

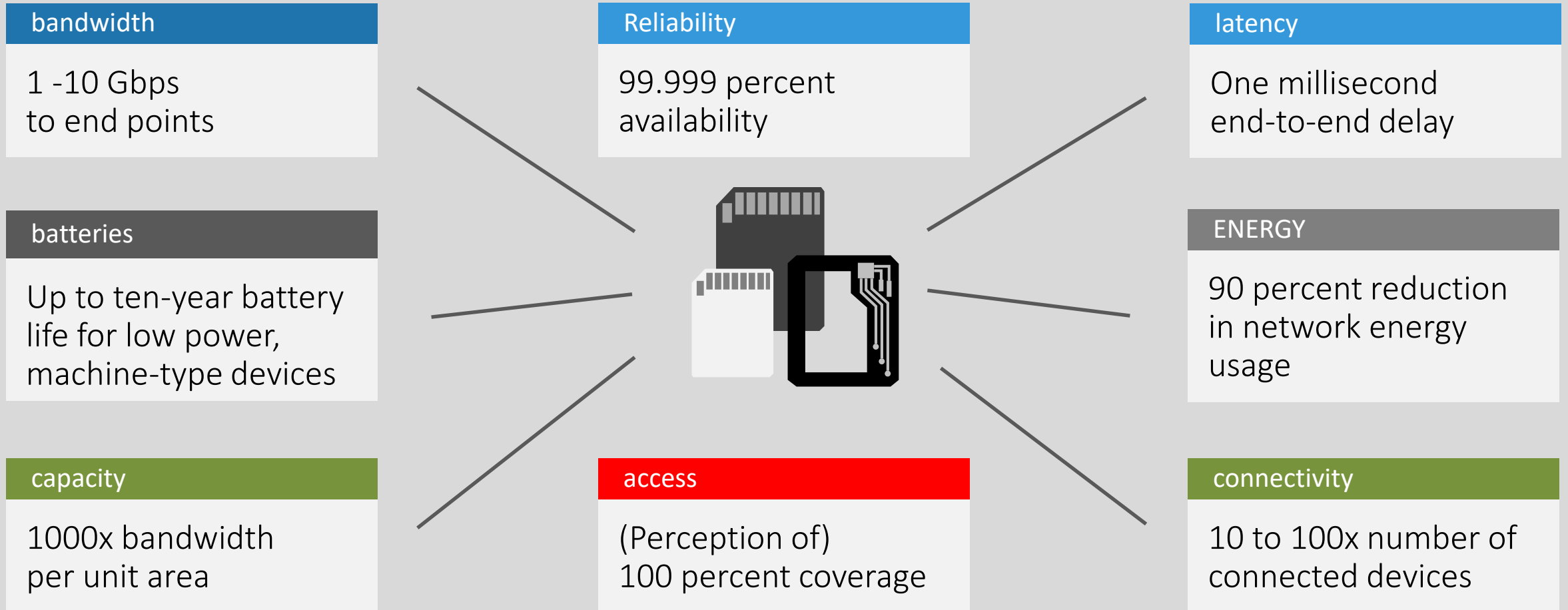
5G NETWORK SERVICES

MULTI SERVICE ACCESS POINTS



5G NETWORKS – INFRASTRUCTURE FOR INDUSTRY

GSMA Criteria – Wireless Fiber Grade Access



SERVICES AS A DEMAND SIDE RESPONSE

Key Industries

AUTOMOTIVE

- Autonomous driving
- Hypermobility
- Low latency
- Security

HEALTH CARE

- Quality & availability
- Coverage
- Reliability (QoS)
- Mobility

PUBLIC TRANSPORT

- Infotainment
- Capacity
- Mobility
- Connectivity

Learning & media

- VR/AR technology
- Bandwidth
- Capacity
- Connectivity

I 4.0 MANUFACTURING

- Productivity
- Very low latency
- Availability
- Security

PUBLIC SAFETY

- Internet of Safety
- Bandwidth
- Coverage
- Availability

ENERGY UTILITIES

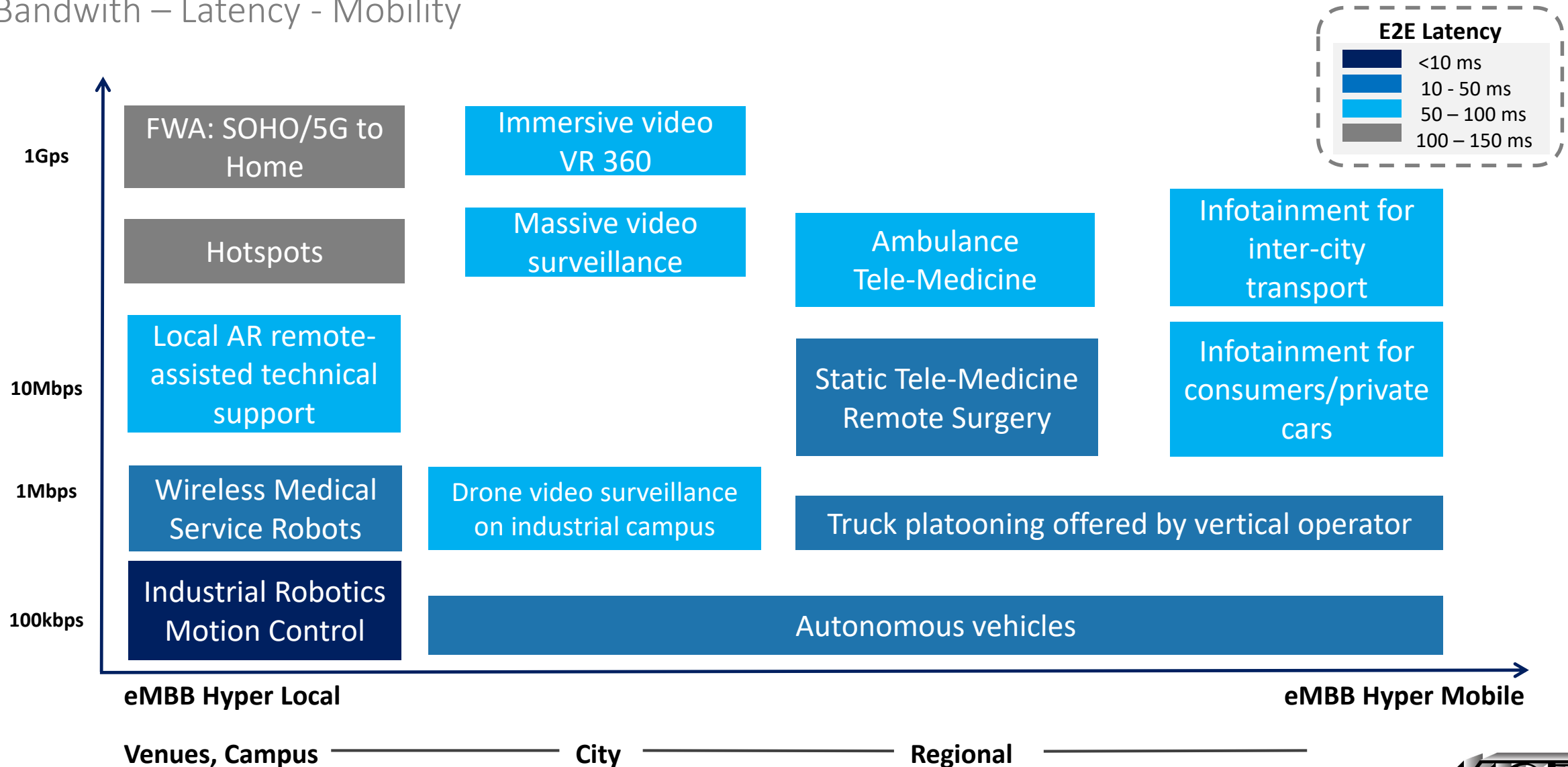
- Energy storage mgmt
- Access
- Low power D2D
- Energy usage

FINTECH SERVICES

- E-Wallets, ePayments
- Bandwidth
- Mobility
- Security

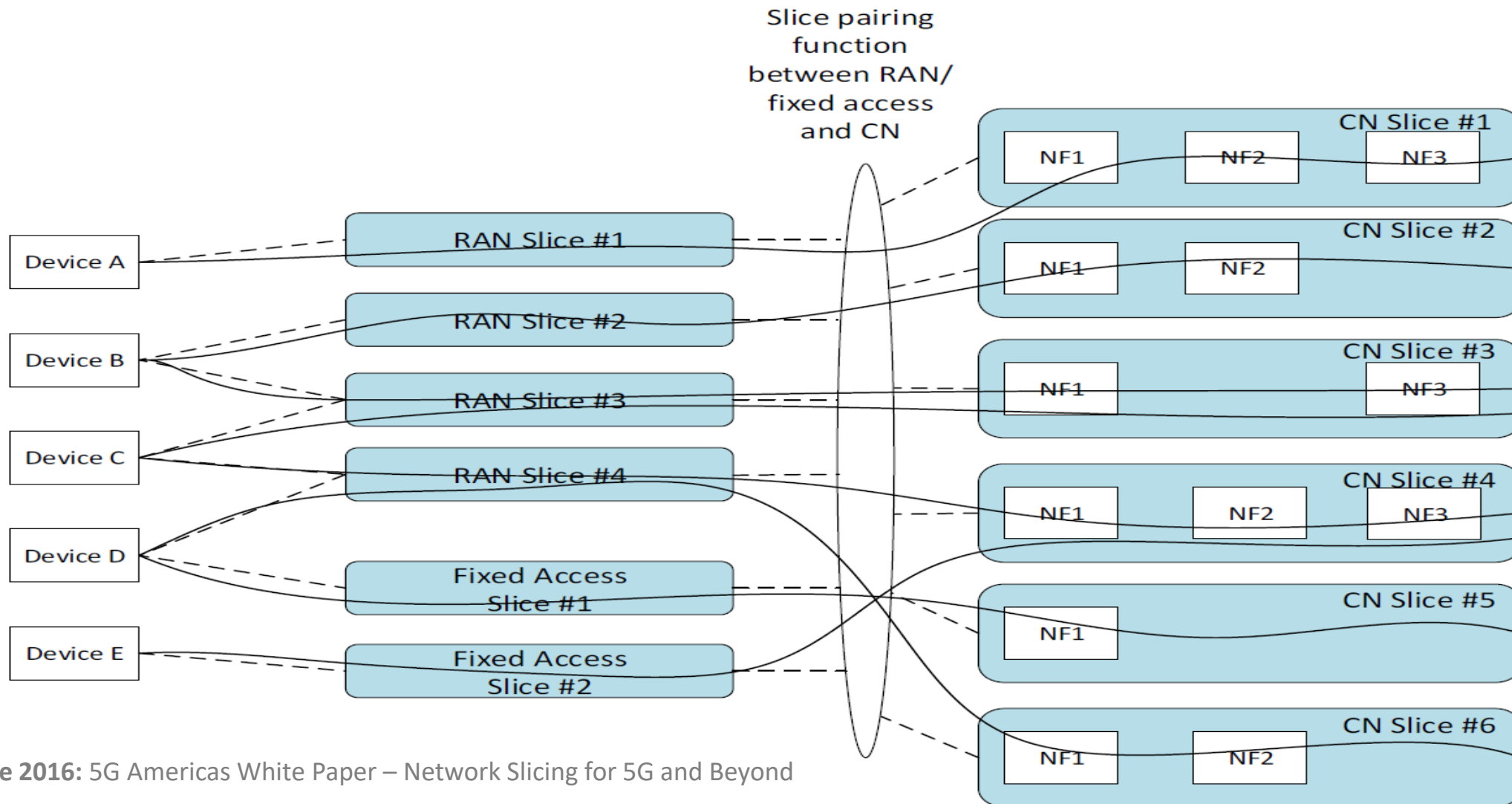
5G NETWORKS SERVICE REQUIREMENTS

Bandwidth – Latency - Mobility



SOFTWARE DESIGNED LOGICAL NETWORKS

Slicing for flexibility and ability



5G NETWORKS – ACCESS NODES

Multifunctional visual information points

PROBLEM

- How to organize multichannel information in the era of autonomous transport?
- How to integrate outdoor adds with 5G radio station?
- How to protect public space from excessive visible communication devices?

SOLUTION

- Definition of next generation visual public information
- Establish rules of multi-user outdoor screens
- Standardized construction permit for video 5G access nodes



5G NETWORKS – ACCESS NODES

Multifunctional access points

PROBLEM

- Where to install devices monitoring the condition of air, water, wind, road temperature, intensity of traffic, location of public transport vehicles?
- How do you connect these things to the network?
- How power all these devices?

SOLUTION

- Facilitate access to elements of public infrastructure
- Establish normalized usage of selected physical objects
- Standardized construction permit system

Ericsson and Philips
unite to brighten...
connectivity
Smart street light integrates mobile broadband infrastructure



Mobile operators

Can densify mobile networks without cluttering a city



Citizens

Better mobile connectivity
and data communications



Mobile traffic
is expected to
grow **10 times**
by 2019

Brighter, safer streets with
white light from LEDs



70-80% of
respondents in
a study said they
felt safer with
LED lighting



Cities

Lower energy costs



LED can generate
energy savings of
up to 80% with
smart controls

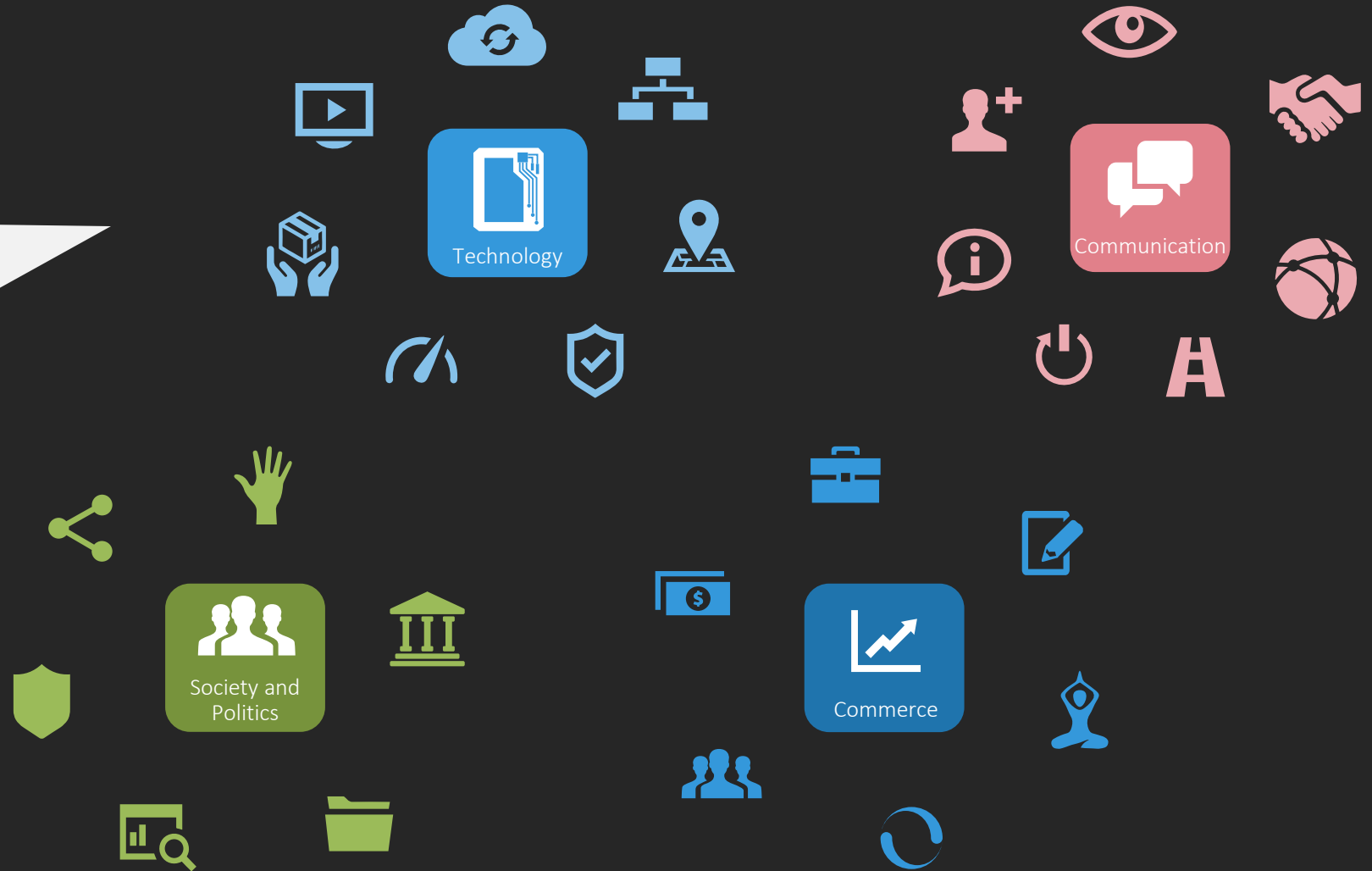
Innovative business model
makes city infrastructure
more affordable



Space in the **smart
street light** pole
can be rented to
mobile operators

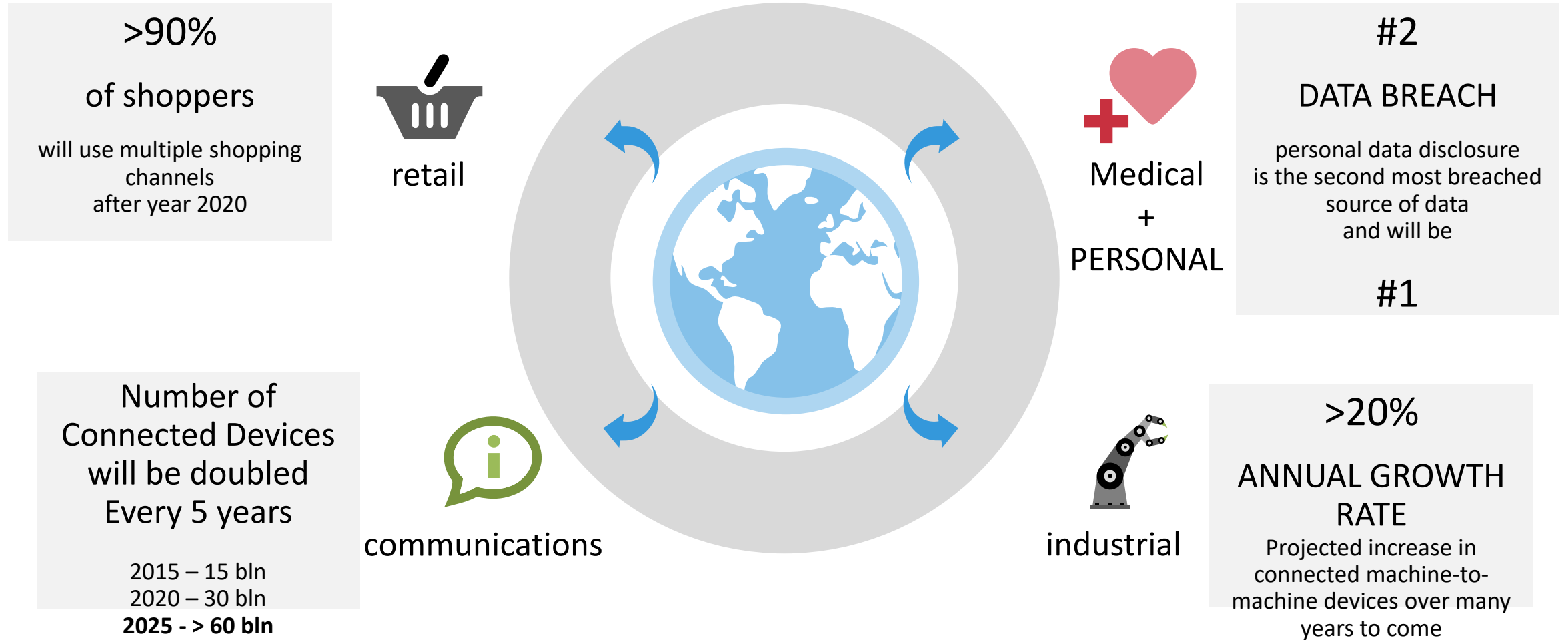
5G NETWORKS FOR INNOVATIONS

Key Factors of Digital Communication



INTERNET OF EVERYTHING IN THE FUTURE

Intelligent Systems for a Connected World



Source: Statista

INTERNET OF THINGS TODAY

Growth

2020



4
Billion

Connected
People



\$4
trillion

Revenue
Opportunity



25
million

Apps



25
billion

Embedded
and
Intelligent
Systems



50
trillion

GBs of Data

4 billion connected people

4\$ trillion in revenue
opportunity

25 million apps

25 billion embedded and
intelligent systems

50 trillion GBs of data

THINKING TECHNOLOGIES

Capabilities of Objects and Systems

- **Embedded:** integration into human environment
- **Context awareness:** perception of the user's situational context
- **Personalization:** tailored to the user's needs
- **Adaptability:** changes depending on requirement
- **Anticipation:** foresees the user's request



5G & I 4.0 EVOLUTION

Humans Fall into the Background and Objects are Pushed to the Forefront



INTERNET OF THINGS

- Devices are equipped with sensors and Internet access
- Independent of humans: autonomic communication
- The computer as a device is replaced by intelligent machines

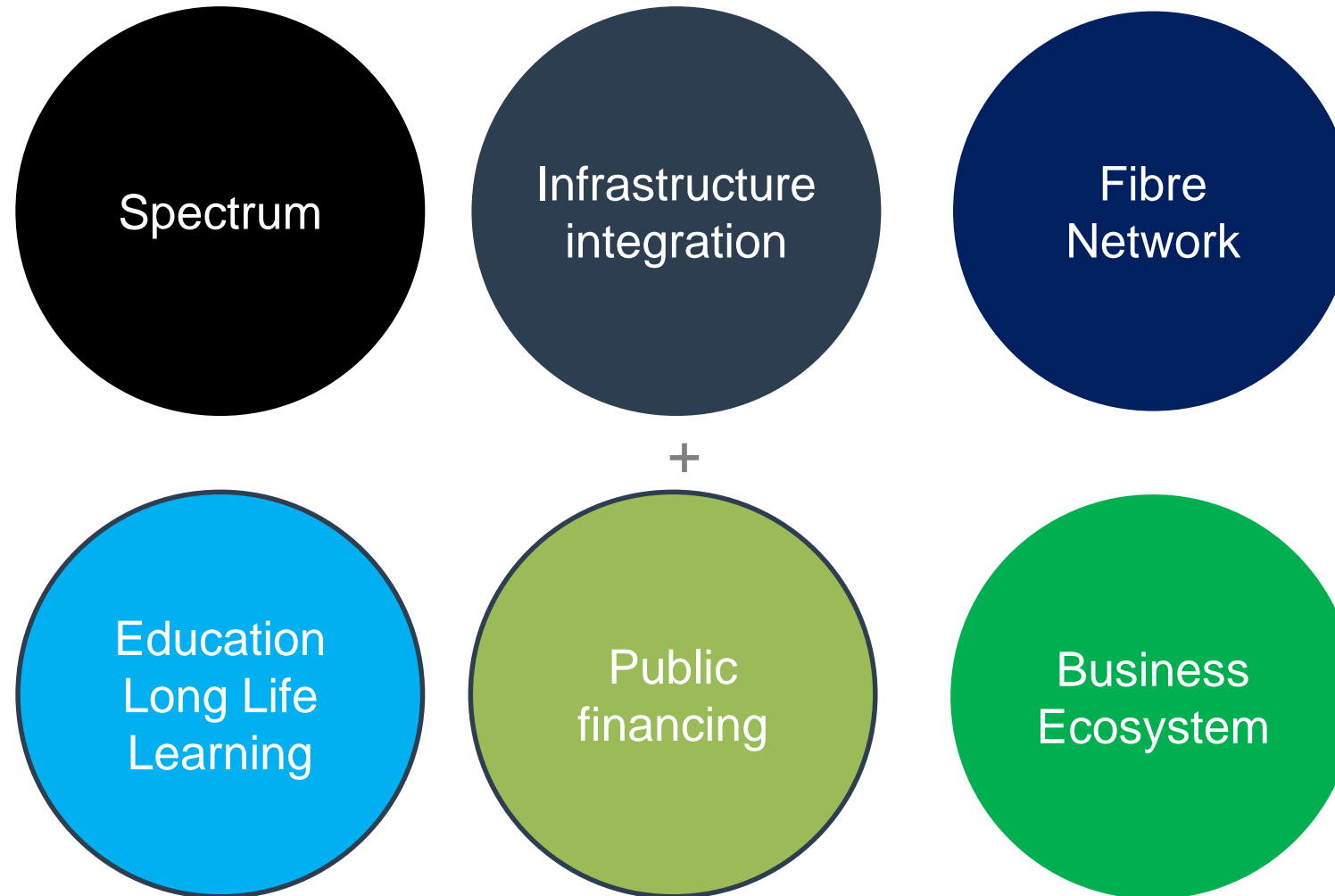


INTERNET OF HUMANS AS USUAL

- Humans control Internet use in order to collect information
- Humans can also access the Internet on smartphones

5G NETWORKS NEEDS REGULATORS' ATTENTION

Industry will deliver equipment and technology



GLOBAL BUSINESS ECOSYSTEM

European Commission, Standards Bodies & Consortia

Global standards are being formed to create interoperability and launch ecosystems of technology, hardware and software partners.

