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Double anniversary celebrations for NUS Overseas Colleges (NOC) and BLOCK71

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This issue's trailblazers: Invigilo Technologies and NUS Alumni Ventures (NAV)

Read more on how Invigilo is transforming the future of safety through their technology and how NAV connects Angels in the NUS Enterprise ecosystem!

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FEATURES

NUS National University of Singapore Enterprise

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All photos used are either file photos, were taken pre-COVID, or were taken in accordance with the prevailing COVID regulations at the time.

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Note

Dear Readers, I am excited to share with you all stories of celebration and innovation in our SPARKS Issue 36! This is my 2nd time writing and editing for the SPARKS magazine and I always find myself learning more and more about the NUS Enterprise ecosystem when I speak to startups, founders, alumni and staff. Being exposed to our diverse ecosystem has brought me a greater appreciation of our startup's new technologies and how they offer solutions to society at large.

In this issue of SPARKS, not only are we looking at stories of the exciting future, but we also take a step back to reminisce and celebrate our past. Our main story covers the NUS Enterprise "Out of this World" gala which celebrated the 10- and 20-year anniversaries of BLOCK71 and NUS Overseas Colleges (NOC). It was one of the largest in-person gathering Enterprise had in the last few years with nearly 500 guests attending from all over the world. For many, it was a long-awaited homecoming for BLOCK71 and NOC alumni, bringing together a diverse community of founders, investors, mentors and government from our ecosystem.

We also held various events focused on calls for innovation, one of which was the Debate for Innovation for Climate Action organised by NUS Innovation with Social Impact (ISI). In conjunction with Singapore Climate Action Week 2022, the debate brought together educators, policymakers and entrepreneurs in the sustainability field to explore whether the world can innovate fast enough to reverse the effects of climate change. NUS Enterprise also took part in the 4th edition of the Cybersecurity Innovation Day jointly organised together with the Cyber Security Agency of Singapore (CSA) and TNB Ventures along with the support of the Innovation Cybersecurity Innovation (ICE) and BLOCK71. The conference was a call for more innovative cybersecurity solutions to strengthen the nation's cybersecurity strategy.

In light of the joint anniversaries of BLOCK71 and NOC, I was also interested to hear some stories from the ground from our alumni and founders on their experiences with the programmes. I had the opportunity to speak to NOC Beijing Alumni, Charles Lee. Charles reminisced about his own journey as a student on the NOC programme, sharing his experiences of uprooting himself and working abroad. It was interesting to hear firsthand what it was like to go through the NOC programme and how it could shape the paths you take in the future. Subsequently, I had the opportunity to speak to Vanessa Ho (NOC Alumni) and Sean Ang from NUS Alumni Ventures (NAV) on their unique experience running NAV whilst working a full-time job. I also spoke to Vishnu Saran (NOC Alumni) from Invigilo Technologies (current BLOCK71 Singapore incubatee) who shared about what it means to pursue your passion and the process of turning it into a scalable venture amidst all odds.

As you turn over each page in this issue, we hope you feel proud and fascinated by the stories from our community! If you have a story from the NUS Enterprise ecosystem you wish to share, do reach out to the SPARKS team too.

Wishing you all a fruitful 2023 ahead!

Megan Ting

SPARKS Editor


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Double anniversary celebrations for NOC and BLOCK71

An anniversary gala of double celebrations was held by NUS Enterprise on 26 October 2022, commemorating 20 years of nurturing Singapore's biggest start-up founders through the NUS Overseas Colleges (NOC) and 10 years of developing Asia's most dynamic entrepreneurial ecosystem, BLOCK71. Both initiatives combined have made a significant impact in addressing the region's most critical challenges, playing a pivotal role in advancing innovation and entrepreneurship.

Themed "Out of this World" to convey an international celebration of a bold future, the gala was also a long-awaited homecoming for NOC and BLOCK71 alumni from all over the world, bringing together a diverse community of inventors, founders, investors, mentors, government and industry in the NUS start-up ecosystem.

Guest-of-Honour, University Professor and NOC founder Shih Choon Fong (third from left) cuts the themed cake featuring NOC's new mascot, baked by NOC-affiliated start-up, Whiskdom. Looking on are NUS President Prof Tan Eng Chye (first from left); former CEO of NUS Enterprise, Dr Lily Chan (second from left); and Mrs Jennifer Phang (first from right), wife of the late Prof Jacob Phang, founding CEO of NUS Enterprise.

Prof Chee Yeow Meng, Vice Provost of Technology-Enhanced and Experiential Learning and Director of NOC, extends a warm welcome to guests from all over the NUS start-up ecosystem to celebrate the occasion.

"DO WE WIN THE FUTURE AGAIN, OR LOSE IT?"

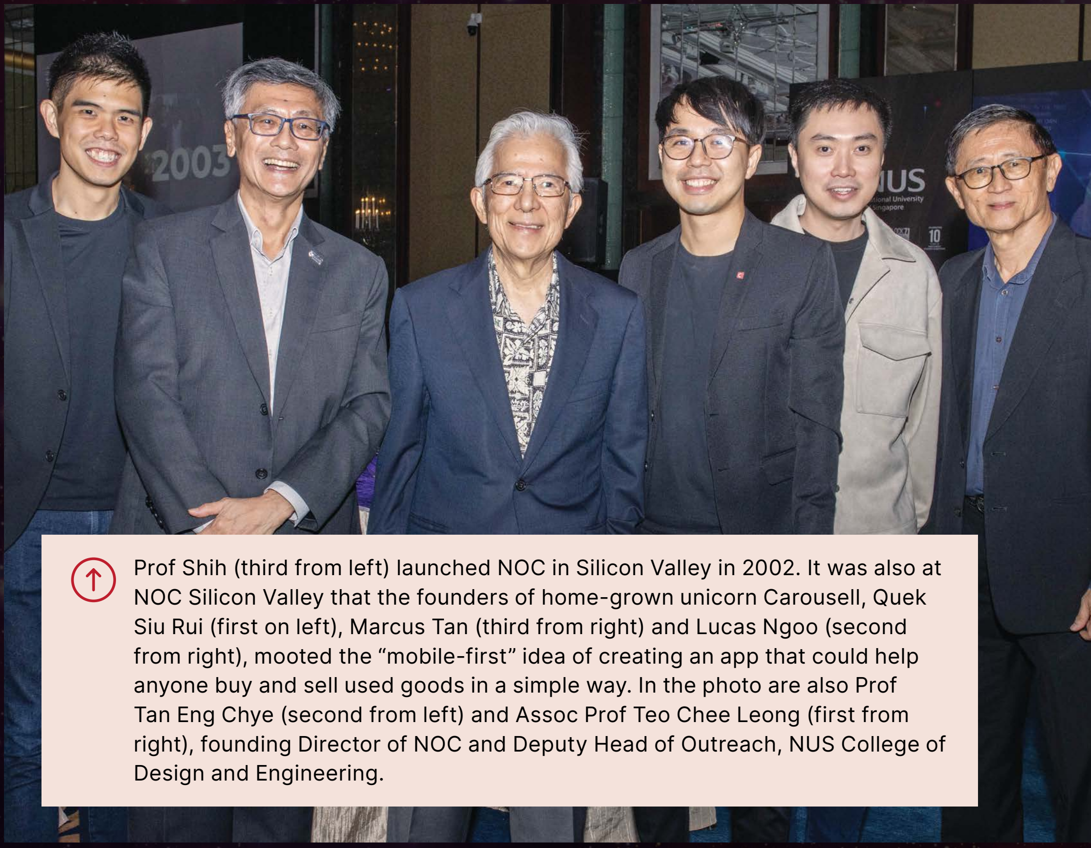
In his opening speech, the Guest-of-Honour, NOC founder University Professor Shih Choon Fong, highlighted the early roots of NOC and BLOCK71 and the extensive journey embarked on by the two initiatives. Prof Shih was also NUS President and Vice Chancellor from 2000 to 2008. Today, NOC has a community of more than 3,600 alumni, with over 15 entrepreneurial hubs across the globe. Nine NUS-supported start-ups have become unicorns, while NOC alumni have founded more than 1,000 start-ups.

Prof Shih paid tribute to the dreamers and adventurers whose vision and daring have carried NOC thus far, such as the late Prof Jacob Phang, the founding CEO of NUS Enterprise; Dr Lily Chan, the second CEO of NUS Enterprise; Assoc Prof Teo Chee Leong, the founding Director of NOC; and Prof Wong Poh Kam, the NUS Entrepreneurship Centre's founding Director.

He recalled the inspiring story of how NUS Enterprise was established around the time when Singapore was facing the impact of events like the Asian Financial Crisis and September 11 and had to restructure its economy into one that was knowledge-based. It was with this in mind that he articulated his vision of NUS becoming Singapore's Silicon Valley like Stanford was for the world-renowned technology hub, adding that the University would be "a knowledge enterprise that transcends boundaries" with NUS Enterprise as its vehicle.

Like the post-millennium era, today the world is faced with new challenges, such as climate change and social inequity – both of which are crises of the collective and the social – which require business leaders and entrepreneurs with a 'we-orientation' to bring about inclusive growth. "'We-orientation' is now required of leaders and citizens, and they must urgently harness the entrepreneurial passions of 'I-orientation' to serve people, solve collective problems and share the benefits."

He added: "With a changing local, regional and global landscape, we need a new generation of leaders, and especially of the young, to bring about change and make us fit for purpose for a world in which all can thrive in."

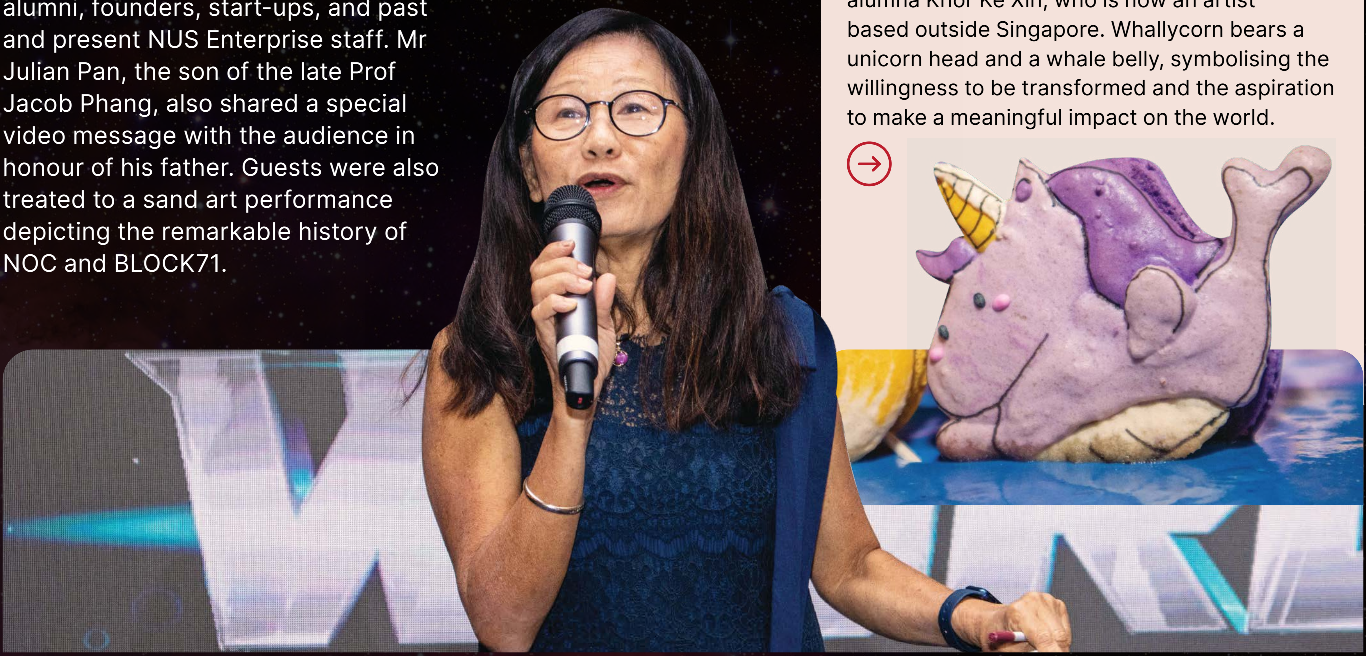


Prof Shih (third from left) launched NOC in Silicon Valley in 2002. It was also at NOC Silicon Valley that the founders of home-grown unicorn Carousell, Quek Siu Rui (first on left), Marcus Tan (third from right) and Lucas Ngoo (second from right), mooted the "mobile-first" idea of creating an app that could help anyone buy and sell used goods in a simple way. In the photo are also Prof Tan Eng Chye (second from left) and Assoc Prof Teo Chee Leong (first from right), founding Director of NOC and Deputy Head of Outreach, NUS College of Design and Engineering.

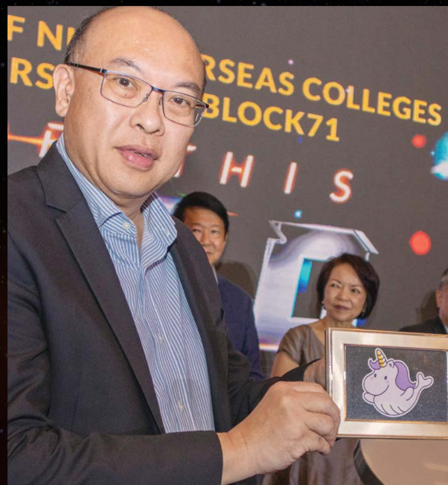
A TIME OF CELEBRATION, REUNION AND REMEMBRANCE

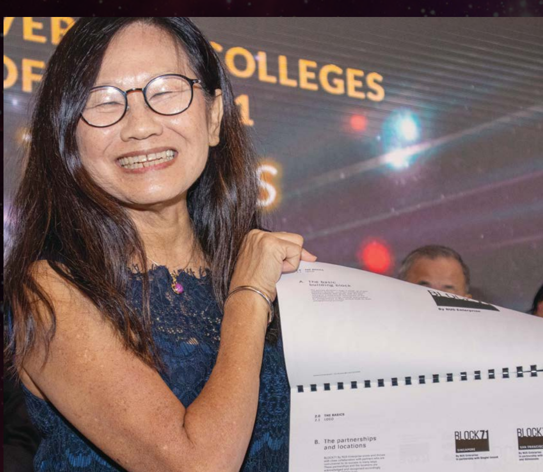
The gala also saw a video screening highlighting the key milestones of NOC and BLOCK71 as well as wishes from its alumni, founders, start-ups, and past and present NUS Enterprise staff. Mr Julian Pan, the son of the late Prof Jacob Phang, also shared a special video message with the audience in honour of his father. Guests were also treated to a sand art performance depicting the remarkable history of NOC and BLOCK71.

Prof Chee unveiled the new NOC mascot, named "Whallycorn", in an animation video at the event. The mascot was created by NOC alumna Khor Ke Xin, who is now an artist based outside Singapore. Whallycorn bears a unicorn head and a whale belly, symbolising the willingness to be transformed and the aspiration to make a meaningful impact on the world.



The University was also honoured to have Dr Lily Chan, former CEO of NUS Enterprise, among its distinguished guests at the gala. During her stint from 2006 to 2019, Dr Chan played an instrumental role in scaling up the NOC programme and founded BLOCK71 in partnership with the Media Development Authority and SingTel Innov8. In her address, she shared about her memorable time at NUS Enterprise, her many interactions with NOC students and the origins of the BLOCK71 building in Singapore.

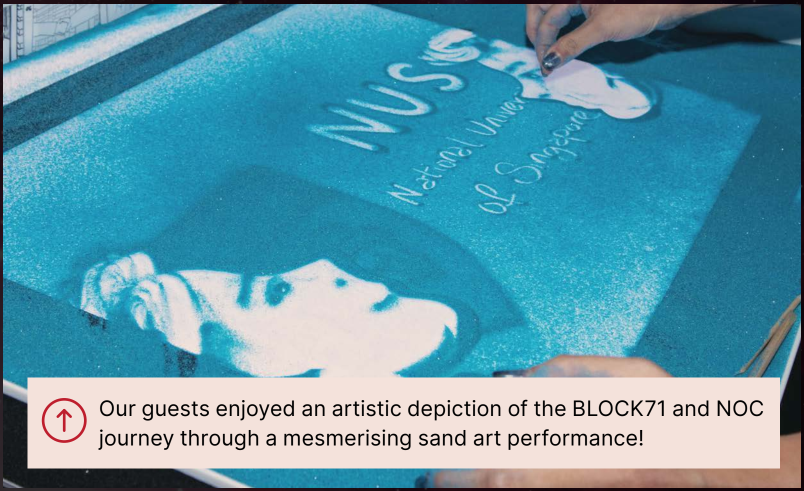




Sealed at the gala, the time capsule contains an inspirational collection of past and present memories contributed by members of the NUS entrepreneurial community.

The gala came to a close with the sealing of a time capsule filled with NOC and BLOCK71 memorabilia. Among the items is a tie belonging to Prof Shih with a salmon design, reminiscent of the early days of NOC when he brought NOC interns deep-sea fishing in California. Other notable items include the very first BLOCK71 brand identity guide, a BLOCK71 LiNUS plush toy and the NOC Care Pack given out to NOC students recalled during the peak of the pandemic.

Hosted at the Shangri-La Hotel, the “Out of this World” gala brought together inventors, founders, investors, mentors, government and industry from all over the world.



Our guests enjoyed an artistic depiction of the BLOCK71 and NOC journey through a mesmerising sand art performance!

It was a fun evening for Enterprise staff to bond and celebrate BLOCK71 and NOC’s achievements.

fire starter

HOPE AND FEAR: DEBATING INNOVATION FOR CLIMATE ACTION

During Singapore Climate Action Week 2022, NUS Enterprise's Innovation with Societal Impact team organised an Oxford-style debate centred on whether the world can innovate fast enough to reverse the effects of climate change.

From extreme weather events and weakening food security to the loss of biodiversity, the ill-effects of climate change have become more globally visible in recent years. A major question that has arisen in public consciousness is whether countries will be able to come together in time to enact the kind of far-reaching, systematic changes needed to meaningfully mitigate climate change.

This was the focus of a recent Oxford-style debate organised by Innovation with Societal Impact (ISI), a cross-division team within NUS Enterprise that drives Innovation & Enterprise (I&E) efforts to address environmental, social and sustainability-related issues. The debate brought together educators, policymakers and entrepreneurs in the sustainability field to explore the following proposition: "The world can innovate fast enough to reverse the effects of climate change".

Held on 23 September, it was among a week-long slate of events planned by ISI to raise awareness, foster community, and enhance dialogue surrounding climate action issues, in conjunction with Singapore Climate Action Week 2022.

In his opening remarks, Professor Low Teck Seng, NUS' Senior Vice President (Sustainability and Resilience), emphasised that NUS is committed to contributing to Singapore's sustainability agenda through education, research, and innovation and enterprise.

To set the stage for the lively exchange of views, Professor Low Teck Seng, Senior Vice President (Sustainability and Resilience) at NUS, highlighted in his opening speech that Singapore is committed to harnessing research and development and technological innovations to tackle climate change. In this regard, the University plays an important role in addressing key sustainability challenges through research and education, while NUS Enterprise provides a platform for the University's theoretical research findings to be translated into products, processes, and services for the good of the environment and society.

After a lively exchange of views on the floor, the opposition and proposition teams came together for a group photo after the debate had concluded. From left to right: Proposition team members Dr Echo Wang and Prof Seeram Ramakrishna, debate moderator Mr Hugh Mason, opposition team members Mr Tay Kae Fong and Prof Johan Sulaeman, and Mr Brian Koh from NUS Enterprise.

Starting the debate off for the proposition, Dr Echo Wang argued that innovation has always empowered and propelled humanity forward to bring about positive changes in society. Drawing from her experience as co-founder of Synectify, a technology start-up focused on carbon offsetting that was incubated at The Hangar by NUS Enterprise and supported by the NUS Graduate Research Innovation Programme (GRIP), Dr Wang said: "Innovative technologies are already helping to reduce emissions by changing current energy use patterns, or by increasing energy efficiency and conservation."

Dr Wang also pointed out that innovation in today's world goes beyond technology. Citing the 2015 Paris Climate Accords as "policy innovation on a global scale", Dr Wang highlighted that similar policy innovations like carbon taxes and emission targets, as well as social innovations developed by social entrepreneurs such as carbon calculators, are already helping to mobilise and organise people and resources towards a more climate-conscious society.

Supporting Dr Wang's proposition, Professor Seeram Ramakrishna from the Department of Mechanical Engineering at the NUS College of Design and Engineering and Chairman of the NUS Circular Economy Taskforce, contended that history has shown how humans have a boundless capacity to be creative and to innovate. Over centuries, humans have overcome the challenges of surviving on earth through creating, sharing, and transferring new knowledge. A case in point is the recent COVID-19 pandemic which precipitated innovations in many areas – scientific, political, commercial, and social, among others – aimed at mitigating the ill-effects of the global crisis.

Countering the proposition's arguments, Professor Johan Sulaeman, Director of NUS' Sustainable and Green Finance Institute and Dean's Chair and Associate Professor in the Department of Finance at NUS Business School, underscored the inherent difficulties involved in translating innovative ideas into actual concrete outcomes to combat climate change, arguing that "the world lacks the mass commitment – be it social, political, or financial commitment – to get these outcomes delivered." He also noted the challenges of undertaking climate actions that will not inadvertently harm society's most vulnerable populations. Rebutting the proposition's point on COVID-19, Prof Sulaeman added that the pandemic has led to an increase in societal distrust in governments and governmental institutions, meaning it may now be harder to convince the public to accept social and policy innovations related to climate change that are being rolled out by governments worldwide.

Speaking second for the opposition, Mr Tay Kae Fong, a NUS alumnus who was in the pioneer batch of NUS Overseas Colleges (2003-2004), cautioned that climate change is a complex issue and one that cannot rely solely on the belief in human resilience and creativity. As an entrepreneur who founded Greenway Revolution, a technology solutions provider focused on driving the circular economy, he shared about the cost factors that disincentivise many businesses from adopting greener technologies. He stressed that without accompanying action from legislators and consumers, the status quo would remain.

"We cannot be complacent and just rely on the innovators, entrepreneurs or intrapreneurs to take action – because of the sheer scale of the problem, all of us in our own way need to step up to address and mitigate climate change," Mr Tay added.

Professor Johan Sulaeman (standing, second from right) from the opposition team highlighted the various obstacles that are slowing down the global fight against climate change, such public distrust and differing national priorities.

After an hour of robust exchanges and a brief Q&A segment, the winning team was decided via an audience poll. The opposition team eventually emerged victorious by garnering 85 per cent of the audience vote, with many audience members agreeing that tackling climate change should be an all-of-society effort, and not just the responsibility of innovators and entrepreneurs alone.

fired up

CYBERSECURITY INNOVATION DAY 2022

Returning for the 4th edition at the Cybersecurity Innovation Day 2022, the Cybersecurity Industry Call for Innovation (CyberCall) 2022 held its first in-person programme in August since the COVID-19 pandemic. Held at the Raffles City Convention Centre, CyberCall is jointly organised by the Cyber Secuarity Agency of Singapore (CSA), NUS Enterprise and TNB Ventures, along with support by Innovation Cybersecurity Ecosystem (ICE71) at BLOCK71 Singapore.

Full house of attendees comprising of academics, cybersecurity professionals, investors and more.

The programme kickstarted with opening speeches by Mr Brian Koh, Director of Ecosystem Development at NUS Enterprise and Senior Minister of State for Ministry of Communications and Information (MCI), Dr. Janil Puthucheary. Both speakers addressed a full house of attendees comprising of academics, cybersecurity professionals, investors and more, shedding light on the rising global demand for innovative cybersecurity solutions in recent years.

First launched in 2018, CyberCall is an initiative to enable the nation's cybersecurity strategy, doing so by catalysing the development of innovative cybersecurity solutions and developing a vibrant cybersecurity ecosystem through leveraging on local talent. By working with local companies to craft pertinent challenge statements, CyberCall allows companies to articulate their cybersecurity concerns and provides a platform for collaboration with tech companies to trial potential solutions. The initiative complements Singapore's national cybersecurity strategy, which was recently refreshed in 2021 to target emerging cyber threats over the years. The enhanced national strategy aims to enhance cybersecurity via 3 key pillars, by building resilient infrastructure, enabling safer cyberspace and strengthening international partnerships. These key elements were displayed in this year's CyberCall challenge statements.

During the event, 7 challenge statements for CyberCall 2022 were announced. Provided by 6 end-users including the Government of Singapore Investment Corporation (GIC), Home Team Science and Technology Agency (HTX), Mediacorp, Pacific Power, SMRT Corporation and SP Group, this year's edition of CyberCall seeks cutting-edge and scalable cybersecurity solutions to address specific security concerns faced by variouas sectors, including areas such as Internet of Things (IoT) Security and Operational Technology (OT) Security.

The programme also included an award ceremony for the 11 shortlisted winners of CyberCall 2021, whose outstanding solutions stood out from over 70 proposals received last year. Selected after careful considerations by the technical review panel, CSA panel and thorough reviews by end-users, the well-deserved CyberCall 2021 winners, along with past winners, showcased their winning solutions to attendees during the post-event booth visit and networking session. In addition, technical experts from the judging panels were also presented certificates of appreciation in recognition of their indispensable support throughout the CyberCall 2021 judging and review process.

From left to right: Prof Anupam Chattopadhyay, Mr Michael Lew, SMS Janil Puthucheary, Dr Liu Yang, Chief Executive CSA Mr David Koh, Prof Alex Siow , Dr Vivy Suhendra, Mr Emil Tan, Mr Ashish Thapar.

Brian Koh, Director at NUS Enterprise (Ecosystem Development), shared how NUS is uniquely positioned as a global university to support cybersecurity innovation through its multi-disciplinary approach.

Dr Janil Puthucheary, Senior Minister of State for Communications and Information and Health, announced the launch of CyberCall 2022 at the Cybersecurity Innovation Day 2022.

The organising team of Cybersecurity Innovation Day 2022.

Post-event booth visits and networking sessions.

How NOC Shaped the Paths I Took and the Work I Do Today

By **Charles Lee**

NUS Overseas Colleges (NOC) Alumni

Hey there! I'm Charles, from NUS Overseas Colleges (NOC) Beijing, Batch 21 and I'm currently with YouTrip as an Associate Product Manager! I have had the privilege and joy of working in a scale-up department at Xiaomi as well as a drone tech start-up known as Avetics during the course of my NOC programme. Despite facing many challenges, my NOC journey has certainly shaped me into who I am today and how I view my career and the world.

Living outside of Lion City has never been easy. Whether at work or at school, there is constantly a sense of cognitive dissonance.

Even though it was temporary, uprooting oneself to explore a completely unknown environment away from an established support system and familiarity (as well as delicious Singaporean food) posed many challenges. Anecdotally speaking, there is a strong emphasis on relationship management, hierarchical social structures, and building strong trust within the Chinese workplace.

Fortunately, I had the privilege of learning from a diverse combination of experiences in Product Marketing, given the support of my wonderful supervisor (shoutout to Vanessa who's also a NOC alumnus). At Xiaomi, I was fortunate to have been part of myriad of projects/ studies from competitor analyses to providing product training to other departments. As the "brain" behind the products, we focused on distilling the deep technical information into easily digestible bits of knowledge to craft a concise and compelling story to market our products. Vanessa also taught me the values of people-centricity in leadership and the nuances of the workplace culture in Beijing. Throughout the internship, she celebrated my small wins and helped me to navigate through challenges that imparted to me, the values of tenacity and resilience.

> "You can't connect the dots looking forward; you can only connect them looking backwards"
>
> — Steve Jobs

Outside of the usual office hours, I also had a meaningful time living on-campus at Tsinghua University (THU) where I attended night classes on Venture Creation. Besides academic commitments, I also participated actively in student life activities, representing THU in badminton.

The friendships forged during the course of my time at THU, remain to be a core memory of my time in Beijing. The fleeting interactions with my badminton teammates and dormitory friends taught me so much about the cultural nuances of living in Beijing. My THU friends helped me to integrate quickly with the local community and supported me throughout the challenges of living abroad. THU was like a home away from home.

Subsequently, the abrupt COVID-19 pandemic resulted in a switch in internship role and company to Avetics Global in 2020. Working at a drone tech start-up like Avetics Global reiterated the importance of resourcefulness and ownership within a start-up. I was constantly challenged to make decisions on my own which had lasting impacts on the company. As a Business Development intern, I wore multiple hats and got to pitch to a Malaysian government agency alongside running my own marketing campaigns. Throughout this stint, I have been empowered with the agency to self-manage the various projects.

As my NOC journey concluded, I found myself to have grown tremendously in terms of personal and professional development. Firstly, living abroad gave me new perspectives on my worldview, and reinforced the importance of being self-sufficient. Subsequently, I personally view entrepreneurship and innovation as a channel and method to drive impact to society. In retrospect, my learnings will serve me well in entrepreneurial environments where lean teams aim to achieve more with a scarcity of resources.

After completing the NOC program, I ventured into other career pathways through Product Management and Consulting internships. As a recipient of the Jane Sun and John Wu Sunshine Award and the Jacob Phang Memorial Scholarship, I also took up the opportunity to pay it forward to the NOC community as a Teaching Assistant. Through these experiences, I also gained a deeper understanding of how I would like to build my career.

Upon deep introspection, I found that my engineering roots and product/strategy internship experiences and my deep appreciation for generalist roles that build cross-functional alignment pointed me towards Product Management. As it seemed like the most logical option, I took the leap of faith by starting my career with DBS PayLah! as a Technical Product Owner and now with YouTrip as an Associate Product Manager.

career and educational decisions while The Young SEAkers is a non-profit (also founded by NOC alumni, Calvin) which aims to bring together ASEAN youths who are passionate about advancing ASEAN-China.

Today, while I have stepped back from SAGE due to work commitments, I continue to manage a team of The Young SEAkers, to collaborate with SMU to develop a digital platform to build serendipitous 1:1 connection among ASEAN youths. Occasionally, I write for NUS Enterprise (like this post), providing coverage for our NOC Alumni!

For incoming NOC students, my advice is to stay open-minded.

Outside of work, I continued to build digital products as a Co-Founder of SAGE (Sharing And Gaining Experiences) and Head of Operations at The Young SEAkers. SAGE is a knowledge-sharing ground-up initiative for youths to make better

Throughout the course of NOC, there is so much to learn. Some of the most important lessons are not found while completing our tasks at work, but found through the little observations we make, either at work or in our personal lives during NOC.

THU Badminton team

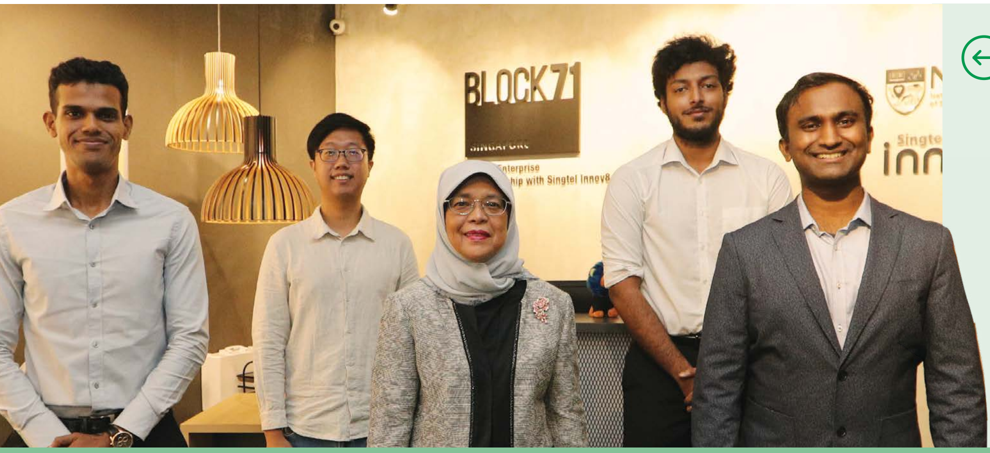
INVIGILO TECHNOLOGIES: SAFETY DOESN'T HAPPEN BY ACCIDENT

Safety is something we take for granted and more often than not, is only taken into consideration as an afterthought when accidents occur at the workplace. Workplace safety is a crucial requirement for all employees to work in a safe and protected environment. Safety is even more essential in high-risk workplaces such as construction, manufacturing, and materials handling sites. When we think of safety, preventive measures such as ensuring the use of protective equipment and wear and observing safety procedures come to mind. But, when humans are added into the equation, there may be rooms of error leading to an increased potential of accidents happening. Many workplaces today still rely on on-site manual inspections by safety officers which can be time-consuming and prone to human error, potentially resulting in workplace hazards going undetected and putting workers at risk.

"TO WATCH OVER"

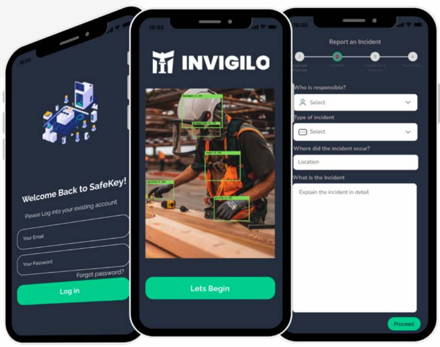
INVIGILO

Invigilo Technologies is a startup which aims to increase the effectiveness of safety implementation through real-time AI (Artificial Intelligence) video analytics. "Invigilo" in its root means to "watch after" in Latin, which is exactly what the startup aims to do. The upper part of its logo resembles a hawk that is "watching over" and the lower part resembles Singapore's iconic Marina Bay Sands skyline, giving it a local touch to its identity. The startup provides video analytics safety solutions designed to automatically identify anomalous actions in real time in high-risk environments. In the blink of an eye, Invigilo's SafeKey™ enables on-site cameras to autonomously identify potential dangers posed to workers before an accident occurs. Through their real-time alerts, it is able to notify and deploy safety officers to take action and improve safety dialogues overtime. What is unique about its technology is its open API (Application Programming Interface) integration with cameras, where its technology is able to integrate seamlessly with a business' existing dashboards and software, making it easy for businesses to adopt. Each industry, whether it be construction, maritime, or industrial sites, has its own safety requirements and Invigilo aims to provide personalised safety detections catered to each business' needs.



(From left to right) T Ananda Kumar (CTO Invigilo Technologies), Koh Jun Hao (Lead AI Research, Invigilo Technologies), Madam President Hallimah Yacob, Priyansh Mishra (Lead AI Deployment, Invigilo Technologies) and Vishnu Saran (CEO and Founder, Invigilo Technologies)

In June 2022, Madam President Hallimah Yacob visited Invigilo to learn more about the capabilities of Invigilo SafeKey™. She was impressed and commended Invigilo for improving safety with the aid of an innovative AI solution.



THE JOURNEY OF PURSUING A PASSION

The founder, Vishnu Saran, shared with us his vision for Invigilo as well as the journey of transforming his ideas into a functioning business. Vishnu previously studied at the National University of Singapore (NUS), majoring in Material Science in 2015. He joined the NUS Overseas Colleges (NOC) programme in 2018, where he had the opportunity to study at Stanford and work in Silicon Valley. During the peak of the COVID-19 pandemic in March 2020, Vishnu made the bold decision to quit his full-time job to pursue his passion in safety analytics. The seeds for the idea behind Invigilo started when he was previously working with two other friends on a project which aimed to build IoT (Internet of Things) devices for the construction industry. It was then he became convinced that there was a greater potential in what they were doing. He recalled the challenges during the pandemic, especially after leaving his full-time job and even turning down a master's offer from Berkeley. There was even a long period of time where he relied on his own savings to run Invigilo before the startup gained traction for funding.

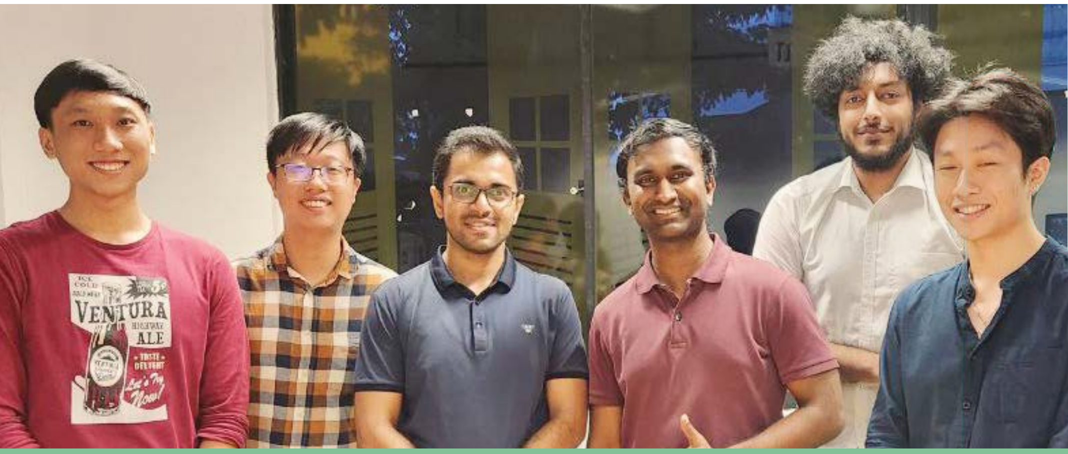
Subsequently in 2021, Vishnu further refined Invigilo in Run 6 of NUS GRIP (Graduate Research Innovation Programme), a programme designed to cultivate deep tech entrepreneurs in transforming their research into scalable ventures. Vishnu was also the recipient of the Phillip Yeo Innovation Fellows award and NUS Alumni Catalyst grant. In 2021, Invigilo received pre-seed funding by GRIP and is now incubating at BLOCK71 Singapore.

"I would say the (construction) industry I am working in is very traditional and more often than not, you are faced with lots of skeptics on whether this technology can work. I think it's important to educate the audience about the technology to ensure that it is adopted in the smoothest manner" says Vishnu.

Invigilo has achieved a 60% reduction in accidents, 40% cost savings, 8 times more safety coverage, and a greater than 90% safety hazard detection rate for its clients. Their technology is already being put into action by several organisations in the construction and manufacturing sector, including the Housing & Development Board (HDB), Land Transport Authority (LTA), Hyundai Engineering & Construction and many more.

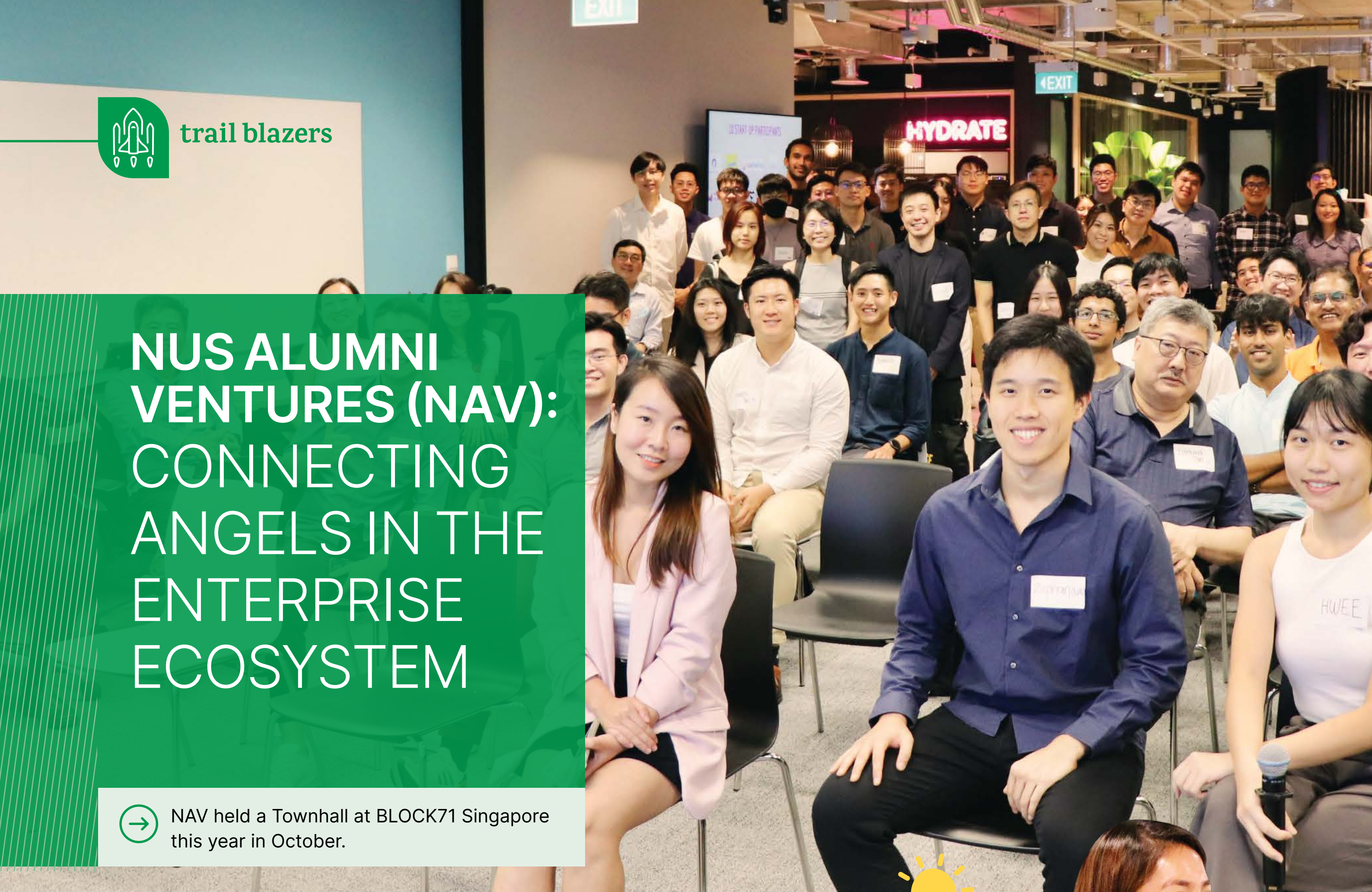
Invigilo is striving to pursue its mission of transforming the future of safety through its technology to make safety a reality for all workplaces.

> I would always make the tough decisions to pursue the less travelled path because I believe that at this age and stage, you have the ability to handle it no matter how difficult it is.
>
> - Vishnu Saran (CEO and Founder of Invigilo Technologies)



The Invigilo team that works hard and plays hard too!

(From left to right) Sylvester Chun Hong Wei (IoT Project Manager), Koh Jun Hao (Lead AI Research), Sanjay Saha (Research Engineer), Vishnu Saran (CEO & Founder of Invigilo), Priyansh Mishra (Lead AI Development) and Brennan Lee Chak Fai (Software Development Intern)



NUS ALUMNI VENTURES (NAV): CONNECTING ANGELS IN THE ENTERPRISE ECOSYSTEM

NAV held a Townhall at BLOCK71 Singapore this year in October.

"Angels" is a term commonly used in talks about investment in the startup scene. "Angel investors" (sometimes called seed investors) are individuals who offer startups funding in exchange for a piece of the business, usually in the form of equities or royalties. Angel investors are usually involved with a startup's growth in their early stages, typically before the startup receives a more sizeable investment from venture capital. In this aspect, angel investors can be seen as critical to the growth of many startups in their development stage where funding may not always be so readily available.

Angel investing is still a relatively new form of investing practiced in Singapore but is gaining traction at a fast pace. The National University of Singapore (NUS) Alumni Ventures (NAV) is a society built on the core concept of connecting angel investors to startups in the NUS ecosystem. Founded in 2020, the society is a student and alumni-run angel investment network under the NUS Office of Alumni Relations (OAR) aiming to strengthen the NUS and Southeast Asia startup and investment community. NAV's model provides mentorship programs for early-stage startup founders with greater interaction opportunities with NAV's angel investors and mentors to prepare for fundraising rounds. They also have a direct investment program which provides investment opportunities to the angel network with the stages of deal sourcing and screening, demo day, due diligence, investment terms and negotiations and post-investment support.

Sean Ang (Co-President of NAV) and Vanessa Ho (Co-Founder & Co-President of NAV) shared with the SPARKS team on their experience building NAV and the purpose behind their core directives. Vanessa shared that in her experience in her university days as a student entrepreneur that many student startups are given grants in their initial stages of development but a lot lack follow-up support and funding to continue their growth,

Vanessa Ho (Co-founder & Co-President of NAV) addressing the audience at NAV's Bootcamp held at The HANGAR in September 2022.

causing many startups to phase out. "This happened to the startup I ran, as well a couple of my friends who are former founders as well. During that time, I realised there was a large group of people in our ecosystem that are untapped; and that is our NUS alumni. Many of our alumni are now business leaders, investors, VC partners, founders and many more. I think there is quite a discrepancy in terms of bridging this gap of young alumni or student founders and our successful NUS alumni as well. We want to build this platform to bridge this for strategic funding and mentorship as far as use this as a deal processing/analysis avenue to train future investment analysts who eventually get placed at a very good startup." says Vanessa.

NAV currently has 90 investors in their network who are hands-on in helping student founders and training their teams. The NAV club itself has about 50 students and graduates who are also active in terms of supporting startups based on their previous investment experience, giving back to the NUS ecosystem. This year, NAV ramped up more physical events, having run their recent Demo Day in November which provided a platform for students and graduates to network with business leaders. “We’re not just helping to facilitate investments, but we want to provide more networking opportunities because that’s a really good avenue for students and graduates who may eventually start a startup or join an investment firm to get to know all these people who are established already” says Vanessa. Sean also shared about how NAV is looking to cement their existing relationships within the NUS ecosystem. Their key partners include BLOCK71 Singapore, NUS GRIP (Graduate Research Innovation Programme), NUS Business School, Let-Labs, ACE (Action Community for Entrepreneurs) and many more. In the coming years, NAV is looking to bridge more relationships with faculties in NUS to be able to cement a stable platform for their projects to pitch through their exclusive network of NUS Alumni angels keen in investing in promising startups. NAV has successfully helped 5 startups raise funds and close to 30 startups have received mentorship. Subsequently, NAV brings in industry partners and experienced investors to organise workshops to help the NUS entrepreneurship community. They are also working closely with the innovation student bodies of Singapore Management University (SMU Eagles, Protégé Ventures) and Nanyang Technological University (NTU) to complement and diversify the investment curriculum they’ve built, give their student analyst greater exposure to different innovation methodologies and further spread NAV’s values which can feedback into the startup ecosystem of Singapore as a whole.

Apart from running NAV, both Sean and Vanessa also work full-time jobs and pursue side projects. Sean shared his experience with growing NAV whilst working as an analyst at NUS CA2DM (Centre for Advanced 2D Materials): “I would say that it’s definitely a unique experience having to balance your full-time career whilst volunteering with NAV. But what really motivates me to take on this hat is the high potential that NAV brings in terms of increasing the business value NUS can bring to its alumni in the innovation ecosystem. What NAV does is really a lot than just simply connecting angels to startups. NAV is building a specific ecosystem that is focused on achieving 3 things: giving alumni angels first-hand access to the most promising NUS startups/projects for investment opportunities, creating a thorough investment curriculum for students, and providing value to not only under-funded, but under-resource startups through our resource repository and alumni mentor network. It’s highly meaningful work to consolidate this value for the benefit of the NUS innovation ecosystem via the angel network we’re painstakingly building and it’s amazing that I’m given this opportunity to contribute back as an active alumnus.” Similarly, Vanessa also shared how working at NAV also aligns with some of her personal goals she is striving toward: “I myself am really passionate in the startup investment space and a lot of the work we do at NAV also aligns with my goals to eventually become an angel investor myself as well! So I think it’s quite synergistic with interest and career goals. But I must say the challenge is time as well as identifying and grooming leaders to continue this organization. As a co-founder, I think it’s easy to get started and to run it the way that I plan to. But to hand it over such that subsequent generations of student leaders can carry forward this mission over batches and batches of students, I think, is one of the biggest challenges, but also the only way to ensure that this society can really make impact for generations to come.”

NAV often organises quarterly Demo Days and Post-Demo Day Investment calls for investors to meet founders to discuss the potential of their startup’s portfolio.

Sean Ang (Co-President of NAV) speaking at NAV’s most recent Demo Day held this year in November.

NAV hopes to continue building their network of angels and founders to provide students with valuable insights and feedback on their ideas as well as tap on a strong base of resources.

INNOVATIONS OF THE FUTURE

FROM OUR VERY OWN

NUS Overseas Colleges (NOC) AND BLOCK71 Affiliated Startups

PRODUCT #1: SWIRL.GO - THE FUTURE OF DESSERTS

For any dessert lovers out there, SWIRL.GO's machine takes you on a sugar rush anywhere you want it to be. Did we forget to mention that it can serve up to 100 ice cream flavours with just 1 machine? It's a dream machine to die for when you can serve swirls in different flavours back-to-back without the need to clean the machine. And with zero food contact, it means you can enjoy every distinct flavour from ice cream to gelato, sorbet and even froyo. Simply choose your swirl pod and insert it into the machine and dispense within seconds!

PRODUCT #2: AMPOTECH - THE AMPOHUB

For any businesses out there looking to obtain business insights and monitor their operational and activity patterns, Ampotech products such as the AmpoHub, is here to offer real-time visibility while providing high-resolution data for your company. Used by many businesses in energy services, electricity retail, commercial real estate, and oil and gas, the AmpoHub is an ultra-compact, wireless-enabled power meter and IoT (Internet of Things) gateway that measures the power consumption of key equipment and transmits the data to the AmpoCloud platform. With hassle-free installation, it can monitor equipment such as air-conditioners, F&B (Food & Business) coolers and heaters, solar inverters, lightning circuits and many other motor and power monitoring equipment. The AmpoHub could not get any better as it is wireless, powerful and secure.

PRODUCT #3: 42 BY DETALYTICS

Start knowing your daily Lifestyle Impact Score and what it means with "42", a personal lifestyle analytics app that provides you with personalized and actionable data about your sleep, physical activity and heart rate. Many pilots, athletes, engineers and entrepreneurs have used this as an assistant to monitor their lifestyle patterns. Besides giving you a score, 42 reflects your functioning status, taking into account an array of daily behaviors, medical data and environmental factors. With 42, no more guessing about what your wearable data means.

PRODUCT #4: EVERDESK+/ERGOEDGE

With the mission of making top quality ergonomic products accessible and creating an empowering workspace, EverDesk is here to make you productive at work. From height adjustable standing desks, ergonomic office chairs, monitor arms, anti-fatigue mats, standing desk converters and cable management products, it is fully customisable and it is the most technologically advanced desk out there which starts at an affordable price of only $749. It also encourages healthy routine movement with the Health Coach controller and alleviates prolonged sitting, which is great for those who like to get out of their seat as they work. Feel alive again at work and double your productivity with EverDesk!

NEWSFEED

NUS Enterprise and NUS Industry Liaison Office participated in the annual SWITCH conference organised by Enterprise Singapore. On 19 October, over 50 startup founders were hosted at BLOCK71 Singapore, where insights were shared on how to expand into the region. A delegation comprising of senior management from Enterprise Singapore and A*STAR also visited our booth at SWITCH, where they met with startups from our ecosystem. 4 of the 10 finalists at the SLINGSHOT pitching competition were NUS-affiliated, including **Soundeye**, **ConcreteAI**, **CBE Eco-Solutions** and **E3A Healthcare**. Each received a $50,000 Startup SG grant and **E3A Healthcare** also won second prize (receiving an additional $150k)!

On October 31st, 2022, we signed a Memorandum of Understanding (MOU) with the Norwegian University of Science and Technology (NTNU) to establish an exchange programme for undergraduate and graduate students under the auspices of the NUS Overseas Colleges (NOC) programme. The signing of the MOU is a move that underscores the two universities' commitment to nurture the next generation of entrepreneurs, deepen knowledge exchanges in the domain of innovation and entrepreneurship and promote experiential learning and development.

The Memorandum of Understanding between NUS and NTNU was signed onboard the Stratsraad Lehmkhul, the research vessel of the One Ocean Expedition 2021 from Norway.

BeeX is one of 6 blue tech startups that focus on marine and naval robotics, improving the ocean's health and increasing coastal resilience to join the University of Southern Mississippi's Gulf Blue Navigator programme. Participants from this programme will benefit from SeaAhead's global network of expertise and success with the Blue Swell Incubator, along with the University's renown facilities and mentorship. Congratulations to **BeeX** on joining the programme, paving the way for innovation in the blue economy!

Congratulations to **Haulio** for securing its first overseas acquisition with a controlling stake in Logol, an Indonesian-based logistics-focused technology platform! **Haulio** signed a Memorandum of Understanding (MoU) with the Centre of Excellence in Modelling and Simulation for Next Generation Ports (C4NGP) which is part of the National University of Singapore (NUS) College of Design and Engineering (CDE) to develop and commercialise the Smart Haulage Scheduler (SHS). **Haulio** aims to further develop the haulage scheduling algorithm aimed at enhancing productivity in Singapore's logistics sector by addressing the various inefficiencies from container tracking, drivers' working schedules and vessel delays, to inaccurate weather and traffic predictions.

The agreement was signed by Sebastian Shen, Chief Product Officer of Haulio, and Assoc Prof Benjamin Tee Chee Keong, Vice Dean Research at CDE, who signed on behalf of NUS.

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:

- Kyan Therapeutics – Pre Series A; $5 million
- Singrow – Series A; ~ $10 million
- Alami – Pre-Series B; USD $10 million
- Shield – Series B; $20 million
- Betafi – Pre Seed; USD $1.3 million

All info based on public news sources.

Catalysts for Societal Change

In today's world where economic pursuit is often at the forefront of our work, how many of us make the effort to stay cognizant of social issues that the world is facing? Well, social enterprises are here to make a difference. Courageously venturing into industries less explored by others, social entrepreneurs act as catalysts for social change. Instead of prioritising only economic value, they spearhead positive change to create 'social value' to solve pressing challenges societies and the less-privileged face in their daily lives. While we may not necessarily be the intended beneficiaries, we can always do our part to enable social impact by supporting these social enterprises!

MATCHUB – LOOKING FOR FULFILLING INTERNSHIPS?

Let's be real, most of us have had some negative experiences from our internship days. A misfit in job scopes, different working styles - there could be a million reasons why. MatcHub, a platform that matches talents with companies using an algorithm, aims to minimise this. Using an algorithm that profiles candidates holistically based on their personality traits, working styles, soft skills and more, MatcHub recognizes that a candidate's suitability for a job or internship goes beyond paper qualifications and experiences on their resume. Its robust screening process powered by AI streamlines the entire recruitment process, providing a more efficient job matching process for both hiring companies and students. More importantly, the platform helps students, especially those who are unsure of their career aspirations, to discover their passion earlier in order to achieve career satisfaction and excellence.

MATCHUB

Matchub - To create a Global Hub for every student and company to find their best match.

Meet the Matchub team (from left to right): Hector Low, Rae-Nyse Yeo, Vivan Chan, Marcus Phua.

Rae-Nyse spent a month attending the Entrepreneurship Summer Camp at Imperial College Business School in London, where she immersed herself in their entrepreneurial culture and honed her business acumen.

MILAAP – A LITTLE HELP GOES A LONG WAY

To say that Milaap has transformed the lives of many Indians is an understatement. As the most trusted crowdfunding platform in India, Milaap has raised over US$302 Million for countless medical emergencies and social causes ever since it was founded in 2010. Other than donations, Milaap is also the world's first online microlending platform that allows anyone in the world to lend and borrow money online at drastically reduced interest rates compared to commercial banks. Once the loan is fully repaid, the lender can opt to re-lend it to another person in need, multiplying the positive impact on the social development of India. Incredibly, Milaap does not charge any platform fees for any of its users, allowing people in need to receive 100% of funds raised. With micro-loans starting from just $25, anyone can play a part in improving someone's life instantaneously.

Milaap – Free crowdfunding for India

(From left to right) Anoj Viswanathan and Mayukh Choudhury, co-founders of Milaap

The team embarking on a Walkaton to celebrate launch of Milaap 360, India's first "all-in-one" digital fundraising solution that allows fundraising via various tools.

HATCH – MAKING DIGITAL EDUCATION ACCESSIBLE TO ALL

Hatch is the first ever training academy in Singapore that prepares underserved groups, including at-risk youths and youths from low-income families, for the digital economy accelerated by COVID-19. With its customised employability programs and skills workshop such as UI/UX design, Hatch has successfully upskilled 972 students with digital capabilities to date and provided them with numerous internship stints with renowned companies such as Changi Airport Group. Upon graduation from their Hatch Immersive program, students are set to secure full-time employment through job opportunities within Hatch's wide network of partner companies. Alternatively, students can also join Hatch Mediahouse as an apprentice to work with clients on their digitalisation needs.

Hatch Academy - Academy for the future of work.
Hatch Mediahouse - Mediahouse for tailored digitalisation journeys.

Hatch won an award for its pitch in the Young Social Entrepreneurs Pitching for Change 2019, held by the Singapore International Foundation. Also present at the awards ceremony: Assoc Prof Peter Pang (left), NUS Dean of Students at that time, and currently Master of NUS Residential College 4.

Victor Zhu (right, with co-founders) founded Hatch with the goal of making education equitable and helping students and fresh graduates carry out digital upskilling in a job landscape that increasingly demands such skills.

Ready to join our NUS Enterprise entrepreneurship ecosystem?

NUS Enterprise, the entrepreneurial arm of the National University of Singapore (NUS), plays a pivotal role in advancing innovation and entrepreneurship at NUS and beyond.

NUS Enterprise actively promotes entrepreneurship and cultivates global mind-sets and talents through the synergies of experiential entrepreneurial education, active industry partnerships, holistic entrepreneurship support and catalytic entrepreneurship outreach. Its initiatives and global connections support a range of entrepreneurial journeys and foster ecosystem building in new markets. These initiatives augment and complement the University's academic programmes and act as a unique bridge to industry well beyond Singapore's shores.

Learn more about how we can support you in your entrepreneurial journey.

Find out more

Join our events

If you are an entrepreneur affiliated with NUS Enterprise, find out how you can:

Give back to the community

Join our Start-Up Runway

Have a question or a suggestion? Reach out to us at **enterprise@nus.edu.sg**.

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