

A child wearing a brown aviator hat and goggles is sitting on the shoulder of a large, white, humanoid robot. The child is pointing their right index finger towards a stylized, pixelated globe in the background. The robot has a large head with a visible internal mechanism and is looking towards the globe. The background is a light blue sky with white clouds and several bright, diagonal streaks of light.

Intelligent FTTR for Smart Homes

Eric Wang

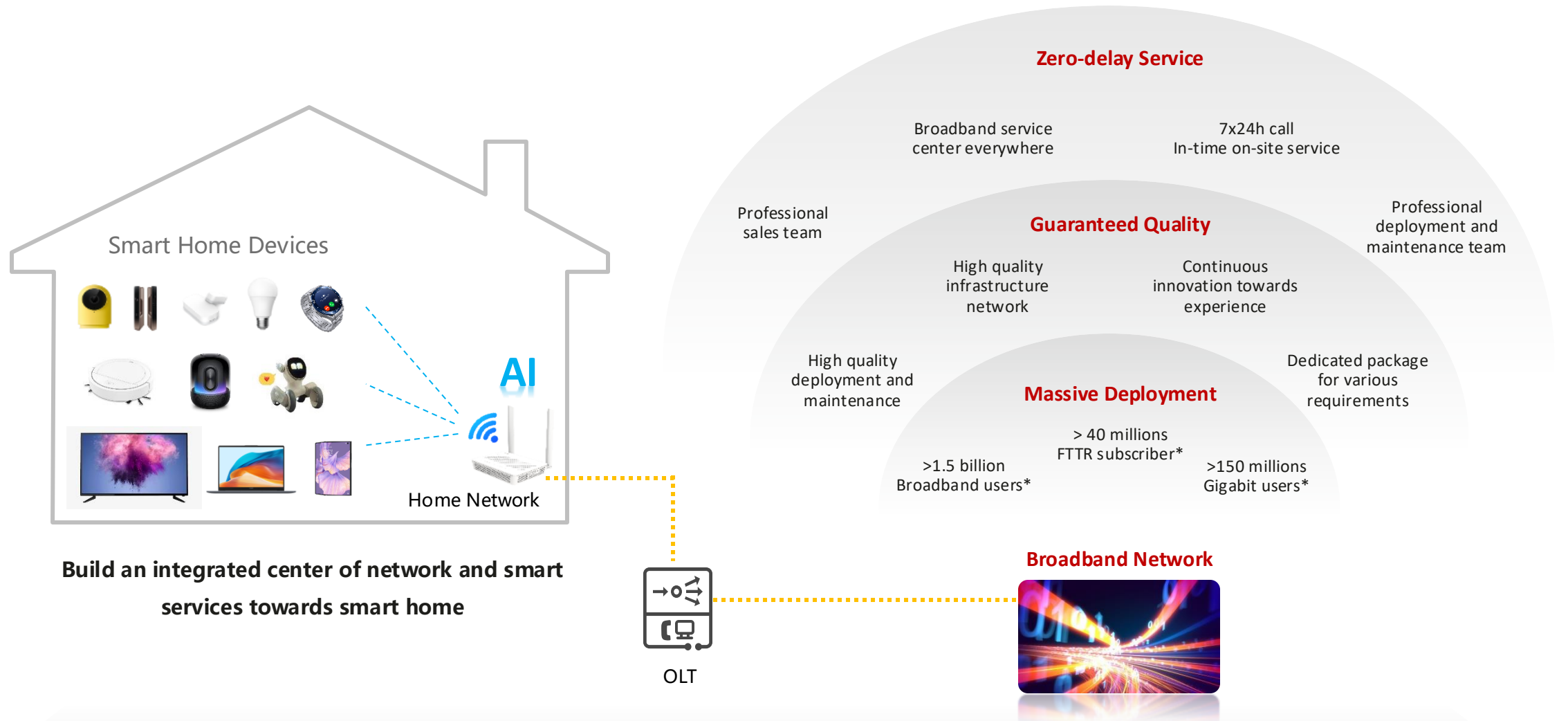
Director of Access Technology Lab, Huawei

2025-10-22

Access Intelligence



Smart home service is a BIG chance for the Telco industry



Telcos provide excellent experience to final customers by expertise and vision for quality service

10G+ throughput and intelligence drives the evolution to smart home

AR/VR/MR



Naked eye 3D



Hologram



Cloud desktop/game



...

10G+ throughput & intelligence for home network

Deterministic experience

Bandwidth Sharing → E2E Slicing



Extensive service

Connection → Connection + Computing + Storage



Intelligent sensing



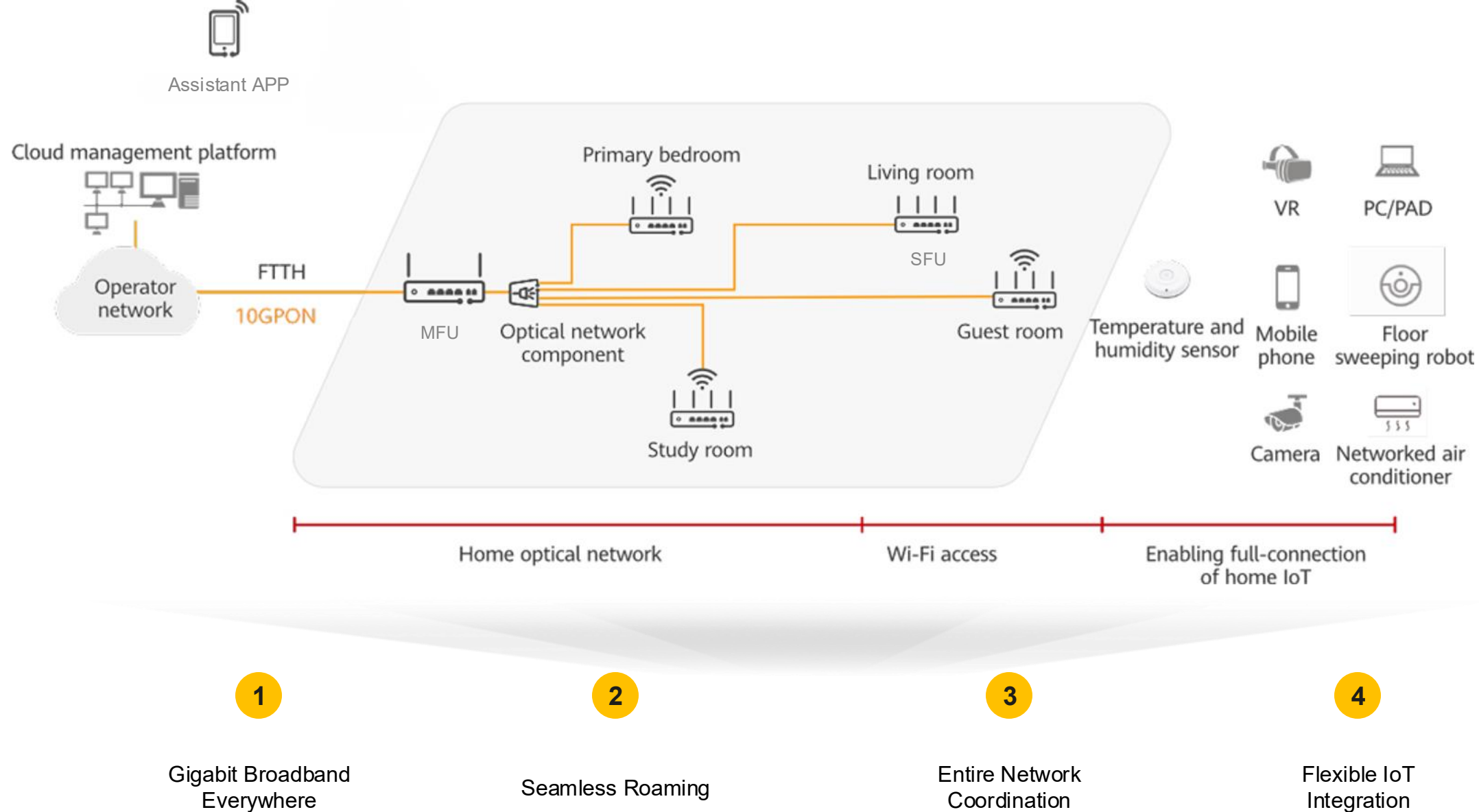
All optical storage



Home control



Innovative FTTR solution for experienced home network



FTTR business boomed rapidly since 2022

Real Gigabit Experience

Gigabit user Growth

1 Link + 1 Home Network

Improve ARPU

Consolidated High-value Users

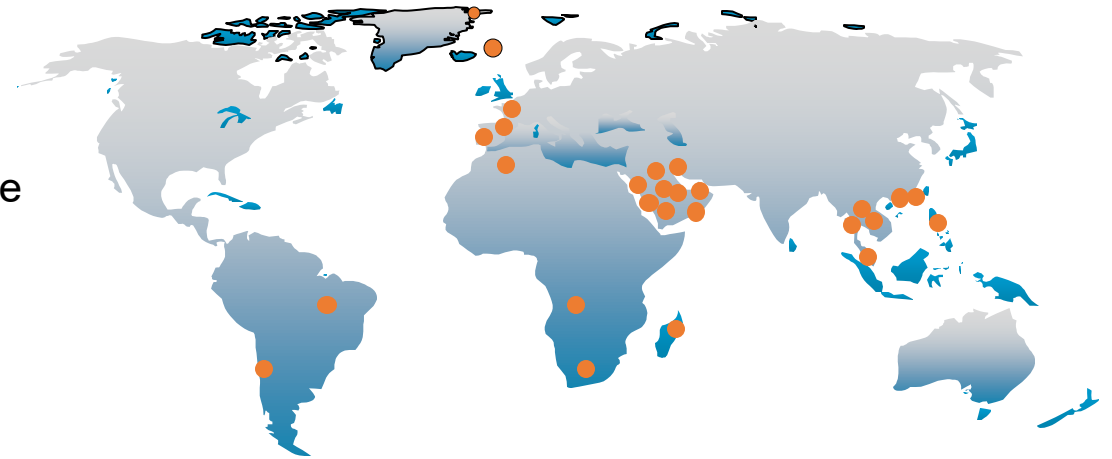
User loyalty

Enhanced Competitiveness

Open Market V.S. Operator



FTTR is the best home network solution



100 Commercial Deployment (Provincial)

80K Daily Increment of FTTR Users

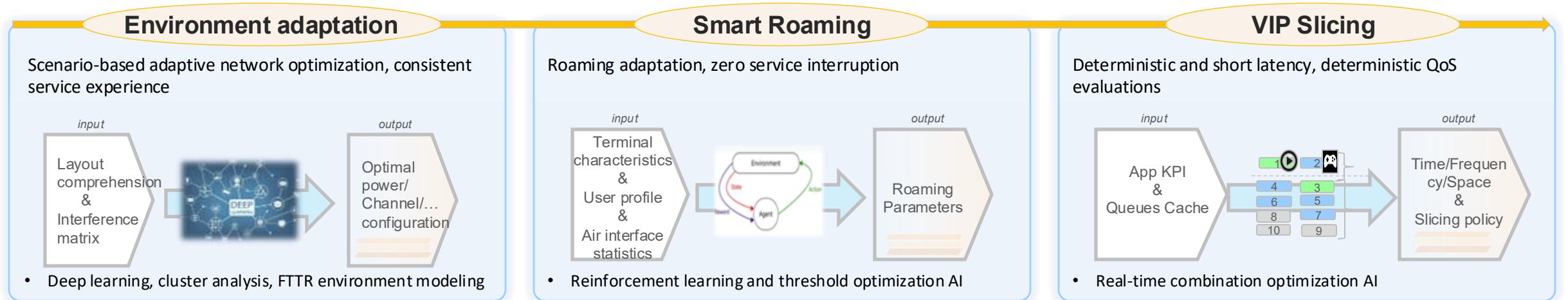
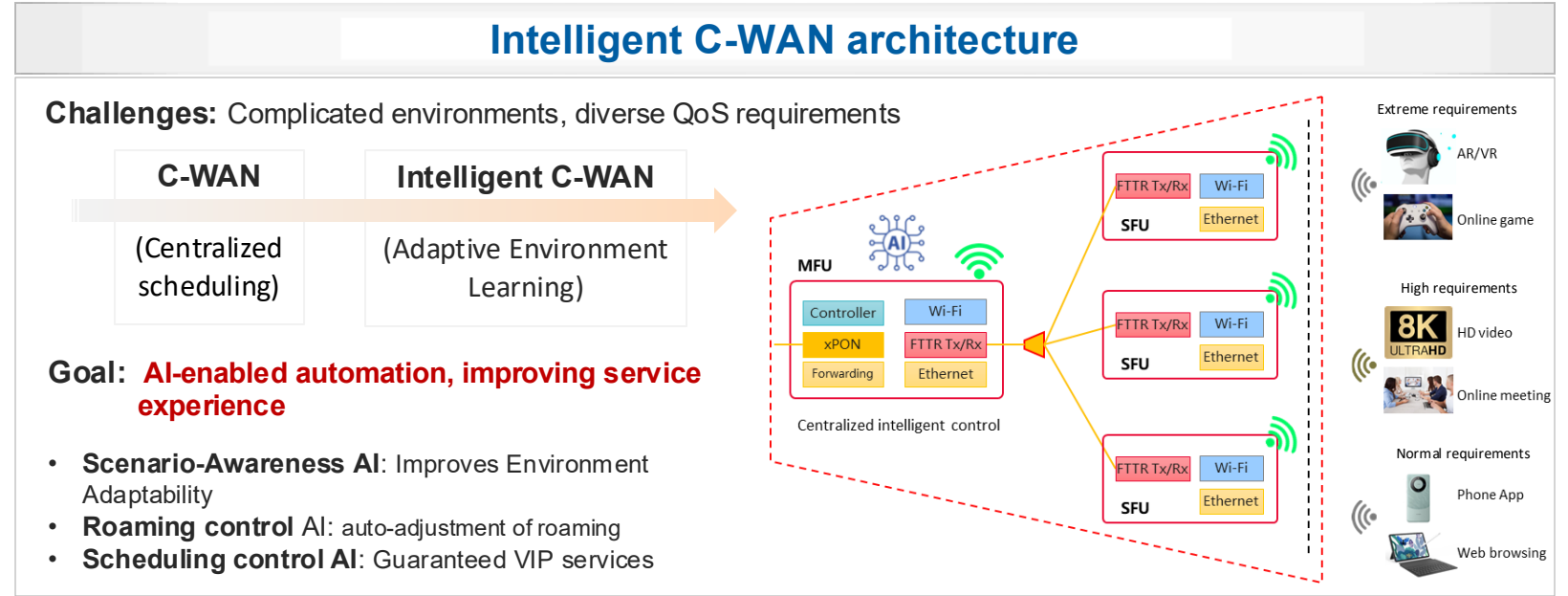
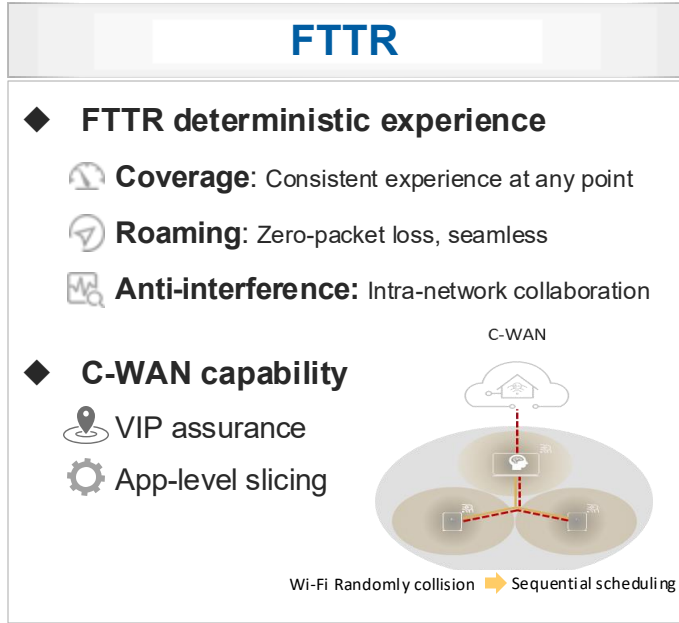
40 Million Total FTTR Users

40+ Carriers Commercial Deployment

30+ Carriers Launched FTTR Package

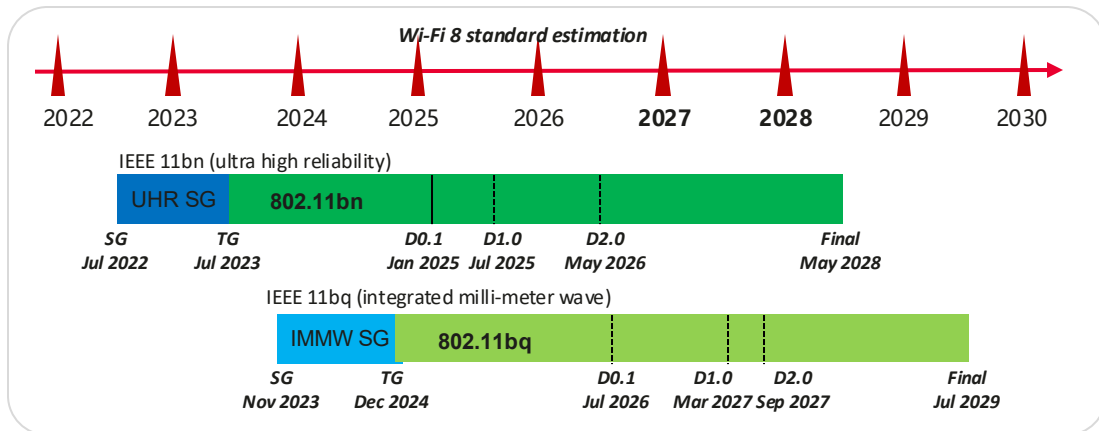
300K Sets for Commercial Use

From FTTR to intelligent Centralized Wi-Fi Network architecture



From Wi-Fi 7 to Wi-Fi 8, experience leveraged by FTTR

Upgrade user experience by extending Sub-7GHz to mmW



✓ 11bn progress

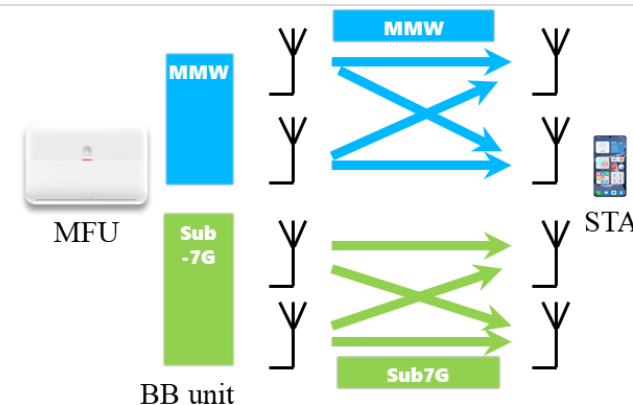
- Standard: D0.3 completed at May 2025
- Certification: Wi-Fi 8 MTG established in WFA

✓ 11bq progress

- Standard: 11bq timeline approved at May 2025

Establish mmW ecosystem by reusing sub-7GHz Wi-Fi BB

Reuse Baseband: 11bq reuses sub-7G baseband signal processing, in a flexible way, to address IMMW challenges. Such as Mobility, Blockage, Roaming, Costs and Power Consumption



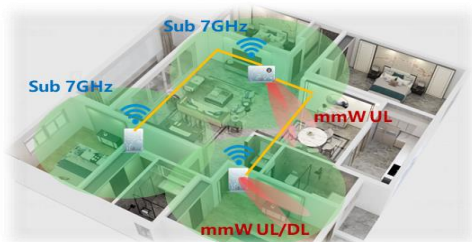
✓ 11bn key features

- Coordinated Spatial Reuse
- Coordinated Beamforming (Co-BF)
- Non-Primary Channel Access
- DRU, ELR, UEQM, etc.

✓ 11bq key features

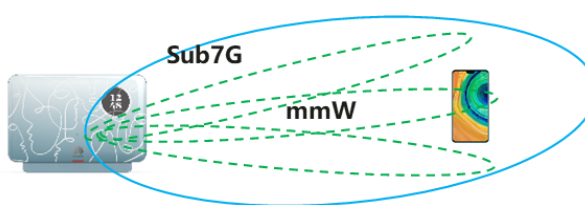
- Coordination between high & low channel
- Effective beam tracking
- Hybrid transmission
- Multi-band roaming

① FTTR enables better coverage and connections



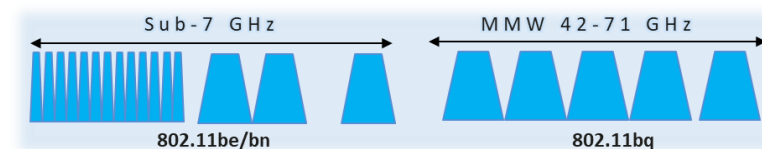
- Support intelligent indoor sub-7GHz and mmW coverage
- Support global optimized interference management

② FTTR enables better coordination and efficiency



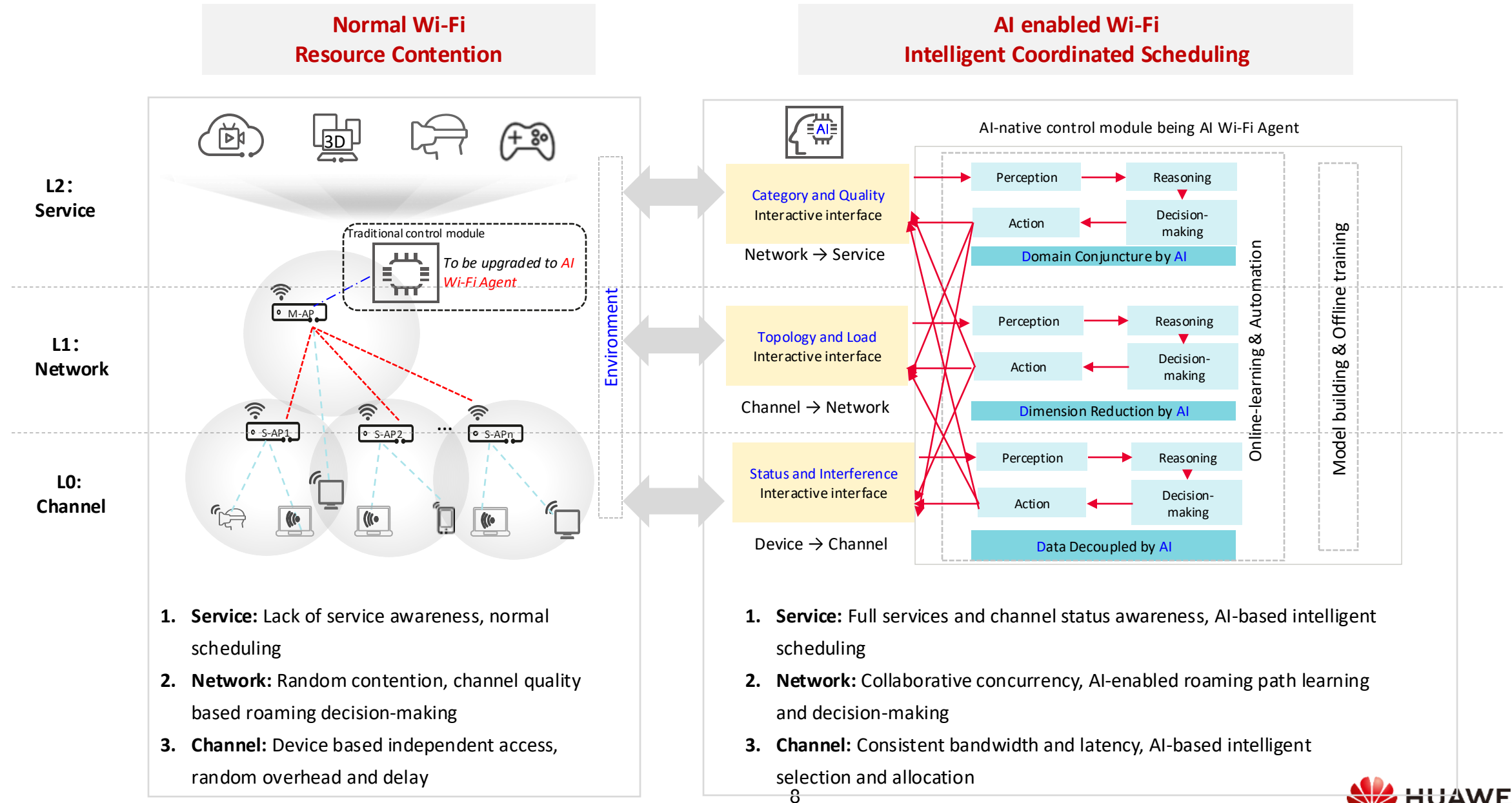
- AI based coordination and balancing between bands/links
- Multi-mode discovery and scanning mechanism

③ FTTR enables better latency and throughput



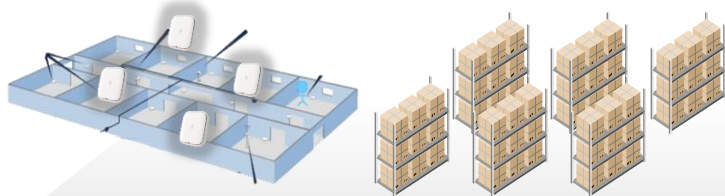
- New ultra-wide spectrum at 42-71 GHz
- Better spatial reuse by directional analog and digital beams

From normal Wi-Fi to AI enabled Wi-Fi for better service adaptation

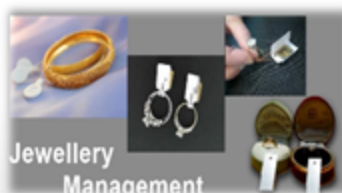


From broadband connection to massive IoT connection and management

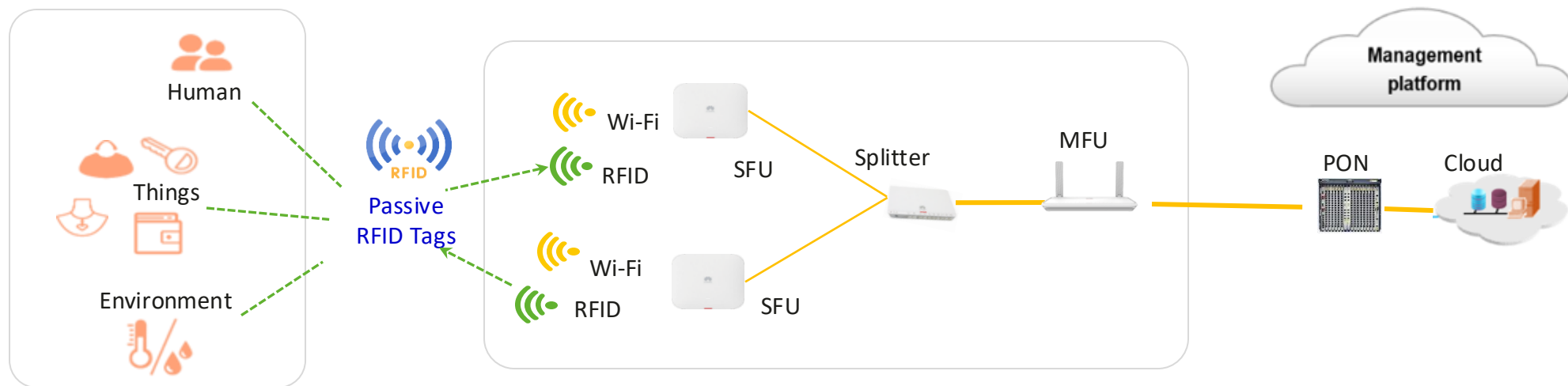
- Office campus: Asset management



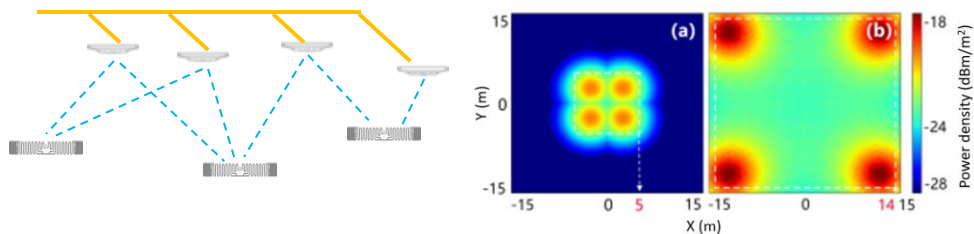
- Retail: Wares Management



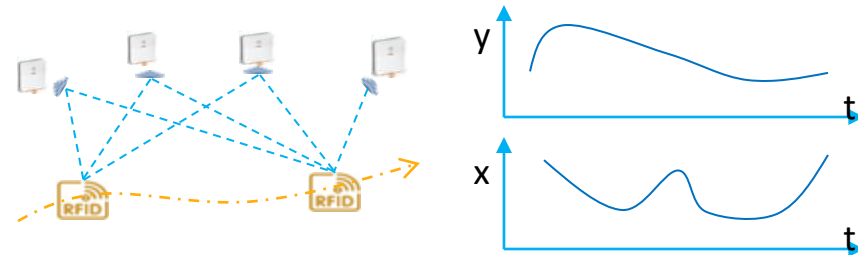
- Healthcare: Medicine Tracking



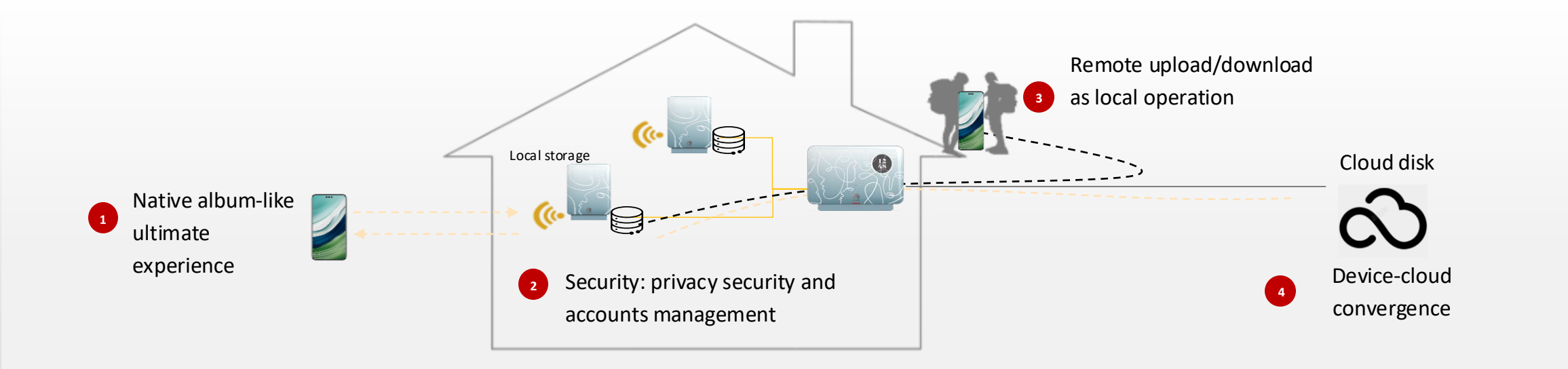
FTTR contributes to entire in-premises coverage



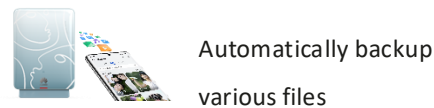
FTTR contributes to accurate positioning and trace tracking



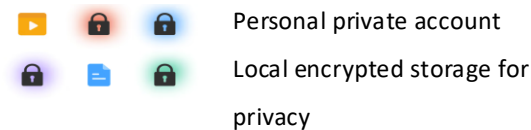
From communication to intelligent cloud storage and AI services



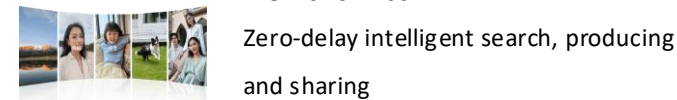
One touch backup



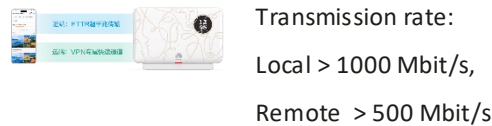
Data safety



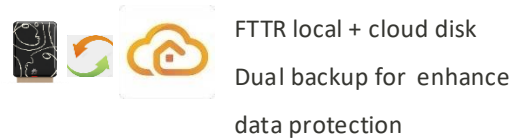
AI Smart Album



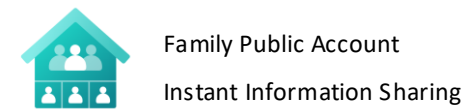
Ultra-fast transmission



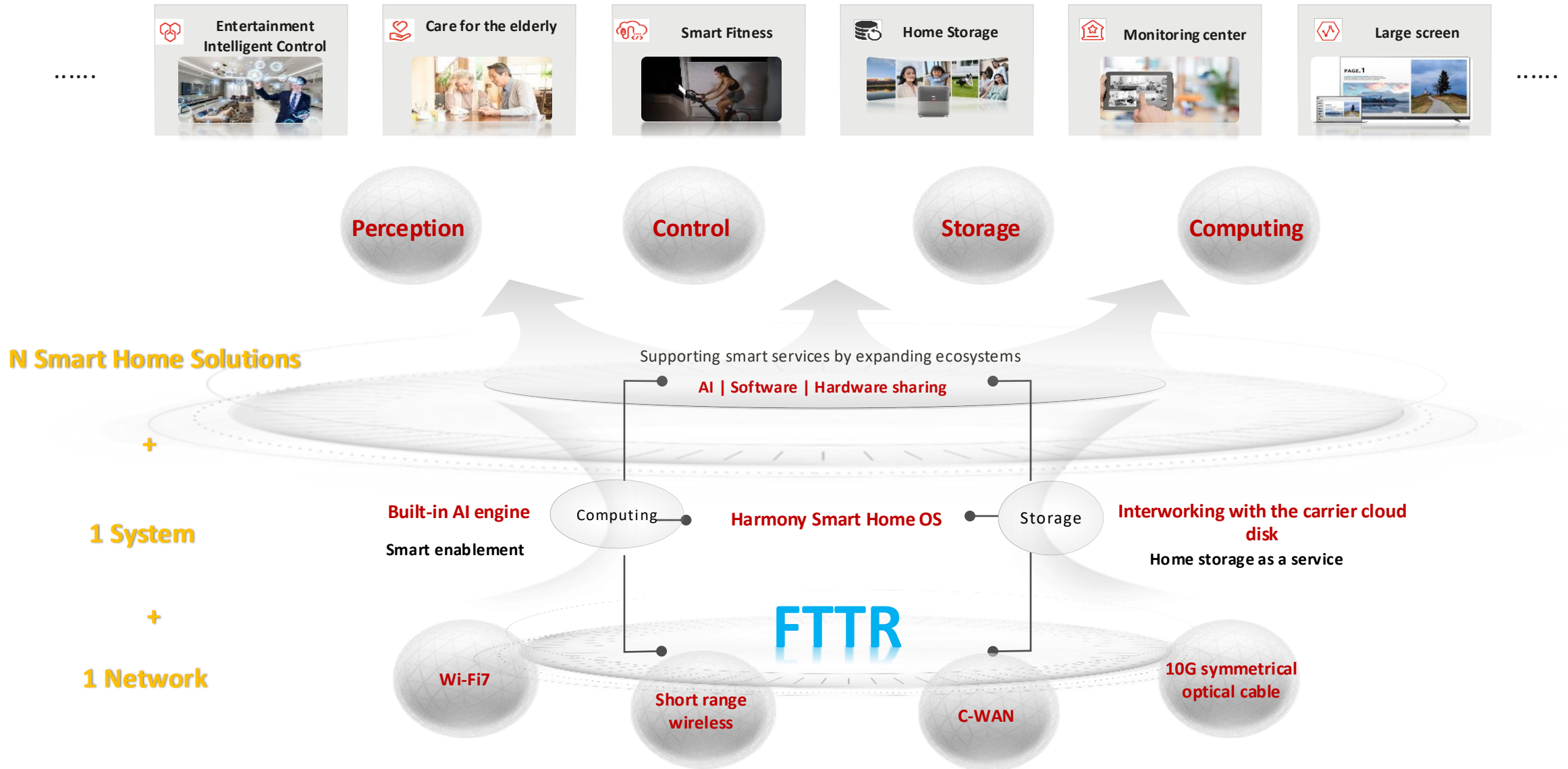
Device-cloud convergence



Family album



From home network to smart home applications powered by FTTR



Outlook: Towards more and more intelligent services and life experience

More immersive



- Wi-Fi 2000M → **10 Gbit/s**, True 4K/8K/3D/XR
- Air interface delay 20 ms → **5 ms**, Cloud AAA Gaming
- 128 concurrent terminals → **1024**, IoT devices 10x more @ 2030

L2 Experience → L3 Experience

Source: Home Broadband Service Experience Grading Whitepaper
Broadband Development Alliance, 2021

More intelligent



- AI penetration rate of smart home: 25% → **50% @ 2025**
- Single cloud/end storage → **Device-cloud converged storage**, 400 million cloud disk users
- Passive response → **Proactive awareness**, 40 million home security service users

Smart product → Smart home

Source: China Smart Home (AIoH) Development Whitepaper
iResearch Inc, 2023

More ecological



- Scattered smart home platforms → **Unified OS platform**
- Multiple APP entries → **Single APP** for integrated entries

Separate → Interworking

THANK YOU

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