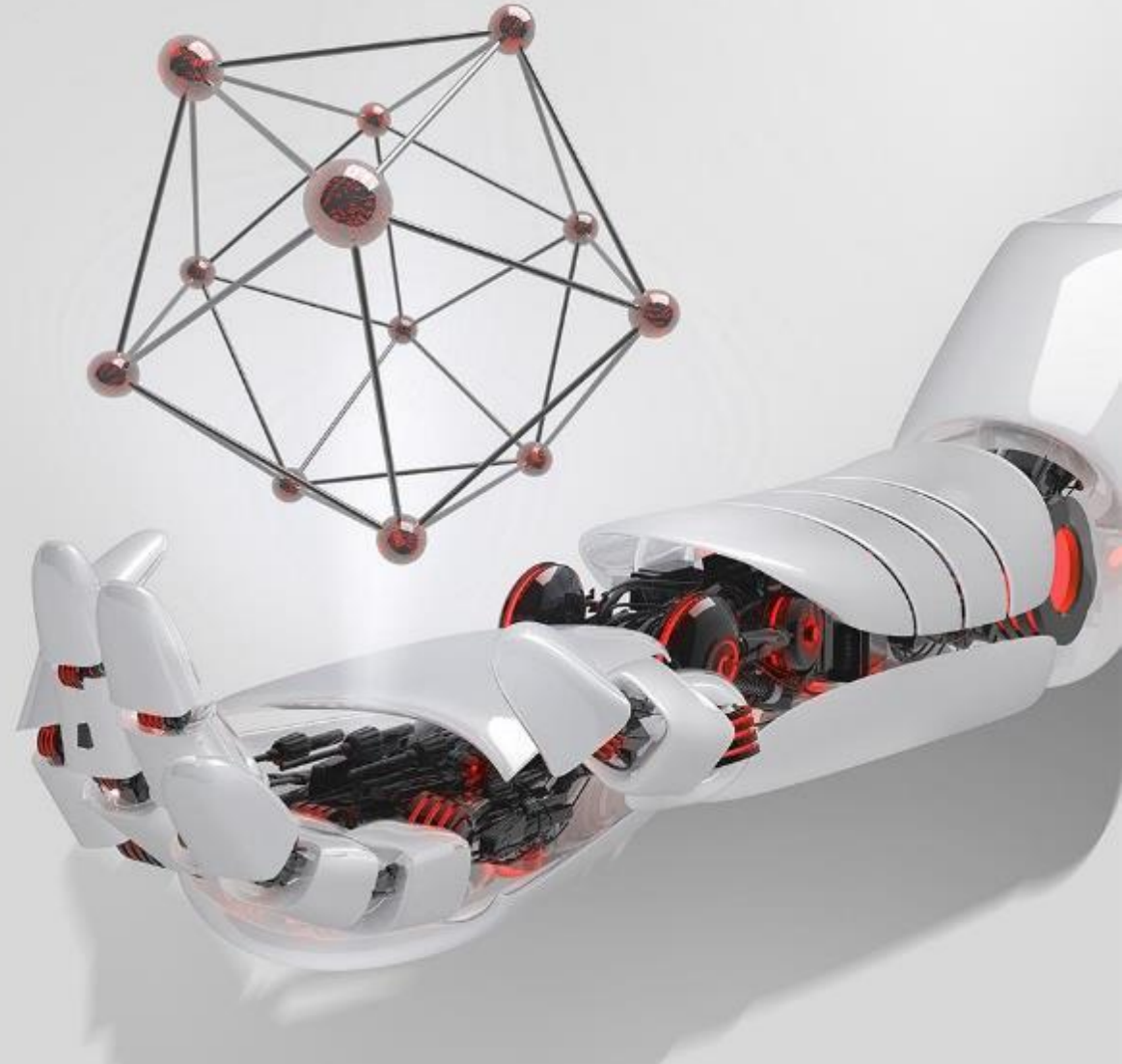


Implementing the Building Regulations Requirements to Provide Internet Access

Adam Lane

Huawei Kenya

adam.lane@Huawei.com



Huawei: Leading provider of ICT infrastructure and smart devices



Vision & mission

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

195,000

employees

170+

countries and regions

No. 44

on Fortune Global 500

No. 2

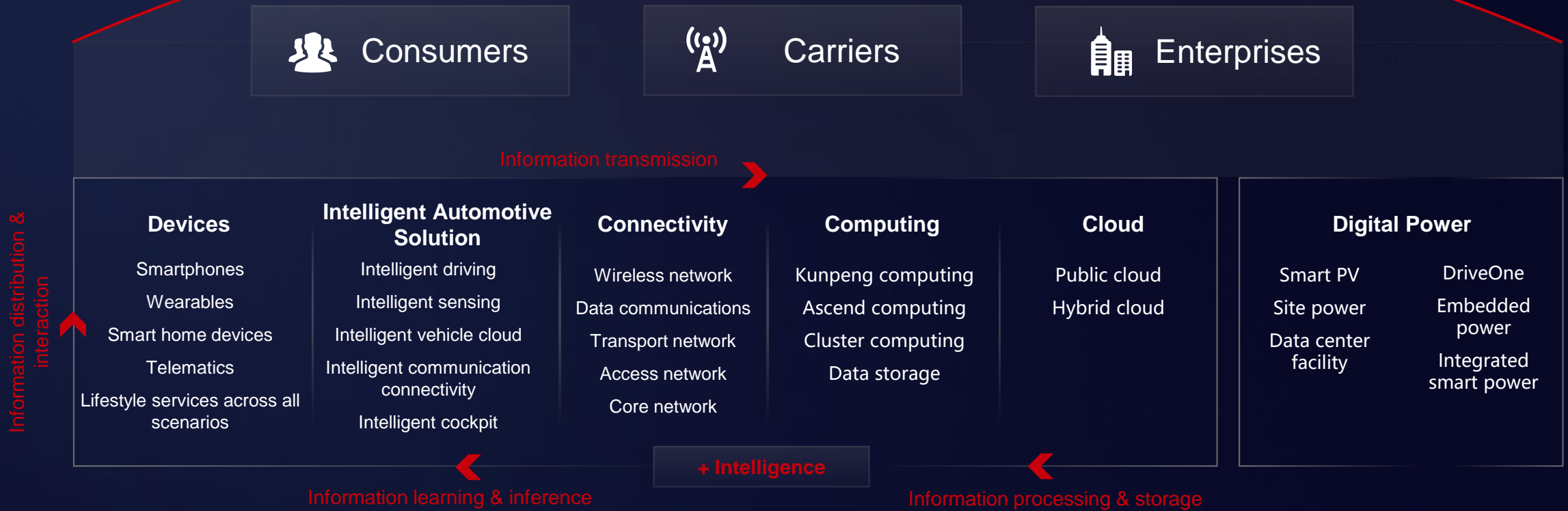
in R&D investment

54.8%

of employees are in R&D

Focusing on ICT to provide products, solutions, and services to three customer groups

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



Fiber connects every industry, and brings future possibilities but in Kenya only 500,000 households/offices are connected to fiber

Enterprise enabled by Cloud on Fibre



Digitisation of all industries

Industry specific applications, private line
Software as a Service, Online sales etc

Video @ Home/Office



Family entertainment

Online Learning, Telemedicine, Home Office etc

5G drives Fibre to Site

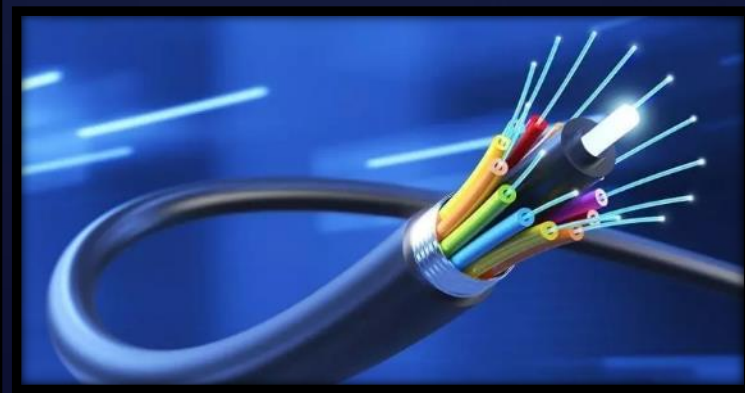


Mobile front- and back-haul

From 4G - 5G era: 100Mbps →10+Gbps

Benefits of fibre network

- Reliability as Service
- Latency as Service
- Bandwidth on demand
- SLA Visibility
- Large Capacity
- Future proof



Pre-provisioning of fiber brings:

Social Benefits

Reduce cost for deploying fiber

Lower installation costs for users so more low income users can afford fiber.

Reduce time for deploying fiber

Save weeks so more people get connected

Reduce duplication in construction

Avoid frequent renovations in buildings

Enhance market competition

Any operator can easily deploy, subscribers gain choice

Enable users to access high-speed services

Users benefit from online learning, healthcare, HDTV

Environmental protection

Less materials/energy used for duplicate infrastructure

Business Benefits

Increase property value

High-speed broadband adds value to property & easier to sell

Avoid renovation costs, risks and hassle

Less risk of damage to property from different operators installations.

Sell digital products, e.g. CCTV, smart locks etc

Depending on business model, having easily accessible fiber enables easier provision of other services that need internet.

Future-oriented

Ensure property is well prepared for future usage

Provide choice to users, improve value to them

Users appreciate the ease of switching providers.

Fiber to the home (FTTH) increases house price 3.1%-11% in US

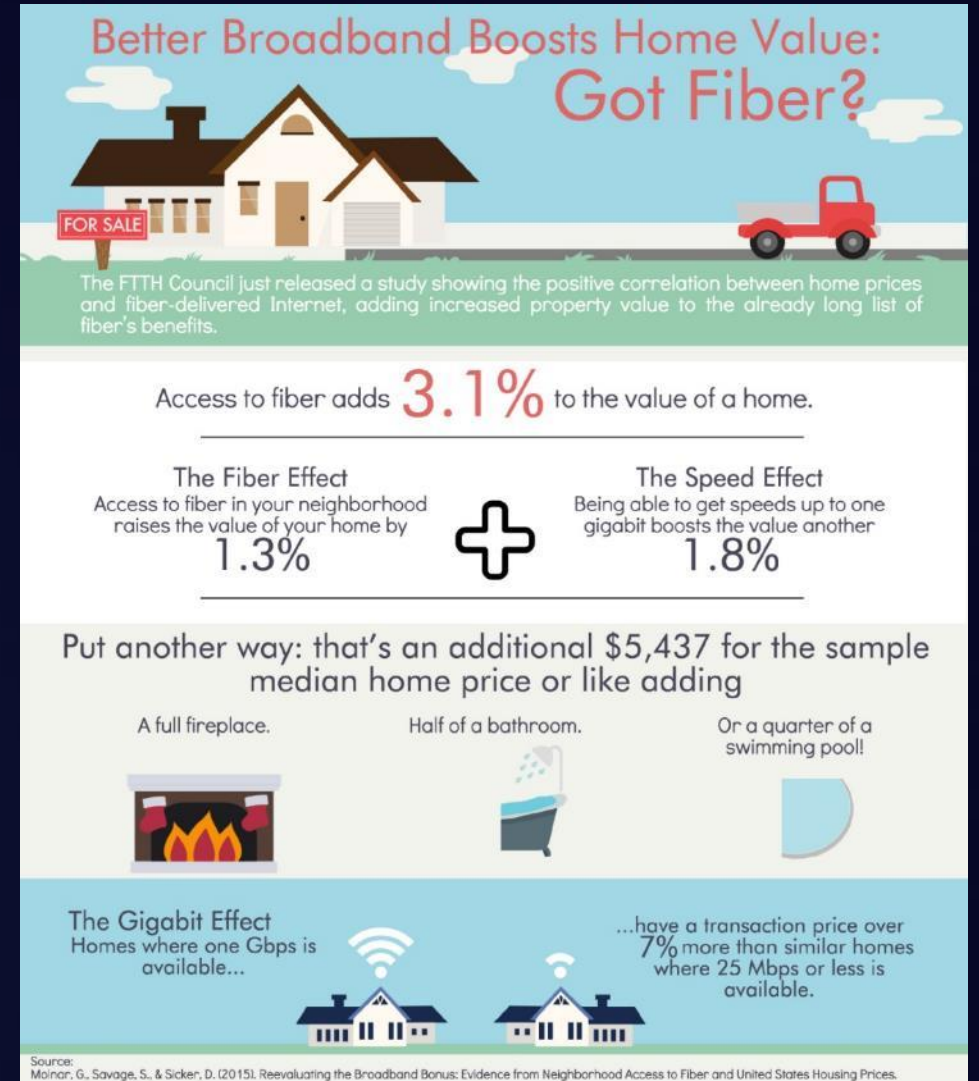
FTTH council America:

1. Access to fiber in your neighborhood raises the value of your home by 1.3%
2. Being able to get speeds up to 1Gbps boosts the value another 1.8%
3. Access to fiber adds 3.1% to the values of a home

RVA LLC survey on 4,500 properties:

If property developer allows operators install FTTH:

1. The value of a home can increase up to 11%
2. Buyer is willing to pay 2% extra for FTTH availability
3. Leaser is willing to pay 15% extra for FTTH availability
4. Broadband access is a key factor for resident satisfaction



Kenya is now adopting fiber pre-deployment to achieve broadband ambitions

EU	DIRECTIVE 2014/61	
China	Broadband China @ 2013	Code of fiber pre-deployment @ 2013
France	National Broadband Plan@ 2013, updated 2015	Code of Building Construction @ 2012
Saudi Arabia	Rules for ICT Infrastructure Provision Deployment in New Developments	Technical Standards for In-building Physical Infrastructure (IPI)
UK	National Infrastructure Strategy, 2020	Part R of Schedule 1 to the Building Regulations, 2016
Kenya	ICT Policy 2019 The Government will liaise with all relevant government agencies to require that all new commercial and private developments are designed and adequately provided with facilities for high-speed connectivity	Building Regulations, 2022 (TBD) KS1882-1:2009 FTTb Standard (2022, TBD)

Likely requirements in the Kenyan Building Regulations, 2022

Paragraph XXX

Telecommunications installation in a building shall have:

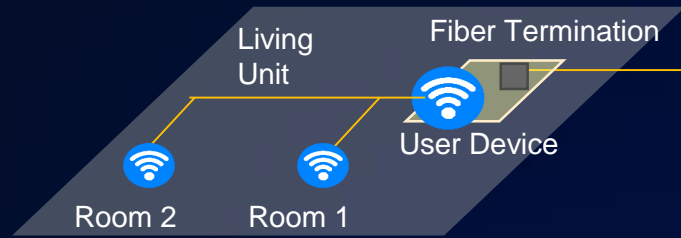
- a) Each unit with at least one network termination point with ducting connecting to the NT**
- b) Telecommunication service ducts separate to the other utility ducts**
- c) Indoor or outdoor space for installation of telecommunications equipments**
- d) Common entry ducts connecting the equipment space to an access point outside the property**
- e) Access point that is accessible by telecommunications service providers without requiring entry into the property**

Design and installation of telecommunications facilities in a building shall be in accord with KS 1882-1: Installation of telecommunications cables Code of Practice

Overall principle for the in-building fiber pre-deployment

- Pre-deployed ducts and conduits shall be accessed equally between operators
- Pre-deployed fiber shall be designed, implemented and accepted together with building construction;
- The facility, fiber & building shall be done ONCE;
- Access for facility and equipment shall be granted;

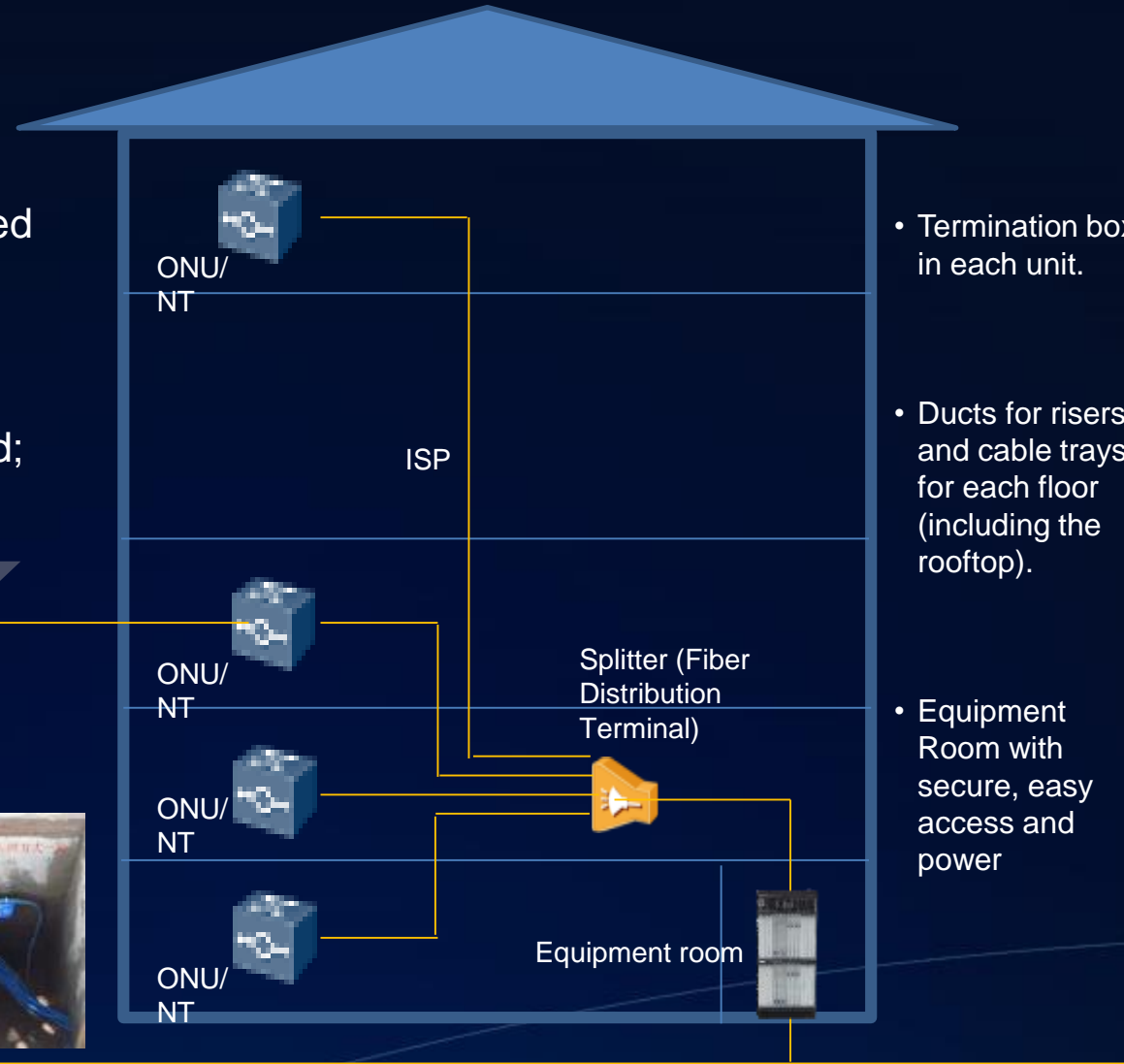
Outdoor Cabinet



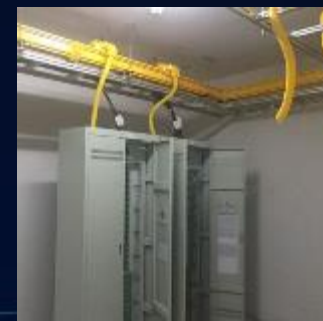
Manhole

OSP

ISP



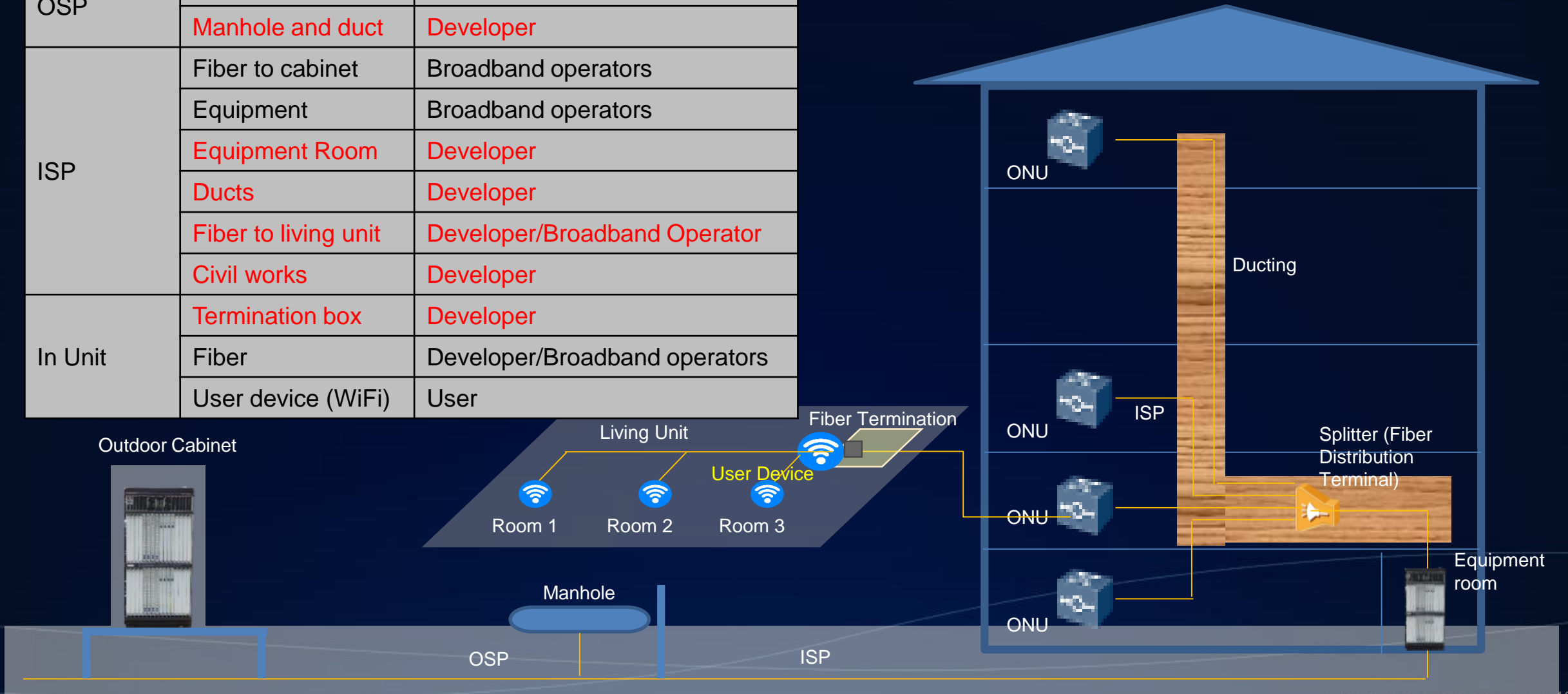
- Termination box in each unit.
- Ducts for risers and cable trays for each floor (including the rooftop).
- Equipment Room with secure, easy access and power



- Buildings should have dual common building entry manholes that are at street level
- Underground communication pipes, shall be constructed synchronously with residential areas and residential buildings.

Roles of developers vs broadband operators in deployment

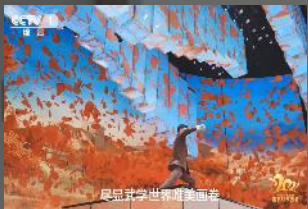
Scenario	Items	Job Owner
OSP	All other items	Broadband operators
	Manhole and duct	Developer
ISP	Fiber to cabinet	Broadband operators
	Equipment	Broadband operators
	Equipment Room	Developer
	Ducts	Developer
	Fiber to living unit	Developer/Broadband Operator
	Civil works	Developer
In Unit	Termination box	Developer
	Fiber	Developer/Broadband operators
	User device (WiFi)	User



Smart community, smart home, and smart applications bring large market and high network requirements

New service experience, new home applications and new network requirements

Entertainment:
4K



Video:
Immersive 3D+AR



New Live
Sports



Smart
community



Market Space

0.2 trillion
2020

1 trillion
2025

Source: International Data Corporation (IDC)

Communication:
HD video call



Online
Education/Work



Intelligent
security



Smart
home



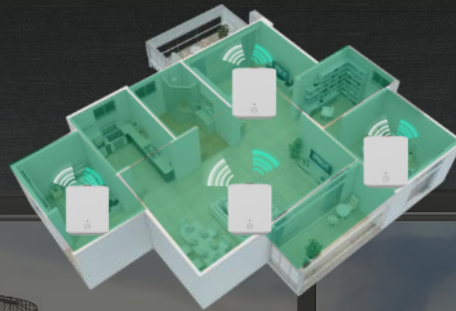
New Network Requirements

- Symmetric bandwidth > 300 Mbit/s
- Latency < 50 ms
- Number of IoT connections > 50

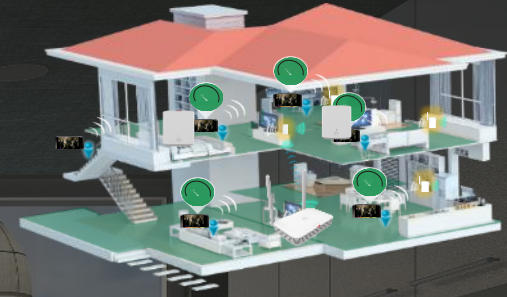
Traditional networking with low bandwidth and poor experience



First Type: Large apartment, single-point Wi-Fi



Second Type: Mesh Wi-Fi Networking



Third Type: network cable networking



Blind spots



Poor coverage

Wi-Fi blind spots because of walls

Low speeds after penetrating 2 walls



Unaesthetic

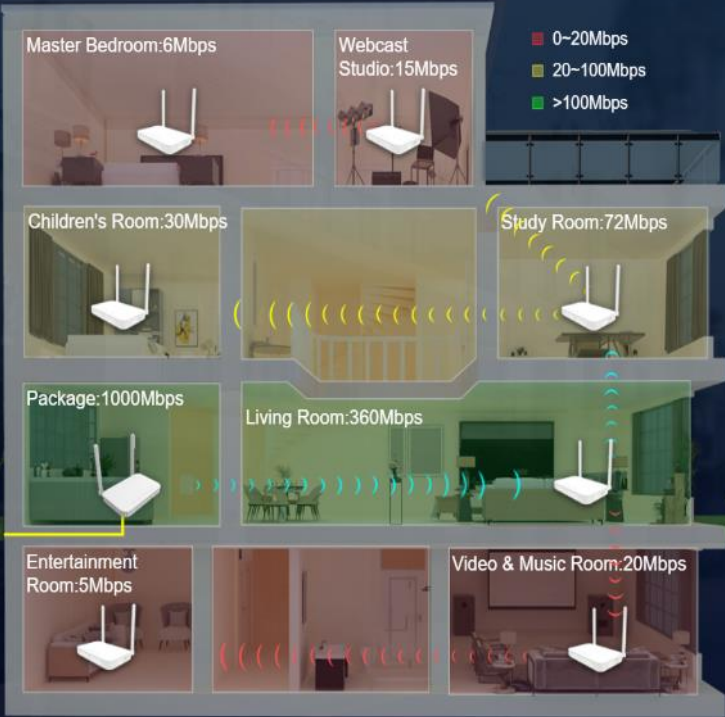


High Latency

Poor aesthetics from conduits, limited space

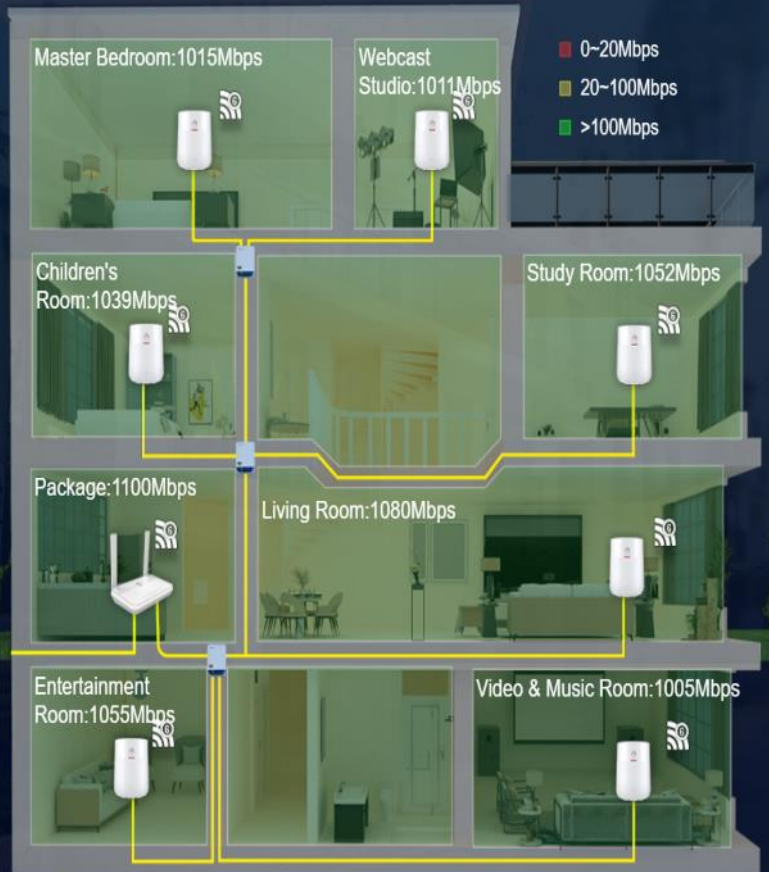
Delays from 50 ms to 600 ms, affecting experience

Full-Fiber networking ensures every room has high speed, low latency, full coverage



Bad HBB Experience
 @ Wi-Fi Mesh / Ethernet Cable Cascaded Solution

V/S



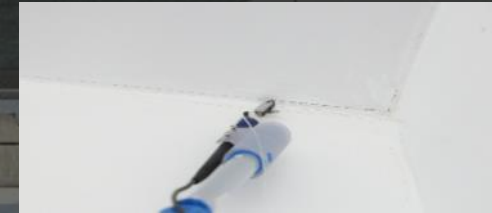
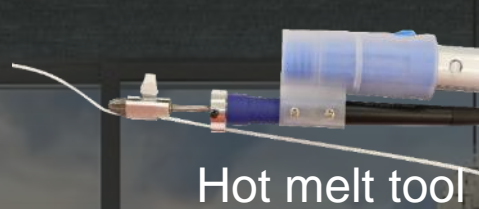
Gbps Everywhere
 @ Huawei FTTR Solution



Speed Test	Traditional	HomePON
Master Bedroom	6Mbps	1015Mbps
Children's Room	30Mbps	1039Mbps
Webcast Studio	15Mbps	1011Mbps
Study Room	72Mbps	1052Mbps
Living Room	360Mbps	1080Mbps
Entertainment Room	5Mbps	1055Mbps
Video & Music Room	20Mbps	1005Mbps

Innovative transparent indoor optical fibers + abundant tools, ensuring indoor cabling is completed within 2 to 3 hours

Innovative transparent optical fiber + hot-melt adhesive design, cabling efficiency by \uparrow 50%



- Unique fiber reinforced design: 75 N tension
- Unique double-sided tape technology: 1 time deployment
- Innovative termination solution: Pre-connection with micro heads
- Transparent cables with hot melt adhesives deployed at same time, 2m/min quick deployment
- Straight fiber, strong adhesion, waterproof, wear-resistant, reliable.
- Pass through door seams (fiber is 2.0 mm x 1.6 mm)
- 1-2m retractable pole design, convenient for ceiling construction

Summary

The country needs faster fiber roll-out....

It makes business sense for developers and construction companies....

It may become required by Building Regulations....

KS1882 provides guidance on how to do it...

Fiber to the room is the future for mid and high-income properties

Thank You!