



Ministry of Communications
and Information

SG:D | GET READY!

DIGITAL READINESS BLUEPRINT



CONTENTS

02

Foreword

04

Digital Readiness
Workgroup
Members

06

Why Digital
Readiness?

22

Strategic Thrust 2
Infuse Digital Literacy
into National
Consciousness

16

Strategic Thrust 1
Expand and Enhance
Digital Access for
Inclusivity

10

Approach to
Digital Readiness

30

Strategic Thrust 3
Empower Community
and Businesses to Drive
Widespread Adoption
of Technology

36

Strategic Thrust 4
Promote Digital
Inclusion by Design

42

Digital
Readiness is a
National Effort

44

Acknowledgements



Foreword

This Blueprint signifies the commitment of the Singapore Government and our partners in the private and people sectors to ensure that people are at the centre of Singapore's Smart Nation efforts.

The impact of technology goes far beyond industrial and economic applications. It will improve our everyday lives, and we must ensure that everyone can benefit from it.

Owning a smartphone has almost become a basic need today for many. Our daily activities now exist in both the analogue and digital spheres, sometimes simultaneously. We can communicate with our loved ones anytime and anywhere, watch our favourite movies and dramas on the go, do our grocery shopping without stepping out of the house, track our daily physical activity to encourage ourselves to live a healthy lifestyle, and much more.

For some of us, however, digital activities still remain an uncomfortable experience. Despite having one of the highest mobile penetration rates in the world, we are not as digitally ready as we can be.

We need to equip everyone with access to technology, and more importantly, the skills that are needed to use that technology — actively, meaningfully, and safely. That is why we had set up the Digital Readiness Workgroup, with members from the public, private, and people sectors, to brainstorm and develop ideas on how we can help empower Singaporeans with technology.

Dr Janil Puthucheary
*Chairperson,
Digital Readiness
Workgroup*

A stylized, handwritten signature in black ink.



Many people associate Singapore's Smart Nation drive with hardware like devices and sensors. But the heart of our Smart Nation vision is really about making Singapore a great place to live, work, and play, powered by technology, for everyone.

This Blueprint signifies the commitment of the Singapore Government and our partners in the private and people sectors to ensure that people are at the centre of Singapore's Smart Nation efforts, and that everyone can experience the benefits of technology. It contains recommendations around providing widespread access to technology, driving digital literacy, encouraging

everyone to play a part in strengthening digital readiness, and hardcoding digital inclusion into the design of all processes and services.

I would like to take this opportunity to convey my deep and heartfelt appreciation to the Workgroup members for this effort, which has involved hard work, sound ideas, and robust discussions.

Making these recommendations real will require the combined efforts of government, industry, and community. Together, we can work towards a digitally ready Singapore, where every Singaporean can find their quality of life uplifted through technology.

Digital Readiness Workgroup Members



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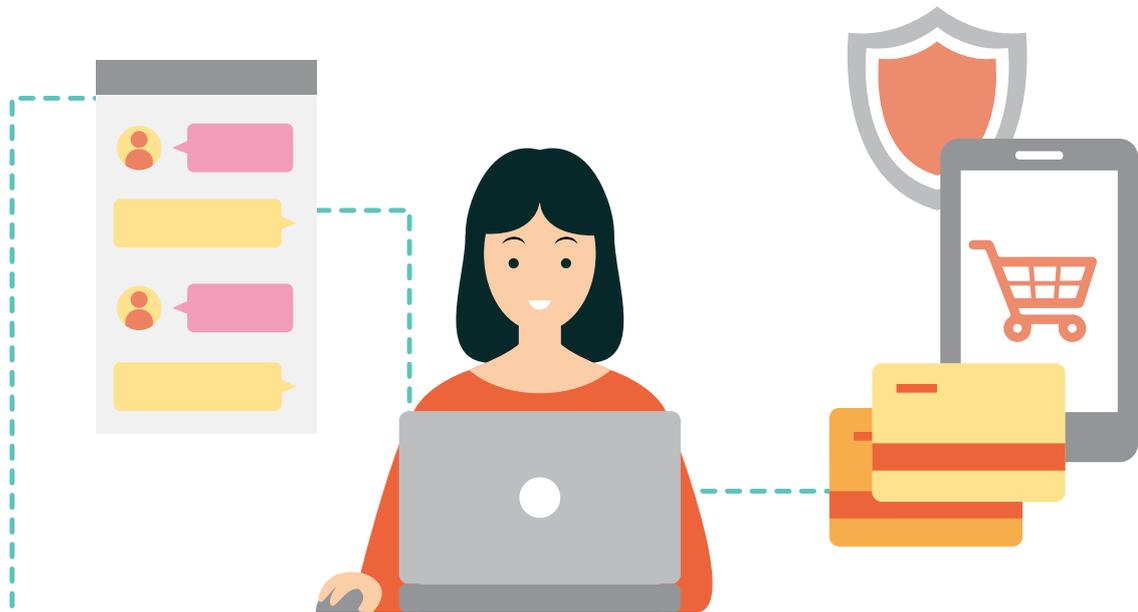


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Why Digital Readiness?



of resident households now have computer access

With **91%**  having access to the internet

Singapore's mobile penetration rate stands at **148.8%** 

Digital technologies are becoming an integral part of societies everywhere.

This has brought about a growing range of benefits and conveniences, from online shopping, entertainment, and navigation, to new channels of education and employment, and deeper connections with family and friends. The daily interactions and activities of Singaporeans in a Smart Nation are likewise growing increasingly digitalised. Not only can digital technologies make our daily lives more convenient and sustainable, they can also enable us to strengthen our community and society, and help us to connect and look out for one another. It is therefore important that we help all Singaporeans leverage the opportunities provided by technology in their day-to-day lives. If Singaporeans are digitally excluded due to a lack of access to

technology or knowledge of how to use technology, then the benefits that could be reaped will be lost.

International research studies and developments in the United Kingdom, Australia, New Zealand, and a range of European countries point to a few common barriers to the meaningful participation of individuals in the digitalised world. These include the lack of access, skills, motivation, and confidence — all of which can lead to new fault lines.

The lack of access may not be as prevalent in Singapore's context as compared to other countries. About 87% and 91% of households¹ now have access to a computer and the internet respectively. Singapore's mobile penetration rate stands at 148.8%.² Over the past decade, the Government has ensured that the

¹ IMDA Infocomm Usage Households and Individuals Survey Results 2016.

² As at Oct 2017. Source: Data.gov.sg

more vulnerable segments of society are not excluded from the benefits of digital connectivity, with initiatives such as the NEU PC Plus and Home Access programmes for low-income families, and Enable IT for persons with disabilities. Singapore has done well in ensuring digital access, and efforts to provide all Singaporeans with basic and appropriate access to digital technology must be continued.

However, we believe that there is a need to do more than just providing access. There is a need to ensure that our people are equipped with the skills and know-how to use digital technology safely and confidently. There is also a pressing need for greater awareness of media and information literacy skills so that Singaporeans are able to discern, evaluate, and manage information in an increasingly complex digital environment. In a poll conducted by REACH in February 2018, only half of the Singaporean respondents were confident of their own ability to recognise fake news.³

“... our vision is for Singapore to be a Smart Nation – a nation where people live meaningful and fulfilled lives, enabled seamlessly by technology, offering exciting opportunities for all. We should see it in our daily living where networks of sensors and smart devices enable us to live sustainably and comfortably. We should see it in our communities where technology will enable more people to connect to one another more easily and intensely. We should see it in our future where we can create possibilities for ourselves beyond what we imagined possible.”

– Prime Minister Lee Hsien Loong



3 “More than 70% in Singapore have come across fake news online: Reach poll.” Channel News Asia, 26 March 2018.

There is a need to ensure that our people are equipped with the skills and know-how to use digital technology safely and confidently.

We already have a strong foundation to build on

Many public, private, and voluntary organisations already have initiatives to help Singaporeans embrace and adopt technology in their own ways.

Public sector initiatives

For instance, the Infocomm Media Development Authority (IMDA)'s Silver Infocomm Initiative (SII) was introduced in 2007 to encourage seniors to pick up IT skills and stay connected to reap the benefits of technology. Under the SII, the Silver Infocomm Junctions (SIJs) are senior-friendly infocomm learning hubs operated by Voluntary Welfare Organisations, the People's Association (PA)'s grassroots organisations, and non-profit organisations, offering accessible and affordable infocomm training for seniors through a customised curriculum. SkillsFuture Singapore (SSG) has a national training programme, SkillsFuture for Digital Workplace (SFDW), to equip Singaporeans with foundational digital skills in key areas of mindset, data,

technology, and innovation, and prepare them for technological changes in their workplace and daily lives.

The Ministry of Education (MOE) has been deepening the use of information and communication technologies (ICT) in education over the years, with the aim of nurturing students who are future-ready and responsible digital learners. Most recently, MOE launched the Singapore Student Learning Space (SLS), an online platform where students and teachers have access to curriculum-aligned resources and a suite of learning tools. MOE has also implemented a Cyber Wellness framework to instil the principles of "Respect for Self and Others", "Safe and Responsible Use", and "Positive Peer Influence" to guide students in making thoughtful decisions in their online activities.

Private sector and community organisations

In the private sector, Singtel has worked with TOUCH Cyber Wellness to develop a Cyber Wellness Toolkit for students with intellectual disabilities.

Microsoft has been actively involved in equipping our students with coding skills in a series of programmes that cater to students from primary to tertiary levels. As an example, its "Code for Change" programme, in collaboration with IMDA since 2015, aimed to collectively develop conceptual thinking skillsets for up to 500,000 students in three years. The Microsoft Imagine Cup Competition is a series of technology competitions where students create games, apps, and integrative solutions.⁴



Equipping seniors with basic digital skills under IMDA's Silver Infocomm Initiative

⁴ "Microsoft launches nationwide code for change programme to boost talent development for smart nation vision." Microsoft News. 1 July 2015.

TOUCH Community Services is a non-profit organisation with targeted programmes to meet the needs of different segments in the population. For instance, TOUCH Cyber Wellness advocates cyber wellness and new media literacy for children, teenagers, parents, and educators, through education programmes, counselling, and cyber wellness centres, built on research and development. TOUCH Cyber Wellness also helped coordinate IMDA's Home Access Programme to facilitate beneficiaries' access to resources that will help bridge the digital divide. The package includes helping beneficiaries understand various cyber wellness issues like privacy management and discerning information on the internet.

SG Enable is an agency dedicated to helping persons with disabilities gain access to disability services and schemes. One of its initiatives was the setting up of Tech Able, comprising the Singtel Enabling Innovation Centre and the ST Engineering Enabling Technology Centre. Tech Able is an integrated assistive technology space at the Enabling Village which features a technology showcase for persons with disabilities and provides them with assistive device assessment services. Persons with disabilities can find out about devices that will help them in their employment or daily living activities.

While much is being done, there is still much more to be gained from coordinating the different approaches and initiatives and aligning them under a common framework. Greater focus and coordination will help us multiply societal benefits on the one hand, and help mitigate the negative consequences of going digital on the other. It will also help Singaporeans



IMDA Lab on Wheels seeds students' interest in coding and computational thinking, and excites them through experiential and engaging technology featured on the bus

better identify what and where support is available, and avoid potential dissonant messaging and duplicative resourcing. The collective digital readiness work will also complement ongoing national efforts to strengthen and improve ICT infrastructure, platforms, and public service delivery to achieve Singapore's Smart Nation vision.

Digital Readiness Workgroup

In tandem with these efforts, the Digital Readiness Workgroup was convened by the Ministry of Communications and Information (MCI) in August 2017, comprising representatives from the public, private, and people sectors. The objective of the Workgroup is to develop strategies and principles for building Digital Readiness for Singaporeans, with a particular emphasis on those who might be at risk of being excluded from opportunities in the digital future. This Blueprint presents our recommendations for building Digital Readiness in Singaporeans, guided by four strategic thrusts.

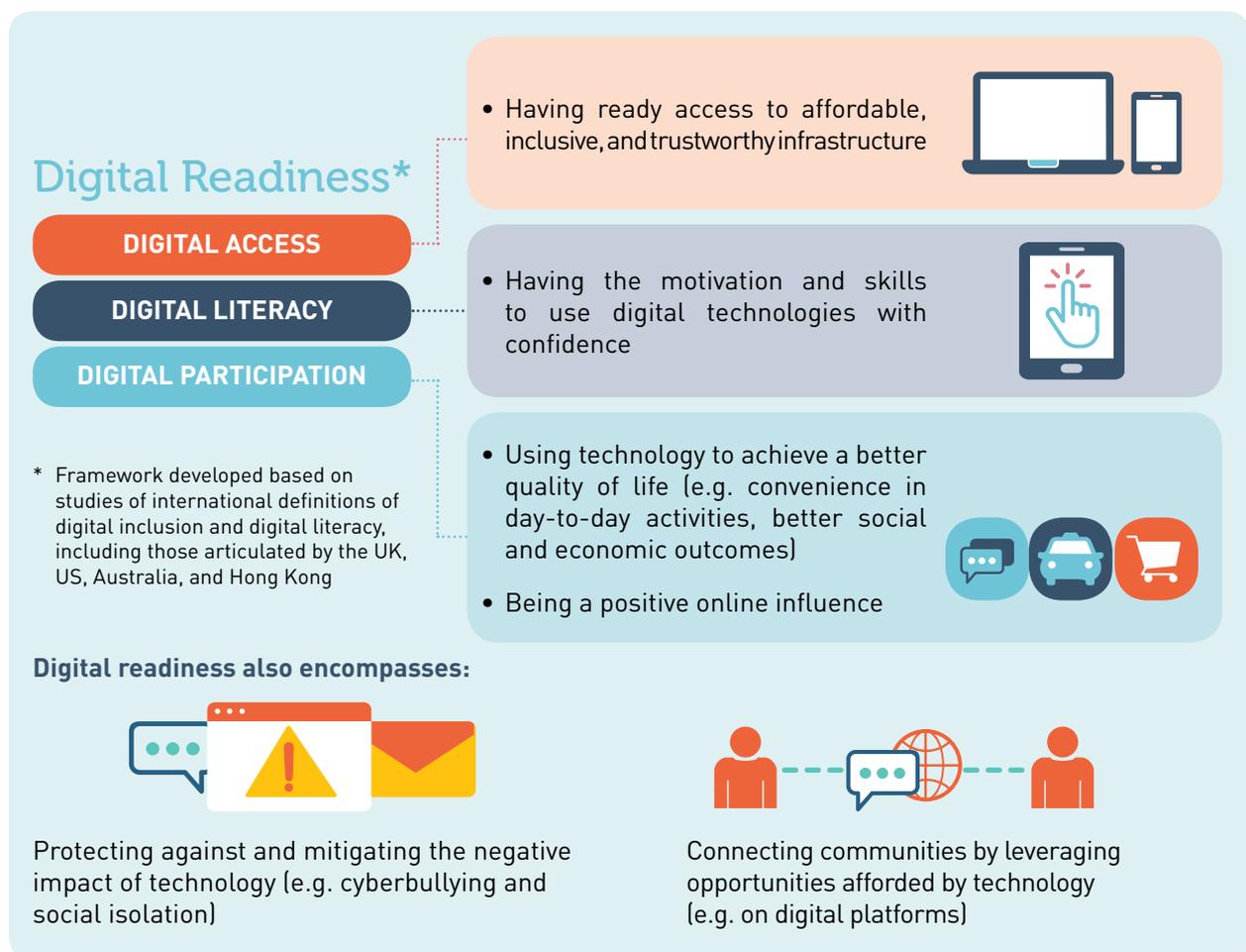
Many public, private, and voluntary organisations already have initiatives to help Singaporeans embrace and adopt technology in their own ways.

Approach to Digital Readiness

Digital Readiness Defined

Based on studies⁵ of other countries' definitions of digital inclusion and digital literacy, digital readiness in Singapore's context is defined as broadly encompassing a) having access to digital technology,

b) having the literacy and know-how to use this technology, and c) being able to participate in and create with this technology. The framework below explains the three aspects of digital readiness.



Guided by this framework, our digital readiness efforts are directed at the following strategic outcomes:

- That every Singaporean has the means to transact digitally;
- That every Singaporean has the skills, confidence, and motivation to use technology;
- That every Singaporean makes use of technology to achieve a better quality of life; and
- That every digital product or service is designed for easy and intuitive use by all Singaporeans.

⁵ According to the UK government, digital inclusion is about having the right access, skills, motivation, and trust to confidently go online. According to the US Institute of Museum and Library Services, digital inclusion is the ability of individuals and groups to access and use information and communication technologies. Digital inclusion encompasses not only access to the internet but also the availability of hardware and software, relevant content and services, and training for the digital literacy skills required for effective use of information and communication technologies.

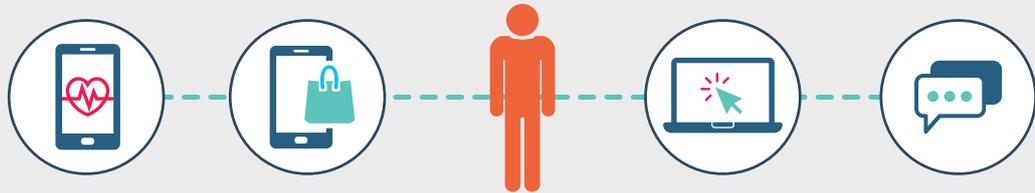
Guiding Principles

In proposing the recommendations, we are guided by three principles.

1

Firstly, user-centric design for the goal of universal inclusion.

There is a plethora of digital applications and services available today. These can provide great convenience to both the user and the purveyor, but only if people can intuitively understand how to use them. In the same way that many children seem almost intuitively able to use mobile devices like iPads, we must also aim for the design of digital applications and services to be accessible by everyone, regardless of how digitally savvy they are. Designing these applications and services must therefore start with the user at the centre. The user interface of our digital services and applications must be so easy to use that almost everybody can participate and transact digitally with little or no instruction.



2

Secondly, digital inclusion is more than access – it is also about equipping people with the skills and know-how to use technology.

There are many programmes today that focus on giving people access to affordable devices and the internet. But being digitally ready is also about having the skills and know-how to use digital technology safely and confidently. Besides being able to operate a mobile device, it is also important for one to be information- and media-literate, and to practise good cyber hygiene habits. The know-how to navigate the complex digital environment should result in a better appreciation among citizens of the benefits that technology can bring, ensuring that they are better placed to participate meaningfully in the digital society.



3

Thirdly, digital readiness requires effort from the whole society.

For our digital readiness effort to be successful, it is critical that all sectors of society play a part. In other words, all efforts to get Singaporeans ready to participate in a digital society must include the strong partnership and collaboration of the Government, businesses, and the community. Only with the mandate of the public sector, the resources and knowledge of the private sector, and the networks, touchpoints, and understanding of the community sector will we be able to effect deep and wide impact for all Singaporeans.



International Efforts

Digitalisation has had an impact on societies across the world. In many countries, efforts to ensure citizens are digitally ready tend to centre on the idea of digital inclusion, i.e. with the objective of ensuring that everyone has access to, is able to use, and benefits from digitalisation.

For example, in the UK, digital inclusion or reducing digital exclusion is about making sure that people

have the capability to use the internet to do things that benefit them day-to-day, whether they be individuals, SMEs or VCSE (voluntary, community, and social enterprise) organisations. In Hong Kong, it is viewed that people from all walks of life should have equal opportunity to use ICT and acquire digital literacy skills, so as to fully integrate with the digital society.



1 UK
Digital inclusion, or reducing digital exclusion, is about making sure that people have the capability to use the internet to do things that benefit them day-to-day, whether they be individuals, SMEs or VCSE organisations.⁶

2 US
The activities are necessary to ensure that all individuals and communities, including the most disadvantaged, have access to and use of Information and Communication Technology.⁷

3 Hong Kong
People from all walks of life should have equal opportunity to use ICT and acquire digital literacy skills, so as to fully integrate with the digital society.⁸

4 Australia
Digital inclusion is about using technology as a means to create social inclusion. To build a digitally inclusive community, we need everyone to have: digital access, digital literacy, digital enablement.⁹

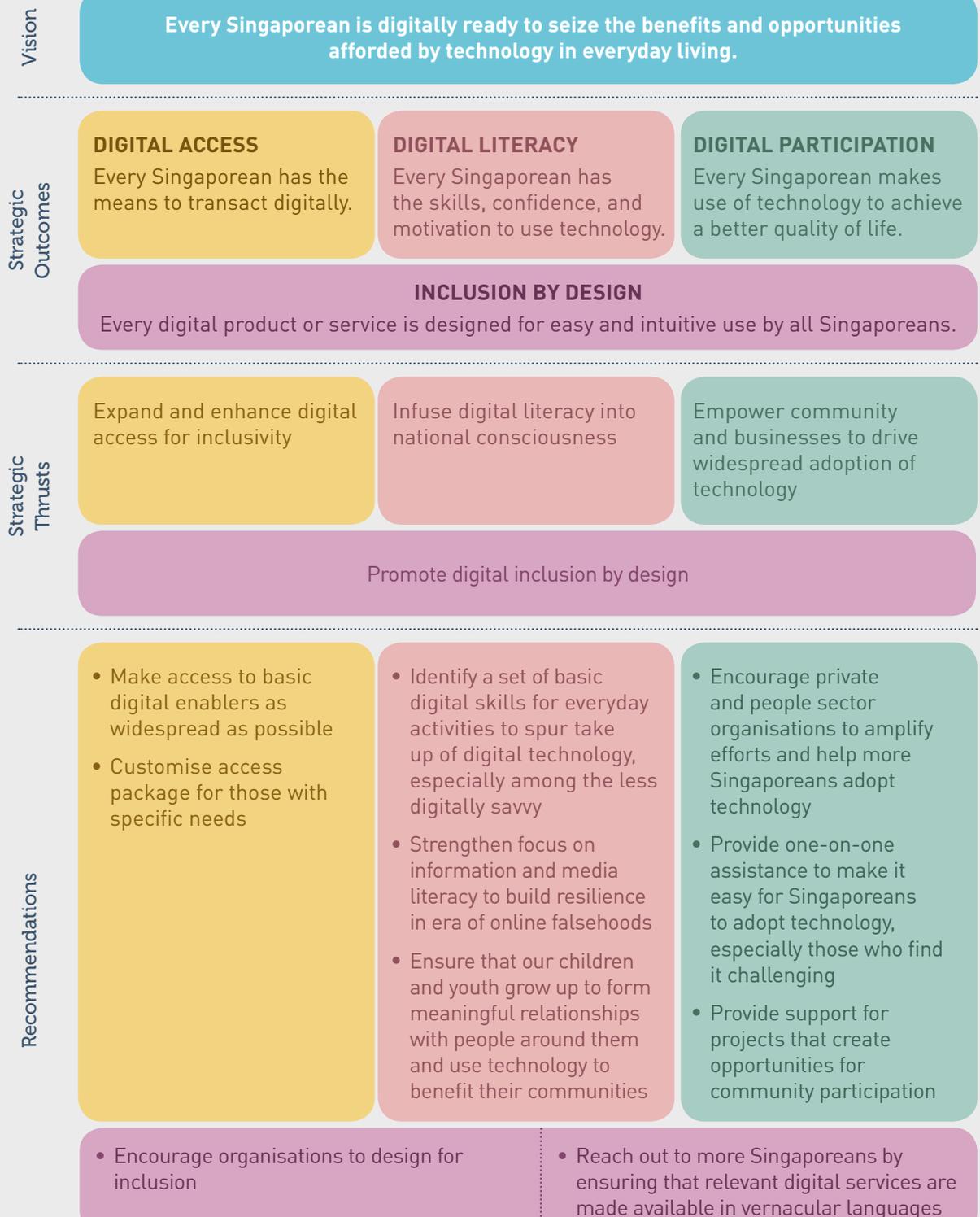
5 Switzerland
Everyone should be able to use ICT in their private and professional life, for their benefit and future development. Equal-opportunity, barrier-free, and non-discriminatory access for all to ICT and competent use of ICT by the inhabitants of Switzerland are an essential prerequisite for this.¹⁰

6 Government Digital Inclusion Strategy. <https://www.gov.uk/government/publications/government-digital-inclusion-strategy>
 7 Factsheet: President Obama announces ConnectALL Initiative. <https://obamawhitehouse.archives.gov/the-press-office/2016/03/09/fact-sheet-president-obama-announces-connectall-initiative>
 8 Hong Kong Legislative Council Panel on Information Technology and Broadcasting. <http://www.legco.gov.hk/yr15-16/english/panels/itb/papers/itb20160216cb4-581-3-e.pdf>
 9 Australian Digital Inclusion Alliance. <https://digitalinclusion.org.au/>
 10 The Federal Office of Communications. <https://www.bakom.admin.ch/bakom/en/home/digital-switzerland-and-internet/equal-opportunity/digital-inclusion-switzerland.html>

Taking reference from these definitions, our Digital Readiness framework of Access, Literacy, and Participation builds on the idea of inclusion and focuses more strongly on the individual.

Strategic Thrusts

To achieve the desired outcomes described earlier, this blueprint offers 10 recommendations which are categorised into four strategic thrusts.



Strategic Thrust 1

Expand and enhance digital access for inclusivity

A basic part of being digitally ready is having in place the means to access the digital world. Access is not just about having computing devices and internet connectivity. We are increasingly finding that to transact in the digital world today, there are more digital elements, or enablers, that we use. The recommendations here focus on enabling inclusive digital access for all segments of the population, including identifying a set of basic digital enablers for Singaporeans to access digital services, as well as strengthening the support for those with greater needs such as seniors and low-income households.

Strategic Thrust 2

Infuse digital literacy into national consciousness

A digital society is one where citizens not only have access to technology, but also embrace it, utilising technology confidently and effectively to connect with the world around them. Besides an appreciation of what digital technology can do, digital literacy is also about being able to think critically about the information that one has received. The recommendations here focus on cultivating the fundamental skills and values required to participate meaningfully in a digital society, including articulating a set of basic digital skills for daily activities, strengthening focus on information and media literacy, and for the young, ensuring that they grow up to form meaningful relationships with people around them and use technology to benefit their communities.

Strategic Thrust 3

Empower community and businesses to drive widespread adoption of technology

To thrive in a technology-rich society, it is not sufficient for people to just be consumers of technology. Instead they should be familiar with new technologies and be motivated and confident to use them to create products, content, and services, and connect with their communities. The recommendations here are about fostering more opportunities for community participation, encouraging businesses to play their part in ensuring digital inclusion, as well as providing one-on-one assistance for the digitally vulnerable who face challenges in embracing new technology and devices.

Strategic Thrust 4

Promote digital inclusion by design

Whether it is an app, website, workshop, or information booklet, digital initiatives must be designed in a way that makes it easy for everybody to get involved. The design, content, language, and the applicability to people's lives will go a long way to making sure that everyone can participate in our digital journey. These recommendations focus on helping individuals and organisations design and develop digital initiatives with their users in mind, so as to build a positive overall user experience, which will in turn lead to greater adoption of technology.



STRATEGIC THRUST 1

Expand and Enhance Digital Access for Inclusivity

A basic part of being digitally ready is having in place the means to access online information, networks, and communities. Access today is no longer just about having computing devices and internet connectivity. We are increasingly finding that to transact in the electronically-connected world today, there are more digital elements which we use almost daily:



DEVICES

The Singapore Government has been providing computers and tablets at subsidised rates to low-income households. In today's society, the use of mobile devices (phones and tablets) is becoming increasingly prevalent, perhaps even more so than computers.



CONNECTIVITY

This is not limited to fixed home broadband access, but also mobile broadband and widespread wireless connectivity.



e-PAYMENT

As countries around the world start grappling with new modes of payment, citizens likewise need not just cash, but also bank accounts linked to card facilities, e-wallets, and so on, which enable electronic or cashless payments.



DIGITAL IDENTITIES

As services and products become increasingly digitalised, a secure way of transacting and authenticating one's digital persona becomes increasingly critical. This could range from personal email addresses to authentication means such as the National Digital Identity ecosystem for government digital services.

A key concern is therefore how we can ensure that all Singaporeans have the elements needed to participate in a digital society. In Estonia, the mandatory digital identity provides all Estonians with digital access to all of the country's secure e-services (such as public services, financial services, and medical and emergency services). In India, every citizen has a digital, financial, and mobile identity: a universal digital identity for every resident, a free basic bank account for every citizen to access

financial services, and a mobile phone as the service delivery channel for all electronic services.

While the strategies undertaken by these countries can serve as good reference points, we recognise that they may not in themselves be sufficient to meet our definition of what it means to be digitally ready. It is worth looking more deeply into how to improve digital access even further for Singaporeans.

Recommendation #1

Make access to basic digital enablers as widespread as possible

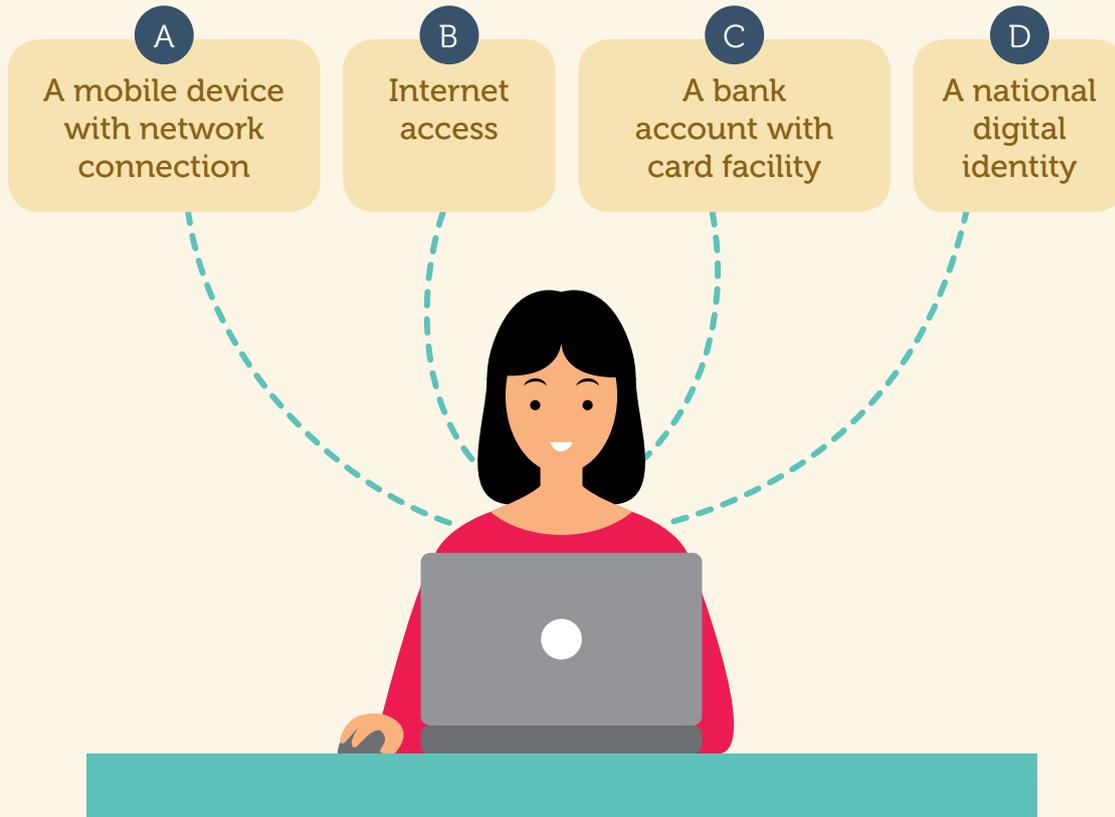
Not all households in Singapore have access to the internet. According to IMDA's 2016 Survey of Infocomm Usage and the SingStat Key Household Income Trends Report, about 9% of Singaporean households do not have internet access. These are in the bottom 20th percentile of household income. At the same time, our daily transactions such as bill payments are shifting towards digital services accessible by internet-enabled mobile phones. Though our mobile phone ownership is high, at about 150% of the population, there are still Singaporeans who do not have mobile phones.

Access to a bank account with a card facility is also becoming increasingly essential as e-payments become more prevalent, for instance as we move towards a cashless public transportation system. While a high proportion of Singaporeans have bank

accounts, about 40,000 Singaporeans still need help opening one. To make it easy and affordable for Singaporeans to open bank accounts, major retail banks have offered basic banking accounts with low initial deposit and minimum account balance requirements since 2002. Some banks also waive the account balance fall-below service fees for children, the elderly, full-time National Servicemen, and recipients of public assistance. The Monetary Authority of Singapore (MAS) is working with the local banks to ensure that free bank accounts are made available to a wider group of Singaporeans who need assistance.

Beyond phones and bank accounts with card facilities, having a digital identity will also be increasingly important for secure digital transactions and services.

As Singapore embarks on Strategic National Projects to build a Smart Nation, it is critical that Singaporeans should be digitally enabled to participate in and benefit from these projects. Beyond what is already being done, **every Singaporean, especially those at greatest risk of being excluded, such as the elderly and those in the lower-income segments of the population, should have four basic digital enablers:**



For those with no recourse to such digital enablers, we recommend exploring the development of a basic access package, which could include a basic mobile-connected device, pre-installed with essential apps and services for participation in day-to-day activities. Key industry and community stakeholders can come together in partnership with the Government to explore and test the feasibility and approach of this idea.

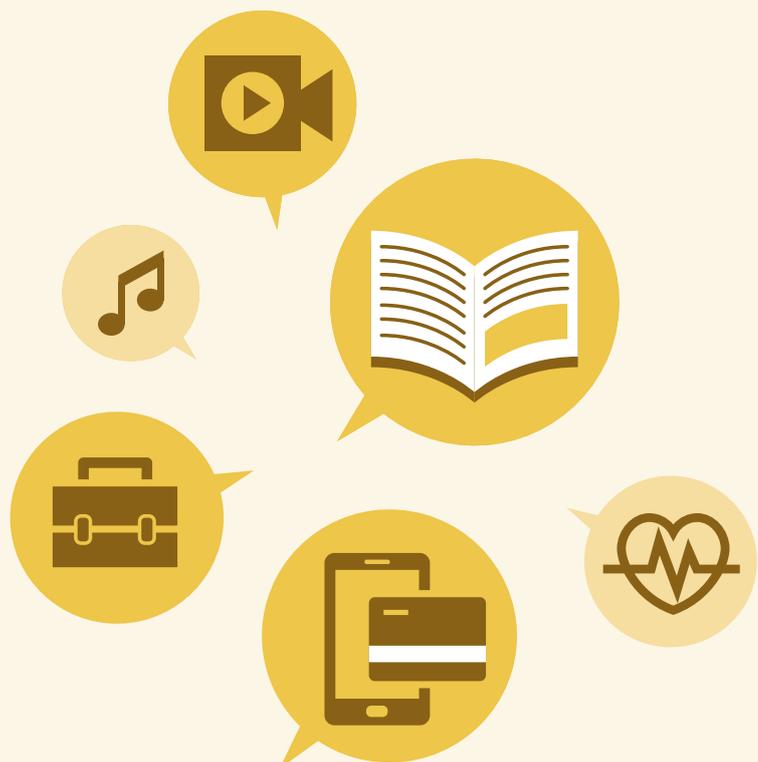


The ultimate objective is for everyone to be able to transact and participate digitally in the Smart Nation. While we strive towards this goal, we are also mindful that there are some who cannot, or will not, keep up with technology. In this interim, therefore, we must ensure that there are still non-

digital options available. In the long term, however, the existence of non-digital options may become an impediment to widespread adoption. The Government must therefore calibrate the process carefully to be as inclusive as possible.

To provide users with a single digital identity to transact with both the Government and private sector more securely and seamlessly, the Government is currently developing a **National Digital Identity (NDI)** system which extends from the SingPass platform. As a next step, the Government will be launching SingPass Mobile, an app which will allow citizens to transact on-the-go more easily using one's fingerprint, or a user-determined passcode.

With transactions increasingly digitised, the Government hopes to ensure that everyone has equal opportunity to benefit from the use of technology. For people at greatest risk of being left behind, such as the elderly and those in the lower-income segments of the population, the Government will work on improving support for access.



Recommendation #2

Customise access package for those with specific needs

Compared to digital natives, vulnerable segments of the population such as the low-income, some seniors, and persons with disabilities, generally face more challenges in embracing technology. Beyond a basic digital access package, we should consider customising the support for such groups with specific needs. For instance, mobile devices for seniors must be designed with their needs in mind (e.g. poorer vision and fine motor skills) and come equipped with senior-friendly features such as large buttons, big readable font-types, and voice-enabled apps. Likewise, there is a need to review existing practices to facilitate access to online banking facilities for vulnerable groups like the chronically unemployed and ex-offenders.

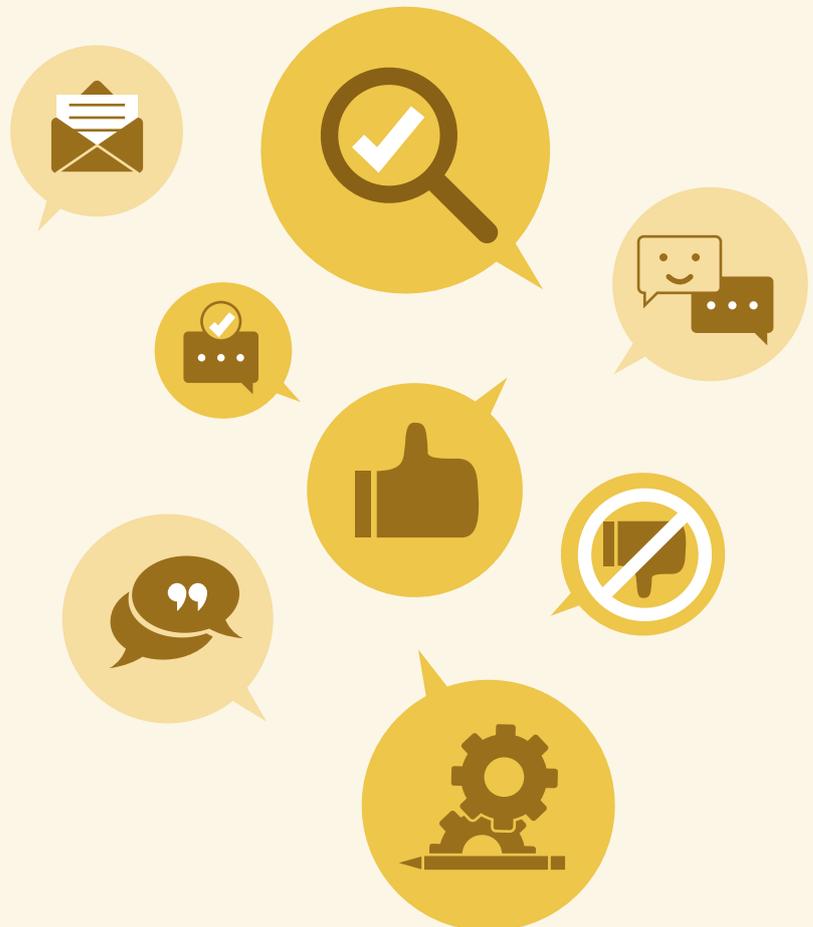
The Government is also doing more with the private and people sectors to help persons with disabilities in the use of technology. In 2014, IMDA launched the **Enable IT Programme** to help persons with disabilities access and use technology to improve the quality of their daily living and enhance their employability through technology. To date, IMDA has invested close to \$2 million in various projects which have benefitted more than 4,100 persons with disabilities. The Enable IT Programme has proven to be useful and there is strong demand for it. In 2017, IMDA enhanced the Enable IT Programme by doubling the grant support to social services organisations to \$100,000 per project so that more persons with disabilities can benefit from projects that improve their access and use of technology.

Mr Ang Chin Hao, a student at the Nanyang Technological University, was born with a rare genetic eye disorder that causes vision loss. He uses an “E-Bot Pro Magnifier” which his university had purchased for him, based on

Tech Able’s recommendation. This device helps to magnify content shown on screens, which makes it easier for him to read and complete his assignments.

Mr Muhammad Firdaus Bin Sarifi is a customer service officer at the Syariah Court. His work entails reading of documents, which is a challenge given his visual impairment.

With SG Enable’s help, the Syariah Court has identified and purchased a magnifier that lets Firdaus perform his duties effectively at his workplace.



STRATEGIC THRUST 2

Infuse Digital Literacy into National Consciousness



A digital society is one where citizens not only have access to technology, but also embrace it, utilising technology confidently and effectively to connect with the world around them. Digital Literacy is defined here as having the skills, confidence, and motivation to use technology, and is key to our journey towards our Smart Nation vision.

Besides an appreciation of what digital technology can do and the know-how to use it, digital literacy is also about being able to think critically about the information that one has received. With the proliferation of fake news, being able to discern misinformation has become even more important.

In January 2018, the Select Committee on Deliberate Online Falsehoods (DOFs) was set up to study the problem of deliberate online falsehoods and recommend measures to combat them. Submissions received have covered a wide range of measures, from enacting new legislation and regulating tech companies, to setting up fact-checking mechanisms. In addition, it was generally agreed by many that enhancing media literacy is one of the key longer term measures to counter online falsehoods. It is clear that a multi-pronged approach is necessary to address the issue.

Recommendation #3

Identify a set of basic digital skills for everyday activities to spur take-up of digital technology, especially among the less digitally savvy

Currently, there are many digital skills training programmes offered by both the public and private sectors. These programmes are typically workforce-oriented in nature and appeal to those with a view to develop and achieve specific technical competencies and job outcomes. For example, the SkillsFuture for Digital Workplace (SFDW) programme has identified

foundational digital skills in four key areas, namely mindset, data, technology, and innovation. Beyond these individual skills courses and a programme level approach, we observe that there is no systemic effort to define the fundamental skills that one, especially a digital non-native, ought to have in order to participate meaningfully in the digital society.

As a start, we recommend that a reference point, in the form of a set of basic digital skills for daily activities, be articulated. This would be helpful to guide Singaporeans, especially the less digitally savvy, in acquiring the requisite skills to participate in the Smart Nation. Framing these skills as basic and communicating the “hows” to build up these skills will help to nudge people towards picking up these skills. In the context of Singapore, we recommend that the following skills be mastered¹¹:

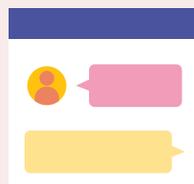
Managing Information

Knowing how to search for information online



Communicating

Knowing how to connect with one another by sending and replying personal messages via email or online messaging service



Transacting

Knowing how to shop online, perform e-banking transactions, make cashless payments, and use key government digital apps/services



We also consider cyber-safety, i.e. how to stay safe online, a fundamental requirement that undergirds this skillset.

¹¹ These skills are proposed with reference to the UK Framework for Basic Digital Skills (2015).

These basic skills should be packaged as a **Basic Digital Skills curriculum** that will be made available to all training providers. It would be beneficial if these could also be made available for mass use

by the public, so that interested family members, friends or community partners can help everyone enjoy the benefits of our Smart Nation.



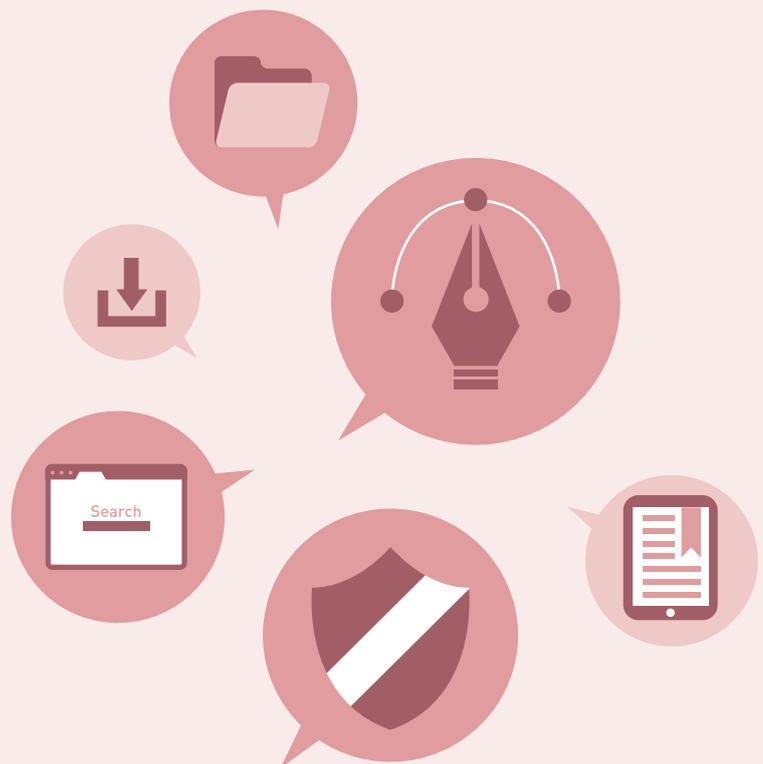


Mr Morni Bin Sulaimain, 73, was a teacher and a bank officer before retirement. Wanting to stay relevant, he heeded the call by the Government to embrace technology.

Initially, he was fearful. However, not wanting to be left behind in the digital age, he overcame his fears and signed up for a basic course on smartphones at the Silver IT Fest. Encouraged by his progress after one class,

he felt confident to sign up for more classes to expand his knowledge.

He felt that the pace of teaching was well-suited for seniors like himself and there was also time for hands-on practice which reinforced his learning. His confidence grew and he is now able to use apps such as Facebook and YouTube to keep himself entertained. He is also able to read the news online and no longer needs to leave the comfort of his home to buy newspapers. He uses Whatsapp to communicate with his friends and family daily, sharing pictures with them on the go. He also uses cloud-based storage applications like Google Photos and Dropbox to send and store files, allowing him to conveniently share them anytime. Cybersecurity is something he wants to learn more about so that he can learn to protect himself and avoid the dangers online. Technology has empowered him and brought convenience to his life.



Recommendation #4

Strengthen focus on information and media literacy, to build resilience in era of online falsehoods

The advance of technology has made it easier to generate and spread false information. Fake news is a global problem, and many countries have put in an array of measures to counter it. Of these efforts, public education has been singled out as an important bulwark against the proliferation of online falsehoods. While legislation could form part of the response strategy, the decision on whether to click on “share” or “forward” lies solely in the hands of the individual.

This emphasis on being discerning and responsible consumers of online content is also in line with the proposed “Core Values on Digital Literacy for ASEAN”¹² which was tabled for adoption at the 14th Meeting of ASEAN Ministers Responsible for Information (AMRI) in May 2018.

To empower individuals in spotting fake news, we recommend the provision of customised resources on information and media literacy, including how to discern online falsehoods. These resources should be made readily accessible, and carry information that is easily understood. This includes making sure that the resources are made available in Singapore’s four main languages, to reach out to non-English speakers too.

In addition, this effort can be complemented by “digital ambassadors” reaching out to seniors in particular. The Media Literacy Council (MLC) has in place some efforts in this area, and more can be done to build on and develop these for greater scale and reach.



¹² These values are Responsibility, Empathy, Authenticity, Discernment and Integrity. The Core Values referenced the media literacy values promoted by Singapore’s Media Literacy Council to address risky behaviours, uncivil behaviours, and inaccurate or extremist information online. The core values initiative was endorsed at the 15th SOMRI Meeting held in the Philippines in March 2017.



987FM DJs visited 12 schools from end-March to mid-May to spread the Better Internet campaign messages, including discernment of fake news

The **Media Literacy Council** first launched the Better Internet Campaign in 2013 to promote the safe and responsible use of digital technology, aimed at youths, parents, seniors, and the general public. Decoding disinformation features prominently as a key focus in the 2018 Campaign. Public education content such as catchy instructional videos featuring bite-sized fact-checking information are circulated to the community.

The aim is to build a healthy scepticism of online information among online users and to provide simple steps to developing fact-checking habits. Youths, parents, educators, seniors, and the general public will receive tips on detecting disinformation, and understanding the motivations behind the creation of and the impact and dangers of believing in and spreading disinformation.

There are many existing information and media literacy efforts, such as the Media Literacy Council's Better Internet Campaign, the National Library Board (NLB)'s S.U.R.E.¹³ programme, and the Cyber Security Agency of Singapore (CSA)'s Cyber Awareness Campaign. Beyond the Government, there are also training providers in the people and private sectors delivering such literacy programmes to schools and employers. There is room for a unified framework on media and information literacy to guide efforts across public, private, and people sectors, especially given the proliferation of online falsehoods.

Raising media literacy and combating misinformation is a multi-pronged effort. Public education efforts would take time to deliver results. In other countries, fact-checking initiatives have been established, often by non-governmental organisations (NGOs), to debunk and verify fake news. In the case of Singapore, a fact-checking initiative or mechanism would also serve as a useful resource for anyone keen to verify information which he/she is unsure of. This initiative must be independent of the Government and could comprise media schools, news organisations, and technology partners to ensure its sustainability.

¹³ S.U.R.E. stands for Source, Understand, Research, Evaluate.

Recommendation #5

Ensure that our children and youth grow up to form meaningful relationships with people around them and use technology to benefit their communities

To better prepare students to navigate the online environment, and to address the inherent risks of the online space, MOE has also implemented a cyber wellness curriculum and various school-based programmes. Through these efforts, students are equipped with social-emotional competencies and sound values so that they are able to exercise self-management, form positive peer relationships and resolve conflicts, and make responsible decisions online.

Schools dedicate curriculum time to carry out cyber wellness lessons with their students. They also organise various activities such as talks, workshops, Cyber Wellness Day / Week, and camps to augment the cyber wellness curriculum. Schools are also encouraged to adopt a peer-to-peer approach to cyber wellness through Cyber Wellness Student Ambassadors (CWSAs) who serve as role models and actively influence their peers to create a safe and kind online community.

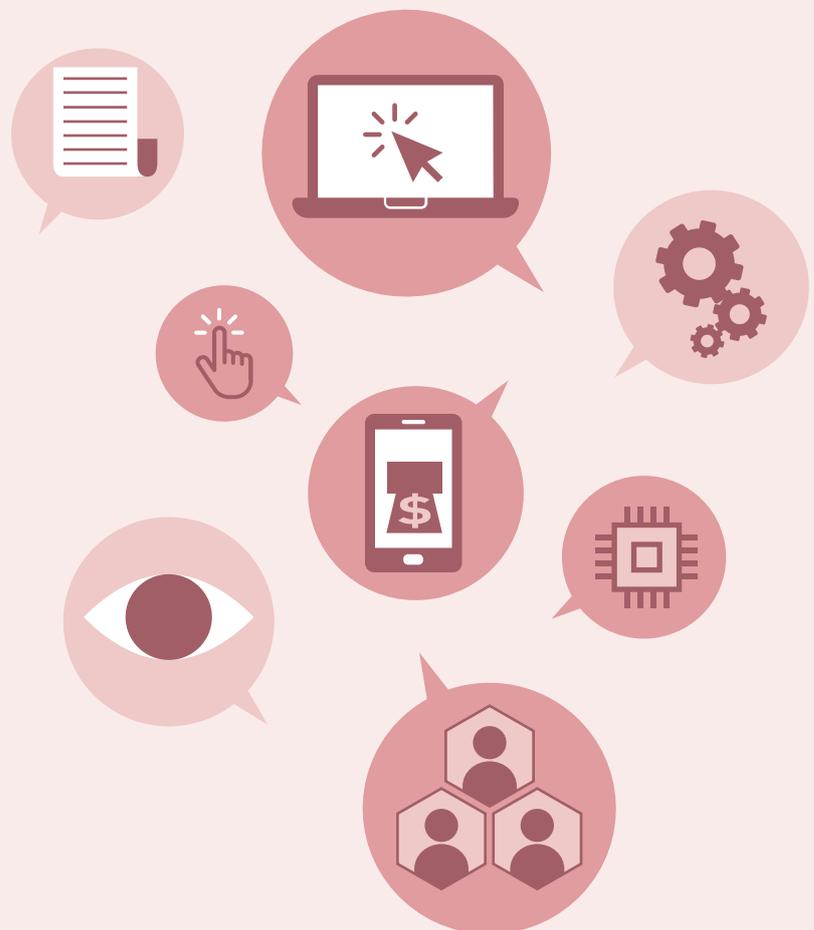
Our youth today are digital natives who will grow up to form the digital workforce of tomorrow. In addition to cyber wellness-related values and skills, it is important to focus on attitudes and values that will be essential in the context of a Smart Nation. **We recommend articulating these attitudes and values¹⁴, as well as the relevant outcomes, to guide efforts by schools and parents in developing our children and youth to thrive in the digital age.**



Equally importantly, efforts could be directed at helping children and youth see how technology can be an enabler for doing good. They should be encouraged to utilise the digital space to take positive action to benefit the community, through ways such as online giving, raising awareness for causes, and creating meaningful content. Community participation programmes for students could also include the inter-generational teaching of digital skills by students to their grandparents.

¹⁴ One possible reference point is the concept of Digital Citizenship, as articulated by Mike Ribble. Ribble (2017) defines “Digital Citizenship” as the “norms of appropriate, responsible behaviour with regard to technology use.” The nine themes of Digital Citizenship are as follows: Digital Access, Digital Commerce, Digital Communication, Digital Literacy, Digital Etiquette, Digital Law, Digital Rights & Responsibilities, Digital Health & Wellness, and Digital Security (self-protection).

TOUCH Cyber Wellness has been conducting cyber wellness education programmes in schools since 2001, constantly updating the curriculum in line with emerging issues, such as the new module on fake news in 2018. TOUCH conducts school assembly talks, classroom programmes, and equips student leaders to champion cyber wellness and media literacy in their school communities including helping their peers to evaluate the veracity of online content. To date, TOUCH has reached out to 1.6 million individuals on cyber wellness.



STRATEGIC THRUST 3

Empower Community and Businesses to Drive Widespread Adoption of Technology

To thrive in a technology-rich society, it is not sufficient for people to just be consumers of technology. Instead, they should be familiar with new technologies and be motivated and confident to use them to create

products, content and services, and connect with their communities. In order to promote motivation and confidence, Singaporeans must be given the opportunities to participate, create, and connect with one another using technology.



Recommendation #6

Encourage private and people sector organisations to amplify efforts and help more Singaporeans adopt technology

As part of the efforts to improve adoption of technology among citizens, countries such as Wales¹⁵ and Scotland¹⁶ have implemented Digital Participation Charters as a way to expand digital inclusion efforts. Signatory organisations publicly commit to digital inclusion principles and also work at ensuring that their employees and volunteers have the confidence to develop digital skills. The desired outcome is for the beneficiaries and volunteers of the signatories to embrace digital solutions for the problems that they tackle.

In Singapore, many organisations already have their own initiatives to prepare their employees or the community to be digitally ready. For instance, DBS announced in Oct 2017 plans to re-skill 1,500 employees to help them be future-ready.¹⁷ IMDA is collaborating with tech companies such as Apple and Microsoft to train a group of persons with disabilities as ambassadors to help others in their community regain their sense of independence.¹⁸



Staff from SPD sharing on the various types of computer access technologies that can help persons with disabilities in their employment and in creating content independently

15 Wales's Digital Inclusion Charter. <https://digitalcommunities.gov.wales/charter/>

16 Scotland's Digital Participation Charter. <https://digitalparticipation.scot>

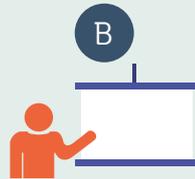
17 "DBS to re-skill 1,500 bank staff in its own professional conversion programme." Straits Times, 31 Oct 2017

18 "Inclusive push to go digital." Straits Times, 19 Nov 2017

Businesses are well placed to help Singaporeans acquire skills and adopt digital technology. To that end, **we recommend establishing a Digital Participation Pledge**, for businesses to voluntarily commit to supporting digital participation and digital inclusion in Singapore by doing the following:



Ensuring that employees have an opportunity to adapt to technological changes by equipping employees with foundational digital literacy skills for work
(e.g., nominating workers to the SkillsFuture for Digital Workplace programme)



Educating customers on digital services
(e.g., setting up experiential learning journeys for less digital-savvy customers)



Designing digital services and products in a way that is simple and intuitive for users
(e.g., setting up regular feedback channels and identifying areas of improvement on user design and experience)



Giving support for Digital Readiness activities and initiatives
(e.g., participating in a nationwide project on digital literacy for seniors)

Companies who pledge their commitment will be part of a Digital Participation network, and those who are already quite digitally ready can collaborate with and help their less-digitally ready peers. **There could also be benefits, incentives, and public recognition for businesses who pledge their commitment.**

Recommendation #7

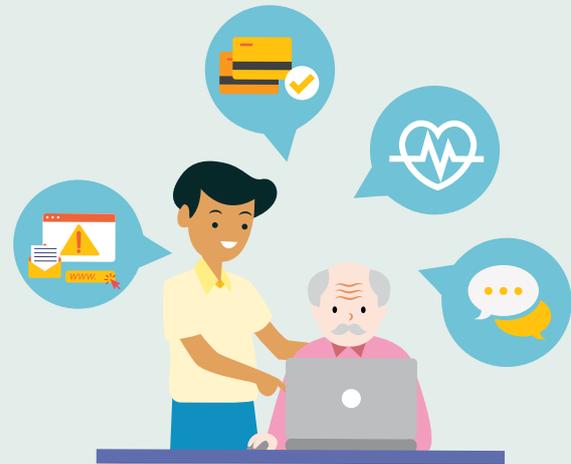
Provide one-on-one assistance to make it easy for Singaporeans to adopt technology, especially those who find it challenging

To further reduce the barriers to learning and using technology, we see a need to provide greater support for digital non-natives on the use of their digital devices or services. With such assistance, non-natives can, over time, become more confident and comfortable in using technology to participate in digital activities.

IMDA and NLB currently have some initiatives in place providing assistance to seniors and mature adults in their navigation of technology. These initiatives should continue to proliferate through partnerships with the community so as to reach out to more people who require more guidance.

In tandem with these existing initiatives, **we recommend providing a dedicated and regular avenue through which the public can obtain one-on-one concierge-type assistance on the use of their digital devices or services.** Such services can be made available at key common social touch-points such as community centres, public libraries, and senior activity centres, manned by staff who can assist individuals and impart basic digital skills (communicating, managing information, transacting, and being cyber aware). Staff can also help to point the public to other useful resources, e.g. by recommending suitable courses for them to advance their digital skills.

More emphasis should be placed on helping citizens living in mature estates which have higher proportions of seniors. There is also potential to leverage these avenues to support the implementation of Strategic National Projects when they are ready, as well as new Government



initiatives requiring citizens to transact using technology. As such, the content and scope of service rendered by such service channels will also have to evolve as requirements and skillsets change over time along with technology.



Mdm Saw Sook Choo, 80, faced difficulties making the transition from 2G to 3G. Mdm Saw's daughter bought a new smartphone for her thinking it would be more convenient and useful for Mdm Saw. However, Mdm Saw said, "I just learnt to use this phone and now I need to upgrade again."

As Mdm Saw does not live with her family, she did not have anyone to whom she could easily turn to for help using her smartphone. While she had learnt about WhatsApp and Skype from her son-in-law, she often had questions about these mobile apps but did not want to trouble him.

Mdm Saw then learnt about IMDA's Digital Clinics from her friend and attended one in May 2018. She was delighted and found that it was a useful platform for seniors like her. At the Digital Clinic, she learnt how to check for bus timings and transfer photos from her old phone to her new one.



Volunteers providing one-on-one assistance to seniors with their mobile phones at the Digital Clinic at L³@RadIn Mas: Your LifeLong Learning Journey event

At **IMDA's Digital Clinics**, volunteers provide seniors with one-on-one assistance in using their mobile devices such as smartphones. IMDA has started Digital Clinic sessions in the eastern area in partnership with South East Community Development Council and corporate volunteers from the Changi Business Park Gives 2017 project. Since November 2017, sessions have been conducted at community venues such as MacPherson Community Club, Heartbeat@Bedok, and Marine Parade Public Library. Some of these clinics are coordinated with help from the SG Cares Local Network of students and corporate volunteers. From April 2018, Digital Clinic sessions will be organised in other parts of Singapore.

Our extensive network of 26 public libraries also provides valuable touch-points to reach out to the community with digital readiness programmes. Seniors will have targeted programmes to help them to be digitally ready. One is **Seniors Tech and Read (S.T.A.R.)** service, which comprises Tech Assist, covering enquiries on the access and use of NLB's e-Resources, and Read Assist, offering support to seniors in reading library materials.

Recommendation #8

Provide support for projects that create opportunities for community participation

Simple-to-use and fun app-like experiences can encourage digital participation in community projects for better social outcomes and benefits. While we have a number of initiatives that promote

social interaction among Singaporeans via the use of technology, some have a limited reach and may only be available to people who are aware of them (e.g. closed Facebook community groups).

To encourage and multiply technology-based efforts towards cultivating a *kampong* spirit among our communities, **we should provide more support for projects that create opportunities for community participation, in particular those that bring about greater social interaction and cohesion through online-to-offline or offline-to-online participation.**

Examples of such support include funding to encourage the piloting of new ideas, or linking owners of such community projects to relevant stakeholders such as technology firms who can provide the necessary resources and advice. The intent is to encourage and catalyse innovative projects that make good use of technology for social good. To make this meaningful, the Government should put careful thought towards the eligibility criteria and performance indicators for fund applicants.

There are some community apps in Singapore today which connect needy residents to keen volunteers, as well as senior-friendly social apps for elderly residents in one-room flats to interact with others online. Greater

resourcing support could increase the number and reach of such applications and services, and in turn reduce the ill effects of social isolation and loneliness, by connecting those who need help to relevant avenues of help.

An example of a project that encourages community participation is the development of a **whole-of-government shared volunteer management system (VMS3.0)** that aims to develop and cross-deploy volunteers across Singapore. Citizens engaged in service to one another can help grow stronger social bonds and a more cohesive society. Creating new volunteer opportunities and facilitating a meaningful volunteer participation journey is a key thrust in this effort. VMS3.0 provides a one-stop, end-to-end system that allows participating agencies and volunteers to find their match. Beyond matching and co-delivery of programmes, VMS3.0 also allows citizens (volunteer leaders) to take the lead and co-create volunteer opportunities that benefit their communities.

Some examples of other community-building digital initiatives include time-banking platforms **HourVillage** and **iGive**. HourVillage is a social marketplace where skills, services or errands are exchanged for time credit, encouraging communities to provide help to one another. The iGive mobile application, developed by a local social enterprise iGive, also runs on a time-banking concept to facilitate peer-to-peer help within a neighbourhood. It also allows non-profit organisations to recruit and manage their volunteers. The **SG Cares application** was launched as a one-stop platform for Singaporeans to take action, learn, and deepen their giving journey. It currently makes use of the Giving.sg platform to list volunteer and donation opportunities that users can sign up for on the go, and offers curated stories and learning resources that promote care and contribution in Singapore. Users can also share their own stories.

The Government is also building digital platforms that can connect citizens to fellow citizens, not just to build a community of digital users, but also to support crowdsourcing for solutions and services. This is to empower the digital community to participate actively in building a Smart Nation that is meaningful for everyone.

STRATEGIC THRUST 4

Promote Digital Inclusion by Design

Whether it is an app, website, workshop, or information booklet, digital initiatives must be designed in a way that makes it easy for everyone to get involved. The design, content, language, and applicability of the initiative to people's lives will go a long way in making sure that everyone can participate in our digital journey.

Inclusion by design also goes beyond that which is directly digital. Policies and regulations

that may hamper digital adoption may also need to be assessed and reviewed. There is also an equally important need to understand some of the impediments or "frictions" which prevent people from using digital products and services, so that we can overcome them to create a better ecosystem which supports the move towards a Smart Nation, both for consumers and businesses.

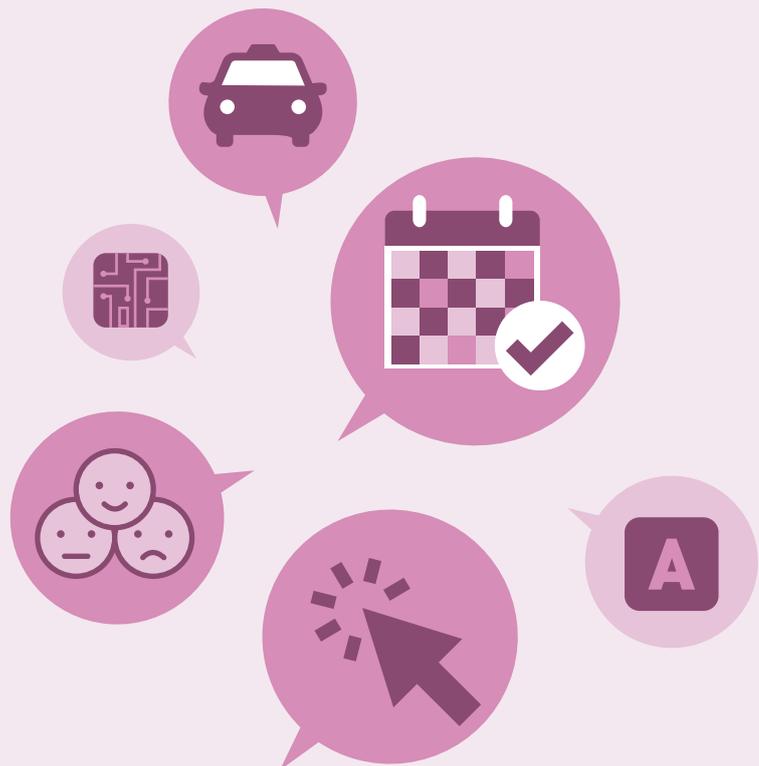


Today, we have in place a plethora of events and platforms promoting the use of technology that are catered to different user groups. Where possible, agencies and organisations of digital services should leverage these events and platforms for conversations with end-users to understand their pain-points and potential barriers which hinder the adoption of technology. In this way, valuable insights

can be gathered to help improve initiatives, or to review existing regulations and even policies that prevent Singaporeans from using technology in a pervasive way. In addition, there should also be a channel to collect, and make available, the feedback gathered so that everyone, from app developers to course providers and policy makers, is aware of the views expressed.

Tech Kaki, an initiative by GovTech, is a community for citizen engagement. Through Tech Kaki, fellow citizens are invited to share their ideas on GovTech's current and upcoming citizen products and services. Anyone with an interest to improve government digital products and services (not just the tech-savvy!) is welcome to join the community.

GovTech has organised a few Tech Kaki meet-ups, gathering feedback from citizens of all walks of life. These engagements help GovTech to better understand user needs and further refine its digital offerings. For example, GovTech has already held conversations on Parking.sg and the use of chatbots to perform government transactions. With each meet-up, GovTech hopes to convey their welcome for everyone to be part of this Smart Nation journey and co-create better public services together.



Recommendation #9

Encourage organisations to design for digital inclusion

Digital services can provide great convenience to users, but only if people can understand and use these services easily.

There are already in place guidelines that developers of digital services can follow to ensure that everyone can use these services easily. These include, but are not limited to, the Web Content Accessibility Guidelines (known as WCAG 2.0), which is an internationally recognised set of recommendations for improving web accessibility, including for persons with disabilities. GovTech is also developing a set of digital standards and design principles, which will be published by end 2018. A review and improvement of all high-volume Government services will also be completed by 2020, to assess where improvements can be made to ensure that all services provided by

the Government are user-friendly and accessible to different population segments, including persons with disabilities.

The SS618 Guidelines on User Interface Design for Older Adults, supported by Enterprise Singapore and the Singapore Standards Council, is another example. This was jointly developed by the public, private, and people sectors to provide guidance to designers of digital devices and online services in designing user interfaces to enhance usability and experience for older adults of digital services, such as laptops and smartphones, as well as online services. It goes beyond basic considerations, such as readable font size for older adults, colour and contrast, and presentation of information, to include considerations on senior-friendly designs and features.

However, having the guidelines alone is not sufficient. Our interactions with several small and medium-sized enterprises in the course of our engagements revealed that some were unaware that such guidelines existed and how it could benefit their end-users — **an indication perhaps, that more can be done to educate and encourage organisations (regardless of size and industry) to be inclusive when designing their digital initiatives so that more people are able to use it with ease.**

The SMEs Go Digital programme aims to make digitalisation simple for SMEs. **We recommend working through SMEs Go Digital to reach out to companies, so they too are aware of such guidelines that will help their customers to use their digital services more easily.**

In addition, organisations with the resources and know-how can also advise smaller firms in the design of inclusive digital services, and even extend access to user groups for them to test designs and interfaces.



Under the **SMEs Go Digital** programme, SMEs can first refer to the sector-specific digital roadmaps to determine the digital solutions to use at each stage of their growth. Next, they can consult digital specialists at the SME Digital Tech Hub if they need expert help to better appreciate digitalisation before they embark on it. When they are ready to get started, they can select from the list of proven digital solutions pre-approved by IMDA, or embark on industry-led pilot projects to achieve new growth.

The Government is also working towards making its digital initiatives easier and more accessible to all population segments. Most of our Government services can now be found online, and are implemented in accordance with a set of Web Interface Standards

(WIS). GovTech will be revising the WIS to reflect an emphasis on improving the end-to-end user experience of Government digital services, such as incorporating the SS618 guidelines to further enhance the online experience of older users.

Recommendation #10

Reach out to more Singaporeans by ensuring that relevant digital services are made available in vernacular languages

A final but no less important aspect of strengthening the readiness of Singaporeans to participate digitally may not be digital at all. In a multi-racial, multi-lingual

society like Singapore, language can sometimes be one of the key barriers to the understanding, acceptance, and adoption of anything, including technology.

To ensure that all segments of the population are able to understand and enjoy the benefits afforded by technology, **it is important that the relevant services — whether it is an application, a workshop, or publicity materials — are also communicated and implemented in our vernacular languages to reach out to non-English speaking Singaporeans, especially the elderly. Machine translation could also be leveraged where possible to make apps more usable to those who speak only vernacular languages.**

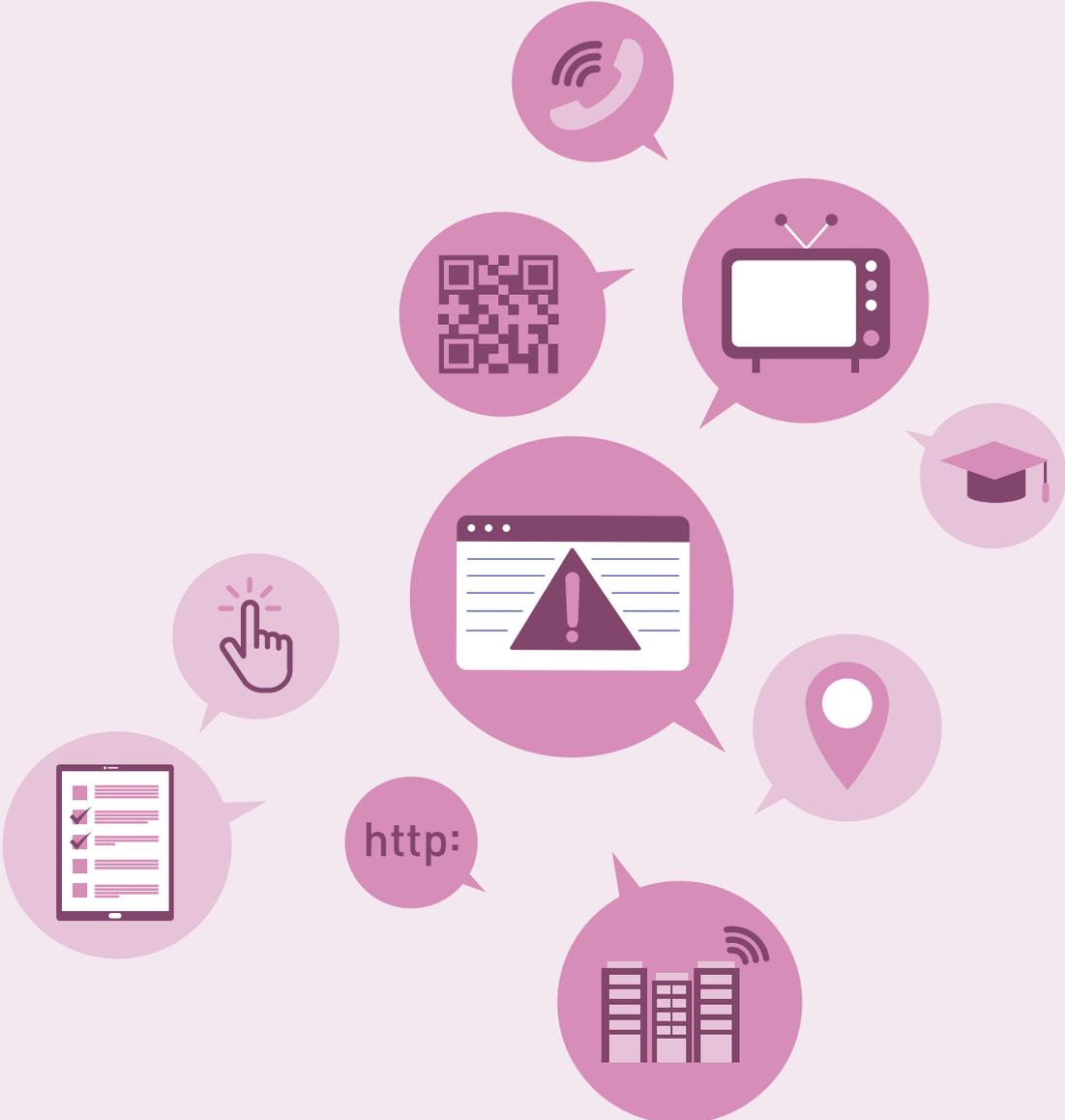


This is not something new — in fact, we are already seeing many of such efforts around us. For example, to introduce seniors to the Pioneer Generation Package, videos in Singapore’s four official languages were produced to reach out to various non-English speaking groups. The Government has also leveraged dialect drama series such as “Eat Already?” and “Happy Can Already!” to convey government schemes and important topics such as healthcare and retirement planning in languages that the Chinese pioneer generation are comfortable and familiar with.

To ensure that nobody, especially the elderly, is excluded by our push towards a Smart Nation, we should give Singaporeans the option of transacting and using digital services in their mother tongue languages. This is especially important with common tools like communication apps and relevant government digital services that are used on a more regular basis.



Dialect programmes like “Happy Can Already!” are effective platforms to communicate important Government schemes and messages, in vernaculars that seniors are comfortable with



Digital Readiness is a National Effort



Digital readiness is a national effort. We want to help all segments of the population to participate together in this digital future, to empower citizens so that they enjoy a better quality of life and for those who are relatively ahead in this journey, to do their bit for the community and help to build a more inclusive society through the use of technology.

The Government can take the lead to drive many of the recommendations outlined in this report, and must work very closely with the private and people sectors to ensure that these take fruit so that Singaporeans will benefit. Close partnerships and networks must be built up, both within the whole of Government as well as across public, private, and people sectors, so that there can be reach, scale, and sustainability of these efforts and initiatives. This could be done through structures like a standing committee to coordinate public sector

efforts, or a Digital Readiness Council to continue the conversations and partnerships across all sectors beyond the pages of this report.

No effort is too small or too simple, and everyone can play a role in this journey. Individuals can teach our families and peers within our communities and social circles how to use a smart device, and navigate safely in a digital world. Businesses can step up to the Digital Participation Pledge and help to design digital products and services that are user-friendly and easy to use by all. Community organisations can work through common social touchpoints and ensure that those who need assistance are linked up with those who can provide it.

Let us work together hand-in-hand to realise our vision of Digital Readiness for all Singaporeans — that every Singaporean is ready to seize the benefits and opportunities afforded by technology in everyday life.



Let us work together hand-in-hand to realise our vision of Digital Readiness for all Singaporeans — that every Singaporean is ready to seize the benefits and opportunities afforded by technology in everyday life.



Mr Syafiq Lee Bin Sani Lee, 23, a Year Two student at ITE College Central, is a fine example of how youths can help and share their knowledge with seniors. As part of his Media Smart Club co-curricular activity (CCA), he signed up to volunteer at IT classes at

IMDA's Silver IT Fest 2017, to help seniors taking Facebook and Dropbox classes.

The volunteering stint which started out as a CCA turned out to be a real eye-opener and spurred his desire to do more. He felt greatly rewarded seeing the huge smiles and gratitude from the seniors and found it to be a fulfilling experience. With renewed dedication and passion, Syafiq wants to do more and as the new nominated President of the Media Smart Club, Syafiq will lead by example and rally more of his peers to join him to volunteer and help seniors enjoy the benefits of technology.

Acknowledgements

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 People's Association
 SkillsFuture Singapore
 Smart Nation and Digital Government Office

Private Sector

Apple South Asia
 Association of Small & Medium Enterprises
 Citibank Singapore
 DBS Bank
 EZi Technology
 Facebook Singapore
 Google Singapore
 Grab
 IBM Singapore
 Intel Technology Asia
 Lazada Singapore
 Sea Limited
 Singapore Airlines Limited
 Singapore Business Federation
 Singapore Telecommunications Limited
 StarHub Limited
 United Overseas Bank Limited

People Sector

Council for Third Age (C3A)
 Delta Senior School (APSN)
 Feiyue Community Services
 HCSA Community Services
 Industrial & Services Co-operative Society Ltd
 Mendaki
 Mendaki SENSE
 Prison Fellowship Singapore (PFS)
 SG Enable
 Silver Ribbon
 Thye Hua Kwan Moral Charities (THKMC)
 TOUCH Care Giver Support
 TOUCH Center for Independent Living (TCIL)
 TOUCH Cyber Wellness
 TOUCH Family Services

About the Digital Readiness Programme Office

The Digital Readiness Programme Office was set up by the Ministry of Communications and Information in May 2017. It is responsible for driving a whole-of-nation strategy for Digital Readiness. The Programme Office facilitates greater coordination and synergy between the public, private, and people sectors in terms of efforts and resources in this area, and works with all three sectors to develop relevant Digital Readiness policies, design programmes, monitor progress and effectiveness of initiatives, conduct research, and manage marketing and assessment.

