



Session 5: **Harnessing the Benefits of New Technologies**

ITU Asia-Pacific Regional Development Forum 2016, Manila
7 June 2016

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What are the Global Challenges?



Urban Density

Two-thirds of the world will live in cities by 2050.¹



Mobility

People are moving more into congested centres, with urban travel to triple by 2050. Traffic congestion could bring cities to a standstill.⁴



Energy Sustainability

Global demand for energy will rise by up to 37% by 2035.⁵



Ageing Population

The world is ageing fast. By 2050, more than 2 billion people will be over 60.²



Healthcare

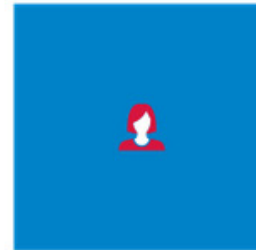
By 2025, there will be 8 billion people, 800 million of whom will be over 65 with high health needs.³

Urban Density

Singapore is the world's third most densely populated nation

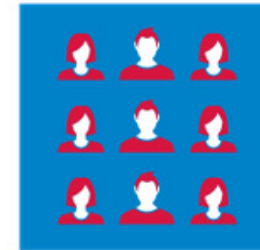


Food for thought: How do we cope with the expected swell of new residents by 2050?



USA

35 people per square kilometre



UK

265 people per square kilometre



Singapore

8,000 people per square kilometre

Percentage of all travel made that is within urban environments



Total amount of urban kilometres travelled



Mobility

with limited land space, we can no longer increase the number of vehicles or add more roads.



1 million
cars on the road
in Singapore
(approximately)

12%
land space in
Singapore used
for roads

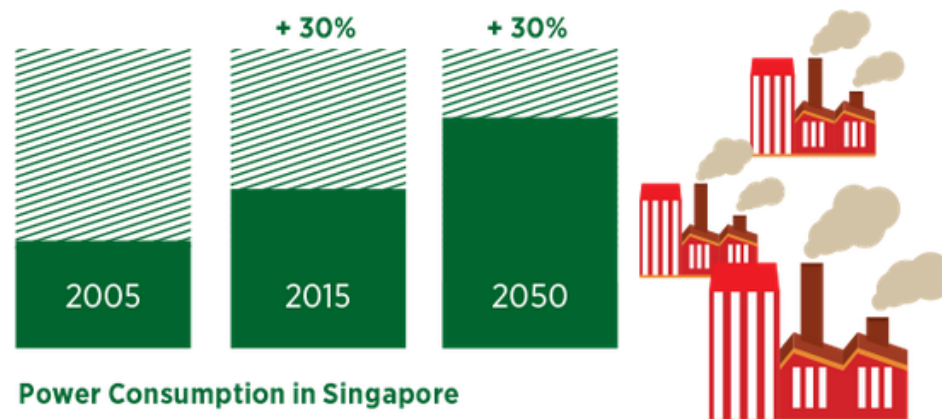


Food for thought: How do we improve traffic planning, faced with this resources challenge?

Energy Sustainability



Food for thought: How do we keep up with energy demands without building more power plants?



Ageing Population

The world population is rapidly ageing.



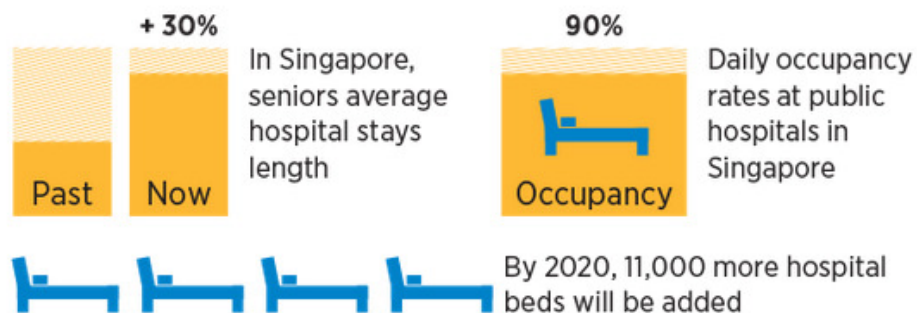
2015

300,000 elderly citizens in Singapore (a 1 in 9 ratio)



2030

900,000 elderly citizens in Singapore (a 1 in 5 ratio)



Food for thought: How will this shape costs and infrastructure when it comes to our future healthcare system?

Singapore's Vision: Towards a Smart Nation



"As our city becomes increasingly complex and diverse ... We will **make full use of new technologies** to develop **sustainable and innovative solutions**... We will make Singapore a **Smart Nation**."

- President's Address to Parliament, May 2014



"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."

- PM Lee Hsien Loong, Smart Nation Launch, Nov 2014

"Technologies are an important source of bringing to life Singapore's vision of a Smart Nation."

IDA Executive Deputy Chairman Steve Leonard

Smart Singapore

Singapore is expanding its use of technology to entrench its position as a leading global city and improve Singaporeans' quality of life. Here are some upcoming initiatives:

Punggol pilot: The first "smart" housing project will be launched in Punggol next year, and will include energy-efficient measures like motion sensor lights in carparks.

Phone home: Controlling household appliances from a smart phone may be possible once HDB determines the digital infrastructure needed for an automated home. Trials start next year.

Senior sensors: Sensors in the homes of the elderly will monitor their movements and send alerts to caregivers if irregular behaviour is detected.

One ring to pay them all: An embedded chip could turn a ring, a watch or your identity card into a payment device, eliminating the need for cash or credit cards.

Remember me: A new digital platform is being developed to bypass the need for citizens to provide their personal data repeatedly for government transactions.

Mapping the future: A new 3D map project called Virtual Singapore will integrate layers of data about Singapore's buildings, land and environment. Government agencies and other organisations can use it to solve problems such as identifying the most flood-prone areas, while the public can contribute information like traffic patterns or the locations of their favourite nasi lemak stores.

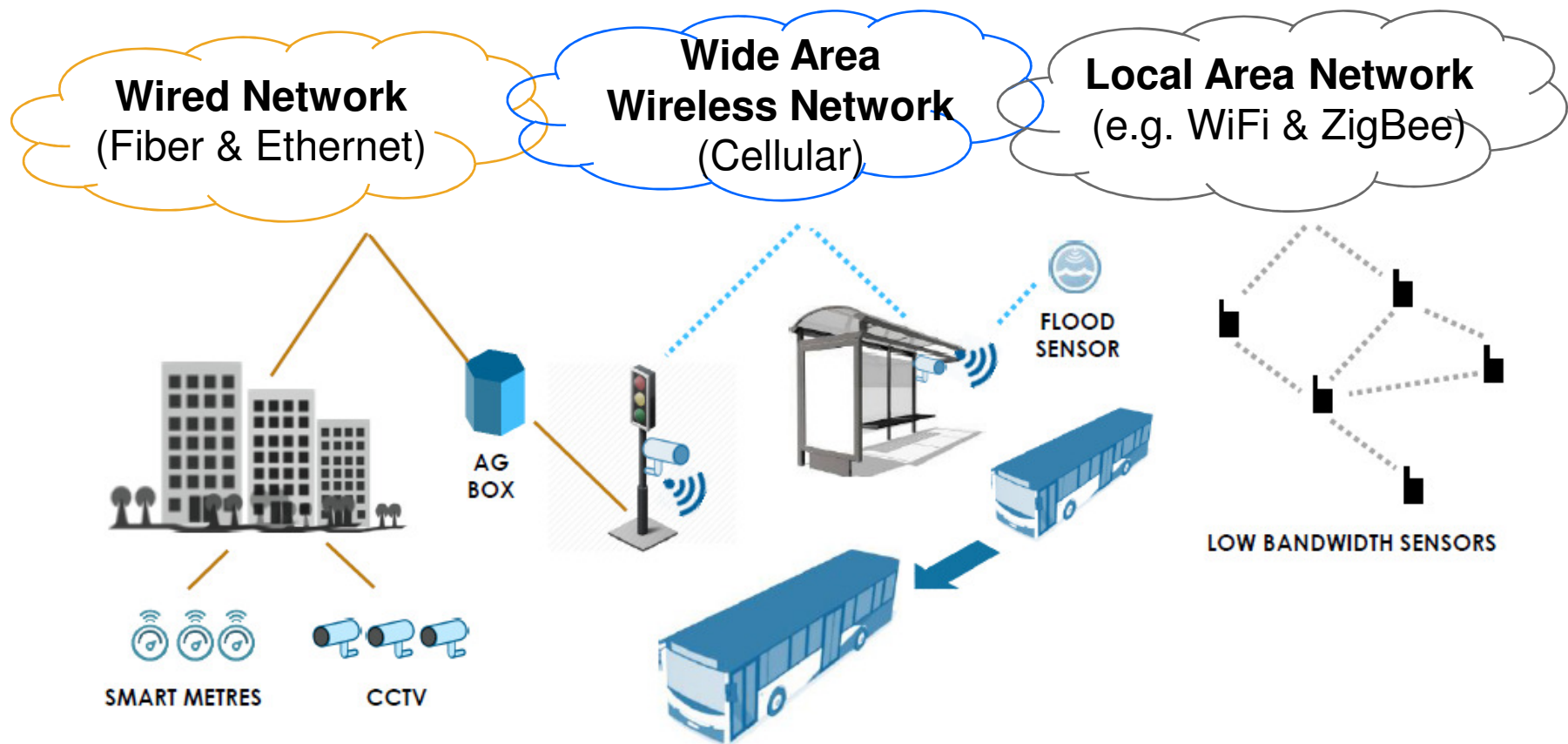
Where's my bus: By next March, commuters can use the My Transport app to find out bus arrival times by the minute and how crowded each bus is.

"Public" transport: Self-driving cars will be tested on public roads for the first time come January next year, in One-North at Buona Vista.

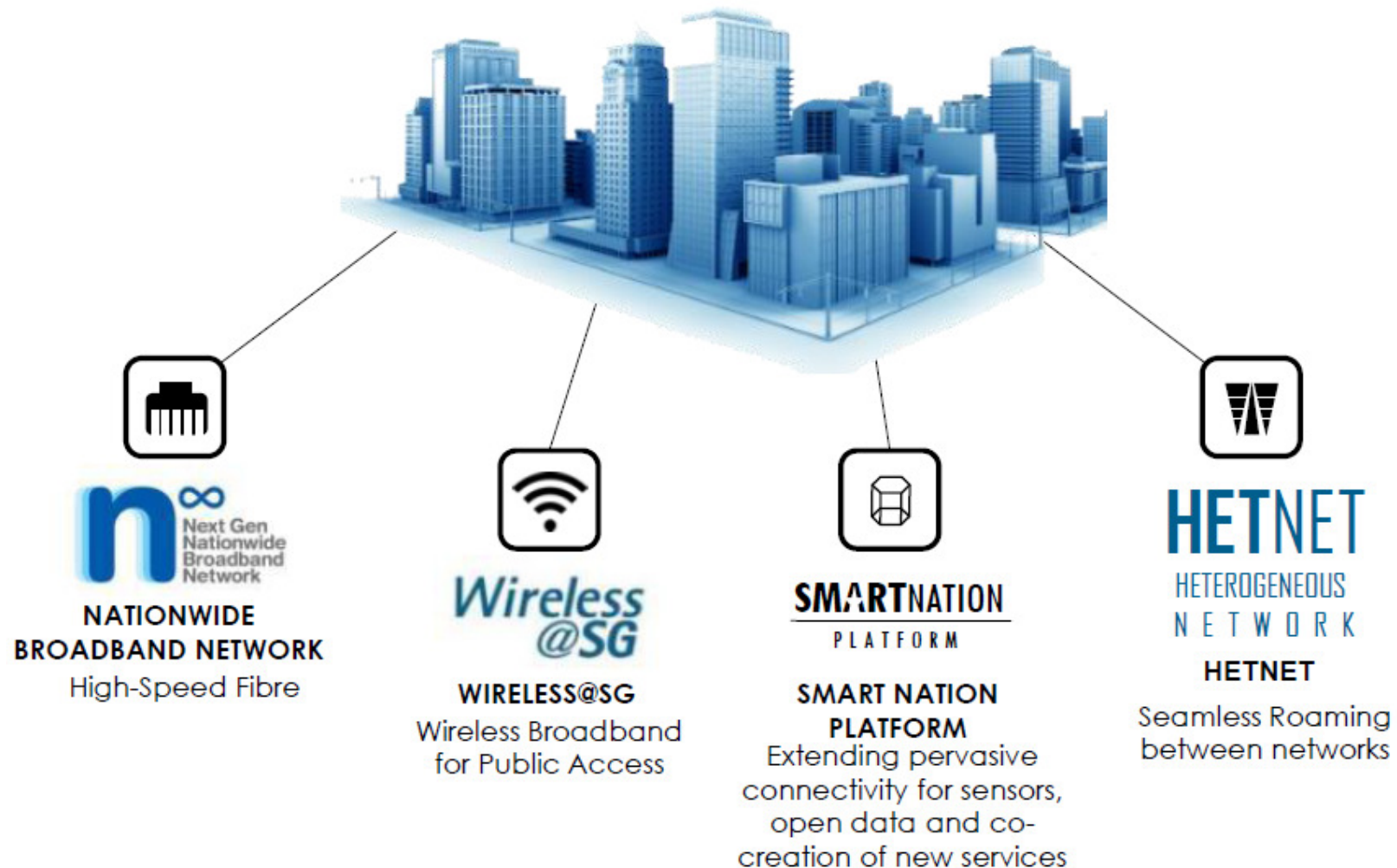
Virtual therapy: A "tele-rehab" system being tested at community hospitals will allow patients to perform therapy exercises at home, while sensors attached to their limbs transmit data back to the hospitals.

Providing Pervasive Connectivity

Various Trusted and Resilient Networks



Providing Pervasive Connectivity



Nationwide Broadband (Fibre) Network



IoT is a key enabler for Singapore's vision to be a Smart Nation

- Beyond economic opportunities, IoT can also enrich the quality of life for citizens
- Some of the challenges and questions related to IoT, highlighted below, need to be addressed



Availability of network resources for IoTs

- IPv6 will be key to support billions of IoT devices



Telephone numbers

Today, IDA allocates number access code 144XX for M2M



Ensuring ISPs support IPv6

IDA launched regulatory and industry initiatives to support IPv6 in Singapore (e.g., No-Islanding Principle)



e-SIM

Conducting trial of GSMA's specification for the Over-The-Air ("OTA") subscription management for M2M devices

New & Emerging Technologies

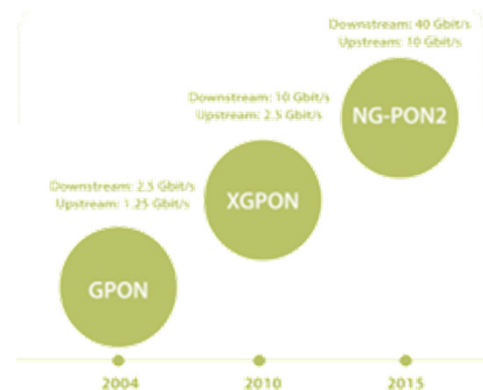
- Most of these technologies are still in their developmental phase



**Evolving
Technologies**



Light Fidelity (Li-Fi) – Uses visible-light communication instead of radio-frequency spectrum - trial is able to send data at up to 1GBps.



New fibre technologies – Can increase broadband speed from 2.5Gbps to 40Gbps (XGPON and NG-PON2).



5G (IMT-2020) – Focus on consolidation of wireless networks to provide better coverage and reliability, and increase in data speeds and reduction in latency.

Panel Session 5: Harnessing the Benefits of New Technologies

Thank You

