



IHL CIO FORUM

NETWORKING THROUGH TECHNOLOGY & EXPERIENCE SHARING



Disruptive Technology in Education

AI and Smart Campus

IHL CIO SUMMIT 2024



IHL CIO FORUM



Programme

Time	Programme		
9.30 am	Registration and Breakfast (SP CONVENTION CENTRE)		
10.30 am	Welcome Address by Summit Chairs		
10.40 am	Opening Address by IHL CIO Forum Chair		
10.50 am	Keynote Presentation 1: Intelligence@NUS (I@N)		
11.25 am	Keynote Presentation 2: Ngee Ann Polytechnic's Integrated Ops Centre 2.0 (IOC 2.0)		
12.00 pm	Lunch and Networking		
PM Tracks	Enterprise Track (AUDITORIUM)	Security and Infrastructure Track (LT17A)	Teaching and Learning Track (LT18A)
2.00 pm	ChatGPT Playbooks and "Private AI" (TP)	Borderless University, Borderless Wi-Fi (NUS)	ALEX Course Planner (NIE)
2.30 pm	JAMA – Generative AI Chatbot (SUSS)	NYP and Menlo: A Partnership for Better Browsing Security and Peace of Mind (NYP)	Course Feedback and Recommendation Insights System - CARIS (SMU)
3.00 pm	Operationalising and Securing Data Lake (SP)	SIT Punggol Campus Network (SIT)	Engaging Students with AI-Generated and Immersive Digital Content (NTU)
3.30 pm	AI Invoice Processing Automation (ITE)	Secure Service Edge Solution with AutoPilot (RP)	Learning Python Programming using Augmented Reality Application (SUTD)
4.00 pm	Closing Address by IHL CIO Forum Chair (SP CONVENTION CENTRE)		
4.10 pm	Token of Appreciation Presentation		
4.20 pm	Group Photo Taking		

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IHL CIO FORUM CHAIR



LAU KAI CHEONG

Mr **Lau Kai Cheong** is the Chief Information Officer (CIO) and Vice President (VP) for Integrated Information Technology Services at Singapore Management University. He is an experienced CIO with 16 years of demonstrated history of working in the higher education industry.

Kai Cheong holds a Master's degree from the National University of Singapore and is proficient in many areas, including IT Strategic Planning, Information Management, Business Process Management, Cloud Computing, Project Portfolio Management, Security and IT Service Management. He is currently the chair of the IHL CIO Forum, which comprises CIOs from the local autonomous universities, polytechnics and ITE.

IHL CIO SUMMIT CHAIRS



CHUA KEE KOON

Mr **Chua Kee Koon** is the Chief Information Officer (CIO) and Director of Information & Digital Technology Services Department at Singapore Polytechnic. He has been instrumental in driving digital transformation across the institution by working closely with schools and departments to adopt digitalisation. Prior to his current role as CIO, he served as the Agency Chief Information Security Officer (ACISO). His areas of expertise include software engineering, infrastructure administration, cloud technologies, and ICT security.

Kee Koon holds a Master's degree in Computer Engineering from the University of Arizona and has over 30 years of experience in the ICT industry.



BRENDON LAM

Mr **Brendon Lam** is the Chief Information Officer (CIO) and the Director of the Digital Services & Technology Office at Ngee Ann Polytechnic. Before contributing as the CIO, Brendon played various roles over more than 20 years of service in NP, including leadership in the academic school and in student development, and as NP's ACISO. He now focuses on unlocking value for NP through the greater adoption of digitalisation. Prior to being in the education sector, Brendon was in the defence and in the banking industries.

Brendon holds a Bachelor's Degree in Applied Science (Computer Engineering) and a Master's Degree in Business Administration, both from Nanyang Technological University.

Keynote Presentation 1

 SP CONVENTION CENTER

Intelligence@NUS (I@N)

AI-volution has swept across NUS! The keynote will showcase NUSChat, an advanced AI platform underpinning AI capabilities across the campus. From smart chatbots that empower staff via access to a comprehensive knowledge base of NUS policies, to AI tools that support Teaching & Learning initiatives, AI is set to transform the future of work at NUS.

Come take a peek behind the scenes to see how we got GenAI to work for us. Learn how we grew the platform from its initial idea to a full-fledged platform supporting an ever-expanding set of tools and applications built by system and citizen developers alike from departments across the campus. We will also share how Intelligence@NUS is created through AI-volution.

Speakers



Ku Wee Kiat

Wee Kiat has been with NUS IT Research Computing team for more than 5 years. He works on AI projects, conducts workshops on HPC-AI for staff and students and manages the central HPC-AI GPU clusters.



James Wong Kang Wei

James is a Software Engineer at NUS Information Technology in the Application Architecture and Technology team. He develops front-end and back-end applications and performs automation and performance testing. As part of the AI-volution project, he has worked extensively on the development of the NUSChat application.

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Keynote Presentation 2

 SP CONVENTION CENTER

Ngee Ann Polytechnic's Integrated Ops Centre 2.0

With the Integrated Operations Centre (IOC) 2.0, NP has taken a huge step forward in increasing the efficiency of its operations and sustainability of its campus. The IOC is made up of a Security Ops Centre and a Facility Ops Centre which respectively oversees security surveillance, facilities management (FM) and utilities monitoring.

Learn how with IOC 2.0, NP is embarking on a paradigm shift in FM service delivery by not only incorporating surveillance, security and smart access through frontier technology, but also by enabling the cross-training and upskilling of FM and security staff in cutting-edge technologies, and leveraging on the IOC as a learning lab for students too.

Speakers

Alan Thng Tien Chye



Alan Thng serves as the Director of the Estate, Eco, and Safety Office, acting as a key point of contact for all related matters. In his role, he functions as the Chief Steward for the campus facilities, overseeing seamless operations and ensuring a safe and environmentally friendly campus.

Charles Keck Meng Teck



As an IT and programming educator with a focus on mobile app development, Charles has dedicated his career to empowering students to succeed in today's digital world. His 25 years of experience in education and a passion for emerging technologies have enabled him to work on innovative and game-changing initiatives in Smart Facilities Management e.g., Digital Twin and IoT.

IHL CIO SUMMIT 2024

Enterprise Track

🕒 2:00 PM – 2:30 PM 📍 Auditorium

ChatGPT Playbooks and “Private AI” (TP)

With the advent of ChatGPT, TP has developed ChatGPT playbooks for staff and students to guide them on the possible usage and also the proper use of ChatGPT. In addition, TP is exploring “Private AI” through the use of LLM (Large Language Model) for Retrieval Augmented Generation (RAG) to handle question answering, document summarization, and content generation confined to TP’s content.

In this session, TP will:

1. Share how the ChatGPT playbook encourages staff on the effective and ethical use of AI generative tools for work as well as teaching and learning.
2. Share how the ChatGPT playbook supports students to leverage AI generative tools in their learning journey.
3. Highlight on the “Private AI” exploration based on RAG using Azure OpenAI Service with Azure native services in GCC Azure.

Speakers

Lee Kok Hian is the Deputy Director leading a team in architecture, innovation and security in TP. He has successfully led projects involving chatbots in TP, as well as the joint-poly AskPoly chatbot. In the realm of generative AI, he has contributed to the development of ChatGPT playbooks for both TP staff and students. Along with his team, he has experimented with ChatGPT and Azure OpenAI service, exploring potential use cases for generative AI solutions.

Kalyankumar Subramaniyan, a dedicated professional, has been delving into the realm of emerging technologies, with a keen interest in generative AI (GenAI). He has conducted various proof-of-concepts based on ChatGPT and Azure OpenAI services, aiming to understand the capabilities of Gen AI to explore how it can be applied to areas of teaching & learning, cyber security and corporate services.

Enterprise Track

🕒 2:30 PM – 3:00 PM 📍 Auditorium

JAMA – Generative AI Chatbot (SUSS)

JAMA, which stands for 'Just Ask Me Anything', is a state-of-the-art Generative AI Chatbot. This innovative tool was developed by the Campus IT Services (CITS), the IT Department at the Singapore University of Social Sciences (SUSS). The creation of JAMA is a result of the 'Blue Sky Friday' initiative, a unique program at SUSS that encourages staff to explore new ideas and experiment with advanced technologies.

Powered by Microsoft Azure Open AI, JAMA is designed to serve the internal community of SUSS. Its main role is to provide accurate and prompt answers to queries related to SUSS's policies and procedures. This contributes to a more efficient and informed work environment, ensuring staff members have immediate access to the necessary information. By automating responses to common inquiries, JAMA allows staff to focus on more complex tasks, enhancing the overall efficiency of the university's operations.

Speakers

Julian Chee is currently serving as the Assistant Director & Head (Applications) at the Singapore University of Social Sciences (SUSS). He has been with SUSS for more than 10 years, in charge of the IT systems. He assists in planning, development and implementation of IT systems for the university.

Tan Cheng Peng is experienced in application development and currently supports the Student Information Management System at SUSS. He has been exploring use of Microsoft Azure Open AI in developing innovative Generative AI Chatbot at SUSS. His passion lies in enhancing productivity with automation and exploring emerging technologies.

Enterprise Track

🕒 3:00 PM – 3:30 PM 📍 Auditorium

Operationalising and Securing Data Lake (SP)

Embarking the data lake journey in 2021, SP has successfully completed the initial phase that focused on PET data ingestion. Subsequently, they have progressed to a crucial stage where their emphasis is on operationalizing the data lake to meet the diverse needs of data analytics.

The general approach involves the creation of separate logical data marts tailored to each project or use case. Leveraging on a suite of AWS services, SP recognized the hurdles of manual processes, which tended to be error-prone and lacking in consistency. To overcome these challenges, SP has implemented an automation framework, ensuring a more streamlined, efficient, and consistent data mart provisioning experience.

In tandem with this, SP is continuously improving their monitoring mechanisms to fortify the overall security and monitoring framework of the data lake, ensuring a robust and vigilant environment.

Speaker

Xu Guang is the solution architect for the SP Data Lake project. Throughout her career, Xu Guang has experience in application development, software administration and service management. Besides the Data Lake project, she has been involved in the AiE PET project as chair of the technical group and co-chair of the data group, and is the service manager for AiE PFP.

Enterprise Track

🕒 3:30 PM – 4:00 PM 📍 Auditorium

AI Invoice Processing Automation (ITE)

Every year, the IT Division processes about 1,500 invoices, amounting to \$20M in value. The current challenge is that for each invoice, it requires the respective Project Lead to follow up with the submission of supporting documents before the invoice can be processed. Today, the identification of the Project Lead is done manually by the admin staff based on the information in the invoice, such as the purchase details etc. Emails are then manually sent to inform the Project Lead to follow up with the supporting documents.

The proposed AI invoice processing workflow will automate the process of analysing and identifying the Project Lead to inform them to follow up. This is developed based on the Microsoft Azure AI platform to extract information from Gebiz invoice submitted by Vendor and integrate with Microsoft Power Platform to process the invoice. The automation will alleviate the admin staff from doing mundane work and manpower savings. The use of AI automation will also pave the way for ITE to explore such automations in other business processes for operational efficiency.

Speaker

Desmond Chen is the ITE Agency POC for the technical track during the Cumulus onboarding for ITE. He is experienced in the application interface and has developed in-house application services to integrate Workday with ITE applications. With the knowledge of the business processes gained during the onboarding of Cumulus, he developed and integrated the IT Division AI invoice processes with Microsoft AI model so as to automate the workflow.

Security & Infrastructure Track

🕒 2:00 PM – 2:30 PM 📍 LT17A

Borderless University, Borderless Wi-Fi (NUS)

The NUS Outdoor Wi-Fi over 5G project is Singapore's first 100% solar-powered portable network infrastructure that provides seamless outdoor connectivity. The project's key success factors included its cost-effective and speedy deployment, which eliminated the need for underground cables. With installation time reduced by 90% to 1 day and cost savings of approximately \$3 million for a campus-wide deployment, this eco-friendly solution also champions sustainability efforts in green technology adoption.

Expanding NUS' Wi-Fi capabilities outdoors, coupled with the utilisation of existing 5G coverage, NUS has opened doors to pioneering learning methodologies, and enhancing its reputation in education, research, and innovation. It also underscores the University's leadership in networking technology innovations, fulfilling NUS IT's vision of being a truly borderless university.

Speaker

Ooi Bok Koon is a Senior Network Architect at NUS with over two decades of IT experience focusing on network solutioning and project management. Holding Cisco CCIE and PMP certifications, his expertise is well-recognised. At NUS, he led the multi-phased wireless infrastructure revamp programme and was instrumental in the Software-defined Access project's design and execution. Bok Koon had innovated a sustainable 5G Outdoor Wireless solution which achieved significant cost savings and rapid deployment. He also advanced the Outdoor Wireless solution to create NUS Wi-Fi On-The-Move, contributing to the realisation of NUS IT's vision: "Borderless University, Powered by Infinite Technology".

Security & Infrastructure Track

🕒 2:30 PM – 3:00 PM 📍 LT17A

NYP and Menlo: A Partnership for Better Browsing Security and Peace of Mind (NYP)

In today's digital world, protecting users from online threats is paramount. Humans remain a vulnerable entry point, particularly as the weak link in browser exposure. The nature of phishing attacks has evolved significantly, with over 740 attacks impacting users. This represents a significant hit rate. Past e-mail security research has shown that phishing attempts rate is around 1,200 per targeted organization. Over half will get through to the browser if security controls are evaded. Furthermore, 75% of phishing links are hosted on known, categorized or trusted websites to unsuspecting users.

NYP and Menlo have partnered to provide a comprehensive solution that safeguards users' online activities and delivers peace of mind. This sharing will delve into the details of this collaboration, highlighting how NYP and Menlo are working together to enhance browsing security and empower users to navigate the Internet with confidence.

Speaker

Thomas Chia (CISSP, CISM and CISA) is currently the ACISO (Agency Chief Information Security Officer) in Nanyang Polytechnic. He leads the Cybersecurity and Modern Workplace towers in implementing security technologies with a zero-trust perspective and supporting a collaborative modern workspace.

He is an experienced IT Infra Operations and Cybersecurity professional with experiences spanning across industries such as banking, transport and oil & gas. Before joining NYP, he was with DBS Bank leading the blue team in endpoint security project management and delivery, collaboration with regional teams to ensure service availability and policy alignment of endpoint defense tools, security monitoring, audit and compliance. He successfully deployed the first Cyberreason EDR in DBS bank in his first year.

Security & Infrastructure Track

🕒 3:00 PM – 3:30 PM 📍 LT17A

SIT Punggol Campus Network (SIT)

Modernizing Network Infrastructure, utilizing Software Defined Networking (SDN) Zero Trust security model and WiFi 6E, can attain the following goals: enhancing access security, streamlining management processes, optimizing operations, and providing an enhanced user experience.

SDN is an approach to networking that separates the control plane from the data plane, thereby providing centralized management and programmability of the network infrastructure. It streamlines network management and configuration, and improves scalability and adaptability to changing demands.

Zero trust is a security model that assumes no implicit trust. It improves security posture by minimizing the attack surface, and improves threat detection and response. In case of a breach, it mitigates against lateral movement.

WiFi 6E is an extension of the WiFi 6 standard, operating in the 6 GHz frequency band. It brings several enhancements to wireless networks, such as improving wireless performance and user experience especially in crowded environments. It also improves support for IoT devices and enhances support for bandwidth-intensive applications.

Speaker

Gui Tang Guan is a Lead IT Consultant with about 10 years of working experience in SIT's Communications & Information Technology Division. His experience includes building network infrastructure at Dover campus and satellite site at various Polytechnic campuses. Currently, he is working on setting up the new network infrastructure at SIT Punggol campus, which is slated to be completed in 2024.

Security & Infrastructure Track

🕒 3:30 PM – 4:00 PM 📍 LT17A

Secure Service Edge Solution with AutoPilot (RP)

With 100% systems in the cloud, RP now manages RP devices and how they can access to RP applications and resources in the cloud. Unlike traditional standard Active Directory (AD) join domain laptop, Autopilot, being an Azure Active Directory (AAD) join laptop, is a cloud-based management solution leveraging on the benefits offered by Microsoft Intune and Zero Trust solution. While Auto-Pilot and Intune manage the devices and its security posture, the Secure service edge solution provides the zero trust component of the zero trust architecture, ensuring only traffic from RP devices can access to RP resources.

Speaker

Lau Yong Ghee is a strong advocate for the use of technology and innovation to enhance user productivity and experience. He is always on the look out for market best practices and cutting edge technologies that can be applied to RP users.

Teaching & Learning Track

🕒 2:00 PM – 2:30 PM 📍 LT18A

ALEX Course Planner (NIE)

The ALEX course planner application presents state-of-the-art advantages with the potential to transform the course design process. Harnessing the power of an advanced Large Language Model (LLM), ALEX provides faculty members access to an extensive database of educational resources and insights. This not only expedites the development of course objectives but also allows for the recognition of emerging trends in pedagogy, ensuring that curricula remain dynamic and up to date.

Furthermore, ALEX integrates seamlessly with the Blended Learning model, combining the strengths of both traditional and online teaching methods. This strategic alignment enhances flexibility and accessibility, accommodating the needs of a diverse student population. In essence, the ALEX application represents the cutting edge of educational technology, offering a comprehensive and forward-thinking approach to course design that not only embraces current best practices but also anticipates and adapts to the ever-changing landscape of education.

Speakers

Shamini Thilarajah-Hariharan is a recognised leader in the field of pedagogical innovation. She is the Deputy Director and Head of the Centre for Innovation in Learning (IN-Learning) and a PhD student at the National Institute of Education (NIE). She oversees a multi-disciplinary team dedicated to transforming teacher education for the future. As an active researcher in teaching development and pedagogical innovations, her significant contributions have been recognised through multiple awards, including the 2021 & 2022 Blackboard Catalyst awards and the 2019, 2020 & 2021 NIE Teaching & Learning Innovation awards.

Kai Hiong Oun has been a driving force in bringing AI innovation to NIE. Notably, he played a key role in developing ALEX – an AI course planner assistant, the NIE AI Sandbox platform that fosters user experimentation with AI, and the inaugural AI Empowerment Boot Camp that equips practical AI knowledge. His technical expertise extends to cloud platforms like AWS and Azure, enabling him to guide users on Generative AI applications.

Teaching & Learning Track

🕒 2:30 PM – 3:00 PM 📍 LT18A

Course Feedback and Recommendation Insights System – CARIS (SMU)

Singapore Management University (SMU) places great emphasis on fostering a culture of effective teaching and learning through course feedback. The Course Feedback and Recommendation Insights System (CARIS) was designed by the Centre for Teaching Excellence (CTE) under the EdTech Greenhouse initiative to support instructors in identifying their strengths and areas for improvement. CARIS uses AI Machine Learning to organize qualitative student feedback data into discernible categories and presents instructors with evidence-based recommendations and curated best practices. This enables instructors to interpret feedback data efficiently and adapt their teaching methods, resulting in improved learning experiences for their students.

Together with the Integrated IT Services (IITS) team, CTE aims to share insights on the potential of leveraging Machine Learning to improve teaching and learning and overcoming implementation challenges such as large-scale data processing, cloud migration and security management.

Speakers

Sandy Gan serves as the Assistant Director at the Center for Teaching Excellence at SMU. She manages course feedback data to support faculty in teaching more effectively, and the University's Teaching Excellence Awards to recognise individual contributions and achievements.

Amar Vilas Shedage is a Senior IS Analyst with Integrated Information & Technology Services at SMU, developing data analytics to improve business operational efficiency and decision-making.

Teaching & Learning Track

🕒 3:00 PM – 3:30 PM 📍 LT18A

Engaging Students with AI-Generated and Immersive Digital Content (NTU)

The ascent of Artificial Intelligence (AI) is set to reshape curriculum content creation, introducing adaptability and innovation in education. AI integration, exemplified by platforms such as Descript and Uptale, promises to revolutionise the creation, delivery, and engagement of educational materials. These tools, transforming audio and video editing, pave the way for dynamic, personalised, and immersive learning experiences. Descript and Uptale not only redefine content development but also offer user-friendly solutions.

This session will cover AI applications, their advantages and drawbacks, aiming to reveal AI's profound impact on education and its potential to redefine the future of curriculum content development.

Speakers

Ashraf Hamid leads a team of video content creators dedicated to developing educational videos for courses in NTU. His leadership extends to collaborating with individuals from diverse backgrounds, leveraging their expertise across various fields of study. He also actively participates in audio-visual procurement and consultancy for several major projects at NTU, playing a crucial role in enhancing the technological infrastructure for educational initiatives.

Lee Siang Hwee leads a team of learning designers working with NTU faculty to design, develop, and implement digital content and solutions for use in courses to enhance teaching and learning outcomes. The team provides consultancy to faculties on how emerging technologies can be integrated into their teaching materials to maximise their affordances and help in the achievement of learning outcomes for each lesson.

Teaching & Learning Track

🕒 3:30 PM – 4:00 PM 📍 LT18A

Learning Python Programming using Augmented Reality Application (SUTD)

In this presentation, SUTD will share an Augmented Reality (AR) application that was developed by SUTD for the purpose of teaching coding using Python programming language. SUTD has found that the use of robots is very effective in engaging and motivating learners. The learning objectives can be achieved either when a physical robot or a simulated robot is used. Moreover, there is no significant difference in the intrinsic motivation by learners when using an augmented reality robot as compared to physical robots. The advantage of using AR robot to teach programming will be presented. Finally, SUTD will also share the early development of their second version of AR application that allows collaboration of more than one learners in the augmented reality environment.

Speaker

Dr Oka Kurniawan led the largest introductory course to Programming at SUTD from the year 2015 to 2020. He was also in charge for an exciting course that teaches students how computer works from basic building blocks like transistors up to its operating systems until 2019. He was involved in designing and leading new computing courses for SUTD such as 'Data Driven World' and 'Design and AI' studio courses. Since 2021, he has been the subject lead for these two courses. He was awarded SUTD Teaching Excellence in 2018 and his teaching was recognized internationally as Fellow by Advance HE in 2020.

He has also been involved in several educational research involving how to teach computing using games, robots, and recently AR/VR. He was appointed in 2021 as a Deputy Director for SUTD campusX programme to lead SUTD into becoming a cyber physical campus. He was also recognized as IEEE Senior Member in 2022.

Directions to Venue

The Summit's morning session will be held in the **Singapore Polytechnic Convention Centre (SPCC)** which is located next to the **Dover MRT Station**. The venues for the breakout sessions in the afternoon are located next to SPCC.

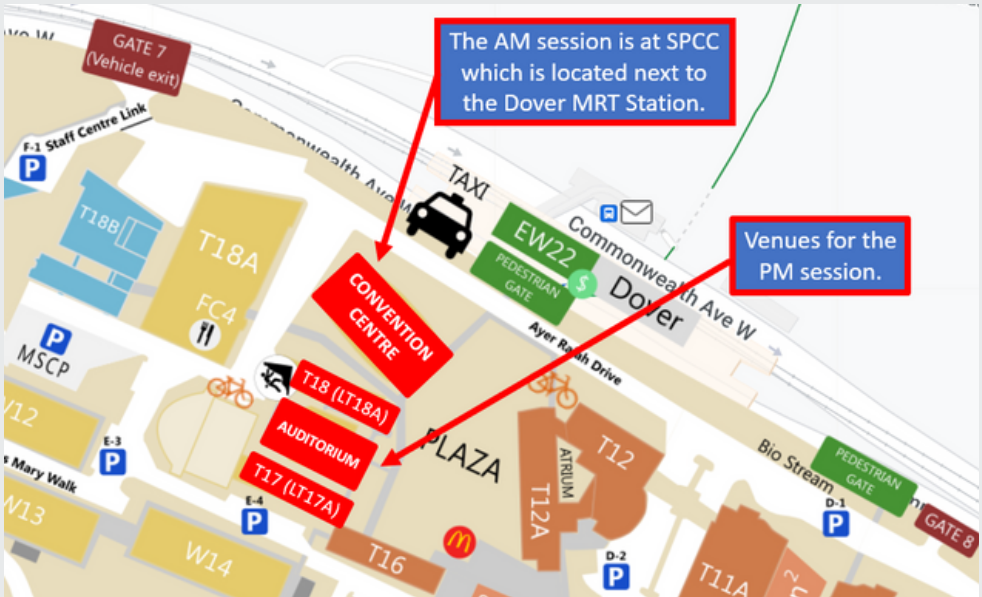
As parking facilities in the SP campus are limited and chargeable, participants are **strongly advised to come by public transport**.

You may choose to come by

- **MRT:** take the MRT and alight at **Dover MRT Station (EW22)**, or
- **Bus:** take bus service no. **14, 74, 105, 106, 147, 166 or 185**, and alight at the **Dover MRT Station bus stop**.

Participants who drive should enter by Gate 8, along Commonwealth Avenue West.

As part of GreenGov.SG sustainability efforts, bottled/packageged water will not be provided. Participants are **encouraged to bring their own water bottles** that can be refilled at the water dispenser.





Appreciation to IHL CIO Forum

Lau Kai Cheong (Chair)
Neo Yong Chiang (Co-Chair)
Ang Lek Han
Alvin Ong
Chong Fook Weng
Eng Pin Kwang
Kristopher Stuart O'Brien
Kong Yen Teck
Law Chin Choo
Lee Foo Wah
Tan Shui-Min

IHL CIO Summit 2024 Planning & Executing Team

<u>SP</u>	<u>NP</u>
Chua Kee Koon (Chair & CIO)	Brendon Lam (Chair & CIO)
Yeo Bee Ngoh	Lim E Lin
Koh Wen Long	Kim Chee Wee
	Pradheep Yatheendran

