Many Smart Cities, One Smart Nation: Singapore’s Smart Nation Vision

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Snapshots of Singapore

- Vibrant but densely populated global city
  - Island city-state of just 715.8km² (50km W-E X 26km N-S)
  - 5.47 million, 7,650 persons per km²
- Tropical and low-lying
  - Tropical climate on equator
  - Low-lying, gentle topography, highest point 164m
- Excellent connectivity
  - Logistics and travel hub, well connected by both air and sea

- In 2014, Singapore’s GDP reached S$390 billion
- GDP growth forecast for 2015 expected to be between 2-4%

Source: Singapore Statistics Department, Photo by Yousef Al Habshi
“What has been achieved in Singapore cannot be taken for granted. Whatever the wonders of modern technology, I do not believe full employment, rising real wages, with a better standard of living and quality of life in a pleasant environment can be sustained without real effort, social discipline and adapting to change. They are not the natural order of things. They can only be achieved if young and old alike understand what is at stake for us as a community and decide on the hard compromises and accommodation needed so that all can have a better future.”

The late first and former Prime Minister of Singapore, Mr Lee Kuan Yew
at his 80th Birthday dinner held at the Shangri-La hotel on 16 September 2003
Outline

1. Milestones Achieved
2. Integrated Approach to Smart-Sustainable Cities
3. Singapore as a Living Laboratory
Milestones

**National Computerisation Plan (1980 – 1986)**
- National Computer Board (NCB) established 1981
- Civil Service Computerisation Program

- TradeNet and PortNet established 1989

- NCB corporatized merged with the Telecommunication Authority of Singapore (TAS) to form Infocomm Development Authority of Singapore
- Singapore ONE launched, first national multimedia broadband network
- Electronic Transactions Act (ETA) (Cap 88) was first enacted in July 1998

**Infocomm 21 (2000 - 2003)**
- Proliferation of integrated e-Government services
- Launch of National Infocomm Literacy Program
- Liberalization of telecommunications market

**Connected Singapore (2003 – 2006)**
- Launch of SingPass, Wireless@SG, 3G mobile services by all 3 operators
Smart Nation Vision

• Smart Nation aims to function beyond the capabilities of a Smart City
  ▫ Ultra-high speed, pervasive, intelligent and trusted ICT infrastructure
  ▫ Vibrant ICT ecosystem with ready pool of tech talent
  ▫ Building on achievements made under the iN2015 Master Plan (2005-2015)
    • Nationwide Broadband Network, Wireless@SG

• Smart Nation Program Office established
  ▫ Under PMO, and chaired by Minister for Environment and Water Resources
  ▫ To take in perspectives and ideas from many sources, ensure a whole-of-government, whole-of-nation approach

Source: IDA
Smart homes

Embedded chips in rings or watches for payments

Virtual Singapore maps to solve problems

MyTransport App

Self-driving cars being tested

Tele-rehab

Senior sensors
Integrated Approach to Smart-Sustainable Cities

Source: Economic Development Board
Commitment to Sustainability

**Carbon Emissions**
- Up to 16% below BAU levels by 2020 with global agreement, 7-11% without global agreement

**Renewable Energy**
- 5% of peak electricity demand from renewable energy by 2020

**Green Buildings**
- 80% of all buildings to be green by 2030

**Energy Intensity**
- 35% improvement from 2005 levels by 2030

**Public Transport**
- 70% of all journeys by public transport by 2030

**Smart Nation**
- 1000 sensors rolled out under Smart Nation Platform Phase 1

Source: Economic Development Board, Urban Redevelopment Authority
Energy Management Domain (goals)

Source: Economic Development Board
Connectivity across the island

- Smart meters relay energy usage and pricing information between consumers and electricity providers.
- Intelligent homes empower households with home automation systems centrally or remotely to control energy consumption. Web portals and in-home displays allow consumers to proactively monitor their energy consumption.
- Intelligent communications use wireless technologies and powerlines for 'real-time' interactions.
- Intelligent electric vehicles can be recharged from green sources or when energy is cheapest; supporting cost-effective transport, with zero-tail-pipe emissions.
- Intelligent generation can reduce overall demand on the power grid by making use of intermittent energy sources, e.g. solar panels, to support the local grid with green energy.
- Demand response management systems in homes, office buildings and industries enable users to monitor and optimize their energy use.
- Intelligent offices adjust cooling and lighting depending on real-time costs and needs.
- Intelligent energy storage store electricity generated at off-peak for later use.

Source: Urban Redevelopment Authority
Innovation with Citizens & Businesses

>130 Apps created by private & people sector using govt data

Transport  Health  Environment  Leisure  Religion  Facilities

Source: Infocomm Development Authority
Supporting Innovation

**Funding**
- Productivity & Innovation Credit;
- Co-Innovation Partnership Fund;
- Public Sector Transformation Fund;
- IDA Accelerator

**IDA Labs**
A physical environment for Singapore-based innovation-driven tech startups and talented entrepreneurs to imagine, build and experiment with ideas.

**Accreditation@IDA**
Provides young & promising tech startups the credentials that will speed up their go-to-market strategy & secure customers & partners.
Singapore as a Living Lab for Urban Solutions

Source: Economic Development Board
Intelligent Energy System (IES) Pilot

S$30 million investment by Singapore Power and Government

Collaboration with Nanyang Technological University and industry partners

Advanced metering infrastructure and smart grid applications

Experimental Power Grid Center

S$38 million facility on Jurong Island

Collaboration with Hitachi, Vestas, Meidensha Corporation Japan and US-based National Instruments

Capable of putting up to 1MW of power – enough to power 500 households

Pulau Ubin Micro-Grid

Test bedding close-to-market clean and renewable technologies on an offshore island

To promote economic viability to lay power transmission cables in remote areas, particularly in energy poor areas

Likely deployment of market-ready technologies and export to remote areas in the region

Integrating Intermittent Renewables

In 2014, Energy Market Authority announced plans to remove the “hard cap” of 600 megawatt-peak (MWp) of solar energy that can be supplied to the grid

Consultations are ongoing to further enhance the regulatory framework to allow more intermittent sources of energy to be fed into the national grid
Concluding Notes

• Smart Nation Program Office under leadership of Environment and Water Resources Minister will likely benefit environment and energy sectors

• For Singapore, being a Smart Nation is more than making the lives of citizens more convenient but will strengthen its community and society

• Smart Nation Vision not just a slogan – but a rallying concept for citizens to work together to transform Singapore’s future
Smart Nation: A little girl's hopes for the future  https://youtu.be/8-d9RCfXXy4
Thank you!

Questions?

You may also email me further questions at esimlyx@nus.edu.sg
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