

# F5G - Extending Gigabit FTTH to Industrial PON



**Dr. Jiang Ming**

**Deputy Director of Data Communication Department  
China Telecom Research Institute**

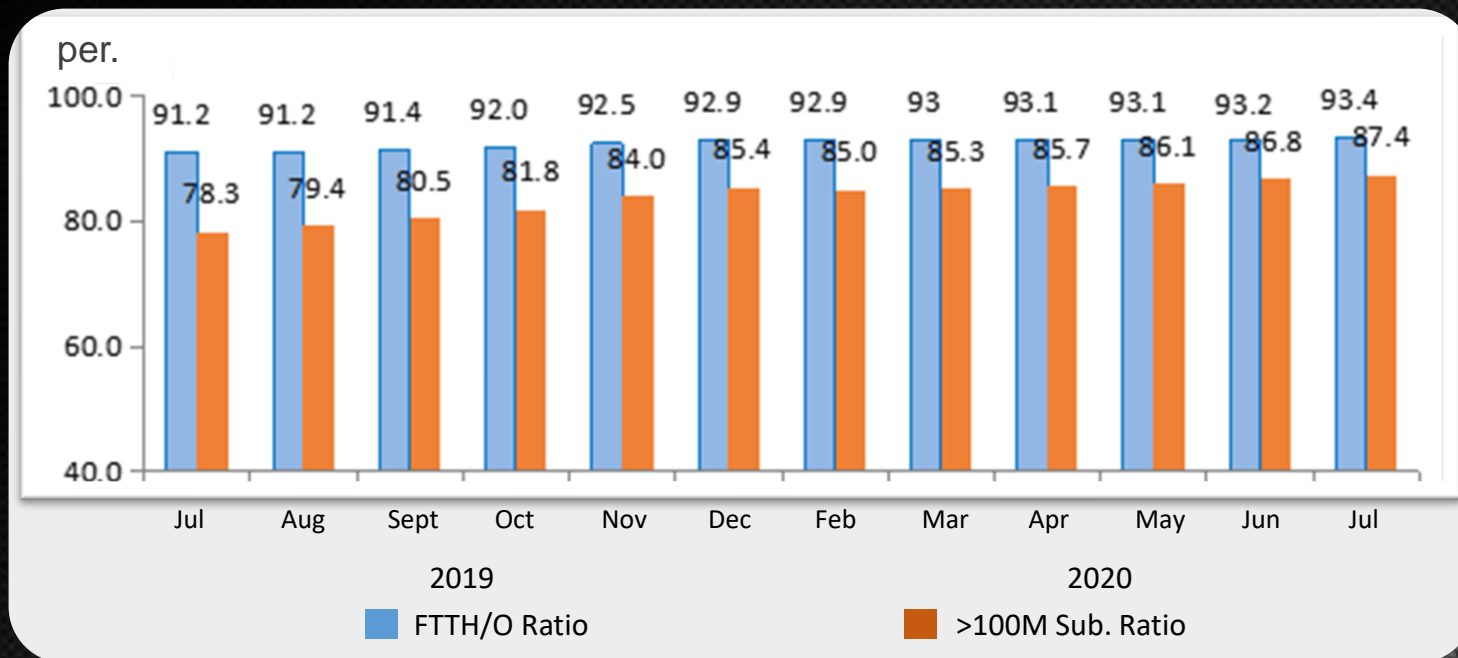
# eFBB - Progress of China FTTx Networks



China FTTx Sub.: more than 90%, gradually increasing

Promotion of Gigabit broadband services accelerated (~ 3.07M)

Rapid scale expansion of family informatization applications in CTC



Broadband  
subs

154Mil

# eFBB – Ubiquitous Gigabit

- ▶ **Triple Gigabit = Gigabit Broadband Access + Gigabit 5G + Gigabit Wi-Fi 6**
- ▶ **Gigabit Broadband Access enabled by Massive Deployment of 10G PON network**



## Cloud VR

BW 500Mbps~1Gbps  
Latency < 10ms



## Smart Home

BW > 370Mbps  
Latency < 20ms



## Gaming

BW > 300Mbps  
Latency < 50ms



## Social Network

Full-view live stream  
BW<sub>US</sub> > 200Mbps



## Cloud Desktop

BW<sub>US</sub> > 50Mbps  
Latency < 10ms



## Safe city

AI real time monitoring  
BW<sub>US</sub> > 200 Mbps



## Cloud Private line

BW > 100Mbps  
Reliability > 99.99%



## E-education

BW > 750Mbps  
Latency < 20ms



## Remote Medical care

BW > 200Mbps  
Latency < 10ms



## Smart Manufacturing

Sync. Real time operating  
Latency < 100us

## ▶ Actively pushing forward Wi-Fi 6



Gigabit Everywhere

QoE and Bandwidth ↑

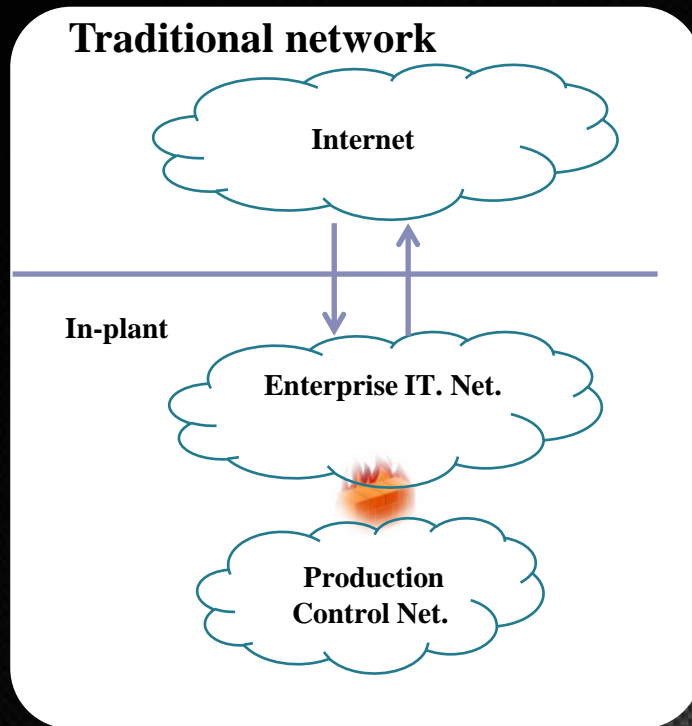
## ▶ Exploring FTTR



All-optical Home Network

Smart Home Upgrading

# FFC - Upgrading of Industrial Internet Network



- Isolated Networks
- Isolated information island
- Deeply Customized
- Inefficient Network

### Smart Factory

Intelligent  
Operating



Outstanding  
Performance



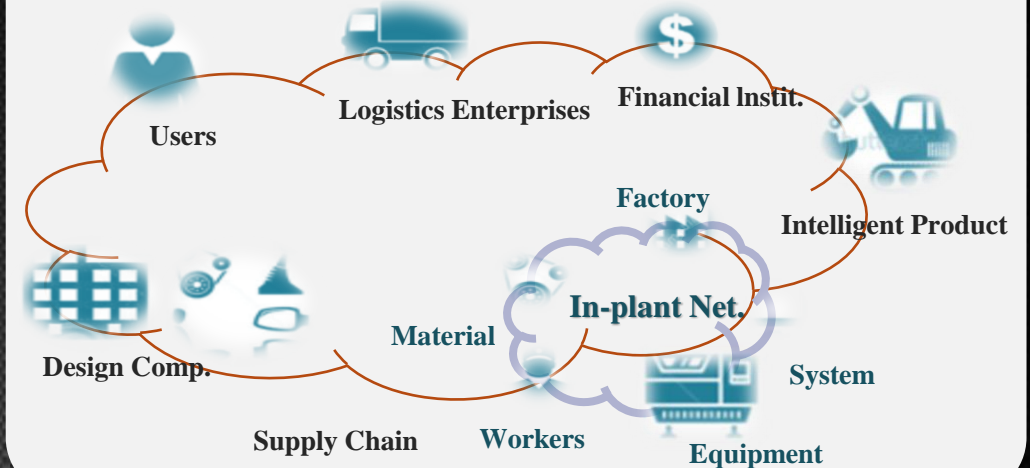
Agile R&D



Durability



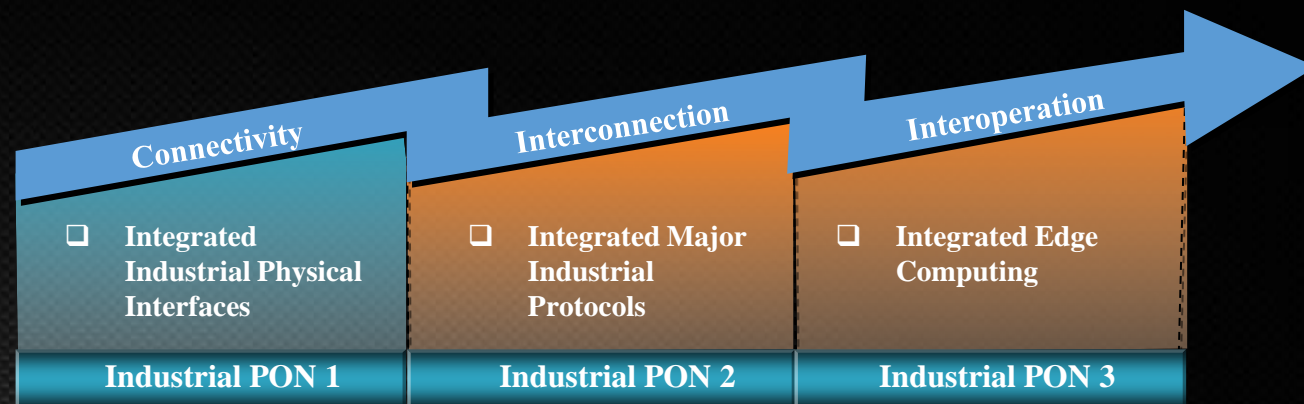
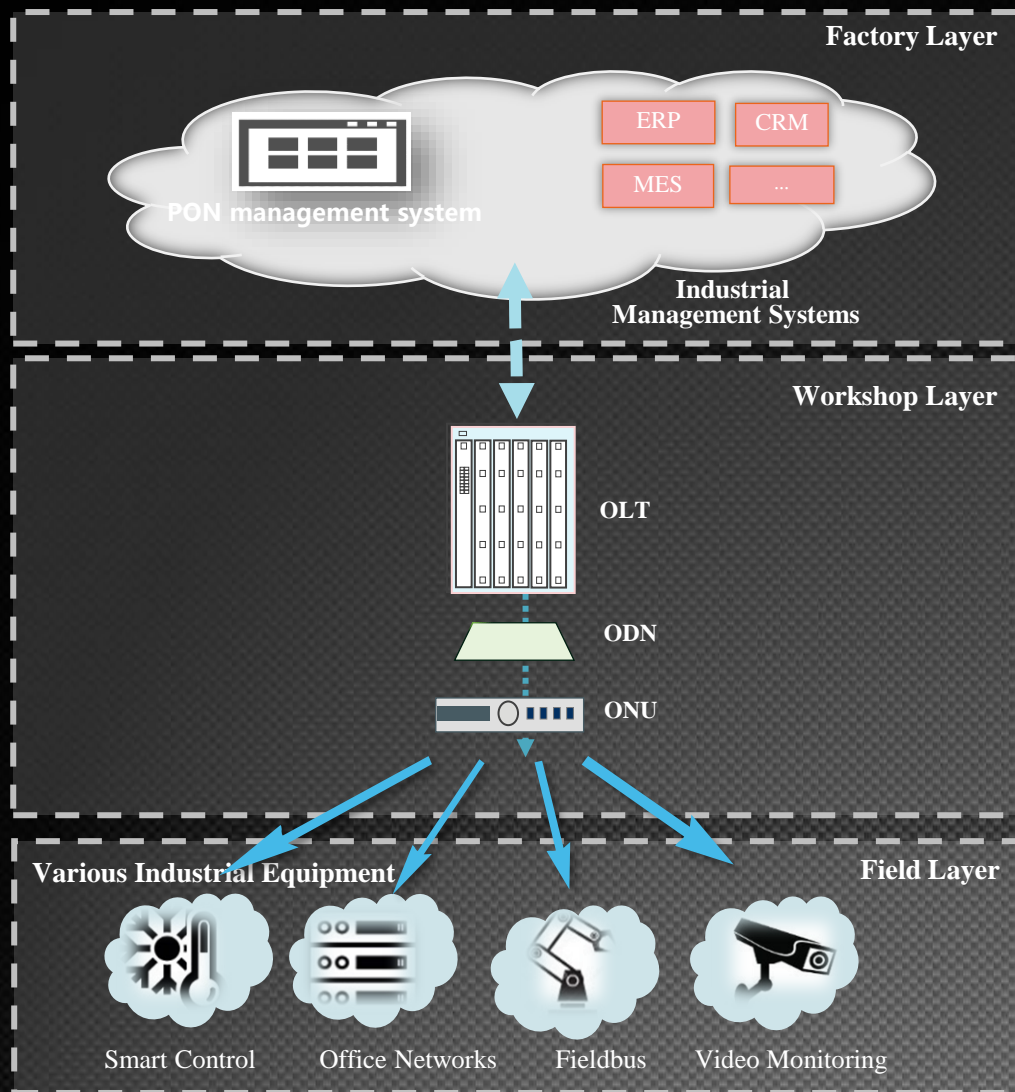
### Industrial Internet Network



- All in one network
- Real-time data acquisition
- Cloud-based capabilities
- Safety & Robustness
- IT &OT&CT Convergence

Industrial  
PON

# Characteristics of Industrial PON



## EtE System

Deterministic experience

Security

Robustness

## Control and Management

Intelligent operating

Open API

Self-service

Monitoring

### ONU

Industrial Phy. interfaces

Protocol conversion

Environment adaption

### OLT

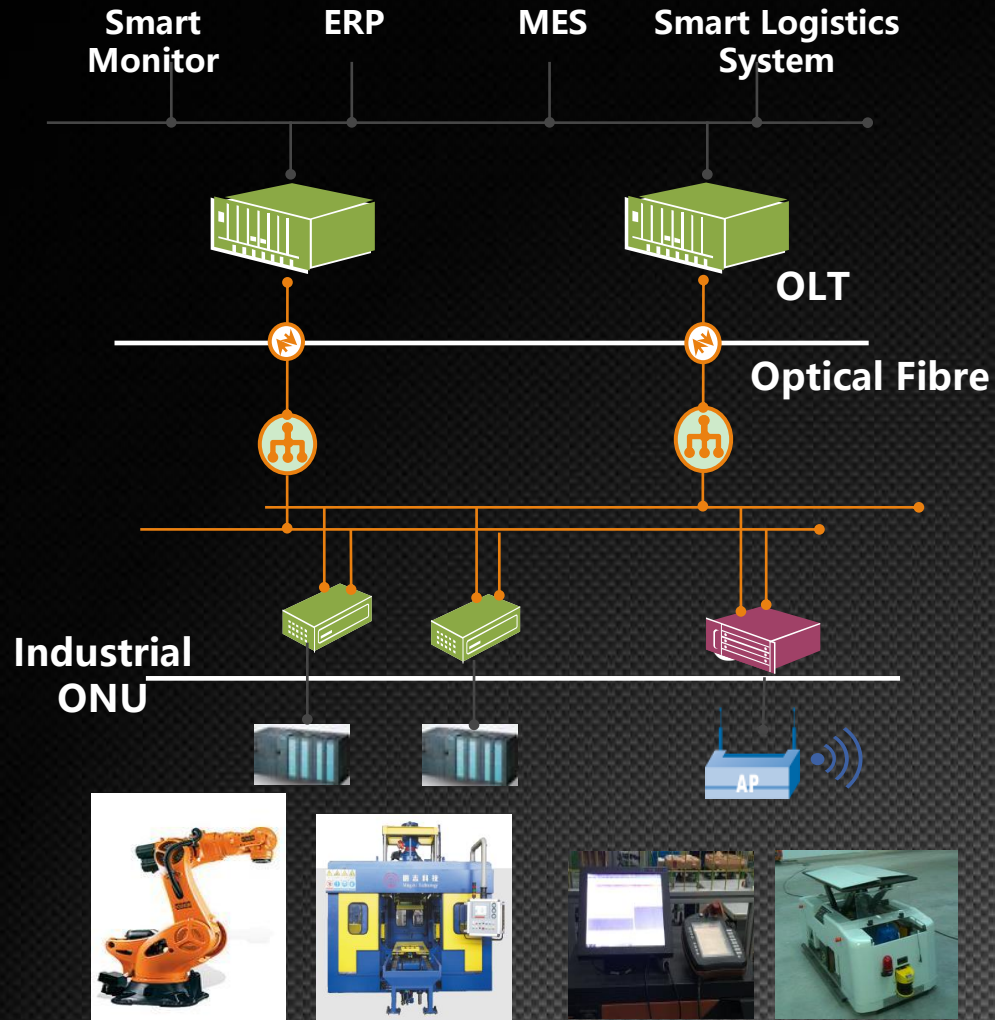
Edge computing

Encryption

Network slicing

Network resilience

# Practice of Industrial PON



## Flexible and reliable Network

- easily scaled
- enhanced protection
- real-time data acquisition

Cost of Networking Single point 40% ↓

Pro. cycle time 6.5 days (ave.) ↓

Pro. efficiency 221% ↑

*eFBB and FFC are important aspects in F5G*

*Good practices achieved by China telecom in both scenarios*

*Welcome cooperation with partners in the communication, industry  
and academia ...*



# *Embracing F5G, Promoting the Digitalization Upgrading*

*Thanks!*

*Q&A*

