



## **Smart Nation Singapore**

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*Singapore is striving to become a Smart Nation. An ageing population, a lack of natural resources and low productivity result in challenges for liveability. Technologies such as data analytics, Artificial Intelligence (AI) and Internet of Things (IoT) must help transform the country into one digital network. This results in new opportunities for collaboration in the fields of mobility, healthcare, industry, and the development of a digital infrastructure.*

### **The urge for a Smart City**

Urbanisation is a worldwide phenomenon. People are moving away from the rural areas towards the cities, causing the cities to grow enormously. 60% of the world population is expected to live in cities in 2030. In 2050, this number will even rise towards 70%. Urbanisation brings challenges. How do we make sure the cities are still liveable with so many people? And how do we guarantee urban sustainability for the future generation?

### **Challenges in Singapore**

Singapore, being a city-state, is facing challenges in liveability as well. In 2018, the number of people aged below 15 will be equal to the number of people aged 65 or higher. In 2030, 27% of the Singaporean population will be aged 65 or higher, while the population below 15 only covers 10,8%. Singapore's ageing population brings additional challenges in the field of healthcare. The ageing population together with the restriction on hiring foreign labour, reduces the workforce. Besides this, Singapore lacks natural resources. This results in a different focus for the economy: from an export-driven economy like most neighbouring countries, to a knowledge and research driven economy in Singapore. Furthermore, Singapore is one of the most densely populated countries in the world. This comes with challenges in mobility. With upcoming economies in the big cities surrounding Singapore, maintaining its current position as one of the leading cities in South East Asia is important.

### **Advantages**

The density of Singapore and its mentality makes Singapore suitable for implementation of digital technologies. Singapore enjoys a high quality digital network with high connectivity. 150% of the people has a smartphone, meaning that there are more smartphones than people. The quality of education is high with universities ranked among top universities in the world. This results in a high literacy rate of 97%. Singapore's strong governmental vision, top-down approach, and the citizens trust in the government smoothens the implementation of new policies and technologies. Being a city-state, Singapore had the advantage of being a compact country in which policies from the central government can be implemented rather easily.

The combination of challenges for population and liveability provides opportunities for research and development and resulted in Singapore's current ambition to become a Smart Nation.

### **Smart Nation Singapore: a liveable city**

Smart Nation Singapore is described as "Singapore taking full advantage of IT to transform it into an outstanding city in which to live, work and play". Singapore uses data analytics, Artificial Intelligence (AI), Internet of Things (IoT), and robotics and automation to make the city a liveable, safe and efficient place, in other words a Smart Nation. Within the Smart Nation ambition, five domains have been selected: smart mobility, smart building and environment, smart industry, smart health and smart governance. These domains are identified to have significant impact on citizens and society and can be influenced by digital technologies.

### **Ecosystem**

Key driver for the Smart Nation vision is the government. The Smart Nation vision is developed by the Smart Nation and Digital Government Group (SNDGG) which is part of the Prime Minister's Office (PMO). The Smart Nation vision provides strong and clear directions for Singapore, implemented with a top-down approach. Within SNDGG, policy is developed by Smart Nation Digital Government Office

(SNDGO) and implemented by Government Technology Agency (GovTech). The Research Innovation Programme (RIE 2020) supports the Smart Nation Vision by providing financial support to research and development in line with the Smart Nation ambition. The government agencies support the ambition by executing initiatives and projects within the five selected domains. For example, Land Transport Authority (LTA) is developing autonomous busses together with Singaporean company ST Kinetics, finding solutions for the last-mile problem. This will improve the transportation sector by providing safer and more efficient transportation to the citizens, contributing to the Smart Nation ambition. Cyber Security Agency (CSA) is looking out for online threats. Singapore uses its own infrastructure to test new Smart City initiatives in real life, making the city often referred to as a living laboratory.

Universities are involved in the Smart Nation ambition by performing research and developing new technology concepts. Research labs are established with help of the National Research Foundation (NRF) and are often a collaboration between local universities, government agencies, and/or international partners. Companies contribute to the Smart Nation Vision by the development of new initiatives in so-called 'corporate labs'. Furthermore, the Smart Nation ambition creates new businesses within the ICT sector making Smart Nation Singapore a possible source for business opportunities.

### **Eyes on the Future**

Although a lot of Smart Nation initiatives have been presented, the transition into Smart Nation Singapore is not going as fast as expected. According to PM Lee, Singapore is lacking behind on the implementation of e-payments, the use of a national digital identity system and the development of an integrated data platform. This has to do with different causes. First of all, the different silos between agencies must be broken to improve sharing of data among government agencies. By facilitating a national Smart Nation Sensor Platform (SNSP), the government aims to develop one platform to gather data from sensors of all government agencies. The platform will be open to all government agencies to develop specific applications related to the needs of their sectors. The establishment of the SNSP together with the current funding programmes opens up new opportunities for data analytics, artificial intelligence and sensor technologies in any of the identified key domains. Secondly, the question is raised whether there's a business case in some of the Smart Nation initiatives like smart eldercare. Private companies need to make high investments to implement their smart solutions, while it's not always clear who'll benefit. Lastly, citizens should be more involved in the Smart Nation ambition. While the technologies for a digital transformation are available, implementation of the technologies into everyday lives of Singaporeans falls behind. Opportunities arise for bottom-up initiatives to match the needs of the Singaporean citizens with new or existing technologies. An example is the Beeline transport application developed by GovTech. The code of Beeline has been opened up to the public to allow members of the public or enterprises to build other crowd-sourced transport apps.

### **Holland Innovation Network**

More information? The complete report 'Smart Nation Singapore' can be retrieved by contacting the Holland Innovation Network at the Embassy of the Kingdom of the Netherlands in Singapore via [sin-ia@minbuza.nl](mailto:sin-ia@minbuza.nl).

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