



Policy Challenges in 5G :

service definition & UTP

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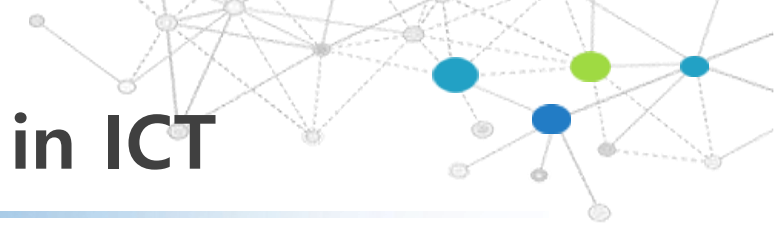


Contents

- 1 A Brief Overview of Key Environment Changes in ICT
- 2 Note-worthy environment changes and challenges

1. A Brief overview of Key Environment Changes in ICT

A Brief Overview of Key Environment Changes in ICT



Digital Revolution

Documents, image, sound, or analog signal converted into a digital format

'60s ~ '90s

1989

WWW

1G Cellular Network

*10 Kbps
Voices only
No Data services*

1980s

1990s

2G Cellular Network

*14.4 ~ 64 Kbps
Voices
SMS*

3G Cellular Network

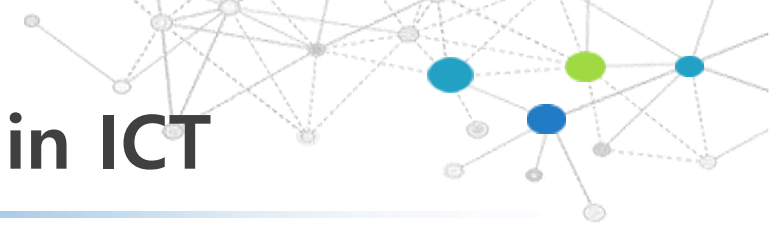
*> 2Mbps
Voices / SMS
Video Calls
Mobile Internet Search*

2000s

Device Convergence

*Camcorder, Camera, MP3, etc.,
one hand-device begin to contain
different functions*

A Brief Overview of Key Environment Changes in ICT



3G Cellular Network

> 2Mbps
Voices / SMS
Video Calls
Mobile Internet Search

4G Cellular Network

> 1 Gbps
Voices / SMS
HD Videos
Wearables
High-speed Internet
Location-based services

5G Cellular Network

> 20 Gbps
Voices / SNS / LBS
3D / UHD / Hologram Images
IoT
Autonomous Driving Vehicles (V2X)
:

2000s

2010s

'20s ?

'02. EC adopted 5 Directives

'06. Amending Directive

'09. Better Regulation Directive

Electronic Communications Code

BEREC WG for potential regulatory aspects of 5G

Network Convergence

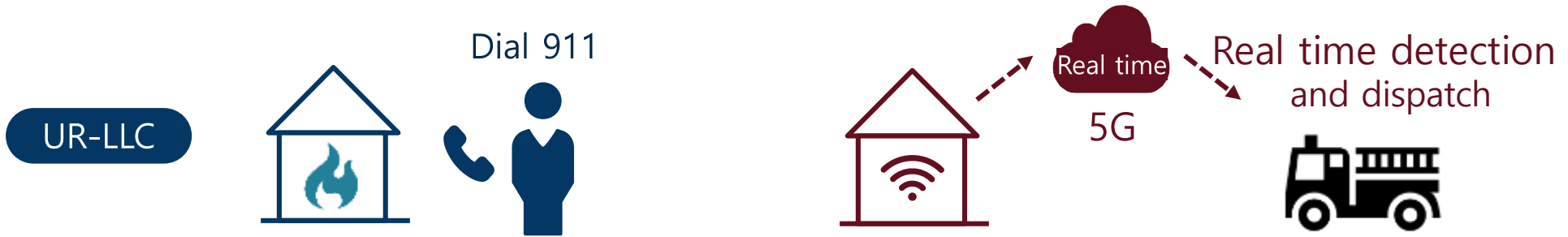
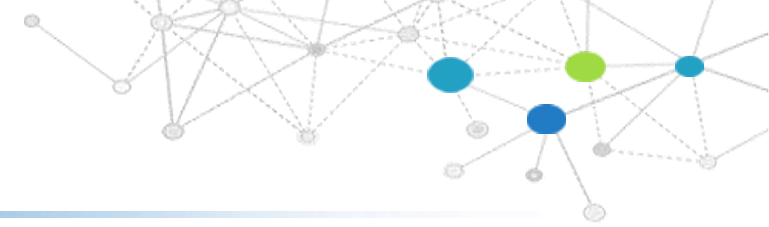
One network become able to provide different services;
Services and networks becoming independent

Digital Disruption

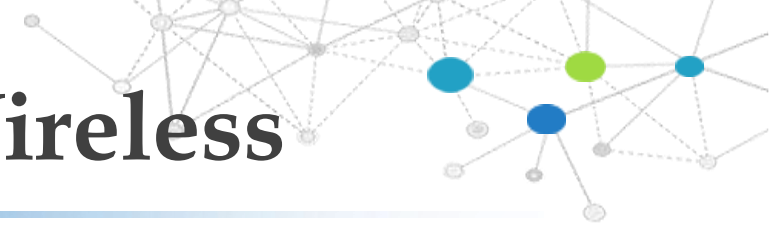
Disrupt or Disrupted!
Actions must be taken to avoid becoming "Uberd." (GE)

Regulatory Framework has evolved in accordance with the evolution of ICT environment

4G → 5G



Brief Introduction of 5th Generation Wireless



Implication

- Backbone for 5G-related Infrastructure • General Purpose Technology

Definition

- IMT-2020 (ITU Official Definition) * 3G: IMT-2000, 4G : IMT-advanced
- * 3GPP named for IMT-2020 as “5G”

Technology

- 3~100x Improvement than 4G



Features

- eMBB
- URLLC
- mMTC

* 4G mainly focused on MBB

Network

- Network Slicing
- Mobile Edge Computing

Spectrum

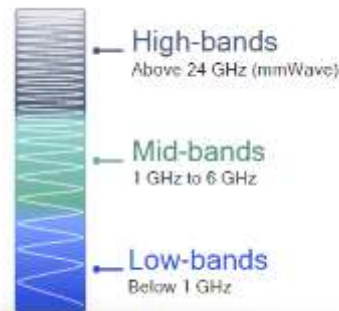


Image source : Qualcomm

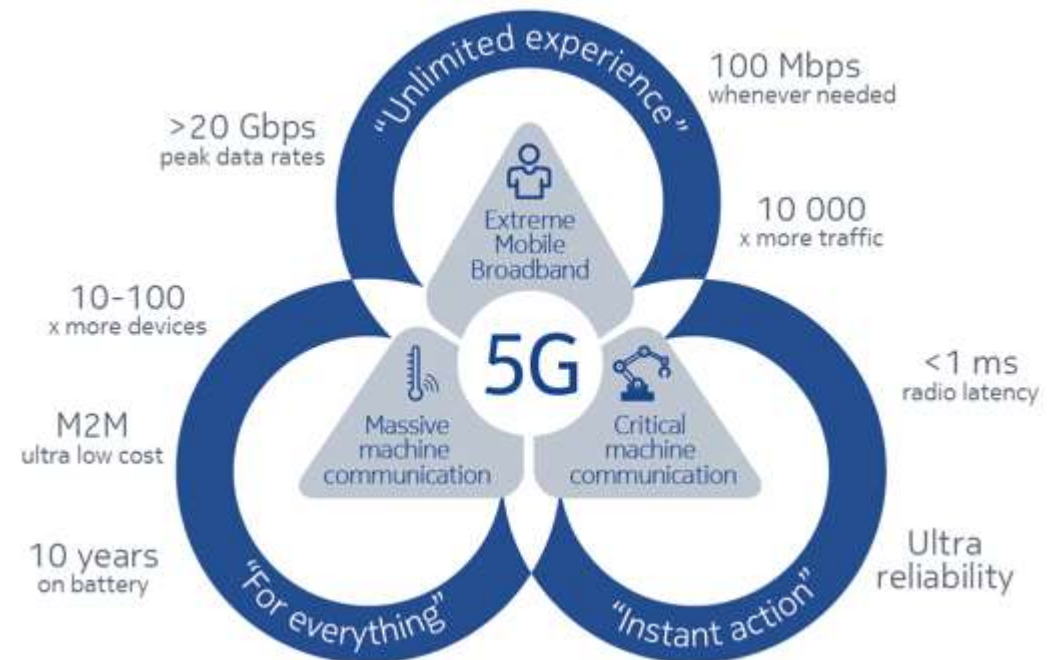
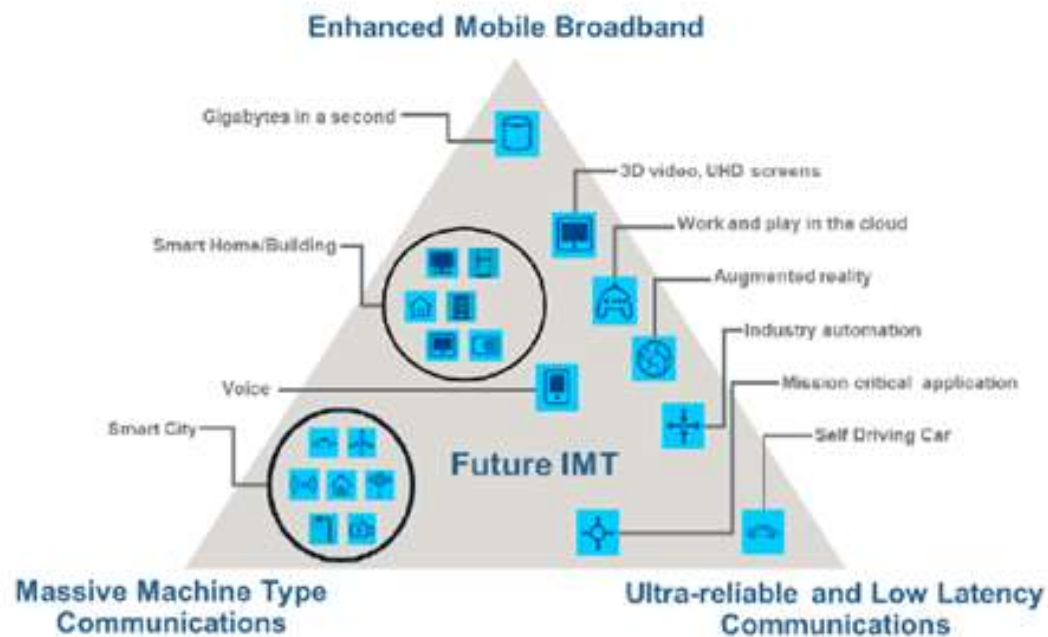
Application

- Expansion to B2B/B2B2X
- * 4G focused on B2C Services

Implication of ITU 5G Vision

Trinity Features in 5G Technology

- ✓ Enhanced Mobile Broadband (**eMBB**): Data transfer in a **VERY HIGH** speed (max 20 times than 4G)
- ✓ Massive Machine Type Communication (**mMTC**): Connecting **MASSIVE** number of mobile machines
- ✓ Ultra-reliable and Low Latency Communication (**UR-LLC**): Guarantees **VERY TRUSTWORTHY** communication



M.2083 (5G Vision)

Image Source: NOKIA

2. Note-worthy environment changes and challenges

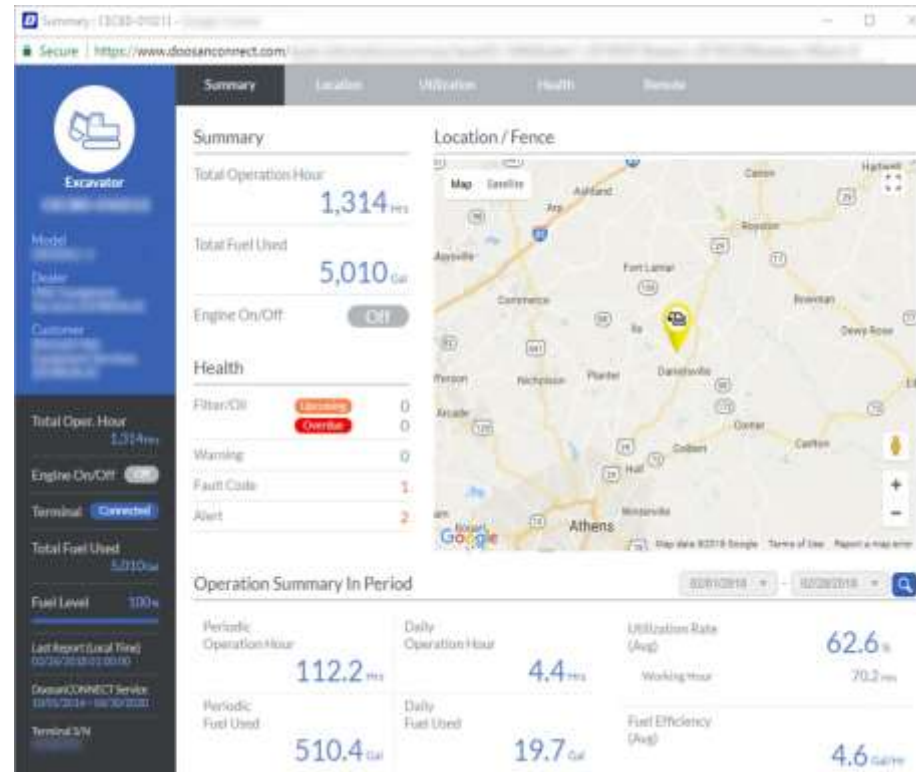
Note-worthy environment changes in 5G



● Telecommunications blends into Non-telecommunications

- Things are to equip with the function of telecommunications

√ In-car Infotainment system, Smart farm, Various Internet of Things



& challenge I



● Telecommunications blends into Non-telecommunications

- Things are to equip with the function of telecommunications
 - √ In-car Infotainment system, Smart farm, Various Internet of Things

● This raises a question of what is telecommunications services or ECS ?

- The definition of services of telecommunications-kind is the elementary block of regulation
- Countries have a set of regulations over the providers of such services
(connecting two end-points)
- Some countries may not suffer such problems if entry barriers are low enough

A response in Korea



● Korea amended the Telecommunications Business Act (2018)

- The Classification of telecommunications business & its authorization scheme changed

Basic Telecommunications services	Common carrier business	Authorization
	Service-based business	Registration
Enhanced services	Enhanced business	Notification



Basic Telecommunications Services	Basic Telecommunications Business	Registration
Enhanced Services	Enhanced business	Notification

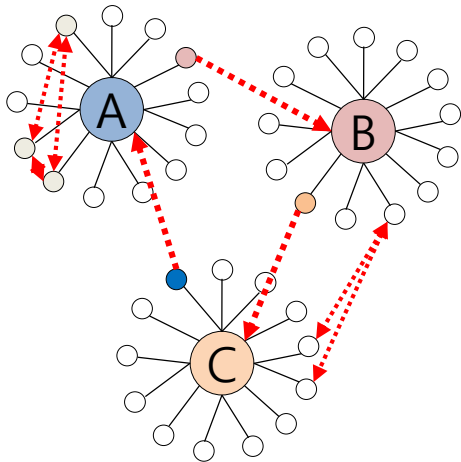
A response in Korea



- **Korea amended the Telecommunications Business Act (2018)**
 - The Classification of telecommunications business & its authorization scheme changed
 - 'A person who incidentally uses basic telecommunications services and claims the charge as provided by Presidential Decree while providing his own products or services shall report to the Minister of MSIT.' (Unofficial translation)
 - Made a distinction between classic common carriers and newly emerging (small) carriers
 - The Decree has become effective since June 2019

Another note-worthy environment change

- The volume of B2B or B2B2C transactions expect to increase
- Building sound ecosystem in 5G would become more important than 4G environment
- An ecosystem can be described as a network formation process between a central player and peripheral players esp. with asymmetric bargaining powers



Voluntary and efficient formation may be blocked!

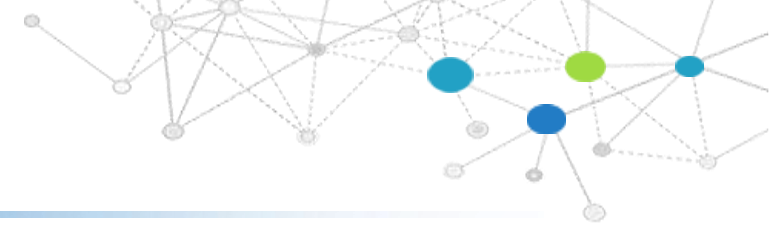
 BLOCKED FORMATION

& challenge II



- **How to deal with unfair trade practices?**
 - **Most 5G projects require to undertake some levels of risks**
 - **The conditions of contract may not be clear and**
 - **Small firms may not have an access to legal consultation for a contract**
- **UTPs in telecommunications sector might need a special attention**
 - **Regular survey or FGI to have a picture of UTPs in a market**
 - **Guidelines (or standardized agreement) might help**

& Further challenges...



- **IoT / M2M numbering resources**
- **New competition issues due to network slicing, bundling, etc.**
- **Consumer information: complexity of 5G services**
- **BEREC's List : privacy, security, competition, QoS, etc.**

※ Planning and Future Trends BEREC Working Group's call for input on potential regulatory aspects of 5G, which could merit from further investigation by BEREC



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