

Smarter Cities

Critical for Australia's economic future

Warren Lemmens
29th March 2017

The Nokia logo is prominently displayed in the bottom right corner of the slide. It is rendered in a large, white, sans-serif font, with the letters 'NOKIA' in all caps. The logo is set against a dark background of a city skyline at night, with the word 'NOKIA' appearing to be superimposed over the buildings.

NOKIA



NOKIA

Shaping the future of technology to
transform the human experience

EUR 119 billion on R&D over 20 years

Internet
of Things

Enabling IoT
with low energy
access for billions
of devices

Ultra-broadband

Driving access and
performance for
near instantaneous
communication,
anywhere

IP interconnectivity

Creating the high-
performing IP and
optical networks that
underpin the digital world

Cloud

Transforming
network
intelligence
through the
universal cloud

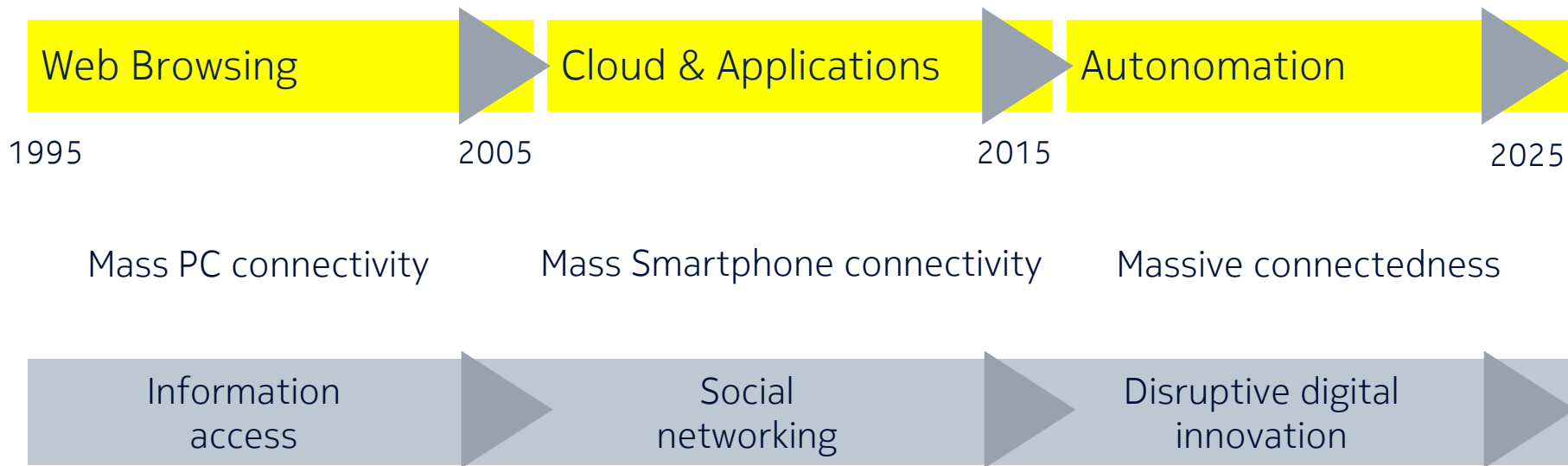
Virtual reality
& digital health

Innovating
transformative
experiences

Reimagining the national economy

Technology driven competition is dramatically changing the world

Three decades of the internet



Economic growth prospect



**Harvard
Business
Review**

March 2016

“Digital is not just part of the economy — it *is* the economy”

- Developing rapidly worldwide
- Nearly 8% of GDP of G-20 countries



Global trend has smarter cities at the core of growth

Urban agglomeration effect

- Colocation and networking of people and businesses



Global technology trends raise questions about Australia's readiness - especially in context of cities

Reimagining Australia's cities

Cities

Crucibles of the digital economy

- Cities will be home to ~70% of global population by 2050
- Cities house workforces
- Cities are centers of innovation
- Cities act as centers of international trade and investment
- Cities dictate the advancement of nations and their citizens

Today 75 per cent of Australians live in cities
which generate 77 per cent of national economic activity

Cities are in a global race

Jones Lang Lasalle (JLL) view

"The CMI highlights that, despite various political upheavals and ongoing economic uncertainties, many cities continue to show impressive dynamism. Keys to their success are the agility and openness that enable them to adapt quickly to each new wave of global change."

Jeremy Kelly
JLL Director of Global Research

JLL City Momentum Index



City essentials

Hyper-connected and thriving



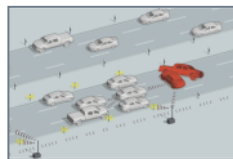
Real time delivery of live and **on-demand video** content



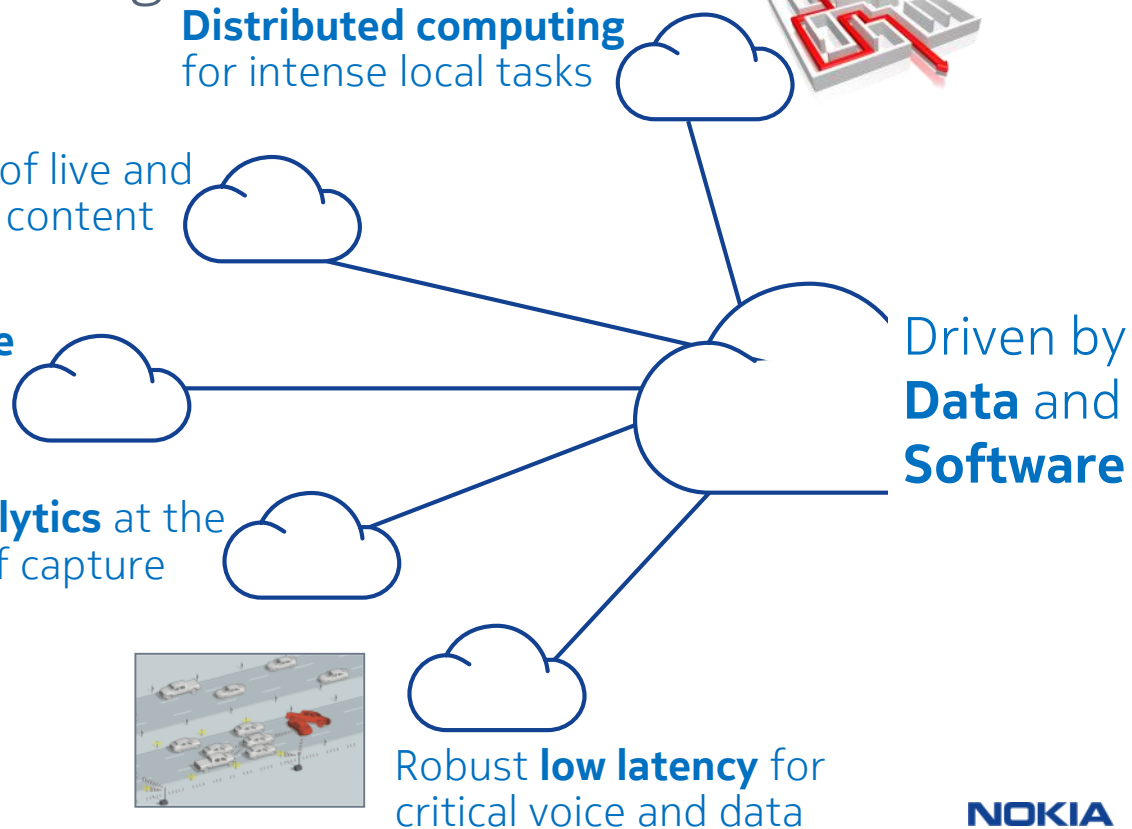
Highly **interactive applications**



IoT **analytics** at the point of capture



Distributed computing
for intense local tasks

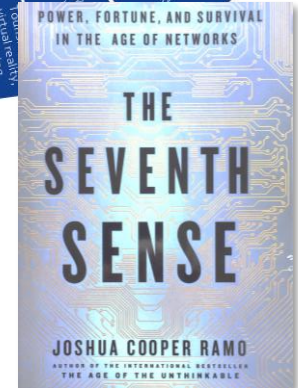
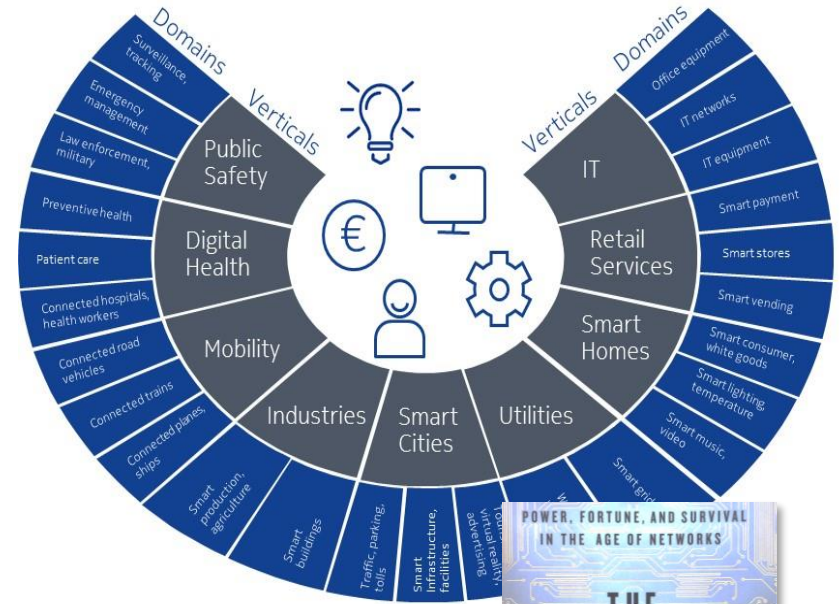


City hyper-connectedness

Most profound impactever

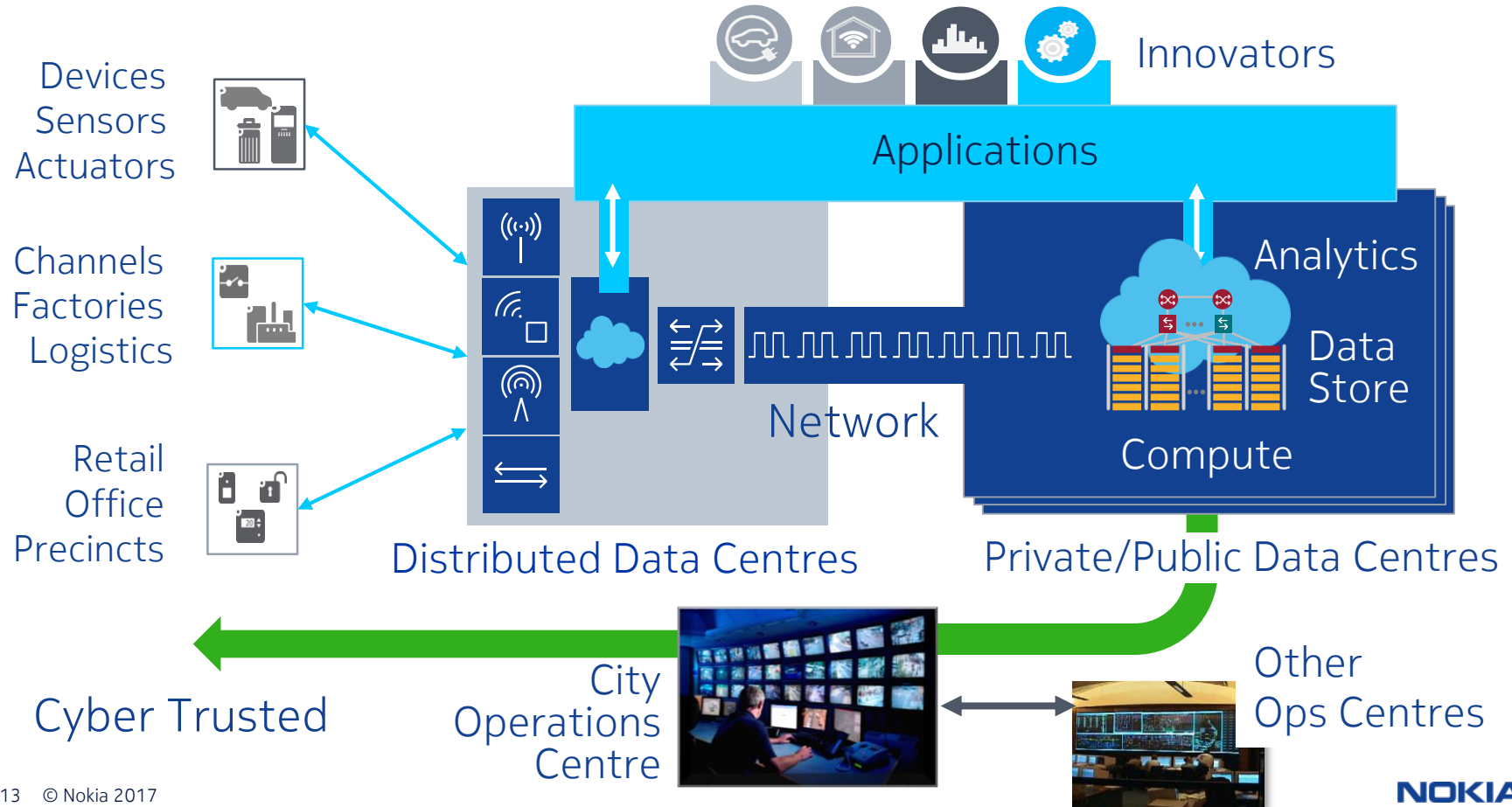
Joshua Ramo explores *The Seventh Sense*:

A new sense about the possibilities from anything and anybody being hyper- connected.



Connectedness underpins productivity and innovation
- the “oil” of the digital economy.

Automating City Digital Platform





Australia is not ready and
heading in the wrong direction

Australia's competitiveness

2016: Australia #22 ↓-1 (New Zealand #13 ↑+3)

World Economic Forum - Global Competitiveness Index

Basic Requirements sub-index

Pillar

1. Institutions
2. Infrastructure
3. Macroeconomic environment 23th ↑5
4. Health & primary education 10th



Key for
Factor-driven
Economies

Efficiency Enhancers sub-index

Pillar

5. Higher education & training 9th
6. Goods market efficiency
7. Labour market efficiency 28th ↑8
8. Financial market development 6th
9. Technological readiness
10. Market size 24th →



Key for
Efficiency-driven
Economies

Innovation & Sophistication Factors sub-index

Pillar

11. Business sophistication
12. Innovation 28th ↓-1

26th ↓-3

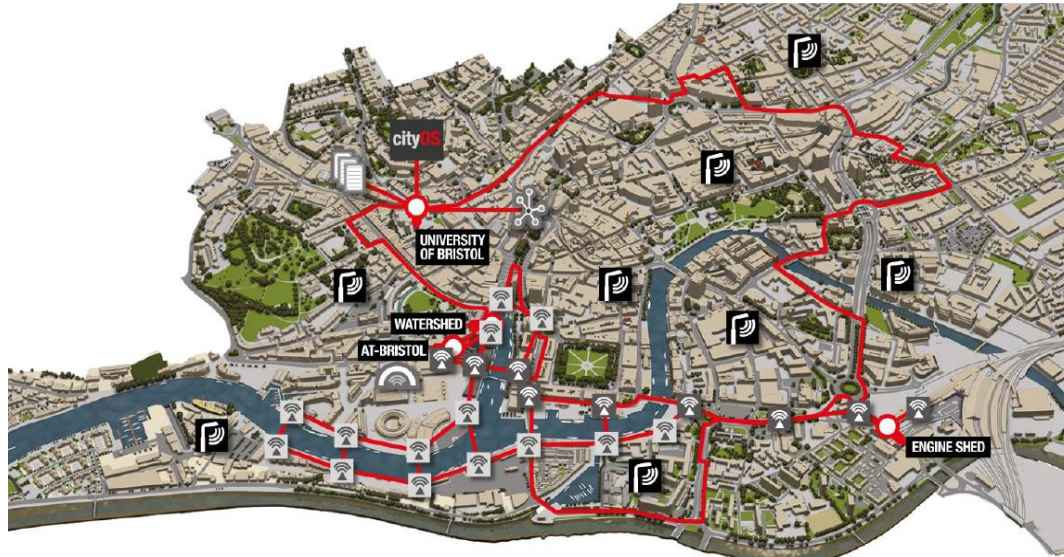


Key for
Innovation-driven
Economies

What are other
economies doing
with their cities?

Open Bristol, UK

City Digital Platform (plus regional in second phase)



ACTIVE NETWORK

- Fibre network
- Core network nodes with accessible rack space



High performance computer



Data Dome

WIRELESS NETWORK

- Main hubs
- 'Sub-hubs'
- 3G, 4G, LTE & 5G Technologies
- 60GHz & Experimental wireless

RF MESH NETWORK

- 1,500 lamp posts

Framework

- City OS and operations
- Big data analytics
- 30Gbps access
- Ubiquitous sensors
- Innovation & investor community

Example initial projects

- Driverless cars
- Assisted living houses
- Air-quality, congestion, health
- Playable cities
- Media distribution innovation
- Municipal energy company

Greater London

Europe's largest city regeneration

Utilities Infrastructure

- Digital communication infrastructure
- Innovation
- Energy harvesting
- Detailed asset modeling
- Storing information
- Information management & digital platforms
- Safety & security

Smart Sustainability

- Smarter building management
- Local energy production and storage
- Flexible energy demand
- Sustainable construction
- Air quality
- Vehicle movement
- Climate resilience
- Energy strategy targets

Transport & Public Realm

- Dynamic street marking
- Smart city technology
- Virtual modeling
- Digital and fixed signage
- Waste management
- Last-mile delivery
- Freight consolidation
- Free flow (360) station
- Safety & security

ADAPTED FROM PRESENTATION:
INNOVATION THROUGH COLLABORATION,
STANDARDS AND BEST PRACTICE FOR SMART CITIES
David Cuckow Business Development Director Flexeye



What might Australia do?

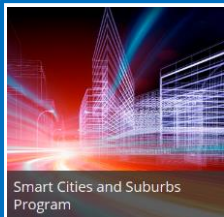
Australia is doing stuff

But needs to be more rounded



Australia's
broadband
network

Rollout well underway but
national broadband
rankings falling behind
leaders



\$50 million
Smart Cities
and Suburbs
funding



Industry in
action and
collaboration



Australian Infrastructure Plan

Priorities and reforms for
our nation's future
Report
February 2016

Infrastructure plans miss
the mark on IoT and
digital economy

Growth Centres

Ongoing initiative with \$250 million in
Government funding over the four
years from 2016/17 to 2019/20.

Growth Centres will facilitate
engagements between enabling
services and technologies, such as ICT,
where they provide essential and direct
support to the growth sectors.



Cyber Security



Prime Minister's Industry 4.0
task force talking up the
digital future

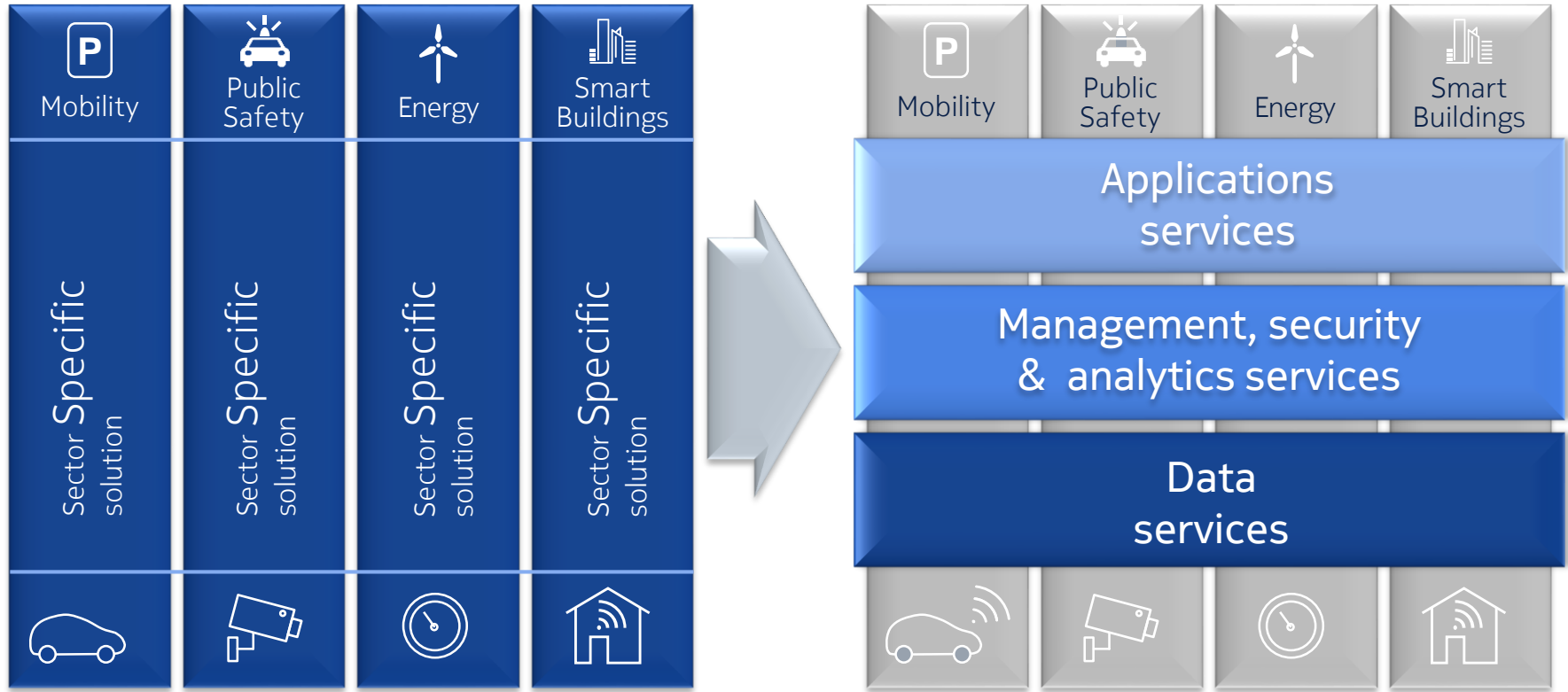


Six imperatives for the future of Australia

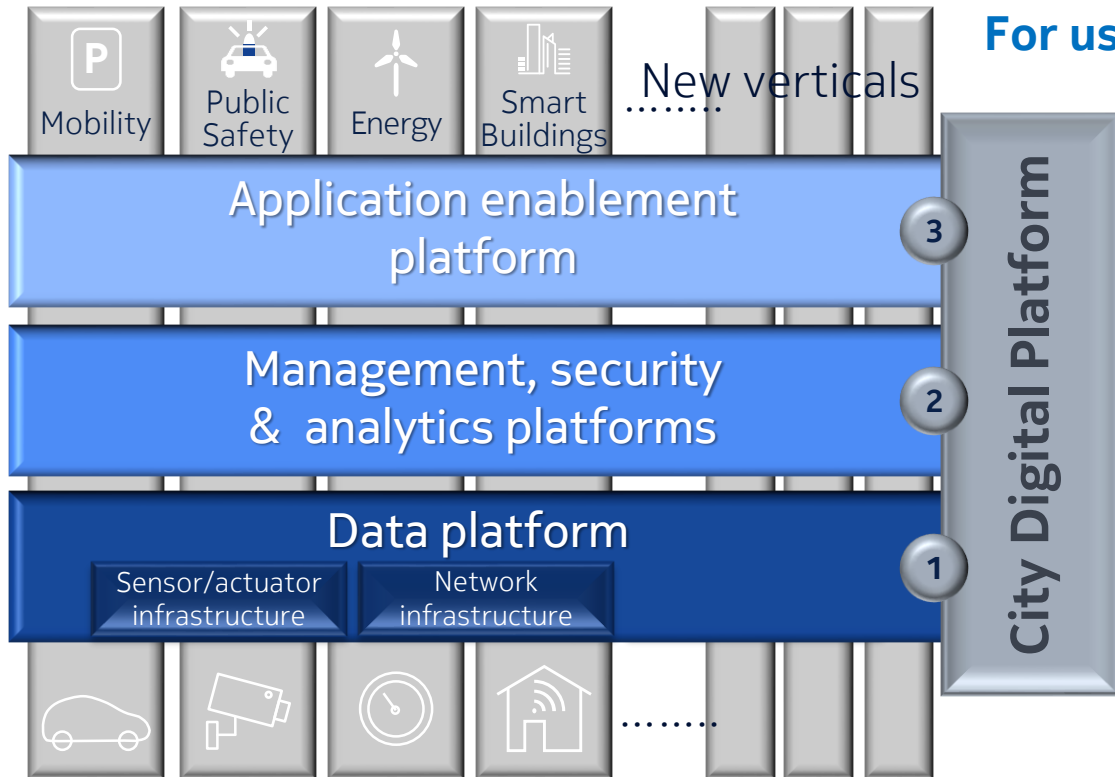
... for all cities

1. Eliminate device, data and application 'stovepipes'
2. Establish a standard City Digital Platform
3. Unleash a national *movement* around digital innovation
4. Establish a new collaborative dynamic across Australia
5. Lead the world on a new personalisation measure framework
6. Facilitate Private-Public Partnerships for city innovation

1. Eliminate device, data and application 'stovepipes'



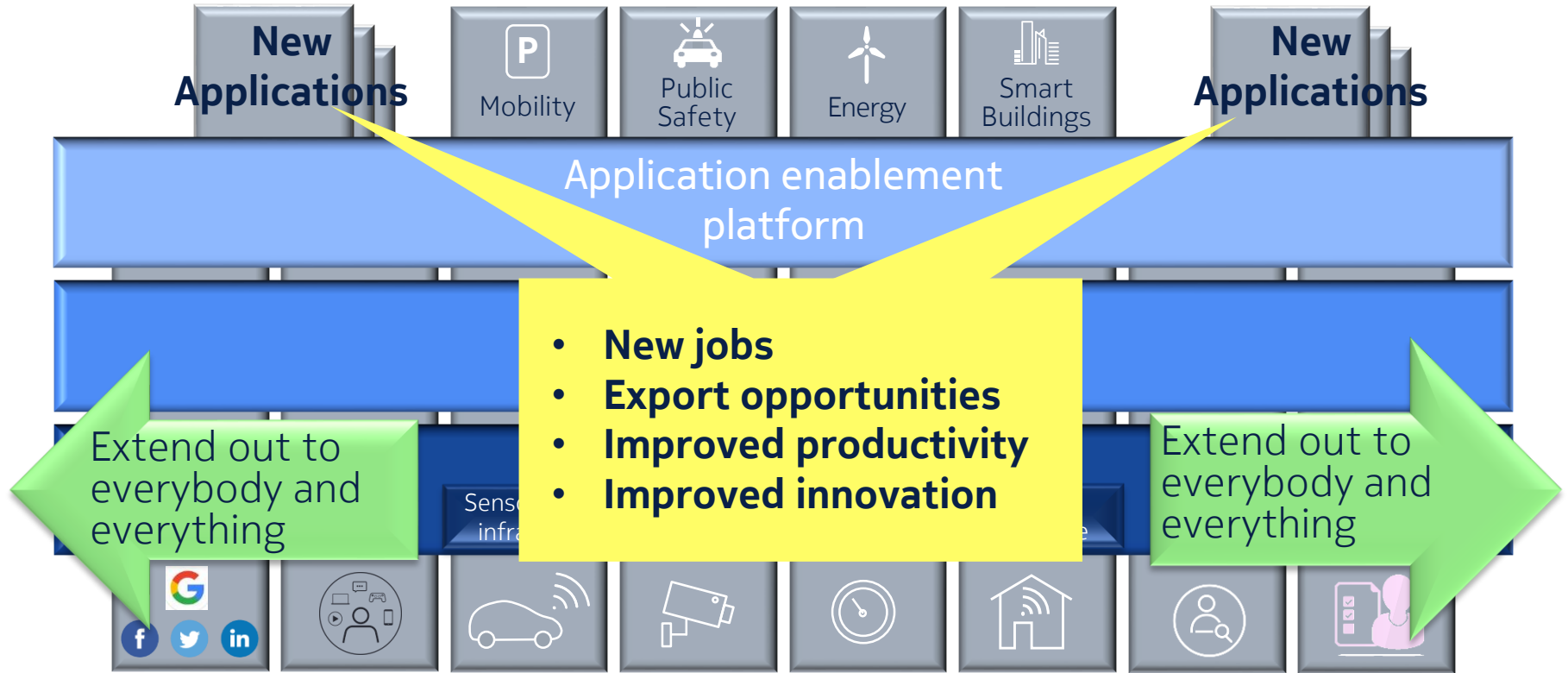
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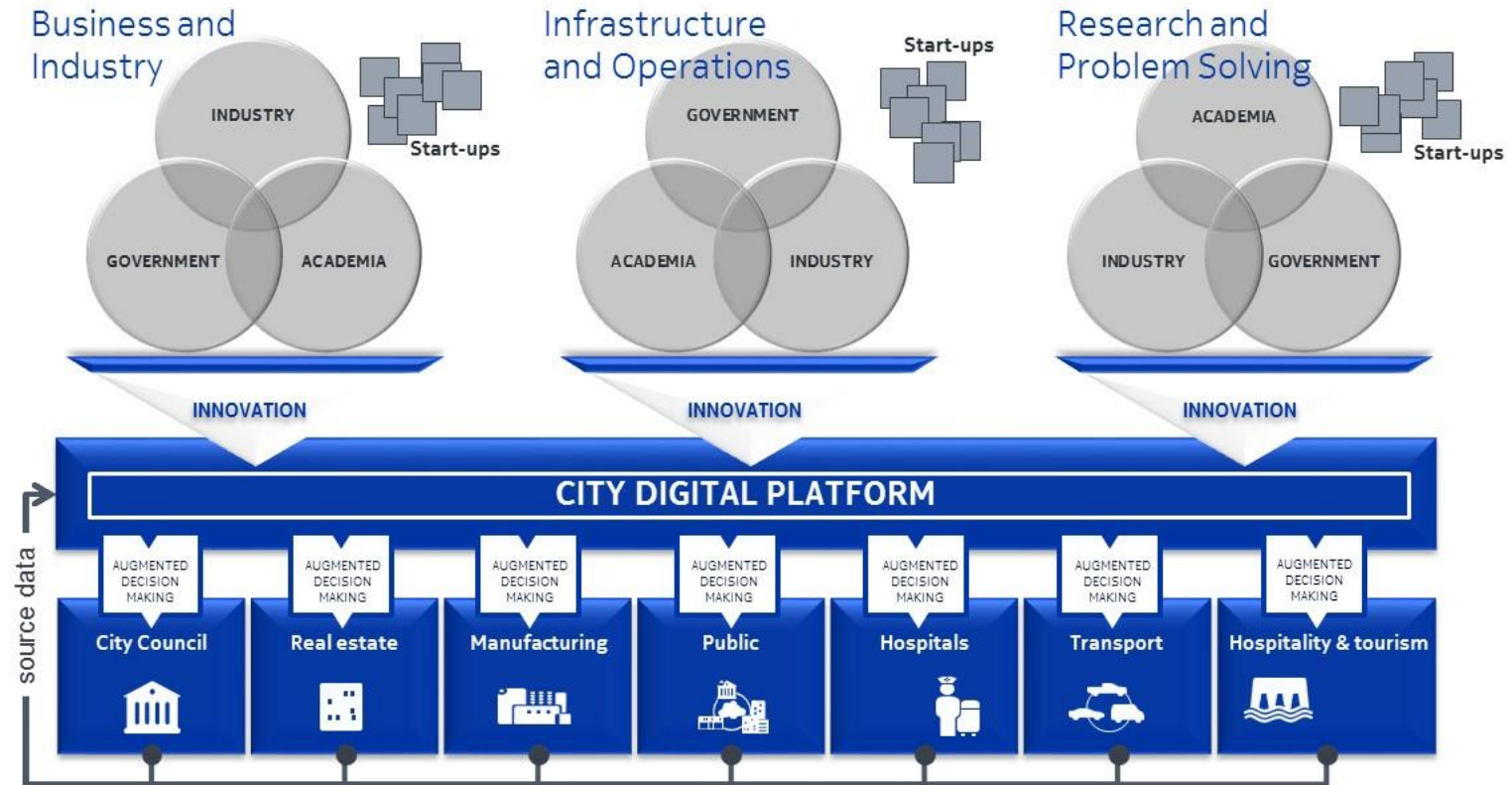
For use by States and Territories

- Implement horizontal layers for reuse across many verticals
- Introduce flexibility to add any number of verticals
- Adopt an Open Data standard (HyperCAT) to promote innovation

3. Unleash a national *movement* around digital innovation



4. Establish a new collaborative dynamic across Australia

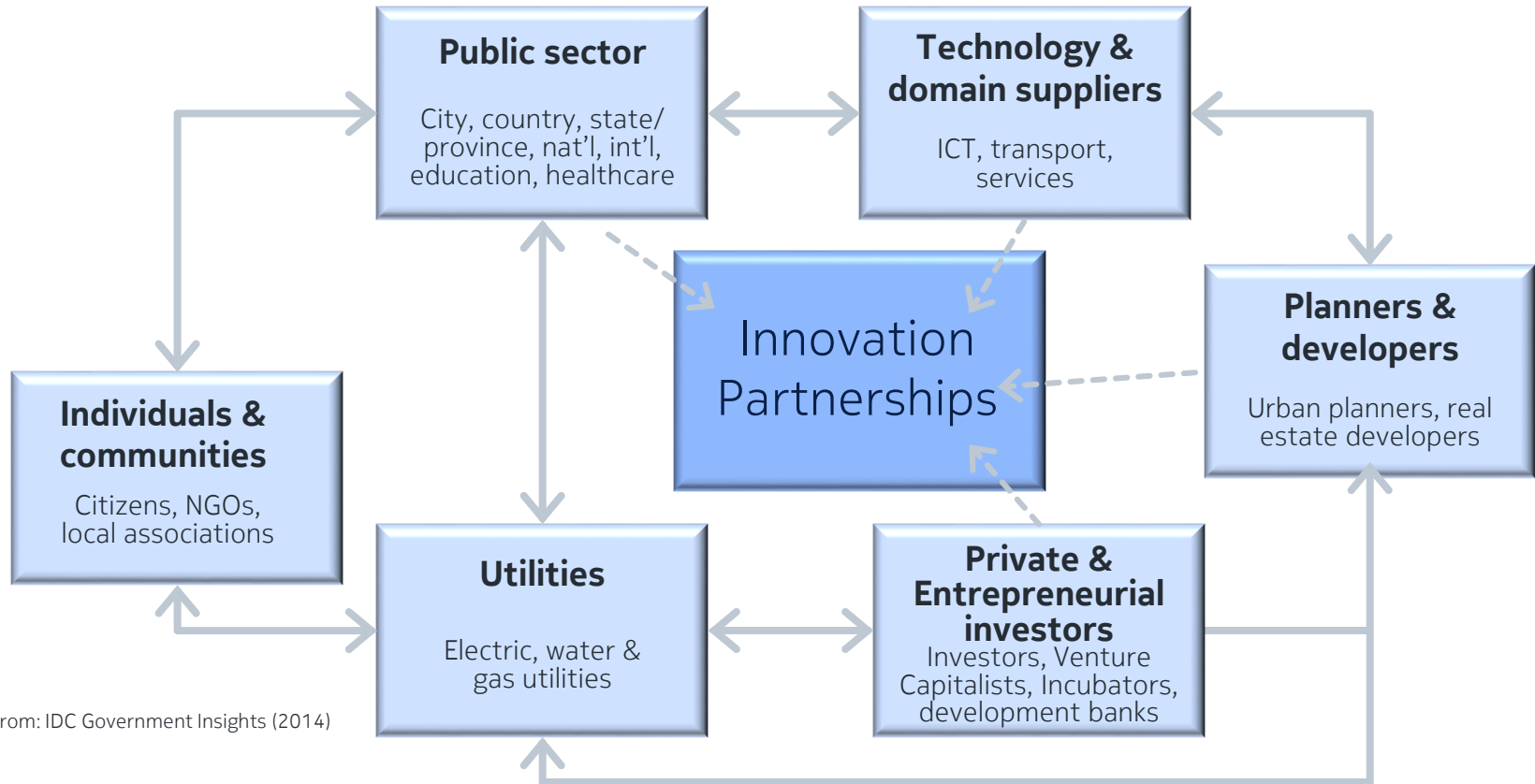


5. Lead the world on a new Personalisation measure framework



- Sustainability
 - ☐ Economic
 - ☐ Social
 - ☐ Environmental
- Personalisation
 - ☐ Achievement
 - ☐ Belonging
 - ☐ Well being

6. Facilitate Private-Public Partnerships for City Innovation



Adapted from: IDC Government Insights (2014)

Six imperatives for the future of Australia

... for all cities

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