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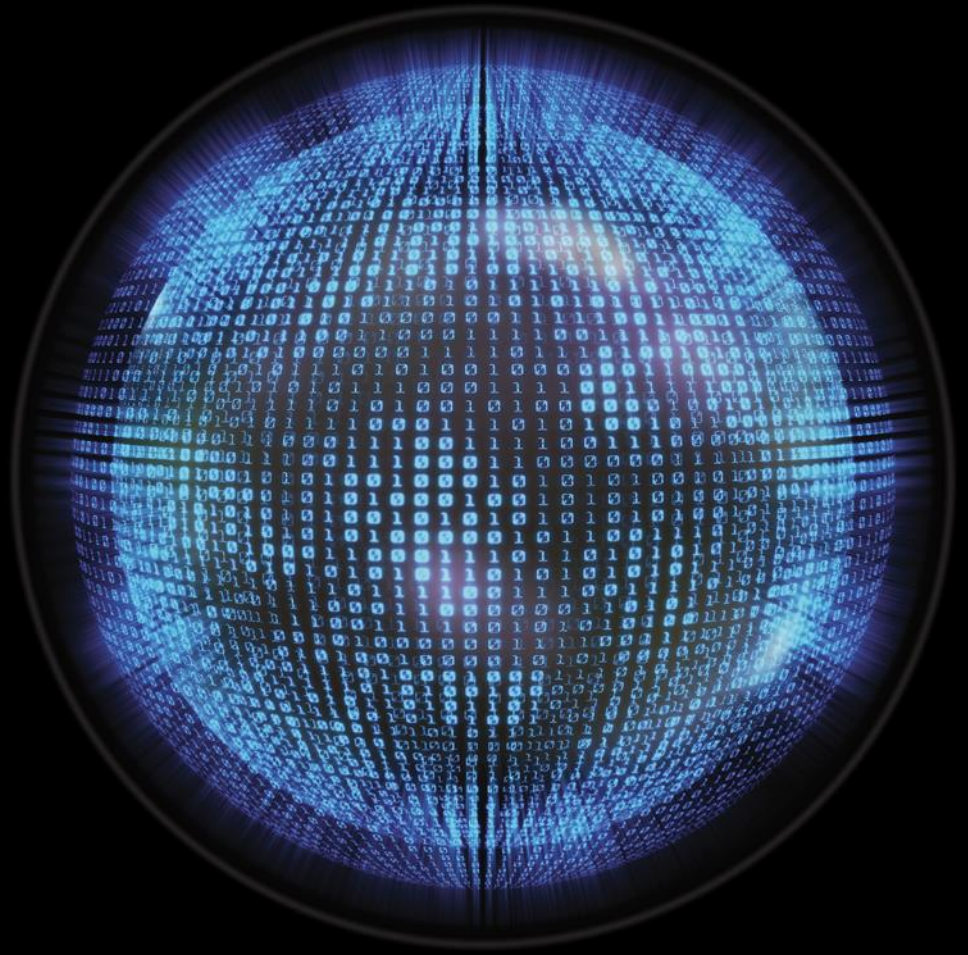

Deloitte INED Series

Workshop #33
5G Empowerment in Future of Health

28 July 2020

MAKING AN IMPACT THAT MATTERS since 1845

Opening
Deloitte INED Club

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5G Empowers the Industries

Taylor Lam, TMT Industry Leader
July 2020

MAKING AN IMPACT THAT MATTERS since 1845

Deloitte speaker

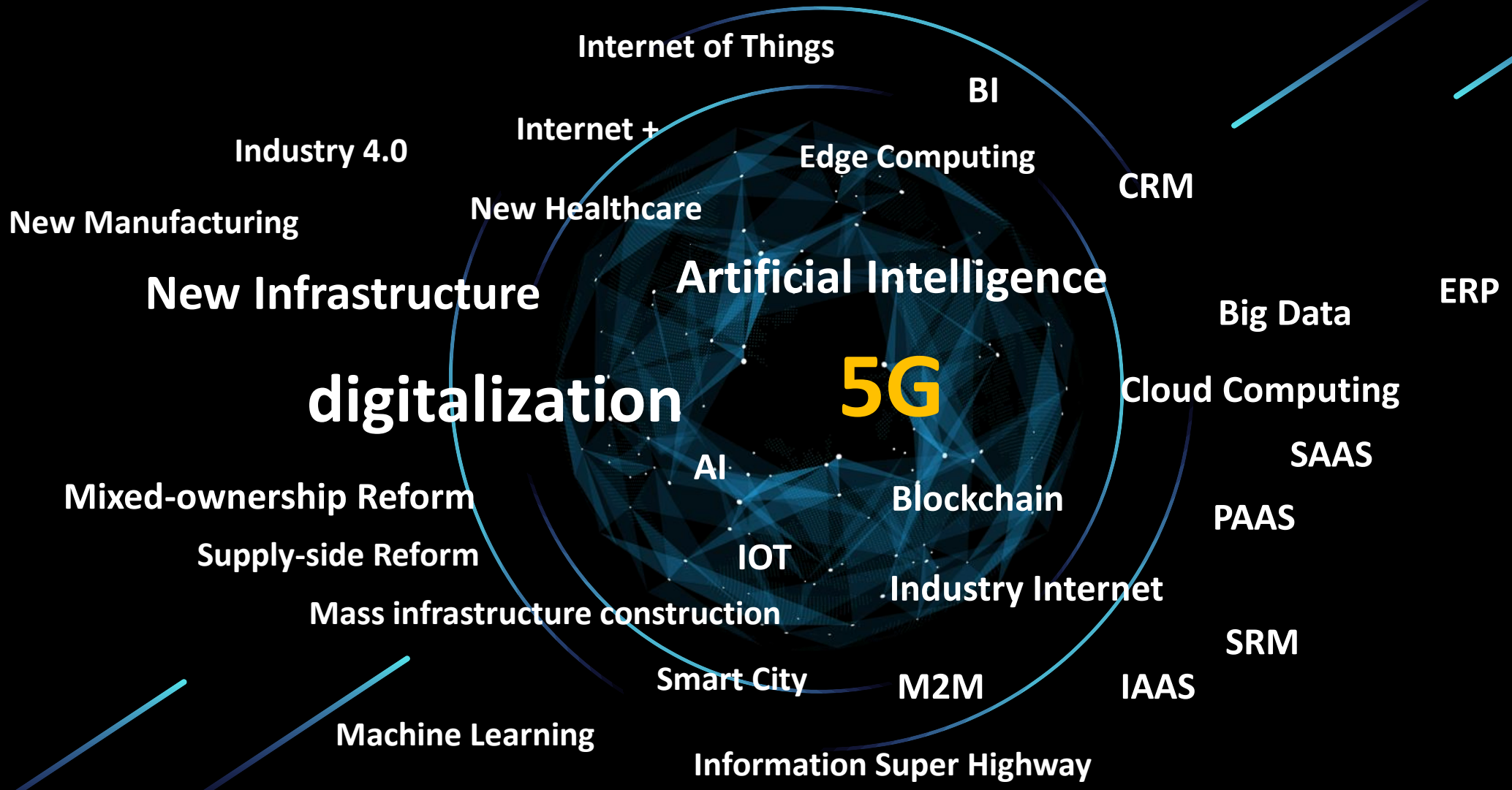
Taylor Lam,
National Technology, Media & Telecommunications Industry Leader
Deloitte China

Taylor Lam has worked at Deloitte in Beijing, Boston, Hong Kong and New York over 30 years with the Firm, and been based in Beijing since July 2005. Taylor is Deloitte China’s Technology, Media & Telecom (TMT) industry leader and Telecom, Media & Entertainment sector leader. He is also a member of Deloitte’s Global TMT Executive Committee.

Taylor also leads the Firm's Public Offering Group in Northern China, which focuses on IPO services. He has extensive experience in advising clients and helping China-based companies go public in Hong Kong or the US.

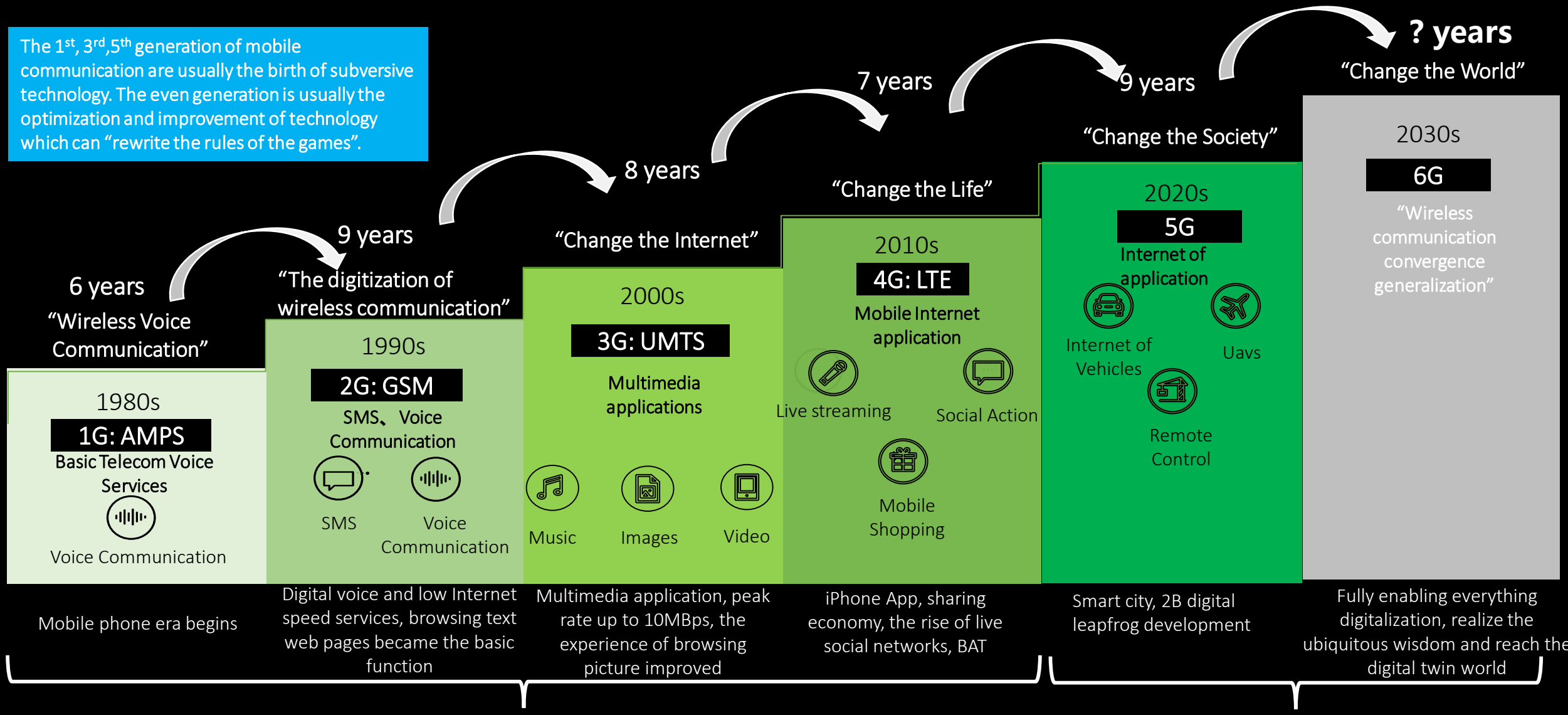
Taylor is Deloitte China's Governing Board member.

Technological progress and enterprise upgrade are continuous…



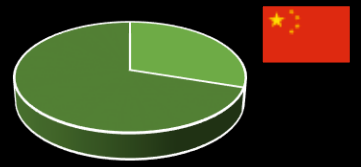
Technology leads to the reconstruction and great changes of the entire industrial chain

The 1st, 3rd,5th generation of mobile communication are usually the birth of subversive technology. The even generation is usually the optimization and improvement of technology which can "rewrite the rules of the games".

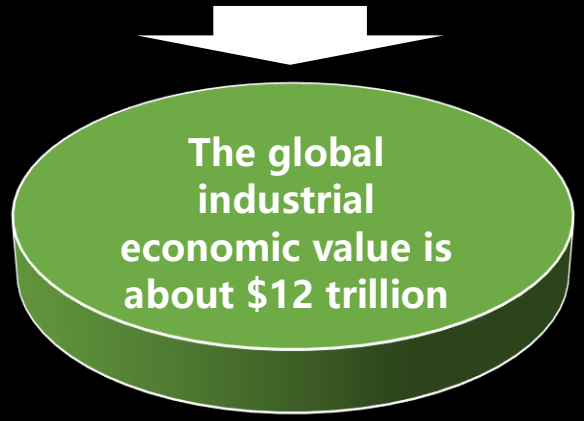


Global investment in the 5G industry chain is expected to reach about $4 trillion, of which China accounts for about 30%

Global 2020-2035 cumulative investment in 5G industry chain and industrial value driven by 5G application.

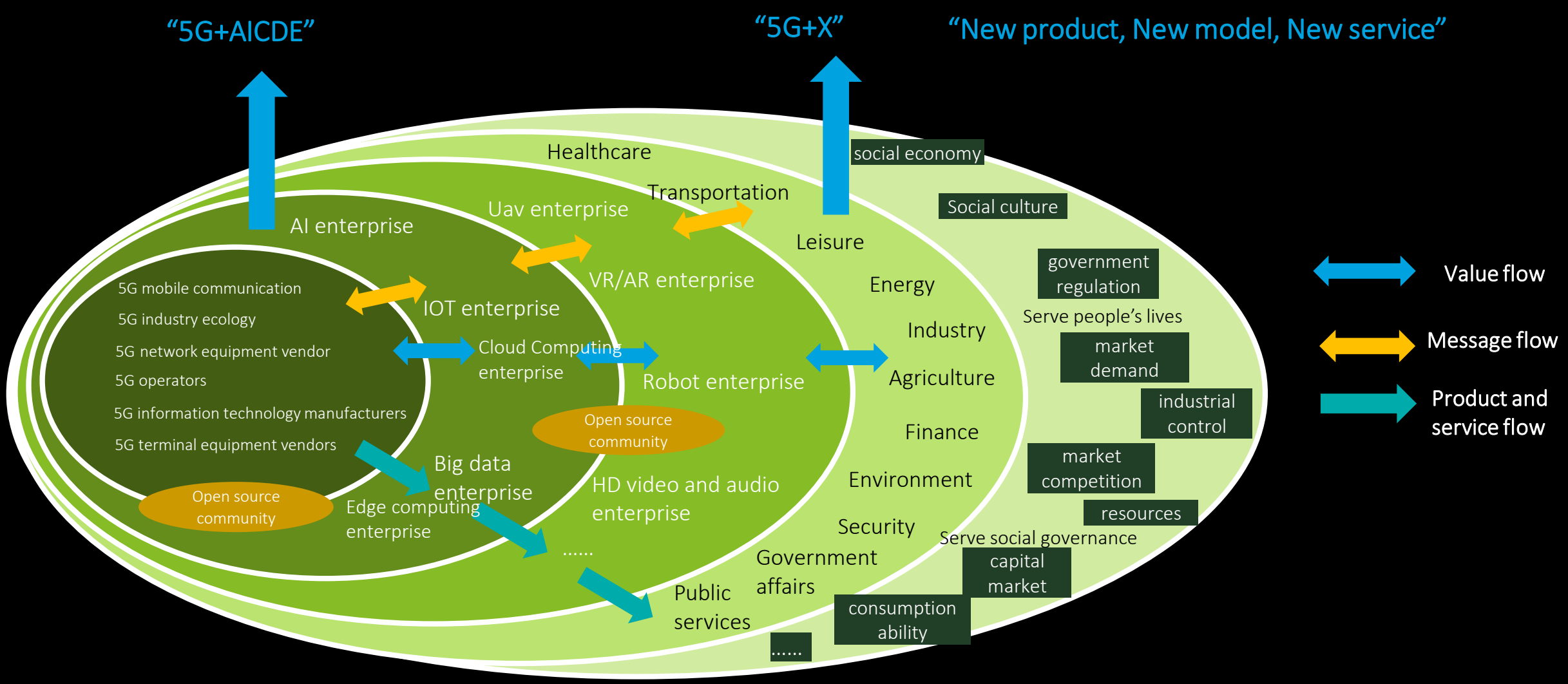


About $4 trillion has been invested globally[1]. China accounts for about 30%



	Industry	5G related economic output
More than 2 trillion	Manufacturing	
More than 1 trillion	Information and Communication	
	Retail + Entertainment	
	Public services and facilities	
More than 0.5 trillion	Engineering	
	Finance and Insurance	
	Logistics	
	Agriculture	
More than 0.2 trillion	Real Estate	
	Education	
	Energy	
Less than 0.2 trillion	Healthcare	
	Other	

5G will change the rule – revolutionizing all levels of society and driving efficiency changes

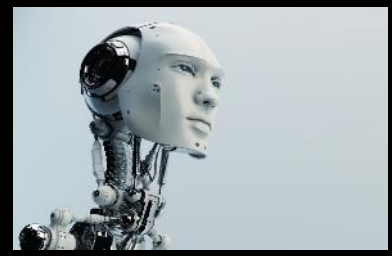


The requirements of new application scenarios are the core driving force of 5G

High

Enhance mobile broad band
eMBB[1]

The speed of 5G is 100 times faster than 4G in theory



Smart home

Car networking

Supply Chain Management

Smart City

3D ultra-high resolution images

Cloud office and games

Augmented reality

Industrial automation

Medical operation

Self-driving

- 5G will be an important step toward 5G support for new use cases, including **network slicing and multi-access edge computing (MEC),** and will help expand telecom operators' service offerings to new markets such as enterprise and Industry 4.0
- *High reliability, low latency scenarios are mainly involved in all walks of life, which is why ecological co-innovation applications need to be established

Big

Huge amount of connection communication
mMTC[3]

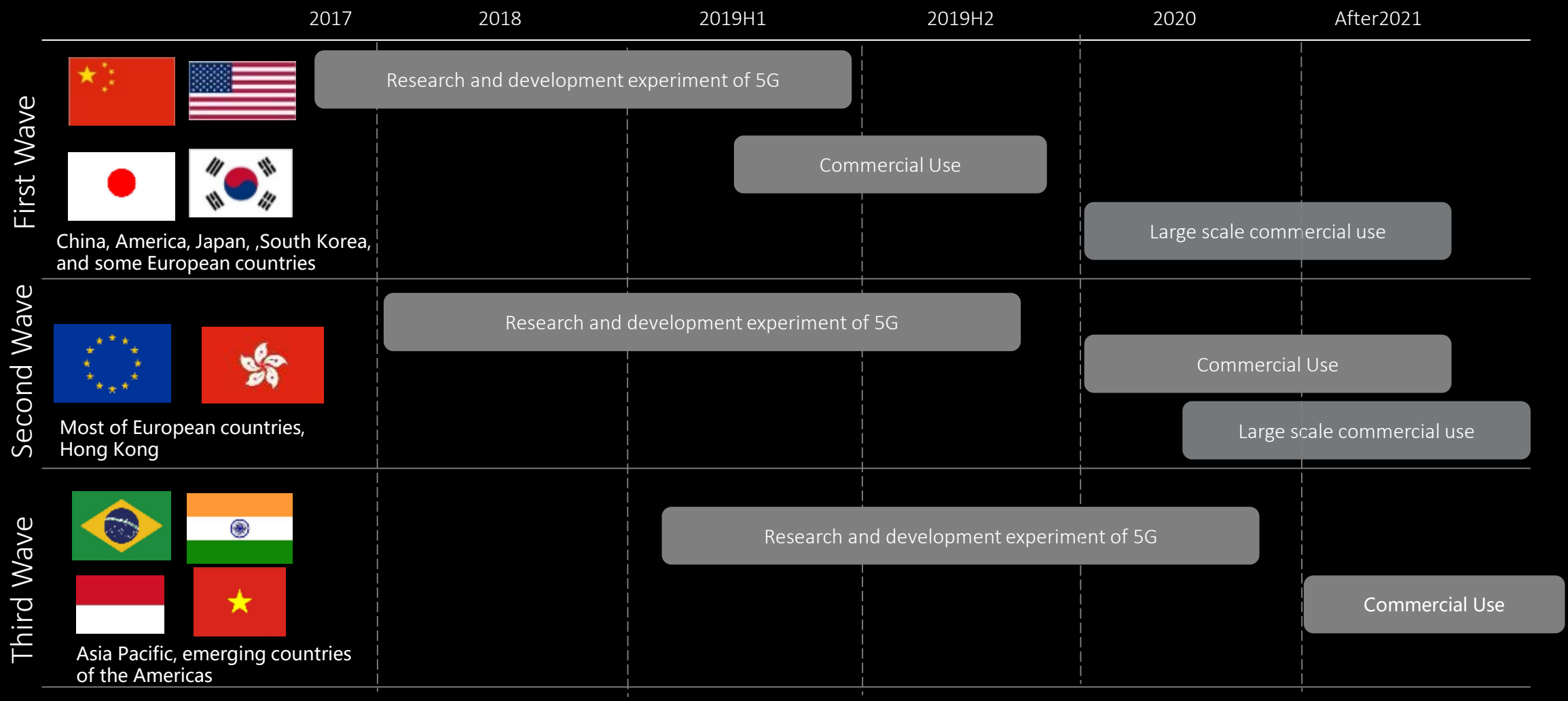
Low

*Low delay and high reliability
uRLLC[2]

Note: 1. enhanced Mobile Broadband; 2. Ultra-Reliable and Low Latency Communications; 3. Massive Machine Type Communications
Source: Ericsson、3GPP、Huawei、Deloitte Research

China is firmly in the global leadership position of 5G business

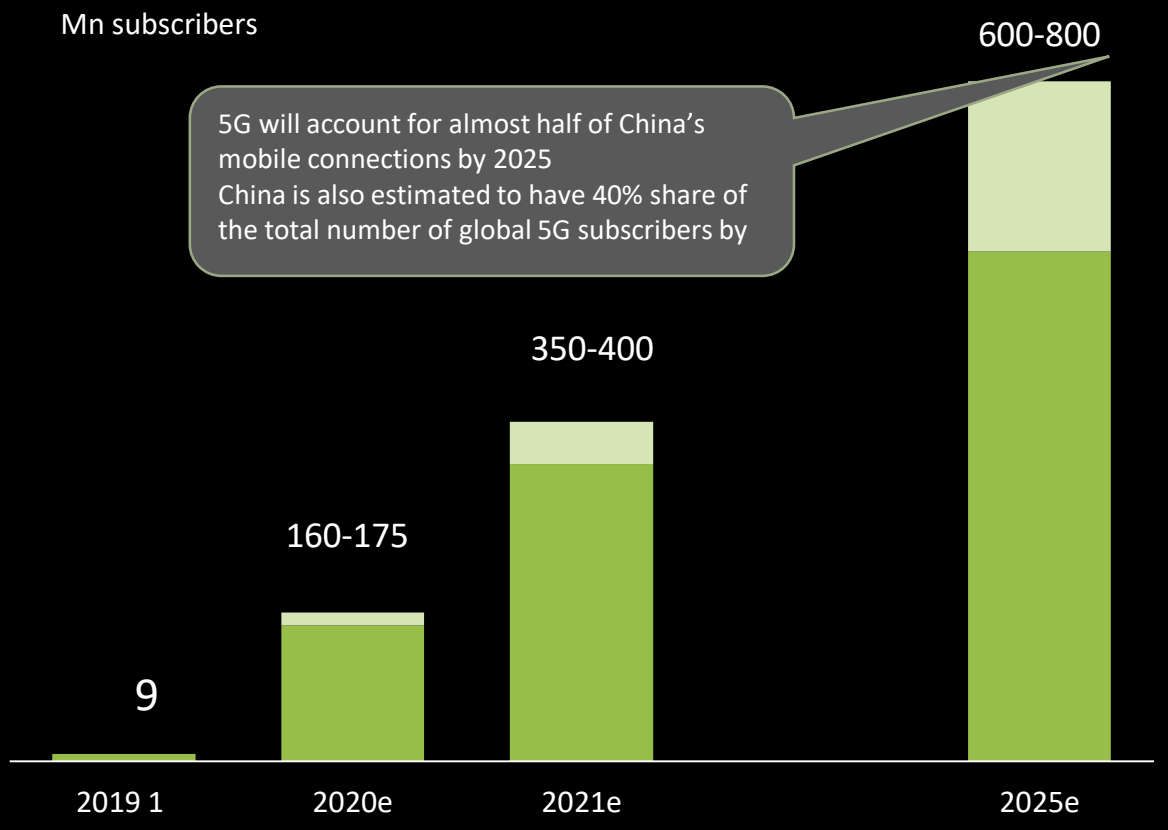
Commercial progress of major countries



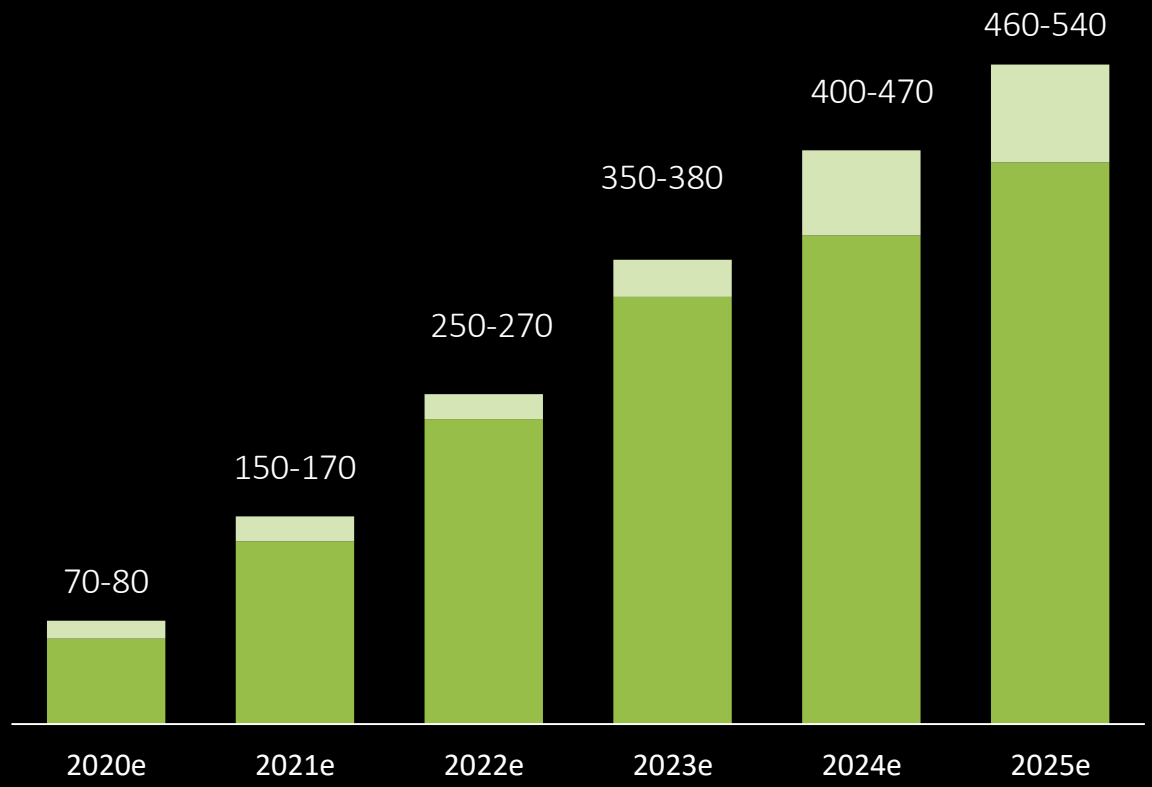
2020 Mass Adoption for 5G

China’s 5G market is expected to hit US$70-85bn in 2020 with an estimated 160-175mn 5G subscribers.

5G Subscribers in China

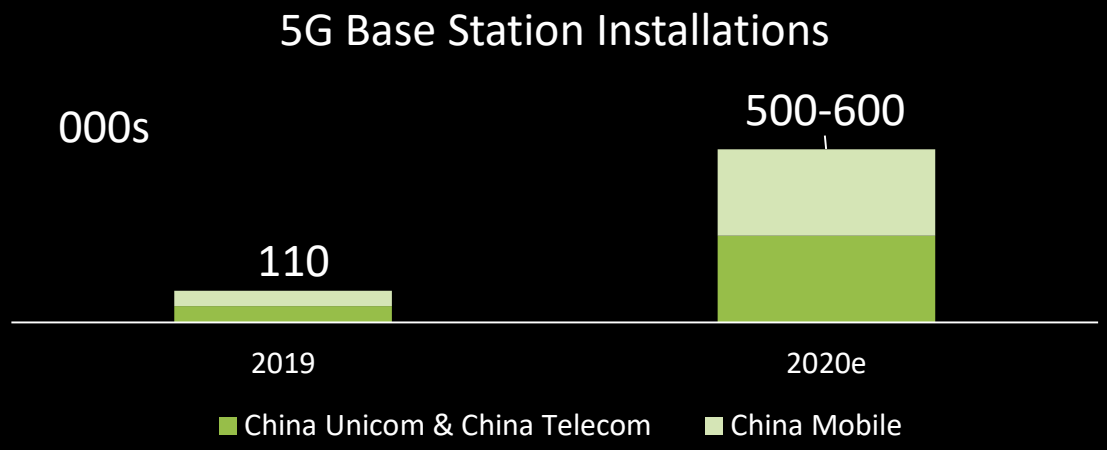


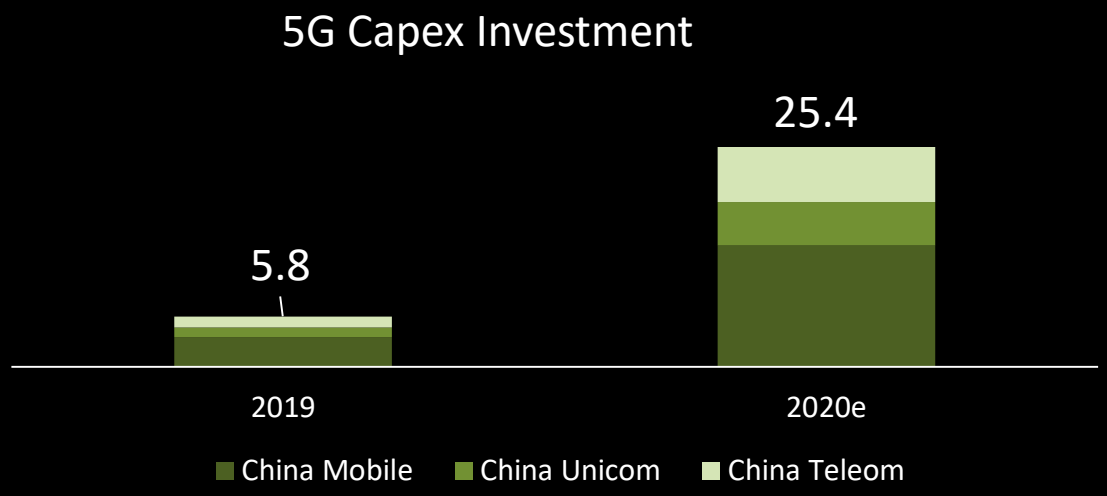
Estimated Market Size of the 5G Market in China, 2020-2030

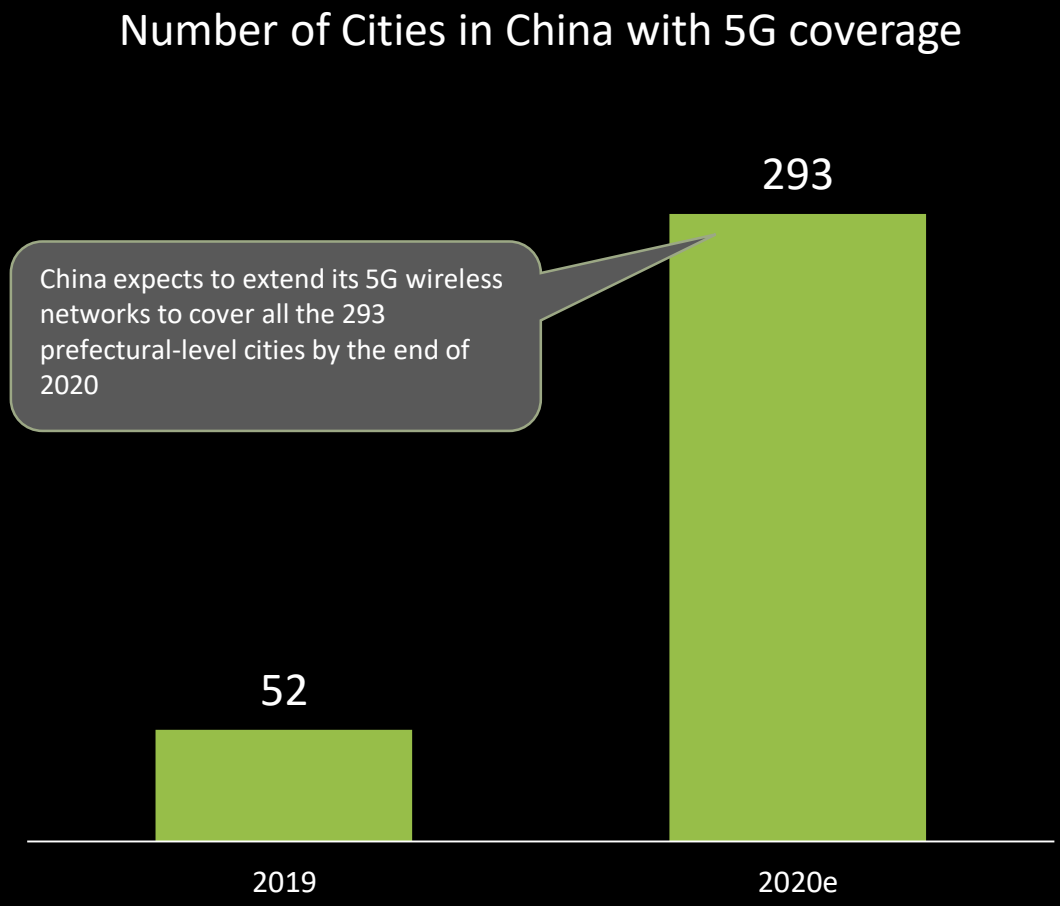


10ct 2019 figures for China Mobile, China Telecom, and China Unicom
Source: SCMP Reporting & Analysis, China Academy of Information and Communications Technology, GSMA, iResearch, Company filings

A massive infrastructure push this year, worth US$25bn and nearly 500k additional 5G base stations, will potentially let China achieve 5G coverage across all 293 of its prefectural-level cities by year end.



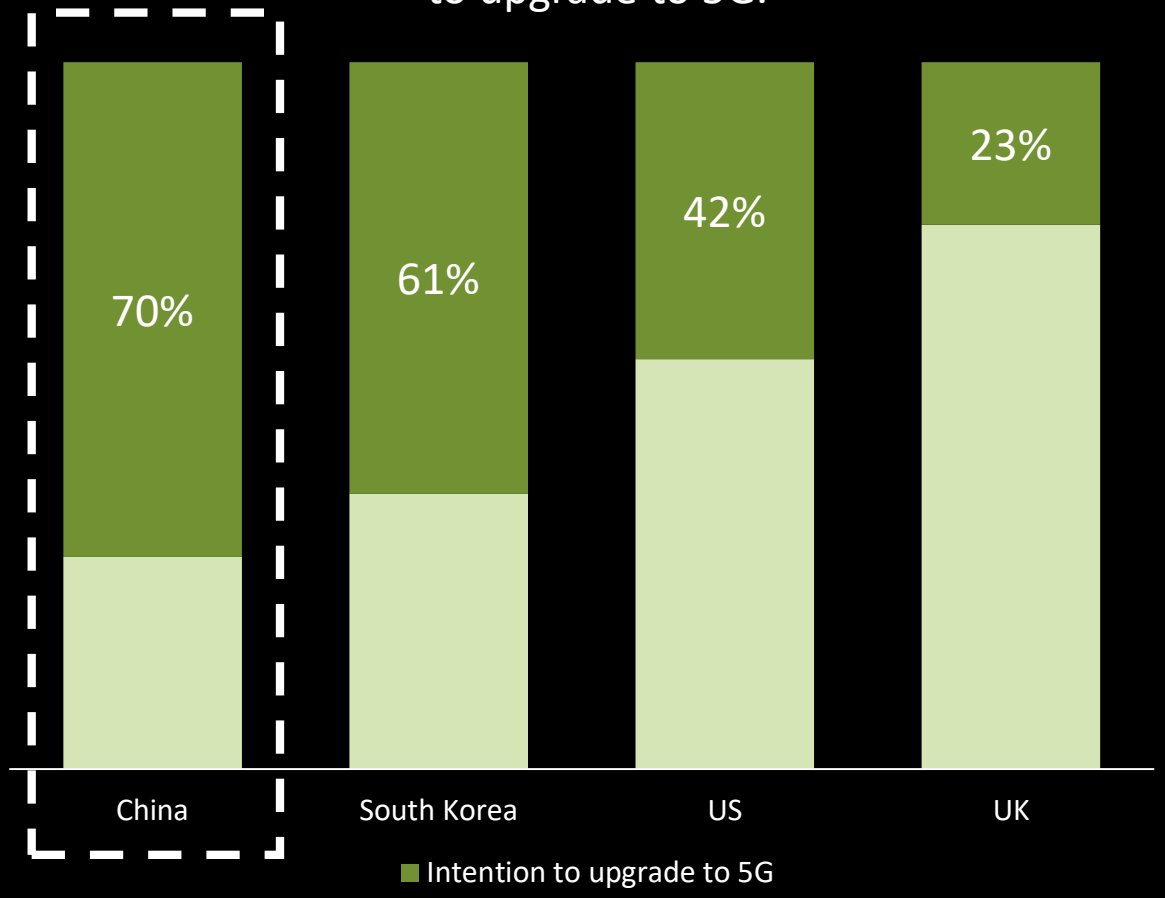




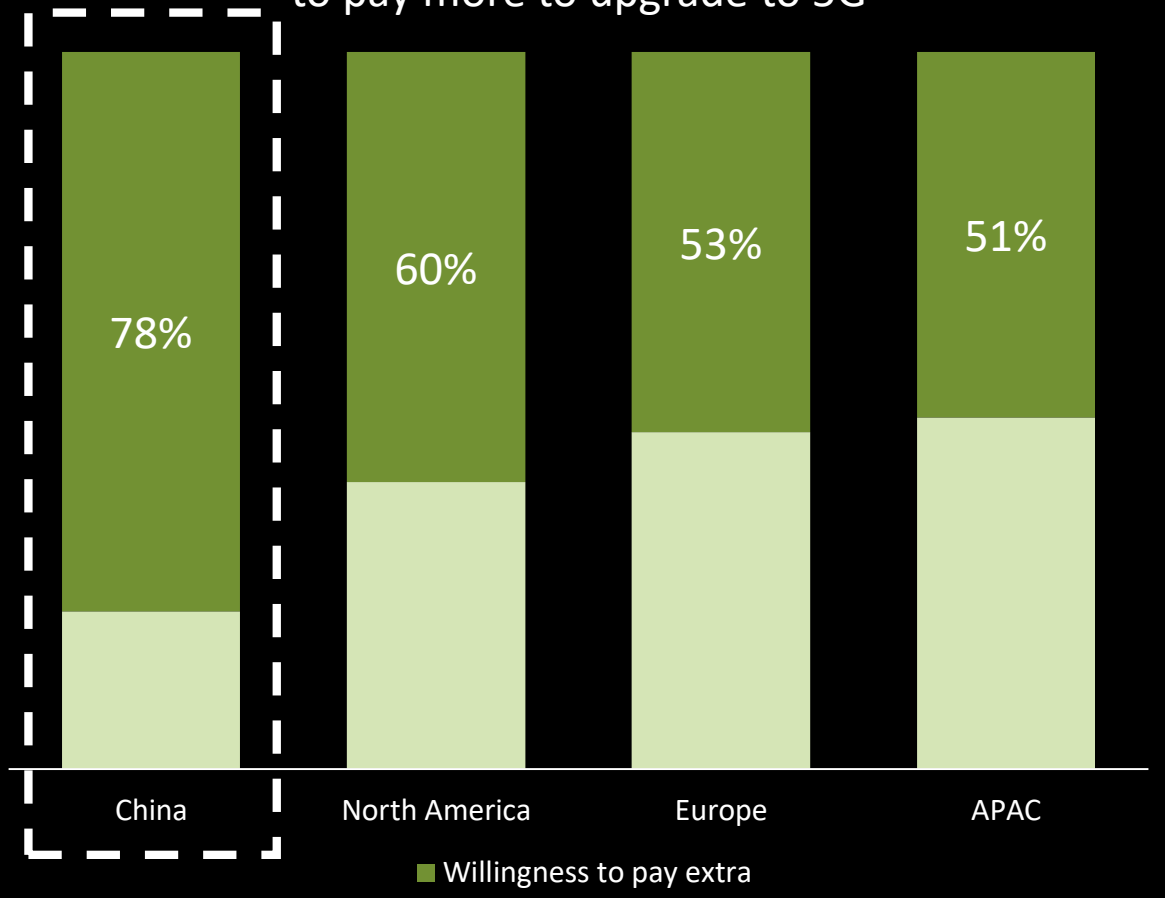
Source: SCMP Reporting & Analysis, Company filings, CAICT

Chinese consumers and businesses are also racing ahead in terms of interest level and acceptance of 5G as they realize the benefits.

Chinese consumers have the highest intention to upgrade to 5G.



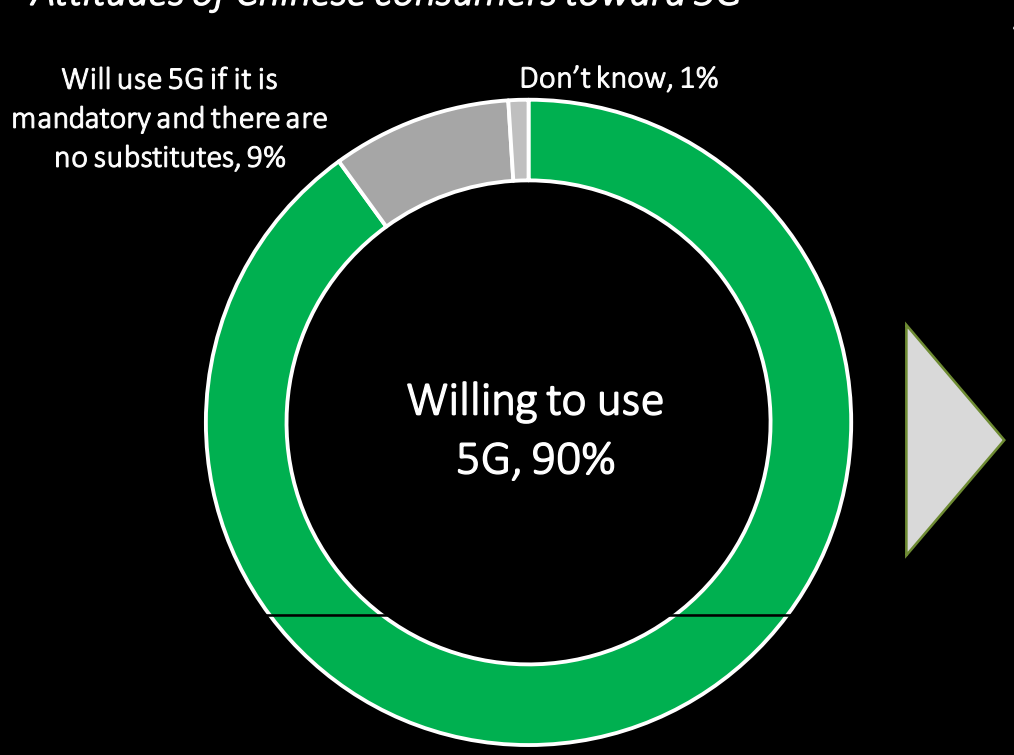
Chinese consumers have the highest willingness to pay more to upgrade to 5G

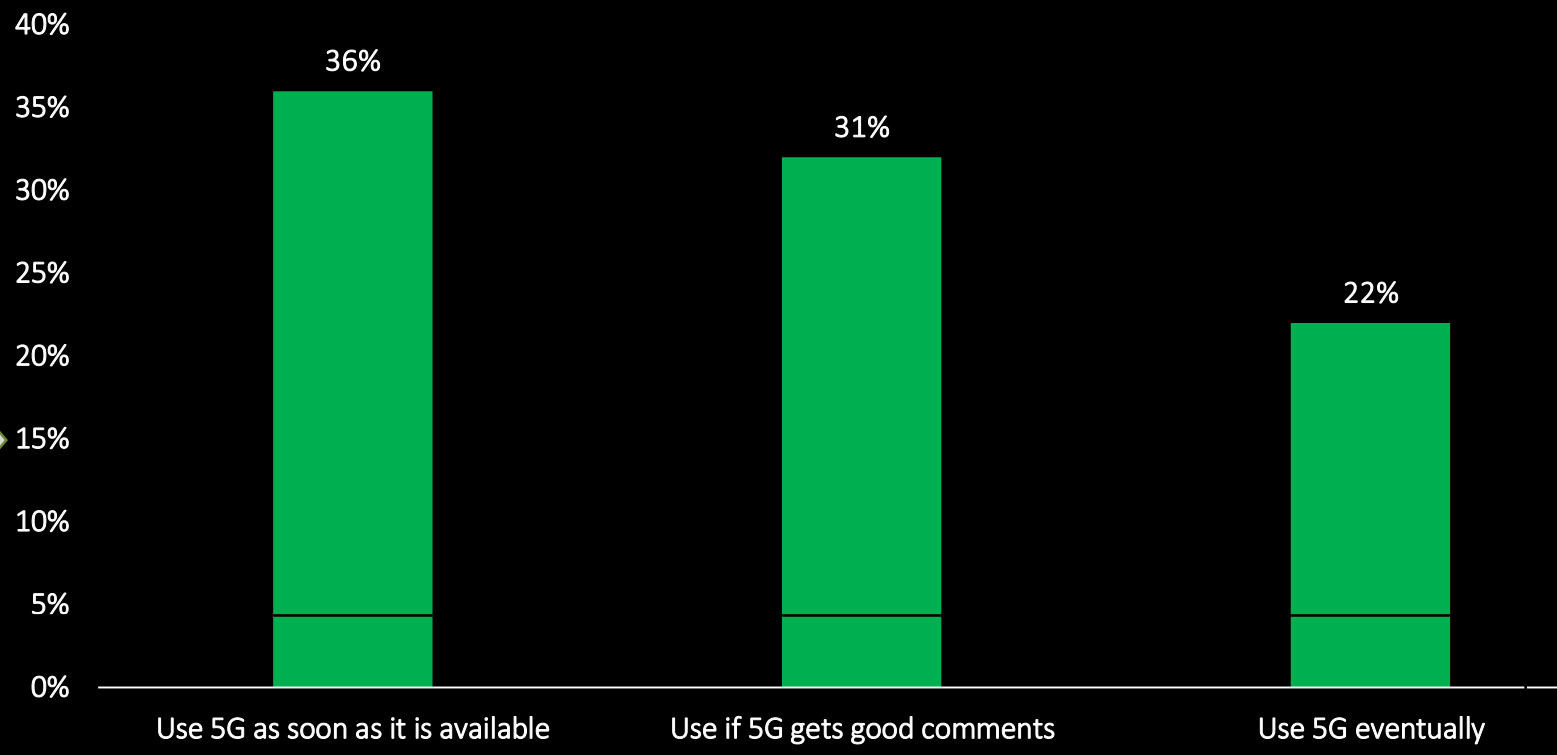


Source: SCMP Reporting & Analysis, GSMA Mobile Economy 2020 Survey

Consumers are willing to pay for 5G

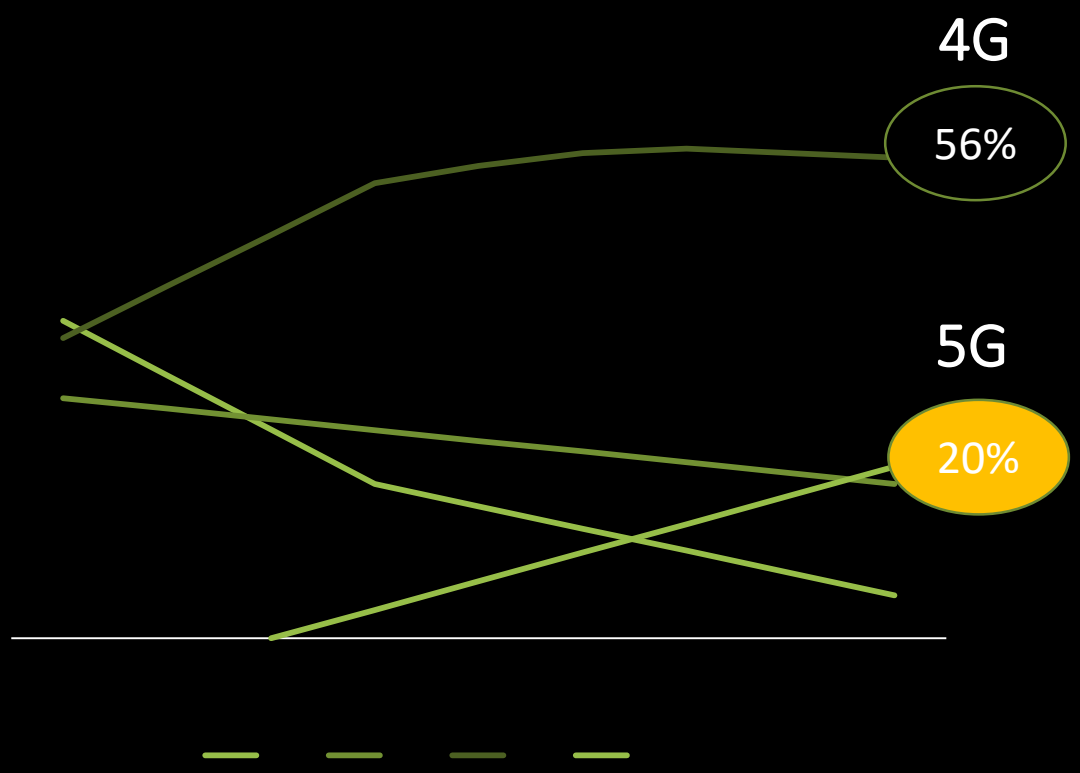
Attitudes of Chinese consumers toward 5G

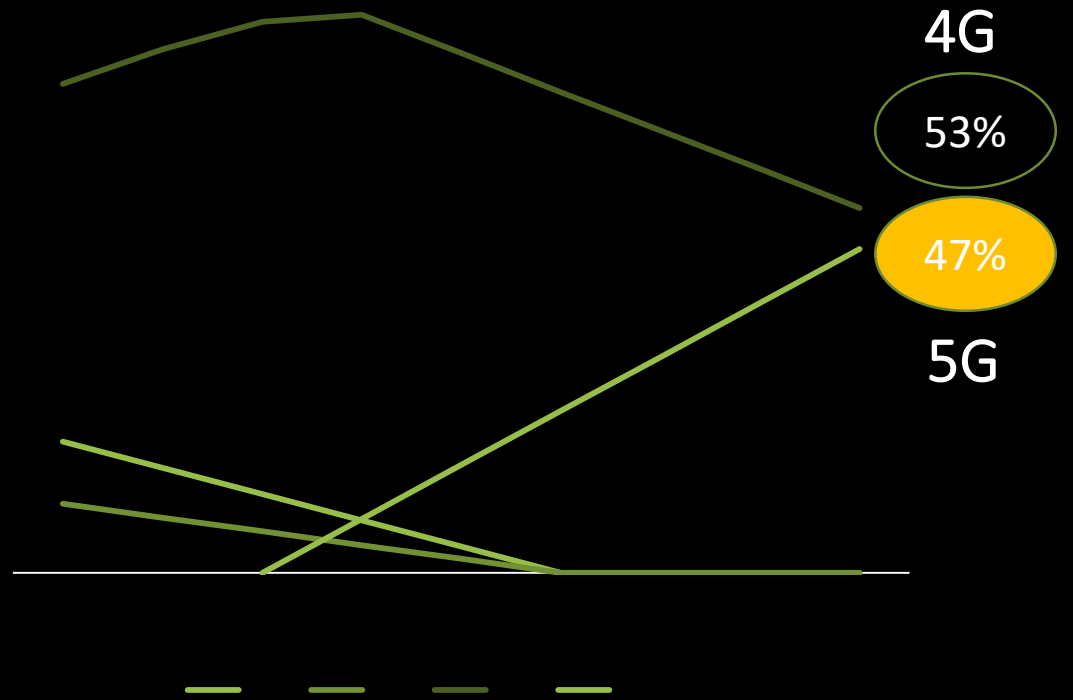




Source: Deloitte

4G will remain dominant in the short term, but 5G is expanding rapidly





Source: GSMA

Embracing the New 5G Era in Hong Kong

Commercial 5G services in Hong Kong available since April 2020

China Mobile Hong Kong

- Its 5G network will cover the entire Hong Kong city – 90% of the major Central and Western, Wan Chai, and Causeway Bay Districts; nearly 90% of the Kwun Tong District; and close to 80% of the Tsuen Wan District.
- Carried out a 5G standalone network trial in November last year, which allows for the provision of network slicing services
- Different slices can provide customized private network services and a diverse mix of 5G applications for corporate customers, making it easier to facilitate different projects within the financial, real estate, and property management sectors
- Founded "The Greater Bay Area 5G Industry Alliance" in August last year to promote the sharing of business opportunities as well as the joint research and development of products and services based on 5G

Hutchison (3 Hong Kong)

- Its 5G base stations are served by a 10 Gbps optical-fiber backhaul network, and that its 5G service is expected to cover the entire territory within the year. Phase-one will see outdoor coverage initially serving Wan Chai, Causeway Bay, Tsim Sha Tsui, Mongkok, Sham Shui Po, Shatin and Tai Po. Indoor coverage will include the Hong Kong Convention and Exhibition Centre, as well as Hong Kong Land's Grade-A shopping malls

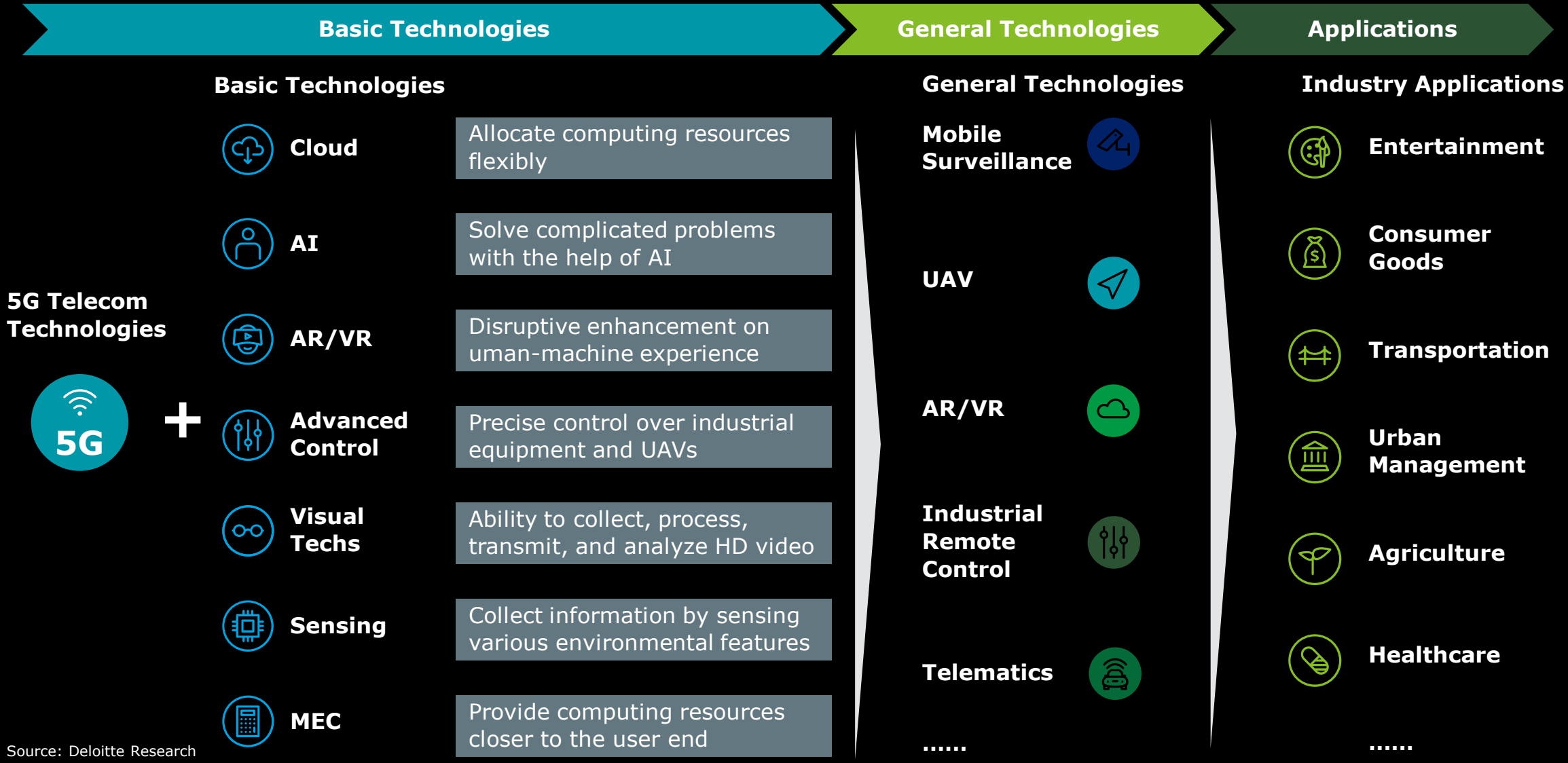
HKT

- Its 5G coverage initially reach 11 of Hong Kong's 18 districts.

Government's Subsidy Scheme

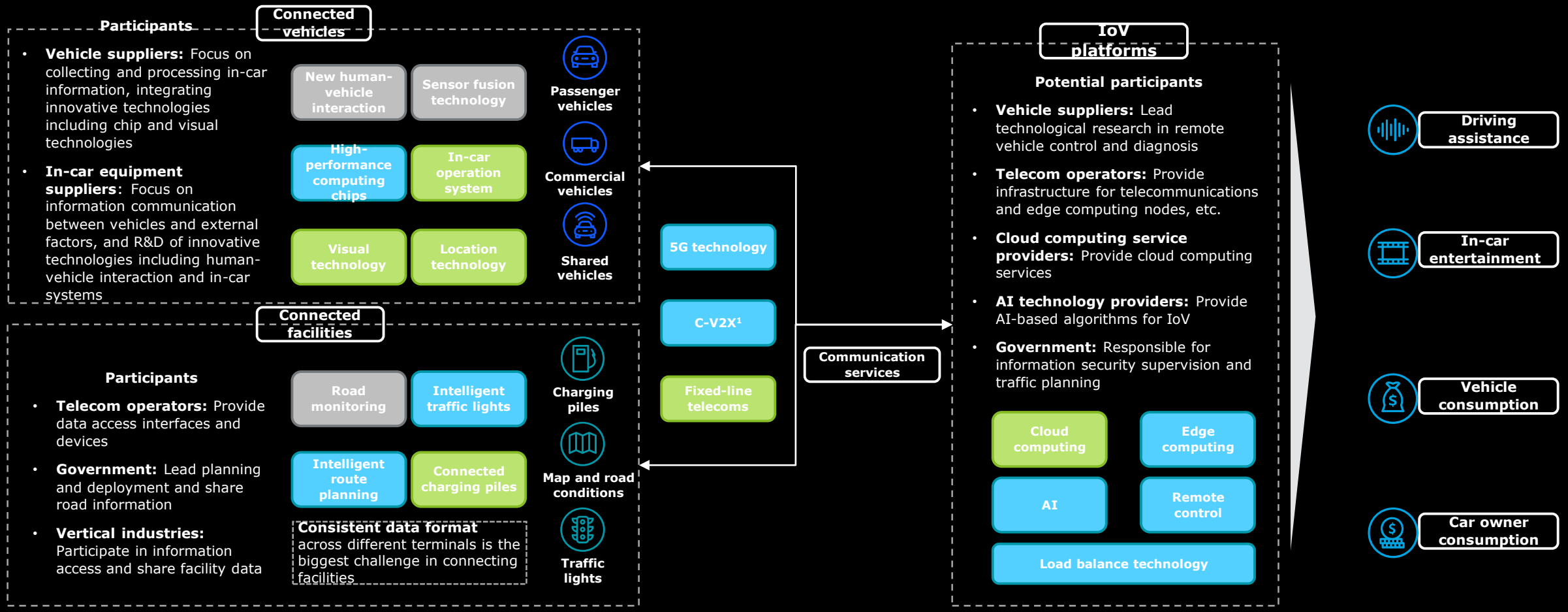
- The Office of the Communications Authority (OFCA) aims to encourage various sectors to deploy 5G technology early to foster innovation and smart city applications, and to improve efficiency of their operations and quality of their services that will contribute to enhancing Hong Kong's overall competitiveness.
- Under the Scheme, the Government will subsidise 50% of the actual cost directly relevant to the deployment of 5G technology in an approved project, subject to a cap of $500,000. Around 100 qualified projects will be subsidised.

Accompanied with basic techs such as cloud and AI, 5G could establish and optimize many general techs that will eventually benefit vertical scenarios



Source: Deloitte Research

5G Smart Transportation

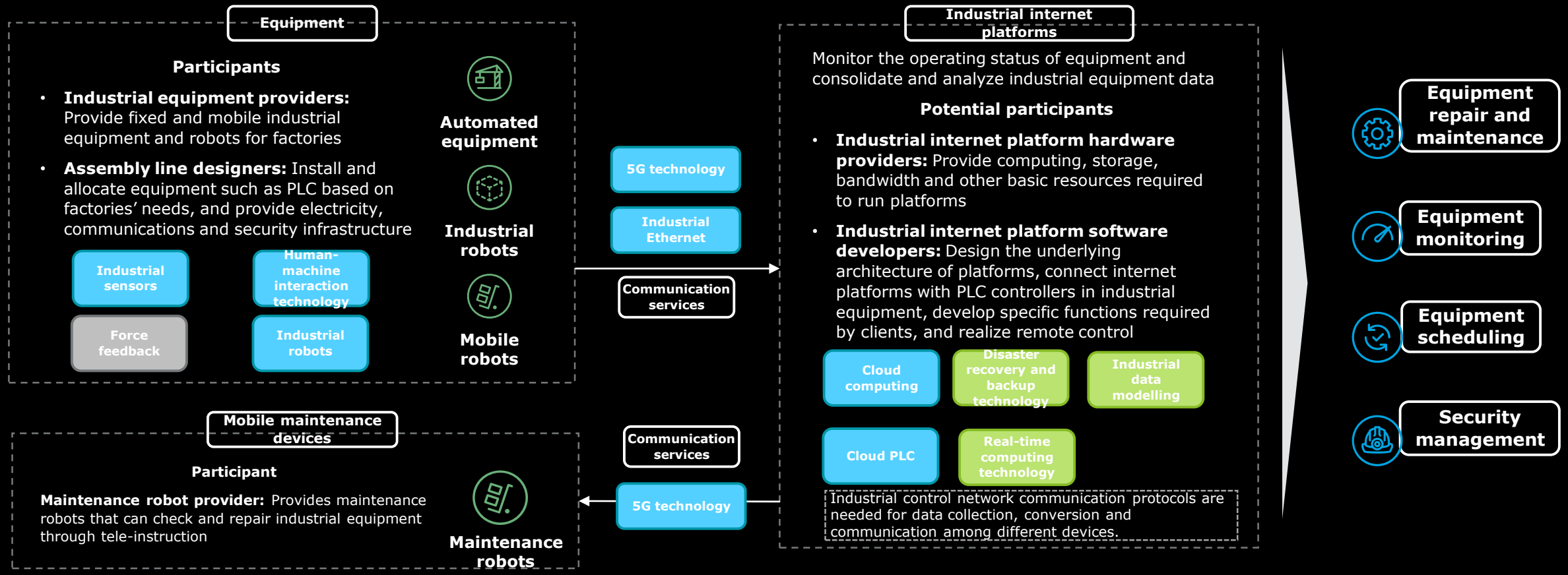


Technologically, IoV requires connections between large amount of infrastructure and vehicles and the integration of sensing, computing and location technologies. In addition to 5G-based communication guarantees, considerable technical breakthroughs are also necessary for "data and mobility management platforms". Besides, it will take a long time to establish such platforms due to the impact of policies and regulations.

Early technologies | Accelerated breakthrough | Mature technologies

Note: 1. IoV technology based on cellular network
Source: CAICT, Deloitte Research

5G Smart Production

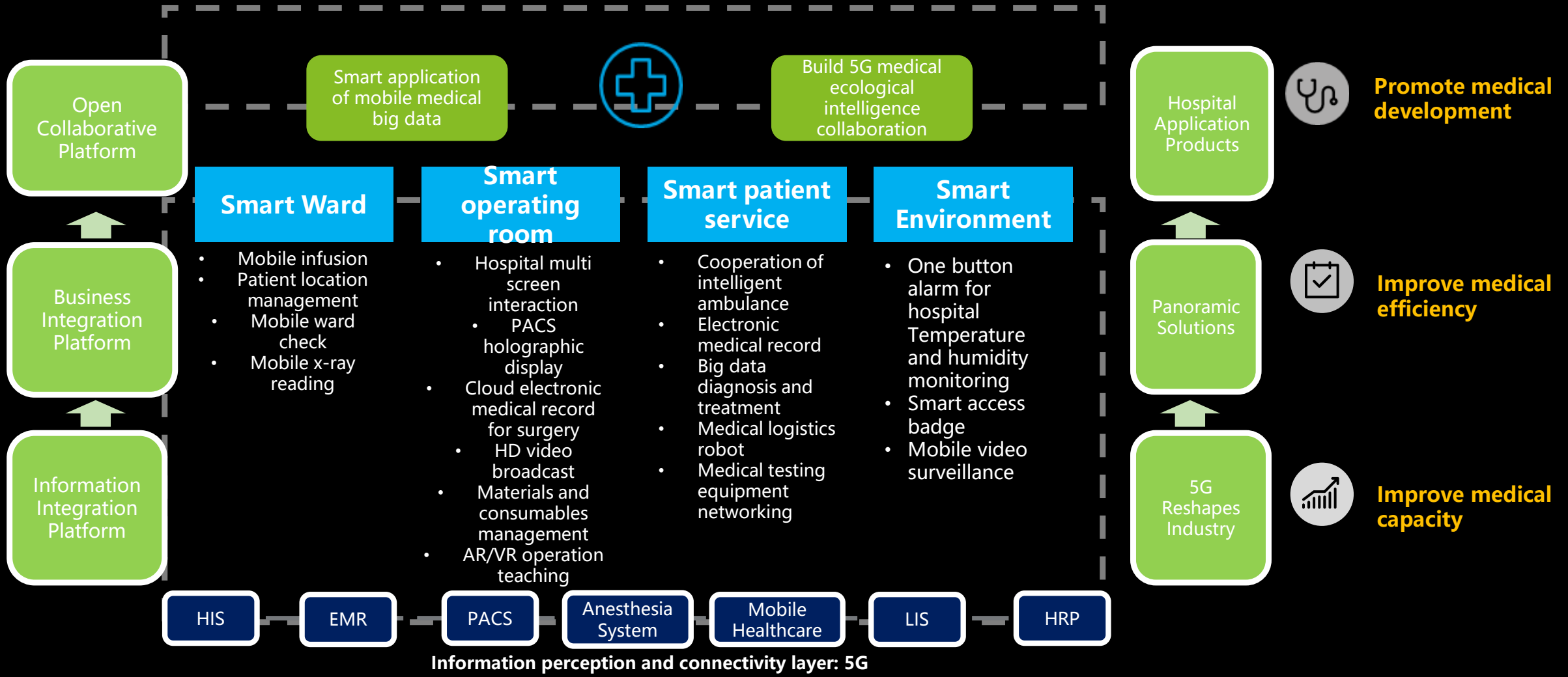


With the support of 5G networks, intelligent manufacturing requires not only basic technologies such as cloud computing, AI and VR etc., but also application of these technologies throughout the manufacturing process from design to production, management and service, to establish an integrated cyber-physical system. Currently, only a few mature technologies have implemented, with most still at the development stage and awaiting their tipping point.

Source: Huawei, Tencent, CAICT, Deloitte Research

Early technologies | Accelerated breakthrough | Mature technologies

5G+ Smart Healthcare - opening a new era of smart healthcare



5G+ Smart Healthcare Application cases

5G remote surgery & multi center remote collaborative surgery

China Unicom helped Beijing 301 Hospital and Fujian Mengchao Hepatobiliary Hospital **complete the first 5G remote surgery in the world**

The biggest problem of remote surgery: real time interconnection of signals

5G technology application

Low Delay

- Doctors know the situation in real time
- The processing is completed by remote synchronization of the device

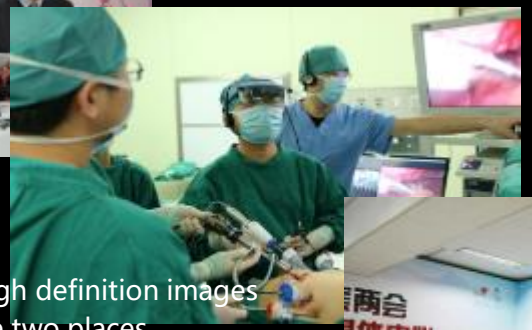
Big Connection

- The control links and two video links at both ends of the remote control surgical robot

China Unicom helps Beijing Tsinghua Changgeng hospital **Complete the first 5G multi center remote collaborative operation in the world**

Hybrid reality technology:

- Discuss the preoperative plan with the operator
- In the process of two remote operations, the remote technical guidance was implemented



5G power

- Real time sharing of high definition images of surgery between the two places
- Online seamless interaction and guidance
- Faster speed, more accurate reconstruction, more realistic reduction of organs and lesions of the anatomical structure

5G+ Smart Medical Application cases

Live broadcast of ultra high definition Surgery & Remote Robot Ultrasonic "consultation"

China Unicom helps Shanghai Huashan Hospital

Complete the live broadcast of ultra high definition surgery

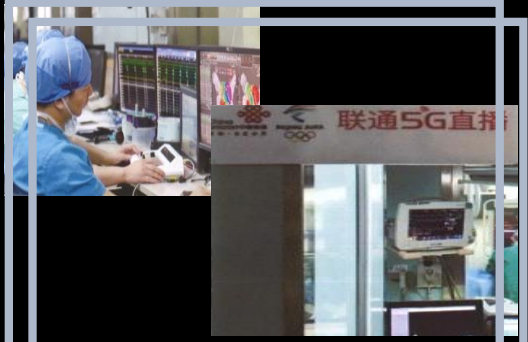
On April11,2019, the opening ceremony of Shanghai's first 5G smart medical application demonstration base and the live broadcast of Neurosurgery of Huashan Hospital Affiliated to Fudan University was held in Unicom building

Remote "zero distance" explanation of operation process

- This activity will carry out 4K HD live broadcast of two remote operations through China Unicom 5G technology
- Based on 5G network, doctors who are not on site can watch the operation process online through the mobile terminal
- Top experts explain the operation process remotely for the Training Foundation College

China Unicom helps hospitals on both sides of the Taiwan Straits **complete the interaction of telemedicine operation live broadcast**

On May 2, 2019, a live online telemedicine surgery interaction between the two sides of the Taiwan Strait was successfully held between Ningbo first hospital and Taiwan Yadong Memorial Hospital



- Through 5G network, professors from both sides of the Strait gave guidance and comments on relevant operations before and after operation
- Normalize real-time medical exchanges between the two sides of the Taiwan Strait
- Cross regional real-time guidance for clinical and surgical problems

- The Third People's Hospital of Chengdu City and China Unicom have built 5G smart medical services under the work deployment of the Municipal Health Commission
- "Face to face" between patients in primary hospitals and expert teams of superior hospitals

On Feb.26, 2019, director Zhou Hong, ultrasound expert of Chengdu Third People's Hospital, conducted a remote ultrasound "consultation" for patients through 5G and doctors from Pujiang People's Hospital nearly 100 km away

China Unicom helps Chengdu Third People's Hospital **complete remote robot ultrasonic "consultation"**

60 Km ultrasound diagnosis

20 Minutes the whole diagnosis process

5G+AI+4K

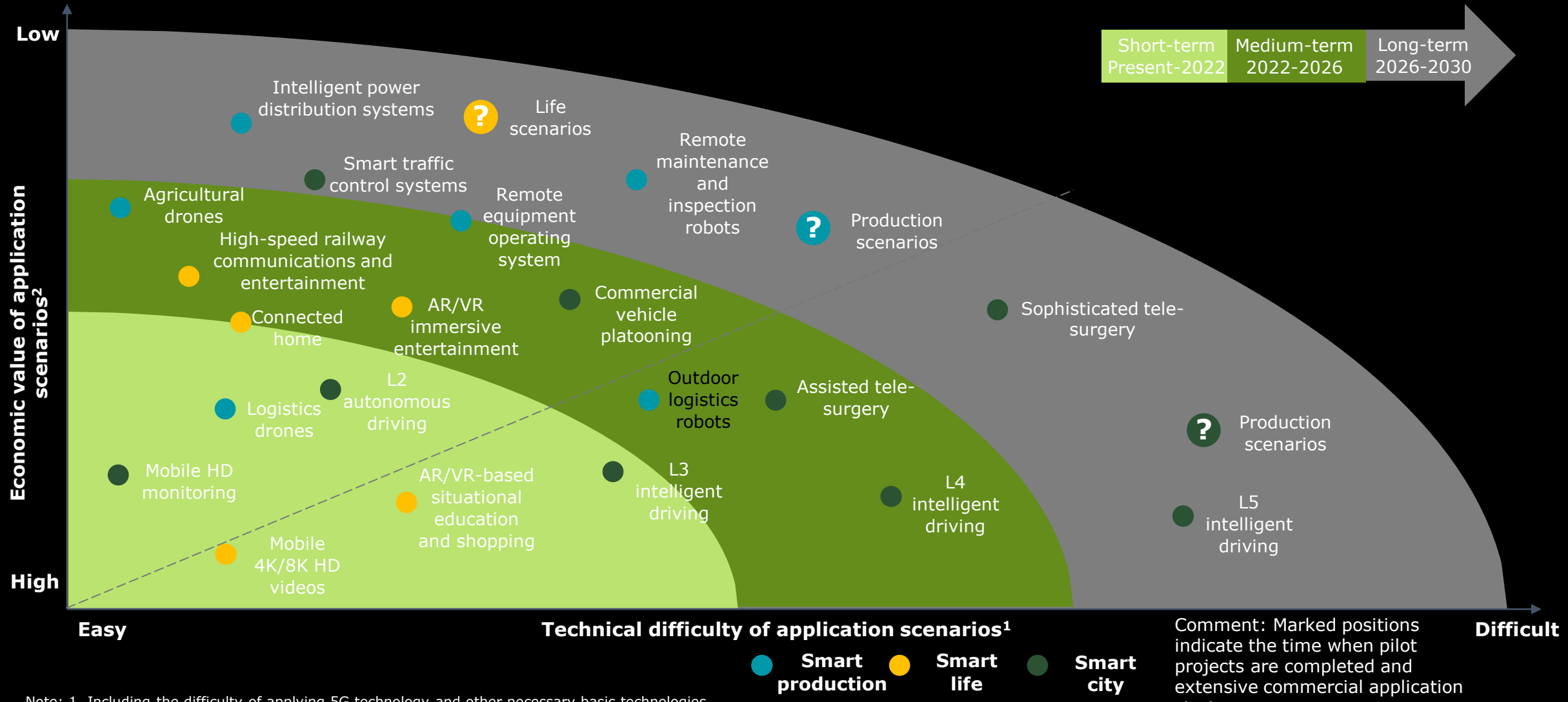
- The doctor side and patient end of the two hospital sections realize the whole process rapid synchronization through 5G network
- Ultrasonic inspection of remote manipulator
- The image details are clear and smooth
- Real time transmission of technology, image and voice

On May 6, 2019, a 60 km interval ultrasound diagnosis was successfully carried out between Guangzhou First People's Hospital and its Nansha park

China Unicom helps Guangzhou First People's Hospital

complete ultrasonic diagnosis based on 5G remote real-time operation manipulator

Economic value from 5G-based downstream applications will emerge in more scenarios.



Comment: Marked positions indicate the time when pilot projects are completed and extensive commercial application starts

Note: 1. Including the difficulty of applying 5G technology and other necessary basic technologies
2. Including the market size of scenarios and the payment capability of downstream clients

Source: Deloitte Research

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Future of Health and New Technologies

Jens Ewert, China LSHC industry leader, Deloitte China

July 28, 2020

MAKING AN IMPACT THAT MATTERS since 1845

Deloitte speaker

Jens Ewert
National Life Sciences & Health Care Industry Leader
Deloitte China

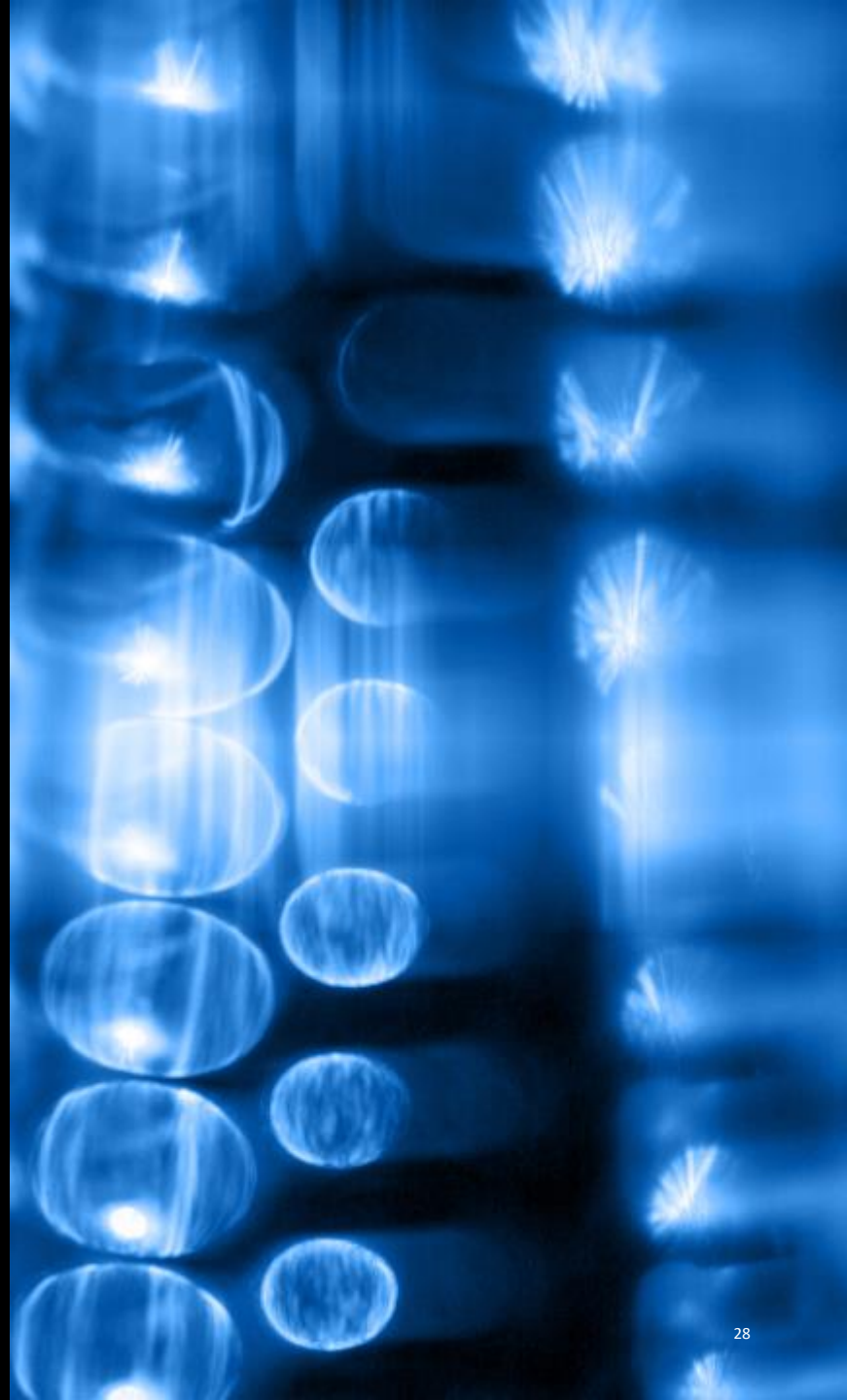
Jens Ewert is a Senior Partner with Deloitte based in our Shanghai office and has been with the China Firm since 2002. He has more than 30 years of working experience in professional services, and has been a member of the Deloitte China Eastern Region Management team for several years.

Jens leads the Deloitte China Life Sciences & Health Care Industry team of more than 600 partners and professionals who are dedicated to working with companies in life sciences, pharmaceuticals, healthcare and related sectors.

Contents

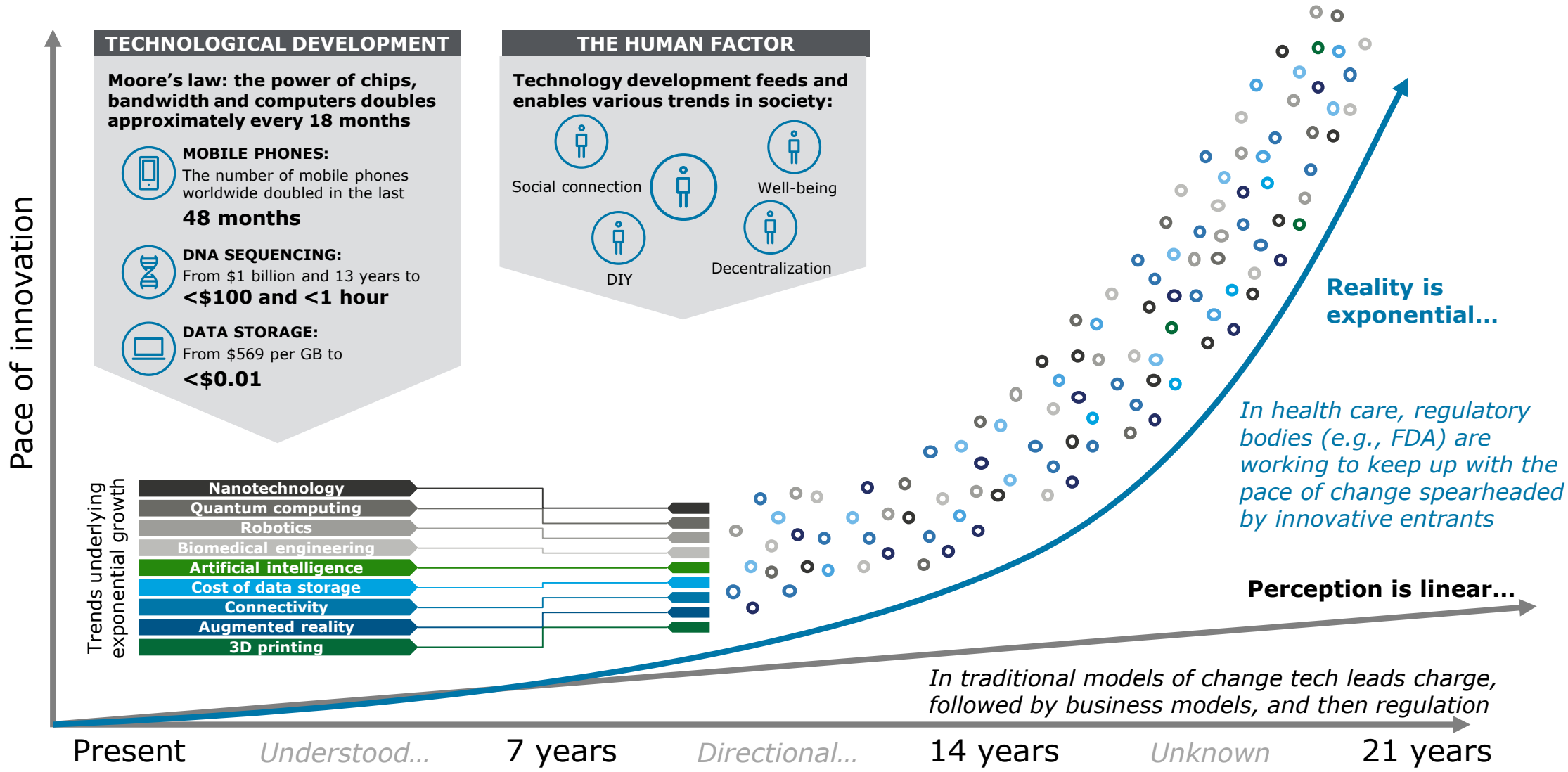
- Future of Health
- China characteristics to consider
- New technologies and 5G
- Outlook

The future of health will be driven by digital transformation enabled by radically interoperable data and open, secure platforms



Change accelerates disruption

Exponential change will accelerate the pace of disruption



Trends driving a new Future of Health in 2040

Changes are taking place in the health care industry, driving towards large-scale industry disruption

*The **empowered consumer** is becoming increasingly focused on their **well-being** and demanding more **customized products and insurance offerings***

- **Affordable health for all**
- **From care to health to well-being**
- **Interconnected health communities**
- **Evolution of trusted patient/caregiver relationship**
- **“N of 1” personalized care**
- **Native data-oriented entrants disrupting incumbents**
- **Acceleration of digital health evolution**
- **Regulation encouraging long-term accountability**
- **Health data ownership by consumers**
- **Personal cognitive and AI for improved outcomes**

Today's health care sectors will be disrupted by radically interoperable data and the empowered consumer

The existing health ecosystem will change dramatically in a world with real-time access to data and advanced capabilities to capture, interpret, and act on near-perfect information

Providers

The shift to prevention and wellness will cause **complex procedure volume** and **routine care costs to crater**

Increased connectivity will transform care delivery models and engage consumers via virtual and localized care hubs, leading to **shifts in care delivery location and type**

Plan

The availability of real-time data and advanced, predictive analytics removes uncertainty and risk from the market and **eliminates the need for traditional coverage**

Increased interoperability, consumer-centricity and technological advances **drive change in health coverage offerings**

Life Sciences

Advanced early intervention, prevention, and precision medicine will contribute to a shift towards **curative and preventative therapies** and **drop in volume of units**

Cognitive technology applied to massive data sets **automate R&D and lower costs**

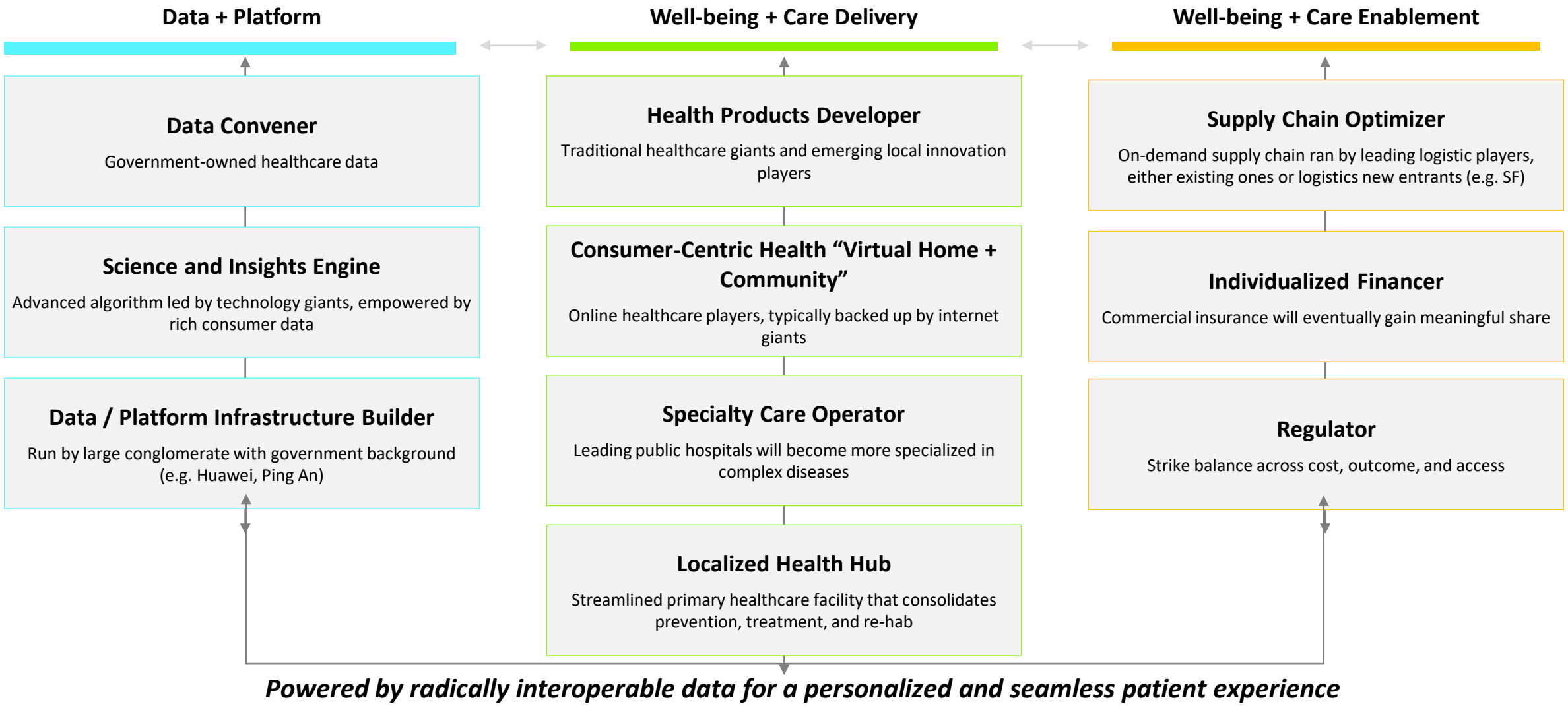
Medical technology will advance exponentially and uses will extend across the entire health ecosystem

Government & Public Sector

The role of government shifts to **catalyst of change** and **enabler of equitable health care for all**

China Industry Predictions

Our Deloitte view of 'Future of Health': Attributes of the 10 winning archetypes



Critical driving forces shaping the future of China health system

Politics

Re-balancing of healthcare resources to improve efficiency and quality

- CDC, specialty public hospitals, and CHCs will drive early disease detection and interventions as well as stimulate the efficiency of overall health system

Encourage localized innovation

- R&D of innovative companies in health industry are supported, including land, talent and finance
- Translational medicine will be uplifted through regional AMCs

Strengthen supervision & enforce IP protection

- The quality of drugs will improve with strict supervision
- The government protect IP, which promotes the enthusiasm of patent development and transfer and the healthy development of the healthcare industry

Economy

Tangible growth of China's GDP and allocation to HC

- The economy in China will keep growth to create an environment for health industry developing
- Healthcare expenditure will still grow from 5% to 8~9%

Capital investment increase

- PE and VC invest much in healthcare industry, and the invested project number and money are ranked in top tier in recent years
- More capital will be contributing towards the growth of a local commercial insurance / provider sector

Society

Arrival of an aging and second child society

- China is entering to the aging society, and the increasing number of old people stimulates the demands of healthcare industry
- The second child promotes the growth of infant market, and parents are paying more and more attention to their children's health investment

Improvement of people's education level and health awareness

- With the increase of people's education level and health-related promotion, people pay more attention to their own health condition, disease protection and medical service experience

Urbanization rate

- In the process of urbanization, the health issues are increasing, esp. on mental illness

Technology

Digitalization

- The digital technology create new devices and business model to fulfill the demands of the people such as AI enabled medical service, IoT devices, electronic medical records and etc.
- Big data helps medical institutions provide better services, which promote medical satisfaction, and optimize the allocation of medical resources

Novel discovery in basic biomedical research

- The breaking through in basic research in synthetic biology, epigenetics and immunology make the change of the health industry possible

Vaccine, diagnostics and disruptive therapeutics

- Precise medicine such as cell and gene therapy have the capability to cure the severe diseases like cancer

Environment

Environment changes

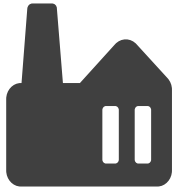
- Environmental pollution, such as air, water, are profoundly driving health issues

Emergence of super bugs

- Increasing economic activities will contribute to more frequent super pandemics and raising the need for systemic surveillance

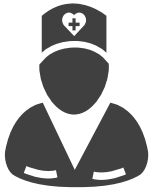
Source: PingAn GoodDoc homepage, MOFCOM, Dingxiangyuan , Kantar Health+ , Iyiou , Health 100 homepage
Note: [1]2019, [2]2017, [3]2018

We summarize five themes for the future of China healthcare system



Expanded health value chain

- **Major Disease Prevention and Control:** a trinity mechanism of professional public health institutions, comprehensive and specialized hospitals, and primary health institutions, regionally building the major disease detection capacity at grass-roots level
- **Increased Demand for Special Test:** third-party medical test centers, medical imaging centers, pathological diagnosis centers, hemodialysis centers, etc.
- **The Industrialization of Health Services:** the spring up of baby care covering the whole life cycle, health management, rehabilitation and senior care, boosting demand for subdivision detection



Empowered consumers

Personalized Health Management Needs

- **Diet Management:** with the popularization of health mindset, more families, especially high-risk groups, will manage diet and nutrition scientifically
- **Disease Prevention and Control:** risk assessment and early intervention of infectious diseases, cancers, genetic diseases and immune diseases
- **Mental Health:** increased demand for self-test and intervention for depression, anxiety and other common mental disorders and psychological behavior problems

Rise of private insurance

- **Cost Control Mode:** changing from zero plus and Volume-based Procurement (VBP) to cost control mode oriented by disease type, DRG and treatment results, disease detection outsourcing, and whole process of diagnosis, treatment and curative effect evaluation
- **Increased Commercial Medical Insurance:** further development of commercial health insurance service, significantly increased proportion of commercial health insurance compensation in total health expenditure, and increased coverage ratio of testing products and services

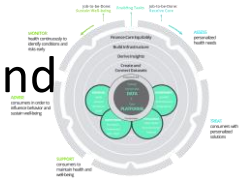
Smart healthcare

- **Health Care Big Data Upgrade:** cross-industry cooperation further accelerating the health care information system data collection and integration of gene, clinical, cost, behavior and others, monetizing the consumer health data
- **Accelerated 'Internet + Smart Medical' Layout:** 5G, wearable devices, AI, robots and other new technologies in the healthcare industry, giving birth to new diagnosis and treatment mode

Innovation clusters

- **The Emerging of Translational Medicine:** a number of clinical translational medicine centers based on hospitals, universities and research institutes vigorously developing cutting-edge technologies such as omics technology, stem cell and regenerative medicine, new vaccines, and so on, boosting the demand for testing
- **Industrialization of Precision Medicine:** the clinical development and industrialization of the next generation of cells, genes, vaccines and targeted drugs, boosting the demand for special testing

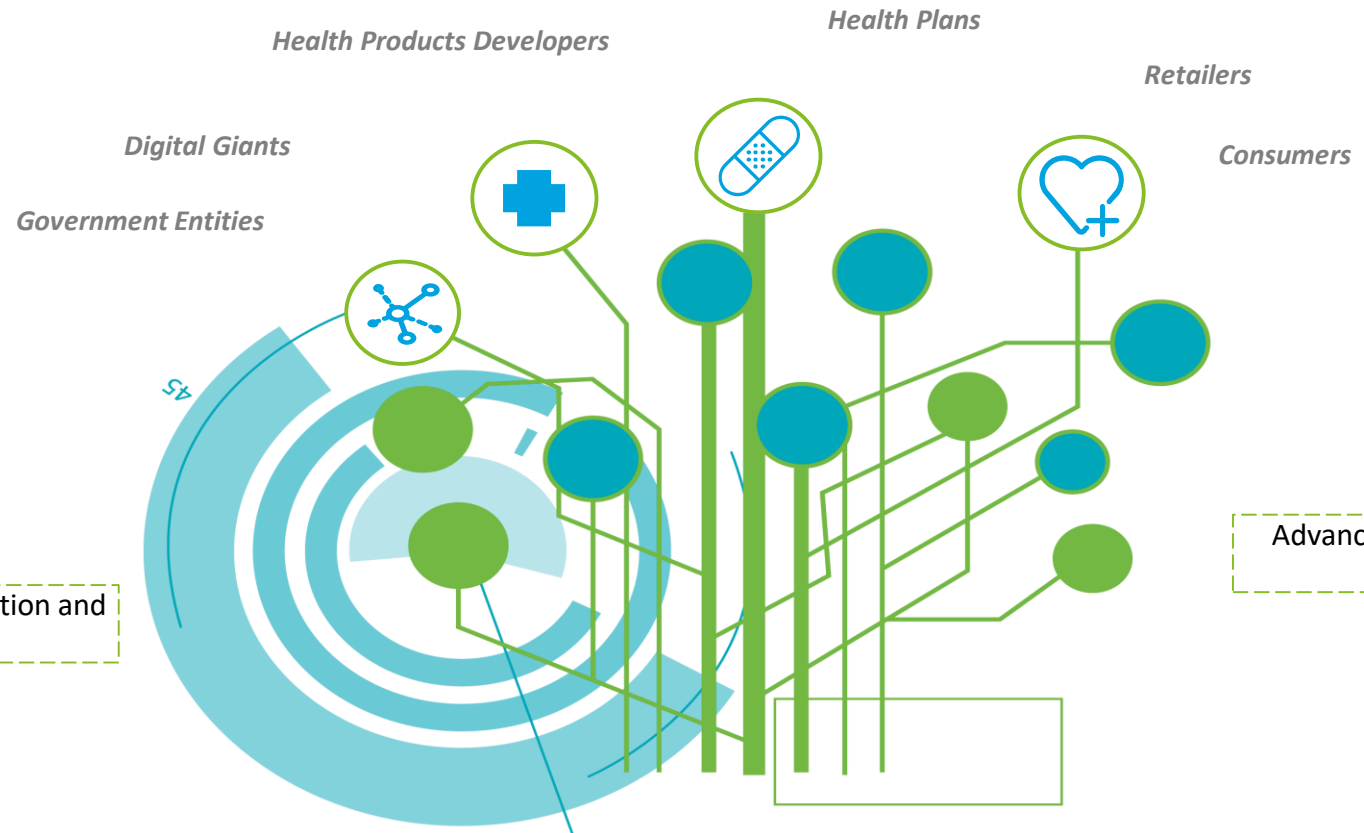
The future of health will be driven by digital transformation enabled by radically interoperable data and platforms



The **"Always-On" sensor-driven environment** generates massive amounts of data that is continuously gathered and stored by **multiple owners and selectively made available**

Data Sources

- Environmental (e.g. air pollution, UV levels)
- Institutional (e.g. claims)
- Population (e.g. public health)
- Individual (e.g. IoT use, genomic, mental health)



Platform Features

- Real-time advanced analytics and machine learning
- Data governance
- Security

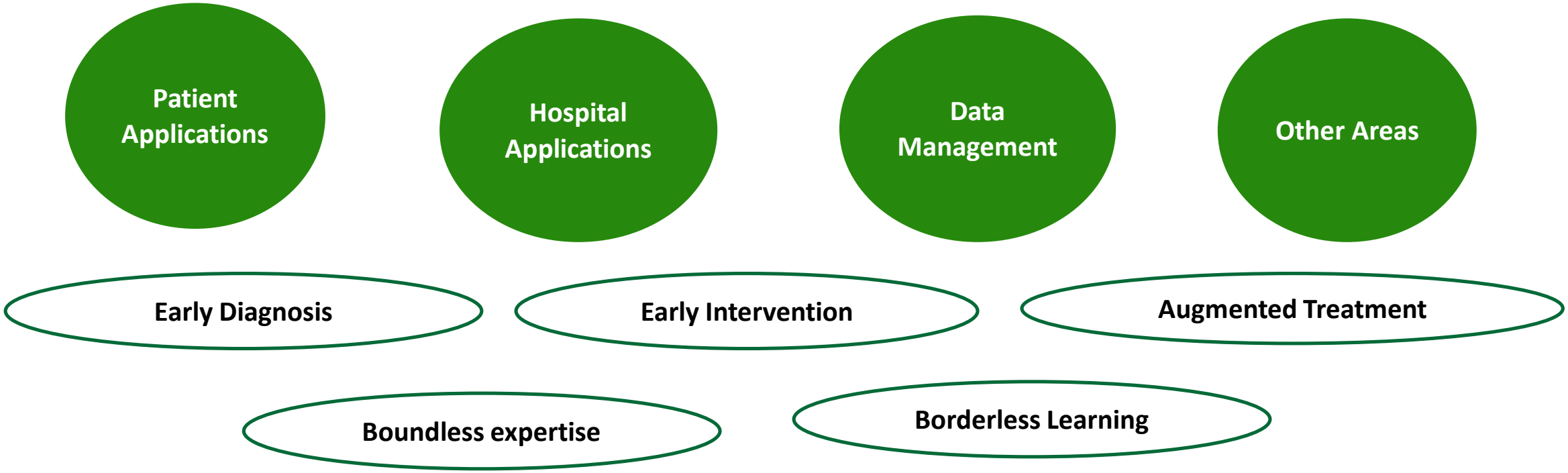
Connected databases allow for aggregation and access to multiple data sources

Advanced analytics generate real-time insights

*Radical Interoperability enables the seamless integration of multiple, disparate data sources and the application of advanced analytics to derive **real-time insights to improve the patient experience and drive the delivery of Always-On care***

What will 5G bring to Healthcare

With its core characteristics of: higher speed, increased data capacities, augmented security – while this new communication technology should primarily benefit the telco operators

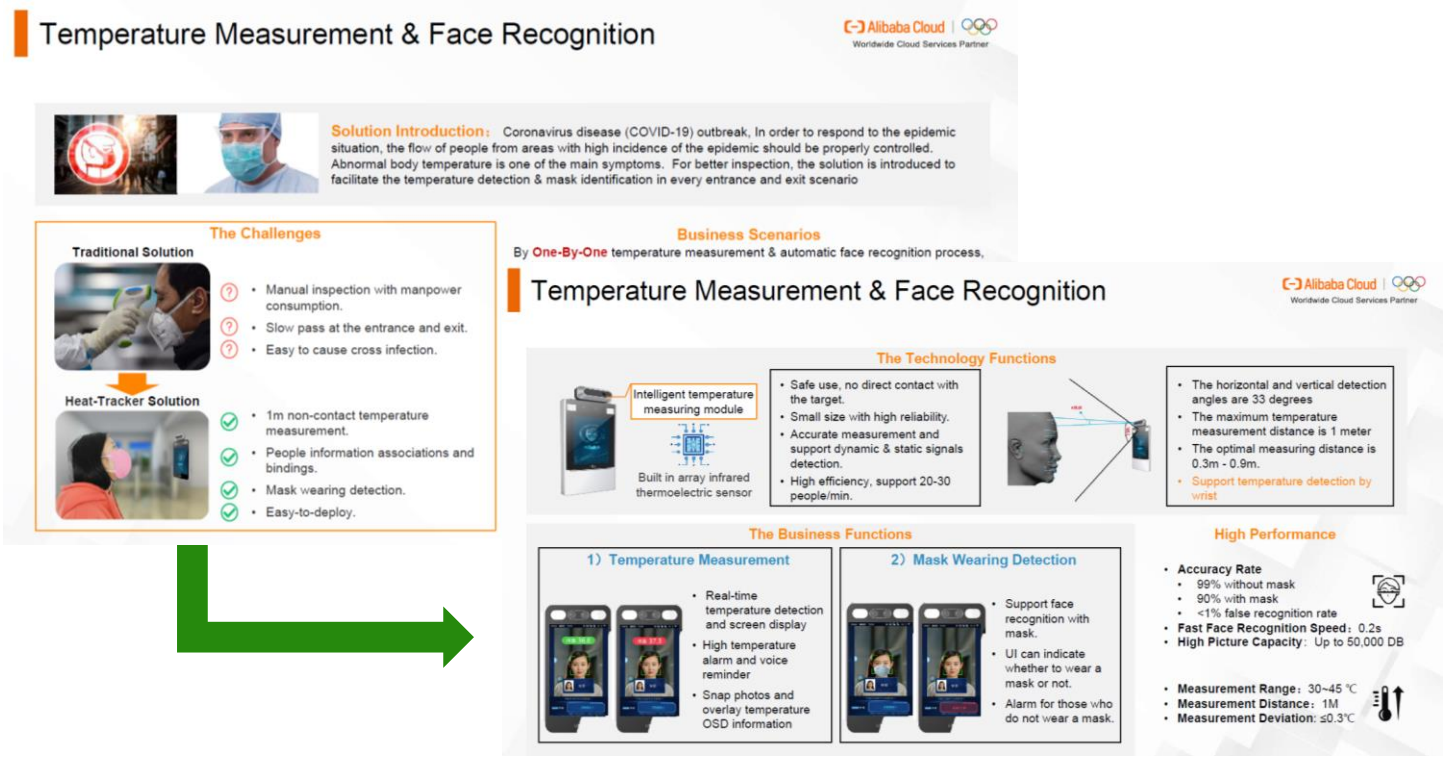


China's technology champions are stating :
Huawei began 5G+ healthcare research in 2016," said Zhang Wenlin, president of the Corporate Strategy Department at Huawei. "Since then, Huawei has built hundreds of 5G+ healthcare pilot projects based on our 5G indoor solution. Now, we have already contributed to the commercial implementation of many healthcare applications, including telemedicine (MDT cares), imaging tele-diagnosis, ECG tele-diagnosis, ultrasonic diagnosis, and training online."

Health Monitoring capabilities

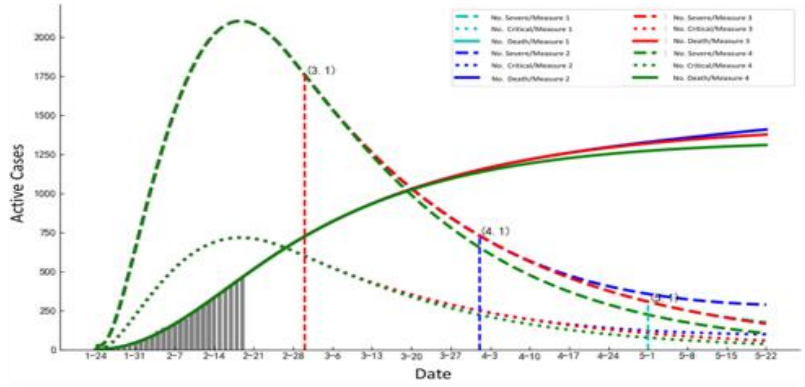
Higher speed and increased data accuracy will enable a more efficient and effective monitoring and prevention measures eventually

Technology solutions providers like Alibaba have brought to market solution enabling effective monitoring and reporting during the health crisis period we are going through. 5G transmission capabilities will not only increase the speed of making data available – thus enabling effective responses, but also a better overall data management system currently controlled by government agencies.



Epidemic Prediction

Help organizations estimate epidemic characteristics of coronavirus disease (COVID-19); predict the spreading trend of a disease in a particular region; and provide sensitivity test under different conditions



Health Treatments remotely delivered

Significantly increased visibility, speed and accuracy will allow remote surgeries, thus bringing to patient the best solution regardless of their distance to the highest expertise

Low Latency + ***High Bandwidth*** → ***Application in Remote Surgery***

5G requirements for remote robotic surgery

What role does 5G play?	Key 5G dimensions for remote robotic surgery			
> 5G **connects a surgeon in a remote location** to a surgical robot	Latency	1ms latency **critical for haptic feedback**	Availability	**Connection down-time** must be minimal since ongoing surgery cannot be interrupted
> 5G is mandatory for remote robotic surgery using **mobile connection**	Peak data rate	High throughput capacity is needed to **transfer high definition image streams**	Reliability	**Packet loss** must be minimal since ongoing surgery cannot be interrupted
> Most importantly 5G provides **1ms latency enabling haptic feedback**	User experienced data rate	High throughput capacity is needed to **transfer high definition image streams**	Security	Security critical since breaches can have **life threatening consequences**
	Battery life	Important as **surgeries can go on for a long time**		

https://www.ericsson.com/en/networks/trending/insights-and-reports/5g-healthcare

- Swedish telecommunication giant Ericsson has collaborated with King's College London to develop a pair of **haptic feedback gloves**. Surgeons are able to operate on a patient via a robotic intermediary from thousands of miles away. The result is sent to the cloud promptly, utilizing faster speeds that 5G provide, helping to prevent lag or data shortages during transmission and keep patients safe during surgery.
- In March 2019, the People's Liberation Army General Hospital chief physician carried out **brain surgery** remotely to insert an implant in the brain of a Parkinson's patient from Beijing at the PLAGH Hainan Hospital, 3,000km away.

- Accessible to in-person surgeons via **augmented reality (AR)**, **high-definition video** and **real-time data readings** from medical sensors
- Guiding surgeons with precise 3D information -- such as X-rays, CT scans or MRI -- overlaid into an **AR headset**, delivered with virtually no latency, as well as **remote robotic surgical tool** operated miles away
- Less time solving complex problems alone and more time saving

Senior well being and health surveillance 24H round will arrive

While the population continues to age in China, senior housing and well being for elderly becomes an increasingly important demand, part of the China 'Healthy China 2030 plan'

Government Policy Support

- China's 2030 plan in its 15 key initiatives, does cover the 'Elderly Care', as this population segment is expected to increase significantly to reach 350M by 2030 (ie. +100M from 2020), and will likely to influence significantly total Healthcare expenditures. Also, new technologies that could limit the exponential increase of resources required, receives all support from the government.

Home Safety | **Personal Safety** | **Personal Health** | **Medical Status**

IoT
Home Automation technologies

Wearables Health Monitoring
Treatment Management
Home Consultations
Medication Management

Digital Health Intelligence Service Practice

- The epidemic has accelerated the integration with 'Internet+', such as telemedicine, health monitoring, mental comfort and online family visits.

Smart Furniture equipped with sensors

- 'Press-the-button' calling for help
- Falling over alert
- Walking assistant robots
- AI Intelligent Steward

Informatization Management Platform

- Standardized modular services
- 24h tracking the elderly's movement and health conditions via smart devices
- Personalized nursing plans

Virtual Nursing Home

- Big data assigning each person to the responsible community-based nursing institute nearby
- Ordering nursing, purchasing and housekeeping services via APPs or phone calls from home

Data sharing and remote sharing

Allowing an significantly enlarged transmission of data & medical images files, knowledge, diagnosis and wider support to patient should become much faster and live saving

5G has the capacity to enable faster transfers of huge medical images, with exceptional network performance

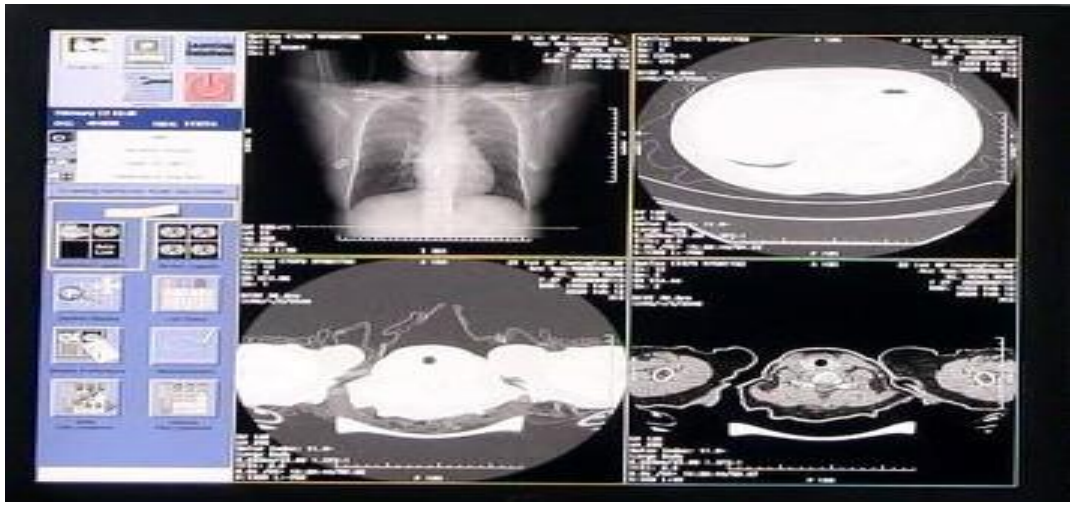
- Patient benefits are obvious with diagnosis competencies become much larger, avoiding lengthy travel & access time
- Diagnosis and treatment eventually increase through wider consultation possibilities
- Physicians are able to ‘see’ patients in less amount of time

BEIJING, Dec. 29, 2019 (Xinhua)
Wearing VR glasses to check a life-or-death situation in an ambulance, and closely watching the patient's electrocardiogram and ultrasonic images transmitted back in real time, doctors at a hospital in east China's Zhejiang Province remotely guided the paramedics and were fully prepared when the patient arrived.

Beijing Mar 23, 2020 (China Daily)
JinCheng Medical Technology, a medical equipment company, provided hospitals in Wuhan with a CT and X-ray coordination solution based on 5G cloud collaboration, which addressed the shortage of radiologists, thereby improving efficiency in screening suspected COVID-19 cases.

CT Image Analytics (Alibaba / Ali-Cloud)

Assist doctors in the diagnosis and detection of COVID-19 within seconds, with an accuracy of ~96% and at least 60 times faster than human detection



Online consultations and prescriptions model will become standardized

A number of barriers continue to exist in China (Rx Online purchasing, Initial (1st) prescriptions are constraints to date), but a better & larger healthcare access to China's population will change going forward

Policy

In August 2019, China released **the tele-healthcare pricing and assurance policy**, pushing tele-healthcare services a step closer to the commercial stage. As part of the **infrastructure of information-driven primary healthcare**, it will accelerate the Internet and medical development, improve primary healthcare to become more convenient, accessible and helpful to the people.

Increased patient experience

Increased access nationwide

Reduced resources

Source: expert interview, Monitor Deloitte analysis

Bundling multi-solution into the healthcare delivery model

Shanghai Health commission has authorized in June 2020, a Hospital (Fever Clinic) operating using the new 5G communication standards and infrastructure

Remote supervision of patients

- Allows visual and risk reduced patient monitoring by physicians
- Permits recording of real time health-data

Robots ensure cleaning

- Allows 24H facilities management and monitoring.

Robots ensure medicine delivery

- Allows medicines patient delivery reducing infection risks for physicians and other subjects

Shanghai's First 5G Fever Clinic Goes Into Use

YICAI GLOBAL

DATE: JUN 12 2020 / SOURCE: YICAI

Shanghai's First 5G Fever Clinic Goes Into Use

In perspective & conclude

China’s unique eco-system fostering the use of mobile technologies and adherence in general to new technologies will certainly allow 5G in Healthcare to have a very speedy application path

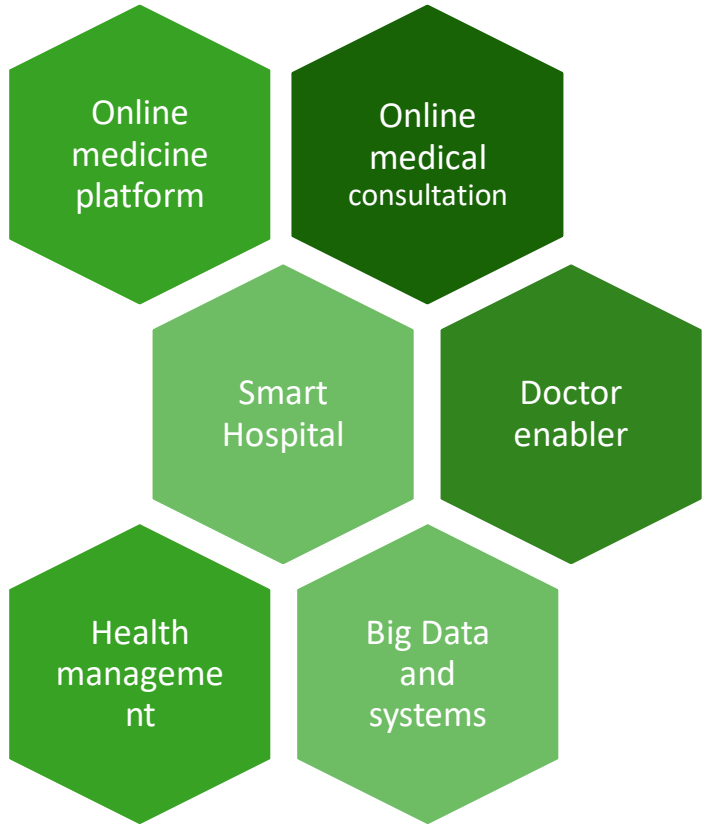
Tech giants involvement in healthcare

- In January 2020, Alibaba launched **online clinic service** for Hubei users on Alipay and Taobao, then extended its service to Beijing.
- In February 2020, Alibaba launched **drug delivery service** for chronic diseases.
- Alibaba developed an **AI algorithm**, which can "**identify the image of coronavirus infected pneumonia** in 20 seconds, with an accuracy rate of 96%." By the beginning of March, the algorithm has been applied to 26 hospitals in 16 provinces and cities, and was expected to expand to more than 100 hospitals.

- Huawei developed a cloud computing tool to **screen drugs** and find five candidates, two of which have entered clinical trials.
- On January 30, Huawei launched a rapid gene detection technology. The data was transmitted to Huawei Cloud through **5G** network, and got quickly analyzed by AI.
- On February 10, Huawei launched a cloud platform for gene identification and providing one-click automatic service for **clinical diagnosis and monitoring** during the epidemic.
- Since February 10, Huawei and Zhejiang University have released a number of **AI knowledge maps** for coronavirus scientific research.

- Since January 26, WeChat launched a "**national epidemic dynamic**" page to provide comprehensive functions, such as medical popularization, real-time epidemic statistics, fever outpatient map, etc.
- Tencent launched a "**symptom self screening**" tool, which helps users with suspected symptoms to obtain guidance through AI.
- For virus mutation prediction, antiviral drug screening and vaccine research, Tencent has opened its own **cloud computing, AI and big data** capabilities to provide technical support for free.

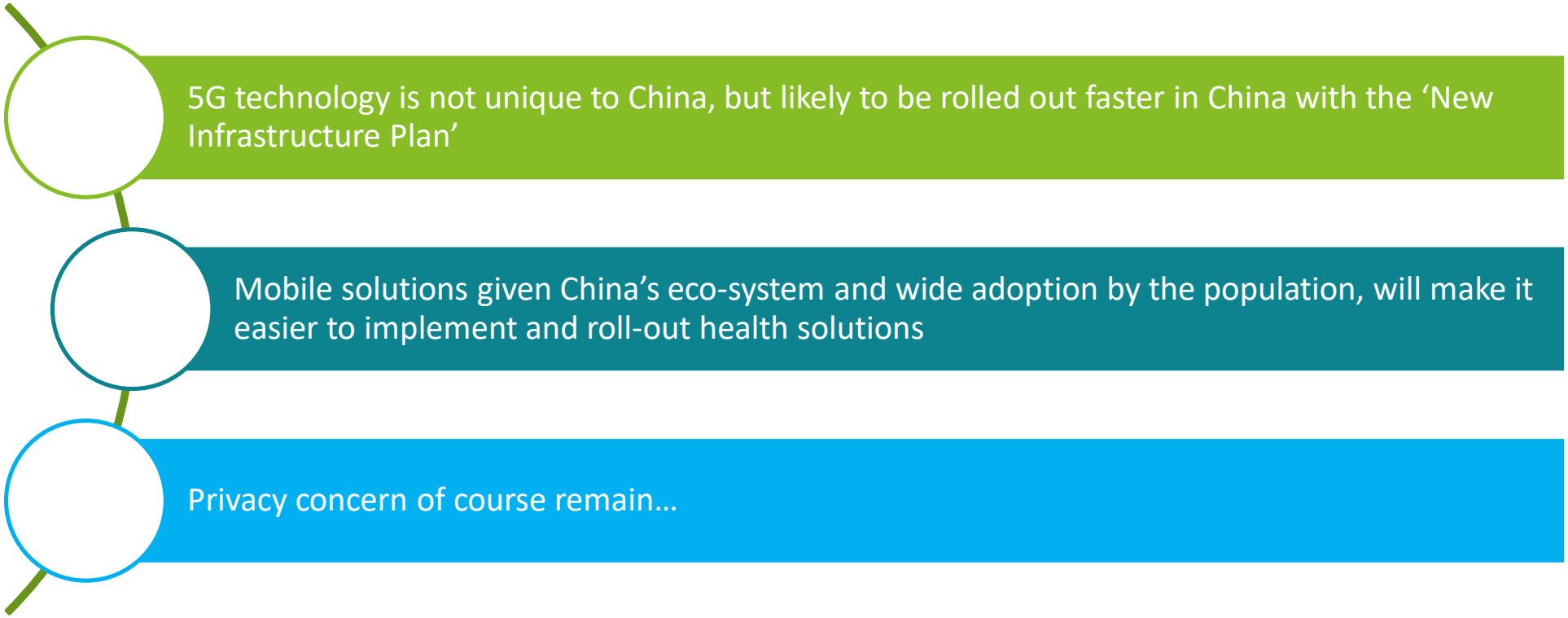
Application scenarios



In perspective & conclude

China's future of Health… care will certainly integrate much of the new possibilities of 5G technologies

A few ending thoughts



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Polling questions for webinar

Thank you!

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