

ROADS to 5G Era

- A Prelude of New Future

Why 5G

The Fourth Industrial Revolution Is Here





Steam engine

- Industrial production powered by a new resource
- Steel, rail transport, etc.

2nd



Electricity

- Mass production
- Steel, oil, internal combustion engine

3rd

Information technology

- Automated production
 - Communications, Internet, personal computers

4th Industrial Revolution



Intelligent technology

- Intelligent production
- AI, IoT, bioscience integrated into human society

We Are Entering an Intelligent World



By 2025, Source: Huawei Global Industry Vision

ICT infrastructure will be the foundation of the intelligent world

The Intelligent Revolution Will Profoundly Impact Every Person, Home and Organization



Persons

- Helping special people live a normal life: Guide helmets for the visually impaired
- Helping people acquire special capabilities: Multi-language communication, AI cameras
- 90% of smart device users will use intelligent personal assistants



- At-home services: Healthcare robots, education robots
- Home everywhere: Holographic communication, smart home
- 12% of homes will use intelligent service robots

Organizations

- Personalization at scale: Customized Harley-Davidson manufacturing
- Smart government: Safe City, smart government services
- 86% of enterprises will use AI

What is 5G ecosystem

Key 5G Capabilities



5G is Now



Huawei Leads IMT-2020 5G Trial





5G C-band & mmWave Large Scale Field Trial



5G Field Trial in Gangnam, Seoul







C-band & mmWave Performance Trial Scenarios



Huawei Technologies Co., Ltd. | 10

5G: Some issues are still open... However, key mobile operator concerns today are business concerns: How to improve the bottom line?

5G Business concerns

- Improving the bottom line
- Vertical market requirements
- Use cases & business model
- Service evolution
- User migration
- Digital transformation

Operations concerns

- O&M model transformation
- Automation / agility
- Intelligence

Infrastructure concerns: Networks, Basics

- 5G network architecture
- CRAN or DRAN
- CDN & MEC
- Current network evolution
- E2E slicing & network architecture

- 5G Spectrum
- Facility modernization
- Data center deployment
- Fiber preparation
- Small Cell site resource
 preparation





Source: GSMA - The Mobile Economy - Europe 2017

A flourishing 5G ecosystem can create millions of new jobs, raise economic output, and GDP – by inviting up to USD 200 bn of global investment p.a.

5G – a key enabler for the 4th industrial revolution...

and how a flourishing 5G ecosystem will contribute





Source: IHS The 5G Economy Report, 2017

Huawei founded Kiels in 2016 to explore opportunities jointly with Partners – resulting in a 5G ecosystem of 280+ global partners and 45+ joint projects



Future mobile use cases according to their 5G relevance

Top 10 use cases for 5G / top 5 for B2B



-	_		-	
1 (//
•		U		A

- 2. Connected Car
- 3. Smart Manufacturing
- 4. Connected Energy
 - 5. Wireless Connected eHealth
- 6. Wireless Home Entertainment UHD 8K Video & Cloud Gaming
- 7. Connected Drones
- 8. Social Networks
- 9. Personal AI Assistant
- 10. Smart City

ToD, Platooning, Autonomous Driving Cloud Based Wireless Robot Control Feeder Automation Remote Diagnosis With Force-Feedback UHD 8K Video & Cloud Gaming Professional Inspection & Security HD/Panoramic Live Broadcasting Al Assisted Smart Helmet Al-enabled Video Surveillance

Real-time Computer Rendering Gaming/Modeling

11.	Hologram	Communication	wireless
12.	Wireless eHealth	Remote Surgery	200
13.	Wireless eHealth	Ambulance Communication	SIL
14.	Smart manufacturing	Industrial Sensors	HUAWEI
15.	Wearable	UHD Body Camera	5G UNLOCKS
16.	Drone	Media	TOP TEN 5G USE
17.	Smart manufacturing	Cloud Based AGV	68-50
18.	Home	Service Robotics (Cloud AI Assisted)	10 A
19.	Drone	Logistics	
20.	Drone	Fly Taxi	
21.	Wireless eHealth	Hospital Nursing Robot	
22.	Home	Home Surveillance	and freedom
23.	Smart Manufacturing	Logistics & Inventory Monitoring	XLabs
24.	Smart City	TrashBin, Parking, Lighting, Traffic Light, Meters	

Top 10 5G Use Cases wirelessxlabs.com



Huawei Technologies Co., Ltd. | 14

Use cases

Fixed Wireless Access for Home Broadband



IoT: Enables Smart Agriculture with NB-IoT in Norway

Traditional Way

- Based on experience and sheep bell
- Can not rescue sheep in time if they get stuck
- 10% of sheep can not be found

Connected Sheep with NB-IoT

1000 sheep are now equipped with NB-IoT in the region of Rogaland

- Sheep's route tracking and life status monitoring
- Proof for applying government's compensation
- 5~10 years battery of life

Huawei 5G in Hungary

Huawei 5G in Hungary 2018

2 out of 3 operators already demonstrated 5G

- Magyar Telekom (July 2018)
 - Real time remote diagnosis via the 5G network
 - Rescue with drone using 5G
 - Gaming in augmented reality
- Vodafone (September 2018)
 - Real time HD streaming and editing

IoT real life implementation:

- Deployed by Hungarian operator
- Based on real user demand
- Service with 135 parking places equipped with sensors started end of September
- NB-IoT technology used (small tube inside pavement containing battery for ~5 years and SIM card)
- Parking application shows where are available space to park

Thank You.

Copyright©2018 Huawei Technologies Co., Ltd. All Rights Reserved.

The information in this document may contain predictive statements including, without limitation, statements regarding the future financial and operating results, future product portfolio, new technology, etc. There are a number of factors that could cause actual results and developments to differ materially from those expressed or implied in the predictive statements. Therefore, such information is provided for reference purpose only and constitutes neither an offer nor an acceptance. Huawei may change the information at any time without notice.