

2022
YEAR IN REVIEW

EMPOWERING NEXT GENERATION ENTERPRISES

IPI
SINGAPORE

Innovation
Partner for
Impact

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About IPI

IPI is an innovation catalyst that creates opportunities for enterprises to grow beyond boundaries. A subsidiary of Enterprise Singapore, IPI accelerates the innovation process of enterprises through access to its global innovation ecosystem and advisory services. Its multidisciplinary team facilitates enterprises' innovation processes, including commercialisation and go-to-market strategies.

MESSAGE FROM THE CEO



WONG LUP WAI
CEO

“
I am confident that IPI will play an even bigger, more meaningful role in the ecosystem as we continue being inspired by the vibrant innovation community around us in the years to come.
”

Imagine a world where innovation didn't exist. Would the world even exist, then?

IPI's mission has evolved since its inception and today we pride ourselves on being a committed partner in helping local start-ups and enterprises accelerate growth by gaining access to industry-specific knowledge insights, as well as taking advantage of new market opportunities for licensing technology. Since taking over the reins of IPI in September 2019, I've come to realise that we serve a very unique purpose here in the innovation ecosystem as we strive to deliver greater value to our stakeholders and create more opportunities for collaboration through our initiatives.

Our Innovation Advisors Programme (IAP) continues to grow from strength to strength since it was established three years ago. Many SMEs have been able to gain access to bespoke advisory services by experienced industry practitioners who are well-versed in both technology as well as business - and are coached in leveraging technology and innovation to develop

differentiated business models, products and services.

This year, we launched TechInnovation Discover and TechInnovation Connect, a spin-off event series that builds on the success of TechInnovation, IPI's flagship technology brokerage event. This enabled interested parties to tap into IPI's global innovation network and enterprise ecosystem. I was delighted to be able to meet with our industry partners, clients and friends once again, after the long Covid hiatus where in-person events were not possible. I'm also excited for our reimagined, full-fledged 11th edition of the TechInnovation conference and exhibition to return in October 2023 - an event which will redefine the impact and experience that TechInnovation offers our industry and community in collaboration with our key partners.

I am confident that IPI will play an even bigger, more meaningful role in the ecosystem as we continue being inspired by the vibrant innovation community around us in the years to come. It has been a true privilege watching our clients continue to make waves in the industry, knowing that we have contributed to their successes. I thank all our partners, clients, Innovation Advisors, and most of all my team here at IPI - in their relentless pursuit of innovation to make the world we live in, brighter and better.

MESSAGE FROM THE COO

As much as it sounds like a cliché, but companies are often told to 'think outside the box' in their quest to accelerate growth for their businesses – that's easier said than done. Very often, they find themselves constrained by various factors – internal resources, time, budgets, technology and access to the right expertise or advisory services.

So where does that leave us? Isn't the true test of a company's hunger to grow and achieve their goals, come down to what they actually do when they have to think 'inside' the box, facing a multitude of constraints? I believe that's where innovation comes into play – and this is where IPI comes in as well.

I've been with IPI since its inception in 2011; during which time I have met numerous companies who wish to innovate, be it to improve products and services, or simply to scale up. One of the challenges they face is having a trusted partner who can help them find the best-fit technologies or link them to a credible advisor who will offer actionable advice that can help with business growth.

That was the reason why IPI was established initially – to be a trusted conduit connecting businesses and technology. Being neutral, we aim to

“
We also managed to secure many projects, promising to deliver a total of more than \$250M projected revenue over a duration of three years, from the commercialisation of the technologies implemented.
 ”

facilitate and support enterprises' innovation journeys, bringing technology seekers and providers together in mutually beneficial working relationships.

Looking back on 2022 I'm very heartened knowing that we've journeyed with companies, many over the course of several years – who've benefitted from the comprehensive suite of services that IPI offers, from technology scouting to advisory guidance.

We also managed to secure many projects, promising to deliver a total of more than \$250M projected revenue over a duration of three years, from the commercialisation of the technologies implemented. While these numbers are indeed encouraging, I'm also constantly thinking what's the next step – how do we sustain this, and how we can do better and continue to create a positive impact. Innovation is a continuous process, and it is my wish that we never lose sight of this as we help our clients transform, and

at the same time re-invent ourselves to remain relevant to our clients.

Thank you to our clients for trusting and allowing us to understand the intricacies of your business – so that we might endeavour to offer our insights and assistance. I'd also like to recognise my talented team at IPI – all of whom simply cannot imagine a world without innovation.

Here's to an exciting year ahead, filled with impactful new discoveries in the technology space!



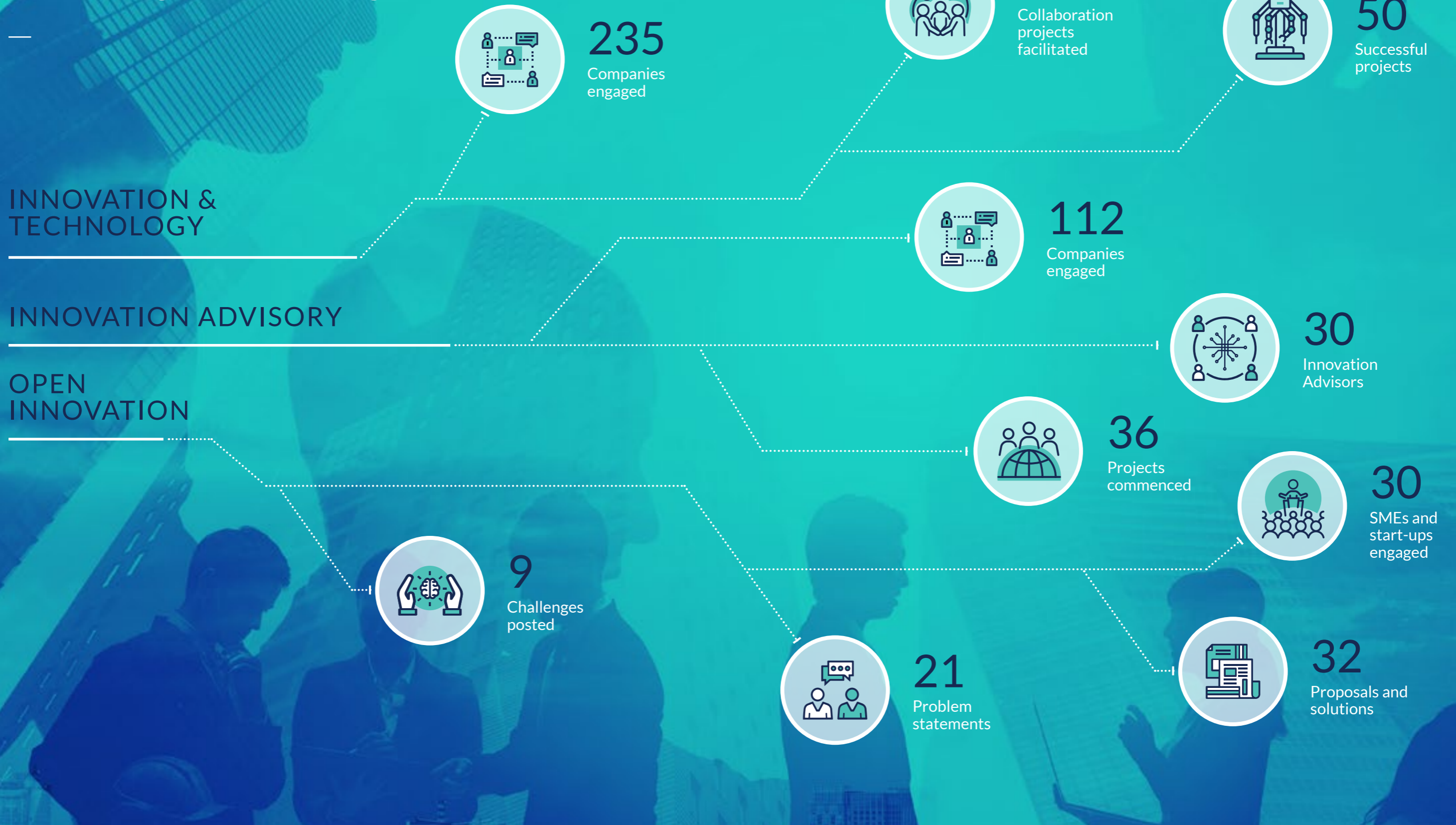
MICHAEL GOH
COO

People are our greatest asset. Our team is dedicated to connecting businesses to pursue and accelerate growth, together, in the innovation ecosystem.



Annual strategic retreat 2022

OUR YEAR IN NUMBERS



KEY HIGHLIGHTS



CHALLENGES AND OPPORTUNITIES FOR SUSTAINABLE AQUACULTURE WATER MANAGEMENT IN SOUTHEAST ASIA

Aimed to inform and cultivate Singapore's water treatment tech providers in the aquaculture sector to address the burgeoning Southeast Asian market, this roundtable session held in May featured an insightful panel discussion and facilitated discussions between tech and expertise providers and panellists.



THE RISE OF DIGITAL THERAPEUTICS

This physical forum on Innovation in Digital Therapeutics held in July saw DTx start-ups, technologists, healthcare providers and medtech experts share their wealth of knowledge and experience in the realm of DTx. Experts also discussed the trends, opportunities and challenges in the sector.

UNFOLDING NEW SPACES IN FOOD INNOVATION

IPI's inaugural TechInnovation Discover event in June brought together innovators and food manufacturers to discuss trends and opportunities in the dynamic food industry.

We were delighted to bring together more than 100 innovators and food manufacturers to uncover new opportunities through technology and accelerate innovation-focused business growth.



TECHINNOVATION DISCOVER - CARBON EMISSION REDUCTION

In line with the 26th Conference of Parties (COP26) and the global push towards net zero carbon emission by 2050, there has been an increasing focus on Carbon Capture, Utilisation and Storage (CCUS) and technologies that would enable us to achieve this goal.

Jointly organised by IPI and Enterprise Singapore, this in-person forum in August allowed attendees to learn more about the market trends, opportunities, current technologies, and network with leaders and movers in the carbon emission reduction space.



KEY HIGHLIGHTS



DIGITAL TRANSFORMATION THROUGH INDUSTRY 4.0

Adopting new technologies and strategies is no easy feat. To address some common challenges faced by businesses, IPI organised a “Digital Transformation through Industry 4.0” workshop held in September, which aimed to direct local businesses towards sustainable transformative practices.

The event began with a panel discussion that explored the Singapore Smart Industry Readiness Index (SIRI), a three-part framework designed to ensure inclusive digital transformation across industries and companies. Participants could choose between specific breakout sessions to join in, with the themes revolving around Supply Chain and Logistics, Healthcare and Food.



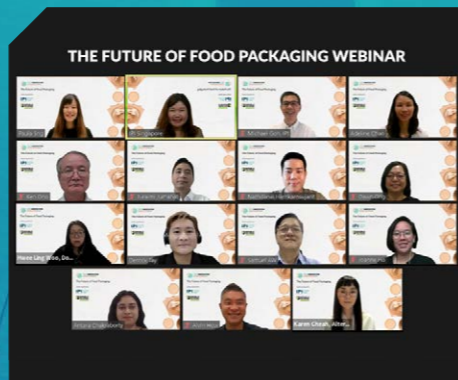
TECHINNOVATION CONNECT: CARBON FOOTPRINT MANAGEMENT IN BUSINESS THROUGH TECHNOLOGY AND AND INNOVATION

Organised by IPI, and supported by Enterprise Singapore, the TechInnovation Connect: Carbon Footprint Management in Business through Technology and Innovation event in November brought SMEs, MNCs, banks, supply chain players and tech experts together to discuss the values of carbon reduction and how companies can begin to manage their carbon footprint with the help of innovation.

THE FUTURE OF FOOD PACKAGING

Together with Republic Polytechnic, IPI co-organised a webinar on “The Future of Food Packaging” in September. Attendees were able to learn more about emerging food packaging innovations from Asia and uncover sustainable food packaging solutions as well as technologies designed for shelf-life extension to reduce food waste.

This industry-oriented webinar was also able to allow participants to explore potential co-creation collaborations in the area of food packaging.



PANASONIC CO-CREATION PROGRAMME

Through the Panasonic Co-creation Programme: Enriching Lives with Smart Solutions, selected enterprises have the opportunity to gain access to a curated pool of Intellectual Property (IP) through licensing and technology transfer with the global technology leader. These technologies can be co-developed for a diverse range of applications such as infocomms, materials, personal care, energy and more; enabling enterprises to commercialise and bring these innovative products to market.



SUCCESS STORY

From Scraps to Snacks UPCYCLING FISH WASTE INTO FOOD

In a bid to turn the top and tails of fish into quality ingredients for human consumption, Denis Asia Pacific works with IPI and the team at Sunvisiae Biotech.

In the world of tech, smartphones often take the spotlight, but beyond developing more efficiently powerful phones, the industry has also greatly improved one of life's greatest joys: food. With new technologies, farmers and suppliers have found ways to reduce food waste, one of the food sector's most pressing issues. In fact, one platform in China has helped cut food loss and fuel expenses by mapping out optimised transportation routes to farms' customers.

Through IPI, they were able to collaborate with Sunvisiae Biotech—an SME led by IPI tech expert Dr Anli Geng. Sunvisiae Biotech's expertise lies in microbial strain development and fermentation, which they initially used to generate biofuels.

Along with this, more companies in the Asia-Pacific region, such as Denis Asia Pacific, have developed novel ways to further reduce food waste. As a group, Denis focuses on meeting essential human needs sustainably and has developed technology in food, health sciences, and other consumer goods.

More recently, the group has been processing whole fish by cutting off the fish's heads and tails. However, instead of simply discarding them as unusable pieces, Denis Asia Pacific plans on upcycling these by-products full of good nutrients. While the group is well-established in both tech and food industries, they remain open to innovating to achieve their ultimate goal—turning the discarded parts of fish into food ingredients that are tasty and enjoyable. To accomplish their objective, Denis Asia Pacific connected with IPI. Through IPI, they were able to collaborate with Sunvisiae Biotech—

an SME led by IPI tech expert Dr Anli Geng. Sunvisiae Biotech's expertise lies in microbial strain development and fermentation, which they initially used to generate biofuels.

"Innovation in our company is what drives us towards excellence," shared Jimmy Yeung, Industrial Operations Director. "The sky is the limit but to reach it you must be aware of what is available. IPI is the perfect partner for us to see what is available in the innovation landscape and to connect with the innovators of today and tomorrow."

Sunvisiae Biotech recognised that their microbial fermentation technology also had uses outside of biofuels and shifted their focus

to providing consultancy services on fermented food and microbial fermentation. This new direction perfectly aligned with Denis Asia Pacific's objectives, and the two companies are now working on upcycling seafood processing waste into food and food ingredients.

Currently in the early stages of the partnership, Sunvisiae Biotech is developing a prototype to gauge the project's feasibility. Afterward, Denis Asia Pacific hopes to create scaled-up protocols they can implement in their industry.

This opportunity greatly benefits Sunvisiae Biotech as well and allows them to get better insights into the food manufacturing industry.

The company feels that working with MNCs would potentially provide them with access to high-level food manufacturers, giving them more opportunities to solve industrial problems.

Denis Asia Pacific is also confident in the partnership, stressing that "Dr Geng is knowledgeable and responsive to our requests. We are still at the early stage of the partnership, but it looks promising," said Jimmy Yeung. "During our discussion, she showed her enthusiasm in developing microorganisms and upcycling food waste via fermentation. We felt that her domain of expertise was something we did not consider initially and it was worthwhile to test it with her."



(L-R)
Steven Lee - IPI and Jimmy Yeung - Denis Asia Pacific



Jimmy Yeung - Denis Asia Pacific

SUCCESS STORY

GROUTING MADE FAST AND HANDS-FREE

Additionally, Fabrica.AI would benefit from Protoking's well-established network of contract manufacturers in China – a key advantage considering the plan to produce 50 units of the improved prototype and to kick-start revenue generation by leasing the prototype to interested contractors.

The ambition to automate an extremely labour-intensive building process saw Fabrica.AI working with IPI tech expert Mr Garrick Soon. Their goal: an improved robot prototype that could speed up the laying of floor tiles while lowering construction costs.

Fabrica.AI Pte Ltd is a local start-up on a mission to boost construction productivity with a robot designed to accelerate the tile-grouting process. The compact solution operates on LIDAR and computer vision software, which means it can recognise spatial distances and dispense grouting directly into tile gaps with sub-millimetre precision. Human intervention is further minimised with a proprietary self-cleaning mechanism, which can remove excess grouting even in hard-to-reach corners.

"The idea behind it is that manpower is only required to refill the grout canisters every two hours, as well as to change the water and carry the robot to a different site," said Mr Keefe Wayne Teo, co-founder of Fabrica.AI, explaining how his lightweight, battery-powered robot could operate in any space for up to five hours per charge.

With the likelihood of prospective customers requiring multiple units, Teo needed to produce a minimum viable product (MVP) for efficient manufacturing. "Our prototypes have been largely hand-assembled in-house using 3D



(L-R)
Keefe Wayne Teo & Jakub Suchánek - Fabrica.AI
and Garrick Soon - IPI tech expert

printed and off-the-shelf parts. We didn't have any industrial prototyping experience, and the fact that we were relying on breadboards meant the electronics and wiring were prone to malfunction. It was a debugging nightmare," he recalled.

Finding the right match

That was when Fabrica.AI was referred by Enterprise SG to IPI's vast network of technical experts. After scoping the challenges and meeting with several consultants with the relevant skillsets, Teo eventually appointed Mr Garrick Soon, an IPI tech expert and founder of Protoking Pte Ltd, to be the product design consultant. Soon's role would be to offer feedback on the initial design components, refine the product design, and advise on mass prototyping of the improved grouting robot.

An entrepreneur with deep experience in hardware design, prototyping and industrial manufacturing processes, Soon brought multiple ideas to the fore. "Garrick spotted our implementation errors quickly and bridged our

understanding between concept and an actual manufactured product. He also helped to fast-track our development process by trimming the bill of material (BOM) costs and outlining a viable supply chain for the components," revealed Teo.

Additionally, Fabrica.AI would benefit from Protoking's well-established network of contract manufacturers in China – a key advantage considering the plan to produce 50 units of the improved prototype and to kick-start revenue generation by leasing the prototype to interested contractors.

Scaling up for production

Given the labour constraints in the construction industry both locally and overseas, it was no surprise that companies were open to automation and market interest has been strong. "Many contractors such as Woh Hup, BHCC Construction, Gin Chia, Dragages Singapore, Laticrete and Soilbuild have been keen to try our solution. And so, we've had the opportunity to test our prototype at various construction sites and engage with different customers. This gave us valuable insights into the smallest operational details, leading to better design choices for our grouting robot," he added.

As project advisor, Soon applauded the team on Fabrica.AI's determination and focus. "Their clarity and commitment made it easier for me to recommend the right materials and manufacturing methods for the improved prototype, without them having to figure this out from ground zero. It is so vital to

anticipate user behaviours as part of the design thinking process, and I liked that Keefe and his team had a great vision and strategy – not only for increasing construction productivity but also in making homes more affordable for people," he said.

For Fabrica.AI, the journey will not end with the development of an improved robot prototype. Already, Teo has been offering attractive perks to encourage early adoption of his autonomous grouting solution. He elaborates: "We're offering grouting services on a contract basis, so that customers can experience and reap the benefits of automation, even before they decide to lease the robot. Our customers have nothing to lose.

"Our initial target was to boost grouting productivity by five times, with each robot working at the same pace as a human, and with each person controlling up to five robots at a time. However, the trials showed that our robots could actually grout a given space at about twice the speed of a human. As the robots get deployed, we can verify if they work well with the learnt software while the hardware can be optimised automatically in simulation. This would be the first step towards making our new robots ~100x faster to develop," Teo revealed confidently.

He also credits IPI managers, Mr Goh Siong Teck and Ms Paula Sng, for the swift assistance rendered to his team at a crucial juncture. It had taken Fabrica.AI just two months from their first contact with IPI in April 2022, to capturing the pain points, speaking to various tech experts, and signing the consultancy agreement with Protoking in June 2022.

"Siong Teck and Paula have been really supportive and responsive from the beginning, paying careful attention to our needs and matching us with the right technical experts. This has truly saved us from many detours and critical pitfalls, enabling us to work through the industrial prototyping and manufacturing processes without going in circles," Teo concluded.



(L-R)
Keefe Wayne Teo, Garrick Soon and Paula Sng - IPI

SUCCESS STORY SCALING UP GLOBALLY FOR SUSTAINABLE GROWTH

For local agrifood tech enterprise ProfilePrint, success is beyond securing patented technologies that profile and predict the quality of food ingredients on the go. Supported by IPI's strategic experts, the company also raised funds and ramped up global expansion plans to ride the growing demands for food ingredient premiumisation.



(L-R)
Peter Tay - IPI, Alan Lai-ProfilePrint and Phey Teck Moh - IPI Innovation Advisor

Can one identify the molecular signatures of food ingredients or determine if they are suitable without human sensory or sending them to a lab? With ProfilePrint's AI food-ingredient profiling technology, the answer is YES.

But that's not all. According to Mr Alan Lai, Founder and CEO of ProfilePrint Pte Ltd, beyond equipping users with the ability to rapidly ascertain the suitability of ingredients without the need to see, touch and taste, ProfilePrint aims to redefine the need for one common standard via their platform, by offering sellers and buyers the ability to transact across different standards – from the farm to destination.

It is no surprise that ProfilePrint has been highly successful since the solutions debut in 2019, given the technology's huge potential in addressing food supply chain disruptions. In fact, the solution is deployed in 27 locations across 5 continents of the world from Africa, America, Europe, China and Southeast Asia, where it serves some of the largest global traders in the food ingredients industry.

Ensuring continued success

Nevertheless, the ambition to secure a sustainable revenue stream from this core business had resulted in a meeting between Lai and Mr Peter Tay, IPI's Deputy Head of Innovation Advisory. Business transactions were brisk, Lai said, and he wanted a more



(L-R)
Phey Teck Moh and Alan Lai

targeted strategy for global business expansion and a secured income stream.

Taking guidance from IPI, ProfilePrint embarked on a journey to review its current business model and Go-To-Market plans, as well as develop a sales process to attract and convert prospects to loyal customers. No detail was spared, as the project team combed through existing customer decision processes – from the initiation of business opportunities to qualification, proof of concept and sales conversion.

Mr Phey Teck Moh, Co-founder and Partner of AngelCentral, was roped-in as the project advisor. A seasoned mentor and angel investor in Singapore's entrepreneurial scene, Phey was ready to dive into his role, bringing his deep experience in working with start-ups, advising on market-solution fit and reviewing business priorities.

"IPI was prepared to help us grow, accepting only a nominal fee as we were very cost-sensitive in the early stages. Teck Moh was a true star. He thinks deeply before offering any suggestions. By revisiting the key points at the right moments, he made sure we kept a laser focus on our objectives and desired outcomes," Lai observed.

Seeing results

Within the first three months, the ProfilePrint team established better clarity over the customer segments and key markets they wished to pursue. Results became even more evident, with the onboarding of major food supply-chain traders (like Olam, Cargill, Louis Dreyfus Company and Sucafina) as strategic customers.

Lai and team would follow-up closely on the new leads and document the use cases. "In gaining a larger customer pool, we had a greater volume of data to improve our foundational AI engine, which is the backbone of the

ProfilePrint platform. This enabled us to make further adjustments and technical developments to improve our software and hardware," he noted.

Before the year was up, ProfilePrint was ready to engage with suitable investors with its rapid growth. As of early 2022, the company successfully closed its Series A1 funding round with Cargill, bringing together five of the world's largest food ingredient conglomerates as strategic shareholders.

"I believe that IPI's advisory scheme, and especially Teck Moh's open-mindedness and global experience, have been critical to our newfound success. For now, we will continue to widen our geographical 'food-print' as well as deepen our traction with key clients to feed more and feed better globally," he added.

SUCCESS STORY

LONGER-LASTING
VEGAN GOODS FOR
OVERSEAS MARKETS

IPI connected her with the Food Innovation & Resource Centre (FIRC), a food innovation centre in Singapore that offers technical solutions and resources to food enterprises.



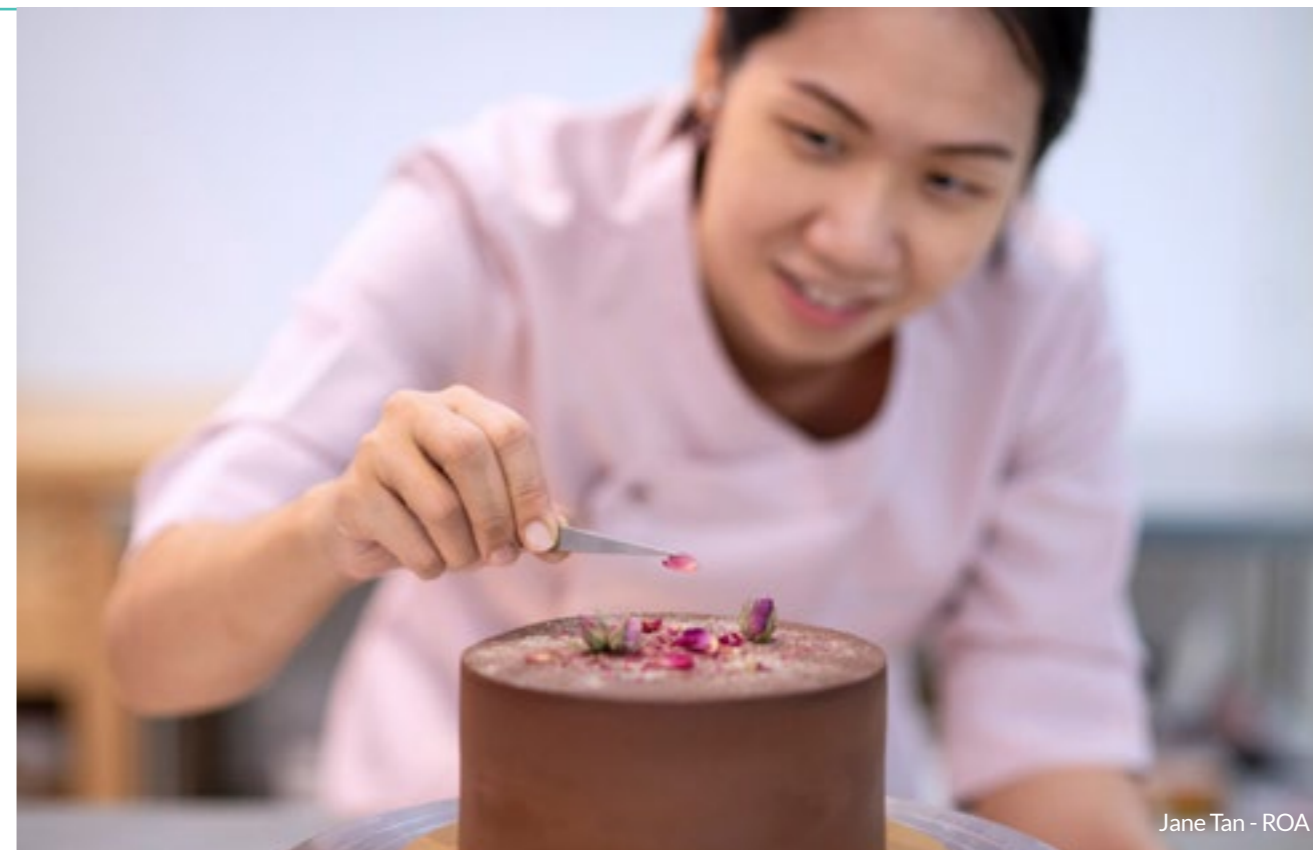
For many years, Jane Tan had a personal mission: to find a delicious birthday cake for her god-daughter. While this might sound like a simple task, Jane's god-daughter had developed allergies to nuts and eggs, and sensitivities to dairy and gluten at a young age. Hence, finding a cake for the little girl to eat safely was no easy feat.

A trip to the US made Jane realise how vegan-friendly ingredients might just be the solution she had been seeking.

A trained baker and pastry chef, she decided to take up the challenge of creating the ideal cake for her god-daughter. She spent nine months perfecting a recipe for a vegan-friendly cake that was both delicious and safe for consumption. Being able to witness the little girl's joy at indulging in desserts safely led Jane to establish RÓA, a bakery championing the belief that "dietary restrictions should not be a reason to miss out on delicious treats".

Jane learned about IPI in July 2021 when she attended the "Scaling Up your Product in the Consumer-Packaged Goods (CPG) Space" event, which IPI had co-organised with Innovate 360. She wanted to share her allergen-free pastries with a larger market, finding ways to increase the shelf life of her products and expand her customer base to the retail and export markets. She desired a packaging solution that could extend product shelf life without altering her recipe and production processes.

After having several discussions with IPI to map out her pain points, Jane realised that the optimal solution was to revamp her product formulation and develop the appropriate packaging. The next step in her journey was to find the



Jane Tan - ROA

right partner to help her, preferably one with holistic capabilities in formulating and packaging. IPI connected her with the Food Innovation & Resource Centre (FIRC), a food innovation centre in Singapore that offers technical solutions and resources to food enterprises.

While Jane had fruitful meetings with the FIRC, she was concerned about the marketability of her products as she had not established a stable customer base yet. As part of her plan to introduce her products overseas, Jane had been trying to form partnerships with two airlines, Jetstar and Scoot. Understanding her concerns, Adeline Chan - IPI's Senior Manager, Innovation & Technology, went above and beyond to put Jane in touch with both airlines.

"Giving the right assistance at the right time to our partners and wanting to succeed together with them are my greatest motivation in going that

extra mile for them," explains Adeline, demonstrating IPI's spirit in creating opportunities for SMEs to grow.

Adeline's facilitation sparked successful discussions between Jane and the airlines, boosting Jane's confidence in the market potential of her products. Jane was now ready to kickstart her collaboration with the FIRC.

Playing to their respective strengths in baking knowledge and food innovation, Jane and the FIRC have been working closely to reformulate RÓA's products while ensuring that the taste, texture and allergen-free ingredients remain intact. Starting with non-filled cookies, they are developing a recipe that will naturally make the cookies more resistant to spoilage without compromising taste and texture. They aim to create cookies with a shelf life of eight months and source for packaging that is suitable for the reformulated cookies.

Moving forward, Jane will bake her cookies according to the reformulation in RÓA and partner with an original equipment manufacturer to scale up production. As she continues innovating with the FIRC, she reflects on their collaboration so far and notes the comprehensiveness of FIRC's support. "From product development to testing, the FIRC covers a wide scope of work that you can tap into and provides you with valuable recommendations."

Jane also expresses gratitude for IPI's commitment to helping small businesses. "The advice given was targeted, useful and the connections made were helpful," she shares. "I look forward to more partnerships with IPI in the near future."



JETTERS INCZ. PTE LTD

Shaik Nafeel Bin
Shaik Nazeemuddin
Chief Executive Officer

Jetters Incz is a local company specialising in facility and drainage services. You may have seen our people doing cleaning, maintenance or landscaping operations at industrial buildings, hotels and retail malls.

Thanks to TechInnovation 2021, IPI's flagship technology brokerage event, we were introduced to emerging trends and new opportunities in food waste valorisation. I thought this synergised well with our current services for F&B clients, and we could do more to create a greener environment. Thus, I became curious about food waste valorisation technologies, particularly how food waste could be upcycled into usable and higher-value by-products. My vision is to eventually develop decentralised food waste digestors for our clients from the hotels, restaurants and catering (HoReCa) sector.

Upon learning my interest, the IPI Innovation & Technology team comprising Mr Ethan Siew and Ms Paula Sng pointed me to their white paper on unlocking value from food waste. They also scanned the innovation and technology ecosystem for potential partners with the relevant expertise in food waste management. Professor Liu Yu, an environmental engineering professor from the Nanyang Technological University (NTU)'s School of Civil and

Environmental Engineering, came highly recommended as a result of the search, given his extensive research experience and special technology for the ultrafast conversion of food waste into biofertilizers.

I liked that Prof Liu's process flow was simple and modularised, requiring no more than eight hours to breakdown the food waste (a quarter of the time required by conventional digestors). Furthermore, each treatment cycle could be completed with close to zero solid discharge.

Ethan and Paula, together with Derek Yip from the Innovation Advisory team, facilitated multiple discussions between Prof Liu and ourselves, leading to several agreements being signed with NTU. These have allowed us to tap into Prof Liu's technology, pilot our project using an existing centralised food waste digester, as well as partner with Prof Liu to commercialise his technology for our clients.

We were very excited to embark these crucial first steps towards our long-term vision for a decentralisation solution, which would ultimately lower logistics costs. Our plan would be to close the waste loop by recycling the biofertilizers as compost in parks and green spaces around Singapore.

At first, I thought it would be very complicated for an SME like us to negotiate licencing deals with a big university. But the experience was surprisingly seamless and easy, thanks to IPI who was there every step of the way until the agreements were signed. We were especially impressed with our Innovation Advisor, Mr Harish Methil, who had vast experience and a proven track record in Circular Economy and Sustainability strategies. It helped that we could benefit from IPI's full suite of services, covering both technology and business innovation. This would guide and refine our strategic business objectives, enabling Jetters Holdings to maintain our market leadership in waste management in Singapore.

More importantly, this licensing deal would allow us to expand our business solutions, and to contribute to the Singapore Green Plan to reduce landfill waste by 30% by 2030. With a robust decentralised food waste system in place, we would also be able to diversify our revenue streams and generate more green jobs for the economy.

NEEURO PTE LTD

Dr Alvin Chan
Co-Founder & CEO

Neeuro is a local tech start-up and Agency for Science, Technology and Research (A*STAR) spinoff specialising in the use of Brain-Computer Interface (BCI) technology. Simply put, we harness the potential EEG data (or brain signals) to offer wider mental health options to people grappling with neurological challenges. These include elderly patients facing cognitive decline, stroke patients, and children dealing with attention deficit hyperactivity disorder (ADHD), among others.

Since Neeuro's inception in 2013, we have come up with an array of neurotechnology products and solutions aimed at overcoming brain health challenges. Our artificial intelligence (AI) and digital therapeutics solutions are fully backed by A*STAR's clinically validated research.

Core to our technology is what we call NeeuroOS — an AI-driven platform enabling healthcare professionals, researchers and third-party developers to interpret brain signals so as to identify different mental states such as attention, relaxation, mental workload and fatigue etc. The platform is paired with our wearable SenzeBand, a non-invasive device capable of tracking one's brain activity and transmitting the signals to NeeuroOS in real time.

While we have been fortunate to collaborate with neuroscientists in A*STAR and the wider medical community, as well as distribute our

products around the world, we are always on the lookout for companies keen to integrate our technologies and algorithms into their products. Even though our technology could be applied to many target markets, our priority was to aid solution providers catering to the ADHD and ageing sector, having seen first-hand the impact that ADHD and dementia had on people's lives.



IPI's Innovation Advisory Senior Manager, Mr Derek Yip, appreciated our objectives, and after a rigorous search, introduced us to Professor Ignatius Rasiah, Programme Director for Engineering Leadership at the NUS College of Design and Engineering. His expertise, coupled with his connections and deep experience in the MedTech industry, made Prof Ignatius the right advisor to work with us on how we could address market gaps.

Through the IPI Innovation Advisors Programme, we identified and scoped the deliverables for two projects with Prof Ignatius. The first was to conduct a needs analysis in the global ADHD ecosystem, while the second was to develop an opportunity assessment

and a platform strategy for the global neuro monitoring ecosystem.

With Prof Ignatius' inputs, we accelerated the commercialisation of a home-based attention training programme, known as Cogo. Co-developed with the Institute of Mental Health, Duke-NUS and A*STAR's Institute for Infocomm Research, the solution involves improving attentiveness in children through gamification. The use of Cogo is paired with Neeuro's EEG SenzeBand 2.

Prof Ignatius' guidance was instrumental throughout the exercise. By highlighting the research gaps and guiding us in the customer journey, he helped us to see the customer pain points and make our solutions more relevant. He also provided many insights that we did not consider, which made us more aware of what we needed to do. The process was smooth and paced according to our needs and requirements.

I was especially pleased to tap into Prof Ignatius' networks in China, which was useful to understanding the market needs, assessing the competitive landscape, identifying suitable touch points and potential clients, and finetuning our processes and solutions. As programme advisor, Prof Ignatius would encourage us to bounce off ideas and directions with him — and he was great at ensuring we made the right considerations to move ahead.

The engagement with Prof Ignatius created strong value for our business plans in China, including our pilot project under a Memorandum of Understanding with Shanghai Dingbo Medical Technology Co. to penetrate the ADHD sector in Shanghai. I look forward to having him as advisor as we continue to launch improved solutions, as part of our next growth phase.

PIONEER ENVIRONMENTAL TECHNOLOGY PTE LTD

Dr Raymond Yang
General Manager/Director

Ow Chin Seng
Executive Chairman



I remember our first meeting with IPI at Singapore International Water Week in 2012. At the time, Pioneer Environmental Technology (Pioneer) was looking for a partner to evaluate the performance of ceramic membranes, found in our filtration systems for solid-liquid and liquid-liquid separation. Our company specialises in products and services for water and wastewater treatment, including the provision of unique software and hardware, turnkey waste treatment and recovery solutions, and related equipment.

In 2022, we were introduced to IPI's tech scouting service when we were looking into chemical-resistant membrane technologies for the treatment and reuse of industrial wastewater. IPI was able to offer an in-depth understanding of our needs and assessed suitable technologies and partners to address our business requirements in the membrane innovation space in Singapore.

Not only was IPI able to highlight the importance of collaboration among the different players within the ecosystem to accelerate new product development, but they also explained to Pioneer the different stages of the innovation journey including membrane chemistry development, module development and application

piloting. This prompted Pioneer to consider IPI's recommendation of a more holistic approach to partner multiple collaborators with different expertise for membrane development, module development and scale up.

Due to our limited resources as an SME, we neither had a large network of partners, nor access to the latest technologies. The IPI team were enthusiastic and helpful - merely a month into crowdsourcing for suitable partners via IPI's innovation marketplace, we managed to find Solvay, a Belgian chemical MNC with a manufacturing facility and innovation centre, in addition to a 30-year presence in Singapore. Solvay had indicated their interest to co-develop chemical-resistant polyether ether ketone (PEEK) membranes, which would complement our own R&D efforts to attain the desired properties on the substrate.

Leveraging our combined knowledge, the goal was to develop novel chemical-resistant membranes for difficult-to-treat, high-strength, solvent-containing pharmaceutical wastewaters. The membranes would have to operate under harsh conditions, such as extreme temperatures and pH levels.

By embarking on this project, we aim to broaden our offerings as a

total solutions provider in water and wastewater treatment. Deliverables for the pilot study would include demonstrating the cost-effectiveness and commercial feasibility of the membranes for pharmaceutical wastewater application. We also aim to provide improved environmental solutions for pharmaceutical clients in China, who require membrane properties that can be customised according to needs. In a market where competitors rely largely on third-party, commercial off-the-shelf products, the results of this project would provide Pioneer with an important strategic advantage.

Throughout the engagement, we benefitted greatly from the various comprehensive technical reports, coupled with the insights and analyses of our partners. We got to understand our own company from different perspectives.

I'd like to thank IPI's Innovation and Technology team, especially Senior Manager, Mr Ethan Siew, whose contributions have been invaluable as we embark on this growth chapter. If you are looking to catalyse a technical product or solution, I would recommend the tech scouting service that helps you get connected to partners who are able to translate technology into innovative solutions.

IPI Innovation
Partner for
Impact
SINGAPORE

10 Biopolis Road,
#02 -01 Chromos
Singapore 138670
www.ipi-singapore.org