

IN CONVERSATION WITH
CHNG KAI FONG

The Importance of a “Science of Cities” Approach for Singapore

Second Permanent Secretary of Singapore's Smart Nation and Digital Government Group (SNDGG), Chng Kai Fong, speaks about how the “science of cities” approach has helped to develop Singapore and why it continues to be important for the city-state.



| Image: Smart Nation and Digital Government Group, Singapore



The way to find short-term solutions is to create a tight loop of experimentation where one could try an approach, get results quickly and adjust the trialled method.



As cities grow increasingly complex, an interdisciplinary science of cities methodology has developed to understand them. Why is this approach important for a city like Singapore?

Singapore is both a city and a country: we are a country with no “countryside” outside the city. This imposes on us many more dimensions and variables compared to a typical city. For one, Singapore is the only city in the world that has a military and foreign service. Cities do not need them. Second, all the gateways that cities thrive on—ports, airports, data centres and submarine cables, and all the critical infrastructure that cities sustain themselves on such as power generation and water treatment plants—need to be within the city. There is no moat, or drawbridge that separates the city from outside. Third, Singapore cannot specialise economically—we have to have a sizeable manufacturing base, about 20% of our GDP. We cannot be a purely service economy like London, Hong Kong or New York, with high paying jobs in finance and banking at one end, and low-end jobs providing food services at the other. We need a spectrum and a thick middle layer of jobs at all levels, catering to all Singaporeans of different skills and experiences. To translate this into land terms, we devote almost 50% of our land to the military, gateways, reservoirs and manufacturing. That’s not even counting other things we need to cater for living: housing, roads and rail, nature reserves and parks.

But most importantly, as a country, we must have a national identity. It is not just the economic dimension, but the social and political dimensions that we have to optimise for. Our history is such that our people did not come about and cohere naturally. Singapore began out of conviction, that different races could come together in a multiracial and meritocratic environment, and survive despite having no natural resources.

Therefore, we have no choice but to be inter-disciplinary.



Buses in peak hour traffic, Singapore.
Image: Seloloving / Wikimedia

8

The public sector has to plan for the long-term and sustain purposeful action over time.

What are some examples of how a science of cities approach has helped in tackling complex city issues and challenges?

One example is how we use public transport data and a combination of experimentation and infrastructure upgrades to solve congestion problems.

We had a novel way of figuring out how crowded our buses and trains are at different times of the day. As such, we could predict when and where the choke points would occur, and then experiment on what we can do with it. Public transport is ultimately a problem about managing peaks. You could solve it either by building additional infrastructure, which takes time and money, and can be very wasteful—or find workarounds to relieve peak loads. For example, using off-peak incentives to shift travel patterns by 10%, or injecting additional buses/trains. While the former continues to be important for long-term planning, the way to find short-term solutions is to create a tight loop of experimentation where one could try an approach, get results quickly and adjust the trialled method.

How has Singapore enabled such an approach, both in the public and private sectors?

We first have to recognise that both the public and private sectors play different roles, and have to constantly navigate and negotiate with each other. The public sector has to plan for the long-term and sustain purposeful action over time. Without doing so, we would not have been able to get a Marina Bay; we would not have been able to convert the whole of Singapore



The key is for both the public and private sectors to recognise their roles and limitations, and to work together in concert—sometimes with tension, but always with a productive outcome in mind.



into a water catchment area; we would not have been able to build up an efficient public transport system. The private sector has a key role to play too—it can innovate, find new and more efficient ways to do things, it can sustain activity, and it moves fast.

Former Deputy Prime Minister and the economic architect of modern Singapore, Dr Goh Keng Swee, once wrote in 1972: “One of the tragic illusions that many countries of the Third World entertain is the notion that politicians and civil servants can successfully perform entrepreneurial functions.” His point was that politicians and civil servants should focus on what they do best, while leaving businesses to the entrepreneurs and professionals.

In a similar vein, Alain Bernard, in his book *Order Without Design*, talks about the tension between planners (public officers) and economists (from the private sector). “We are facing a strangely paradoxical situation in the ways cities are managed: the professionals in charge of modifying market outcomes through regulations (planners) know very little about markets and the professionals who understand markets (urban economists) are seldom involved in the design of regulations aimed at restraining these markets. It is not surprising that the lack of interaction between the two professions causes serious dysfunction in the development of cities. It is the story of the blind and the paralytic going their own ways: the planners are blind and act without seeing, while the economists are paralysed as they see but do not act.



The Marina Barrage transformed Singapore's Marina Bay into a freshwater reservoir.
Image: © Cephoto, Uwe Aranas

The key is for both the public and private sectors to recognise their roles and limitations, and to work together in concert—sometimes with tension, but always with a productive outcome in mind. The public sector needs to intervene because a laissez-faire attitude does not always work. But the public sector also needs to recognise that the private sector and the market do work to impose some order, and not all order is the domain of the public sector.

Let's talk about SNDGG, which is made up of the Smart Nation and Digital Government Office (SNDGO) and Government Technology Agency (GovTech). We know that SNDGO plans and prioritises key Smart Nation projects while GovTech is its implementation arm. What role does SNDGG play in bringing the public and private sectors together, and in creating a culture of innovation and experimentation that is necessary for the science of cities? And what are some of the challenges or barriers in taking this approach?

First, data. We need to bring data to the conversation. By having proper governance and transparency around data, we enable urban planners and the private sector to work with each other and find new ways to do better.

Second, building digital infrastructure for the nation. We need to be hands-on and get to the ground, rather than only being in ivory towers, planning. For example, by building tools—identity, payments, communications—that enable the digital economy to thrive, we enable both the public and private sectors to use these tools to build services and products to serve Singapore.



The Singpass Digital IC barcode being scanned at a polyclinic self-service kiosk.
Image: Smart Nation and Digital Government Office (SNDGO), Singapore

||
We need to be hands-on and get to the ground, rather than only being in ivory towers, planning.
||

Third, attracting digital talent into the public sector. If we believe that both the public and private sectors need to work together, we cannot have digital talent only working for tech companies. We must continue to have a government that can hold its own and work with the private sector productively. We will also need to be humble in learning from others—from other cities and countries, and other people.

As for the challenges, our fundamental problem is success, because there is too much to lose, and success entrenches practices and values that have worked for us over time. So we have to develop a divine discontent: to be always dissatisfied with the way things are, but yet be grateful for what we have.

11



Smart Nation Ambassadors speaking to members of the public at the SkillsFuture Month X Smart Nation roadshow at Our Tampines Hub.
Image: SNDGO, Singapore



Minister for Communications and Information Josephine Teo speaking to Mr Keith Lee, senior commercial account manager at software company VMware at the SkillsFuture Month X Smart Nation roadshow at Our Tampines Hub.
Image: SNDGO, Singapore

12



TraceTogether and SafeEntry—a digital contact tracing system developed by GovTech.
Image: SNDGO, Singapore

A member of the public replacing an out-of-battery TraceTogether token at the TraceTogether vending machine.

Image: SNDGO, Singapore



As city planners, we have to be more adaptable, more resilient and be able to adjust nimbly, even as we have to develop more conviction about where we are going and be able to rally and tap into our communities to get there together.



What changes do you foresee in how new science and technology will change the way cities are planned and run?

US entrepreneur, investor and software engineer Marc Andreessen has said that “software is eating the world”, where software is eating much of the value chain of industries that are widely viewed as primarily existing in the physical world. It started with business and industries. As those businesses and industries interact with the real world, software and technology affect governance, urban planning and societies. The changes will be deep and complex, because it is not just about replacing what exists with an app or software. We will have to keep abreast of the changes, and be open to new approaches of governance and planning.

At the same time, while some things fundamentally change, others don't. For example, the need for human connection and community, and the desire for a good life for us and our children. Zoom can help us to traverse distances to communicate with each other but it cannot replace in-person meetings or a hug.

The world is becoming more complex and interdependent. Hence, as city planners, we have to be more adaptable, more resilient, and be able to adjust nimbly, even as we have to develop more conviction about where we are going and be able to rally and tap into our communities to get there together. 🧐