

# **4G/LTE-A DEPLOYMENT IN VIET NAM**

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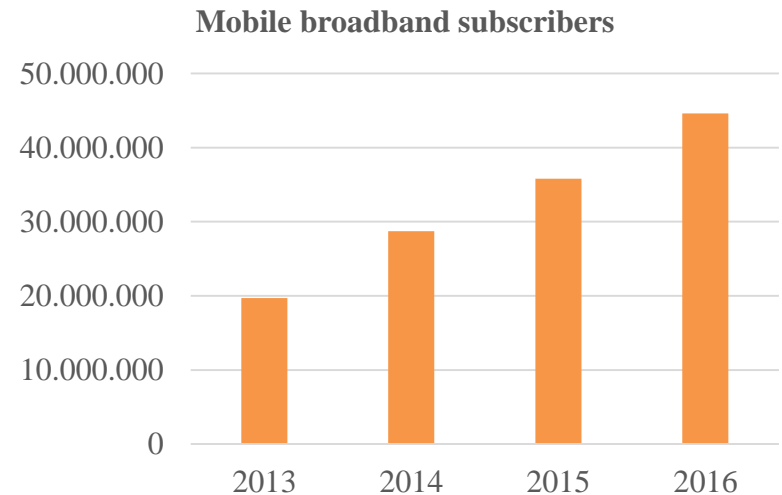
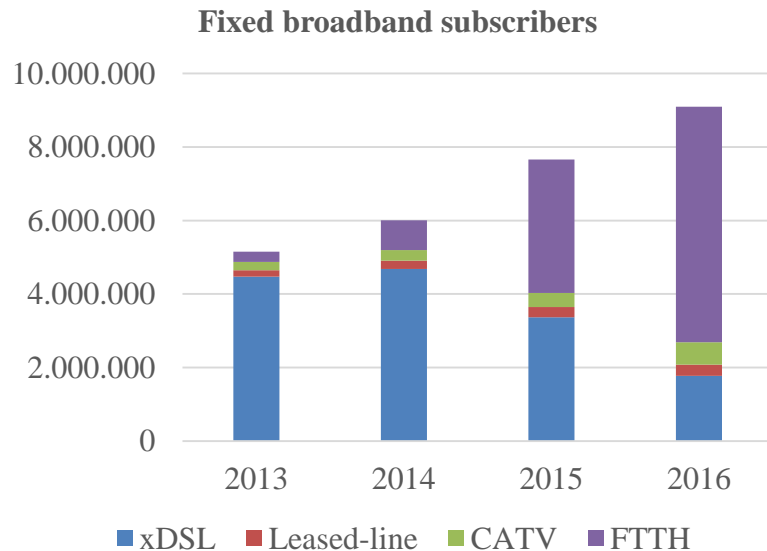
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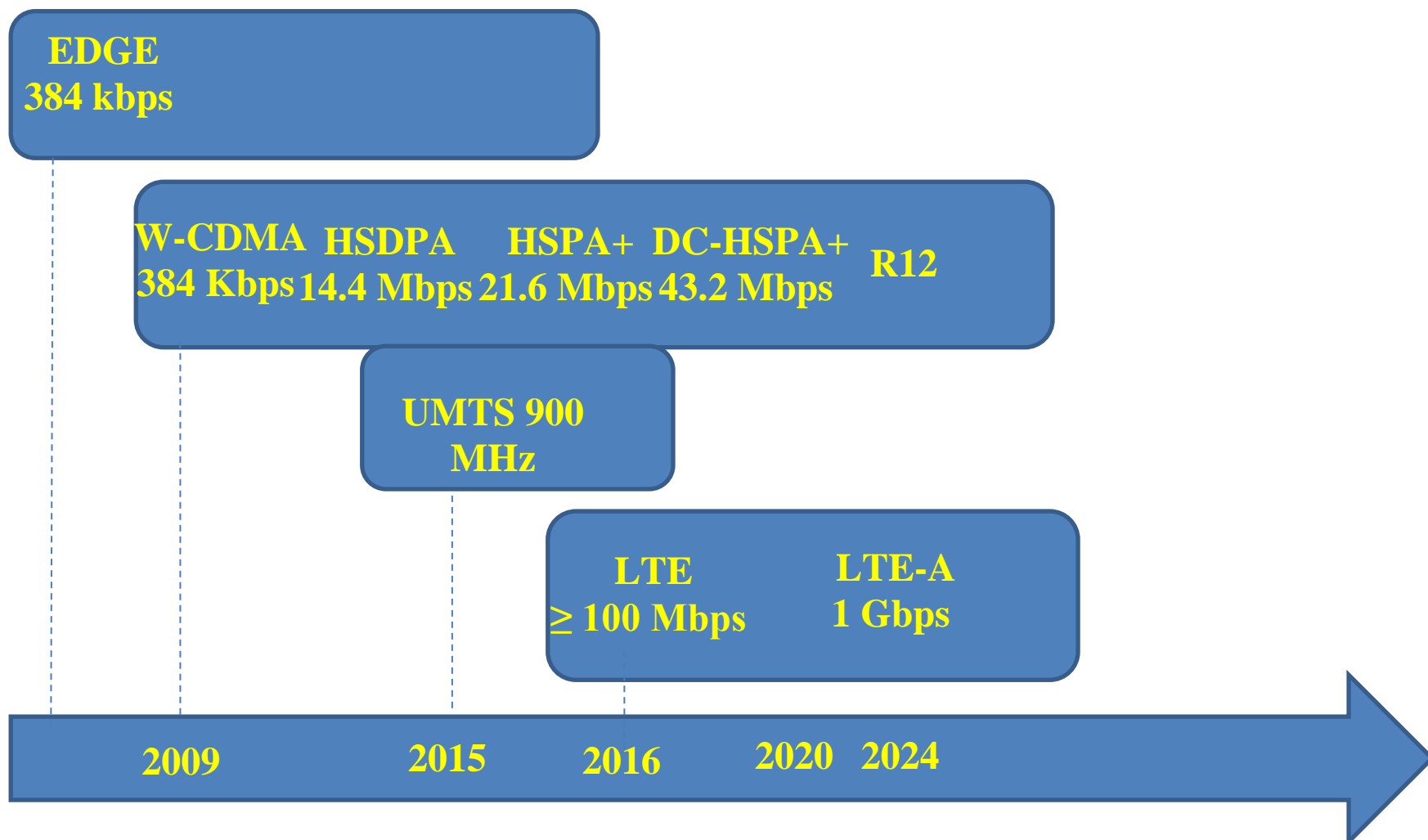
# OVERVIEW

# Internet Statistics (Upto 5/2017)

- Total subscribers: **58,9 mil.**
- Fixed broadband subscribers: **9,9 mil.**
- Mobile broadband subscribers: **48,9 mil.**
- Total domestic Internet bandwidth: **1.920 Gbps**
- Total international Internet bandwidth : **4,500 Gbps**



# Wireless Broadband road map in Vietnam

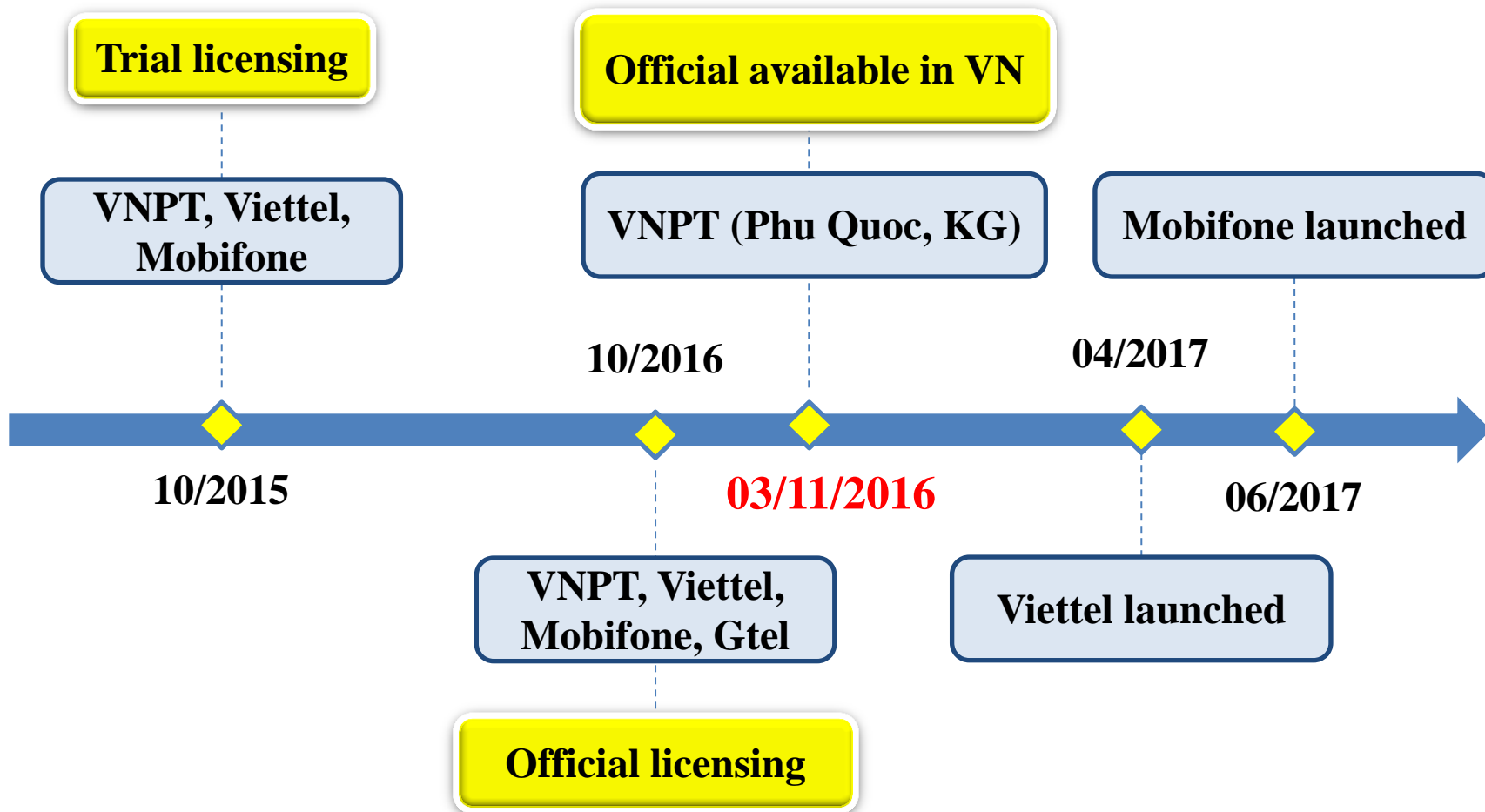


# Trial 4G

- Areas:
  - VNPT: Ho Chi Minh city, Phu Quoc (Kien Giang);
  - Viettel: Ba Ria – Vung Tau;
  - Mobifone: Ha Noi city, Da Nang city, Ho Chi Minh city.
- Duration: 01 year;
- Bands: 1800 MHz and 2600 MHz.



# 4G/LTE-A deployment in Viet Nam



# 4G licenses

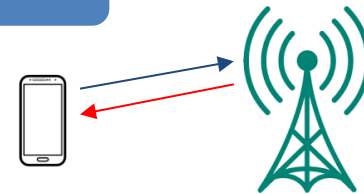
## OPERATORS

- Mobifone ☒
- Viettel ☒
- VNPT ☒
- Gtel ☒
- Vietnamobile ☐



## BANDS

- 900 MHz ☐
- 1800 MHz ☒
- 2100 MHz ☐





# Deployment



**Official available  
in Viet Nam**



**43.000 eNodeB**

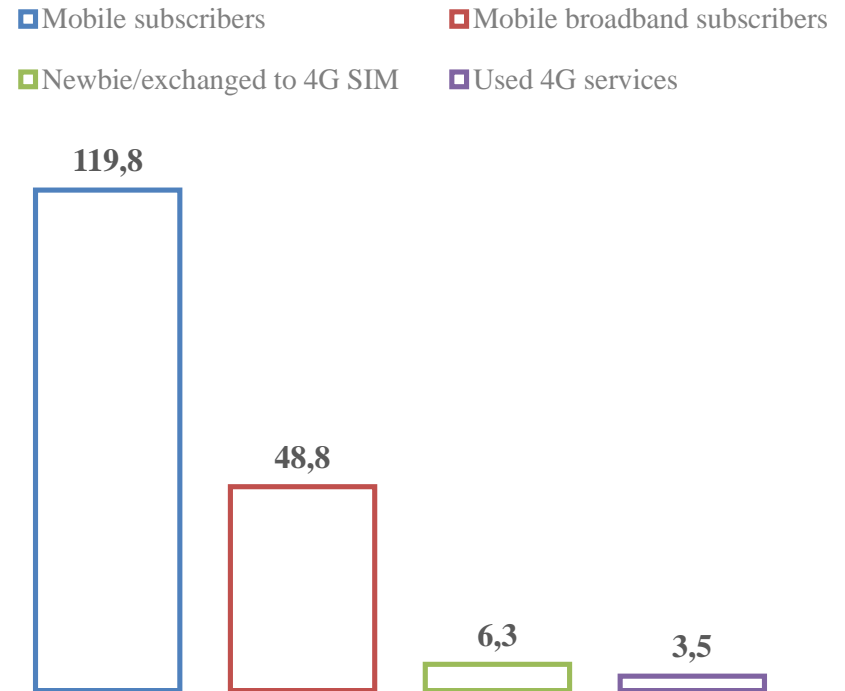
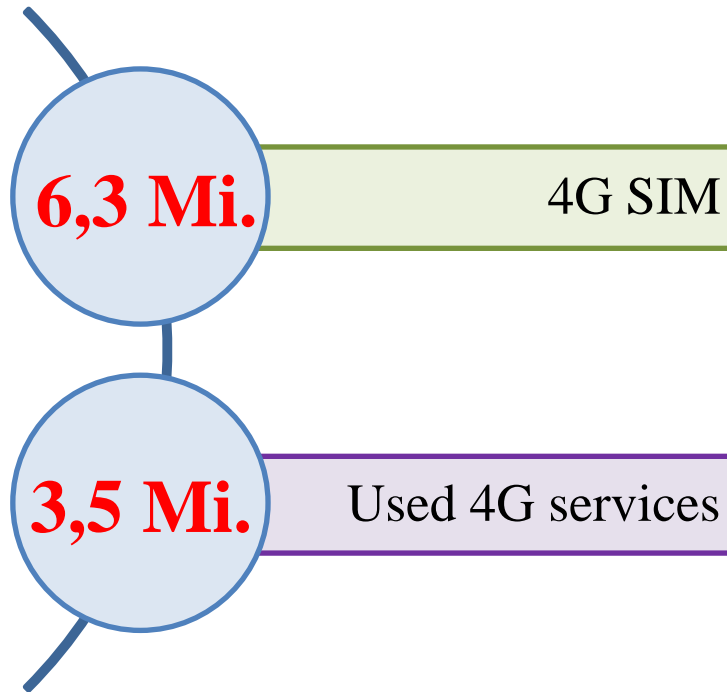


**95% population**



*(Sources: VNTA, Q.I/2017)*

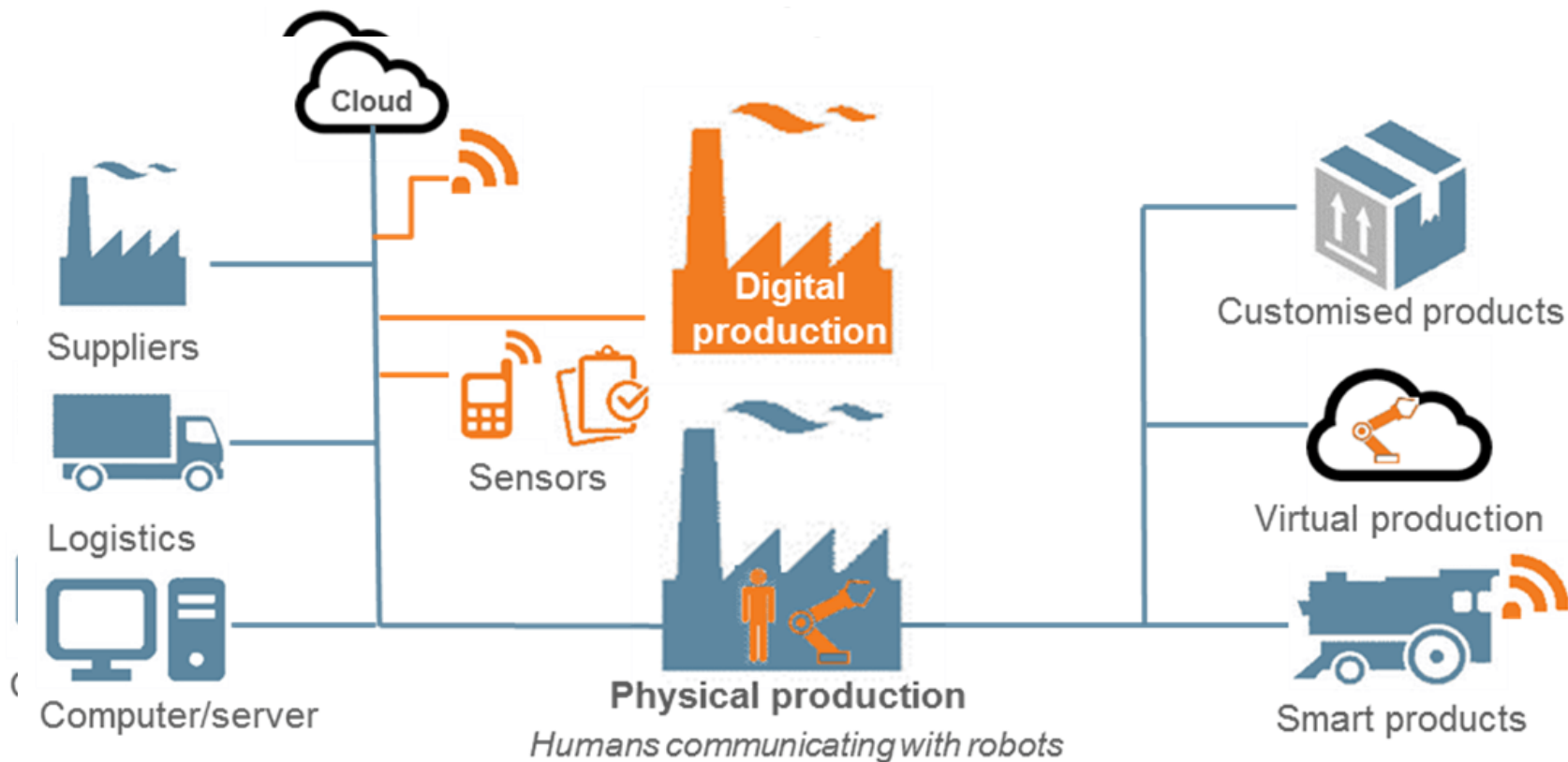
# 4G subscribers



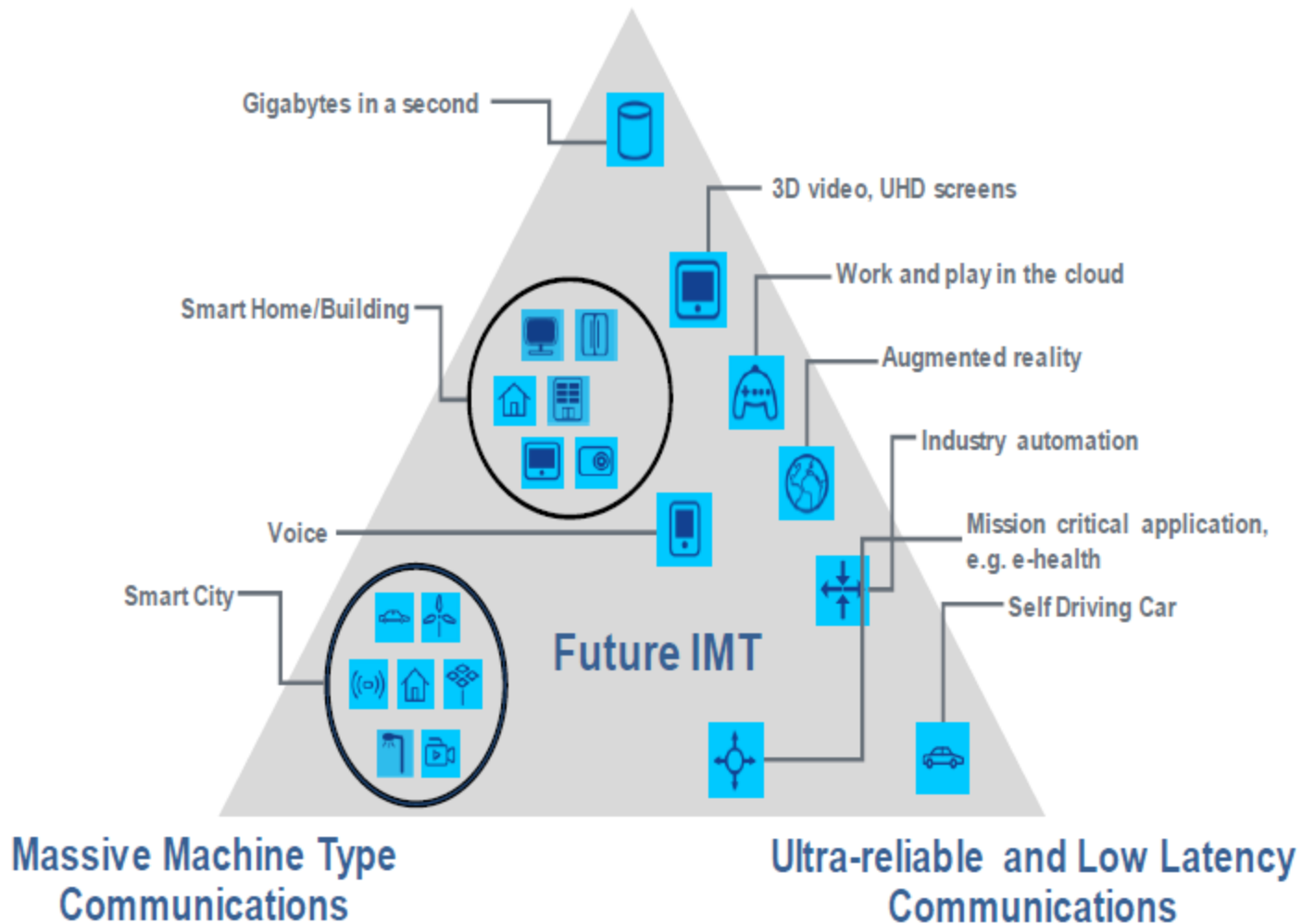
(Sources: VNTA, Q.I/2017)

# TREND OF DEVELOPMENT

# Industry 4.0



## Enhanced Mobile Broadband



# Mobile is the largest technology platform in history



~7.5 billion connections,  
almost as many as  
people on earth<sup>1</sup>



Evolving into **Internet of Everything**: cars, meters, sensors, health devices, etc.



**More prevalent** than electricity or running water in some regions



At the center of breakthrough experiences like **4K UHD video**

<sup>1</sup> ~7.5B connections (~3.7B subs) — GSMA Intelligence, May '15.

*(Sources: Qualcomm, 2016)*

# Creating the connectivity fabric for everything

Rising up to meet significantly expanded connectivity needs



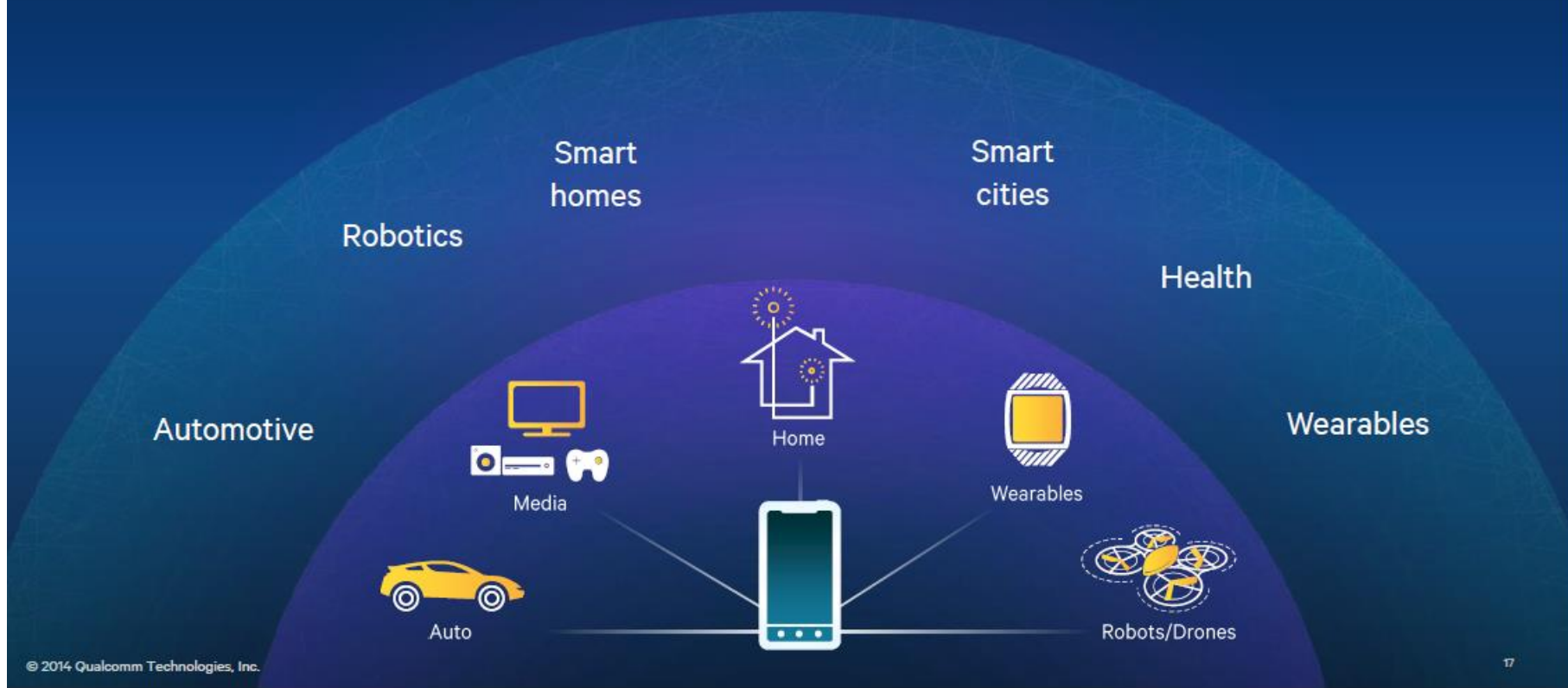
## Requires a new connectivity paradigm

- Human communication ▶ Scaling to connect virtually anything, anywhere
- Devices as end-points ▶ New and intelligent ways to connect & interact
- Best effort data services ▶ Also, new kinds of control & discovery services
- Disparate networks ▶ Convergence of access, spectrum types, services

(Sources: Qualcomm, 2016)



# Reshaping industries with cognitive technologies



(Sources: Qualcomm, 2016)



# 5G to meet significantly expanding connectivity needs

Building on the transformation started in 4G LTE

**Connecting**  
new industries and devices

# 5G

**Enabling**  
new services

**Empowering**  
new user experiences

**Scalable**

To an extreme variation of  
requirements

**Edgeless**

For uniform experiences with  
new ways of connecting

**Unified**

Across all spectrum types/bands,  
services and deployments

*(Sources: Qualcomm, 2016)*

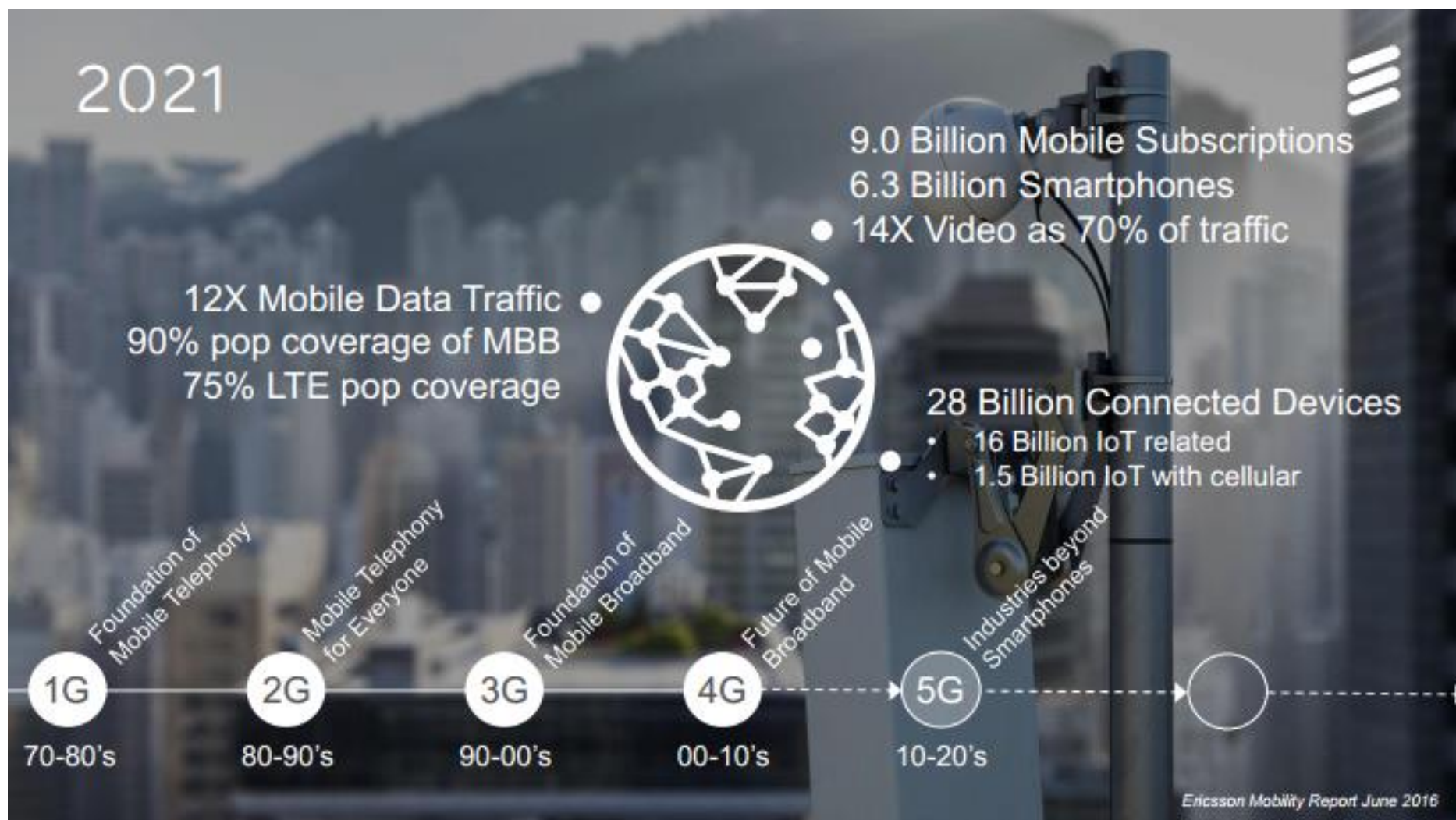
# OPPORTUNITIES AND CHALLENGES

# Connection trend

|   | 2015  | 2016  | 2022<br>forecast | CAGR**<br>2016–2022 | Unit     |
|---|-------|-------|------------------|---------------------|----------|
| <b>Mobile subscriptions</b>                         |       |       |                  |                     |          |
| Worldwide mobile subscriptions                      | 7,260 | 7,520 | 8,980            | 3%                  | million  |
| > Smartphone subscriptions                          | 3,280 | 3,860 | 6,830            | 10%                 | million  |
| > Mobile PC, tablet and mobile router subscriptions | 240   | 240   | 320              | 5%                  | million  |
| > Mobile broadband subscriptions                    | 3,530 | 4,390 | 8,280            | 11%                 | million  |
| > Mobile subscriptions, GSM/EDGE-only               | 3,600 | 3,050 | 670              | -22%                | million  |
| > Mobile subscriptions, WCDMA/HSPA                  | 2,080 | 2,280 | 2,780            | 3%                  | million  |
| > Mobile subscriptions, LTE                         | 1,090 | 1,860 | 4,960            | 18%                 | million  |
| > Mobile subscriptions, 5G                          |       |       | 530              |                     | million  |
| <b>Mobile traffic*</b>                              |       |       |                  |                     |          |
| > Data traffic per smartphone                       | 1.4   | 2.1   | 12               | 33%                 | GB/month |
| > Data traffic per mobile PC                        | 5.8   | 7.7   | 23               | 20%                 | GB/month |
| > Data traffic per tablet                           | 2.5   | 3.6   | 11               | 20%                 | GB/month |

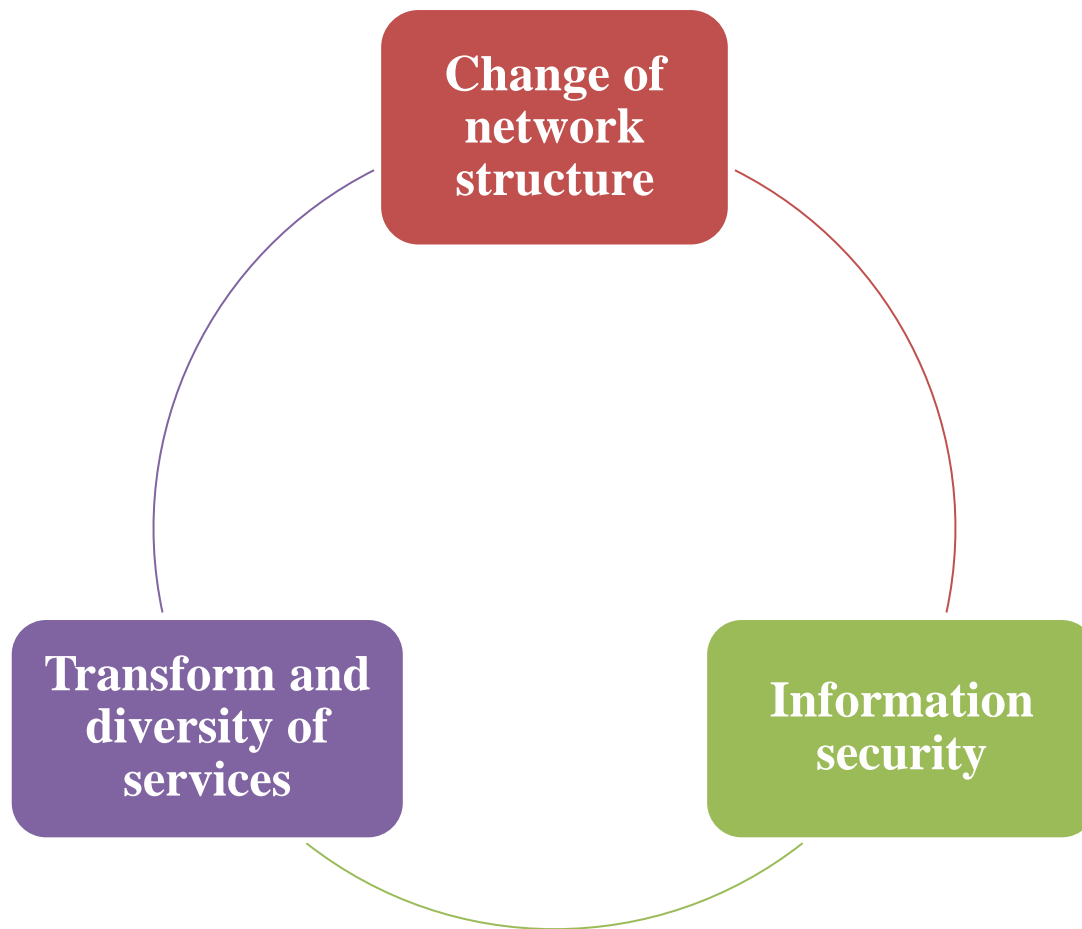
(Sources: Ericsson Mobility Report 6/2017)

# Connection trend



(Sources: Ericsson Mobility Report 2016)

# Challenges



# CONCLUSION

# Policy regulations

- Complete telecommunications regulations:
  - Cross-sector Regulations;
  - Promotion of innovation;
  - Security of connections;
  - Quality of services;
  - Etc
- Technology neutrality orientation; Frequency allocation;
- Promote Broadband (4G, 5G) deployment:
  - Improve fiber infrastructure and deploy SDN, NFV;
  - Share passive infrastructure;
  - Extend network coverage, improve quality of services.
- Enhance network performance and HR skills in security.

# Future vision

- Infrastructure
  - Future transforming into Cloud computing networks; Big data centers;
  - Unified Platform for connectivity needs
  - Unified air interface; Enhanced high speed and security networks; Flexible network Architecture;
- Services
  - High Valuable services;
  - HD online video streaming;
  - High security broadband access;
  - Enhanced Mobile broadband (3D, UHD video, Virtual reality, Tctile Internet;
- Intelligent services
  - IoT, IoE connectivity;
  - Machine learning;
  - Computer vision;
- Etc



# Thank you