5G Application Policies and Development in China

CAICT

March 2024

01   **Policies of 5G Applications in China**

02   **Development of 5G Applications in China**

03   **Experience of 5G Application Development in China**

Political Environment Supports the High-Quality Development of 5G

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The development of 5G is considered as **a national priority**

"Outline of the Fourteenth Five-Year Plan for the National Economic and Social Development and the Long-Range Objectives Through the Year 2035"

➢ Accelerate the **large-scale deployment** of 5G network

➢ Build **application scenarios and industrial ecology** based on 5G.

"2022 Government Work Report"

➢ **Promote the large-scale application of 5G,** promote the digital transformation of industry, and develop smart cities and digital villages.

Cross-department policies are issued to promote the development of 5G applications

Multiple Verticals:
"Set Sail" Action Plan for 5G Applications (2021-2023)"

Industry：
"5G+Industrial Internet" 512 Project

Energy：
"5G Implementation Plan in the Energy Field"

Medical and Health Care：
"5G + Medical and Health Application" Pilot Project

Education:
"5G + Smart Education" Pilot Projects

Tourism：
Notice on Strengthening Collaborative Innovation and Development of 5G+ Smart Tourism

The "Set Sail" Action Plan Promotes 5G Applications

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MIIT, collaborated with other 9 ministries released the *"Set Sail" Action Plan for 5G Applications (2021-2023)"* in July, 2021
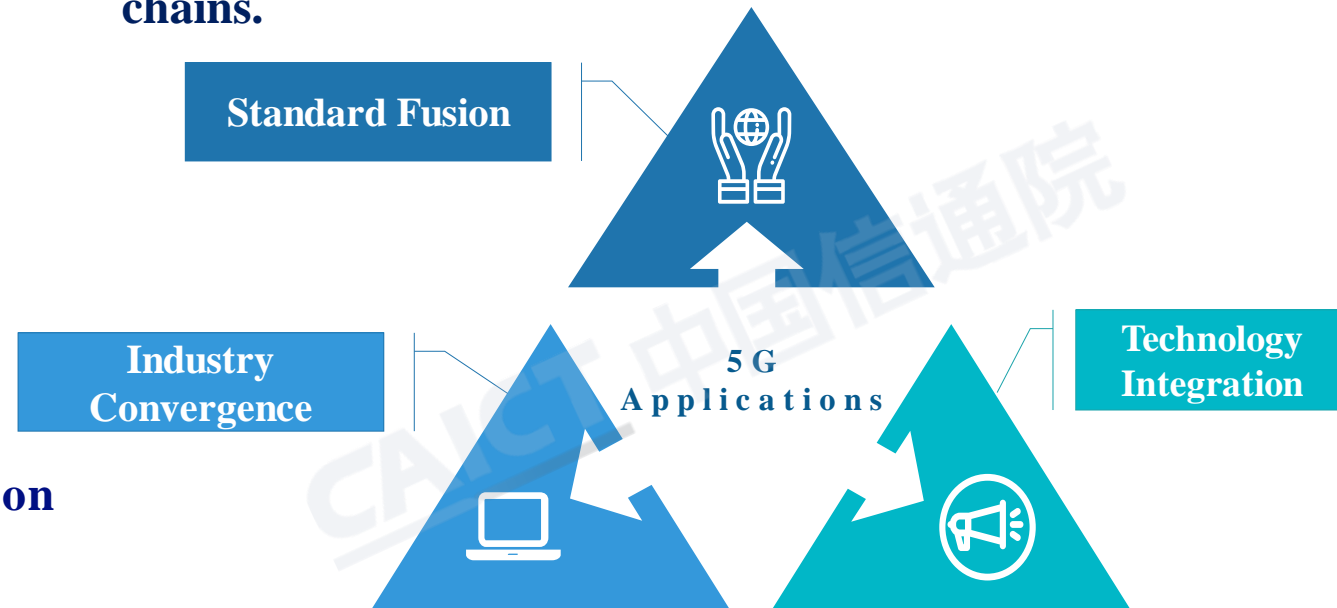
Issued by MIIT and Other 9 Ministries

- ✓ **Ministry of Industry and Information Technology(MIIT)**
- ✓ **Office of the Central Cyberspace Affairs Commission(CAC)**
- ✓ **National Development and Reform Commission (NDRC)**
- ✓ **Ministry of Education (MOE)**
- ✓ **Ministry of Finance(MOF)**
- ✓ **Ministry of Housing and Urban-Rural Development(MOHURD)**
- ✓ **Ministry of Culture and Tourism(MCT)**
- ✓ **National Health Commission(NHC)**
- ✓ **State-owned Assets Supervision and Administration Commission of the State Council(SASAC)**
- ✓ **National Energy Administration(NEA)**

Overall Objectives of the Plan

This plan is to promote deep integration of 5G with industry, logistics, ports, mining, education, medical care and other related industries, by getting through 5G application innovation chains, industrial chains and supply chains.

Standard Fusion

Industry Convergence

5 G Applications

Technology Integration

4

Cooperation among departments of 5G applications

Cross department policies accelerate the development of 5G applications in different fields. MIIT issued policies with the Ministry of Education, the National Health Commission, the National Energy Administration, and the Ministry of Culture and Tourism.

MIIT and MOE: "5G + Smart Education" Pilot Project

Objective:
- Projects solicitation
- Projects cultivation
- Benchmarks establishment

Content:
- 5G+Interactive teaching
- 5G+Intelligent examination
- 5G+Comprehensive assessment
- 5G+Smart campus
- 5G+Education management
- ......

109
5G+Education pilot programs

Cooperation among departments of 5G applications-Medical and Health Care
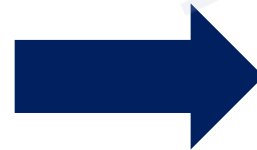
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MIIT and NHC： *"5G + Medical and Health Application" Pilot Project*

Objective：
- Enrich application scenarios
- Recruit and select key departments
- Establish benchmark projects

Content：
- Emergency treatment
- Remote diagnosis
- Remote treatment
- Remote intensive care
- TCM diagnosis and treatment
- Hospital management
- Health care

987
5G+Medical and Health Care pilot programs

Cooperation among departments of 5G applications-Energy

MIIT and NEA：*"5G Implementation Plan in the Energy Field"*

Objective：

- Stimulate innovation
- Expand application scenarios
- Explore reproducible models

Content：

- Intelligent power plants+5G
- Smart grid+5G
- Smart coal+5G
- Smart oil+5G
- Comprehensive energy+5G
- intelligent manufacturing and construction+5G

33
5G+Energy pilot programs

Cooperation among departments of 5G applications-Culture and Tourism

MIIT and MCT： *"Notice on Strengthening Collaborative Innovation and Development of 5G+ Smart Tourism"*

Objective：

- Strengthen 5G network construction
- Enrich application scenarios
- Build industrial ecological environment

Content：

- 5G network coverage
- Network resource
- Service and experience
- Marketing mode
- Management ability
- Product supply
- Tourism benchmark
- Tourism village models

30
5G+Tourism pilot programs

Policies in different places promotes 5G application development

➢ Local governments have implemented policies for **5G base station construction**, **application innovation**, and **industrial cultivation.**

➢ By the end of 2023, there are about **900** 5G policies issued in different places in China.

| 5G Base Station Construction	Application Innovation	Industrial Cultivation
• Reduce the cost of electricity (Beijing, Gungdong) • Electricity subsidy(Shenzhen, Guangxi) • Simplify procedure(Beijing)	• Application benchmarks(Shanghai, Guangdong) • Government procurement(Shenzhen, Guangdong)	• Build industrial parks(Zhejiang, Shanghai, Guangzhou) • Financial subsidies(Beijing, Zhejiang)

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5G Network Construction in China

Number of 5G base stations (ten thousand)

2023 **337.7**

2020 **71.8**

Number of 5G base stations per 10,000 people

24

Less than 6

2020 2023
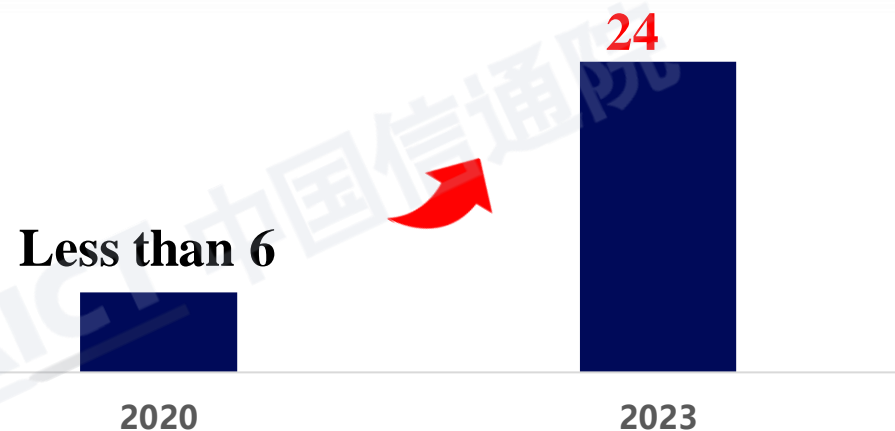
Average download rate of 5G

351Mbps

Faster than the rate of 4G (51Mbps)

Total number of 5G industry virtual private networks

31600

+509%

14000

800   2300

2020   2021   2022   2023

11
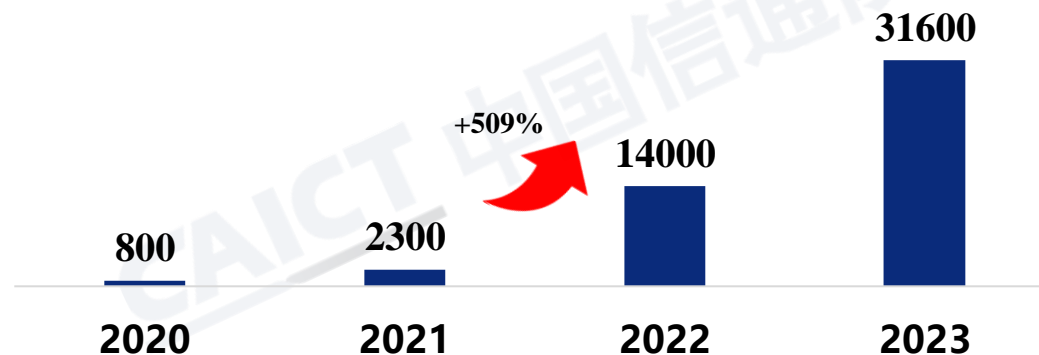
The Number of 5G Individual Subscriber Continues to Expand

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◆ By the end of 2023, the number of 5G mobile phone users reached **805 million**, accounting for **46.6%** of mobile phone users.

◆ By the end of 2023, domestic 5G mobile phone shipments were **240 million**， and represented **82.8%** of the total shipments.

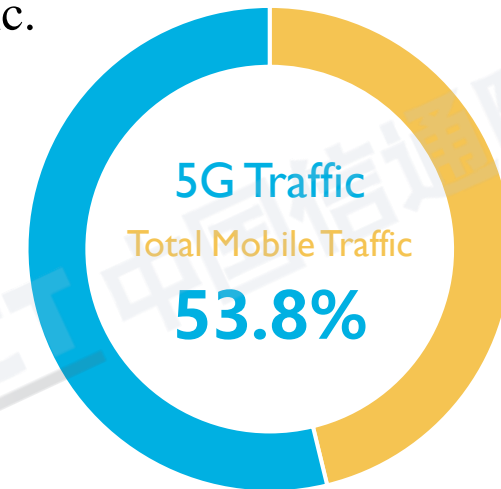## 5G Penetration increases with the number of 5G users

■ With the gradual improvement of the network construction, the penetration of 5G users is steadily increasing.

5G Users
Total Mobile Users
46.6%
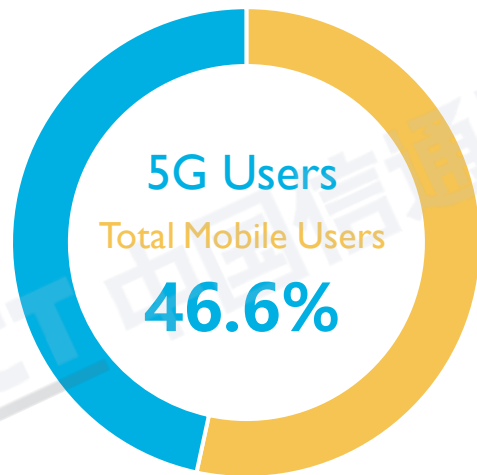
By the end of 2023

The utilization rate of 5G network continues to increase

■ Driven by the expansion of 5G user scale combined with the promotion of new applications such as ultra HD video and cloud games, 5G traffic was accounted for nearly 54% of total mobile traffic.

5G Traffic
Total Mobile Traffic
53.8%

By the end of 2023

Effects of the "Set Sail" Plan on Different Industries are Remarkable

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By the end of 2023

◆ 5G industry applications have been integrated into 71(of 97) national economic categories.

◆ In 2023, 5G directly drove the total economic output of 1.86 trillion yuan, an increase of 29% over 2022

◆ There are about 94,000 5G usecases

5G directly drove the total economic output of 1.86 trillion Yuan

5G Applications
National Economic Categories
73%
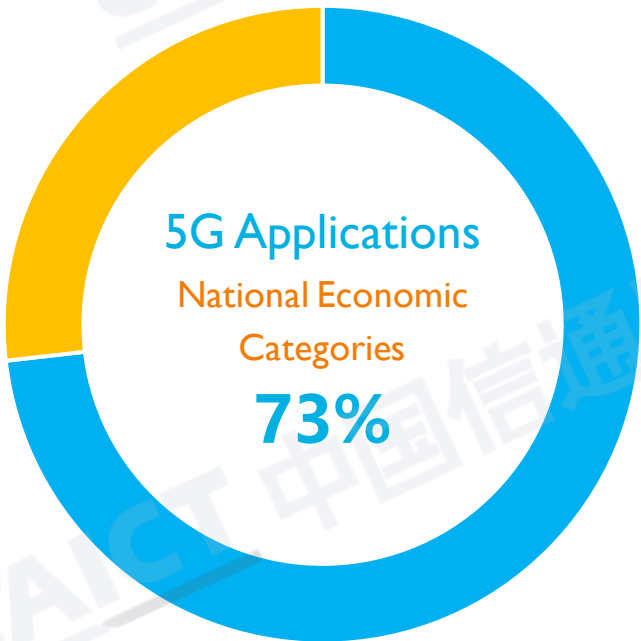
■ 5G Applications in Industry   ■ others

Amount of 5G use cases

94,000

5G penetration in large industrial enterprise

37.1%

The Development of 5G Converged Applications is Remarkable

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◆ By the end of 2023, there were **31,600** 5G industry virtual private networks. There are more than 94,000 application cases. Especially in mining, electricity, ports and other vertical industries.

Some important vertical industries have become scale replication

By 2023 M7

6948
"5G+Factory"

691
"5G+Mines"

547
"5G+Grid"

2149
"5G+Hospital"

Modes of 5G Virtual Private Network

Public network for sharing	It is fully shared with the public network through network slicing and other means to ensure the service quality and data security of industrial customers
Public network for private	Shared the public network with UPF sinking and MEC deployment in local to meet the high requirements such as data no exit and ultra-low latency
Private network for private	Build a dedicated network for customers through exclusive base stations, even frequencies, to meet customers' requirements for high security, high isolation and customized network construction

14

5G Applications in different vertical industries

5G applications have been improved the efficiency in different parts in vertical industries, especially in industrial field, medical and health care, agricultural field, electrical field, and so on.

Industry
- 5G applications in key processes
- About 20 typical cases

Medical & Health Care
- 5G applications from remote diagnosis to Specialized fine treatment

Agriculture
- 5G Applications from single uses to key processes, such as crop production, breeding industry and etc.

Power Industry
- 5G applications from single use to power generation, transmission, transformation, distribution, and utilization.

Harbor Ports
- The percentage of 5G application is about 92% in 25 main ports in China.

Mining and Iron&Steel
In the top 20 enterprises
- Mining: 95%
- Iron & Steel: 85%

5G Enter the Core Control Sector of Vertical Industry with Remarkable Effects

☐ Coal mine: remote tunneling

✓Remote one button start/stop reduces the number of people from 9 to 5
✓Heading machine orientation, efficiency increased by 3 times
✓Centralized control of mobile terminal, efficiency increased by 20%

☐ Steel: remote production operation

✓Remote centralized control, saving 12 employees
✓Machine replacement, 70% reduction in high-risk operations
✓Online operation and maintenance, and the patrol efficiency is improved by 60%

Factory: AI visual inspection

Machine vision with AI for quality testing can save many cost for enterprises every year.

☐ Port: 5G unmanned truck


✓ Remote monitoring mode reduces personnel by 3/4
✓ Automatic operation in the whole process, 50% improvement in efficiency
✓ 5G+Beidou, positioning accuracy reduced to centimeter level

16

◆Successfully wakeup a number of innovative services.

◆Select a number of excellent demonstration benchmarks with good application effects in the whole society.

◆Collect more than **90 000** 5G application cases over the past six years.

Participants and Projects （2018-2023）
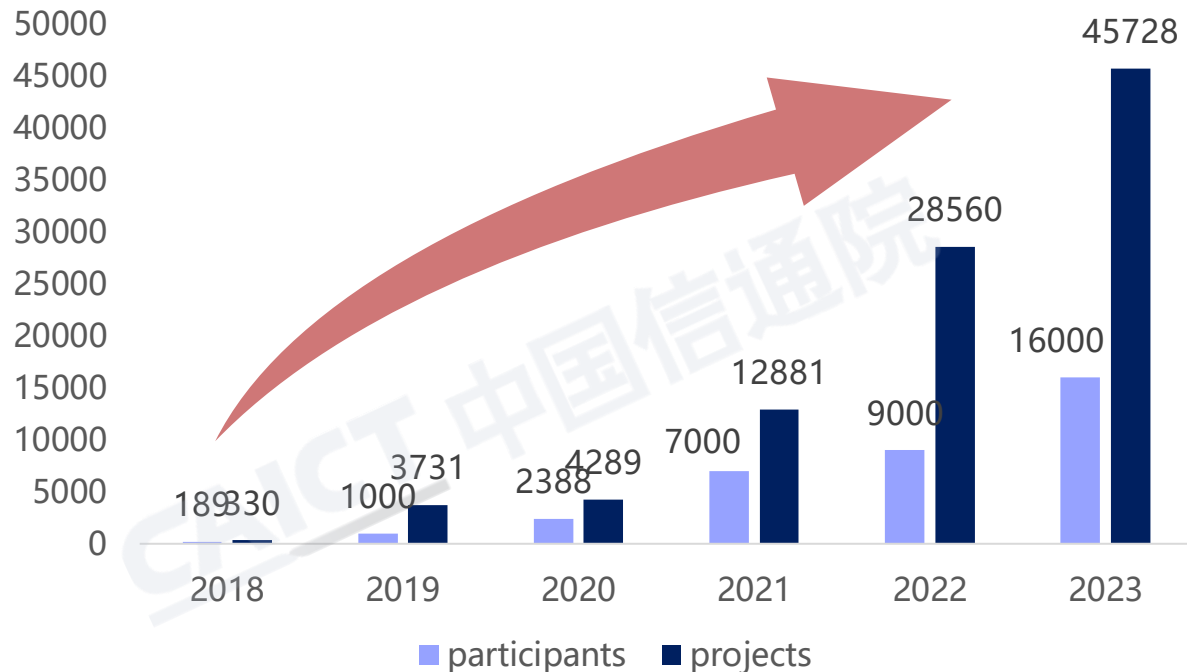
Distribution of the Projects in Different Industries
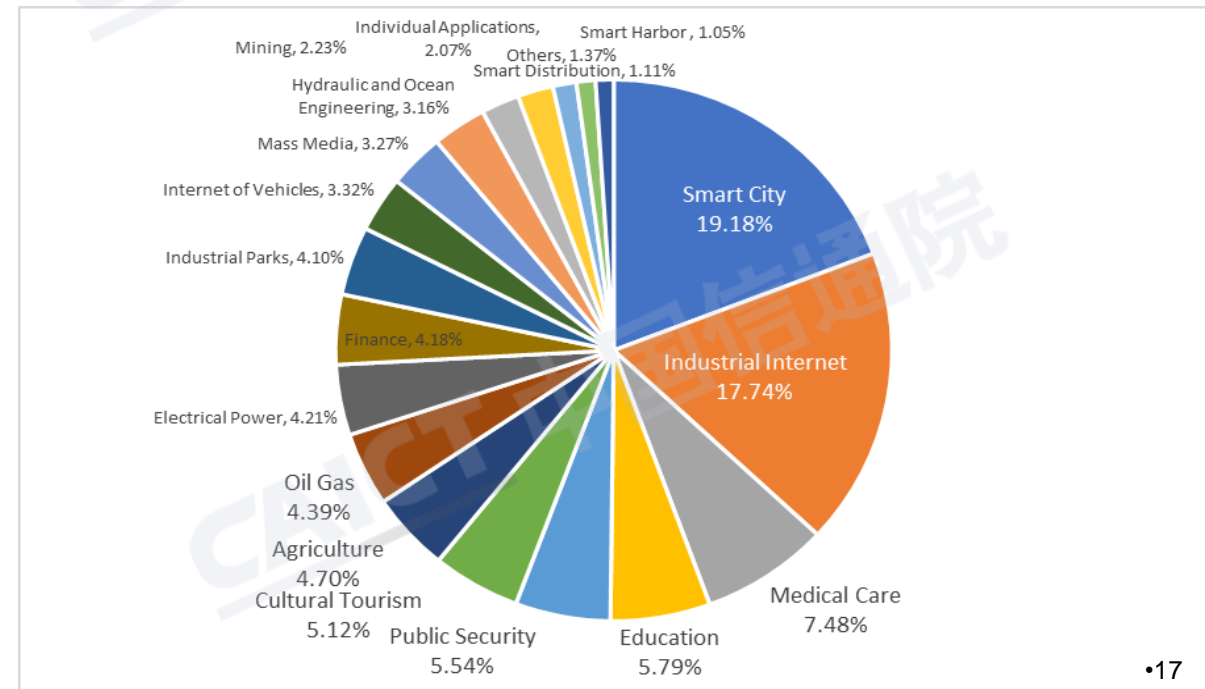
•17

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Summary

☐ **China has built the biggest 5G network，actively explores the 5G industrial applications and makes great breakthroughs in many vertical industries. China is promoting large-scale 5G application implementations.**

☐ **5G empower vertical industries is the most important trend after commercial launch， but it still in early stage. Here are three challenges**

- **How to get industry consensus：not only for technology but also for value of 5G**
- **How to meet different needs：the requirement is so fragmental**
- **How to make it into commercialization: the cost of 5G applications are still high**

◉ **Create a good political environment to help digital transformation of industries，encourage vertical industries and ICT industry work together to continuously promote the development of 5G applications**

◉ **Strengthen the cooperation between IT, CT and OT, explore service scenarios， making cross industry application standards**

◉ **Improve the supply capacity of the 5G industry and promote the diversification and cost performance of devices，develop a strong industrial ecosystem**

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感谢观看
THANKS