

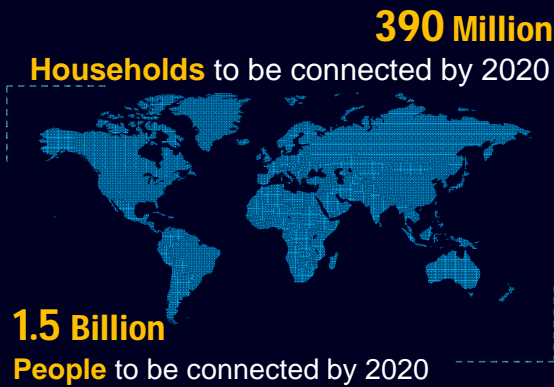


Ultra-broadband
Achieving Connect 2020 Targets Through
Innovations in ICT

Huawei Technologies Co. LTD

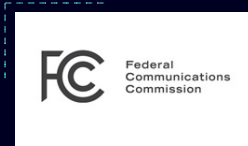
Better and full connectivity is trend

From **Unconnected**
to **Connected**



More Connected

From **Under-Connected**
to **Better Connected**



Redefine broadband: **25Mbps**
34% households' connection
speed **below 10Mbps**;



“**Giga Home** subscribers
must reach up to **58.5%**
by 2025” --Günther H. Oettinger

More Traffic

From **Human Connected**
to **All Connected**



Safe City, Shenzhen
205 Cameras/km²

IoT (Massive Connected)

Broadband As Infrastructure is New Driver for Economy

Like water, roads, rail, and electricity before it, broadband is of fundamental importance to the social and economic development of all nations.

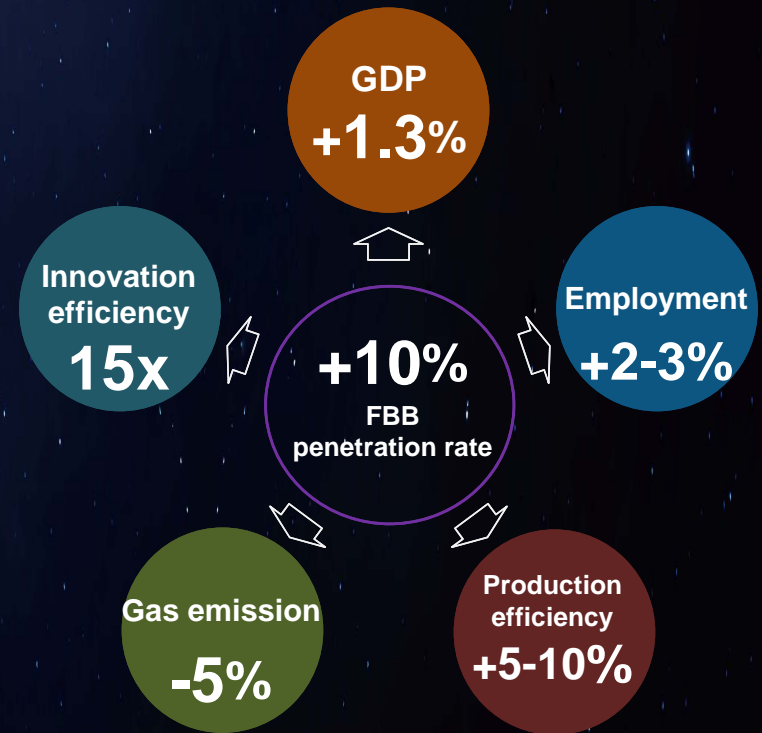
-- ITU, Broadband Commission



Connect 2020

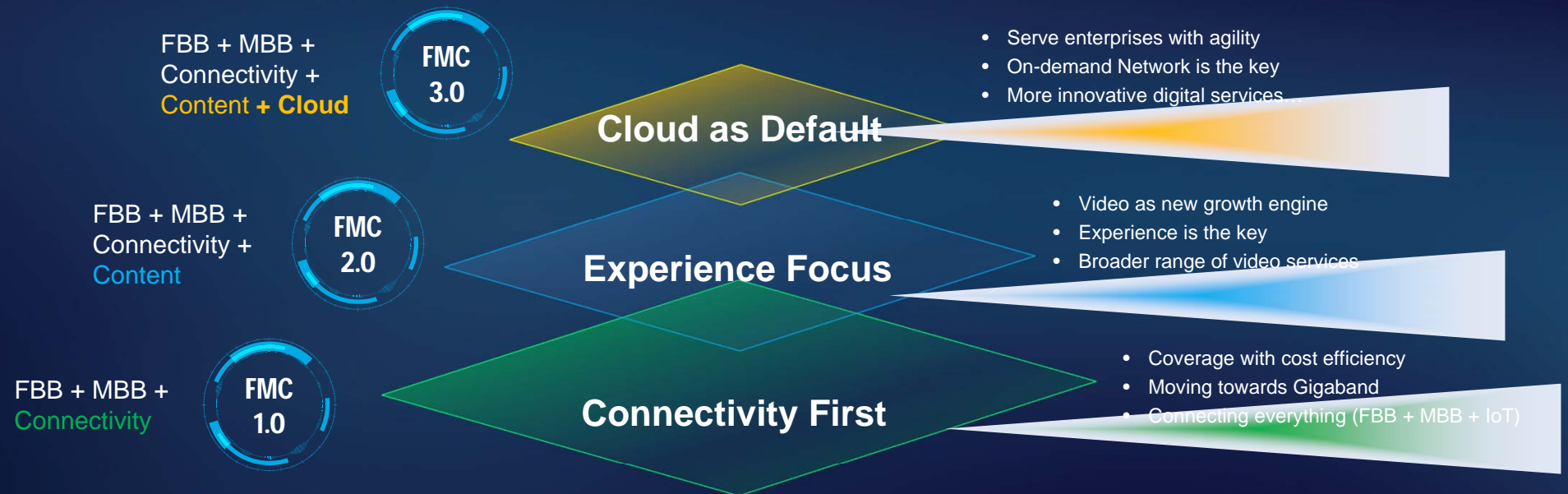


148 Nations release broadband strategies and plans



Source: *Impact of broadband on the economy, ITU*

FMC 3.0, Innovations for the Diversified Broadband Network



Network Strategy | Data Center centric Network + Cloud



Ultra-Fast

- Giga Fiber / Copper / Coax / Wi-Fi
- E2E IP+Optical 400G/2T

Simplified

- No Congestion, Lower Concentration Ratio
- Legacy Consolidation, Flattened Hierarchy

Agile

- SDN / NFV Enabled
- Telco OS (IES + BES + Big Data)

Fuel **Growth of Connectivity** in Smarter Ways

Sustainable PON Evolution

- Accelerate Industrialization with Multi-mode PON Chipset.
- Unify 100G PON Standard



Realize Potential of Legacy Media

- Giga Copper: G.fast /NG.fast
- Giga Coax: Docsis 3.1



Improve FTTH ROI

- Effective Roll-out and High Efficient O&M: SmartCAPEX
- Wireless and wire line synergy
- Power utility synergy



Expand to IoT

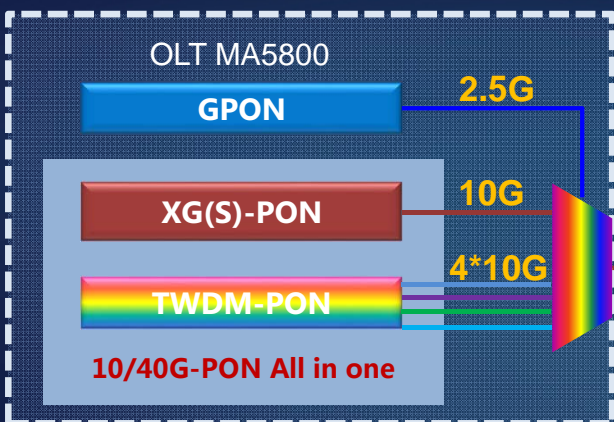
- Edge Computing IoT for Smart Industry
- Smart Home



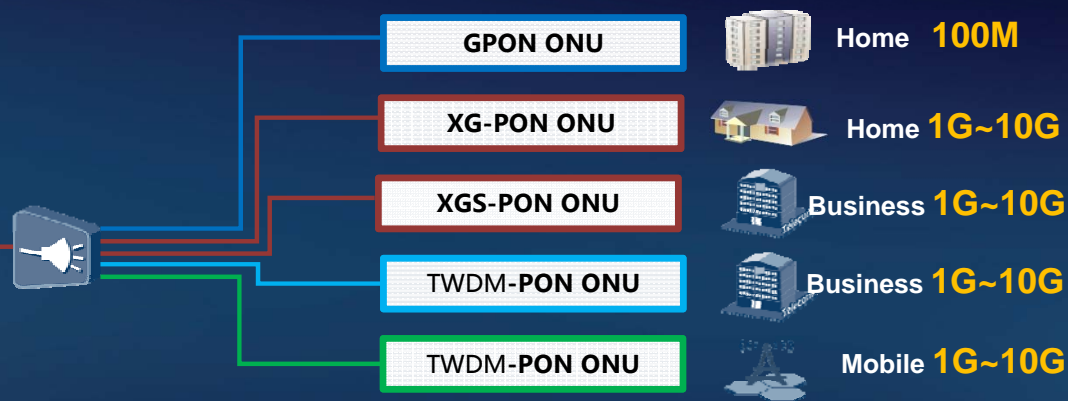
Optical Fiber

Ultra Capacity Access Fiber for Gigabits to Home/SMEs

Central Office



End Users



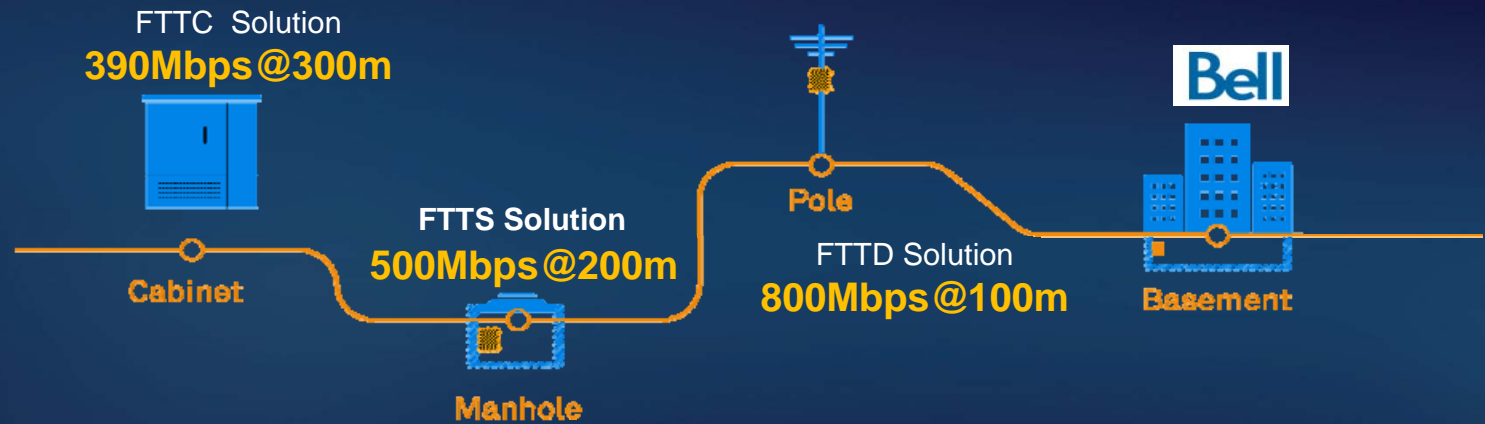
- High integrated broadband solution based on fiber
- Future proof solution for 10~20 years



Copper

Ultra-fast Copper Raise the value of legacy **COPPER**

**G.Fast
&
SuperVector**



Industry Unique 48/96 lines **G.fast**



- 96-port G.fast
- 48-port G.fast

SuperVector Improve FTTB/C Speed **2-3 Times**



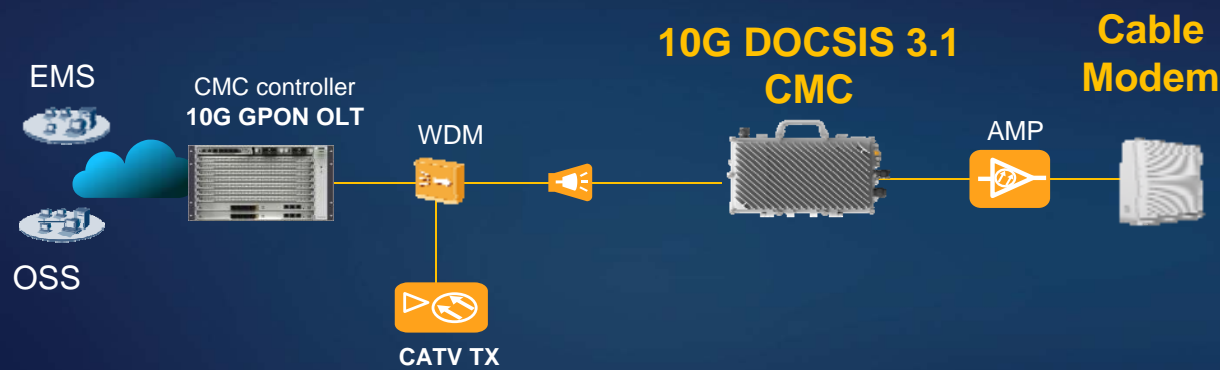
- 384-port SuperVector
- 192-port SuperVector

1st Vectoring Deployment



COAX | Coax upgraded for Gigabit by D-CCAP based on DOCSIS 3.1

Coax could be an alter way to Gigabit broadband



DOCSIS 3.1 Cable Modem

- DOCSIS 3.1/D3.0 to reach 5Gbps
- 802.11ac 4*4 and 802.11n 4*4 Wi-Fi
- Giga USB for 3G/LGT Backup

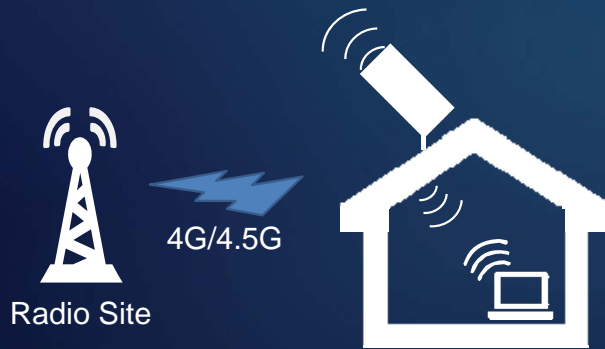
- **Challenge:** High Bandwidth
- **Benefits:**
First launched **giga service**
D-CCAP **save fiber 70%**

- **Challenge:** No CO space
- **Benefits:**
-80% HUB space saved
-30% TCO reduction

- **Challenge:** separately network
- **Benefits:**
One platform for fiber&coax
IP TV migration

- **Challenge:** Competition from Telco
- **Benefits:**
1G Symmetric Service
4K TV Ready

WTTx as Another Option of Connectivity



WTTx: Wireless To The Site

- Fast Coverage
- Low Bandwidth
- Evolve to FTTx in long term



Microwave + Mini-OLT: Fast coverage for saving digging work



Fast Delivery

- **Civil works decrease** from 1-6 months to **1-2 weeks**
- **"0" site construction**, sharing outdoor cabinet with Mini-OLT

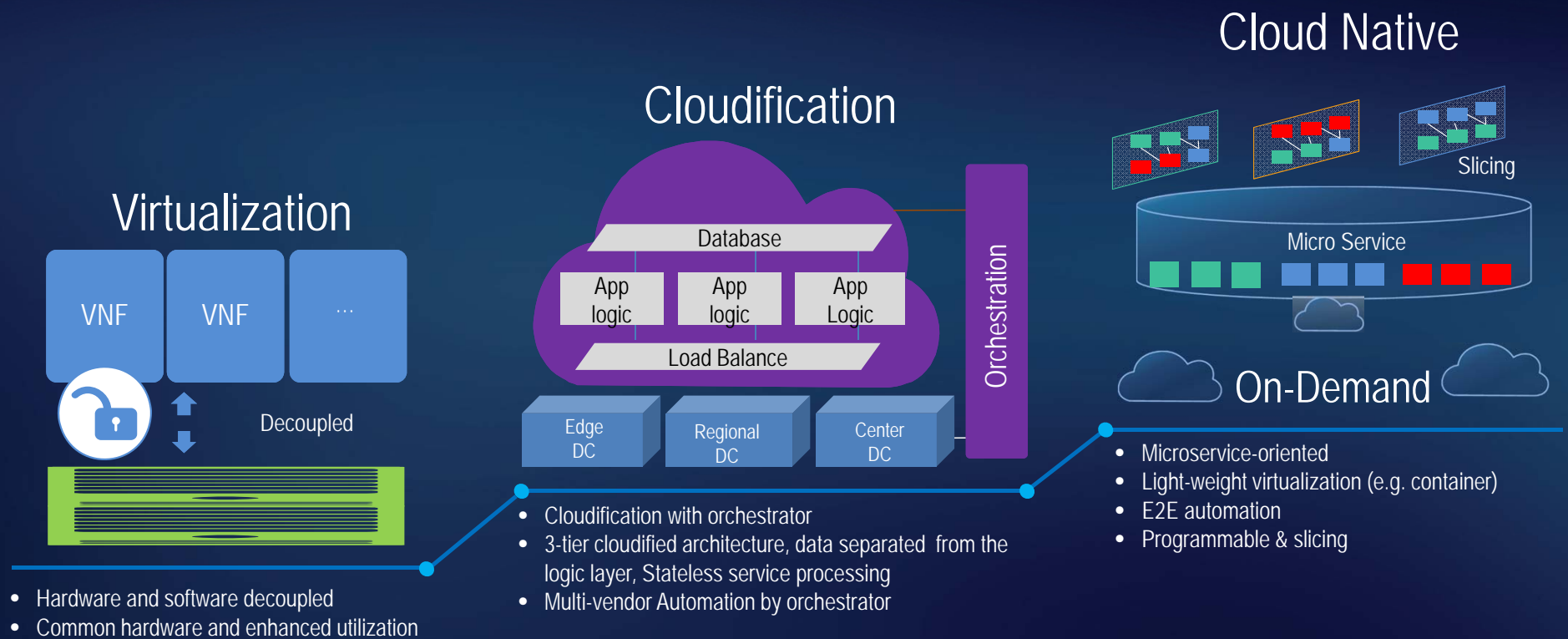
Sufficient Bandwidth

- 1Gbps by Traditional IP MW
- 10Gbps by SDB MW

TCO Saving 85%

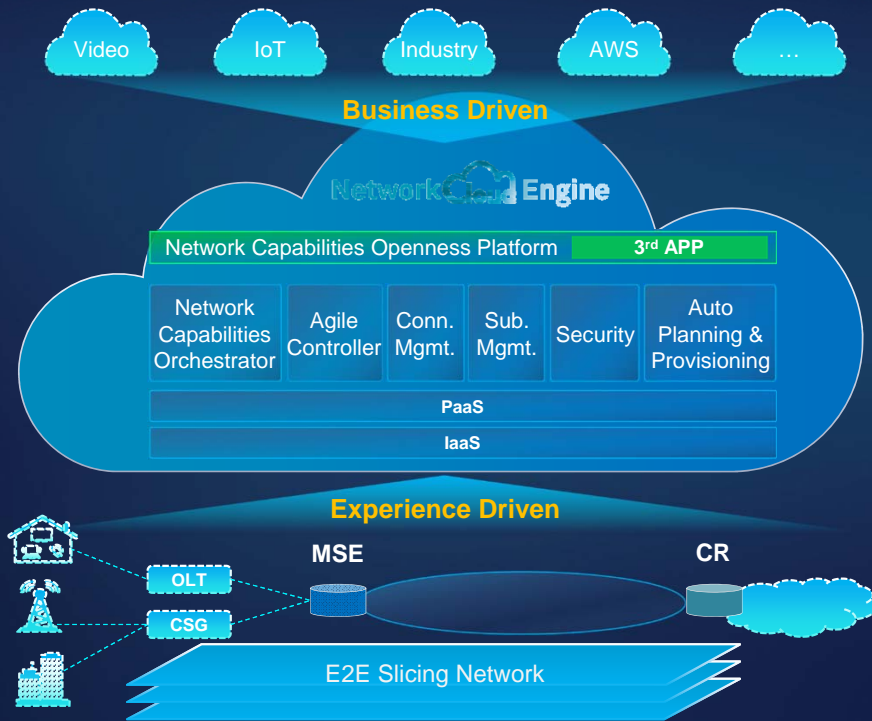
- 5 years TCO saving up to **85%**, ROI from 25 months to 8 months (Greece OTE)

All Cloud Network Transformation Phases



All-Cloud

Cloud Network: On demand network for SMEs



Tech. Driven to Business Driven



100%

Resource utilization improved



Months → Days

Fast time to market



10 x

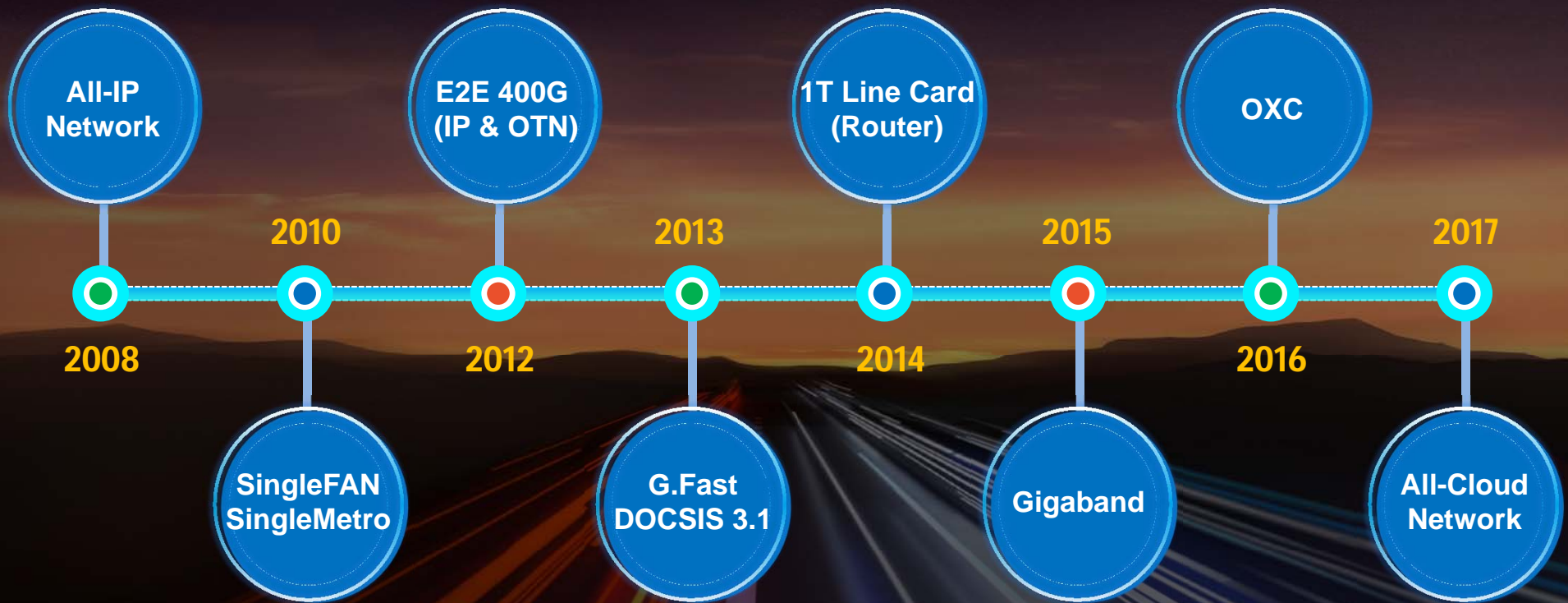
Operational efficiency improved



Open

Enriched business

Continuous Technology Innovations



Huawei: Global R&D and NIC Contribute Cutting-Edge Technologies



10+

Major different R&D centers for specific key technologies

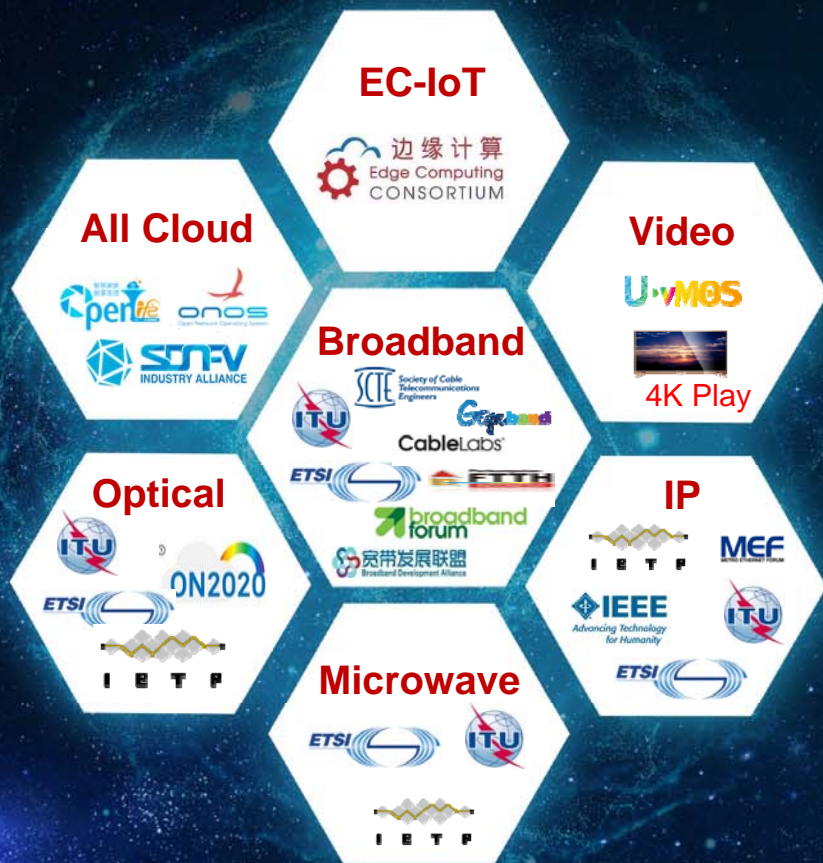
10+

Network Innovation Center (NIC) with our Telco partners

17,000+

Talented R&D colleagues serve 45 of the world's top 50 telecom operators.

Shaping Industry Direction



- Joined **170+** standard & open source organizations
- Holding **180+** key positions in IETF, ITU-T, ETSI...
- **14,795** patents granted
- Co-establish **IETF ISG-mWT** to drive the millimeter industry
- Co-establish **Edge Computing Consortium** to drive the EC-IoT industry
- Released the first industrial **Gigaband** network development whitepaper.
- Establish **U-vMOS** standard for measuring video experience.
- Promote **400GE Super Port** standardization and commercialization.



Thank you

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