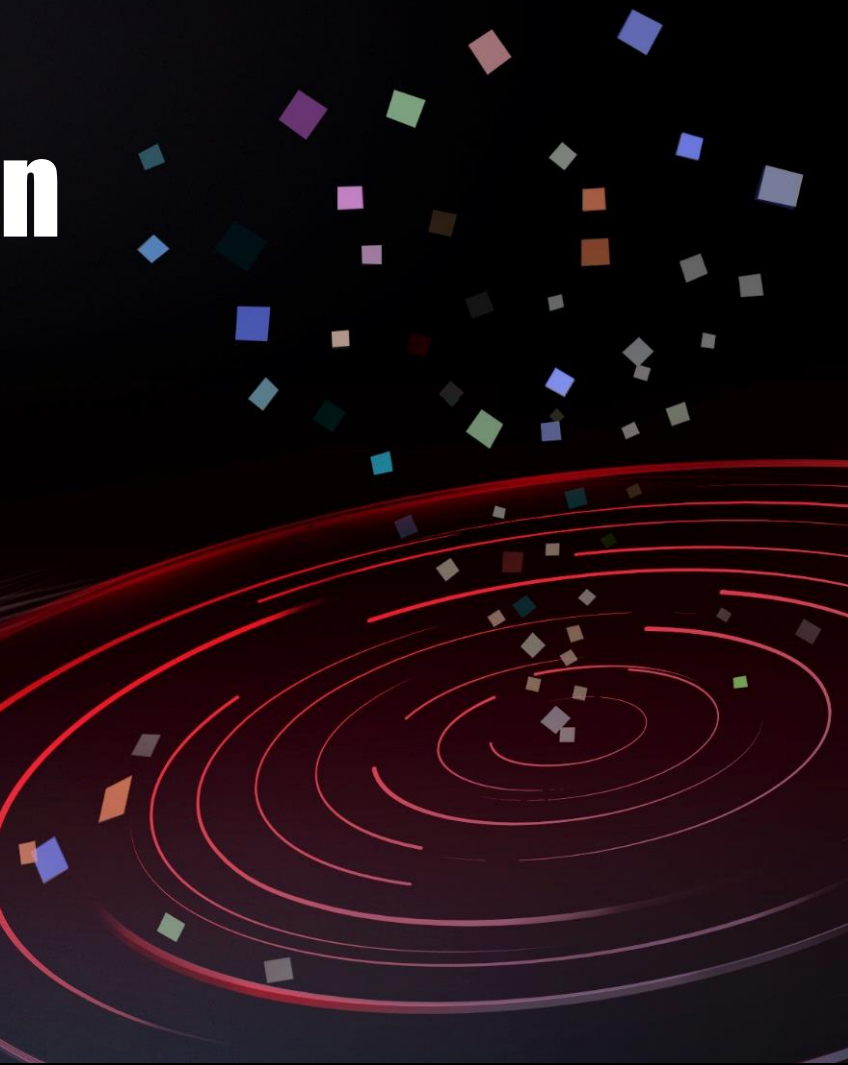


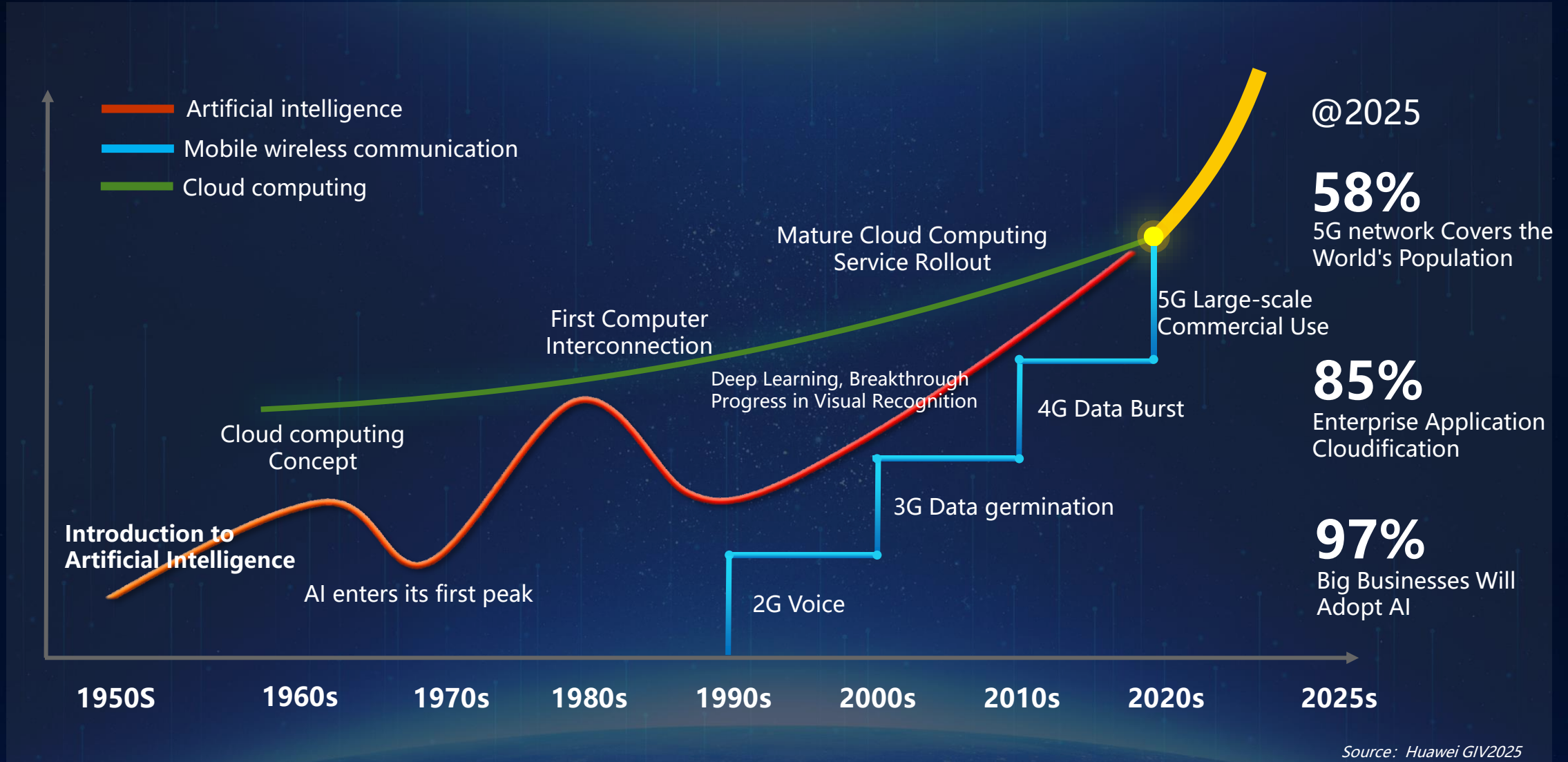
5G Inspires New Value to Accelerate Industry Digitalization

George Li

Director of Hong Kong Solution Sales Dept, Huawei Asia Pacific Region

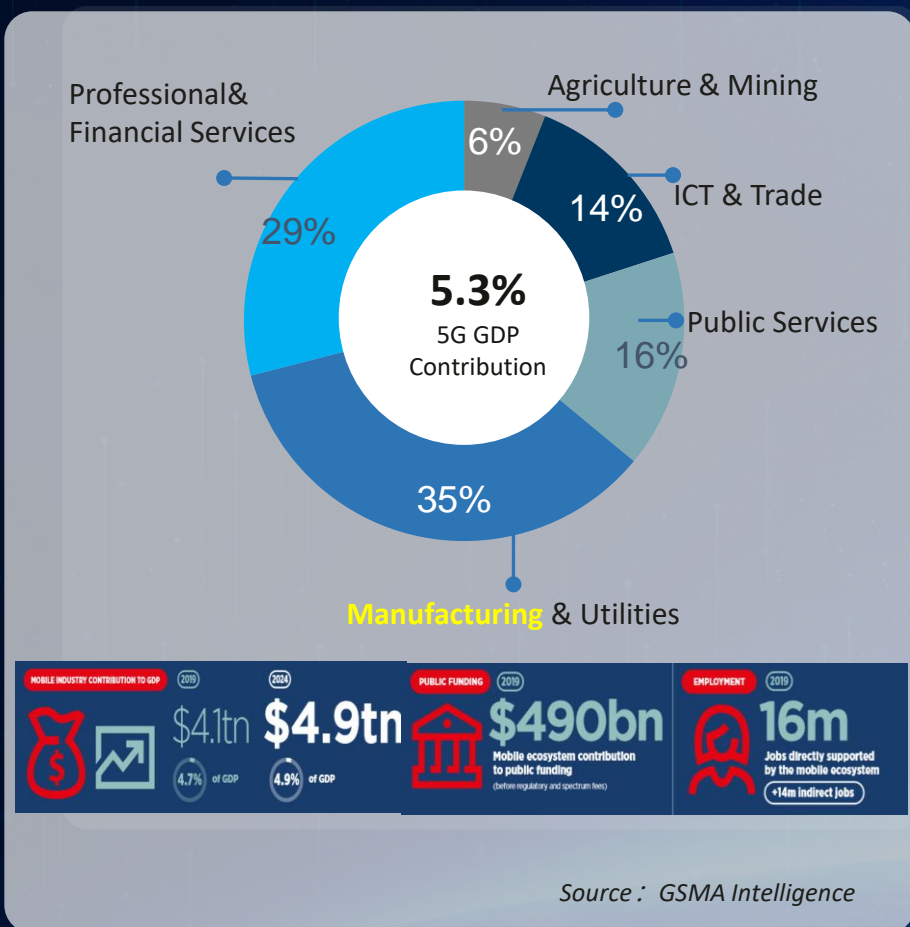


5G、AI and Cloud Converge on the Top of the Wave and Become the Core Engine Driving Industry Digitalization

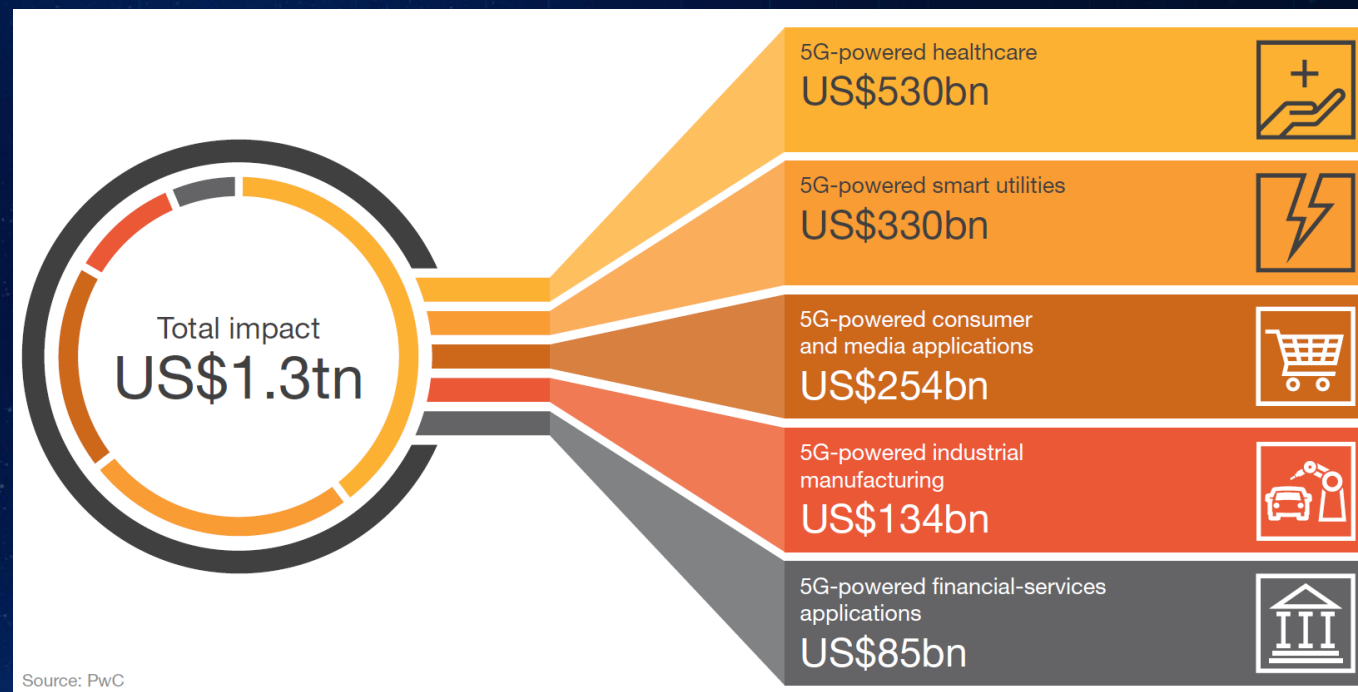


5G is Helping Industries for Adding New Growth

5G will drive 5.3% GDP growth in 15 years(Manufacturing: 35%)



5G boosts global GDP by industry by 2030 (US\$)



Healthcare, smart utilities, consumer & media, **industrial manufacturing**, and financial services powered by 5G will add **US\$1.3tn** to global GDP by 2030.

5G is Driving 2C Business to Make Financial Growth

5G 2C is Booming



~940

Announced 5G Devices

~65%

Devices Commercial Available



450

Announced 5G Smart Phones

170

Announced 5G CPE



< US\$150

Budget 5G Smart Phones

~ US\$200

Budget 5G CPE



...



Source: GSA, GSMA Intelligence, CAICT, etc...by July 2021

China Mainland: No "Killer Application" But Multi-point Service Innovation Accelerating 5G 2C Success



(YoY, 2021H1)

↑12.7%
Revenue

↑11.3%
Net Profit



>910K
5G Sites



495M+
5G Subscribers



↑33.4%
MBB DoU

5G + Redefined Traditional Services

SMS with Plan Text



New Message with Rich Media



Voice Call



Dual-Side Video RBT



5G + Free-View Video



Free-view Video in 2021 New Year Gala Show

5G + Live Broadcasting and AR



5G + Social Media Live Broadcasting in Tea Garden



Free-view VR Video of "Wu Shang Chun" Dance Show



AR Tour in The West Lake, Hangzhou City

Other Countries:



Korea
(YoY, 2021H1)

↑4%
Revenue

↑34%
Net Profit



Kuwait Zain
(YoY, 2021Q2)

↑9%
Revenue

↑21%
Net Profit

.....

Industry is Developing Faster than We Expected by Numerous Collaborations & 5G

5G 2B Making Significant Progress in China mainland

How can HongKong develop Industries with 5G?



Ongoing 2B Projects in Hong Kong

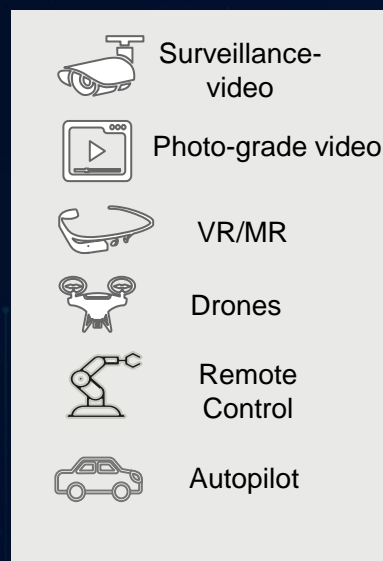
- Smart Healthcare
- Smart Building
- Smart Property
- Smart City
- Smart Transportation
- Smart Port
-

5G + AI + Cloud Enable Smart Manufacturing

- **HongKong can learn China mainland cases in smart manufacturing for electronics industry**

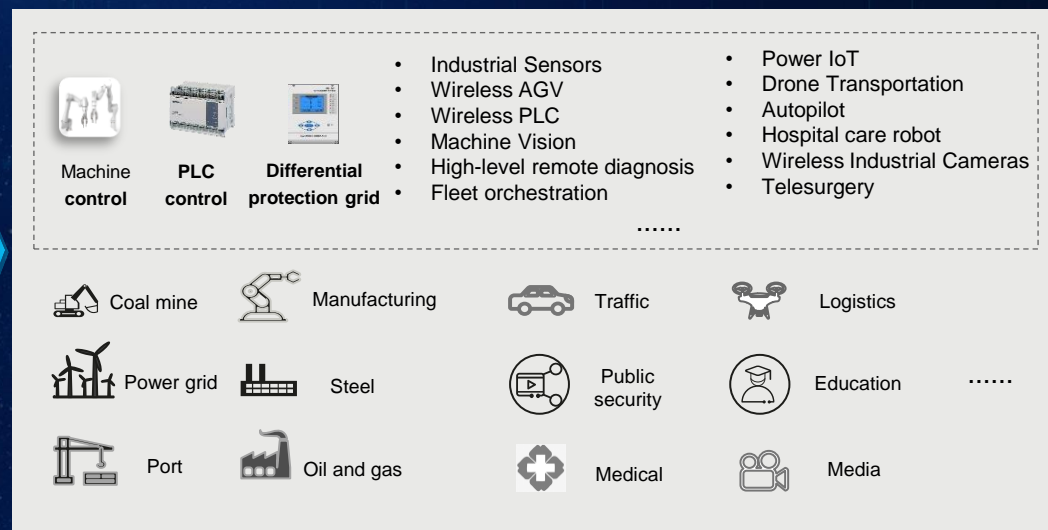
5G Industry Applications are Gradually Promoted Based on Industry Requirements

Phase 1: eMBB features can meet a large number of industry requirements



Large-bandwidth, Low-latency and High-Reliability

Phase 2: Successful 5GtoB trial industry applications will make scale replications in the industry



High Reliability, Wide Connection, and High Positioning

Identify Suitable 5G Services in Each Industry

2019: 5G Use Case Trial

2020: 5G application Commercialization

2021 ~ Future: Scale development of 5G vertical industries

3C & Home Appliances Smart Manufacturing: Covering the Entire Production Process, Collecting Data and Controlling in Real Time

Smart
Manufacturing

Automation: standardization and fewer people

Lean operation: lean and flexible

Informatization: end-to-end digitalization

Industry
Use Cases



① AI quality inspection

Surface inspection, positioning, identification and measurement



② Data collection/loading

Data collection and software loading



③ AGV Logistics

Park, Warehousing and Workshop Logistics



④ AR/VR

Remote maintenance and AR spot check



⑤ Cloud-based PLC

Cloud-based control and machine collaboration



⑥ Video surveillance

Video surveillance and fire prevention

More...

Atomic
Capability

A

Large uplink bandwidth
150M-1Gbps

B

Ultra-low latency
15-20ms

C

High reliability
Backup route

D

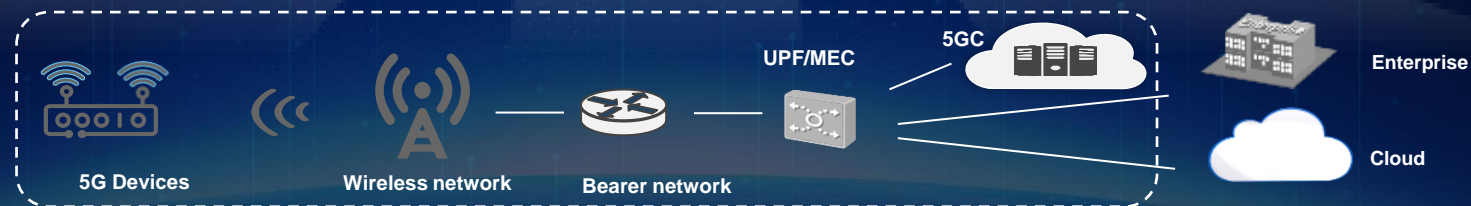
Fusion positioning
Meter/submeter

E

Edge Computing
MEC

...

Network



More values more returns for IKD and partners



+ Terminal



鼎桥通信技术有限公司

Now 600+ terminals deployed

+ Application

AI



App portal

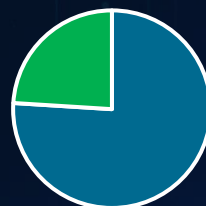


+ Cloud platform



China Mobile Cloud

24%
5G Network
(incl. service)

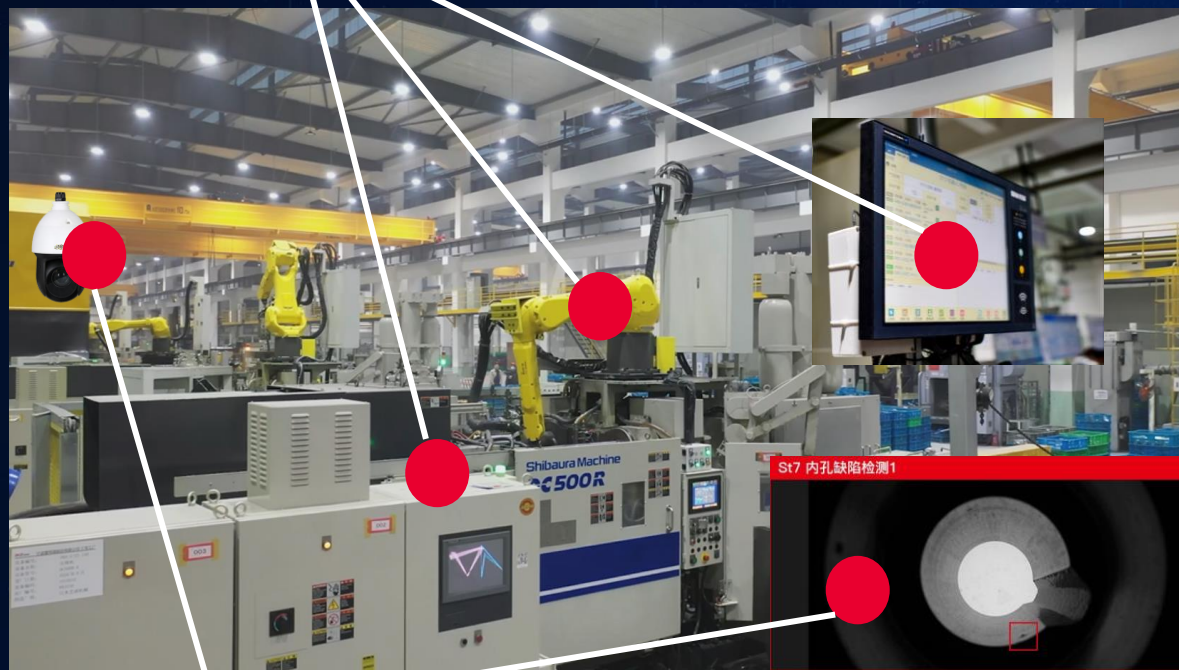


76%
Application & Integration
(Incl. terminal, application, cloud)

IKD Smart Factory: World's 1st full 5G connected factory

UC 1: Connect all equipment, machines, robots

UC 2: Collect all production process data



UC 3: AI product quality inspection

UC 4: Safety surveillance(Intelligent video)

All connected by 5G



中国移动
China Mobile

2000
Equipment

300
Robots



MES Terminal
(5G Inside)

2000
5G terminals



鼎桥通信技术有限公司

5G Manufacturing Brings New Values to Stakeholders

Full 5G connected digital factory

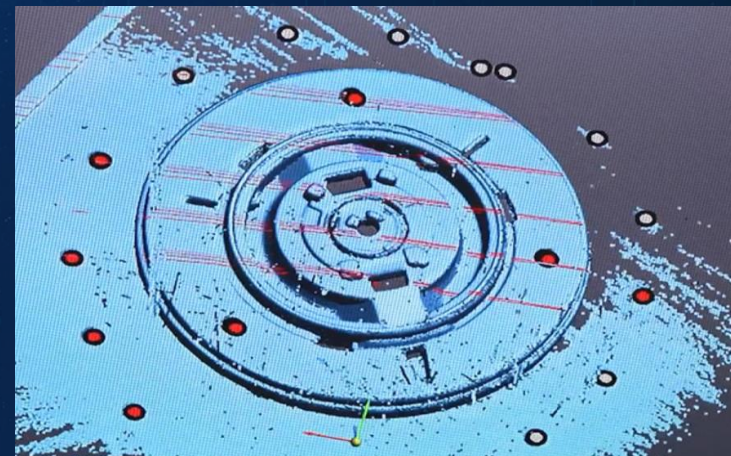


50% ↑
Production Yield per capita (2023)

70% ↑
Semi-product turnover

IKD
(factory)

5G + AI Product Quality Inspection



15% ↓
Product Defect Rate

85% ↑
Efficiency

Midea 5G Smart Manufacturing Project Overview

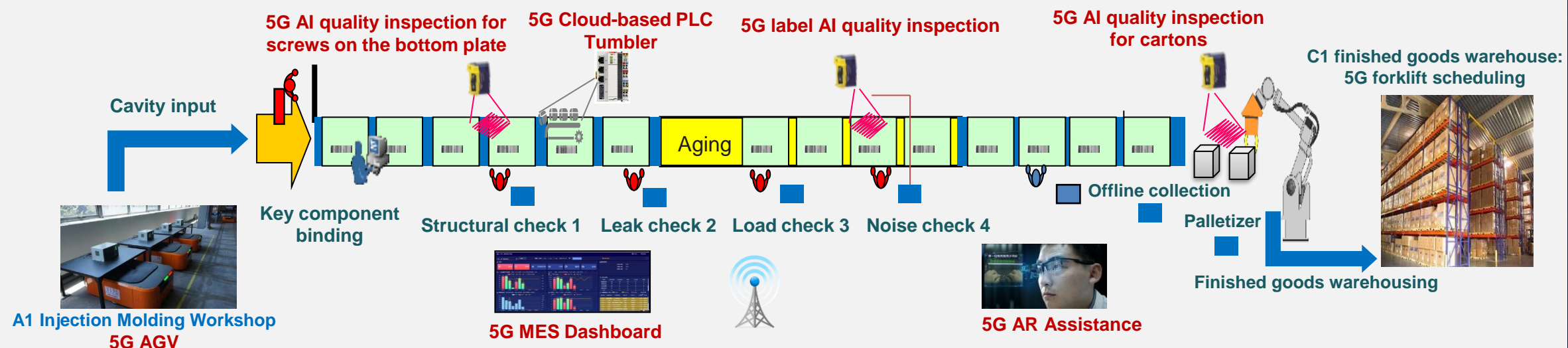


- Covering **533328 m²**, 8 workshops, nearly **10,000** employees
- Products: microwave oven, big oven, small oven, steam oven, etc
- Capacity: **59** assembly lines, **40 million/year** units, 2019 revenue **2 billion USD**
- Cover the entire production process, including **parts production, product assembly, and warehousing**

Business Pain Points

Flexibility	<ul style="list-style-type: none"> • Small batch and multiple models (2000 types+) • Frequent adjustment (12 times/line/year) • Network change investment exceeds 6 million CNY/year
AI quality detection	<ul style="list-style-type: none"> • Many quality inspection requirements
Logistics efficiency	<ul style="list-style-type: none"> • Wi-Fi network is unstable, affecting logistics efficiency • Locating is not supported
Equipment O&M	<ul style="list-style-type: none"> • Engineers can not go to the site quickly when faulty happens, which affects the production for a long time
Wireless	<ul style="list-style-type: none"> • Various production terminals are based on wired networks, which is difficult to maintain and costly.

11 Types of 5G Scenarios in Midea Various Production Processes



UC 1:5G+Smart security protection



UC 5:5G+Scanner Management



UC 9:5G+Data collection



UC 2:5G+AGV



UC 6:5G+Cloud-based PLC



UC 10:5G+AR Remote Maintenance



UC 3:5G+Machine Vision Inspection



UC 7:5G+KUKA Robot



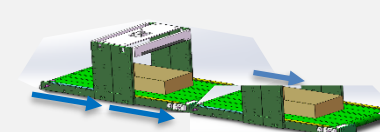
UC 11:5G+ Warehousing logistics



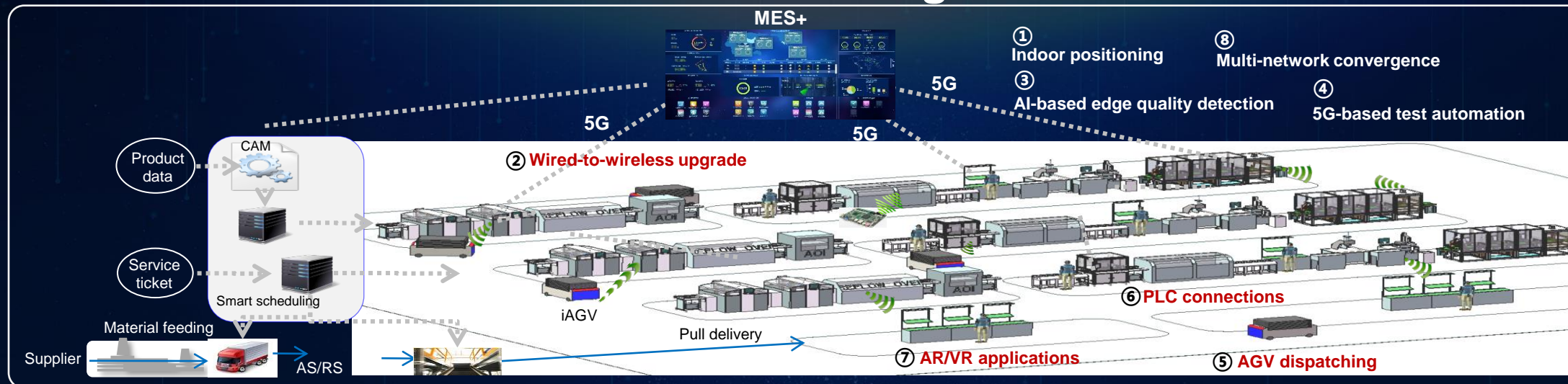
UC 4:5G+MES Dashboard



UC 8:5G+Machine Vision Inspection



Huawei T-Campus(3C Electronic Manufacturing): Eight Application Scenarios and 45 UCs Cover Manufacturing Process



Application Scenarios

Indoor positioning

- Asset auditing
- Resource scheduling
- Visualized material management
- Staff heat map

Wired-to-wireless upgrade

- Flexible manufacturing
- 5G LAN
- Commonality, automation, wireless connections

Test automation

- Automated aging
- Automated OS loading
- Automated loading test

PLC connections

- PLC control
- PLC collaboration
- PLC on cloud

Multi-network convergence

- Wired
- Wi-Fi
- UWB
- Others

AR/VR applications

- Remote guidance
- Online repair
- Factory visit & acceptance

AI-based edge quality inspection

- Print defect
- Material defect
- Assembly defect
- Package defect

Smart logistics

- AGV dispatching
- Logistics dispatching
- 5G-based autonomous driving



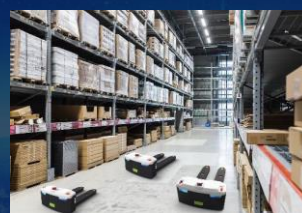
Resource Management



AI Visual Quality Inspection



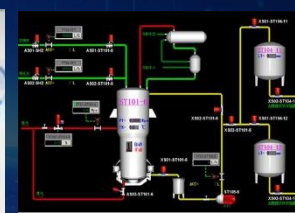
Automatic test



Intelligent logistics



AR auxiliary



Equipment Intelligent Monitoring



Robotic Collaboration

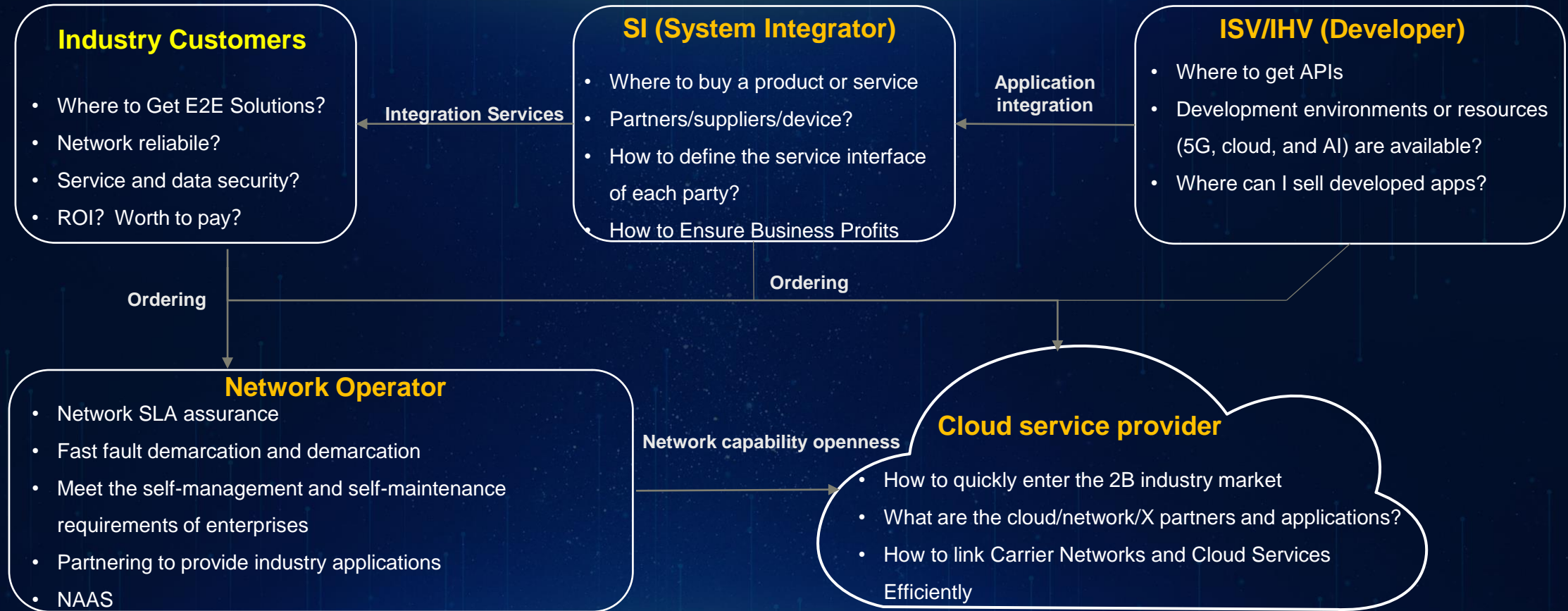


Multi-network Convergence

Short and medium term

Medium and long term

5 Roles Require Collaboration to Meet Industry Requirements



5G Manufacturing Enables "New Connections, New Platforms, and New Convergence" for Enterprises, Helping Enterprises Transform



Digital R&D Intelligent logistics Smart factory Smart Campus Industrial AI Applications Digital marketing Mobile travel



3 Key Successful Factors

- Find practical needs & industry focus
- Scenario Based Solution & Operation Platform
- Business Model

Intelligent cloud platform

Computing|Storage|Network|Security

Application and data security

Access security
Communication security

5G Industrial Internet



Interactive devices

Production equipment

Logistics equipment

Security and protection equipment

Three Convergences

Convergence of order and manufacturing based on digital foundation

Convergence of design and manufacturing enabled by cloud computing + AI

Convergence of 5G network and Edge Cloud

Two Clouds(Intelligent Cloud Platform + MEC)

High-performance edge cloud (MEC) is the foundation for building full-factor awareness

One Network

Reliable + Flexible + Intelligent 5G connections guarantee real-time systems

Welcome to Join APAC 5G Industry Community



Accelerating the 5G & IoT adoption in industries and enterprises

OUR VISION: Strengthen operator and industry partnerships to accelerate enterprise digital transformation with 5G & cellular IoT

INTEREST INDUSTRY GROUP (2021-2022): We invite enterprise, govt/agencies and industry organizations to join to participate in the community

Manufacturing



Logistics, Port & Transportation



Healthcare



INDUSTRY LEADERSHIP:

Contributor members



Globe BUSINESS



HUAWEI



MINISTRY OF
COMMUNICATIONS AND INFORMATICS
REPUBLIC OF INDONESIA



Life Is On



Telkomsel



Scan QR Code



Register here to join the community

Register here to join the community

<https://www.gsma.com/asia-pacific/communities/ap5gic/>

Thank you.

把数字世界带入每个人、每个家庭、
每个组织，构建万物互联的智能世界。

Bring digital to every person, home and
organization for a fully connected,
intelligent world.

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