



5G & SMART CITIES

OPTIMIZE LIFE & HUMAN WELL-BEING

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SUMMARY

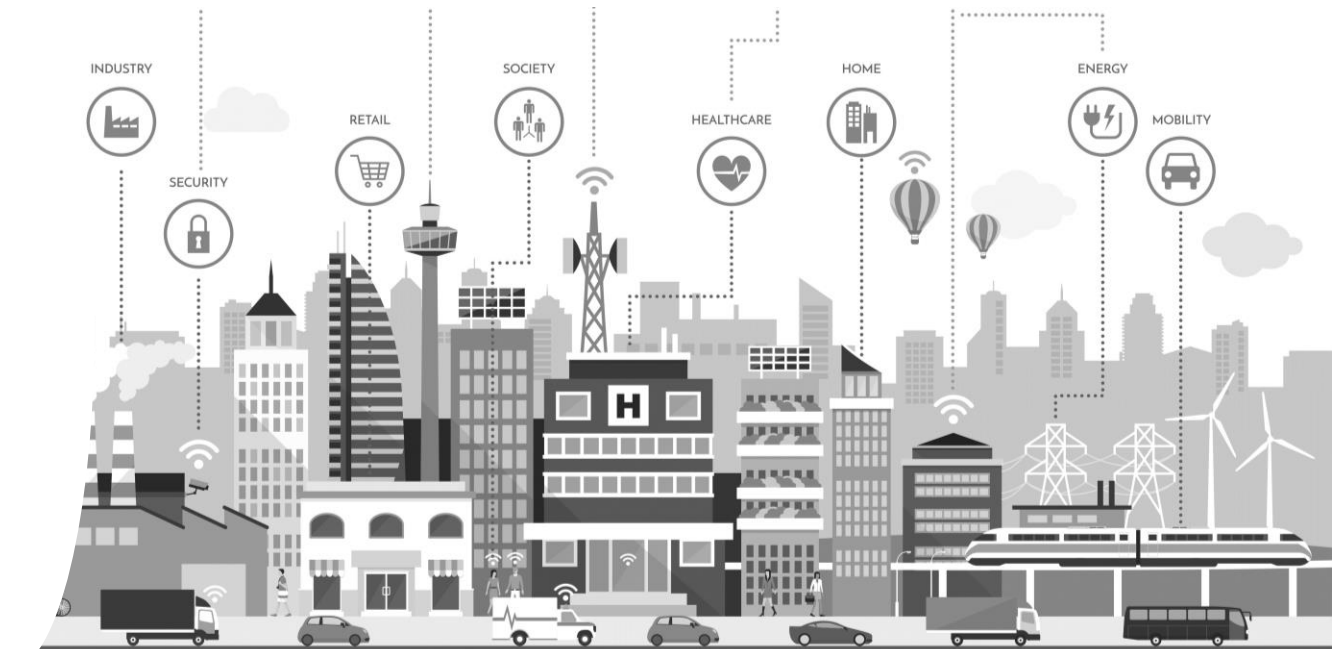


I. WHAT IS A SMART CITY?

II. WHAT IS 5G ?

III. 5G IN SMART CITIES

IV. SINGAPORE: A SMART NATION



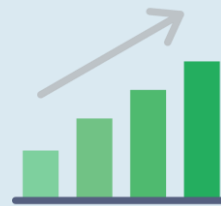
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Smart City: connecting digital devices to efficiently run different places **through the IoT**

Population in cities

TODAY
50%



2050
70%

OPEN DATA

City goals

- Resources
- Costs
- Well-being
- Organization



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Standard: Long Term Evolution Advanced Pro



Improving the **IoT**



Increasing the **speed**

5G

2020

Release 15: Already approved

Release 16: December 2019

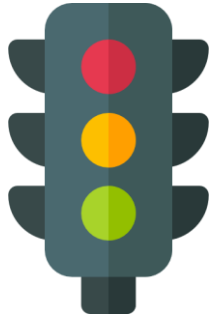
First standard: enhanced Mobile Broadband (**eMBB**), ultra-reliable low-latency communications (**URLLC**), and massive machine-type communications (**mMTC**)



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5G Benefits: 50 billion of devices connected to mobile networks in 2020



**Smart traffic
management**

Street lights
Car navigation



Smart Grids

Low cost
Low power
connectivity



Smart Homes

Domotic
Video surveillance
Street connectivity



**Smart Healthcare
& Security**

Monitoring patient
Perform in better
conditions

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5G Challenges

Smart people
Quality of life

Investments

Smart mobility
Reducing traffic & contamination

Smart environment
Ecologically sustainable development

Flexible polities
(European countries)



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Smart Nation: infocomm technologies, networks and big data to create tech-enabled solutions

Convenient
administrative
services

Mobility

Healthcare

SINGAPORE
WORLD'S FIRST SMART NATION

Safety



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What's next?



Smart lamp post
iOMNISCIANT



Driverless taxis
→ more green areas
NuTonomy



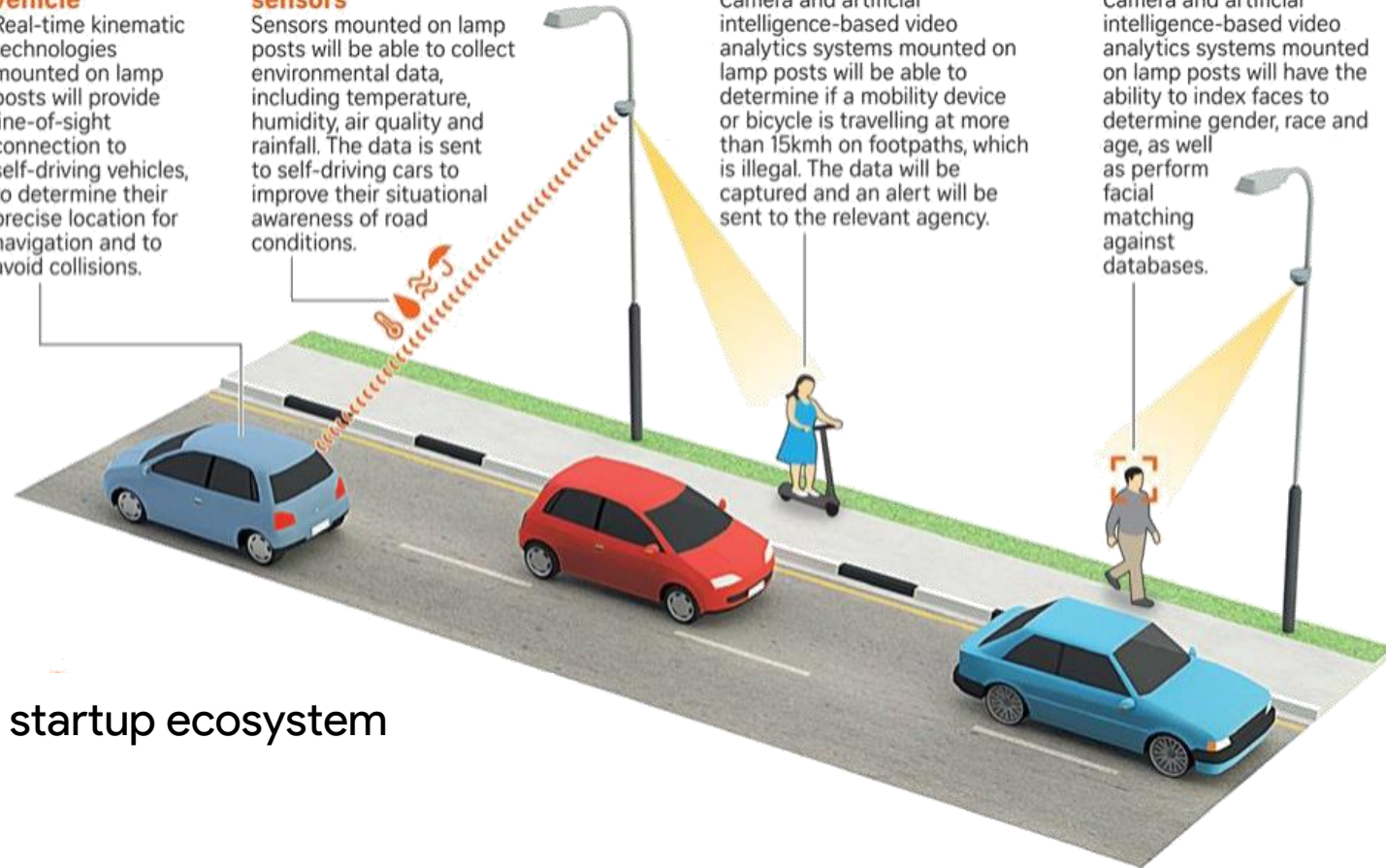
Key of this success
→ strong government, **universities**, startup ecosystem

Autonomous vehicle
Real-time kinematic technologies mounted on lamp posts will provide line-of-sight connection to self-driving vehicles, to determine their precise location for navigation and to avoid collisions.

Environmental sensors
Sensors mounted on lamp posts will be able to collect environmental data, including temperature, humidity, air quality and rainfall. The data is sent to self-driving cars to improve their situational awareness of road conditions.

Personal mobility device
Camera and artificial intelligence-based video analytics systems mounted on lamp posts will be able to determine if a mobility device or bicycle is travelling at more than 15kmh on footpaths, which is illegal. The data will be captured and an alert will be sent to the relevant agency.

Facial detection
Camera and artificial intelligence-based video analytics systems mounted on lamp posts will have the ability to index faces to determine gender, race and age, as well as perform facial matching against databases.





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THANK YOU FOR YOUR ATTENTION!

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