

ENTERPRISE sparks

JUL - SEP 2023 >> ISSUE #38

InnovFest



ELEVATING
FOUNDERS



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Singrow's Climate-Resilient Strawberries: Savour the Sweetness, Defy the Elements

Discover the remarkable journey of Singrow, a pioneering start-up defying the challenges of climate change with their groundbreaking genomics technology.

InnovFest 2023

Pushing the Boundaries
of Ideas, Innovation and
Impact for Asia
and the world

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Enterprise

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DEPUTY PRESIDENT'S Message

Dear readers,

It is with great honour that I address you as the new Deputy President (Innovation and Enterprise) at the National University of Singapore. My previous experience as Deputy President (Research and Technology) has prepared me well for this new role. By connecting the dots between research and innovation, I hope to drive NUS forward in this exciting space!

As we navigate the ever-evolving innovation and entrepreneurship landscape, I am inspired by the exceptional talent, creativity and determination that I have witnessed within our community. NUS Enterprise has been at the forefront of building an entrepreneurial ecosystem that embraces change and empowers individuals to make a meaningful impact on society.

In this edition of the NUS Enterprise SPARKS Magazine, we celebrate the diverse and captivating stories of our community. We showcase groundbreaking ideas and remarkable start-ups like Teredo Analytics and Singrow, as well as the resilience demonstrated by those who have overcome challenges along their entrepreneurial journeys. It is through their unwavering spirit that we are reminded of the immense potential that lies within each of us.

I am particularly thrilled about the recent InnovFest 2023, the flagship tech innovation conference in Asia, where we brought together about 100 university start-ups, over 50 speakers, panellists and thought leaders and more than 5,500 visitors from across the world. By showcasing promising start-ups, InnovFest successfully bridges the gap between academic and research strengths and real-world problem-solving and commercialisation opportunities in the region. We were honoured to have Senior Minister of State for Communications and Information, Dr Janil Puthucheary, as our esteemed Guest of Honour. His visit to some of our start-ups was a true testament to Singapore's vibrant and thriving innovation ecosystem.

Our community at large has also been busy with various programmes and events. NUS, Unicorns for Good and Social Innovation Park held a forum on "Mindful

Leadership in an Age of Disruptive AI" alongside the signing of a Memorandum of Understanding, addressing the importance of ethical considerations and responsible stewardship in navigating the challenges and opportunities posed by disruptive AI technologies.

The Smart Port Challenge 2023, an annual flagship programme that connects maritime companies with tech start-ups, was also jointly launched by the Maritime and Port Authority of Singapore (MPA) and PIER71™ during InnovFest 2023.

As you read through the pages of SPARKS Magazine, I encourage you to immerse yourself in the stories, absorb the knowledge, and seize the opportunities that lie ahead. Let these pages ignite your own entrepreneurial spark and inspire you to turn your ideas into reality.

I would like to thank all the staff at NUS Enterprise, and my predecessors Freddy, Lily, and Jacob for their contributions. I hope to foster collaboration, streamline processes, and create a seamless continuum from research to innovation and entrepreneurship at NUS Enterprise. I look forward to working and engaging with each and every one of you as we embark on this exciting chapter together!



Prof Chen Tsuhan

**Deputy President
(Innovation and Enterprise)**



INNOV FEST

2023

PUSHING THE
BOUNDARIES OF IDEAS,
INNOVATION AND
IMPACT FOR ASIA AND
THE WORLD

InnovFest x Elevating Founders, the highly anticipated flagship tech innovation conference in Asia, made its return as the official start-up event of Asia Tech x Singapore (ATxSG). Organised by NUS Enterprise, in partnership with Informa Tech, InnovFest stands out as the largest tech event of its kind in the region, bringing together university start-ups, entrepreneurs and other ecosystem players from around the globe.

With a focus on pushing the boundaries of ideas, innovation and impact for Asia and the world, this year's event delved into the latest in technology and innovation advancements across three key themes: Health and Human Potential, Energy and Environment and Future of Food.

"InnovFest is an exceptional event that brings together so many start-ups, entrepreneurs and universities. By showcasing these promising start-ups from across the region, the event successfully bridges the gap between academic and research strengths and real-world problem-solving and commercialisation opportunities. This not only benefits the participating start-ups, but also propels the region's start-up ecosystem to new heights," said Professor Chee Yeow Meng, Chair of InnovFest Organising Committee and Vice President (Innovation & Enterprise), NUS.



↑ Empowering innovation and entrepreneurship with the Government, Institutes of Higher Learning, corporates and homegrown start-ups at InnovFest 2023 (from left): Professor Chee Yeow Meng, Vice President (Innovation & Enterprise), NUS; Nguyen Luong, CEO, Mindfully; Widya Putra, CEO and Co-Founder, Meatless Kingdom; Wong Liang Jie, Co-Founder, Teredo Analytics; Dr Janil Puthuchear, Senior Minister of State for Communications and Information; Professor Chen Tsuhan, Deputy President (Innovation and Enterprise), NUS; Joyce Lee, Global CIO & Global Vice President, Pharmaceuticals, Johnson & Johnson; Christian Eviston-Putsch, CEO and Co-Founder, Curated Culture; Harry Chen, Partner & Chief Marketing Officer, E3A Healthcare; and Associate Professor Benjamin Tee, Associate Vice President (Innovation & Enterprise), NUS.



INNOVFEST: BY THE NUMBERS



5,500+ visitors from across the world



50+ speakers, panelists and thought leaders sharing their knowledge



100+ companies and solutions for Health, Energy and Environment, Future of Food and Industry 5.0 from across Asia showcasing their innovations and technologies



FROM DREAMERS TO INNOVATORS: THE RISE OF YOUNG START-UPS AND ENTREPRENEURS

“NUS Enterprise has been organising InnovFest since 2009. We continue to hold this event because start-ups push the boundaries of ideas, innovation and impact for Asia and the world. Our role at NUS Enterprise is to support their vision and help them translate innovative ideas into reality,” said Professor Chen Tsuhan, Deputy President (Innovation and Enterprise), NUS, in his welcome address.



Professor Chen Tsuhan, Deputy President (Innovation and Enterprise), NUS, reiterated that partnerships, collaborations and entrepreneurship are the reasons why NUS Enterprise has continued to organise InnovFest over the years.



Professor Chen highlighted NUS Enterprise's commitment to supporting young start-ups and entrepreneurs through diverse programmes and initiatives. These include the launch of the Smart Port Challenge, an annual flagship programme under PIER71™. In addition, NUS Enterprise will form two new partnerships with the Indonesian Endowment Fund for Education Agency, Lembaga Pengelola Dana Pendidikan (LPDP) and the Vietnam National Innovation Centre (NIC) to collaborate on entrepreneurship education and start-up support.



Collaboration between NUS and LPDP Indonesia for the nurturing of Future Indonesian Entrepreneurs



A moment of celebration for NUS and LPDP who will jointly offer scholarships to deserving Indonesian students to join the NUS Master of Science in Venture Creation (MSVC) programme (from left): Agustin, Manager, Ecosystem Builder Programmes, NUS Enterprise; Associate Professor Benjamin Tee, Associate Vice President (Innovation & Enterprise), NUS; Professor Chen Tsuhan, Deputy President (Innovation and Enterprise), NUS; Nurmala Febriani, Senior Analyst, Scholarship, LPDP; Associate Professor Dwi Larso, Director of Scholarship, LPDP; Professor Chee Yeow Meng, Vice President (Innovation & Enterprise), NUS; Ari Kuncoro, Head of Communication Subdivision, LPDP; Professor Yue Chee Yoon, Academic Director (Master of Science in Venture Creation and NUS Overseas Colleges), NUS Enterprise Academy; and Claire Cheong, Associate Director, NUS Enterprise Academy.



Dr Janil Puthucheary, Senior Minister of State for Communications and Information (right) was introduced to the technologies of various NUS start-ups by Professor Chen Tsuhan, Deputy President (Innovation and Enterprise), NUS (centre). These include Curated Culture, E3A Healthcare, Meatless Kingdom, Mindfully and Teredo Analytics.

FROM INNOVATORS TO ECONOMIC DISRUPTORS: START-UPS PAVING THE WAY FOR GROWTH

Guest-of-honour, Dr Janil Puthucheary, Senior Minister of State for Communications and Information, resonated with the theme of pushing the boundaries of ideas, innovation and impact for Asia and the world. He emphasised the significant role that universities like NUS play in helping start-ups internationalise through partnership opportunities.

These partnerships provide access to new skills, knowledge, overseas markets, funding opportunities and other resources, which are particularly valuable in a small country like Singapore. "Since 2001, NUS Enterprise has nurtured close

to 3,000 start-ups and created 11 unicorns. NUS-affiliated start-ups are currently valued at USD 29 billion, equivalent to about one-third of the total valuation of Singapore's start-up ecosystem," said Dr Janil in his opening speech.

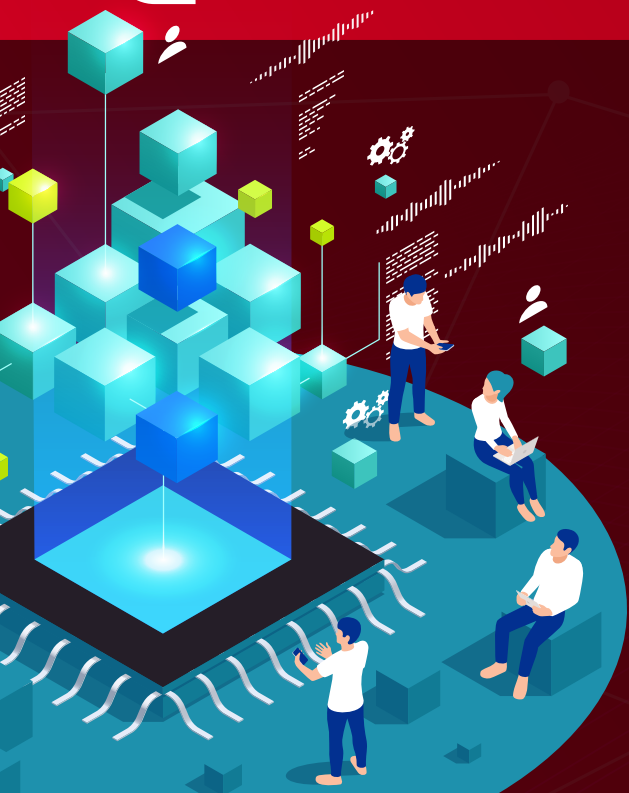
He added, "The development of the start-up ecosystem is important to the region's growth, and InnovFest serves as an important example of NUS Enterprise's commitment to nurturing and supporting university start-ups. By providing platforms for exposure to regional communities and facilitating partnerships and collaborations, InnovFest plays a

significant role in the establishment as well as the development of a robust and thriving start-up ecosystem here in Singapore."

Dr Janil affirmed that the Government also has a part to play in helping start-ups scale and grow globally, such as through their Research, Innovation and Enterprise (RIE) 2025 Plan. They will continue to foster Singapore's vibrant start-up ecosystem by leveraging the four key pieces that are already in place: Big Ideas, Talents, Capital and Infrastructure. With these initiatives, Singapore is set to become an even more dynamic hub for entrepreneurial ventures.



red hot



THE TECH REVOLUTION: EMPOWERING FUTURE GENERATIONS THROUGH DIGITAL TRANSFORMATION

Opening keynote speaker, Joyce Lee, Global CIO & Global Vice President, Pharmaceuticals, Johnson & Johnson, discussed the power of digital transformation and its impact on the entrepreneurial landscape. As technology continues to advance, it creates exciting new opportunities for start-ups to explore uncharted territories. To this end, she encouraged start-ups to be adventurous in trying new ideas, exploring different industries and working in diverse cultures and communities to foster a global perspective.

Within the healthcare sector, Joyce recognised the immense potential for innovation amidst technological advancements. "There are still many unmet needs," she noted, highlighting the existing gaps that remain to be filled. "There are several key trends in recent years that shape healthcare, and these trends will continue to disrupt and play a key role in healthcare and transform the future." She also spurred the audience to think about how they can play a role in shaping the future of healthcare — "a future where diseases are a thing of the past".



The panel, hosted by Hussein Bin Sulaiman, Manager, Ecosystem Builder Programmes, NUS Enterprise, consisted of: Sia Zong Xi, Principal, Cocoon Capital (second from left); Koh Wei Shan, Director, Quest Ventures (second from right); and Jason Su, Partner, Farquhar Capital (right).



TECH FOR GOOD: RETHINKING FOOD SECURITY, HEALTH, SUSTAINABILITY AND MORE

The latest cohort of tech start-ups from BLOCK71 Singapore, Indonesia and Vietnam, as well as industry leaders from the region, shed light on how businesses are turning to technology to solve problems in the areas of Climate, Health, Green Energy and more:

1

Who are the newest start-ups from BLOCK71 Singapore, Indonesia and Vietnam?

BLOCK71's Global Start-up Runway is a year-long programme designed to help the most promising start-ups leverage BLOCK71 and their partners' global network and scale high-impact solutions in Asia. This year, a diverse range of start-up founders spanning fintech, food tech, cybersecurity and more had the chance to present their groundbreaking solutions to a panel of venture capitalists as part of the "BLOCK71 Global Runway: Southeast Asia Demo Day". The start-ups are: CeePay; Chain; Datality Lab; Meatless Kingdom; PolyDigi; Soca AI; Spiralife; and ZenKlass.

Together, these eight tech start-ups, supported by NUS Enterprise, showcased the incredible potential that arises when passion and purpose converge, leaving an indelible mark on the region's entrepreneurial landscape.



2

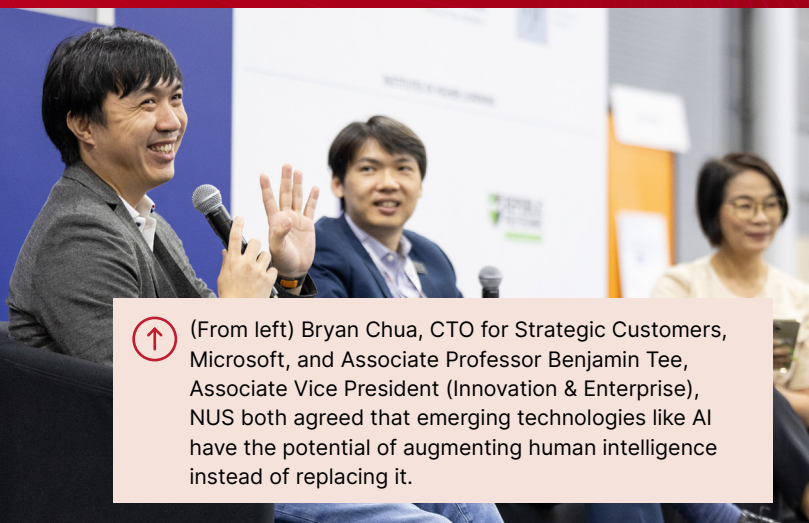
How can we advance the frontiers of human potential?

In the ever-changing digital landscape, technologies continue to reshape industries, revolutionise work processes, and unlock the vast potential within us. What is the profound impact of these technologies on our lives? How do they empower us to achieve greater productivity, creativity and innovation?

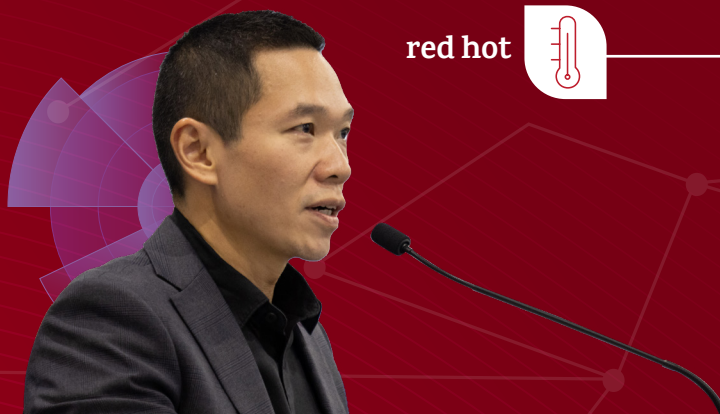
Associate Professor Benjamin Tee, Associate Vice President (Innovation & Enterprise), NUS, shared valuable insights on the increasing use of technological innovation, specifically Artificial Intelligence (AI) in the healthcare field. From administrative tasks to clinical decision support, AI enhances system efficiency and improves patient outcomes. However, along with the benefits, there are risks and ethical concerns that arise if AI is not safely designed and implemented.

Addressing these concerns, Associate Professor Tee discussed the challenge of ensuring that the data sets fed into AI models are comprehensive enough to cover all possible scenarios, even those that may be in the minority. He added, "Another challenge is that AI is a probabilistic model. It does not work a lot on logic even though it can guess logic." It is, therefore, crucial to utilise these tools while understanding their inherent limitations, just like any other technology.

Bryan Chua, CTO for Strategic Customers, Microsoft, stressed the importance of responsible AI practices. He highlighted the need for AI systems to treat all individuals fairly, perform reliably and safely, as well as undergo thorough testing in various scenarios to eliminate any potential for discriminatory actions.



(From left) Bryan Chua, CTO for Strategic Customers, Microsoft, and Associate Professor Benjamin Tee, Associate Vice President (Innovation & Enterprise), NUS both agreed that emerging technologies like AI have the potential of augmenting human intelligence instead of replacing it.



Professor Koh Lian Pin, Director of the NUS Centre for Nature-based Climate Solutions, discussed the research centre's objective to develop new methodologies and science for establishing new standards in NCS.

3

How can nature-based climate solutions (NCS) address climate change and biodiversity loss?

Nature-based climate solutions (NCS) are climate mitigation strategies that harness natural processes to reduce or remove greenhouse gases. These solutions can be categorised into three groups: protecting, restoring and improving the management of agriculture and forestry. Given the pressing issues of climate change and biodiversity loss, how can we strike a delicate balance between sustainability and development?

During his keynote session, Professor Koh Lian Pin, Director of the NUS Centre for Nature-based Climate Solutions, shared examples of NCS such as protecting threatened forests and mangroves and reforesting city green spaces. It is worth noting that tropical regions, including Southeast Asia, hold significant potential for implementing such solutions to address climate impacts. However, they also come with trade-offs that can limit their overall effectiveness.

Professor Koh emphasised the need for a holistic understanding of the benefits and limitations of nature-based solutions to better inform climate policies. "To deal with these risks and constraints, we need to continue to invest in better science and methodologies to improve our monitoring, reporting and verification of these carbon projects... At NUS, we are embarking on a new research programme to do exactly that — to develop new methodologies and science to inform the development of new standards when it comes to NCS," he added.

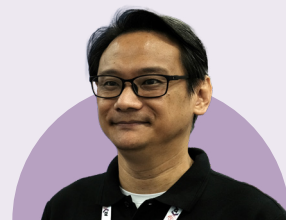


fire starter

SUPERCARGING START-UP IDEAS WITH ACCELERATION: STELLARLIFESTYLE AND TEREDO ANALYTICS

In 2022, NUS Enterprise and Stellar Lifestyle established a partnership which focused on supporting and rejuvenating retailers located within SMRT operated train station premises in Singapore. Stellar Lifestyle, as the largest managing agent of retail and advertising spaces in Singapore's rail network, aims to create an innovative ecosystem that provides resources and solutions to address the challenges faced by small and medium businesses (SMBs) operating within the transit retail network. By partnering with NUS Enterprise, Stellar Lifestyle aims to leverage the start-up ecosystem to bridge the digital gap for retailers and accelerate the connection between retailers and commuters.

The collaboration involves NUS Enterprise and Stellar Lifestyle identifying and supporting high-potential start-ups from NUS Enterprise's entrepreneurial ecosystem that have innovative technologies and solutions. These start-ups are expected to assist Stellar Lifestyle's business partners in achieving their goals, such as improving operational efficiency, uplifting technology awareness and expertise, and delivering new retail experiences that cater to commuters' preferences and interests.



Teredo Analytics is one of the five start-ups from NUS Enterprise we bring to the spotlight that embarked on an exciting journey when they joined forces with Stellar Lifestyle through Project Accelerate. The programme served as a conduit between start-ups and NUS, facilitating collaborations with Stellar Lifestyle to address their specific problem statements. In the case of Teredo Analytics, Stellar played a pivotal role by connecting them with the esteemed SMRT engineering team, setting the stage for an impactful partnership that promises innovative solutions.

TEREDO ANALYTICS: STOPPING PIPELINE LEAKS IN THEIR TRACKS WITH SMART DATA

Teredo Analytics has emerged as a pioneer in the field of leak detection and system monitoring by utilising the power of acoustics and advanced technology. With their groundbreaking products and solutions, including fixed and continuous ambient listeners, as well as remotely operated vehicles (ROV), Teredo Analytics is transforming the way pipelines are inspected and potential leaks are detected.

Liang Jie Wong and Rajat Mishra, both research engineers at NUS, crossed paths at the NUS Acoustic Research Lab, sparking a fruitful collaboration. During that time, Liang Jie was working on research in underwater acoustic data and Rajat was conducting research on autonomous underwater robotics for environmental monitoring. Joining the two forces together, both founders started discussing the possibilities of applying their research to real-world problems.





THE BIRTH OF TEREDO ANALYTICS: GRIP AND BEYOND

In 2019, the NUS Graduate Research Programme (GRIP) was launched, providing an avenue for researchers and postgraduate students to transform their ideas into deep technology start-ups. Liang Jie and Rajat seized this opportunity and joined the inaugural GRIP cohort, further refining their concept and paving the way for commercialisation. Teredo Analytics secured \$100k in pre-seed funding through the programme, and in July 2020, the founders made the bold decision to commit themselves full-time to Teredo Analytics. Liang Jie expressed his enthusiasm for GRIP, stating, "It's a one-of-a-kind program that empowers researchers to implement their ideas and start their own start-ups, opening up new possibilities for researchers."

Liang Jie reflected on the challenges faced during Teredo Analytics' early stages, including the necessity of taking a pay cut. He explained, "Personally, I made the decision to forgo a salary from the company for an extended period, allowing us to secure a longer runway. This was a crucial step that required mental resilience, as it tested our commitment to the company's growth and success. Additionally, we encountered instances where potential deals presented low-ball offers, which posed difficult decisions. We had to carefully evaluate whether accepting these deals would lead to

a pattern of undervaluing our company in future collaborations." Liang Jie's words encapsulate the difficult choices and obstacles faced by entrepreneurs, emphasising the importance of strategic decision-making and maintaining the long-term sustainability of the business.



COLLABORATING WITH PUB TO ENSURE PIPELINE INTEGRITY

During GRIP, Teredo Analytics actively sought partnerships, one of which was with the Singapore Public Utilities Board (PUB). PUB was immediately receptive to their idea, recognising the potential of Teredo's technology to revolutionise leak detection. Within the first year of operation, Teredo Analytics expanded its team and began incubating at Science Park in February 2021.

Teredo Analytics is currently engaged in three significant projects with PUB. Firstly, their ROV, controlled manually like an underwater submarine, enables thorough inspections of pipelines, detecting leaks that often occur at pipe joints, invisible to the naked eye. Secondly, Teredo Analytics collaborates with PUB on pipeline and water tank monitoring solutions, ensuring the integrity of these critical infrastructures. Lastly, the Pipeline Listener, a non-invasive R&D project, aims to monitor pipeline leaks within a 200-meter range. Pipeline leaks, ranging from fountains to wet patches on the road, pose daily risks to vehicles, motorists and infrastructure.

INSPIRATION FROM THE SHIPWORM: TEREDO'S VISION

Drawing inspiration from the shipworm, Liang Jie highlights the start-up's vision. "If you search up the word 'Teredo,' it refers to a shipworm. In the olden days, ships' harps were made of wood, and shipworms would burrow into the hull while the ship was docked. As the ship sailed away, the shipworms would unknowingly expand their reach throughout the world. Similarly, our ROVs 'burrow' into pipelines like shipworms, aiming to expand our impact beyond water pipelines and serve the entire world."



Teredo's Fixed Interval Listener is used for monitoring pipelines and can alert the user when the device registers a leak.



Beyond their collaboration with PUB and SMRT (Singapore Mass Rapid Transit) Corporation, Teredo Analytics is actively pursuing projects with other government agencies. Negotiations are in the final phases, signaling potential expansion and growth opportunities. Moreover, the company is eyeing overseas markets, with plans to commence trials in Malaysia later this year. Teredo Analytics is determined to make its mark on a global scale, revolutionising leak detection and system monitoring across industries.



For start-ups interested in the programme, the upcoming cycle for start-ups to seek collaboration opportunities with Stellar Lifestyle is scheduled for the second quarter of 2023.



NUS, Unicorns For Good and Social Innovation Park hold inaugural forum on “Mindful Leadership in an Age of Disruptive AI” in conjunction with MOU signing ceremony



The MOU was signed by (first row, from left): Ms Penny Low, Founder and President of UFG and SIP, and former Member of Parliament; Professor Chen Tsuhan, Deputy President (Innovation and Enterprise) of NUS; and Mr Khong Kwok Wai, Director of SIP. Witnessing the signing ceremony was Ms Gan Siow Huang, Minister of State for Education and Manpower (second row, third from the left).

How can mindful leadership help organisations navigate ethical challenges posed by disruptive AI technologies? How can we balance the potential benefits of AI with the concerns surrounding data privacy and security?

On 18 May 2023, NUS, Unicorns For Good (UFG) and Social Innovation Park (SIP) co-organised an inaugural forum on “Mindful Leadership in an Age of Disruptive AI”. At the forum, esteemed speakers from diverse sectors engaged in discussions on the vital role of mindful leadership in effectively navigating the challenges and opportunities presented by disruptive AI technologies. They also shared insights on how business leaders, innovators, and entrepreneurs can act as responsible stewards, leveraging AI and other technologies to drive positive transformations for society and the world.

“Innovation is everyone’s responsibility, (whether you are developers of technology or governors of ethics,” said Prof Chen. When it comes to designing, developing, and deploying emerging technologies like AI, both businesses and individuals have an enormous responsibility to adopt a balanced and mindful approach — one that maximises their potential for good while minimising potentially adverse social, ethical and environmental concerns, he added.

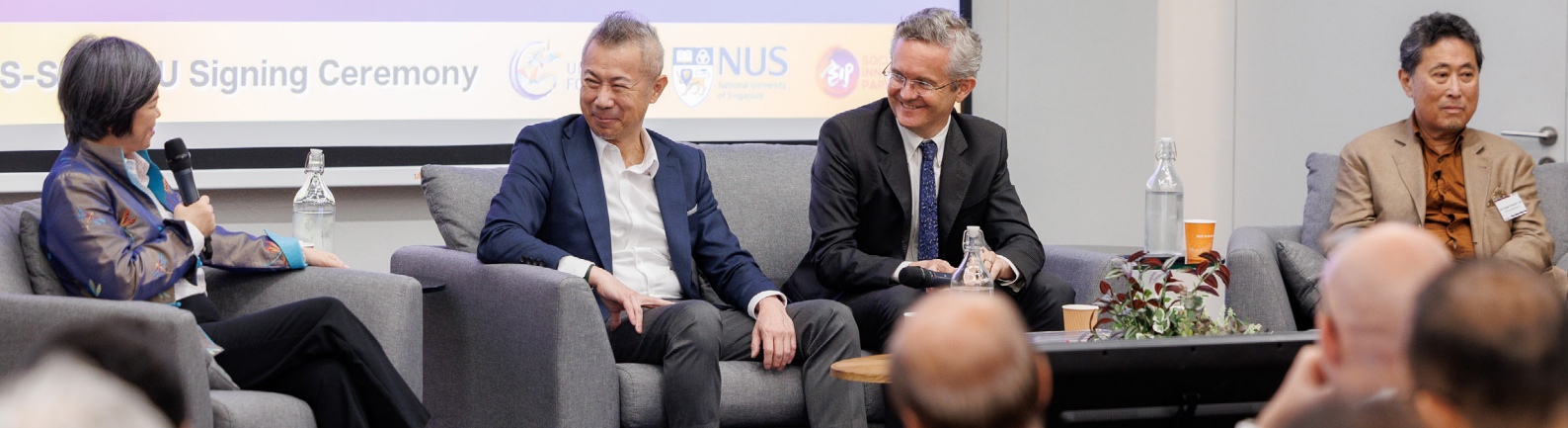
Ms Low emphasised that in an age of technological disruption, a more equitable and ethical society can only be built only through collective commitments and actions. “It is not just the engineers who need to come together. In fact, the sociologists, the psychologists — all hands must be on deck — not just in terms of coming up with guidelines, but also taking personal responsibility in using and navigating some of these (new technologies),” she said.

EE YOOH
artner,
ulture Capital

MR CHAVALIT FREDERICK TSAO
Chairman, IMC Group;
Founder, Octave

PROF SIMON CHESTERMAN
Vice Provost, NUS;
Senior Director, AI Singapore

S-S
U Signing Ceremony



(From left) Ms Low, Prof Chen who is also Chief Scientist at AI Singapore, Professor Simon Chesterman, Vice Provost (Educational Innovation) at NUS and Senior Director (AI Governance) at AI Singapore, and Mr Frederick Chavalit Tsao, Chairman of IMC Pan Asia Alliance Group, and Founder of Octave, were among panellists at the forum on “Mindful Leadership in an Age of Disruptive AI”.



Continue reading to gain deeper insights into mindful leadership in an era of disruptive AI:

What is AI and generative AI?



AI, which stands for Artificial Intelligence, is all about making computers perform tasks that usually require human intelligence — it is akin to giving them a brain to think and solve problems. AI is applied in many things we use or do everyday without us even realising it. For example, when we unlock our phones using our faces, that is AI in action.

On the other hand, generative AI is a branch of AI that focuses on creating content or data including images, text, music and other types of media. It uses machine learning algorithms to learn from existing content or data, identify patterns and create new things based on what it learned.

Generative AI can bring positive changes by boosting creativity and productivity, but it is essential to recognise its potential negative impacts. Apart from concerns about misuse, deception and other ethical dilemmas, the technology could divide our society. With the growing reliance on AI as the primary source of knowledge, there is a possibility that our society will become more disconnected.

Over time, this technological divide can widen the gap between those who have access to AI tools and can benefit from them, compared to those who have limited access and may be left behind. Therefore, it is important to understand that while AI presents significant growth opportunities, we must navigate it carefully due to the ethical challenges it poses.

What is the impact of AI, specifically generative AI, on society and individuals?



Will AI take over humanity? Have technology breakthroughs made AI more formidable?



In some ways, AI already has taken over humanity. The way algorithms are designed can control what we see, think and believe. They are programmed to gain our trust through things like face recognition and voice assistants like Siri. So, the real concern is how AI could undermine our democracy and freedom of speech.

AI-powered algorithms can also make misinformation spread faster, making it harder to decipher what is true and what is not. They can create filter bubbles that limit our exposure to different opinions, and even put our privacy at risk. That is why it is important for engineers and policymakers to work together to make AI more ethical, inclusive and regulated. We need to ensure that AI benefits society without undermining our values and rights.

According to the book “Quantum Leadership: New Consciousness in Business” by Frederick Chavalit Tsao and Chris Laszlo, our consciousness is our capital. They compare technology and evolution to fire and emphasise the need to be aware and mindful of it.

When it comes to AI and its impact on businesses, if we are overly closed-minded and fearful of the potential risks it poses, we might miss out on the opportunities it can offer. By practicing mindfulness, businesses can actively recognise and tackle ethical concerns while also being conscious of the potential benefits it brings.

We talked about the impact of AI on society and individuals. What about businesses?



What are some ethical guidelines to consider when navigating AI? How can we, in the process, safeguard our humanity?



It is important to understand that AI itself is not inherently harmful. Think of it like a road filled with autonomous vehicles — it would be safe. The real issue arises when humans are in control, introducing the potential for human judgment errors alongside technological mistakes.

Likewise, the concerns surrounding AI arise from how humans interact with and manipulate technology. For example, we have ChatGPT, a chatbot that uses natural language processing to simulate human-like conversations. On the other hand, there is ChaosGPT, an AI chatbot created to raise awareness about the potential threats of AI if not used responsibly.

Therefore, the key message is that completely banning AI is not the most effective solution. Instead, we need to learn how to integrate it into our human systems. To ensure a smooth and responsible integration, engineers, policymakers, sociologists and psychologists all play vital roles in making AI a safe tool for everyone.

The forum coincided with the signing of a Memorandum of Understanding between NUS, UFG and SIP. This agreement marks the beginning of a significant partnership between the three parties to champion impact leadership for start-ups and innovators by harnessing the power of technology for the greater good.

Charting the future waves:

Advancing key industry issues and exchanging ideas at the Singapore Maritime Week 2023

The Singapore Maritime Week (SMW) 2023 is an annual event where the international maritime community comes together to collaborate, address industry issues and create new ideas. Organised by the Maritime and Port Authority of Singapore (MPA), with the involvement of industry stakeholders and research and educational institutions, SMW 2023 brought together key opinion leaders and industry leaders through a dynamic array of conferences, dialogues and forums. Held at the Marina Bay Sands Expo and Convention Centre from 24 to 28 April, this year's theme was "Ambition Meets Action", emphasising collective efforts towards decarbonisation, innovation, talent development and more.

In conjunction with SMW 2023, Sea Asia, organised by Informa Markets and the Singapore Maritime Foundation, served as the anchor maritime conference. It marked a significant milestone as the first large-scale industry exhibition since the pandemic. The event featured over 400 exhibitors and attracted an estimated attendance of nearly 18,000 local and international maritime professionals from more than 90 countries, boasting a remarkable presence and establishing itself as a bustling gathering from the get-go.

The MarineTech Pavilion at Sea Asia provided a platform for PIER71™ and its Smart Port Challenge start-up alumni, including eyeGauge, GotSurge, Moorio, mVizn, MarinaChain, Seadronix Corp and SunGreenH2, to exhibit their cutting-edge innovations. They warmly welcomed the Vice Mayor of Rotterdam and its delegation, representatives from the embassies of France and Belgium, maritime corporates, investors and other industry stakeholders. It was also a valuable opportunity for them to highlight their impressive advancements in innovation and market progress.



Brian Koh, Director of Ecosystem Builder – Business Development, NUS Enterprise welcomed Robert Simons, Vice Mayor, Rotterdam, Allard Castelein, CEO, Port of Rotterdam and the Rotterdam delegation at the MarineTech Pavilion.



PIER71™ START-UPS GREEN COP AND MAGICPORT JOIN THE COASTAL SUSTAINABILITY ALLIANCE

As part of SMW 2023, two PIER71™ start-ups, Green COP Pte Ltd (Smart Port Challenge 2022 alumni) and MagicPort (Smart Port Challenge 2021 alumni), have signed MOUs as new members of the Coastal Sustainability Alliance. This significant event took place on 25 April 2023, in the presence of Mr Chee Hong Tat, Senior Minister of State for Finance and Transport, during the opening of Sea Asia 2023 and the MarineTech Conference.

As members of the Coastal Sustainability Alliance, Green COP and MagicPort will actively contribute to the alliance's objectives and accelerate decarbonisation efforts in the shipping industry. Green COP will focus on developing and commercialising sustainable second-generation biofuels as part of the Coastal Logistics Ecosystem's transition plans. They will also work on creating innovative processes for generating second-generation biofuels as a transitional fuel for conventional harbor craft. On the other hand, MagicPort aims to develop and implement a coastal logistics platform that enables stakeholders to optimise and decarbonise the global coastal supply chain. Their efforts will include the development and deployment of optimised vessel scheduling and fleet deployment algorithms, enhancing the utilisation of PaxOcean electric harbor craft.

The signing of these MOUs signifies a significant step towards promoting sustainable practices within the maritime industry. We look forward to witnessing the positive impact that Green COP and MagicPort will make as members of the Coastal Sustainability Alliance.



↑ The new members of the Coastal Sustainability Alliance (CSA) displayed their MOU certificates at the MarineTech Conference at Singapore Maritime Week 2023: (Second row, first from left) Hanson Lee, CEO, Green COP; (second row, fifth from left) Sonny Tyan, Company representative, MagicPort.



↑ Maritime corporates, VCs and start-ups commemorating a successful Norway-Singapore collaboration



↑ Yong Rui Yuan, Head of Stack Manufacturing, SunGreenH2, spoke on Channel News Asia evening news segment.

PIER71™ COLLABORATES WITH NORWEGIAN BUSINESS ASSOCIATION ON A B2B MATCHMAKING SESSION ON DIGITALISATION FOR DECARBONISATION

The inaugural "Innovation to Zero" initiative, in collaboration with Team Norway consisting of the Norwegian Business Association, Innovation Norway, the Norwegian Embassy, and Chambers of Commerce, was launched by PIER71™ during SMW 2023. The aim is to create an exclusive ecosystem that brings together Norwegian maritime corporates, venture capitalists, and start-ups, with a focus on digitalisation-for-decarbonisation.

Ning Png, Programme Manager of PIER71™, NUS Enterprise, discussed the entrepreneurial mindset and the role of start-ups in driving innovation and decarbonisation in the maritime ecosystem. Meanwhile, participating start-ups from the Smart Port Challenge alumni, including EcoWorth Tech, eyeGauge, Green COP, Moaah, MarinaChain, Seadronix, SunGreenH2, and WeavAir, had the opportunity to engage in a round-robin B2B matchmaking session. This allowed them to directly interact with decision-makers from renowned Norwegian maritime corporates such as BW, DNV, Odfjell, Kongsberg, Wilhelmsen and others, validating their innovations and potentially securing follow-up meetings.

The positive feedback received from the event sets the stage for continued engagements and emphasises the commitment to driving the maritime industry towards a sustainable future.



In a world where climate change poses significant challenges to agriculture, one company stands out for its groundbreaking solution—Singrow's climate-resilient strawberries. Singrow's innovative genomics technology has not only defied the elements but also delivered strawberries bursting with sweetness, ensuring a delectable treat regardless of environmental conditions.



A scientist with a passion for innovation, Dr. Bao Shengjie embarked on a mission to revolutionise the urban farming industry. The inspiration behind Singrow emerged from Dr. Bao's experience with strawberries that tasted dramatically different from what he had known before. Digging deeper, he discovered that premature harvesting to accommodate long shipping times and the availability of a sour-tasting strawberry variety were the culprits. "When I first arrived in Singapore about 10 years ago, I noticed that strawberries here tasted drastically different from those I had before. As a scientist, I looked into this through my microbiology lenses and found out two main reasons for the taste: One, strawberries sold here have been harvested prematurely in order to accommodate the long shipping time to arrive in Singapore. Secondly, the strawberry variety available here is the one that has a longer shelf life, but sour in taste (ever-bearing variety)" said Dr Bao.

Savour the Sweetness, Defy the Elements Singrow's Climate-Resilient Strawberries

Founded in 2019, Singrow set out to equip the agricultural industry with cutting-edge plant-science-based technology solutions. Leveraging advanced genomics techniques, the company harnessed a deep understanding of plant genomes to enhance crop nutrition, increase yield, and create varieties that were resilient against diseases and climate challenges.

NUS Enterprise, an integral part of their success story. Beginning as participants in the NUS Graduate Research Innovation Programme (GRIP), Singrow received invaluable assistance that laid the foundation for their growth. Later, Singrow found a nurturing environment within the NUS Agritech Centre, granting them access to state-of-the-art R&D equipment



Through years of intensive research and innovation, Dr. Bao and his team employed genome-editing technology to enhance specific gene qualities within strawberries. "Singrow uses advanced genomics technology that leverages deep understanding of plant genomes to improve crop nutrition and yield with varieties that are also disease and climate resilient. These methods are more productive than conventional breeding" explained Dr. Bao. The outcome was a strawberry variety that thrives in tropical climates, exhibits increased disease resistance, and offers a delightful alteration in sweetness profiles. Singrow Strawberries quickly became a symbol of Singrow's pioneering spirit and dedication to revolutionising the agricultural landscape. Singrow's journey was propelled by the support and guidance provided by

and fostering collaborations with like-minded researchers.

Dr. Bao, reflecting on his personal challenges as a start-up founder, acknowledged the transition from being a formal researcher to a business entrepreneur. Throughout his entrepreneurial journey, Dr. Bao also recognised the need to prioritise assembling a talented and dedicated team, as the success of a business hinges on the collective expertise and shared vision of its members.

Looking towards the horizon, Singrow has ambitious plans to expand their revolutionary technology beyond strawberries. Their focus includes developing new crop varieties such as rice, sustainable palm oil, and staple vegetables, aiming to transform the agricultural landscape and contribute to global food security.



NUS GIVING
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CHAMPION GENDER DIVERSITY



Empower women to become leaders in STEM-related fields



The NUS for Women initiative aims to nurture and empower next-generation women leaders in STEM (science, technology, engineering and mathematics) fields. Through this meaningful initiative, we aspire to improve gender diversity and inclusion of female STEM talents in all professions and sectors, and ensure they receive the vital support needed to succeed in their fields.

Find out more at nus.edu.sg/nusgiving/nus-for-women.

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- **Mentorship programme** pairing women leaders with female NUS students
- **Scholarships** for women NUS students



NUS SECURED ONLINE GIFT PORTAL

Please check that the QR code leads you to a webpage with a URL that starts with "bbis.nus.edu.sg" and a padlock icon.



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1. Launch your mobile banking application.
2. Tap on "Scan & Pay" and scan the PayNow QR Code.
3. Key in the gift amount.
4. Under UEN/Bill Reference Number, key in <DA042-NRIC/FIN/UEN>. Donors who do not provide their Singapore Tax Reference Number (i.e. NRIC/FIN/UEN) will not be able to enjoy tax deduction.



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bright ideas

This is Home, Grown

National Day

As we gear up to celebrate the spirit of Singapore this National Day, what better way to show our support than to embrace the innovative products from our homegrown entrepreneurs? We have delicious treats made from re-purposed soy pulps, limited-edition sneakers, plant-based culinary delights and our very own lifestyle gaming brand!

Soynergy's Fibreworks Cookies

Soynergy is a start-up that aims to create a biotech platform that converts food by-products into functional foods, leading the way for zero-waste food manufacturing and sustainable food for all.

Their Fibreworks Cookies have 25 per cent less sugar and high-fibre content, offering a delicious guilt-free snacking option. What's more notable is their use of Okara, a by-product derived from soy pulp waste. You can find their cookies at MUJI Plaza Singapura and MUJI Jewel Changi Airport in the dedicated MUJI x Sustainable Local Products section.

Fibreworks Cookies (60g)

\$5.90



Razer's Seiren Mini – Ultra-compact Streaming Microphone

Their slogan is "For Gamers, By Gamers", but did you know that Razer was founded by a Singaporean gamer? This local brand has built the world's largest gamer-focused ecosystem and is recognised as the leading brand for gamers in the US, Europe, and China. The Razer Seiren Mini is an ultra-compact streaming microphone that takes your gaming and streaming experience to new heights. Whether you are engaging with your audience during live streams or creating content for your gaming channel, this microphone delivers crystal-clear audio that enhances your presence.

Razer Seiren Mini, ultra-compact Streaming Microphone (Comes in Black, Mercury and Quartz)

\$79.90



\$397



Novelship's Air Jordan 1 Retro High OG 'Lost & Found'

Explore a wide array of limited-edition sneakers, brand-worthy streetwear, and rare collectibles from popular international brands from Novelship. Their mission is to curate Asia's largest collection of in-demand sneakers and collectibles whilst prioritising the local market and guaranteeing seamless transactions and quick deliveries.

One of their standout items that captures the essence of both style and national pride is the Air Jordan 1 Retro High OG 'Lost & Found.' Its striking red and white colour scheme not only pay homage to our national colours but elevates any outfit you might wear!

Novelship's Air Jordan 1 Retro High OG 'Lost & Found' (\$397)

Alchemy FoodTech's Alchemy Fibre for Rice

Want to indulge in the variety of food Singapore has to offer without compromising your health? Alchemy Foods is here to ensure that every bite you take is both delicious and nourishing.

Alchemy FoodTech collaborates with various establishments in bringing their expertise in formulating plant-based fibre blends to improve the health benefits of staples such as rice and sugar. Say goodbye to the guilt of enjoying your favourite dishes this National Day, as Alchemy FoodTech's innovative formulations help lower glucose release levels while providing high fibre and prebiotics.

Alchemy Fibre for Rice [250g]

\$10.70



NEWSFEED



eFishery, Indonesian aquatech firm, has become Indonesia's latest unicorn after raising US\$108 million in a Series D funding round led by 42XFund, according to regulatory filings. The valuation for eFishery has since more than tripled, from US\$407 million pre-funding to US\$1.3 billion post-funding. The Indonesia-based start-up offers access to technology, feed, financing and markets for fish and shrimp farmers in the island archipelago. Based on eFishery's 2021 impact report, the start-up has disbursed over 70 billion rupiah (S\$6.3 million) with over 6,000 fish and shrimp farmers, groups and cooperatives part of their ecosystem.

ProjectEx, an exclusive collaboration between deep tech start-up **Cellivate Technologies** and handbag designer Adrian Furstenburg, is looking to raise a pre-seed round of US\$1 million to hire a core team of experts and develop leather from animal skin as their Minimum Viable Product (MVP). Unlike other cell-based leather firms, ProjectEx is solely focused on exotic leathers using proprietary technologies. The innovative lab-grown leather concept also recently earned international acclaim, winning the esteemed Vogue Singapore Innovation Prize in partnership with the Singapore Fashion Council.

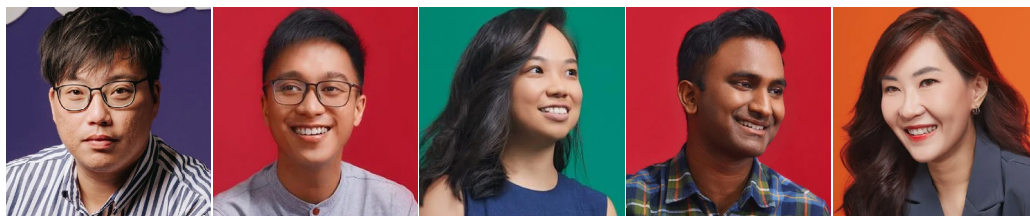


Business magazine Forbes has released its eighth annual 30 Under 30 Asia list, which features young entrepreneurs, leaders and trailblazers — all under the age of 30 — across the region. One of them is Vishnu Saran, CEO and Founder of **Invigilo Technologies**, Singapore's leading AI video analytics solution provider for workplace safety. It has forged partnerships with Singapore regulatory bodies like the Housing & Development Board and the Land Transport Authority, actively advocating for the adoption of advanced technologies on high-risk construction sites.

Alchemy Foodtech, a venture-backed, multi-award-winning, Singapore-based carbohydrates and sugar reduction food technology company, announces the launch of Alchemy SweetFibre™. Alchemy SweetFibre™ is a sweetener created under the proprietary Alchemy Technology™. Like sugar, it dissolves easily in water and can be made into a clear sugar syrup. Alchemy SweetFibre™ is sugar-free and high in dietary fibre and prebiotics. When replacing sugar with SweetFibre™, it helps to reduce sugar and calories while increasing dietary fibre content.



The annual Gen.T List recognises 300 Leaders of Tomorrow shaping Asia's future. Congratulations to these trailblazing entrepreneurs, creatives and young leaders from the NUS Enterprise community for making the list (from left): **Jonathan Lim**, Co-founder and CEO of Oddle, NOC & BLOCK71 Alumni; **Lim Wei Jie**, Co-founder and director of Foreword Coffee Roasters, NOC Alumni; **Yeoh Wan Qing**, Co-founder of Hatch, NOC Alumni; **Vishnu Saran**, Founder and CEO of Invigilo Technologies, NOC & BLOCK71 Alumni; and **Vivian Lee**, Co-founder and CEO, Go!Mama, BLOCK71 Alumni.



To recap past NUS Enterprise events and stay apprised of those upcoming, please refer to the following QR code.



RECENTLY REPORTED FUNDING & ACQUISITIONS IN OUR START-UP COMMUNITY:

- Zuzu Hospitality: Series B; US\$9 million
- eFishery: Series D; US\$108 million
- Kyan Therapeutics: Pre-series A; US\$5 million
- Groundup.ai: Seed Round; US\$1.8 million
- Mito Health: Seed Round; US\$1.3 million

All info based on public news sources.



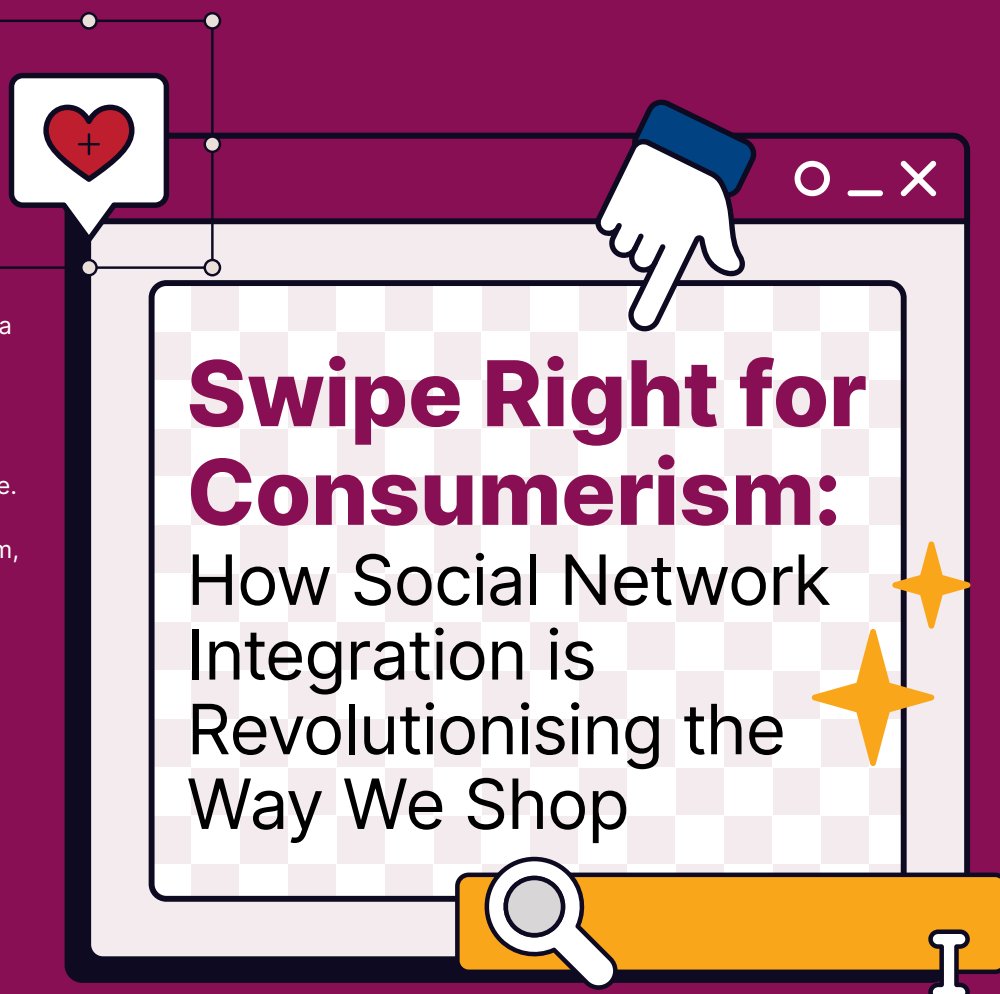
HOW HAS SOCIAL MEDIA INTEGRATION IMPACTED CONSUMERISM?

With the integration of social media and e-commerce, social media platforms have become online marketplaces that entice us with the promise of instant gratification and seamless shopping experience. Consumers can now shop directly on popular platforms like Instagram, Facebook and TikTok. Facebook was the first to introduce the “buy” option in 2014. According to Accenture, 44% of the world’s population uses social media, with consumers spending an average of two and a half hours per day on these platforms. The social commerce market is expected to grow three times faster than traditional e-commerce over the next four years.

According to Eric Dahan, CEO and Co-founder of Open Influence, the key to social commerce is to be real and human. Instead of advertising, it’s important to find an entertaining angle that people would enjoy.

Business Insider defines social

media shopping as anything from in-app purchases made on platforms such as Facebook and Instagram on brand or influencer pages or via livestream shopping channels. The most recent implementation of social commerce is on TikTok, where users can go live and sell products in real-time. These highlight the evolution and impact these integrations have on our shopping habits.



Swipe Right for Consumerism: How Social Network Integration is Revolutionising the Way We Shop

Platform	Facebook	Instagram	TikTok
Background Information	Facebook Marketplace was launched in 2016 as an online space dedicated for users to buy and sell their items. In 2020, Facebook Shop was added.	Instagram Shop was introduced in 2020, with recent improvements made to implement product tags, storefront and product descriptions.	TikTok Shop was recently launched in 2021. The shopping features are still in the experimental and expansion phase where more users are starting to purchase on the platform.
Audience Base (Monthly active users)	2.98 billion	2 billion	1 billion
Demographic	25 – 49 years old 44% Female & 56% Male	18 – 34 years old 57% Female & 43% Male	16 – 24 years old 49.3% Female & 50.7% Male
Content	Curated and carefully edited content ranging from: - IG post - Carousell posts - IG Reels - IG Live	Reproducible content in a more casual setting based on trends and challenges: 30-second to 3-minute videos - Picture slideshow - TikTok live	Informational and more review-based content: - Standalone pictures - Long-form captions - FB videos - Album collage of pictures



SO, HOW CAN BUSINESSES CAPITALISE ON THE RISE OF SOCIAL COMMERCE AND BENEFIT FROM IT?

China has emerged as a frontrunner in the wave of social commerce, particularly in the realm of live commerce. It has made a huge impact on the retail industry by generating major sales. According to McKinsey Digital, it was surveyed in 2020 that two-thirds of Chinese consumers stated that they had bought products via livestreams. We are witnessing a global trend as evidenced by recent efforts made by TikTok to encourage users in various countries like Singapore, Canada and the US. Other platforms like Facebook have already been embracing the concept of using social media livestreams to sell products. In Singapore, the trend of celebrities utilising Facebook and TikTok Live to sell products has gained significant traction. Prominent personalities like Pornsak Prajakwit, alongside several other well-known celebrities, have ventured into the world of live commerce,

leveraging their influence and reach to promote and sell various products directly to their audiences.

Social commerce has the potential to greatly impact small businesses by offering them opportunities to expand their brand and reach a wider consumer base. To make the most of each platform, it's important to understand the content and advertising options they provide. Many small businesses have leveraged platforms like TikTok and Instagram. This is because platforms like TikTok make it easy for small creators and businesses to gain traction and visibility. This in turn encourages consumers who are invested in their personal branding to follow their other social media accounts. Here are some small businesses that have successfully boosted their visibility through social commerce on TikTok

CHERURYSTALS – SINGAPORE TIKTOK CRYSTAL SHOP

Cherucrystals, owned by Cheryl, has gained a significant following through weekly live sales on TikTok. The growing popularity of crystals in mainstream culture has helped boost

the business and increase sales. Besides, people love sharing their crystal hauls and discussing the benefits of crystals, which has contributed to the trend. During her live sales, Cheryl showcases a diverse range of crystals and crystal bracelets to attract real-time purchases. She also goes the extra mile by engaging with her audience through videos of order packing, behind-the-scenes glimpses, and wholesale packages, creating curiosity and building trust in her brand. As a result, her weekly live sales attract a larger audience.



YOUTHFORIA

→ Youthforia BYO Blush went viral for its skincare benefits and colour-shifting properties.

Youthforia gained worldwide attention in early 2022 with their viral product, BYO Blush. While color-changing products are not new in the beauty industry, they are mostly associated with lip products. This gave Youthforia an advantage in standing out.



Founder Fiona Co Chan also capitalised on the "Clean Girl Aesthetic" trend on the internet and positioned her product as a must-have for achieving the coveted dewy makeup base. One of the biggest selling points was how her blush oil is essentially "makeup that acts like skincare which you can sleep in". Positive reviews from popular beauty influencers further amplified the product's

popularity, resulting in many TikTok users trying it out.

The brand has since expanded its product line, including new offerings like primer, cleanser and setting spray.



PIER71™ Smart Port Challenge 2023 — Call for submissions!

Smart Port Challenge is an annual innovation challenge organised by PIER71™ to attract start-ups with breakthrough technology-driven solutions to step forward and address key challenges faced by the maritime industry. This year, there are twelve challenges statements spanning five key categories: **Smart Port; Smart Ship; Smart Maritime Services and Supply Chain; Green Technology** and **Decarbonisation; and Crew Safety, Training and Well-being.**

Whether you are a technology start-up based in Singapore or overseas, we want your ideas. This is your chance to revolutionise the maritime industry — submit your proposals by **31 July 2023.**



Mentoring and coaching



Access to maritime corporates, investors, venture capitalists, entrepreneurs and other PIER71™ partners



Opportunity to address real challenges and identify customers



Access to workshops and masterclasses conducted by industry veterans and domain experts



Product and business model validation



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Cash prizes for top three winners



Sponsored residency at PIER71™'s Landing Pad



Branding and media exposure



Find out more



About PIER71™



About Maritime & Port Authority of Singapore (MPA)

Have a question? Reach out to the PIER71™ team at enquiries@pier71.sg.



Founding Partners



Enterprise

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