



中华人民共和国工业和信息化部

Ministry of Industry and Information Technology of the People's Republic of China



# 5G Progress in China

November 9, 2016

# Main Contents

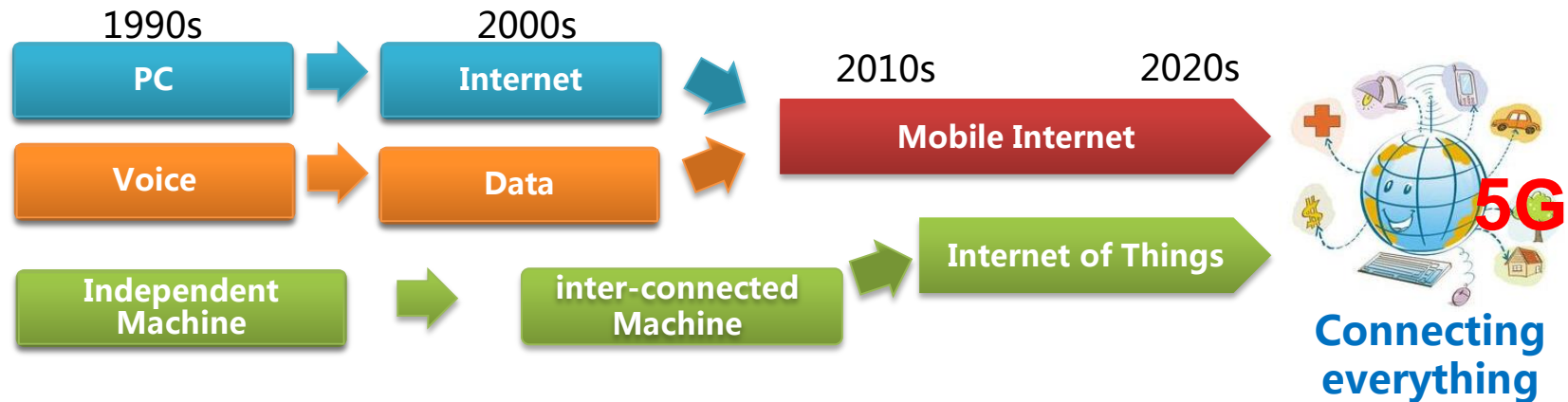
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**1. General Activities of 5G in China**

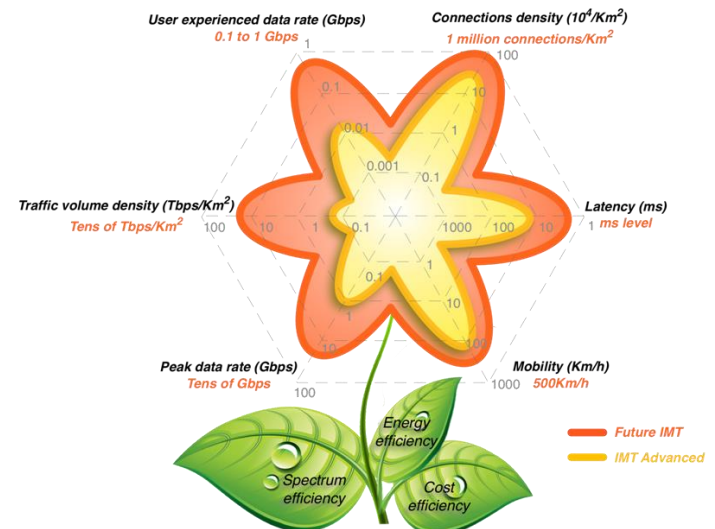
**2. Future work plan in China**

**3. Proposals for further cooperation**

# Trends of 5G Development



## 5G Vision: Information a finger away, everything in touch



# Main 5G Development Plans in China



- “Made in China 2025” Plan pointed out that China should break through the Fifth generation mobile communication technology comprehensively.



- It is proposed in “the 13th Five-Year Plan” that China should promote the development of 5G actively, and launch 5G in 2020.

# 5G Research Projects in China



国家高技术研究发展计划 (863计划)

## National 863 Program

2014

- General Technology
- Wireless Key Tech.
- Network Architecture & Key Tech.
- Evaluation & Test Methodologies

2015

- Soft Base Station Test Bed
- mmWave Indoor Access
- Wireless Network Virtualization
- RAN and System Security
- Advanced Modulation and Coding



国家科技重大专项

National Science and Technology Major Project

## National Science and Technology Major Project

2015

### Overall

- Network Architecture
- Standard Evaluation Platform
- Analysis and Evaluation on Candidate Bands

### Technology

- mmWave Key Technologies
- Low-Latency High-Reliability Solution
- Next Generation WLAN

2016

### Overall & Component

- 5G Standardization
- AD/DA for Base Station
- High-Freq PA for Base Station
- High-Freq Filter for Base Station

### Wireless Technology

- Wide-Area Coverage
- Low-Power Massive-Connections
- High-Freq. Comm.
- UDN
- Novel Multiple Access

### Network & Service

- RAN Architecture
- 5G Indoor Positioning
- Key Technology for Self-Driving Cars

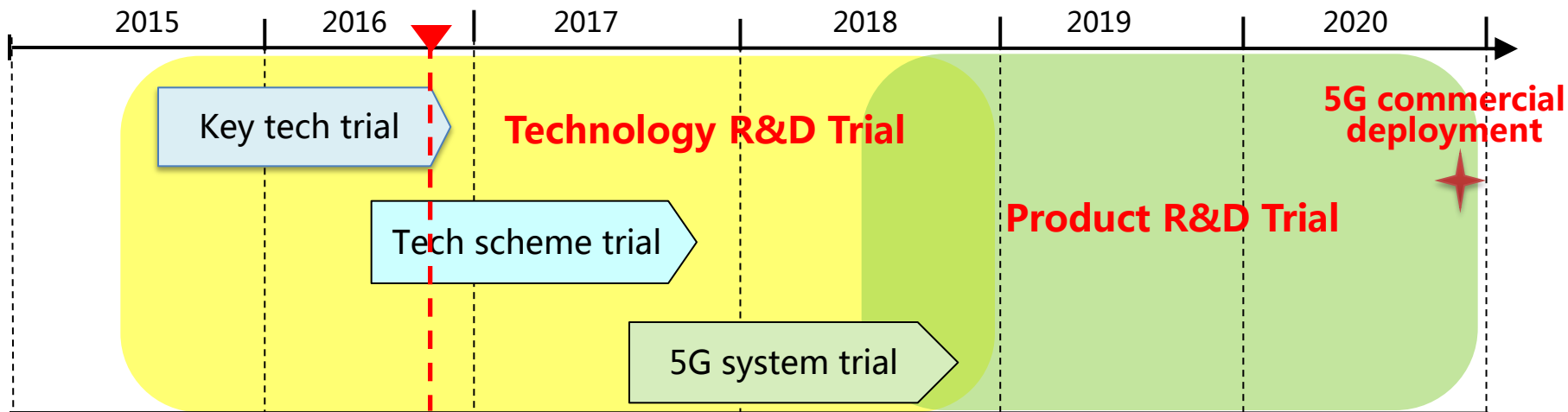
- Open to all the companies registered in China, including domestic & international ones

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# Introduction to China 5G Trials



- **2 Phases** of 5G Trial
  - Phase 1: **Technology R&D trial** (2015~2018)
  - Phase 2: **Product R&D trial** (2018~2020)
- **3 Steps** of Technology R&D trial
  - Step 1: **Key technology trial** (2015.9~2016.9)
  - Step 2: **Technology scheme trial** (2016.6~2017.9)
  - Step 3: **System trial** (2017.6~2018.10)



# Progress of China 5G Technology R&D Trial

## Objectives

- Promote the development of 5G key technologies
- Verify and improve 5G technical schemes
- Support the global unified 5G standardization

**The Results of Step 1 were released on Sept. 22 , 2016**



## Main domestic and international participants

### Research



### Operator



### Infrastructure



### Chipset



### Instrument

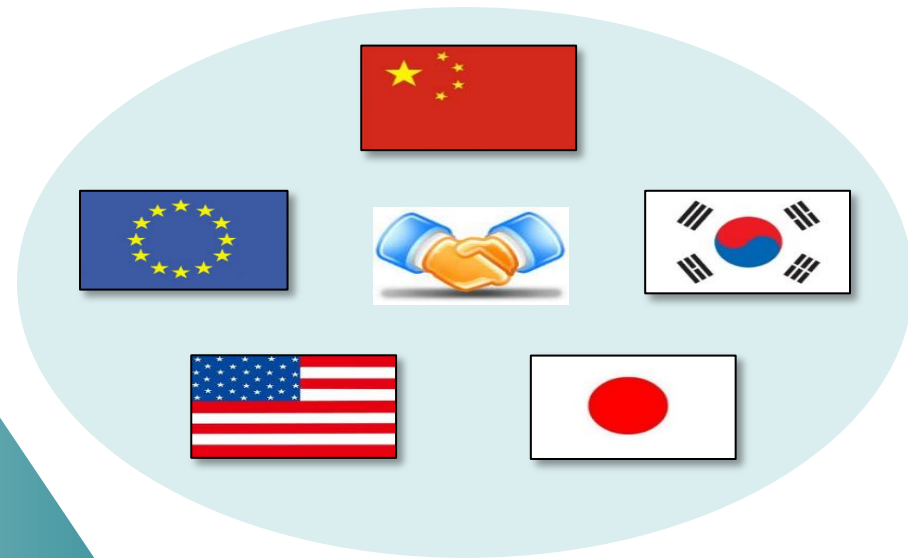


# International Cooperation

China has built 5G cooperation mechanism with EU, US, Japan, and Korea on the levels of governments and industrial associations

Both domestic and international companies have joined the 5G Technology R&D Trials of China

Ericsson, Samsung, Qualcomm and NTT Docomo have joined IMT-2020 (5G) Promotion





# Main Contents

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# Release 5G development guidance document

## 5G Guidance Document

- Guide 5G development in China, and make 5G become an important infrastructure for economic and social development

5G development and application fields

promotion strategy

R&D, standards, trials, industrialization

Plan and schedule

# Major Project for 5G in 2017



National Science and Technology Major Project

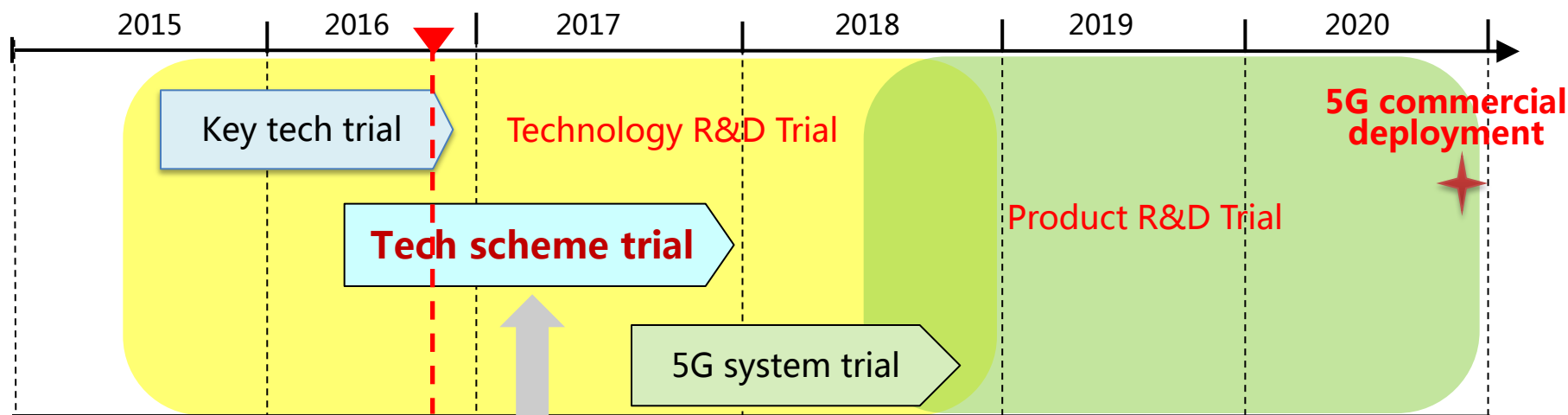
Research of 5G wireless system prototype ,  
terminal chip and wireless networking technology

Research of 5G network technologies ,  
including network slicing, mobility management and virtualization technology.

Research of 5G key device, component, platform and test instrument



# Step 2 of Technology R&D Trial in 2017



## Technology scheme trial (2016.6~2017.9)

- **Wireless technology**
  - Indoor and outdoor performance test, functional test, and radio frequency test for eMBB, mMTC and URLLC scenarios
- **Network technology**
  - Network slicing, mobility management and QoS management Technical scheme tests

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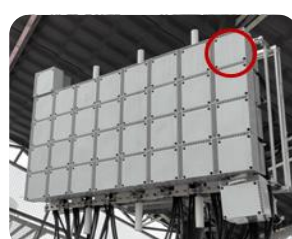
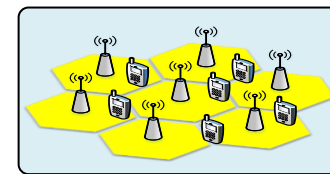
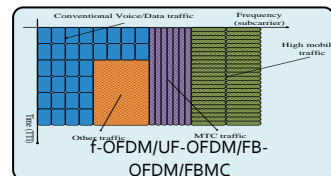
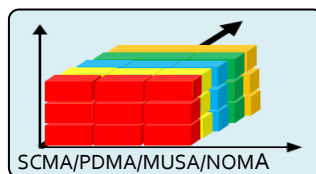
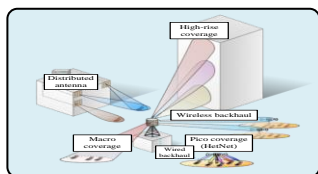
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# Promotion of 5G technology

Accelerating the promotion of 5G technology, standards and product development.

Accelerating technological innovation

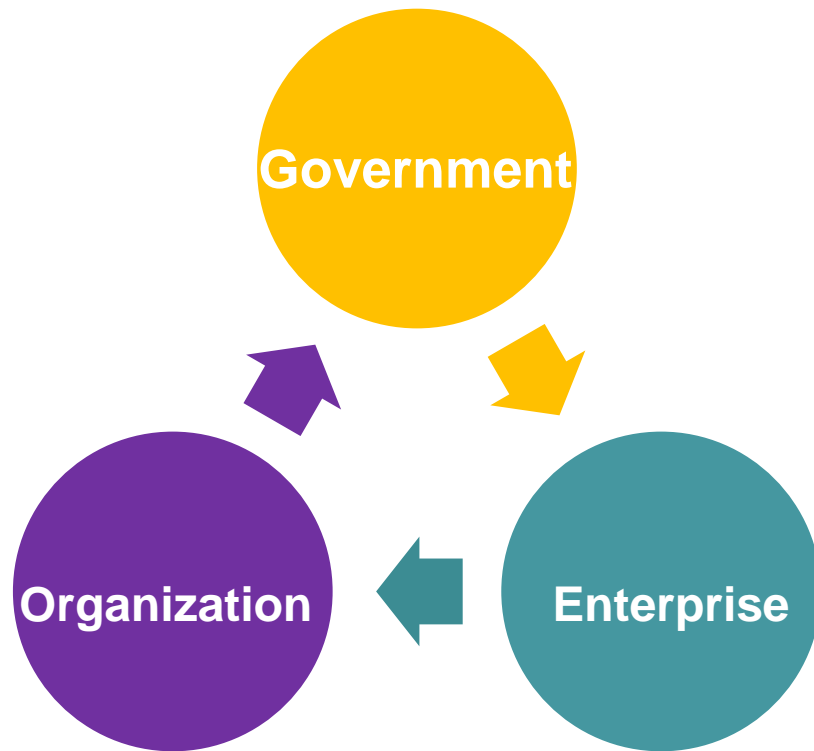


Build a international communicative platform for 5G R&D tails

Strengthening information sharing and cooperation between countries and regions in the 5G R&D Tails

# International cooperation

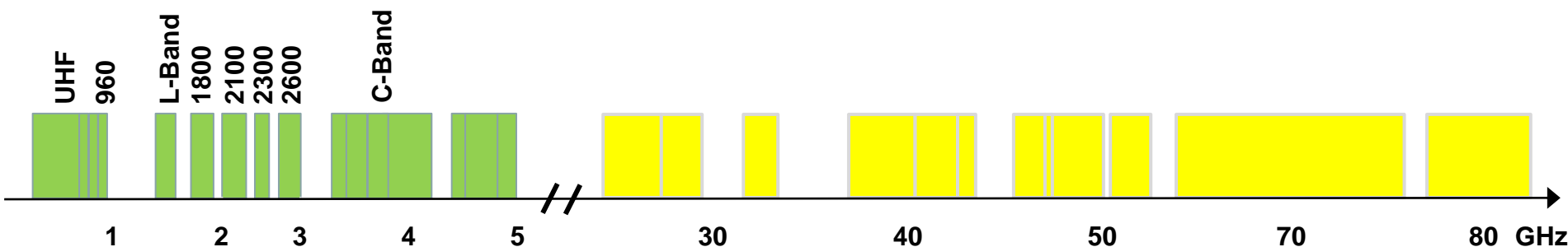
- International cooperation should be further enhanced to build a globally unified 5G standard and industry ecosystem



- ✓ Under the framework of ITU and 3GPP , the global unified 5G international standard is actively promoted
- ✓ strengthening the equivalent openness in 5G between other countries and China

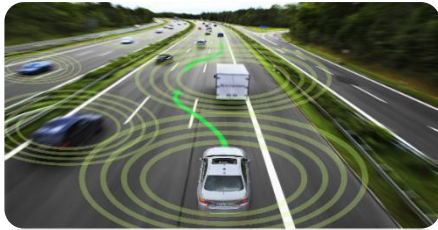
# Harmonized 5G spectrum

- Improve communications and cooperation between regional groups, administrations and industries
- Promote global coordination on 5G spectrum actively in ITU, for the frequency bands below and above 6GHz
- Identify global/regional harmonized spectrum for IMT to enable economies of scale of 5G



# Integration of 5G and vertical industry

## ■ Strengthen the integration of 5G and vertical industry development



**Vertical industries**

- ✓ Based on the industry development demands to research and design 5G new network architecture.
- ✓ Industrial internet and car internet will be 5G Key industry applications.



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**Thanks for your attention**

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