CAICT 中国信通院

5G+Healthcare Development

March 2024

www.caict.ac.cn

1. 5G+Healthcare Development in China
2. 5G+Healthcare Applications
3. CAICT and 5G+ Healthcare

5G+Healthcare Development：Technical architecture

5G+Healthcare Definition: It refers to the informatisation, mobility and remote medical services provided in disease diagnosis, monitoring and treatment, etc., based on the fifth generation mobile communication technology, making full use of the limited medical manpower and equipment resources.

4 **Application**

- **Intelligent development: AI large models provide optional solutions and predictions, assisting services, management, and medical decision-making.**
- **Personalized development: IoT collects real-world data from micro gene level to macro physiological and social level, providing precision medical treatment 。**

3 **Platform**

- **The data center is an important foundation for hospitals to achieve digital transformation. 5G healthcare will generate massive data, and It is necessary to build a data platform that could provide reliable and stable data support for the operation of the smart hospital business center.**

2 **Network layer**

- **With the rapid development of 5G, based on 5G technology, a high-speed, highly reliable, low latency, secure and stable access network has been provided for smart healthcare, achieving information exchange and transmission in different application scenarios of smart healthcare.**

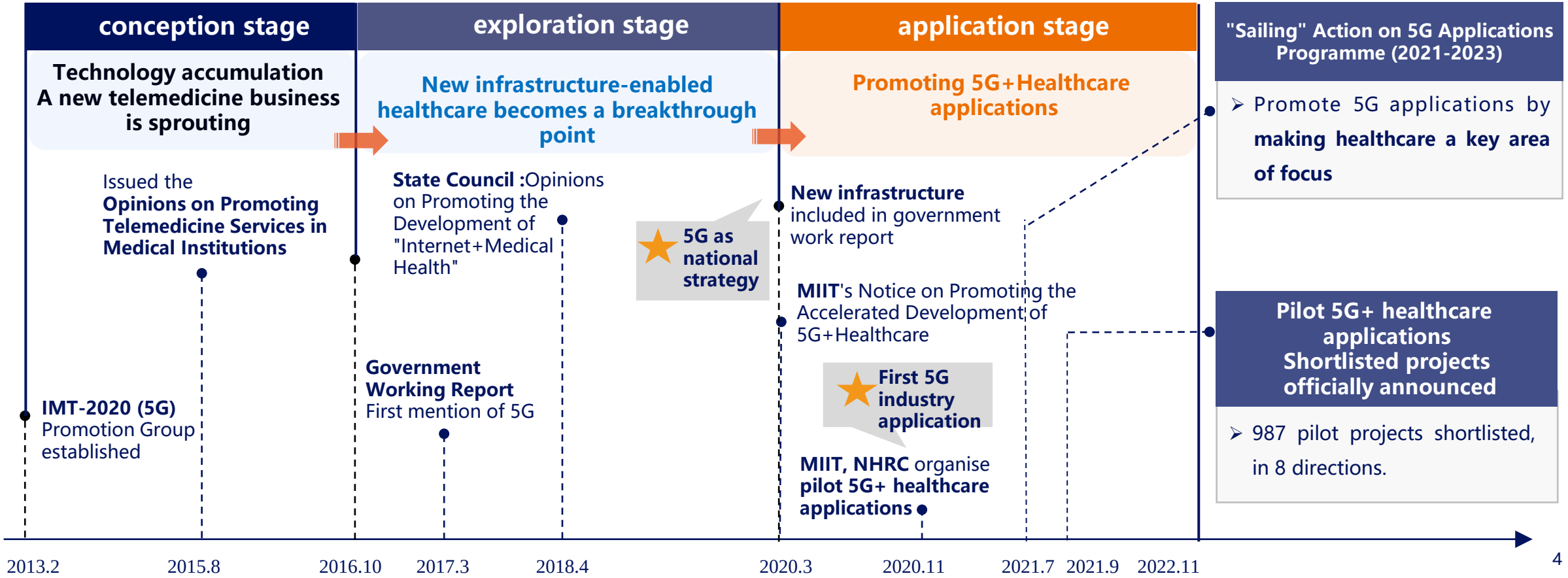
1 **Perception layer**

- **Composed of various sensors, instruments, terminals, and vehicles from different application scenarios in the smart healthcare system, relevant data and information are collected according to the needs of different medical scenarios and monitoring objects.**

5G+Healthcare Development：Policy Development

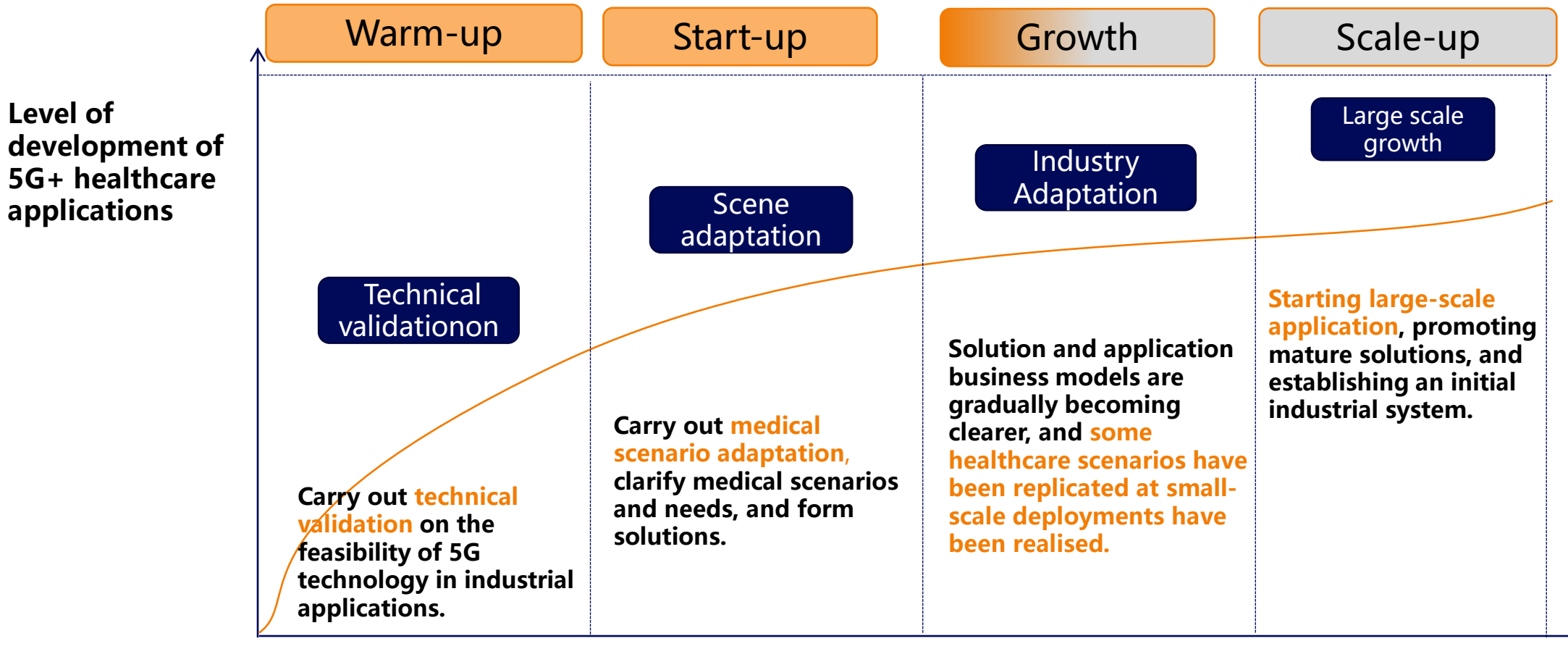
China's 5G+healthcare policy: conception stage, exploration stage and application stage

The layout history of China's 5G+ healthcare policy



5G+Healthcare Application： Development Path

4 stages: warm-up, start-up, growth, and large-scale development.



Eight Application Scenarios for 5G+Healthcare

5G + Emergency Care and Treatment

- **Guangzhou Emergency Medical Command Centre**

Guangzhou 120 to create "on board that is admitted to the hospital", has carried out 400 emergency vehicles 5G transformation, to build a regional 5G emergency treatment network.

5G + Remote Critical Care

- **China-Japan Friendship Hospital**

Connecting all kinds of ICU equipment to the hospital's 5G network, real-time alarms on patient conditions have been landed, and only 1 nurse is needed to monitor 100 beds.

5G + Hospital Management

- **Run Run Shaw Hospital, Zhejiang University School of Medicine**

One of the earliest hospitals in China to carry out smart hospital construction, leading in mobile care, hospital IoT and other areas, saving over a million manpower costs.

5G + Remote Diagnostics

- **Shenzhen Luohu Hospital Group**

Experts can remotely control the ultrasound robot arm to diagnose patients, obtaining the world's first registration licence for remote ultrasound robots as Class III medical devices.

5G+Chinese medicine diagnosis and treatment

- **Jiangsu Provincial Hospital of Traditional Chinese Medicine**

Research on Chinese medicine diagnosis and treatment of hypertension has been carried out, and a two-way referral management system has been established with community hospitals, which has completed more than 500 diagnoses and treatments for hypertensive patients.

5G + Smart Disease Control

- **Wuhan Centre for Disease Control and Prevention**

Built the first 5G customised network for public health in a mega-city in China, with more than 10,000 monitoring points (covering 650 fixed monitoring points in hospitals and about 10,000 pharmacies and other health-related links).

5G + Teletherapy

- **General Hospital of the Chinese People's Liberation Army**

Pioneering the world's first 5G remote implantation of a brain pacemaker in 2019, with a cumulative total of 25 cases performed, saving patients over $2 million annually.

5G+Health Management

- **The Eighth Affiliated Hospital of Sun Yat-sen University (Futian, Shenzhen)**

The Internet-based home hospital bed service management platform has been created to interface with 83 community health and hygiene service centres in the region, serving 40,000 disabled elderly people.

Application Scenario Example: 5G + Teletherapy

"Don't go out for small illnesses, don't go out of the county for big illnesses", 5G helps improve primary medical treatment

- 5G+Remote Treatment: Using medical-industrial robots and high-definition audio-video interaction systems, remote experts can control the treatment process and patient's condition at any time and anywhere, realise cross-region remote precise manipulation and guidance, and carry out timely remote treatment for patients.

- The use of 5G networks can quickly build the communication environment required for remote treatment. Through 5G network slicing technology, exclusive communication channels between upper and lower level hospitals can be quickly established, effectively guaranteeing the stability, real-time and safety of remote surgery.

5G powers remote surgery

Application Scenario Example: 5G + Remote Critical Care

5G-enabled critical care telemonitoring with real-time patient alerts is on the ground

- 5G+ Remote Intensive Care Unit (ICU): an acronym for the use of wireless communication technology to assist in medical monitoring, where wearable monitoring devices are continuously collecting, processing and calculating the patient's location upload and vital sign information and transmitting it to a remote monitoring centre.

- Two types of patients have a strong demand for remote critical care monitoring: First, postoperative patients: postoperative patients get out of bed early to prevent a variety of postoperative complications. Second, patients with sudden-onset diseases: such as heart disease patients, who also need vital signs monitoring under normal activity.

5G+ Remote Intensive Care (ICU)

CAICT Work on 5G+Healthcare

Ministry of Industry and Information Technology(MIIT)

National Health and Wellness Commission (NHSC)

PRC National Development and Reform Commission (NDRC)

State Administration of Market Supervision and Administration (SACMA)

Ministry of Science and Technology (MOST)

White papers, special reports, support missions

Policy measures to accommodate industry development

Policy measures to accommodate industry development

CAICT 中国信通院

互联网医疗健康产业联盟 INTERNET HEALTH CARE INDUSTRY ALLIANCE

ITU and WHO Focus Group on Artificial Intelligence in Healthcare

Committee on Information Technology for Chronic Disease Prevention and Control

Forming industrial platforms and building experimental environments
Supporting the overall advancement of the smart healthcare industry

National Engineering Laboratory for Internet Medical Systems and Applications

Centre for Healthcare Big Data and Network Research

Business capabilities coverages

Applications	**Devices**	**Governance**	**Cloud**	**Security**	**Supervisory**
Telemedicine, mobile health apps, etc.	Healthcare Wearables, Large Medical Devices	5G Networks and Healthcare Combined	Cloud computing, artificial intelligence, blockchain	Healthcare Information Security	Internet + Healthcare Management

CAICT 中国信通院

Thank You!