



5G & SMART CITIES

OPTIMIZE LIFE & HUMAN WELL-BEING

Rémy Dubois
Jonathan Malique
Elie Taillardat





SUMMARY

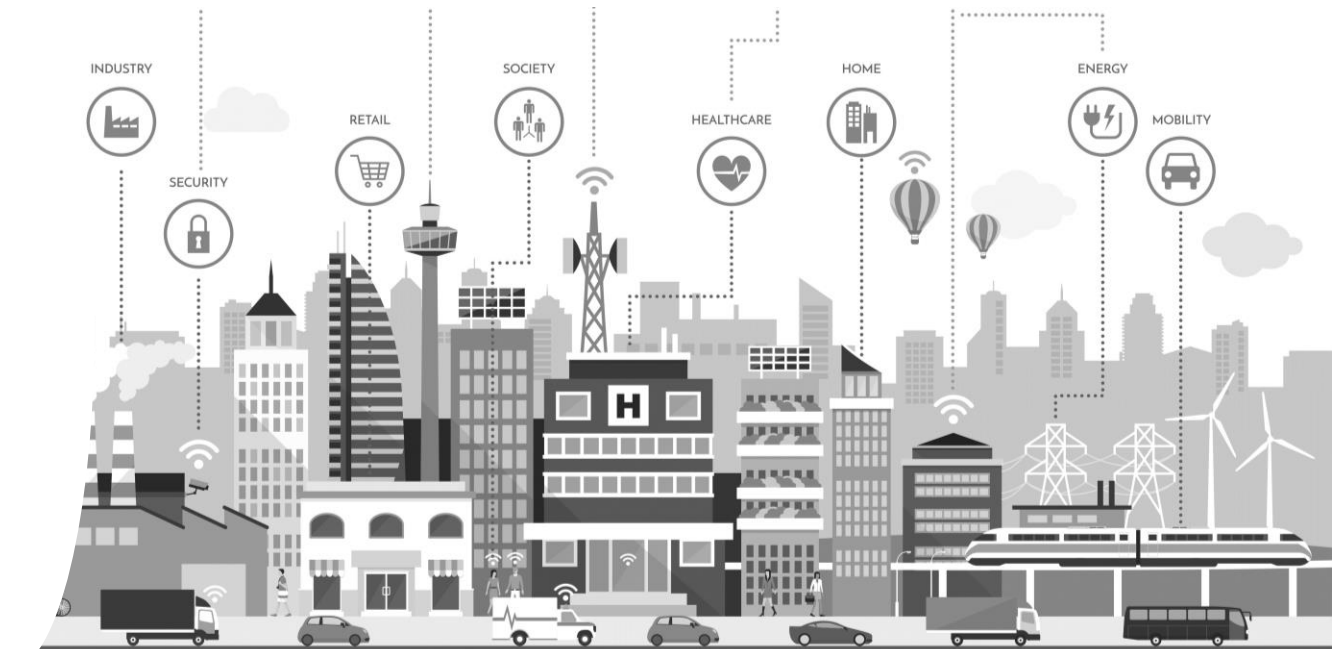


I. WHAT IS A SMART CITY?

II. WHAT IS 5G ?

III. 5G IN SMART CITIES

IV. SINGAPORE: A SMART NATION



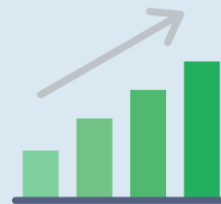
I. SMART CITY? - II. 5G? - III. 5G IN SMART CITIES - IV. SINGAPORE: A SMART NATION



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



I. SMART CITY? - II. 5G? - III. 5G IN SMART CITIES - IV. SINGAPORE: A SMART NATION



Standard: Long Term Evolution Advanced Pro



Improving the **IoT**



Increasing the **speed**

5G

2020

Release 15: Already approved

Release 16: December 2019

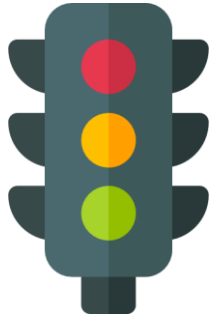
First standard: enhanced Mobile Broadband (**eMBB**), ultra-reliable low-latency communications (**URLLC**), and massive machine-type communications (**mMTC**)



I. SMART CITY? - II. 5G? - III. 5G IN SMART CITIES - IV. SINGAPORE: A SMART NATION



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

I. SMART CITY? - II. 5G? - III. 5G IN SMART CITIES - IV. SINGAPORE: A SMART NATION



5G Challenges



I. SMART CITY? - II. 5G? - III. 5G IN SMART CITIES - IV. SINGAPORE: A SMART NATION



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



I. SMART CITY? - II. 5G? - III. 5G IN SMART CITIES - IV. SINGAPORE: A SMART NATION



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

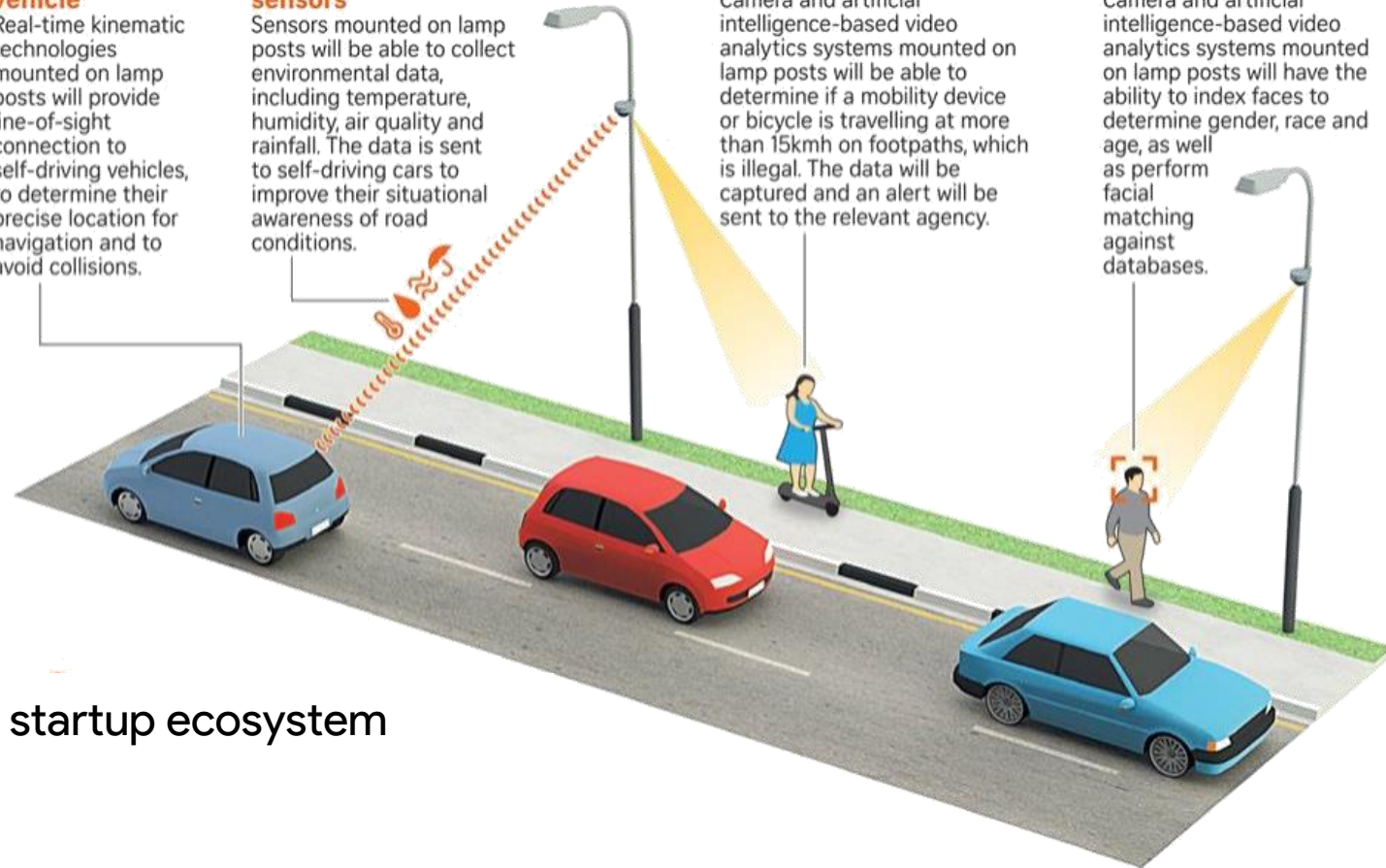
Sensors mounted on lamp posts will be able to collect environmental data, including temperature, humidity, air quality and rainfall. The data is sent to self-driving cars to improve their situational awareness of road conditions.

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.





5G & SMART CITIES

OPTIMIZE LIFE & HUMAN WELL-BEING

THANK YOU FOR YOUR ATTENTION!

Rémy Dubois
Jonathan Malique
Elie Taillardat

