Lloyd's List

Entrepreneurs

A special report

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Entrepreneurs

A post-Covid surge in start-ups is expected, fuelled by abundant tech funding and targeting an ample supply of industry problems with their innovative solutions. Yet is the shipping industry ready to open the door to new ideas and provide the collaboration needed to scale these entrepreneurial talents beyond the quickly burned seed capital stages?

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Is a conservative, fragmented shipping industry finally ready to take full advantage of this groundswell of start-ups looking for scale?

Is this the golden age for shipping entrepreneurs?

Corporates have not traditionally been rewarded for experimenting and failing, but the challenges that shipping is facing require a new way of thinking from everyone, **Richard Meade** reports

Joseph Schumpeter, the father of creative destruction, argued that a burst of entrepreneurial activity was almost inevitable in the wake of an economic slump.

As he wrote in 'The Theory of Economic Development', published in 1911 (itself a recessionary year), the very logic of the capitalist system would create a new 'swarm' of entrepreneurs.

"A wave of prosperity would start up and the whole cycle would roll on," he declared.

Two years after Lloyd's List first identified a fertile seedbed of entrepreneurial activity in shipping, there is every reason to expect a Shumpeterian sprouting of post-Covid start-ups.

The global pandemic has catalysed the digital revolution; decarbonisation is demanding immediate innovation; global venture capital funding is at an all-time high; and bigger funds featuring dedicated teams with industry experience have created a more mature environment for smart ideas to meet smart money.

The conditions are ripe for change.

The only question is whether a conservative, fragmented industry, where corporates have rarely been rewarded for experimenting and failing, is finally ready to take full advantage of this groundswell of start-ups looking for scale.

"Pre-Covid, I would say a lot of companies were on the fence, dabbling with a little innovation funding, spending some cash, placing a few minor bets and generally dipping their toes in the water," says Nicklas Viby Fursund, partner and head of transport at the corporate innovation development firm Rainmaking.

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"And then Covid happened — and it brought about a tectonic shift in the world of innovation in this industry."

Companies can be broadly divided into two camps: those that retrenched in the wake of Covid and focused on survival and their core business; and those that are doubling down on innovation, accelerating investment and actively engaging start-ups in response to shifting dynamics in the industry.

The latter remains a minority group, but there is a growing sense that many of the same companies dragging a reluctant industry ever faster towards zero-carbon technology and digital efficiencies are also now leading the charge to support — and ultimately scale — innovative start-ups that support those end goals.

"What we are seeing today is a much larger group of corporates in shipping who clearly believe that in five years' time, the industry is going to look very different, and they are establishing partnerships and supporting innovation," said Mr Fursund.

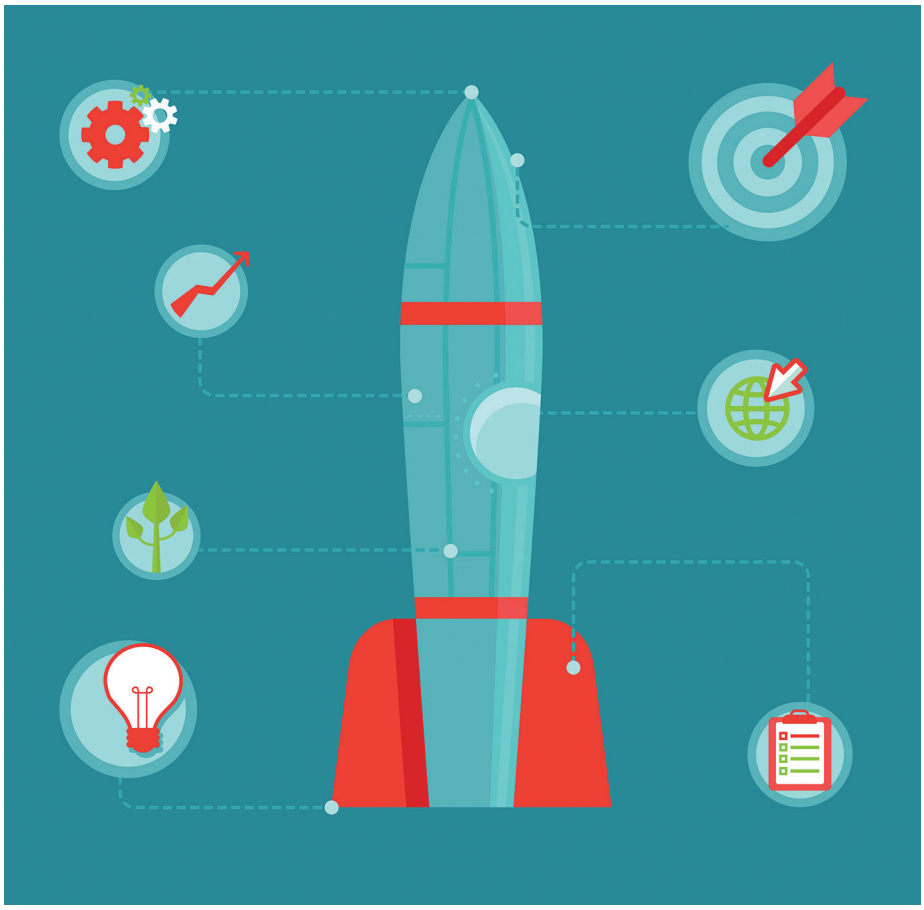
"Those companies are taking this much more seriously than they were a few years ago — and that is where you are seeing real change."

The influx of start-ups identifying niche industry problems to resolve or coalescing around game-changing technology is not an issue.

In fact, the proliferation of industry-focused accelerator programmes has been successfully churning out entrepreneurial businesses for several years now.

The problems lie beyond the start-ups.

To borrow the innovator's favoured moonshot analogy: the launch pad has been built and rockets are regularly launching, but the real problems are now emerging nearer the moon landing.



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The launch pad has been built and rockets are regularly launching, but the real problems are now emerging nearer the moon landing.

For start-ups, funding is relatively plentiful right now. In the first quarter of 2021, global venture investments reached $125bn, a 50% increase quarter over quarter and a 94% increase year over year, according to venture capital trackers Crunchbase.

Their data shows that global funding last quarter hit an all-time high, marking the first single quarter to reach more than $100bn.

Attracting a slice of that action into shipping has traditionally been the difficult sell — but even there, progress is being made.

"The willingness to support innovation inside the industry is increasing quite a bit and here in Singapore, I see a lot of initiatives in the maritime ecosystem and beyond," says Claus Nehmzow, chief innovation officer of Eastern Pacific Shipping.

"There's a lot of money going into the sector right now, with $20m-$30m VC funds springing up and taking a real interest in shipping."

Y Combinator, the prominent Silicon Valley boot camp for start-ups, has long set the standard for entrepreneurial excellence, producing unicorns at a fearsome rate — but until recently, shipping was not on its radar.

The fact that Singapore-based maritime technology start-up Greywing was selected in the Y Combinator cohort has been taken as positive indicator that the visibility is at least no longer a barrier.

"For early-stage investments, there is now money available, but when you are talking about moving to scaled operations and later-stage funding, that is still a real problem," concedes Mr Nehmzow.

> *"What we are seeing today is a much larger group of corporates in shipping who clearly believe that in five years' time, the industry is going to look very different"*

Nicklas Viby Fursund
Partner and head of transport
Rainmaking

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The freight forwarding platform Flexport has routinely been held up as the exemplar of funding success in the maritime space, following their now famed $1bn funding round led by Softbank Vision Fund — the Saudi-backed fund that has become the world's largest tech investor.

Yet their story remains an anomaly in shipping, which has traditionally struggled to get on the larger fund's radar.

"The bigger funds are looking for proven tech and product market fit, so essentially they are waiting for everything to mature in order to go in with heavier investments," explains Mr Fursund.

"Also, the funds and the start-ups have realised that changing anything in this industry is really hard because of the industry corporates sitting on the data and the assets.

"So coming in and pushing innovation is proving to be a hard game for the start-ups unless they partner with the corporate — and that's where we see the real change and the most success around collaboration," he adds.

The emergence of a new fund, Motion Ventures, backed by the Singaporean government to support tech innovation for the maritime sector, is one such example.

The fund plans to invest in around 20 early-stage start-ups focused on artificial intelligence, machine learning and automation, with investments ranging between S$500,000 ($378,000) and S$2m, but it comes with an innovative new approach to corporate collaboration.

Collaboration is key

"The conversation changed a few years back," explains Wilhelmsen vice-president of open innovation Nakul Malhotra, who acts as one of several industry advisors to the scheme.

Wilhelmsen Ship Services

> *"The willingness to support innovation inside the industry is increasing quite a bit and here in Singapore, I see a lot of initiatives in the maritime ecosystem and beyond"*
>
> **Claus Nehmzow**
> Chief innovation officer
> Eastern Pacific Shipping

"It was no longer about why we should be collaborating — that's now taken for granted. It's about how we best fast-track and prioritise the right ventures and ideas."

The goal for Motion Ventures and its supporters is to set up corporates and start-ups with the best chance to succeed by bringing a group of industry adopters together to form a consortium to connect with entrepreneurs early in the process and figure out how to build solutions with an industry context in mind.

Motion Ventures boasts a line-up of more than 40 industry executives acting as an advisory network and mentorship programme, but it also partners start-ups with well-established maritime firms like Wilhelmsen to help them commercialise and integrate their technology into supply chains.

Described as a consortium-driven fund, these corporate partners are accelerating technology adoption essentially as an in-house consultant.

"We see that in the seed capital to

> *"It was no longer about why we should be collaborating — that's now taken for granted. It's about how we best fast-track and prioritise the right ventures and ideas"*
>
> **Nakul Malhotra**
> Vice-president of open innovation
> Wilhelmsen

Series A stage of funding, a lot of reasons why these companies don't make it is because they don't find product market fit," says Shaun Hon, general partner at Motion Ventures.

"They burn through cash trying to iterate that idea.

"What we're trying to do is to bring the corporate consultant and the start-up together so that any ideas that they are iterating, they are iterating for their users. This saves start-ups the time and tragedy of getting it wrong — and provides users and clients with what they actually need — fast."

Consortium model

The consortium model provides a more mature and workable form of innovation, tailored to a sector that is littered with failed experimentation and no historical precedent of rewarding first-movers.

Despite the initial enthusiasm of the Silicon Valley set, shipping's fragmented structure, conservative attitudes, capital-intensive and long cycle-specific requirements did not suit the traditional venture capital model.

The standard VC model tries to find new ways of adding value into their investments, but it is based on value extraction and maximisation of profit for the shareholders; it is not based on solving the challenges of the industry.

That has created a tension between the long-term requirements and the reality that investing in start-ups is estimated to lead to losses of between 35% and 70%. Start-ups do pose a risk — but ultimately, staying still is an even bigger risk.

When Eastern Pacific's accelerator was established in 2019, it was done with the intention of supercharging their own innovation potential.

However, according to Mr Nehmzow, there is a wider benefit to this approach. The days of viewing industry peers purely as competition is a mindset that only benefits corporates in siloes.

"We don't do purely experimental stuff with very low chances of success — it's not a long-term strategic R&D kind of thing that we do," he says. The idea is really to take something that has a pretty good chance of being a success.

"But the other aspects of this work is that we work very closely with competitors and partners. Obviously we're doing it for ourselves with our own goals in mind, but it acts as a catalyst for wider innovation.

"We're making it much easier for other shipping companies to latch on because we essentially de-risk the whole situation.

"They can really see it working on our ships; we obviously have taken the risk to work with these guys, so we make it much, much easier for these companies to work with start-ups," he adds.

Shipping has no shortage of problems begging to be overcome by smart start-ups, if only the traditional lack of standardisation and siloed thinking can be overcome.

Motion Ventures

> *What we're trying to do is to bring the corporate consultant and the start-up together so that any ideas that they are iterating, they are iterating for their users*
>
> **Shaun Hon**
> General partner
> Motion Ventures

Innovation has never been the end game; rather a means for developing new value drivers and new business models.

The shipping industry may not be a major attraction for investors looking for a play on decarbonisation — but it could become so if the industry can transform itself into a catalyst for change in the industries being served.

Opportunities abound, and yet the industry is waking up to the fact it cannot solve all the problems itself.

Collaboration is essential for survival. Corporates may have not traditionally been rewarded for experimenting and failing, but the challenges now require a new way of thinking from everyone.

We need to find different types of companies — and new ways of creating them.

Salvador Ill Manaois/Alamy Stock Photo

Singapore appears to have all the ingredients to be a global success, but fewer than one in 10 start-ups are profitably growing companies.

What every entrepreneur should know — but is afraid to ask

Being agile and talented are not enough for an entrepreneur in maritime. A degree of commercial shrewdness is vital, plus an ability to see the long-term vision. A two-year time horizon will not cut it, **Richard Clayton** reports

Why do some economies sparkle with innovation, while others appear satisfied with marginal improvements to old technology?

How can shipping hope to attract the brightest talent when the overwhelming attitude is: if it ain't broke, don't fix it?

There are several reasons why entrepreneurs have found shipping tough to penetrate. The most obvious of these are culture, financial support or lack of it, and industry (non-)expertise.

What is less obvious, but is probably the deal-breaker for start-ups, is commercial acumen.

Shipping has been swamped with entrepreneurs and their fantastic ideas, but very few of these ideas meet the simplest of tests: will the investor make a decent return on their investment?

In a 2020 study of Japan's innovation culture entitled 'A quiet revolution', the authors Nick Chubb and Leonardo Zangrando lamented that the dearth of start-ups in the maritime sector was a serious weakness for an economy needing to leverage its growth potential.

In Japan, the report observed, innovation involves combining established technologies to create entirely new categories, "which perfectly suits an industry that still depends on technology that is hundreds of years old".

Cultural hurdles there dictate that new ideas are created, developed, refined and brought to market by giant corporates. They inevitably come up with solutions for the problems of a decade ago.

Contrast that with Singapore's innovation ecosystem. Here, a "highly entrepreneurial and mobile population is driven further by the power of proximity", according to a 2021 study of the city-state's innovation culture, 'The Startup Magnet', by the same authors.

Singapore appears to have all the ingredients required to be a global success: government funding for start-ups; access to a steady stream of educated talent; a small geographic footprint; closeness to some of the world's tech giants; and in constant touch with the global maritime crossroads.

All these qualities are in abundance in Singapore, which has been a hub for unicorns (high-growth start-ups worth more than $1bn).

However, fewer than one in 10 of Singapore's start-ups are said to be gazelles (profitably growing companies), which are a major engine of economic expansion and creators of large numbers of sustainable jobs.

This is a concern, along with research showing that more than half of all Singapore's start-ups lose money and fail to grow.

For deep tech start-ups, which attempt to make fundamental leaps in science, technology and engineering, the report suggests that despite the Singapore government's strategy of support, "there is a clear gap between research and its commercialisation".

Innovation in shipping is a slow process. Seismic change tends to come along once in a generation, otherwise change is incremental.

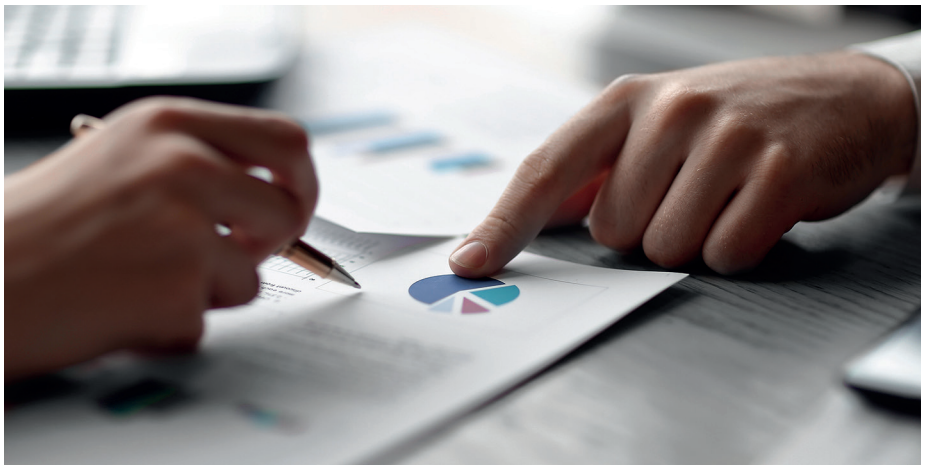
Partly that is a reflection of ambition being tempered by the harsh winds of commercial reality. The experience of working with autonomous vessels — seemingly an innovation that would transform the industry to a more efficient and sustainable level — is a case in point.

Autonomy is an innovative concept that offers improved levels of safety, because almost all accidents and incidents stem from human error; greater efficiency, because data analysis is a better decision-making tool than human intuition; and sustainability, because reduced fuel consumption is not only better for the environment but also saves money.

So why is autonomous shipping still far off, and what can this experience teach about other innovative ideas?

The mantra now is that 'autonomous does not mean unmanned', which is an attempt to counter the widespread concern of substantial job losses among seafarers.

The International Maritime Organization has established four levels of autonomy, only the last of which — the fully autonomous ship — requires no human interaction either at sea or on land.



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Shipping has been swamped with entrepreneurs, but very few of their ideas meet the simplest of tests: will the investor make a decent return?

> *Innovation in shipping is a slow process. Seismic change tends to come along once in a generation, otherwise change is incremental*

The necessary intervention of regulators, the fear of social consequences, and the lack of a clear commercial business case has delayed the introduction of autonomous vessels beyond a few harbour tugs and ferries on pre-determined routes.

These are also the key stumbling blocks for less ambitious innovation and for entrepreneurs with little industry experience.

Transformation innovation requires buy-in from a substantial part of the industry and is more likely to come from outside shipping.

Containerisation invaded breakbulk shipping from the trucking sector, which suggests that successful innovation might be imposed by the logistics supply chain, rather than coming from the IMO.

Then there is the issue of speed. "Singapore is unique for many reasons, but its defining characteristic is agility," say Mr Chubb and Mr Zangrando.

"[Singapore is] small, powerful, nimble, and able to safely guide the world's shipping industry through the complexities of the 21st century."

Agility and nimbleness are valuable in software design but less so in maritime, where ships are built for a design life of 25 years, and long-term charters rarely go beyond 10 years. Investment in innovation must be mindful of this extended timeline.

Lloyd's List is aware of start-ups that have won awards for their innovation, only to find the venture itself was swallowed up by a competitor or taken in a different direction by stakeholders. even before the award was handed over.

Nimbleness might be an admirable attribute in the world of innovation but it rings alarm bells in the world of shipping.

So, while Singapore sparkles with innovation, Japanese corporates and European shipowners and operators are timid by comparison.

They are reluctant to invest in new technologies until the business case is watertight — or their immediate rivals have taken advantage of innovation.

Entrepreneurs already active within shipping work for technology companies with a mandate to grow year by year in a predictable way.

Such companies are unlikely to invest in resources that will create transformation technology for which the industry is not ready; they must stay on the conservative side of the innovation timeline.

The future of innovation in maritime is expected to be cautious, leading the industry but only by a few paces, and never straying far from the guidance offered by regulators. There will be claims and promises, few of which will live up to expectations.

If real transformation happens, it is more than likely to hit maritime from the wider logistics supply chain, driven by mega customers. Those customers live and breathe innovation in a way of which shipping can only dream.

Shaking shipping's status quo

Dmytro Lastovych/Alamy Stock Photo

New ideas from entrepreneurs can help bring about significant changes to the way the shipping industry operates.

Meet the entrepreneurs bringing a wave of disruption to a conservative industry finally waking up to the positive change of outside influence

Lloyd's List spoke to the individuals behind a series of start-ups looking to make their mark and revolutionise how shipping operates.

Ben Braverman, Flexport

For Ben Braverman, it all started with a dog park and a hoodie.

That's what Flexport founder Ryan Petersen was wearing when Mr Braverman first saw him.

"He was wearing a YC hoodie. I was leading sales for a YC company at the time."

As Mr Braverman explains, YC stands for Y Combinator, "which is one of the most prestigious start-up incubators" — one that Flexport eventually used.

Flexport

> *"I couldn't believe there was an industry so big that wasn't as focused on as seemingly every other major industry in the world by technologists"*
>
> **Ben Braverman**
> Chief customer officer
> Flexport

"I said: 'Hey, how are you doing?' And it turned out it was a hoodie for his brother's company, BuildZoom, that had already gone through YC."

That chance meeting led to a year of walking their dogs around San Francisco together, working out their ideas and, as Mr Braverman puts it: "I just became captivated by it."

He says: "Ryan had already spent three years working on this by himself before I met him that day at the dog park," and he was astonished by what he learned.

"I couldn't believe there was an industry so big that wasn't as focused on as seemingly every other major industry in the world by technologists. It's like, this was the biggest opportunity to be the biggest dollars."

The dollars have since become legendary in the industry, with Flexport racking up $1.29bn in revenue for 2020 — and the business just keeps pouring in.

In 2020, Flexport global ocean freight volumes increased by 50% year on year, while premium ocean products grew from 2% to 11% of Flexport's overall transpacific aastbound volume.

Yet money is not everything for chief customer officer Mr Braverman and Flexport. A good example of that is flexport.org, the firm's non-profit entity and an online carbon calculator that helps customers assess the emissions on a shipment level.

"Then, with one more click, if a customer wants, they can offset all that carbon when they ship with us," he says.

"We don't make money off it," he explains. "It's just one of those things that if you're accurately tracking it, and you can make it really easy for someone to get a win with, whether it's their end-customer or their boss or their shareholders, it's like pretty rational to do."

For Mr Braverman, Flexport is down to a very basic formula and rationality is at the heart of it.

"We're just building what any rational person would build, either to serve a customer well or to automate the selection of what carrier service to use or whatever it may be."

Cosmo King, ioCurrents

The chief innovation officer of US-based data analytics company ioCurrents believes that smart technology is becoming more widely used in the maritime industry as companies strive to maximise efficiency and prevent costly downtime.

"Technology does come naturally to shipping companies as they have to innovate and deal with the changing world and life at sea," says Cosmo King, the company's co-founder.

Based in Seattle, ioCurrents was formed in 2015 by Mr King and current chief technology officer Bhaskar Bhattacharyya, who identified a gap in the industry.

Sailor's e-home

> *Technology does come naturally to shipping companies as they have to innovate and deal with the changing world and life at sea*

Cosmo King
Co-founder and chief innovation officer
ioCurrents

They realised how their work with geospatial technology and sensor data could predict maintenance and prevent equipment failures.

Combining their passion for the industry with their skills in cloud computing, machine learning, artificial intelligence and automation, their MarineInsight platform was born.

It initially focused on the fishing and tug boat sectors, but has since expanded to host tankers, bulkers and ro-ros, with the latest additions being offshore service vessels.

However, finance was hard to come by — so the two men quit their well-paid tech jobs, sold their homes and embarked on their journey.

Mr King said it was a lengthy process to raise funds and the challenge was that, while Silicon Valley investors were awash with cash, they had no maritime knowledge, and were therefore less inclined to get involved.

The co-founders approached investors in the northwest of the US, who did understand the industry — and, in 2019, they managed to source $7m from a venture capital firm.

"Shipping is now facing a critical need to cut emissions," says Mr King, and the company's analysis of speed conditions can help with fuel consumption. In an early application, vessels were able to make fuel savings of 7%.

The package is easy to deploy and the self-installed application can be updated remotely. Data, which is already available on the ship, is analysed and compressed, where shore-side teams can easily access it.

Reports are also automated and sent straight through to classification societies if needed.

From just five clients in the early days, the company is adding fleets at a rate of knots.

"There is huge opportunity for growth in the maritime industry," says Mr King, who grew up in a maritime family running ferry services in Virginia.

He said running ioCurrents was his ideal dream job, as he can combine his "tech geekiness" with his love for ships.

> *We want to do like what [Chinese vehicle for hire company] DiDi does, so that a seafarer can sign on and sign off at the nearest port to his/her home*

Mi Chuanjin
Founder and chief executive
Sailors ehome

Mi Chuanjin, Sailor's e-home

It wasn't the pursuit of a career that drove Mi Chuanjin to become a ship navigation major at the Wuhan University of Technology in 2003; it was the cost.

"I wasn't interested in the subject," he says. "It was because my major's tuition fee was about Yuan2,000 ($314) per year, while others cost more than Yuan5,000."

As a child from a peasant family in South China, his keenness to improve the finances soon led to his first entrepreneurial idea, when he was serving as an intern sailor on a Chinese coal carrier a few years later.

Dita Bruijn, PortXchange

Tech needs to think more like shipping and shipping more like tech, according to PortXchange director of operations Dita Bruijn.

"They are two separate worlds and they're not quite coming together yet," she says.

PortXchange was spun off from the Port of Rotterdam's Pronto project in 2019. It sells optimisation software to help ships arrive and depart ports just in time.

Ms Bruijn says despite "some small improvements" in the past two years, shipping remains a conservative industry.

"Some companies are trying to reinvent their business model or expand their relevance because they do see that digitalisation is coming. But it's a slow process," she says.

It is hard to 'disrupt' the industry without knowing how it works, so the trend is towards nimble start-ups spun off from, or backed by, bigger established players.

"I do think that if you want to do this as an outsider, you need to have a lot of patience — also financially — to wait for things to pick up," she says.

> *"Some companies are trying to reinvent their business model or expand their relevance because they do see that digitalisation is coming. But it's a slow process"*
>
> **Dita Bruijn**
> Director of operations
> PortXchange

PortXchange

Ms Bruijn does not believe in digitalisation for its own sake and says tech products must solve customers' problems. If a product fails, "it's not that people aren't ready, it's probably that you haven't quite nailed it; you haven't quite understood how the customer works".

She adds: "People in shipping, in operations, are generally very busy with a lot of different things at the same time. So you have to make their lives easier and not add extra screens and extra tasks for them."

Ms Bruijn says data standards will be key to further digitalisation so companies' systems are compatible. Yet once they are, the freer exchange of data could help drive down prices and improve services across the industry.

A traditional crewing firm was soon started up by Mr Mi and his business partners in the city where he graduated, and through it, he made his "first pot of gold".

Meanwhile, he also discovered the dark side of the business.

Many crewing agencies at the time were what he described as "seafarer scalpers" that took advantage of a market with asymmetric information.

Charging excessive commissions, they ripped off sea workers who were looking to join a crew on board, or young people who wanted to be trained for the job.

For example, a training course was priced by some agencies at Yuan20,000 to Yuan50,000, while it only cost Yuan6,000 at his university.

As a result, the payment and welfare for being a seafarer often got overstated or exaggerated in order to justify the prodigious mark-ups, according to Mr Mi.

Gradually, the candidates' financial affordability — rather than their physical and mental fitness — had become the main stepping stone to their seaborne career, he says.

"That has largely compromised the quality of Chinese seafarers."

In 2016, Mr Mi began his second adventure, establishing a digital crewing platform named Sailor's e-home. The aim was quite simple in the beginning: to reduce the job-hunting and training costs for seafarers with the benefits of the internet — the scale, efficiency and transparency.

Via the digital platform, for instance, training courses are sold at their original price and hence can reach more seafarers.

Meanwhile, Mr Mi's company can profit from a discount offered by the schools as a reward for its services.

The business, alongside its platform users, began to grow fast.

As of today, one-quarter of China's one million seafarers are registered users of the Sailor's e-home, which also connects them with more than 400 shipping companies, as well as 70 maritime schools and training institutions.

It now tries to provide a one-stop service, where users can also book their health checks and pay their social insurance.

However, the "ultimate goal" of Mr Mi is much more ambitious: "to make a sail for seafarers — or at least some of them — feel like a business trip".

Seafarers are a profession with a high turnover ratio, he says. The loneliness and isolation resulting from eight to 10 consecutive months of service on board often leads many of them to change their career.

"But can we shorten the period to three to five months and let them go home more often?" he asks.

The answer might lie in the possibility of finding a more flexible crew change system. It imitates the way mobile ride-hailing services operate, meaning to pair the passengers (seafarers) with the nearby cars (ships).

"We want to do like what [Chinese vehicle for hire company] DiDi does, so a seafarer can sign on and sign off at the nearest port to his/her home," Mr Mi says.

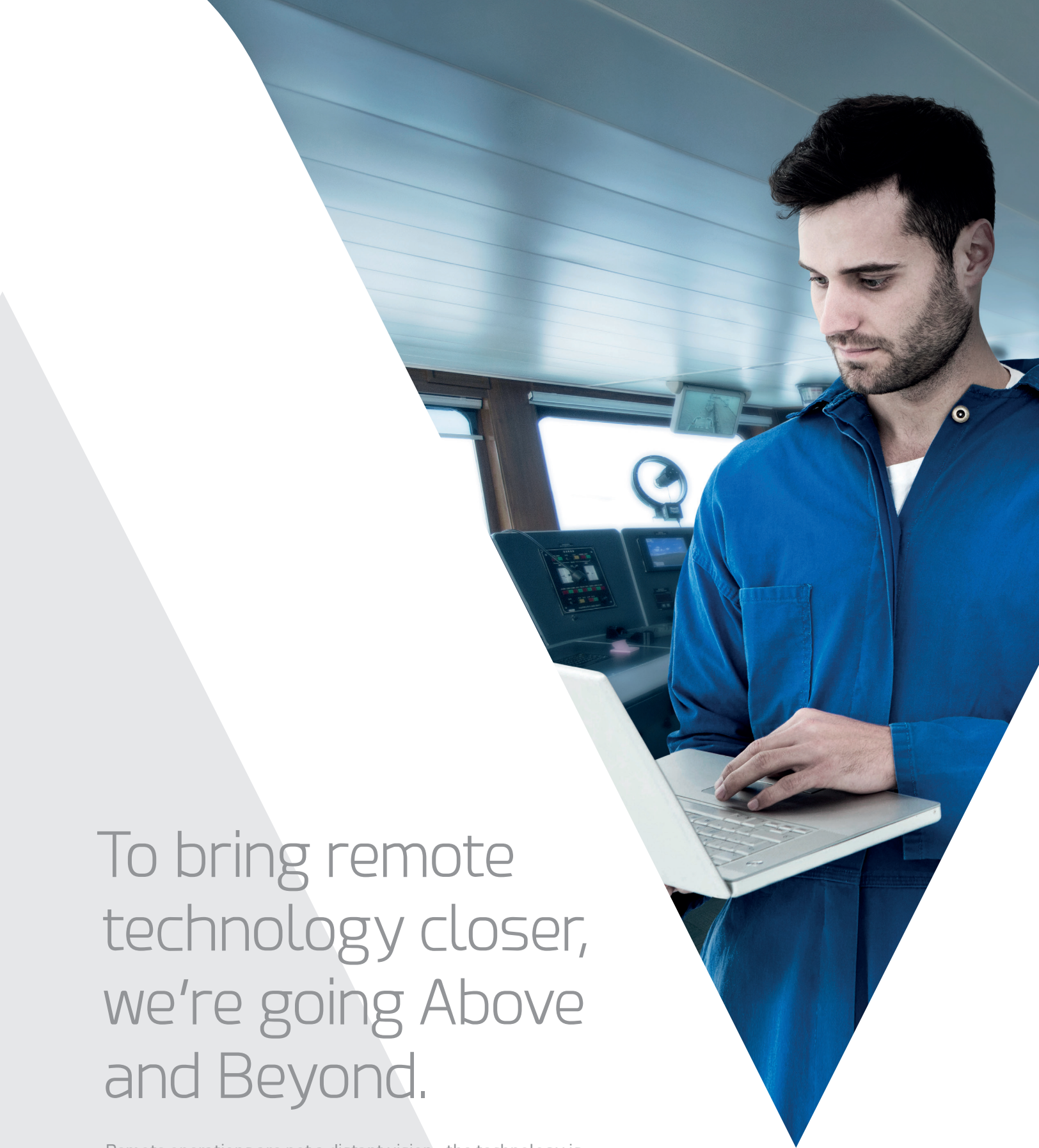
It is, of course, not an easy task.

It requires technological innovation and a great amount of data, including the crew's personal information and the schedule of the vessels.

And to find a ship on the vast ocean is a lot more complicated than getting a taxi in a small city.

A passenger does not have to be qualified to get into a certain type of car, but seafarers are hardly all-rounders when it comes to vessels on which they can serve.

"So, we have to start from the sailors whose job is easier to be standardised, and from the Chinese coastal trade to narrow the search area," says Mr Mi.



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A pilot project was conducted last year, involving more than 20 offshore rigs operating in the Bohai Rim and 40 seafarers living in the nearby port of Tianjin.

The match-up has enabled the seafarers, working as radio operators, to disembark at the port via a helicopter or shuttle ship to enjoy their 10-day holiday after 28 days of service.

That compares to the traditional model of three months' service on board, with one month'a time off.

Only one of those 40 rig workers has quit the job versus the segment's average turnover ratio of about 15%, according to Mr Mi.

"Their salary is not higher than the others, but the friendly holiday model has encouraged them to stay," he says.

NAN/Alamy Stock Photo

The challenges that shipping is facing require a new way of thinking from everyone.

Ove Munthe-Kaas, Engine Online

Engine Online, as with many digital start-ups active in the maritime space, has evolved from a concept backed by a reputable shipping name.

Navig8 went public about two years ago with its plan for a free online fuel-benchmarking web portal.

That concept is now a standalone business that has beaten popular expectation by continuing to build steam after one regulatory trigger linked to its conceptualisation came into force.

Engine Online had gained 220 signed-on members by late May, almost 18 months on from the implementation of the International Maritime Organization's 0.5% sulphur limit on marine fuels on January 1, 2020.

That signifies another quantum leap from the 150 members reported in March.

Developer Ove Munthe-Kaas noted the regulation, commonly dubbed IMO 2020, has stoked widespread fears over fuel quality risks of "catastrophic consequences". This has resulted from suppliers resorting to blending components to pump out compliant products for marine users.

While such quality issues may not have spiked as anticipated, marine fuel price volatility was indeed a major concern.

The price spread between compliant and non-compliant fuel oil, HSFO and VLSFO widened then narrowed dramatically within the first three months of IMO 2020's implementatiion, disrupting the economics behind vast investments put into retrofits of exhaust gas-cleaning systems.

"The market could not agree on the direction it was taking and it created a moment of confusion where few people could justify their decision-making processes," says Mr Munthe-Kaas.

"These are situations where a platform like Engine provides huge value to users, affording them visibility to otherwise clouded markets."

However, Engine Online is clearly not the only information-provider in the bunker space.

Argus Media and S&P Global Platts are two major agencies that had been offering daily price assessments and reports months before Engine went live.

Still, Mr Munthe-Kaas argues that where Engine differs from the two more established names and others in the same space, is by pumping out data and information "minute for minute".

How Engine manages to do this is basically through fulfilling a latent need for a digital platform to allow industry participants to exchange information with each other while maintaining anonymity.

"Engine is a tribe of likeminded and forward-thinking shipowners and suppliers that see greater value in sharing data, rather than limiting themselves to their internal research."

Beyond this, Mr Munthe-Kaas says the developers behind the platform also sought to respond to the users' expressed wish list.

"As an example, we have added forward pricing, bunker voyage planner features, distance calculators and LNG prices, among other things, only within the past few weeks."

> *"Engine is a tribe of likeminded and forward-thinking shipowners and suppliers that see greater value in sharing data, rather than limiting themselves to their internal research"*
>
> **Ove Munthe-Kaas**
> Developer
> Engine Online

Ioannis Martinos, Signal Group

As a spin-off from the Martinos family shipping company Thenamaris, Greece's Signal Group is a rare example of tech-led entrepreneurship that comes from a pure shipowning and operating lineage.

Signal Maritime, set up by Ioannis Martinos in 2014, sought to chart new territory and "bring together shipping best practice with internet-age advanced analytics and management methods".

In 2018, the group publicly unveiled its Signal Ocean platform, drawing on artificial intelligence to create a highly intuitive tool that owners, charters and brokers can use to assess a panorama of chartering options and make smarter decisions.

The platform has since expanded to cover all main tanker and dry bulk segments and has been used by numerous major players worldwide.

In April 2021, Signal's forecasting algorithm — said to select the best path with more than 95% accuracy — was awarded a US patent.

Despite the acclaim, the group says it is nowhere near exhausting the potential of the platform and is in it for the long haul.

> *We are experiencing change, but a meaningful paradigm shift could take a decade or more*

Ioannis Martinos
Founder and chief executive
Signal Group

It is currently fine-tuning the technology for use in the dry bulk sector and coverage of the gas shipping markets — and containers are not far behind.

Signal's own managed fleet, mainly of tankers, has provided scope for testing new technology and methods in practice and the cutting-edge platform has also been put to use in Signal's role as a pool operator. It has managed an aframax tanker pool for the past three years and has just launched a medium-range product tanker pool, too.

Mr Martinos sees that appreciation of innovation in the industry is gaining ground rapidly — but at the same time, he outlines numerous reasons why the pace sometimes seems slow.

Nicolas Ang, F-drones

As a co-founder of F-drones, which develops and operates aerial delivery drones, Nicolas Ang feels that the maritime industry is at the dawn of a major transformation.

"The evolving environment and advancing technologies are pushing the industry forward," he says.

Mr Ang feels the world's digital connectivity presents boundless opportunities for the sector to digitise, with the market shifting around the International Maritime Organization's regulations, which are driving sustainability initiatives across the value chain, while drones and robots are helping humans with dangerous tasks.

F-drones was founded in 2019 with the support of the Eastern Pacific Shipping accelerator programme and has pioneered commercial Beyond-Vision-Line-Of-Sight drone deliveries to ships.

The start-up is forging ahead to refine the next iteration of its own proprietary drone system, currently capable of carrying 5kg over a distance of 50km, into a larger-scale drone capable of delivering 100kg to vessels up to 100km away.

"Getting funding for new ideas in any sector is never easy, especially shipping; being a more traditional and not so sexy sector, it has probably had less than its fair share of venture money," Mr Ang argues.

However, there is every reason to be optimistic about entrepreneurship in shipping as industry leaders are beginning to embrace innovation and more investors start to see the impact they can create with their monies in the maritime sector, he conceded.

> *"Getting funding for new ideas in any sector is never easy, especially shipping; being a more traditional and not so sexy sector, it has probably had less than its fair share of venture money"*
>
> **Nicolas Ang**
> Co-founder
> F-drones

There is a positive momentum in Singapore, which is beginning to see a sprouting ecosystem, including programmes like the EPS MaritimeTech Accelerator, powered by Techstars, Innoport, PortXL Singapore and Pier71.

Funds have also been set aside by the Singapore government for the maritime sector, including a $50m co-investment fund set up in 2020.

More recently, $10m was awarded in grants for maritime start-ups.

Citing the theory of diffusion of innovation propounded by American sociologist Everett Rogers, Mr Ang notes that most shipping companies are probably still considered as "early or late majority".

"I think the absence of innovators from the sector over the past decades has, in a way, resulted in new or radical technologies being unable to penetrate the industry."

Yet the shipping industry has come a long way in the past two years.

"We have met a good number of shipping players who are becoming more like innovators or early adopters.

"This development will certainly help to pave the way for the sector to be more receptive to entrepreneurial ideas and solutions," he adds.

"We are experiencing change, but a meaningful paradigm shift could take a decade or more," he says.

"Some of the problems that technology can help solve in shipping are actually quite hard by global standards. There is high complexity, low data quality, lack of standards, and a very small audience in terms of user counts.

"Shipping has always been very entrepreneurial and most large players in the industry are indeed currently concerned with adopting technology.

"For a wide spectrum of reasons, ranging from fear-of-missing-out to sound entrepreneurial thinking, decision-makers do want to adopt technology. But most times, this involves change management, which is notoriously hard and unpleasant."

According to Mr Martinos, perceptions of what is achievable — especially within certain time horizons — can be unrealistic.

"People often expect technology to push boundaries and render previously impossible things possible, like autonomous vehicles, for example. This is not true of many innovations that simply made things easier or simpler, resulting in a truly profound impact. There is nothing wrong with something that just makes things more efficient!" he says.

"It is a numbers game; only a certain percentage of the propositions being worked on have the ability to generate real value and an even smaller percentage will enable new models that get to it.

"One issue is that these attempts are being tried in a relatively unknown and immature technology ecosystem — at least compared to other competitive business domains," Mr Martinos says.

Signal also stands out for its commitment to driving and supporting the quest to solve longstanding problems across the shipping spectrum.

"Other than helping teams boost their freight trading performance, problems we hope to help solve include enabling a higher level of commercial consolidation and assisting the maritime domain to manage its carbon footprint," he says.

"We are also excited to be now offering solutions not only to end-users, but also to other developers."

Earlier this year, the group launched its own technology accelerator, Signal Ventures, to fulfil this mission. It gives the group a "central vantage point" to see developments, says Mr Martinos.

According to Signal Ventures technology vice-president Nikolas Pyrgiotis, the initiative is "hoping to create synergies in data, product integrations, and customer adoption".

The early signs are encouraging, he says.

"In just a few months of operations, we have a funnel of software solutions — including several confirmed investments — that cover a wide range of topics, like crewing, bunkering, ship supplies, freight forwarding, port operations and vessel voyage optimisation."

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Clément Galic, Unseenlabs

A French start-up is using nano-satellites to detect radio signals emitted from vessels that have gone 'dark', augmenting surveillance for ships that switch off their Automatic Identification Signals so they cannot easily be found.

Unseenlabs, established in 2015, targets radio frequencies on ships to gain information about its position and electromagnetic signature, says co-founder and chief executive Clément Galic.

Radio signals emitted by ships include VHF, UHF and Satcom, although Mr Galic says Unseenlabs does not disclose which frequencies are targeted.

The information alone does not always identify the vessel. However, overlaying with AIS or other systems, such as synthetic aperture radar, adds details that can — no matter where or when the AIS was switched off.

In November 2020, Mr Galic — who established Unseenlabs with his brother, Jonathan — launched the company's second and third maritime geolocation nano-satellites. The first went into orbit a year earlier.

Three satellites allow signals to be received from a vessel every 12 hours.

This will be halved to around six hours when Mr Galic, who is a former aerospace engineer, launches further satellites in coming months after completing a €20m ($24.4m) venture capital fundraising round in April. Plans are to have around 20 to 25 nano-satellites in orbit by 2025.

> *Unseenlabs, established in 2015, targets radio frequencies on ships to gain information about its position and electromagnetic signature*
>
> **Clément Galic**
> Co-founder and chief executive
> Unseenlabs

Unseenlabs

Demand for 'dark' vessel detection in the maritime domain has soared over the past five years, extending beyond monitoring illegal fishing and smuggling.

Maritime sanctions imposed on Iran, North Korea and Syria have embedded evasive shipping practices in commercial shipping to avoid detection.

New space technology developed by Unseenlabs can be used for business intelligence, insurers and marine protection.

So far, dominant clients are naval and coastguard authorities, who subscribe to Unseenlabs' intelligence to better deploy aerial resources, for example, or detect illegal fishing, drug trafficking and polluting vessels.

Both French and Canadian coastguards are Unseenlabs customers.

Investors include Brittany-based public fund Breizh Up, supported by the European Regional Development Fund, as well as a venture capital fund linked to France's ministry of the armed forces, and private equity fund Omnes, according to Unseenlabs.

Roberto Coustas, DeepSea Technologies

"We were astounded to see that the shipping industry was lacking data-driven decisions of any sort, let alone AI or machine learning," says Roberto Coustas, describing the brainchild of his entrepreneurial journey.

The co-founder and chief executive of DeepSea Technologies had just completed a degree in computer science at Oxford University and was discussing the problem with his friend Konstantinos Kyriakopoulos, who had just finished his masters in machine learning at Cambridge.

"The biggest problem that I think persists today is that owners and charterers really don't know how much a vessel should be consuming, so there is no way to monitor whether a vessel is efficient or not," he says.

"And if you don't know how a vessel should behave, even under good conditions, then you're in no position to optimise — and that's where we started.

"We were trying to solve that problem and everything that we've achieved to date has been driven by that angle."

> *It is notoriously difficult to get initial traction in the maritime industry — owners and charters are very reluctant to try out new technologies*
>
> **Roberto Coustas**
> Co-founder and chief executive
> DeepSea Technologies

DeepSea has been looking at performance monitoring and optimisation for the shipping industry since it launched in 2017.

It picked up its first clients in 2018, a Lloyd's List Award for approach to data in 2019 and secured €3m ($3.7m) in funding from London's ETF Partners in 2020. Earlier this year, DeepSea launched Cassandra Light, described as a cost-effective, hardware-free AI-driven platform able to deliver accurate vessel performance insights using only noon reporting data.

However, that journey from idea to launch has not been as easy as the timeline would suggest.

"It is notoriously difficult to get initial traction in the maritime industry — owners and charters are very reluctant to try out new technologies," says Mr Coustas.

"They are very conservative by nature. This is an industry that's driven by high-value assets and it's not an industry that allows for young people to ascend quickly.

"I think all that contributes to some delays in technology adoption generally."

That is now changing out of necessity, argues Mr Coustas, who points to the shifting requirements of fuel efficiency and industry-wide decarbonisation as the catalyst for innovation and tech uptake within the industry.

"The owners have realised that change is coming — and it's coming fast," he says.

"They've started placing more attention and focus on analysing the efficiency of their entire fleet, and seeing which vessels are inefficient and which ones are aren't — that's a significant start.

"Ten years ago, we wouldn't be having this discussion. Even four years ago, I would meet with companies where the charterers paid for the fuel and I would talk to them about timely hull cleaning, and they literally wouldn't care because it wasn't money out of their pocket.

"Now you get better financing if your investment is efficient, or you get a slightly better rate, or if you expect to be taxed and you want to avoid that. I think together, all these factors are now directing the industry's decision-making."

> *"I feel it's a matter of time before new digital ventures and business models will develop more in shipping"*
>
> **Shanker Pillai**
> Head of innovation and change
> Hafnia

Shanker Pillai, Hafnia

Digitalisation in shipping is happening. And for all the talk of pace and accelerated digital change, technology development and integration is taking place alongside behavioural change towards digitalisation.

There has been a real change of attitude but, like any other commodity-based industry with no direct consumer pressure, the opportunities for digital business models are not always easy in the maritime sector, says head of innovation and change at Hafnia, Shanker Pillai.

Although the sector is still plagued with legacy systems and processes — politely described by external observers as outdated — he believes that more shipping companies are becoming receptive to new ideas and working with start-ups.

The BW Group-controlled company has been actively involved in encouraging start-ups, not just those disrupting maritime, but working for all industries. One example has been a partnership with Shell Shipping, launching a sustainable non-profit venture this year called Sea Code for tackling gender diversity issues.

The company is also currently running tests with drone service provider F-drones to deliver goods to vessels anchored in Singapore.

Once the test phase is completed, F-drones will enable Hafnia to rely less on the use of boats to deliver smaller loads to vessels, and thereby reduce CO_2 emissions with every trip.

"I feel it's a matter of time before new digital ventures and business models will develop more in shipping," says Mr Pillai.

However, a lack of clear processes or project management in undertaking such initiatives is very evident in many large shipping companies, he says.

"The challenge for companies trying to apply digitalisation to all their processes is that they have never done this before and need to be guided through the process."

Mr Pillai points out that the common complaint across the shipping industry is that start-ups often work fast and can produce prototypes or solutions much quicker than a typical vendor partner. This means the organisation should be able to keep up with this pace.

"Often this is a challenge in large organisations with multiple stakeholders, as getting the key stakeholders to a meeting in itself could take time."

Also, start-ups can pilot solutions quickly but are often understaffed and unable to scale up rapidly to corporate needs. This is where another major hurdle rests.

Mr Pillai notes that several new funds have come up with dedicated investment portfolios in shipping. Recent ones like Motion Ventures are a great example.

The Maritime and Port Authority of Singapore has also been at the forefront of such funding start-ups with its Maritime Innovation and Technology fund, which provides equity-free financing for start-ups.

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Some companies are using drone service providers to deliver goods to vessels.

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How to get ahead in alt lending

Two young shipping entrepreneurs saw the opportunities opened up by the global financial crisis — and then they stepped in to seize them, **David Osler** reports

Setting up as a shipping alt lender is easy, right? Round up some buddies, rent some desk space, raise a couple of hundred million bucks from somewhere and then farm it out to shipowners who cannot borrow elsewhere and are ready to pay through the nose.

Well, not exactly, according to two people who should know.

Andreas Povlsen launched Breakwater Capital in the wake of the global financial crisis in 2011, while Christoph Toepfer set up investment manager Borealis in 2010 and lender Australis Maritime rather more recently, in 2019.

Long haul

Both admit it has been a long haul from the early loss-making years of 70-hour weeks before getting to where they are now, but would recommend other people emulating their example.

"Of course it's do-able. We did it," notes Mr Povlsen.

"If I'd have known what I know now in regards to how difficult it is, I would never have done it. Thank God I didn't know, because obviously it has been a success."

Mr Toepfer adds: "I would always set up Borealis and Australis Maritime again. Both have been great successes, but only in combination of hard work and assembling very high calibre teams."

Lending is a very different proposition to buying a ship, where lawyers do most of the heavy lifting for you.

Tip number one is that while there is always a gap in the market, would-be starts need to be certain that there is a market in the gap.

Even though alt lenders are not regulated banks, many aspects of what they do are regulated or controlled. While it is possible to use higher leverage to take more risk, taking more risk is ... well, riskier.

zoompix/Alamy Stock Photo

Lending is a very different proposition from buying a ship, where lawyers do most of the heavy lifting for you.

Returns risk

"Unless you do something that's really scalable — and not a lot of people have done that in the alternative space — it's rare you get the same kind of returns providing a loan as you get providing equity," said Mr Povlsen.

You are therefore better off raising seed capital from credit funds than private equity, because private equity needs private equity-sized returns.

Family offices are another option, especially if you are from an established shipping family, as was the case with Mr Toepfer.

Select borrowers carefully. Origination can be hard work and you may need to look at 20 deals before being able to execute one project.

Borrowers will rightly want to have trust in lenders, and assurance that lenders stick around in bad times. On the other hand, one badly loss-making deal can wipe you out.

"People know that there are some deals that will go well and some deals that won't go so well. But if you make enough money on the deals that go well, that supports the ones that don't go so well," says Mr Povlsen.

In lending, everything starts when the deal has closed. You must be mindful of environmental, social and governance considerations, sanctions, know-your-customer rules and much else.

Find a solution

You need to monitor deals constantly, see where things are not going as planned and act quickly and to find a solution with the borrowers.

"The one mistake we made is that we initially considered the vast Greek market for us as the key market, and underestimated the extent to which Greek banks were willing and able to continue lending to smaller Greek-based owners at very attractive levels," Mr Toepfer reveals.

There is also the question of whether now is a good time to take the plunge.

Mr Povlsen thinks that in some ways, the train has already left the station — although he points out that good markets in containers and bulkers may offer new entrants some leeway.

> *If I'd have known what I know now in regards to how difficult it is, I would never have done it. Thank God I didn't know, because obviously it has been a success*

Andreas Povlsen
Founder
Breakwater Capital

Mr Toepfer, as a relatively new lender, will likely differ on that point.

However, both interviewees agreed that a start-up alt lender is not a job for someone with a freshly minted shipping MBA from Cass.

"We did it early enough when the competition was not there," says Mr Povlsen.

"It's not as if there are people out there who have $100m and just want to throw it at something like this.

"Why would they do that with someone who has no track record or background in lending?

"If somebody comes out of Cass or a shipping family, that doesn't mean they know anything about lending."

Mr Toepfer adds: "One needs to credibly show that one understands shipping cycles in the different shipping segments, with a track record of successful executions, and evidence access to deal-flow at senior level across shipping segments."

> *I would always set up Borealis and Australis Maritime again. Both have been great successes, but only in combination of hard work and assembling very high calibre teams*

Christoph Toepfer
Founder
Borealis iand Australis Maritime

Build networks

So the advice is to get a background in banking, private equity or hands-on shipping first, and build networks that will allow you to source transactions and cut specific deals with specific investors.

"Right now, I would say think twice. And maybe think about how you would benefit from being a partner in an existing set-up and create value both for yourself and that set-up," Mr Povlsen concluded.

"But it's a fantastic thing to be an entrepreneur. I can highly recommend it to anybody who has the guts to do it."

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