aren't really bridges at all.

Modern simulation technology is expensive, but not as expensive as the on-water mishaps it has surely prevented. The simulations are now so accurate and sophisticated that they can support port development and risk-free testing of various scenarios. And the students, crews, marine pilots and harbour masters who gather there have often travelled a long way.

Australians may travel interstate to train at these facilities, but others have come from overseas. Some programs have fostered global partnerships between training institutions and, in this case, an Australian pilotage service provider.

FROM PORT HEDLAND TO THE WORLD

Port Hedland Pilots and the Samundra Institute of Maritime Studies (SIMS) in India are collaborating on a training program designed to ensure safe operations as ships call the port of Port Hedland.

SIMS is a training initiative of Executive Ship Management (ESM), a Singapore-based company which established the facility to provide a regular source of officers and crews as it diversified its fleet.

To support ESM's expansion into the bulk market trade, SIMS developed a simulator-based course that would prepare seafarers for the bulk export colossus that is Port Hedland.

SIMS enlisted the help of PHP to develop a simulator experience that replicates the scenarios and challenges that crews and vessel operators encounter at the Australian port. This approach to training blends navigational, operational and technical elements and covers concepts such as bridge team management, human factors and inspection regimes.

The drawcard is the inclusion of marine pilots – real ones – in the simulation and learning process. SIMS and PHP have found that having PHP pilots present during development and periodical review of this course to share insights and answer questions improves the crew's performance and safety.

"We came to know that Port Hedland is very strategic for Australia, and we can't just set up an ordinary course; it has to be a very good course and a very hands-on course," SIMS principal Maneesh Jha said.

The product of that understanding is a two-day program addressing navigational concerns and operational challenges. Mr Jha said all navigating officers are able to attend the course.

PHP pilot Matt Shirley said there are strict processes in place at the port of Port Hedland,

NEW DIMENSIONS OF TRAINING TECHNOLOGY

Tucked away in the industrial precinct at Brisbane Airport is a maritime simulation centre familiar to many Aussie mariners. The Smartship Centre primarily provides training for marine pilots, but its simulators are also used for assessment and licencing, developing procedures, infrastructure modelling and testing operational limits.

The main difference between Smartship's simulation facility and other simulation training centres, according to Smartship director Peter Listrup, is that the Smartship Centre is dedicated entirely to simulation technology, rather than offering it as part of a wider training facility or course.

Captain Listrup has more than 30 years of seagoing experience behind him, including a decade in command. He is the principal instructor at the Smartship Centre, and he said the idea for a dedicated facility took root about 15 years ago. Support from Maritime Safety Queensland saw the centre open in 2011 as a space for ports, pilot organisations, shipping companies and regulators.

And that space has grown; the facility expanded by about 500 square metres in 2019 to accommodate more simulators and more visitors.

"In a year, we have maybe 300 people coming through from different organisations," Mr Listrup said.

"That's not only in Australia; we're getting quite a few people from overseas also. Most ports in New Zealand are coming here, we have Thai pilots coming here … often we cover some of the Pacific Islands also. We have people from Noumea, New Caledonia coming and doing training here as well."

Mr Listrup said there are perhaps four or five other dedicated maritime simulation centres in the world which are detached from broader institutions.

"I think the big difference here is how accurate you can make the digital version – or digital twin – of a port and ship. In more general training, you don't really need to have that accuracy, and accuracy costs money," he said.

"But it's worth it, because the quality of the training is as close to the reality as you can get. We're talking not only about what you see out the window when you come into the simulators, but everything else behind it: how the ships are behaving, how the current and the weather are acting on the ships as you're taking them in and out of port. The training here is very often done in extreme conditions."

CHALLENGING EXTREMES

One of the advantages of sophisticated simulation technology is that it can create the harsh conditions a pilot needs to prepare for but may not frequently encounter on the water. Conversely, if there are extreme weather conditions in reality, they might not be suitable for training.

"You have to come in and train in here because if that wind is too strong or that weather is too bad, you might have a grounding," Mr Listrup said.

Training on a simulator offers the contingency to find a way out of the situation without the risk of costly mistakes. It also helps pilots know where to draw the line on an unsafe job.

Mr Listrup said one of the biggest changes he has seen over time is greater acceptance of using simulation in training, particularly for pilots. The initial attitude was that simulation-based training was a good thing, but not vital. A program comprising simulation and on-water training is now considered ideal. Mr Listrup said it safely speeds up the training process for new pilots.

"It takes time, of course, to get a pilot trained, and if you can shorten that time or can make it more effective, it's a win for everyone," he said.

And this is important because a generation of pilots is approaching retirement. It can take three to five years to bring a fully licensed pilot on board, but a retiring pilot only needs to give a few weeks' notice ahead of their departure.

"It's kind of a difficult guessing game of when you're going to start recruiting new [pilots] and train them to have them ready," Mr Listrup said.

"That's something every port and pilot organisation are worried about – how they can train new pilots effectively and get them ready and confident as quickly as possible."

Simulation technology also reduces the time gaps between practicing difficult manoeuvres or port approaches on real jobs. Mr Listrup said a pilot could repeat a step 20 times in a single day on a simulator, rather than drawing that repetition out over 20 individual jobs in real life.

"You also remember things that you did 20 minutes ago," he said.

"You can do it again and again to build up your confidence, and that's a really powerful tool. When it comes to simulations, you don't have to do the whole transit [every time]; you can just do that little bit of it."

THE FUTURE IS NOW

Mr Listrup said simulation accuracy is continually improving, new software is being developed and the quality of modelling data is getting better.

When *DCN* spoke with Mr Listrup in February 2024, Smartship was venturing into augmented reality – a futuristic blend of physical and virtual realities. He said a new greenroom at the simulation centre would allow the user (wearing a headset) to interact with the bridge, equipment, other people in the room and the paper or tablet in their hand, but with an unbroken view of their virtual environment.

"We are the first one that is trying this," Mr Listrup said.

"There are things we don't know yet, like how it's going to work with motion sickness. But what we are hearing now from the experts in the field of using goggles with 3D, is that they're getting so much better. The resolution is better for your eyes.

"I think the realism is going to be incredible because you can basically walk out on the bridge wing and you can look down, and you can look up at the stars and you can look in any direction."

There is an exciting future for simulation technology, and also for Smartship.

Gadgets such as virtual reality goggles are part of modern training

Fotogrin

Samundra Institute of Maritime Studies in Mumbai

designed to maintain channel integrity. Failure to meet those processes could jeopardise the ship's return, so it is important that those on board know the requirements and how best to meet them.

"The crew's training is a big part of it," Mr Shirley told *DCN*.

He said PHP has spent a lot of time working with different crews over the years, improving their skills and familiarity with the requirements of the port.

"We get a lot of common callers, so we can work with those crews and gradually increase their standards. But throughout the process, we've been able to cherry-pick what certain crews are missing in terms of what we call bridge resource management, which Australian deck officers have a very solid grounding in.

"We're hoping that we'll be able to take some of that knowledge to the rest of the world."

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>
> **Maneesh Jha,** Samundra Institute of Maritime Studies

CHALLENGE YOUR SENIORS

Anuradha Jha is the nautical faculty at SIMS. Ms Jha said the institute is focused on enhancing seafarer training, and often finds areas where more advanced and detailed versions of the training are necessary.

She said the connection with PHP has been an opportunity to sharpen the institute's focus on port operations and on ensuring crews are trained for safe navigation and efficient operations.

"In recent times ... a major shift in the shipping industry has been observed wherein a lot of emphasis is placed upon human factors in ensuring that safe navigation and operations are taking place," she said.

"And for enhancing human factor, the training part is something which is very essential."

Ms Jha said case studies are another important part of the training. Lessons from past situations help students know what to anticipate. SIMS also has a view to offer a wholistic approach to training, and provides a complete spectrum of training for different types of ships.

The course participants include superintendents at senior level to cadets at junior level, and everyone in between.

Mr Jha added that SIMS analyses incidents to shape training and prevent the incident from happening again. These investigations revealed that some incidents occurred not because of a lack of knowledge or skill, but because of communication gap or other human factors. For example, when a younger or more junior crewmember had withheld a good idea or even an alert because they had hesitated to speak up, due to the power distance with the senior person.

SIMS

"We call it 'not challenging your senior'," Mr Jha said.

He recalled a situation many years ago, in which a second mate wanted to reduce the speed of the ship. They chose to stay silent while the master did not opt to reduce the speed in time, resulting in a collision.

"If the second mate had just spoken out, maybe things would have been different," Mr Jha said.

Mr Shirley said PHP often encounters the same attitude when they come onboard as pilots.

"The master may be a little bit scared to challenge our authority as a pilot," he said.

"And yet, at PHP, we don't foster that kind of relationship between ourselves and the ship's crew; we want the junior officer on the bridge to be able to speak up to us as well. The simulator sessions conducted during Port Hedland training at SIMS does cover the softer aspects like this. The candidates are trained and debriefed accordingly."

CROSS-BORDER COLLABORATION

Australia is on the southern end of another international partnership aimed at supporting maritime education, and the distance is even greater.

The Australian Maritime College in Launceston has a unique connection with the Satakunta University of Applied Sciences (SAMK) in Rauma, Finland. The latter is home to the Maritime Logistics Research Center.

AMC and SAMK signed a memorandum of understanding that primarily aims to foster international co-operation in education and research. The agreement covers professional development, joint research activities and exchange of faculty members and students.

"There's a really strong, long tradition here in Rauma for shipping and shipbuilding," a SAMK spokesperson told *DCN* during a visit to the campus in 2023.

"SAMK is only 30 years old, but actually in Rauma, there has been 143 years of education for seafaring."

Stephen Hurd, director of the Centre for Seafaring and Maritime Operations at AMC, said despite an "incredible geographic distance" between the two campuses, they have plenty in common. Both serve national education and training needs in seafaring; logistics, supply chain and maritime management; and specific maritime engineering disciplines such as naval architecture and production technology.

Mr Hurd highlighted another common interest which is currently taking shape in the nearby Rauma Marine Constructions (RMC) shipyard.

"TT-Line's new vessels, Spirits of Tasmania IV and V, are a very significant link between the two institutions," Mr Hurd said.

"RMC's shipyard, where the new ferries are being built, is right around the corner from SAMK's Rauma campus. The staff at SAMK work closely with RMC and

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>
> **Stephen Hurd,** Australian Maritime College

The simulator facility at AMC

Australian Maritime College

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> We're hoping that we'll be able to take some of that knowledge to the rest of the world.
>
> **Matt Shirley,** Port Hedland Pilots

TT-Line staff across a range of logistics and seafaring training and consultancy issues.

"TT-Line's project technical manager in Rauma, John Anastassiou, is an AMC alumnus, graduating in the first class of marine engineers after AMC was established."

DCN caught up with Mr Anastassiou last year. More information about his work on the new spirits is available in the December 2023/January 2024 edition of this magazine.

Mr Hurd said the most significant collaboration between AMC and SAMK to date has been joint research projects with funding from the International Association of Maritime Universities.

"One example is our joint research into autonomous shipping and the future workplace of marine engineers," Mr Hurd said.

"This is important research which will inform policy and help to shape future maritime workforce structures. In this regard, it benefits current students as they increasingly take part in the transition to a future workplace model, and clearly benefits future students in defining rewarding and effective future careers."

A NEW GENERATION OF LOGISTICS SPECIALISTS AND SEAFARERS

Separate to its cross-border education partnership, AMC has reported a significantly higher number of students in its seafaring courses.

"We think this is most likely linked to increased interest in Australian shipping, a strong growth in the DCV [domestic commercial vessel] sector and Engineering our Future, a campaign driven by AMC that is raising the profile of the maritime industry in schools," Mr Hurd said.

"The additional students will ensure a more vibrant campus, providing people with the training and education they need to pursue their seafaring careers."

AMC also runs revalidation and refresher training, which is an integral part of seafarers' career development. And three maritime and logistics management (MLM) degrees at AMC have recently been certified by the Chartered Institute of Logistics and Transport Australia. Mr Hurd said certification builds on AMC's existing pathways to professional qualifications.

"The industry members on MLM's Course Advisory Committee have emphasised that there is a big demand from industry for maritime and logistics management skills," he said.

"AMC's courses with direct industry links are designed to help students achieve the qualifications they need to enter and advance in the maritime and logistics industries that are crying out for new and well qualified employees."

Australian Maritime College