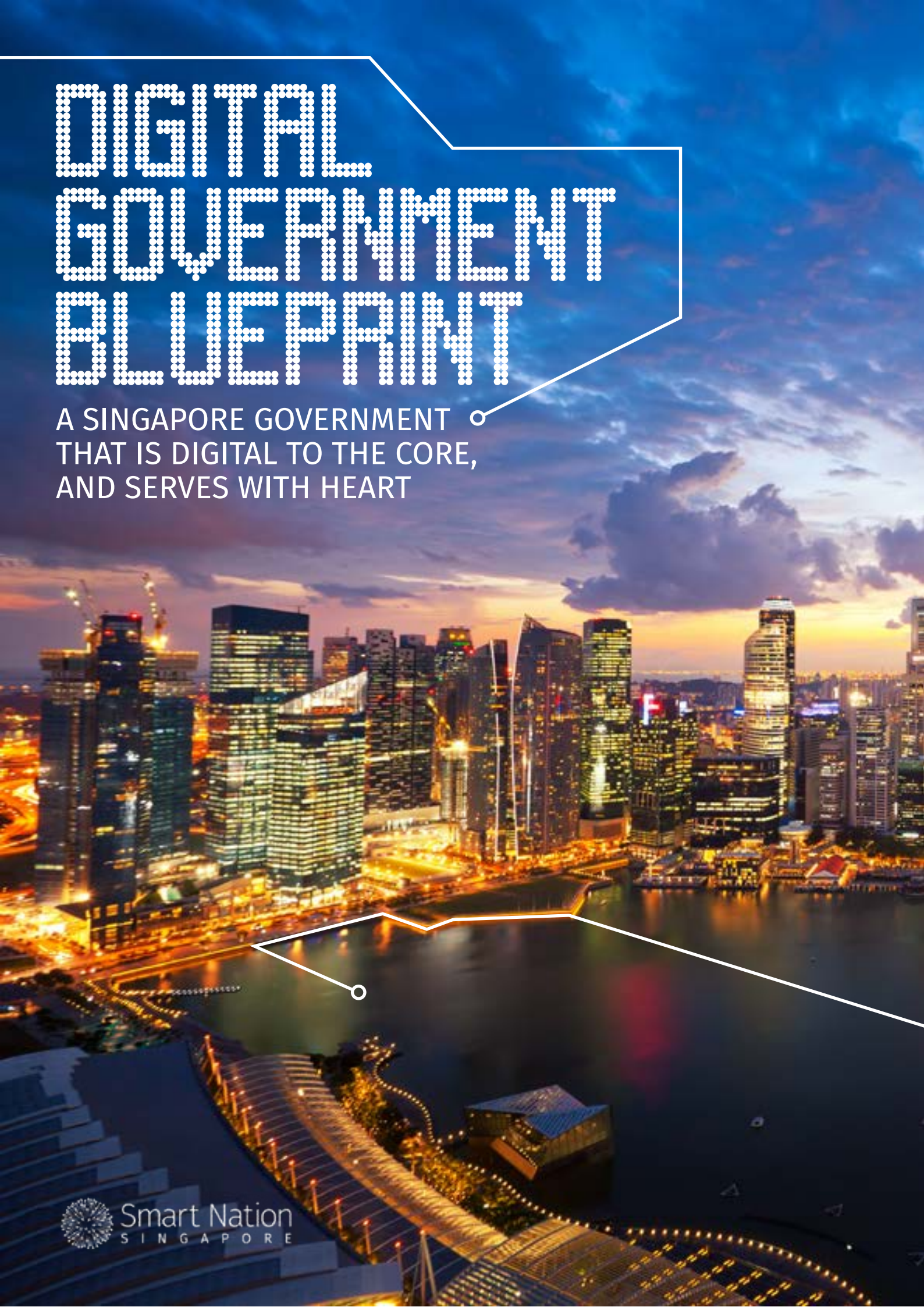
DIGITAL GOVERNMENT BLUEPRINT

A SINGAPORE GOVERNMENT THAT IS DIGITAL TO THE CORE, AND SERVES WITH HEART



Smart Nation SINGAPORE

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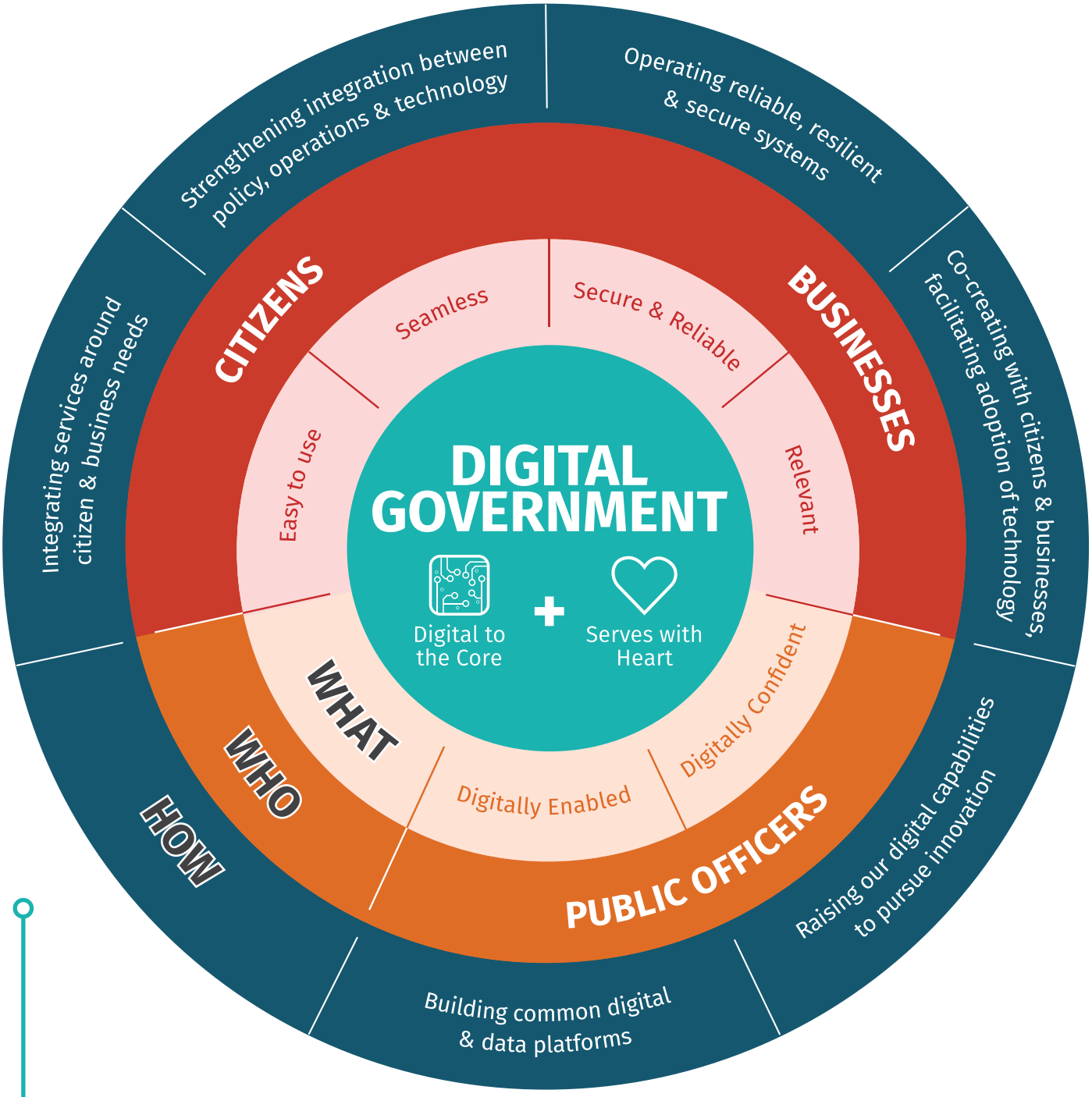

DIGITALISATION IS CRITICAL FOR THE GOVERNMENT

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1

The Singapore Government has made bold strides in our computerisation and e-Government journey. Our journey started over 30 years ago, with the National Computerisation Programme in the 1980s. Today, our e-Government efforts are well regarded internationally. Our people and businesses are able to transact with the Government online, and our public officers make use of digital tools in their day-to-day work.

2

The conditions are now ripe for us to take Government's digital transformation to the next level. Rapid technological advances, particularly in big data, Internet of Things (IoT) and Artificial Intelligence (AI), have the potential to fundamentally transform Government for the better. At the same time, we face increasing manpower constraints and an ageing workforce. This is even as we seek to do more to support the public and our businesses. Our people, including a growing group of "digital natives", also expect top-notch digital services.

DIGITALISATION IS CRITICAL FOR THE GOVERNMENT

To be a Digital Government, we will have to partner citizens and businesses to embrace technology and drive adoption.

3 Digitalisation will therefore be a key pillar of our public service transformation efforts. It will enable a public service that is leaner and stronger, with skilled and adaptable officers at the leading edge of service delivery and innovation. It will help us command strong public trust, confidence and support.

4 The Digital Government Blueprint builds on the foundations laid by previous e-Government masterplans. It is a statement of our ambition to better leverage data and harness new technologies, and to drive broader efforts to build a digital economy and digital society, in support of Smart Nation. It spells out how we will organise ourselves around our mission and stakeholders, instead of Ministries and agencies. It explains how we will strengthen integration between policy, operations and technology to support the Government's mission and better serve the stakeholders. This will require us to build common digital and data platforms for the Whole-of-Government (WOG), operate reliable, resilient and secure systems, and raise our digital capabilities to pursue innovation. Ultimately, we will not be able to become a Digital Government on our own. We will have to partner the community and businesses to embrace technology and drive adoption.

5 We will improve this blueprint iteratively. As technology evolves and needs change, we will have to adjust our plans. Nonetheless, this blueprint articulates concrete milestones for specific initiatives and areas that we will embark on now.

OUR VISION – A GOVERNMENT THAT IS "DIGITAL TO THE CORE, AND SERVES WITH HEART"

Image from Infocomm Media Development Authority

OUR VISION - A GOVERNMENT THAT IS "DIGITAL TO THE CORE, AND SERVES WITH HEART"

6 Digitalisation is a key enabler, but it is not an end goal in itself. Being "digital to the core" is about using data, connectivity and computing decisively to transform the way we serve citizens and businesses, and the way we enable our public officers to contribute fully to their work.

7 A Digital Government will still be one that "Serves with Heart". It does not mean that we will digitalise at the risk of losing our human touch and stop engaging with our citizens face-to-face. It is one where we are able to automate work where possible, so that we can provide a personal touch in a way that enriches the experience of the engagement between Government and citizens.

SERVING OUR CITIZENS AND BUSINESSES

Image from Infocomm Media Development Authority

SERVING OUR CITIZENS AND BUSINESSES

Citizens and businesses will find transacting with a Digital Government easy, seamless and secure.

8 The digital medium allows us to build stakeholder-centric services that cater to the needs of the individual. It enables policies, services and infrastructure to be better designed through the use of data and evidence-based policy-making, rather than by agencies' functional boundaries or our manpower limitations.

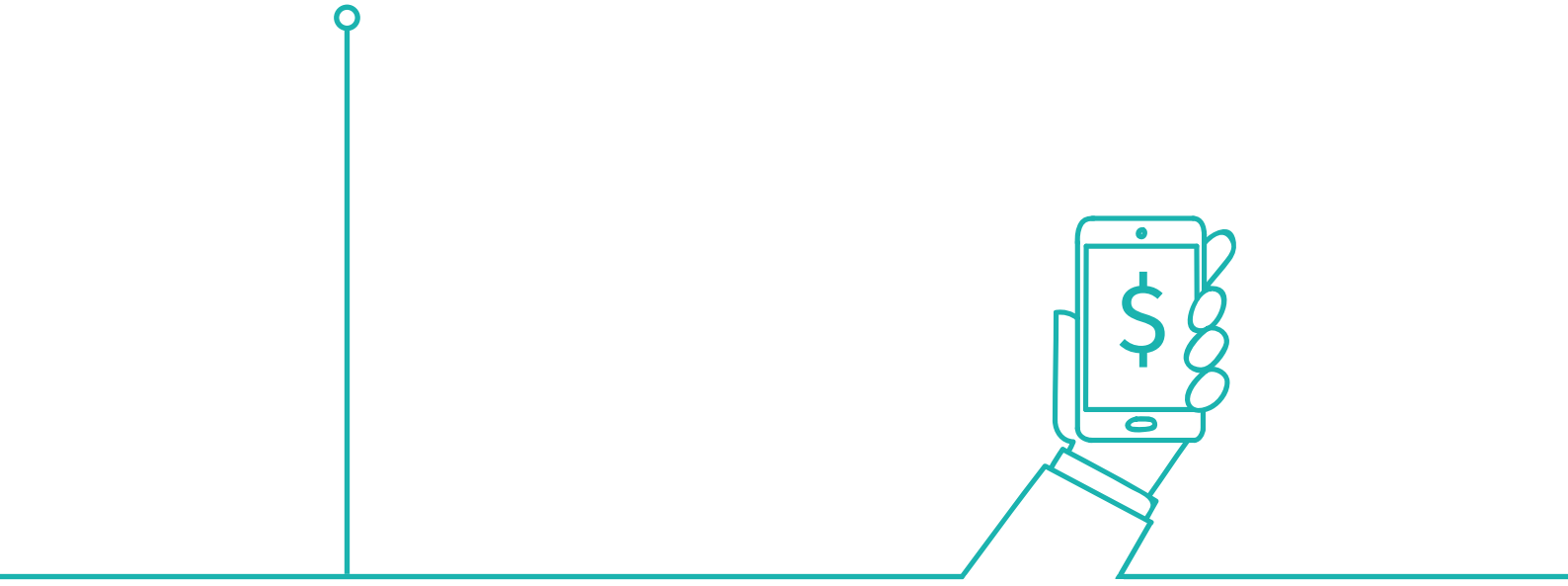
9 For citizens and businesses, this means that transacting with us will be easy, seamless and secure. Our citizens and businesses will:

a. Find our digital services intuitive, easy to use, and relevant to their needs;

b. Enjoy the convenience of completing government transactions in a paperless, presence-less manner from start to finish, anytime, anywhere and on any device;

c. Only need to give information or request for help once, as the relevant data or request will be shared with the right public agencies; and

d. Feel confident that their data is secure.



SUPPORTING OUR PUBLIC OFFICERS

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10 The Government must have a digitally-confident workforce which is supported by a digitally-enabled workplace and digital tools. To do this, we will support our officers to continually upskill themselves, adapt to new challenges and requirements, and work more effectively across agencies as well as with our citizens and businesses.

11 Our public officers will work in an environment where they can:

a. Evolve and design better policies through the integrated use of data and digital technologies;

b. Execute high quality decisions and processes in a timely manner, supported by data and automation;

c. Connect and collaborate with other public officers easily through digital means;

d. Access high quality internal corporate services and processes; and

e. Be trained and empowered to harness technology and data in their work.

SUPPORTING PUBLIC OFFICERS WITH DIGITAL TOOLS

Ministry of Manpower's Mobile i-Occupational Safety Health System (iOSH) is a mobile solution that empowers Occupational Safety and Health inspectors to make prompt decisions on-site. It improves the mobility of inspection, provides easy access to information and promotes interactivity among inspectors.

Mobile iOSH represents an effort to seamlessly integrate the flow of information between off-site premises and the iOSH system. Through the system, inspectors are able to instantly key in their inspection findings and easily access salient workplace information, which eliminates the need to return to the office to complete tasks such as data entry, scanning and uploading of work.

The Mobile iOSH has resulted in time and cost savings, work efficiency, better system security, and better achievement of workplace safety and health enforcement outcomes.

BUILDING A DIGITAL GOVERNMENT

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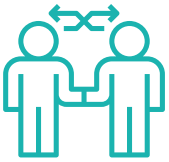


Building a Digital Government involves the efforts of every government agency. Agencies will improve how we operate, how we deliver services, and how we engage our stakeholders. The Smart Nation and Digital Government Group will support agencies by laying out the overall blueprint, building common platforms and systems, exercising technical leadership by setting and enforcing Information and Communications Technology (ICT) standards, as well as supporting agencies with technical expertise in emerging technology areas.

13

WE HAVE A SIX-FOLD STRATEGY TO BUILD A DIGITAL GOVERNMENT. THIS ENTAILS:

- **A** Integrating services around citizen and business needs;
- **B** Strengthening integration between policy, operations and technology;
- **C** Building common digital and data platforms;
- **D** Operating reliable, resilient and secure systems;
- **E** Raising our digital capabilities to pursue innovation; and
- **F** Co-creating with citizens and businesses, and facilitating adoption of technology.

A

INTEGRATING SERVICES AROUND CITIZEN AND BUSINESS NEEDS

Image from Infocomm Media Development Authority

INTEGRATING SERVICES AROUND CITIZEN AND BUSINESS NEEDS

14 The Government will take greater steps to digitally integrate services around the needs of citizens and businesses.

15 For businesses, we have started consolidating applications for Government grants and licences through the Business Grants Portal and LicenceOne portal respectively. We intend to improve these platforms and develop additional integrated business services. The aim is to reduce the time and cost for businesses to transact with the Government, and to make it easier for businesses to comply with licensing and regulatory requirements.

INTEGRATING SERVICES AROUND CITIZENS' NEEDS

Moments of Life is a step towards delivering integrated services and information that citizens need, when they need it, all through a single platform. The first Moments of Life initiative that will be implemented will focus on proactively supporting families with children aged 6 and below by bundling streamlined services and information.

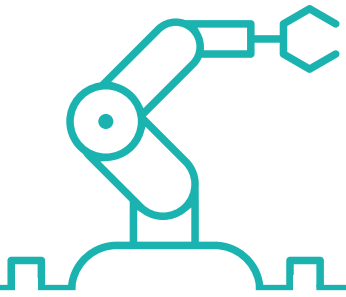
The Moments of Life (Families) app is developed based on insights gathered through citizen engagement sessions to identify and better understand parents' challenges and needs at different key moments. Based on user feedback and suggestions, we will progressively enhance and expand the suite of services and information available on the app for parents with young children.

In the future, more services will be introduced to provide seamless experiences to citizens at other moments of their lives.

INTEGRATING SERVICES AROUND BUSINESSES' NEEDS

The Business Grants Portal is a one-stop portal launched in 2017 for businesses to apply for grants according to their needs without having to approach multiple agencies. LicenceOne, a government-wide licensing portal for businesses, was launched in 2016.

By 2019, at least 80% of Government grants, which constitute the highest volume of government to business transactions, will be on the Business Grants Portal. By 2019, over 200 licenses will be available on LicenceOne.



B

STRENGTHENING INTEGRATION BETWEEN POLICY, OPERATIONS AND TECHNOLOGY

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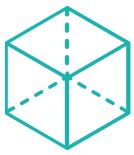

Within the Government, tight integration between our policy, operational and technology communities is essential.

17

We are not pursuing digital technologies for their own sake, but applying digital technologies where most needed to meet our mission, or to overcome resource scarcity. Our agencies will develop digitalisation plans to support the overall transformational objectives.

18

At the operational level, technology presents opportunities to completely re-engineer our processes. We will go beyond just digitising existing processes, and will review and change them.

RE-ENGINEERING PROCESSES USING TECHNOLOGY

The HDB Resale Portal was introduced in January 2018, to make buying and selling of resale flats easier and faster.

With the HDB Resale Portal, flat buyers and sellers need to attend only one appointment with HDB, instead of two previously. The first appointment is no longer needed, as all forms and checks are completed via the online portal. Flat buyers and sellers will only need to attend a resale completion appointment, either at HDB Hub or at their solicitors' office, to sign the necessary documents.

The HDB Resale Portal can shorten the entire transaction time by up to 8 weeks, if buyers and sellers submit the necessary documents promptly.

STRENGTHENING INTEGRATION BETWEEN POLICY, OPERATIONS AND TECHNOLOGY

19 We also need to challenge ourselves to harness emerging technologies to improve the way we formulate policy and operations. In particular, the Government will make a big push for the use of AI. We will identify high-impact areas for the deployment of AI in Government. These include automating rule-based tasks, providing personalised and anticipatory services, and anticipating situations such as traffic or security incidents. We will develop a set of guidelines on the use of AI to manage the risks. We will also deploy IoT to improve operational efficiency. The Smart Nation Sensor Platform will use sensor data to make the city more intelligent. For technologies that are less mature, such as blockchain, we will start with small-scale experiments and find opportunities to synergise or scale-up successes.

20 To further strengthen integration between policy, operations and technology, Chief Digital Strategy Officers have been appointed to lead and implement digitalisation plans within their Ministries and respective agencies. They will be paired with Chief Information Officers, who will support them from a technical perspective. At the middle management and working levels, we will also help our policy and operations officers understand the opportunities which technologies may offer, and expose our technology officers to the Government's business needs so they can design effective solutions.

C

BUILDING COMMON DIGITAL AND DATA PLATFORMS

BUILDING COMMON DIGITAL AND DATA PLATFORMS

21

There is a need to deliver ICT projects in a timely and cost-effective manner. Our systems have to be interoperable and easy to maintain over time. In order to do this, we will leverage common platforms where we can, and customise only when necessary. This requires the Government to significantly re-engineer ourselves. The Government Technology Agency (GovTech) is developing a Singapore Government Technology Stack that will be shared by all Government agencies.

BUILDING COMMON DIGITAL AND DATA PLATFORMS

The Singapore Government Technology Stack (SGTS) is a collection of common digital services and infrastructure available to all Government agencies to build their digital applications. This reduces the time and effort needed to introduce new digital services, and allows digital services to be enhanced in a more agile manner.

The layers of the SGTS include:
1) Data (e.g. data hubs);
2) Infrastructure (e.g. data centres and common hosting infrastructure);
3) Application Infrastructure (e.g. platforms-as-a-service); and
4) Library of Micro-Services (e.g. common authentication, payment services).

SGTS will allow agencies to focus on designing solutions that best meet the citizens' needs. With SGTS, citizens can expect to experience a seamless, consistent and connected user experience across the spectrum of government digital services.

The MyInfo initiative was one of the first projects using the SGTS. The pilot was developed and delivered in four months, instead of what would typically take a year. Other notable digital services hosted on SGTS include myCareersFuture.sg and the Moments of Life initiative.

BUILDING COMMON DIGITAL AND DATA PLATFORMS

22

To support greater data-driven policy making and service delivery, we will step up data sharing between agencies. This involves tackling legislative, policy, capability, and technical challenges simultaneously. We recently formalised data sharing and safeguards in the public sector through the Public Sector Governance Act, which provides the legal means in which data can be shared in a safe, responsible and appropriate manner. Agencies will be able to use Government verified data to provide services to citizens without requesting for additional documents and sensitive information online. At the same time, personal data will be protected through a robust set of safeguards, including access control, and will be de-identified when used for analysis and policy design.

23

Personal data will be protected through a robust set of safeguards, including access control, and will be de-identified when used for analysis and policy design.

We will also set data standards and develop a data architecture to ensure usability of data across Government digital platforms and services. We will embark on comprehensive digitisation of Government records to ensure machine-readability, especially for frequently used data for policy making and service delivery. In the future, shared infrastructure to use data from different Government agencies will facilitate cross-sector policy analysis and improve service delivery.

BUILDING COMMON DIGITAL AND DATA PLATFORMS

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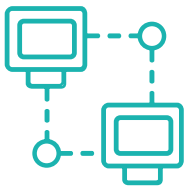

To support our vision of a digitally-enabled workplace, we will develop a Digital Workplace Strategy which will provide each public servant with the digital tools to work efficiently and productively.

25

The Government's digital platforms can also be extended to help businesses and the larger community. We will open up more platforms for businesses to participate in, to enable new innovative B2B and B2C services. We will also build digital platforms to connect citizens, not just to build a community but also to support crowdsourcing for solutions and services.

EXTENDING DIGITAL PLATFORMS TO BUSINESSES

MyInfo is a "Tell Us Once" service which allows users to automatically fill personal details onto online forms, instead of having to repeat them or submit supporting documents. It is part of the National Digital Identity project.

Although designed initially for Government agencies, MyInfo was extended to the banking sector as a pilot in 2017, where four participating banks could register new customers using Government verified data from MyInfo. This would save customers the hassle of providing certain supporting documents, such as proof of residential address.

After the MyInfo pilot with banks was rolled out, 50% of eligible customers chose to use MyInfo over existing options. As there was potential for businesses and developers to use MyInfo for even more digital services, the MyInfo Developer & Partner portal was launched in November 2017.


D
RUNNING RELIABLE, SECURE AND RESILIENT SYSTEMS
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RUNNING RELIABLE, SECURE AND RESILIENT SYSTEMS

We need to continually safeguard both Government and citizens' data, and ensure that critical public services remain unaffected.

26

As cyber threats become more sophisticated, we will need to enhance the security and resiliency of our systems. We need to continually safeguard both Government and citizens' data, and ensure that critical public services remain unaffected.

27

The Government will develop a Cybersecurity Strategy for our ICT and smart systems, which will include enhancing monitoring and detection, strengthening the resilience of critical systems, and building up critical capabilities. The existing audit regime will be strengthened to include deeper technical checks in areas of priority concern. We will also heighten cybersecurity awareness among our public officers by incorporating cyber literacy curriculum as part of public officers' induction programmes, and through campaigns.

E

RAISING OUR DIGITAL CAPABILITES TO PURSUE INNOVATION

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28

We must have the right capabilities to support our level of ambition and ensure that the Government is able to "think big, start small and act fast" to seize new opportunities.

DEVELOPING CAPABILITIES WITHIN GOVERNMENT

The Government has been deepening its technical capabilities through a Centre of Excellence (or CentEx) for ICT and Smart Systems, where specialist engineering expertise will be grown to support the WOG.

The CentEx will house capability centres such as Data Science and AI, ICT Infrastructure, Application Development, Sensors and IoT, Cybersecurity, and Geospatial. The CentEx may expand into new technology capability areas as the need arises – for example, in robotics, VR/AR, digital twins or blockchain.

The CentEx will support the development of ICT skills and leadership for WOG through:

a. Building an in-house reserve of deep technical skills in areas where internal capabilities are needed to deal with highly complex issues on short notice;
b. Raising capabilities of ICT practitioners and leaders across the WOG; and
c. Equipping general public officers with relevant broad-based ICT skills (e.g. basic awareness of data analytics).

Nurturing manpower with the right technological expertise is the best way to build up long-term capabilities. Through the CentEx, we will grow bigger pools of specialist manpower that can capture and take advantage of technology opportunities as they present themselves. Given how rapidly technology is advancing, it is easy for us to be left behind or for our systems to become obsolete quickly if our capabilities cannot keep up with the changes.

RAISING OUR DIGITAL CAPABILITIES TO PURSUE INNOVATION

29

The Government will also take a more proactive approach to managing and deploying ICT and related talent within the public service. Through our public service leadership schemes, we will develop leaders who are competent and experienced in both policy and technical domains to fill apex leadership positions. Alongside this, a Smart Nation Scholarship has been launched to identify young ICT engineering talent to fill technical leadership positions (e.g. Chief Data Scientists) in the future.

30

We will train public service officers to have basic competency in digital skills. We will commit to training 20,000 officers in data science by 2023. Beyond data science training, the Government will develop a basic ICT competency framework for public service officers, with an accompanying training plan. This will also include specific ICT competencies tied to certain job functions.

31

Underpinning all these new capabilities, we need a shift in our public service culture to better support transformation and innovation. We want to encourage a "dare to try" mindset, where officers will be empowered to try out new ideas and new ways of working, which will be critical to support the realisation of new opportunities.

32

To complement the Government's in-house capabilities, we will also proactively collaborate with industry and research institutions, especially those in emerging technology areas. Such partnerships will allow us to learn from industry and research and development (R&D) players to deepen our knowledge and stay ahead of technology trends.
On the industry front, the Government will also identify and engage key strategic partners for Smart Nation and Digital Government interests and support them to build up capabilities.

33

On the research front, we will put in place mechanisms to align R&D activities towards our Digital Government efforts. This includes facilitating the translation of research to address current government needs, and seeding future digital capabilities from cutting edge R&D in our research institutions.

F

CO-CREATING WITH CITIZENS AND BUSINESSES, AND FACILITATING ADOPTION OF TECHNOLOGY

Image from Infocomm Media Development Authority

CO-CREATING WITH CITIZENS AND BUSINESSES, AND FACILITATING ADOPTION OF TECHNOLOGY

Services should be user-friendly, accessible and beneficial to different population segments.

34 To ensure that we design our services around the needs of our stakeholders, we will regularly engage our citizens and businesses to gather feedback, and seek new ideas on how we can serve them better, and co-create the solutions and services with them. Facilitating meaningful engagements upstream will help us develop services that are well adopted.

35 We believe that as we push ahead, no one should be left behind, in line with the Digital Readiness Blueprint. Services should be user-friendly, accessible and beneficial to different population segments. They should comply with a set of digital standards and design principles, which GovTech will publish by end-2018. We will provide extra help to those who need it to adopt our services. To achieve greater digital inclusion, we will pilot select digital services in vernacular languages.

36 To support these initiatives, we will grow our competencies in areas such as design thinking, behavioural insights and organisational development.

KEY PERFORMANCE INDICATORS AND MILESTONES

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37

The Government will hold itself to a set of KPIs for Digital Government, as outlined below. These capture our intended end-state – where our citizens and businesses are guaranteed seamless and easy transactions online such that it would be their preferred mode to transact with Government; where we catalyse new opportunities through our platforms and data; and where our officers are more effective and empowered through digital tools and data.

38

The Government should seek to provide end-to-end digital services to our citizens. Some of our services already have this. For example, the process of filing one's income taxes is fully digital, and our citizens can access library resources without having to physically access the library. We will have to do so for our other services.

39

Achieving the KPIs will require significant improvements in how we currently deliver digital services, as well as the delivery of new tools and platforms. While technology can be the catalyst, it will require a collective re-engineering on Government's part on how we provide services and conduct our work.

KEY PERFORMANCE INDICATORS AND MILESTONES

BY 2023

STAKEHOLDER SATISFACTION

Citizen Satisfaction with Digital Services (via survey)	***75-80%*** to rate very satisfied
Business Satisfaction with Digital Services (via survey)	***75-80%*** to rate very satisfied

END-TO-END DIGITAL OPTIONS

Services that offer e-payment options (inbound and outbound)	***100%***
Services that are pre-filled with Government-verified data	***100%***
Services that offer digital options for wet ink signatures	***100%****

END-TO-END DIGITAL TRANSACTIONS

Percentage of transactions completed digitally from end-to-end	***90-95%****
Percentage of payments (inbound and outbound) completed via e-payments	***100%****

** Excludes services or individuals where the KPI cannot be met for valid reasons. These reasons can include legislative reasons, or that certain segments of our population (e.g. the elderly or persons with disabilities) are unable to have access to or use digital tools.*

KEY PERFORMANCE INDICATORS AND MILESTONES

BY 2023

DIGITAL CAPABILITIES

Number of public officers trained in data analytics and data science

20,000

Number of public officers with basic digital literacy

All Public Officers

TRANSFORMATIVE DIGITAL PROJECTS

Number of transformative digital projects

30-50

AI, DATA AND DATA ANALYTICS

Percentage of Ministry families that use AI for service delivery or policy making

All Ministry families to have at least one AI project

Number of high-impact data analytics projects

10 cross-agency projects per year, and ***2 projects*** per Ministry family per year

Core data fields in machine readable format, and transmittable by APIs

90-100%

Time required to fuse data for cross-agency projects

Less than 10 days to share data for cross-agency projects

A DIGITAL GOVERNMENT FOR A SMART NATION

A DIGITAL GOVERNMENT FOR A SMART NATION

40 As we embark on this new phase of Digital Government, the Government will continue its efforts to drive the digital transformation of our economy, as well as to help Singaporeans achieve digital access, literacy, and participation, so that we can seize new opportunities in an increasingly digital world as a Smart Nation.

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