



GOVTECH  
SINGAPORE



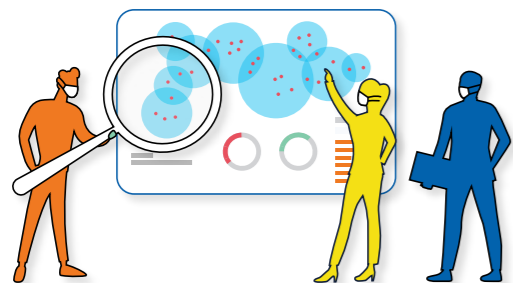
# DRIVING DIGITAL TRANSFORMATION; RESPONDING TO COVID-19 | Annual Report 2020/2021

# Chairman's Message

The past year has been a challenging one for Singaporeans and public agencies. GovTech's organisational and engineering capabilities have been stress-tested to the hilt as we support the government's fight against COVID-19. I am pleased to say that our people have risen to the occasion. Our investments in re-engineering the government digital infrastructure and transforming the organisation through GovTech 2.0 has paid off in enabling a swift digital response to the pandemic.

## RESPONDING TO COVID-19 AS ONE GOVTECH

In short order, we managed to deploy critical solutions that supported Singapore's COVID-19 response. Our contact tracing tool TraceTogether and check-in service SafeEntry formed the backbone of our contact tracing efforts, enabling the Ministry of Health (MOH) to reduce the time taken to identify and ring-fence close contacts of infected cases from four days to less than a day. We developed end-to-end solutions for rapid antigen testing and built the COVID-19 Management Backbone for seamless data flow across government agencies and applications. Digital services like the National Appointments System were rolled out to help MOH administer more than eight million doses of the COVID-19 vaccine to meet Singapore's vaccination target.



We introduced digital solutions to enable timely and accurate government communications to citizens. The suite of GoWhere sites like MaskGoWhere and TokenGoWhere provided citizens with information on where they can collect masks and TraceTogether tokens. Postman, a modular omnichannel communication tool, enabled the government to send nationwide COVID-19 updates to over one million subscribers through the Gov.sg WhatsApp channel.

Our agencies' teams played a crucial role in ensuring the continuity of operations and services provided to citizens. The team at the Ministry of Education increased the capacity of the Student Learning Space system to concurrently support over 400,000 students in home-based learning during the lock-down. Our team at the People's Association deployed over 1,500 systems and devices at short notice to support the mobilisation of staff and volunteers to deal with mask distribution at the frontline.

Our infrastructure teams worked round the clock to boost our infrastructure capacity, monitor the health of our critical networks, and enhance workplace collaboration platforms to support public officers working from home. Our cybersecurity team also played a crucial role in stepping up to give advice and support, conducting penetration and security tests to enable the quick commissioning of COVID-19 digital tools.

These are just some examples of how GovTechies have risen to the occasion amidst the crisis. But this could not have been possible without the strong ops-tech relationships we have forged with our agency partners during the pandemic. I want to record my thanks not just to our GovTechies, but also to our partners for their unwavering support in jointly delivering effective digital solutions as One Public Service.

## ACCELERATING DIGITALISATION WITHIN THE PUBLIC SERVICE

Even as we dealt with COVID-19, we continued to make good progress in accelerating digitalisation within the whole of government (WOG). We are on track in migrating our agency systems to the Government Commercial Cloud (GCC), with nearly 40 per cent of systems completing migration as of March 2021. Agencies onboard the GCC have reported up to 50 per cent in annual cost savings, as well as significant improvements in service reliability and scalability.

The adoption of digital tools such as FormSG by agencies and citizens has also grown significantly in the past year, with form submissions increasing from three million to a hundred million. We rolled out Secure Internet Surfing to allow officers to surf the Internet securely on their work laptops and access information seamlessly. We also embarked on a multi-year strategy to onboard agencies to Workday, a global cloud-based application. With Workday, we can adopt the best in user design and corporate services delivery while achieving manpower and cost savings in the Public Service. Over 23,000 officers from 17 agencies are now on board and can perform everyday tasks on the go through the mobile app, improving their productivity and work experience. Twenty-two more agencies will come on board over the next two years.

These efforts, combined with the various digital tools we have rolled out, resulted in the highest-ever public officers' satisfaction score of 79% for the annual Surveys on Satisfaction with Government Digital Services – an improvement of eight percentage points from last year's survey.





## DELIVERING TRANSFORMATIVE DIGITAL SERVICES FOR CITIZENS AND BUSINESSES

Despite the pandemic, citizens' and businesses' satisfaction with government digital services also held steady (85% and 76% respectively). The percentage of citizens who were extremely satisfied with our services increased by six points, thanks to our continuous efforts to implement and improve our various digital platforms.

The Singpass app was refreshed in early 2021 and is now used by three million residents, with new features such as Digital IC and Face Verification for improved identity verification and authentication. Users can also digitally sign their electronic documents securely through the app. Moments of Life was rebranded to LifeSG, providing more touchpoints for users to transact with the government at key life stages. Myinfo business was enhanced to enable companies to save time in B2B transactions, and over 700,000 manpower and workplace applications for businesses were made through the GoBusiness portal.

Together with the Smart Nation and Digital Government Office, the Monetary Authority of Singapore and Ministry of Manpower, we launched SGFinDex, the world's first public digital infrastructure to use a national digital identity and centrally-managed online consent system to enable individuals to access their financial information across government agencies and financial institutions. Over 98,000 unique users have performed setup or retrieved their data since its launch last December.

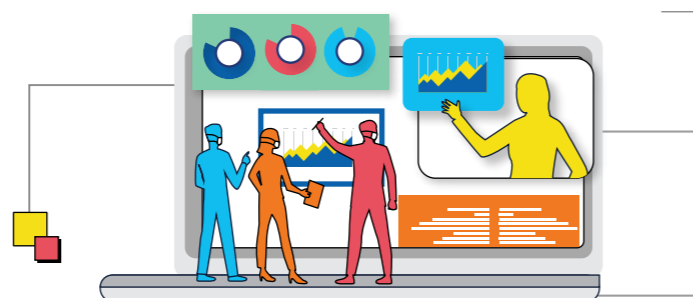
Our efforts to continue driving digitalisation were acknowledged through many local and international awards. As a country, we retained first place in the 2020 IMD-SUTD Smart Cities Index. As an organisation, our teams did us proud – winning prizes at the Public Sector Transformation Awards, United Nations World Summit on the Information Society Award and Gartner Eye on Innovation Award, to name a few.

## DEMONSTRATING LEADERSHIP AS THE WOG ICT&SS FUNCTIONAL LEADER

In our role as the government's ICT&SS Functional Leader, GovTech continued to play a key part in driving the Public Service towards building a Smart Nation. We concluded the second round of the Ministry Family Digitalisation Plans (MFDP) with 19 Ministry Families and have made good progress in our digital government journey. MFDP has facilitated a higher level of policy-ops-tech integration and greater command responsibility at the senior leadership level. More holistic planning has been put in place to strengthen the alignment of Ministry Family plans with WOG directions in digitalisation and data, enabling us to chart the way forward for the next phase of MFDP.

We also completed the revamp of the IM8 (Instruction Manual on ICT & Smart Systems), making it more user-friendly, comprehensive, and relevant to the changing technology landscape. With the new IM8 guidelines, agencies can take a risk-based approach to implement the required standards within their operating context, empowering them to manage their systems and data better.

In the SNDGG Effectiveness Survey conducted in November 2020, 84% of Public Service Leaders agreed/strongly agreed that SNDGG is an effective ICT&SS Functional Leader – up 12 percentage points from 2019. Leaders agreed that we “provided strong leadership in charting and implementing new technologies to engineer a Digital-to-the-Core government” and “demonstrated adaptability and responsiveness as a Functional Leader during COVID-19”. This is a good indicator that we are on the right path and should motivate us to double down on our efforts.



## ENGAGING OUR COMMUNITIES TO MAKE LIVES BETTER

2020 was also when many of our traditional ways of doing things changed or were reimagined as our interactions moved into the virtual space. I'm glad that we successfully pivoted and continued to connect with our partners in digital government through virtual editions of our annual Digital Government Exchange (DGX) and engage our developers in the biennial STACK developers conference.

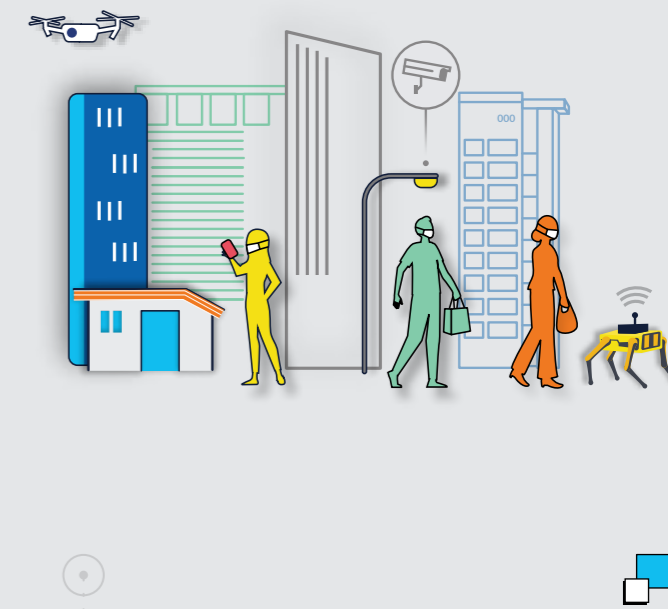
Public sector leaders from 14 countries in Asia, Australasia, Europe and Singapore participated in DGX, while more than 4,000 developers attended STACK 2020. GovTech also organised 10 STACK-X webinars that reached out to 2,300 participants throughout the year. Within the Public Service, we held a virtual CDSO Connect with over 100 participants to update them on the progress of the MFDP and the government's digital transformation efforts. Our teams also continued to keep citizens engaged through regular Tech Kaki sessions, inviting them to co-create, test, and provide feedback on various Smart Nation initiatives and digital products.

As an organisation, GovTech remained among the top tech employers for in-demand roles in engineering, infrastructure, and cybersecurity. Our multi-channel employer branding efforts have helped increase awareness among potential hires and young talent, with the growth in direct applications and referrals in 2020 indicating a solid brand presence. Within GovTech, we implemented the GovTech Competency Framework to optimise our workforce capabilities through competency-based workforce management. The Digital Academy was launched to accelerate efforts in helping officers attain the required technical proficiency in their job roles. We also enhanced employee engagement across the board, strengthened our holistic well-being approach to support staff, and adopted a hybrid working approach.

## PREPARING FOR THE NEXT BOUND

2020 should give GovTechies the conviction that our work can make a big difference to the public sector, citizens, and the nation. Whether we were aiding our colleagues' adjustment to work-from-home, helping agencies deal with sectoral challenges or addressing public health concerns directly (e.g. contact tracing), our contributions have been impactful, and at times, decisive. We must continue to live up to GovTech's *raison d'être* – to engineer digital government and make lives better. Let us “lock in” this conviction and confidence as we prepare for the next bound. Let us continue to be ambitious – seizing every opportunity to make digitalisation a defining driver for a better government and nation in the years ahead.

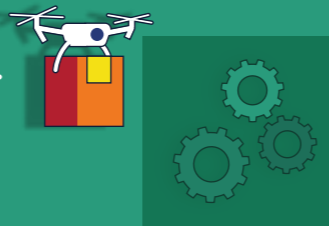
**Ng Chee Khern**  
Chairman  
Government Technology Agency



# RESPONDING TO COVID-19 AS ONE GOVTECH

2020 has unalterably disrupted life as we know it. We have had to adapt to new ways of living, working and playing. Amid the challenges brought about by this unprecedented year, GovTech rose to the challenge with talent, technology and tenacity. Our teams went above and beyond to support the whole-of-government COVID-19 response, delivering digital solutions and services for citizens, businesses and the Public Service on top of their day-to-day work.

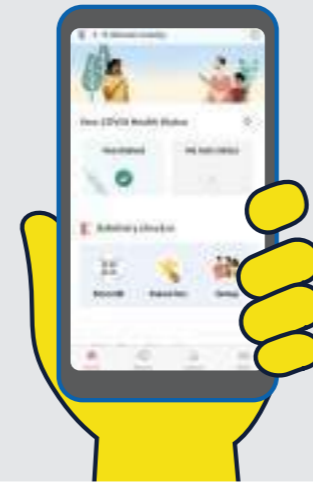
# MANAGING THE CRISIS



## SUPPORTING SINGAPORE'S CONTACT-TRACING EFFORTS

### TraceTogether

GovTech worked with the Ministry of Health to develop and roll out the TraceTogether mobile app in early 2020 – a contact tracing mobile app that uses Bluetooth technology for proximity tracing, enabling COVID-19 cases to be detected and isolated earlier and more efficiently. The TraceTogether Token was later introduced in June 2020 to ensure that the digitally excluded community, like the elderly and other citizens, could also stay safe. As at end-July 2021, 99% of the population have adopted the TraceTogether digital contact tracing solution.



The team leads behind GovTech's TraceTogether efforts:



**Jason Bay**  
Senior Director,  
Government Digital Services



**Dominic Chan**  
Director,  
National Digital Identity



**Quek Yang Boon**  
Director,  
Sensors & IoT

### JASON BAY

Senior Director,  
Government Digital Services

Describing himself as a curling sweeper – navigating the bureaucracy ahead of his teams just as a sweeper steers the stone by sweeping the ice ahead – Jason leads the strategy, design and delivery of digital products at GovTech to help transform the way the Government serves the public. After hearing the news of Singapore's first COVID-19 case on the radio, he pitched the idea of a mobile app to colleagues at the Ministry of Health that would help to transform contact tracing. That marked the birth of TraceTogether, and the rest as they say, is history. While ensuring that TraceTogether continued to evolve with the changes brought about by the pandemic, Jason's team was also responsible for delivering a range of other pandemic solutions, such as SafeEntry, HealthCerts, and a range of informational 'GoWhere' sites, beginning with MaskGoWhere.



“ I'm grateful for the relationships that I've forged through the COVID-19 crucible. The experiences, both ups and downs, have solidified many friendships that will survive the work that brought us together. I've also benefitted greatly from stakeholders who were prepared to empower my team and I, and to trust us to deliver the desired outcomes. Without their support, none of our work would have been possible. ”



## SafeEntry Portal, App and Gateway

The national digital check-in system for contact tracing, SafeEntry has adapted to the ever-evolving pandemic. From checking in via Singpass and the TraceTogether app, it now allows check-ins via TraceTogether Tokens and, most recently, the app-based version of SafeEntry Gateway – reducing congestions at check-in points through Bluetooth-based check-ins.



### ALEX NG

Software Engineer,  
Government Digital Services

As the tech lead for the SafeEntry Business Portal and App team, Alex played a key role in developing the first iteration of SafeEntry at the initial stage of the pandemic, deploying SafeEntry NRIC at four major wet markets in just two and a half days. Since then, SafeEntry has grown to include other forms of check-in, such as via TraceTogether Tokens and the SafeEntry Gateway. Alex now monitors SafeEntry's usage to ensure that the entire contact tracing process is seamless – from the moment users check-in to when public health alerts are triggered.

“**‘Pressure makes diamonds’ – one of my favourite quotes. Battling uncertain product scopes, hectic development and tight delivery timelines for the various COVID-19 initiatives, I saw first-hand the ‘diamonds’ at GovTech, working together to make an impact in the lives of citizens. Grateful to work with a group of fun, talented and resilient people!**”



### JAMIE CHENG

Associate Embedded Engineer,  
Sensors & IoT

Jamie was part of the team that developed and tested features of the SafeEntry Gateway (SEGW) box, managed ground operations, and ensured that members of the public had a positive user experience. Having joined GovTech just before the pandemic, she has worked almost exclusively on COVID-19 projects and played a key role in the implementation of SEGW – even forming a helpdesk team to manage public queries and applications from businesses. Although there were fast-changing demands and challenges faced, Jamie's team eventually managed to get a system in place and even carried out deployments for ad-hoc events.

“**Entering a new and foreign environment during the pandemic was a challenge, but it has given me the opportunity to work closely with various teams. I am thankful to be part of this meaningful project and even more so for the warm camaraderie and support from the teams which made working enjoyable despite the pandemic.**”



## COVID-19 Management System

A multi-agency collaboration between GovTech and the Ministry of Health (MOH), the COVID-19 Management System was key in helping Singapore's Contact Tracing Centres identify, verify and manage positive COVID-19 cases efficiently. Contact tracing efforts were accelerated, allowing close contacts of cases to be isolated promptly. The team also provided the Ministry of Manpower and Public Health Institutions with the data required for phone surveillance to manage persons under quarantine.



### CHLOE KHOO

Senior Digital Business Analyst,  
Ministry of Health

An analyst under MOH's Corporate Systems and Infectious Disease Surveillance and Outbreak Management team, Chloe was involved in multiple COVID-19 projects, working across teams from various agencies to support Singapore's contact tracing and quarantine efforts. The dynamic and evolving nature of the situation meant that the team had to respond in tandem with the changing needs on the ground and adapt where necessary. For Chloe, there was also the additional challenge of managing home-based learning for her two sons in primary school at the height of the pandemic. Despite that and the long hours, she is thankful to have contributed in a meaningful way to Singapore's COVID-19 response.



“While the past two years were challenging, it has also been an immensely fulfilling and meaningful journey. I'm especially thankful for the wonderful collaboration across teams and agencies, particularly the TraceTogether, SafeEntry, Vision and SALLY teams - we all worked hard together with a common goal to see Singapore through the pandemic.”

## DEPLOYING TEMPERATURE SCANNING SOLUTIONS

### SPOTON

SPOTON is a smart thermal scanner developed for mass temperature screening. It combines deep learning-based software with low-cost hardware to screen up to 10 people in indoor and outdoor environments. In September 2020, GovTech licensed the SPOTON software for free to three small-and-medium enterprises and a non-profit organisation, enabling the latter to provide job opportunities for individuals with special needs thanks to SPOTON's easy-to-assemble nature.



### Self-Help Temperature Scanner

Early in 2020, GovTech rolled out a low-cost, fast-deploying self-help temperature scanner - developed wholly in-house using off-the-shelf materials - at government buildings and community clubs to automate temperature-taking during the pandemic. Close to 200 units were assembled and deployed with the support of public service officers.





## SenseOps

To effectively support safe-distancing operations during the pandemic, SenseOps was rolled out to gather real-time data from various sources, visualise it, and display it on a single platform. Using SenseOps, agencies could effectively deploy more Safe Distancing Ambassadors at common hotspots to ensure safe distancing measures.



### SIAH SHU FEN

Project Manager,  
Smart Nation Platform Solutions

Shu Fen joined GovTech just before the Circuit Breaker and was soon pulled in to oversee the development of SenseOps, a visualisation and dashboarding tool for COVID-related enforcement and operations that is now used by 28 agencies. Working with a timeline that was accelerated ten-fold, Shu Fen's team worked through weekends to get a prototype version up in 11 days. There were many instances when they had to push on and look for different ways to deliver the product as soon as possible. With help from various teams within GovTech, SenseOps went live within a month and continued to evolve to support the changing Safe Management operations.



“It was through SenseOps that we got to work with many other talented teams in GovTech, all of whom helped us immensely along the way. It was not an easy period for all of us and I'm especially thankful for their willingness to step up even when it meant sacrificing weeks of their personal time and sleep. I'm glad that we could contribute in our various roles and do our part to help the nation in critical times.”

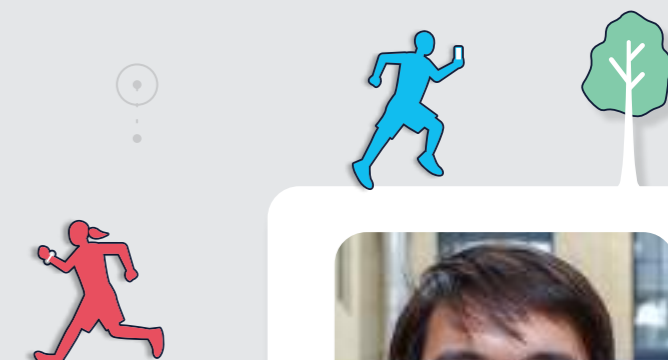
## Digital Operations Smart Services (DOSS)

Leveraging robotics for safe-distancing operations, DOSS – an operations management platform that works with any robot system – was used to power the four-legged robot SPOT for autonomous navigation, remote controlling, and real-time analytics. SPOT was deployed at the Bishan-Ang Mo Kio Park in May 2020 to help ensure safe distancing and mask-wearing among crowds.



### Safe Distance @ NParks

To improve crowd control and safe distancing operations at public parks during the pandemic, GovTech collaborated with NParks to launch an AI solution that facilitated automated crowd counting and the feeding of live data into NParks' Safe Distance portal. This helped minimise the need for NParks to physically deploy their officers at public parks and manually account for crowds.



### BILL CAI

Data Scientist,  
Data Science and Artificial  
Intelligence Division

As a Data Scientist, Bill helps design, implement, and iteratively improve products that generate useful insights and image data. On top of his day-to-day work, Bill and his team worked closely with stakeholders to develop and roll out various automated tools during the pandemic. This included VigilantGantry – an AI-enabled automated thermal scanning gantry that was subsequently open-sourced for industry take-up, as well as a crowd estimation tool for NParks. The prototype for the latter was developed in 3.5 days and was later scaled up to include over 160 cameras island-wide.



“I am thankful for the trust that our users have in letting us come up with ideas and to implement and scale them. Whenever we face initial hiccups, the fact that they believe in the potential of our products enables us to push through and deliver something useful.”



## COVID-19 Operations @ People's Association

GovTech staff deployed at the People's Association (PA) worked hard to roll out the necessary technology and systems required to facilitate nationwide distribution of key items, such as masks, SG Together Fun Packs and TraceTogether Tokens. A record 4.2 million masks were distributed to citizens during the Circuit Breaker period, and PA's existing grant management system was also adapted to facilitate the disbursement of the Temporary Relief Fund to individuals in need of financial assistance.



## RedeemSG

With the shortage and uneven distribution of face masks at the start of the pandemic, there was a need to develop a fast and cost-effective way to distribute masks to citizens. Working with government agencies, GovTech developed and integrated RedeemSG's system in over 1,000 mask vending machines to ensure that citizens could easily redeem free masks in their neighbourhoods. RedeemSG facilitated over 20 million redemptions island-wide across five mask distribution campaigns.



## SupplyAlly

SupplyAlly is a mobile app that facilitates the process of logistics distribution. Since its launch, SupplyAlly has operationally supported the distribution of 4.2 million reusable masks, over 440 refurbished laptops, and more than four million TraceTogether tokens.



## Homer

Homer was launched to help reduce the spread of the virus by ensuring that potential carriers complied with their Quarantine Orders (QO) and Stay-Home-Notices (SHN). The system helped facilitate spot-checks via SMS or a mobile app, which sends related data for enforcement officers' review. It is used by the Ministry of Health, Ministry of Education, Ministry of Manpower and the Immigration and Checkpoint Authority, and has ensured compliance of over 300,000 QOs and SHNs.



## ENABLING SINGAPORE'S REOPENING

### COVID-19 Management Backbone

To facilitate Singapore's reopening, GovTech created an intuitive registration system for individuals to uniquely identify themselves when taking Antigen Rapid Tests (ART). Registration forms and test cartridge readers were integrated with the COVID-19 Management Backbone, which notified individuals and public health authorities in real-time upon completion of an ART test or when an antigen-positive case is detected. Over one million tests were administered through the system at border checkpoints and large-scale events.



## HealthCerts

GovTech and the Ministry of Health developed a globally interoperable standard for Pre-Departure Test (PDT) results and vaccination certificates, HealthCerts, to facilitate the safe resumption of travel. HealthCerts works with the Notarise system to endorse locally issued certificates and the Verify system to enable checks on the authenticity of these certificates. To date, over 332,000 PDTs and 338,000 digital vaccination certificates have been endorsed and issued.





## Vaccination Appointment Booking

To facilitate the nation-wide vaccination exercise and support end-to-end operations, Vaccine.gov.sg was developed to provide up-to-date information on Singapore's vaccination programme and direct people to pre-register online via FormSG. The system authenticates an individual's registration and notifies them via SMS to schedule their appointments through the National Appointment System. A proxy booking system was later built to ensure that even the less digitally savvy like the elderly could book their appointments through agencies like the People's Association and Silver Generation Office.



### JEAN TAN

Software Engineer,  
Open Government Products

Describing herself as analytical, frank and persistent, Jean builds products that improve the efficiency of the government. Her team was responsible for launching the Gov.sg WhatsApp service when the pandemic hit and prototyping the vaccination appointment booking system. The latter has since evolved into an entire suite of systems that enable scheduling, record-keeping of vaccinations and test results, and logistics optimisation. Jean was key in building the pre-registration workflow for the booking system, which helped to titrate the population according to available vaccine supply and appointment availability. Although it was a challenge to

integrate their products with other agency systems, Jean's team pushed through to reach common ground and support each other through stressful situations.

“ I'm especially grateful to the people I work with for having my back and being open to discussing issues. Thanks to everyone in Open Government Products who continued working tirelessly, our vaccine ops team was able to roll out vaccinations to most of Singapore's population in a short amount of time. ”

# DELIVERING INFORMATION AND SUPPORT FOR CITIZENS AND BUSINESSES



## DISSEMINATING TIMELY INFORMATION

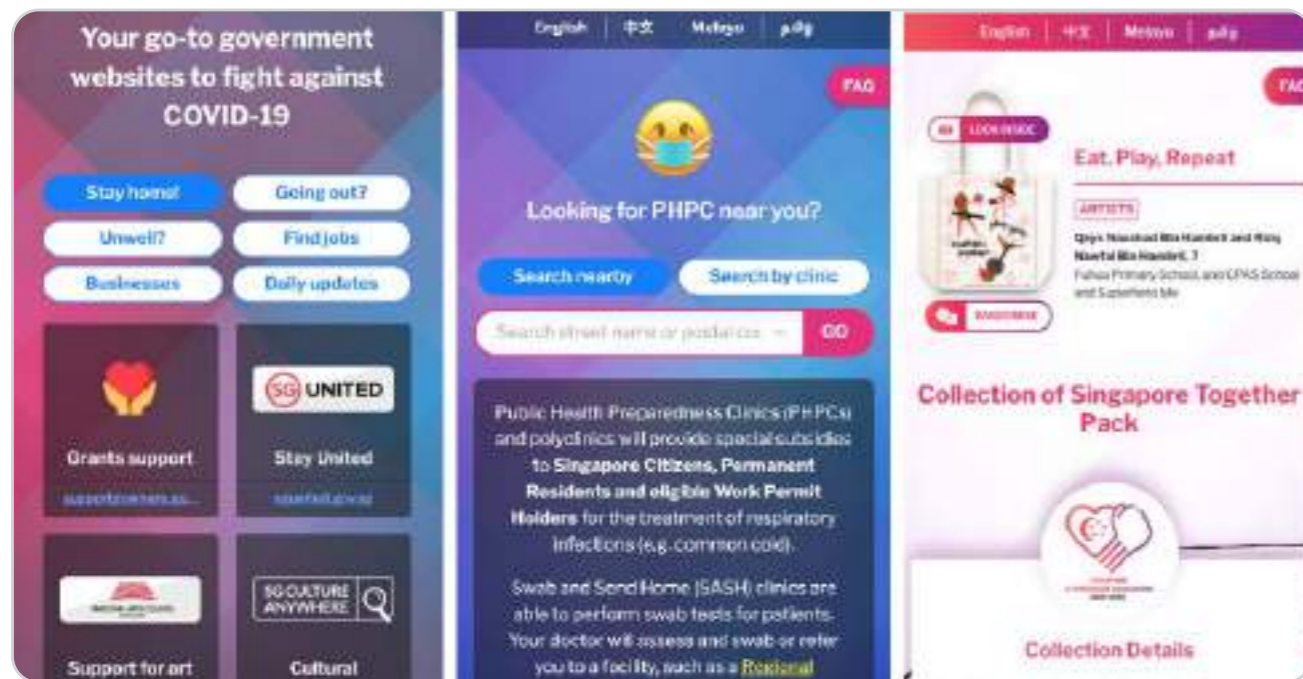
### Postman

In three days, the mass communication tool, Postman, was built to enable the government to send nationwide COVID-19 updates through the Gov.sg WhatsApp channel. Since then, Postman has enabled agencies to quickly scale their communication needs and distribute critical information across multiple channels such as email, SMS and Telegram. Over one billion COVID-19 related announcements were disseminated in total to more than one million subscribers on the Gov.sg WhatsApp channel.



## GoWhere Suite

GoWhere.gov.sg is a compilation of websites that provide citizens with timely and accurate information on government initiatives such as mask collection, polling information, clinic and health subsidy information, COVID-19 support schemes and other related government initiatives. These include MaskGoWhere – which went live in less than 48 hours, FluGoWhere, TokenGoWhere and SupportGoWhere, to name a few.



## DAVE QUAH

Software Engineer,  
Government Digital Services

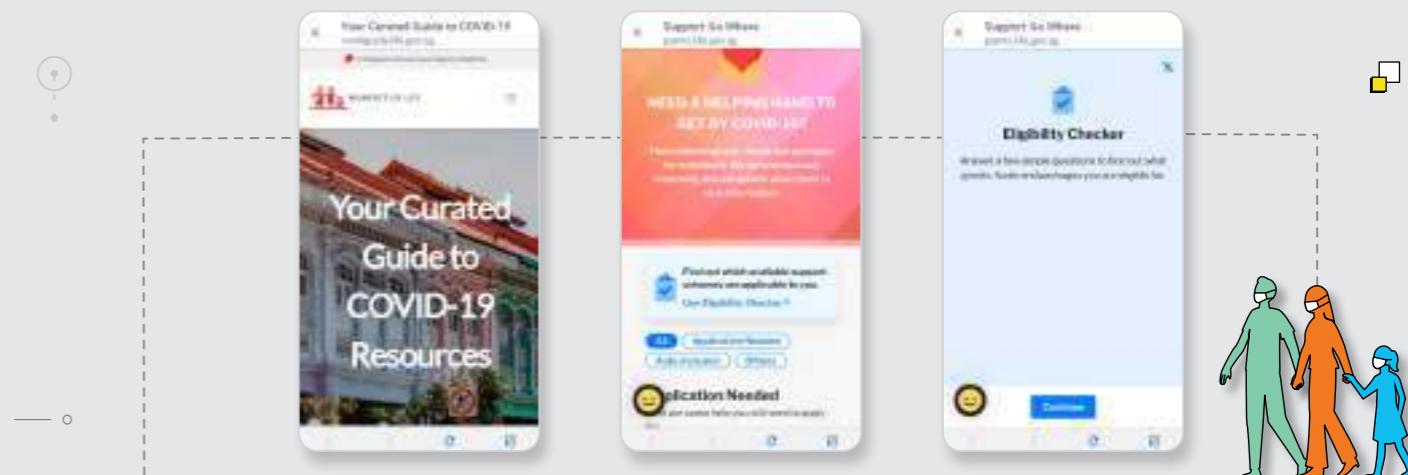
Dave is the pioneer engineer for the suite of GoWhere websites and was part of the team that worked round the clock to develop and roll out the first iteration of MaskGoWhere in less than 48 hours. Always positive and constantly looking for ways to improve the user experience of his products, Dave also designed the GoWhere sites to support the four local languages, and worked on tech solutions that supported ground operations in record time. Beyond working on COVID-19 projects, Dave often challenges the status quo and experiments with other digital initiatives in his own free time.

“ I’m in a great place to work where I have the freedom and autonomy for innovation. We typically embrace failure, which is good because failure shows us the way by showing us what’s not the way. We also have a lot of like-minded individuals who really want to help others, and we’re doing meaningful work that contributes back to society. ”



## Moments of Life – LifeSG app

Despite the approaching Moments of Life (MOL) app rebrand to LifeSG in August 2020, the MOL team quickly pivoted to launch the COVID-19 Guide when the pandemic hit, providing citizens with easy access to important information and needed support. The Guide consolidated resources across government agencies, such as updates on health information, announcements and support schemes. A series of Employment Support Guides were also released in June 2020 to provide job seekers and retrenched workers with resources to seek employment assistance or financial support.



## DOMINIC CHAN

Director,  
National Digital Identity  
and Moments of Life

A naturally curious and energetic person, Dominic leads the National Digital Identity and Moments of Life division at GovTech, overseeing the development and implementation of these strategic national projects that drive Singapore’s Smart Nation vision. Collaborating with other agencies, industry partners and the international community is a big part of Dominic’s work, which had to pivot in response to the unfolding pandemic last year. Instead of working on a new service journey to support Singaporeans in their overseas travel, the team focused their efforts on rolling out guides to help citizens navigate available government schemes and setting up a COVID-19 chatbot to answer pandemic and Circuit Breaker-related questions in less than 48 hours. Today, the chatbot is also plugged into WhatsApp as an interactive channel where citizens can ask questions.

“ What really drew me to join GovTech is the idea that leveraging technology can transform services to make lives better for citizens. My journey so far has given me every opportunity to do this, and I am very thankful for that. The energy and sense of purpose within GovTech is so infectious. People are passionate about this same goal of making lives better, which is clearly demonstrated over the past year as we stood united in the fight against COVID-19, innovating and delivering impactful tech solutions in a short period of time. ”





## COVID-19 Support and Recovery Grants Portal

The COVID-19 Support Grant/Recovery Grant application portal allows members of the public who lost their jobs or suffered significant income loss due to the pandemic to apply for temporary income support. Since the Circuit Breaker, the portal garnered over 1.94 million visits, 6.6 million page views, and received over 249,000 applications as of mid-April 2021.

## GoBusiness

Jointly developed by the Ministry of Trade and Industry (MTI), the Smart Nation and Digital Government Office, and GovTech, GoBusiness is an online platform that connects business owners to various Government e-services and resources. During the pandemic, GoBusiness was enhanced to include a Government Assistance portal to provide businesses with personalised help and recommendations, garnering over 600,000 visits and two million page views since its launch in August 2020. The Business Grants portal was also introduced as a one-stop platform for businesses to apply for grants from multiple agencies. Over 80,000 applications and claims were processed last year, providing businesses with enhanced support through the Productivity Solutions Grant and Enterprise Development Grant, to name a few.



### POH QUAN WEI

Senior Product Manager,  
GoBusiness

With GoBusiness chosen as the platform to update businesses on key COVID-related operations, Quan Wei and his team were given two days to develop an informational portal with COVID regulations and guidelines that businesses could refer to. This included the creation of several application forms to facilitate operational requests during the Circuit Breaker. The portal was launched in the nick of time, integrated with other agencies' systems, and is being constantly iterated to ensure a good user experience.

“Despite it being a period of uncertainty and chaos, the MTI and GovTech team worked together to help each other even though it may not have fallen under our respective scopes of work. There were many moments where the camaraderie and support made me feel super thankful to the team!”

## COVID-19 Financial Assistance Schemes

GovTech supported the Ministry of Social and Family Development in rolling out various financial assistance schemes for residents during COVID-19, such as the Temporary Relief Fund (TRF). Applications were done online to minimise risk and allow officers to tend to urgent cases. PayNow was also integrated within the system to allow residents to receive assistance in a hassle-free manner. More than 300,000 applications were received online and 74% of eligible applicants received their TRF pay out digitally.



## GALE

The GALE Case Management System was enhanced with a new sub-system to facilitate elderly outreach by the Silver Generation Office and their volunteers, enabling proactive support in ensuring the wellbeing of over 100,000 seniors over the Circuit Breaker. Another sub-system targeting rental tenants was introduced to ensure that 35,000 tenants had sufficient support and assistance during the pandemic. The system was also used to handle appeal or re-issue requests of Grocery Vouchers to support lower-income families in collaboration with the Ministry of Finance and the People's Association.



## SUPPORTING STUDENTS IN THEIR HOME-BASED LEARNING

### Student Learning Space (SLS)

GovTech staff deployed at the Ministry of Education helped to enhance the existing SLS system so that it could support more than 400,000 students in full home-based learning during the pandemic, at 2.3 times the maximum load it was originally designed for. The system was sustained even after schools re-opened, with an average of 365,000 unique users per month.

## MOM COVID-19 Ops-Tech Initiatives

GovTech collaborated with multiple agencies (MOM, MTI, BCA, MOH, HPB and DSTA) to enable real-time updates of close to one million foreign workers' movements via AccessCode, enabling their safe return to work. This, coupled with other digital solutions such as DormWatch and Exit Pass, ensured that workers could leave their dormitories for leisure activities and stay safe during the pandemic.



### ASHRAF ALI

Assistant Director (Applications),  
MOM ISTD

Part of a five-man team, Ashraf works closely with other Ministry of Manpower (MOM) divisions and agencies to drive digitalisation projects that impact multiple business units. When the virus first surfaced, Ashraf's team had to quickly develop solutions to stem potential infections arising from incoming migrant workers overseas. Working with MOM's Foreign Manpower Management Division and GovTech's Open Government Products team, they built a GPS-based tracking web application for Leave of Absence, and subsequently Stay Home Notice (SHN) compliance. The SHN application has since evolved into a key feature for MOM's AccessCode, providing an indicator of migrant workers' health and incorporating tamper-proof wearables to strengthen compliance and tracking accuracy.

“ This experience has expanded my network and knowledge of key stakeholders and roles within other agencies, and how they operate or are affected whenever a major incident or policy change takes place. Within the MOM and GovTech team, we formed a very close bond and got to know each other better. I also appreciate how our bosses and management had to handle the changing situation in an agile and tactful manner as work from home became the norm. ”

## Wi-Fi for Dormitory Operations

Together with SPORTSG, we equipped four Sports Centres that were housing migrant workers during the Circuit Breaker with high-speed Wi-Fi coverage so that they could use the Internet and keep in touch with their loved ones at home. This allowed them to settle down quickly in these temporary shelters and save on data costs.

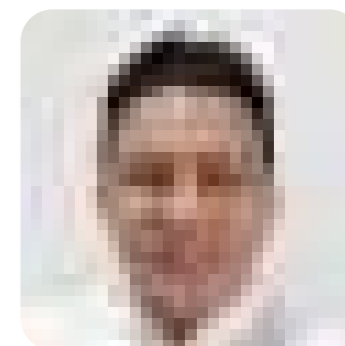
# STRENGTHENING THE PUBLIC SERVICE



## ENSURING BUSINESS AS USUAL FOR THE PUBLIC SERVICE

### Enhanced SG-VPN connectivity

To enable a seamless working experience for public officers during the pandemic, the SG-VPN connection was extended from four to 10 hours to reduce the number of logins required daily. The VPN auto-connect tolerance was also extended from one to five minutes to minimise officers' inconvenience of having to re-connect due to weak connectivity. Reminders were programmed to notify users 15 minutes in advance before a VPN session ends to help them better plan their work, as opposed to one minute previously.



### IVAN LOH

Infrastructure Engineer,  
Government Infrastructure Group

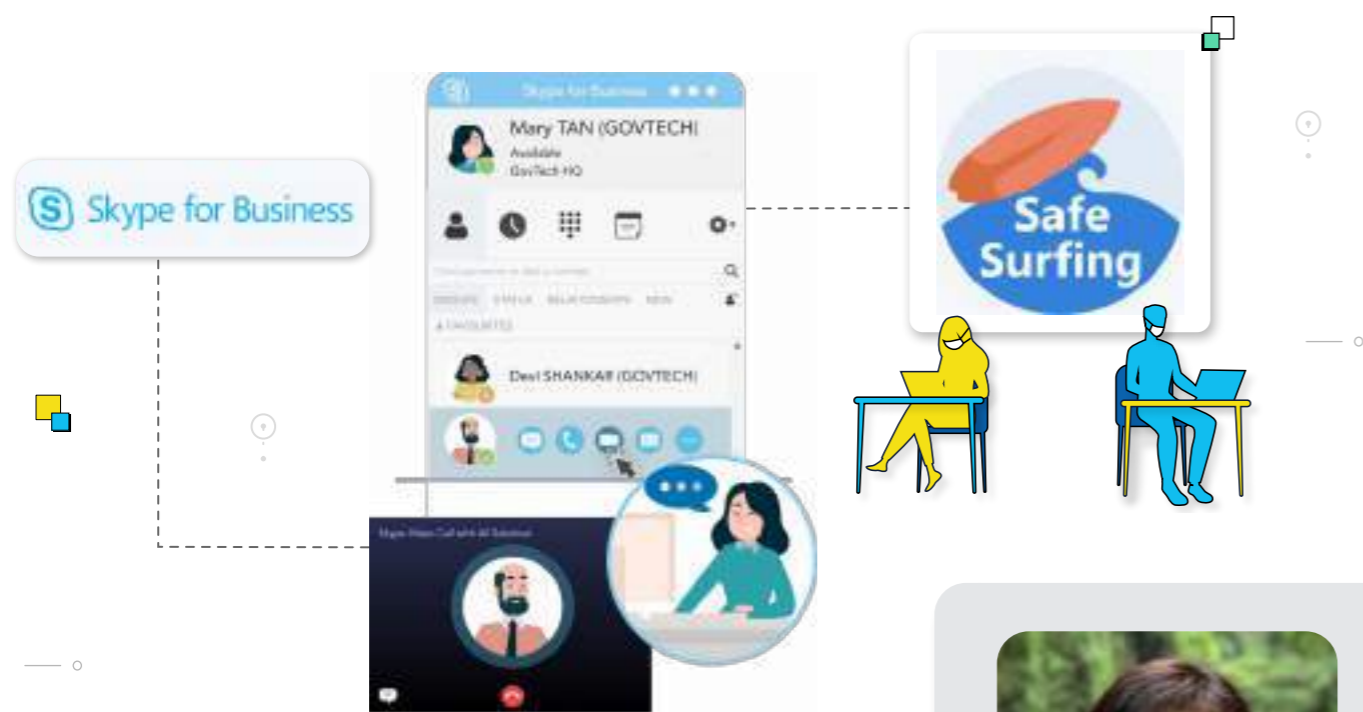
A “doctor” for the Government's digital infrastructure, Ivan's role sees him performing regular health checks for systems and ensuring that they are working properly. When work-from-home arrangements were implemented, Ivan's team worked with multiple parties through the night to ensure that key infrastructure such as internet bandwidth, VPN capacity and other components were upgraded in double or triple time to support the entire Public Service. They also stepped in to implement interim plans for agencies to upgrade their bandwidths and set up contact tracing centres when there was a worldwide shortage of IT equipment.

“ Looking back, without everyone's support, it would have been almost impossible to accomplish what we have done. I'm thankful for my superior's support and our vendors and agencies for their mutual trust and understanding. Despite the challenges faced, we worked well together and had good rapport, helping each other to tide through the pandemic. ”



## Improving WOG digital tools for remote working

When the pandemic hit, our existing suite of digital tools had to be upgraded for business continuity across the Public Service. Skype for Business became one of the most important platforms for officers overnight, with physical meetings replaced by virtual ones. Its infrastructure was quickly enhanced to ensure that it could support the sudden surge in conference calls. New tools like Secure Internet Surfing (SIS) was also rolled out to allow officers to use their work computers to surf the internet securely through Remote Browsing Technology. This significantly improved work productivity as officers no longer need to toggle between work computers and internet accessible devices to surf the internet. SIS was rolled out to over 100,000 public officers during the work-from-home arrangements last year.



### BRENDA ONG

Lead Infrastructure Engineer,  
Government Infrastructure Group

Brenda leads and manages a suite of WOG digital products such as Government email, Skype for Business and a collaboration infrastructure, which enables more than 120,000 officers to deliver services to the public. Her role includes managing day-to-day operations, resolving issues within various service levels, and implementing measures to improve user experience through data analytics. When the Public Service pivoted to working from home, Brenda's team ensured that additional resources were brought in to support

the increased load on digital tools. They also stepped in to coordinate and provision additional accounts and mailboxes for agencies to support COVID-19 operations.

“I'm thankful to be working with a supportive and collaborative team who are always ready to discuss, share ideas and resolve issues when we're faced with challenges.”

## SUPPORTING WOG THROUGH THE INCREASED WORKLOAD

### Stepping up with in-house Cybersecurity and Procurement support

GovTech's strong in-house cybersecurity capabilities were crucial in supporting the quick commissioning and delivery of COVID-19 digital tools. The Cybersecurity Group played a key role in providing advice and support to conduct penetration and security tests that helped speed up operations and implementation. Our Procurement team was also instrumental in ensuring the continuity of ICT operations across the whole-of-government, guiding agencies in managing ICT contract variations arising from COVID-19 and enabling essential personnel to keep essential ICT systems running during the Circuit Breaker.



### MARK LEE

Assistant Director,  
Cybersecurity Group

Mark leads a team of cybersecurity specialists within GovTech's cybersecurity consulting division, who played an instrumental role in supporting the rapid development and deployment of contact tracing tools such as SafeEntry and TraceTogether during the pandemic. With the need to overcome time and manpower challenges, Mark developed a streamlined process to identify key security risks and mitigate measures in an agile manner. This helped his team cope with the surge in requests for cybersecurity consultation to ensure that citizens' personal data is safeguarded prior to rolling out these tools. His team was also key in

conducting security assessments for government teleconferencing tools so that officers could work remotely in a safe and secure manner.

“The role that I'm in is extremely fulfilling – it has allowed me to work with bright and talented individuals and to do good for our family, friends and fellow countrymen. I look forward to continuing the partnerships across the Public Service with the objective to be more secure each day, as opposed to perfectly secure one day!”

# DELIVERING ON DIGITAL GOVERNMENT

Amid the pandemic, we delivered on our business-as-usual work, keeping the lights on for the Government, rolling out transformative digital services for citizens and businesses, and accelerating digitalisation within the Public Service.

## SINGPASS

The Singpass team made many strides in FY2020. The security of citizens' digital identity was strengthened through the launch of NCA (National Certification Authority)-issued digital certificates for Singpass app users as a trusted means of authenticating an individual's identity for electronic transactions. Two types of certificates are available – Authentication Certificate, which is used when Singpass app users scan a QR code to log in to a digital service; and Signing Certificate, used for document signing within the Singpass app.

We launched the Digital IC on the Singpass app as an alternative method of identity verification for in-person agency services. Users can scan their Digital IC barcode in place of their physical NRIC at kiosks located in libraries and polyclinics. To provide greater accessibility to services, more Two-Factor Authentication (2FA) methods – Face Verification and Multi-User SMS 2FA – were rolled out, and the “Sign with Singpass” service was introduced to provide users with a secure and easy way to sign documents electronically through the app.

In early 2021, we refreshed the Singpass brand identity to mark its evolution into Singapore's trusted national digital identity. No longer just an authentication platform, Singpass' new features provide citizens with greater convenience and accessibility to more than 1,700 everyday services and empower over 300 private sector organisations with its application programming interfaces.



singpass

## SGFINDEX

The Smart Nation and Digital Government Group, Monetary Authority of Singapore and Ministry of Manpower built SGFinDex on Singpass, in collaboration with The Association of Banks in Singapore and seven participating D-SIBs (Domestic Systemically Important Banks). Touted as the world's first public digital infrastructure that allows individuals to access their financial information across government agencies and financial institutions, SGFinDex allows users to better plan their finances in a holistic manner. Over 98,000 unique users have performed setup or data retrievals since its launch.



## MYINFO BUSINESS



GovTech has improved the general availability of Myinfo business over the past year, enabling businesses to pre-fill digital forms with entity data from government sources, such as ownership and grants information. Businesses can save time and resources by integrating this feature in their digital services for business-to-business (B2B) transactions. Since its launch, more than 68 private sector digital services from over 25 organisations have come onboard Myinfo business and conducted 100,000 B2B transactions.

myinfo  
business



## SHIP-HATS

SHIP-HATS is an SG Tech Stack component for continuous integration and continuous delivery. It is built on top of industry tools, with baked-in security and compliance required for government systems. SHIP-HATS has been widely available to agencies for the past year. One hundred systems across more than 30 agencies are reaping the benefits from this by being able to deliver applications faster with agile development. In addition, with SHIP-HATS, agencies can improve the quality of their codes by identifying critical errors sooner – leading to cost avoidance.

## LIFESG

Moments of Life was rebranded and launched as LifeSG by then Minister-in-Charge of the Smart Nation Initiative, Dr Vivian Balakrishnan. LifeSG offers citizens consolidated access to government digital services through personalised content. Citizens can explore more than 70 government e-services and use the personalised dashboard to stay informed on important government announcements and discover recommended content or useful guides.

The team behind LifeSG also worked on a portal to support the distribution of SingapoRediscover Vouchers (SRV), including a Government Benefits module where citizens can view their remaining SRV balances and transaction history; as well as an Eligibility Checker for Budget 2021, enabling users to check their eligibility for government assistance schemes on a single platform.

LifeSG

## NRIC REGISTRATION E-SERVICE FOR 15-YEAR-OLDS



GovTech worked on a brand new e-service for Singapore Citizens and Permanent Residents to register for their identity card when they reach the age of 15 (before their 16th birthday). This e-service brings greater convenience for parents and guardians of applicants as they no longer require manual paper submissions when applying for their first NRIC. The inclusion of features such as the ethnic character keyboard and Chinese handwriting pad makes the online form “self-sufficient”, providing a hassle-free and seamless user experience for citizens. The service also allows Immigration and Checkpoint Authority (ICA) Officers to expedite the process by doing away with physical documents and photos. The e-service was rolled out in Jan 2021.



## STACK-X MEETUPS

GovTech's regular STACK-X Meetups pivoted to virtual outreach sessions when COVID-19 struck, allowing us to continue engaging the tech community. Webinars were held to share thought leadership and digital responses to COVID-19, involving GovTech leaders, Chief Information Officers, leading technology firms (like Amazon Web Services, Google and ThoughtWorks), and partners such as Accredify. Since its inaugural event in August 2019, the STACK-X community has grown to over 4,100 members and conducted more than 32 events with an average attendance of over 150 participants. The community continues to gather techies passionate about technology and exploring innovative ways to improve lives through digital solutions.



## STACK 2020

Singapore's largest Government-led developers conference went fully virtual last year, with more than 4,000 participants tuning in. Tech leaders, developers, software engineers and more gathered to discover the latest technologies, applications, tools and platforms. Dialogues and talks by renowned industry leaders such as Amazon Web Services, IBM, Microsoft, ThoughtWorks, public officers and GovTechies were held over three days, discussing topics such as artificial intelligence, engineering solutions for cloud adoption, machine learning and COVID-19 tech.

## SPLUNK "BOSS OF THE SOC" (BOTS) CHALLENGE

GovTech's Government IT Security Incident Response (GITSIR) team achieved the first placing at APAC-level and second placing at global-level for the annual Splunk Boss-of-the-SOC (BOTS) challenge. The team competed against over 2,600 contestants globally and demonstrated strong capabilities in Advanced Persistent Threats attack scenarios, cloud, and Internet of Things environments.

## STACK THE FLAGS

GovTech's Cybersecurity Group (CSG) launched the inaugural GovTech CSG Stack the Flags competition to strengthen the local cybersecurity community and attract potential hires. Participants had to rely on their knowledge of system vulnerabilities and exploit them to capture the various digital flags hidden within systems. Held from 4 to 6 December 2020, Stack the Flags was the largest local cybersecurity "capture the flag" competition and attracted close to 1,400 participants both locally and overseas.



## OPEN DIGITAL PLATFORM

The Open Digital Platform (ODP) is an interoperability platform that centralises various smart city solutions in a single district management system. Using AI to optimise resources in a building or district, it includes a real-time digital twin that allows operators to respond proactively and run simulations for scenario-planning. The system is currently deployed in the JTC Summit building in partnership with JTC and is also being developed for use in the upcoming Punggol Digital District. ODP also won the 2021 IDC Smart City Asia Pacific Awards for Urban Planning and Land Use.



## BALEFIRE

Project Balefire is a video analytics collaboration between GovTech and the National Environment Agency that uses an in-house algorithm deployed on the edge to detect smoking activity based on human motions and actions associated with smoking. This allows agencies to monitor near real-time levels of smoking occurrences in public spaces and respond in an efficient manner.



## PROJECT PLATESNAP

Project Platesnap is a collaboration between GovTech and the Urban Redevelopment Agency (URA), using video analytics technology to help with automatic trend analysis. It detects parking behaviour by identifying a vehicle's dwell time and licence plate number through Optical Character Recognition. This allows URA to monitor vehicle usage and patterns within designated parking spaces and provide insights on dwell time and parking utilisation rates for better planning.



## SMART NATION CITYSCAPE

A permanent exhibition by the Smart Nation and Digital Government Group, Cityscape showcases how various Smart Nation initiatives and technologies are intertwined with our daily lives to improve the way we live, work and play. Visitors will learn about Singapore's digital transformation journey through a series of interactive stations and displays, how Smart Nation initiatives emphasise citizens at its core, and why Singapore is one of the world's most admired smart cities. Smart Nation Cityscape was launched in March 2021 and is housed at the Singapore City Gallery at The URA Centre.

# STATISTICS

## SINGAPORE'S PERFORMANCE IN THE DIGITAL GOVERNMENT RANKINGS

### United Nations (UN) e-Government Survey

The **UN e-Government Survey** measures the effectiveness of all 193 UN Member States on the relative ability of their governments in harnessing infocomm technologies (ICT) to deliver services and engage its citizens in public policies.

In 2020, Singapore ranked 11<sup>th</sup> overall on the e-Government Development Index and was 5<sup>th</sup> for the Online Services index. While this is a decline from our positioning in 2018, we climbed eight places for the e-Participation Index, which assesses national governments' success in engaging citizens through ICTs in policy, decision-making, service design and delivery.



Publication Year	2016	2017	2018	2019	2020
i. Development Index	4 <sup>th</sup>	No report	7 <sup>th</sup>	No report	11 <sup>th</sup>
ii. Online Services Index	3 <sup>rd</sup>	No report	2 <sup>nd</sup>	No report	5 <sup>th</sup>
iii. e-Participation Index	8 <sup>th</sup>	No report	14 <sup>th</sup>	No report	6 <sup>th</sup>



## SINGAPORE'S RANKING IN THE IMD-SUTD SMART CITIES INDEX 2020



The **IMD-SUTD Smart Cities Index (SCI)** is jointly developed by the Singapore University of Technology and Design's Lee Kuan Yew Centre for Innovative Cities (SUTD-LKYCIC) and Switzerland's Institute for Management Development (IMD). The 2020 SCI is the second edition. It is the first global Smart City survey to be based on citizens' perception of structures and technology applications available to them in their city. The 2020 SCI edition ranks 109 cities worldwide by capturing the perceptions of 120 residents in each city.

Singapore maintains the first position as the smartest city in the world for 2020, and performed well across the board for the indicators of basic sanitation, online ticket purchasing, provision of medical services, online access to job listings, lifelong learning opportunities, internet speed and reliability, CCTV cameras for public safety, and online medical appointments. The other Top 10 smart cities include Helsinki (2<sup>nd</sup>), Zurich (3<sup>rd</sup>), Auckland (4<sup>th</sup>), Oslo (5<sup>th</sup>), Copenhagen (6<sup>th</sup>), Geneva (7<sup>th</sup>), Taipei City (8<sup>th</sup>), Amsterdam (9<sup>th</sup>) and New York (10<sup>th</sup>).

## ANNUAL SURVEY ON SATISFACTION WITH GOVERNMENT DIGITAL SERVICES (CITIZENS)

### BACKGROUND AND OBJECTIVES

The Survey on Satisfaction with Government Digital Services (Citizens) is conducted annually by the Smart Nation and Digital Government Office (SNDGO) and GovTech to assess citizens' satisfaction with key government digital services and to identify areas for further improvement. The survey was conducted from November 2020 to January 2021 for the reporting period of FY2020 (1 April 2020 - 31 March 2021).

### RESEARCH METHODOLOGY

**1,510** respondents, comprising representatives of the total demographic population above the age of 19, were surveyed. Data collection was done via face-to-face interviews.





# STATISTICS

## ANNUAL SURVEY ON SATISFACTION WITH GOVERNMENT DIGITAL SERVICES (CITIZENS) (CONTINUED)

### SURVEY RESULTS

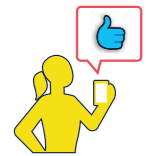
The Survey on Satisfaction with Government Digital Services (Citizens) held steady in 2020 despite the pandemic. While overall satisfaction decreased by one percentage point, the percentage of citizens who were “extremely satisfied” with government digital services increased by six points.



**85%** were very satisfied or extremely satisfied (rating of 5 and above on a scale of 6) with government digital services for citizens.



**97%** agreed that digital services for citizens have improved in the past 12 months and **98%** would encourage their friends and families to use it.



**>75%** were very/extremely satisfied with the reliability, relevancy and ease of usage of government digital services in general.



**84.5%** were very/extremely satisfied with the government’s COVID-19 digital solutions.



**97%** agreed that these solutions played a key role in our fight against the pandemic.

## ANNUAL SURVEY ON SATISFACTION WITH GOVERNMENT DIGITAL SERVICES (BUSINESSES)

### BACKGROUND AND OBJECTIVES

The Survey on Satisfaction with Government Digital Services (Businesses) is conducted annually by the Smart Nation and Digital Government Office (SNDGO) and GovTech to assess the business community’s satisfaction with key government digital services and to identify areas for further improvement. The survey was conducted from November 2020 to January 2021 for the reporting period of FY2020 (1 April 2020 – 31 March 2021).

### RESEARCH METHODOLOGY



**1,142**

company respondents were surveyed. Data collection was done via telephone interviews.

### SURVEY RESULTS

The Survey on Satisfaction with Government Digital Services (Businesses) held steady in 2020 despite the pandemic, decreasing by one percentage point compared to 2019.



**76%** were very/extremely satisfied (rating of 5 and above on a scale of 6) with government digital services for businesses.



**94%** agreed that government digital services for businesses have improved in the past 12 months.



**95%** would encourage their friends and families to use these digital services.



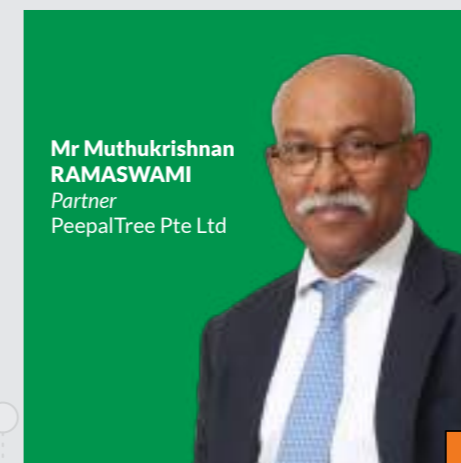
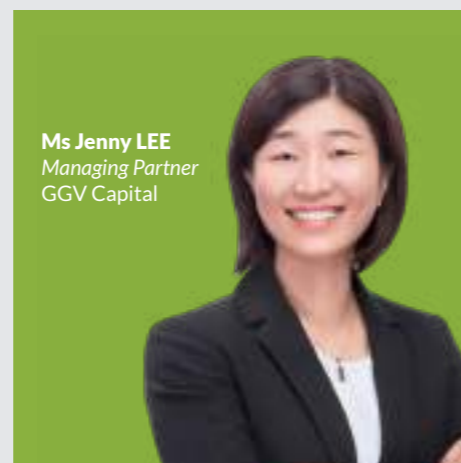
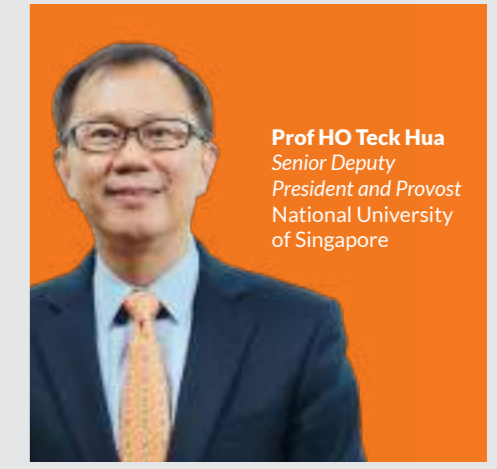
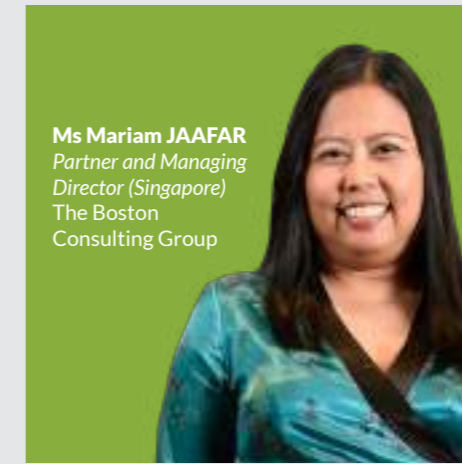
**72.2%** were very/extremely satisfied with the government’s COVID-19 digital solutions.



**95%** agreed that these solutions played a key role in Singapore’s fight against the pandemic.

# BOARD OF DIRECTORS

(AS AT JULY 2021)





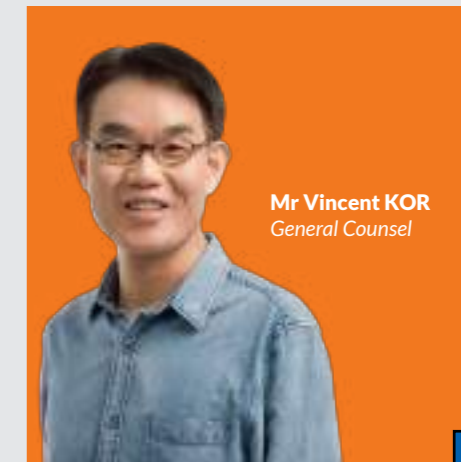
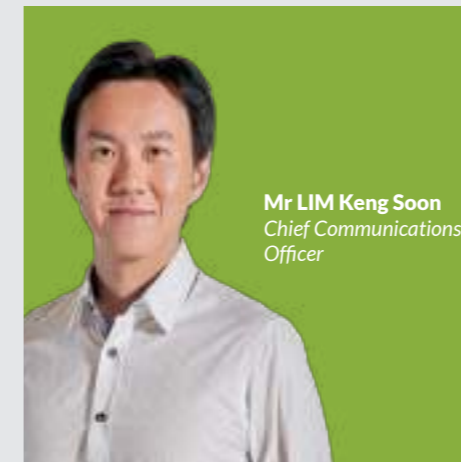
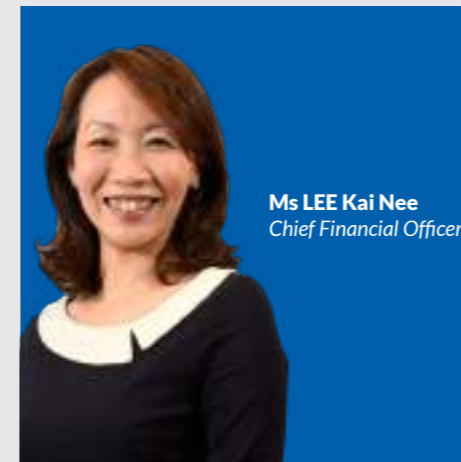
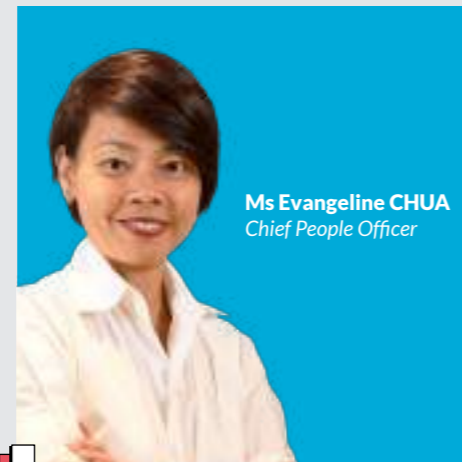
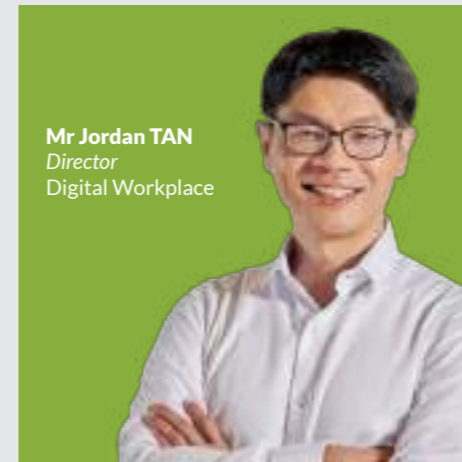
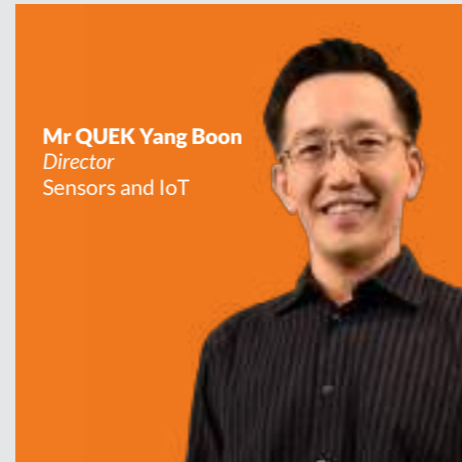
# SENIOR LEADERSHIP TEAM

(AS AT JULY 2021)



# SENIOR LEADERSHIP TEAM

(AS AT JULY 2021)





# MEMBERS OF BOARD COMMITTEES

## AUDIT & RISK COMMITTEE (ARC)



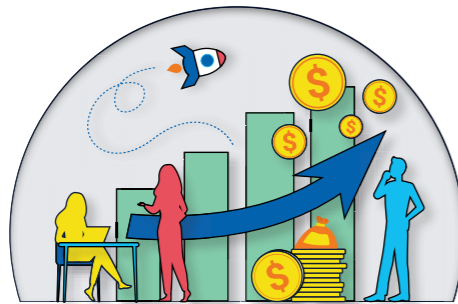
**Mr Muthukrishnan RAMASWAMI**  
Chairman

**Ms Melissa KHOO**  
Member

**Mr Derrick GOH**  
Member

**Mr LEE Ah Boon**  
Co-opted Member

## FINANCE & INVESTMENT COMMITTEE (FIC)



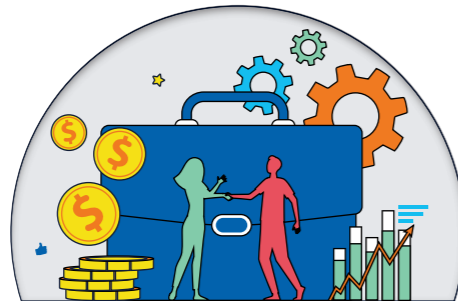
**Ms Mariam JAAFAR**  
Chairman

**Mr KOK Ping Soon**  
Member

**Mr Bojan BLECIC**  
Member

**Mr David KOH**  
Member

## PEOPLE MATTERS & REWARDS COMMITTEE (PMRC)



**Mr NG Chee Khern**  
Chairman

**Mr Alexander KLEINBERG**  
Member

**Prof HO Teck Hua**  
Member

**Mr KOK Ping Soon**  
Member

## TECHNOLOGY ADVISORY COMMITTEE (TAC)



**Mr Matt QUINLAN**  
Chairman

**Ms Lesly GOH**  
Member

**Ms Jenny LEE**  
Member

**Mr LEW Chuen Hong**  
Member

**Mr Mervyn TAN**  
Member

# SUBSIDIARY

Assurity Trusted Solutions Pte Ltd ("Assurity") is a wholly-owned subsidiary of GovTech. It was incorporated to operate the National Authentication Framework (NAF).

The NAF is a project to improve the security of consumers performing online transactions. It is supported by the Monetary Authority of Singapore and respective regulators, such as the Ministry of Finance and the Ministry of Health.

The NAF is a part of GovTech's vision of "An Intelligent Nation 2015 (In2015) Masterplan" to develop a secure and trusted infocomm infrastructure. This is to facilitate the delivery of safe online services offered by the public and private sectors. The NAF is one of the key initiatives of the Infocomm Security Masterplan and National Trust Framework.



**Mr Robert CHEW**  
Chairman  
Assurity Trusted Solutions Pte Ltd



**Ms ANG Mui Kim**  
Chief Executive Officer  
Assurity Trusted Solutions Pte Ltd



**Mr Dominic CHAN**  
Director, National Digital Identity  
Government Technology Agency



**Mr Vivek KUMAR**  
Director, Strategic Marketing &  
Omnichannel Monetisation  
NTUC FairPrice



**Ms Shirley WONG**  
Managing Partner  
TNF Ventures Pte Ltd



**Mr Bruce LIANG**  
Chief Executive Officer  
Integrated Health Information  
Systems Pte Ltd



**Mr TAN Chee Hau**  
Director, Smart Nation and Digital  
Government Office  
(Planning and Prioritisation)  
Prime Minister's Office



**Ms Deborah LEE**  
Formerly Executive Vice-President,  
Corporate Development  
Singapore Press Holdings Ltd



**Mr Eddie CHAU**  
Board Advisor  
Assurity Trusted Solutions Pte Ltd