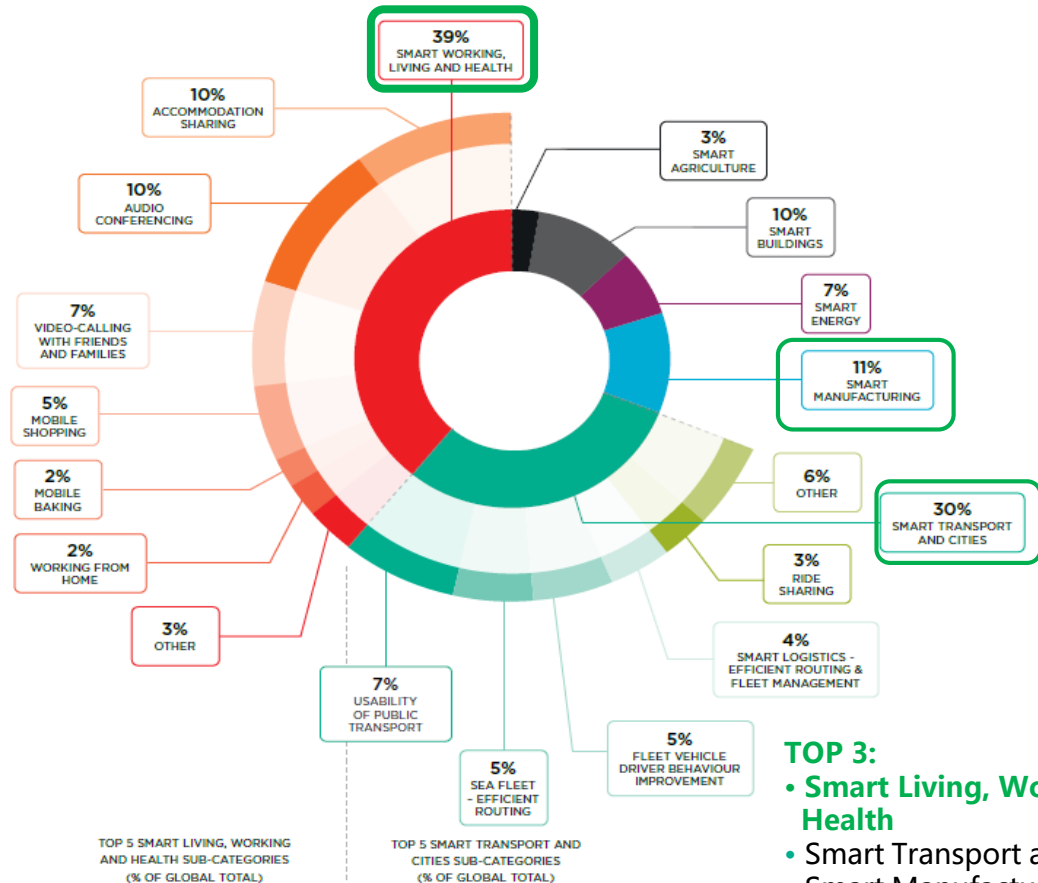


# Anforderungen an Gebäudeausstattung

*BMVI Gesprächsreihe: Nachhaltiger Netzausbau  
19. Oktober 2021*

*Dr. Michael Lemke, Huawei Technologies  
Deutschland GmbH*

# Das IKT Potential für Nachhaltigkeit



- TOP 3:**
- Smart Living, Working, and Health
  - Smart Transport and Cities
  - Smart Manufacturing

IKT als Teil der Lösung für die Umsetzung von Nachhaltigkeitszielen

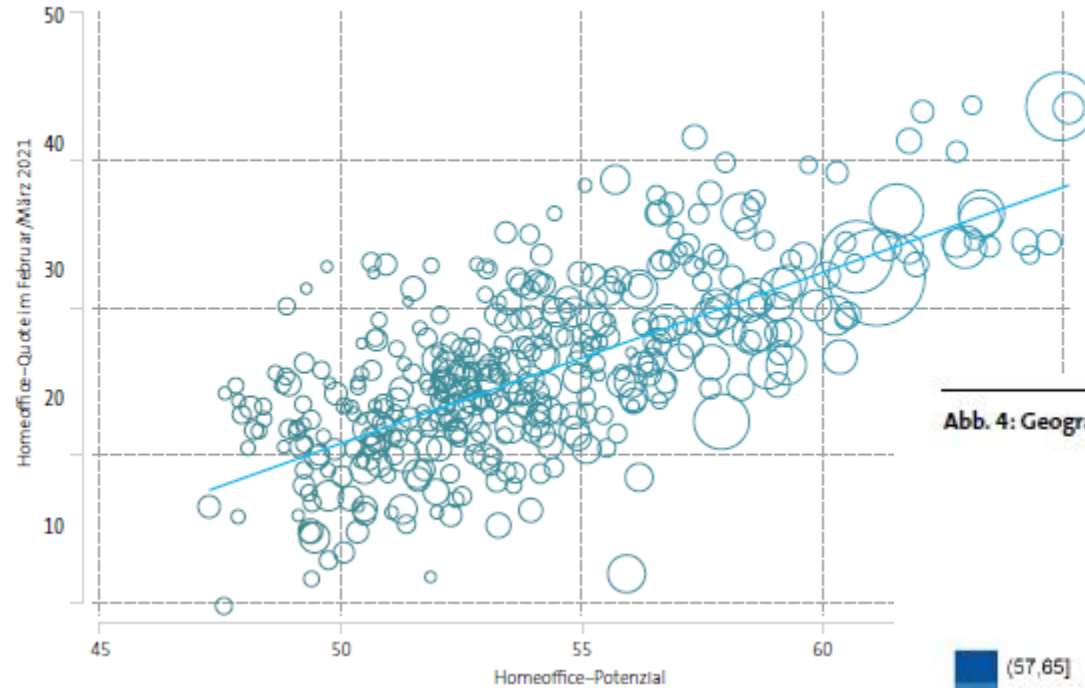
Reduktionspotential von 39% CO<sub>2</sub> Fußabdruck im Smart Working Living and Health Umfeld

Die Wohnung als Lebensmittelpunkt !

Source: GSMA

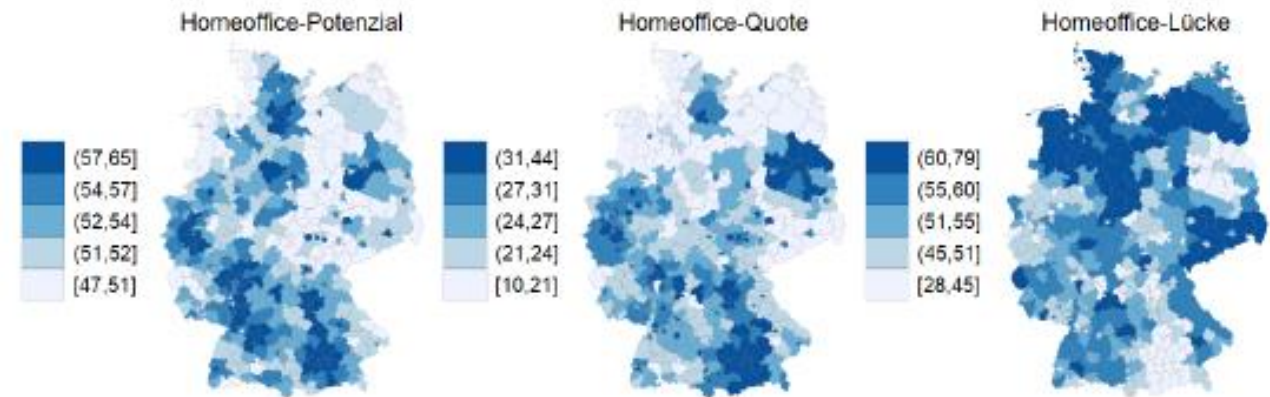
# Covid-19 als Transformationstreiber

Abb. 5: Homeoffice-Nutzung und -Potenzial nach Landkreisen (beschäftigungsgewichtet)



Covid-19 treibt Home-Office Wandel  
und Nachhaltigkeitsaspekte in der  
Arbeitswelt

Abb. 4: Geographische Verteilung von Homeoffice-Potenzial, Homeoffice-Quote und Homeoffice-Lücke im Februar/März 2021



Quellen: Allpour et al. (2020), Infas 360, Infas

Quelle: <https://www.corona-datenplattform.de/uploads/admin/Themenreport02.pdf>



# Anforderungen an die Wohn- und Lebensumgebung steigen unaufhaltsam ...

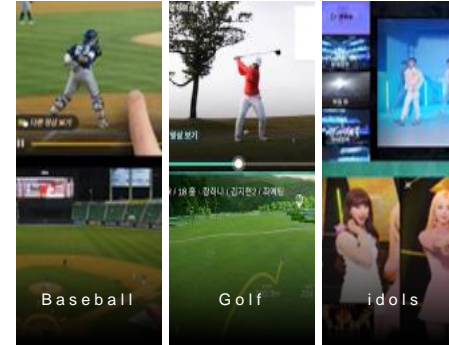
**Entertainment:**  
4K Free Roaming View



**Video: immersive VR (3D) +AR**



**New Live Sports /Idols /Carry...**



## ultimate new experience

- Free Roaming of view
- 4K image quality
- immersive experience
- Undifferentiated access of various devices
- Multi-channel HD video real-time interaction



## New Network Requirements

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

**Communication**  
multi-party HD video call



**Online Education/Working**



**Intelligent security protection**

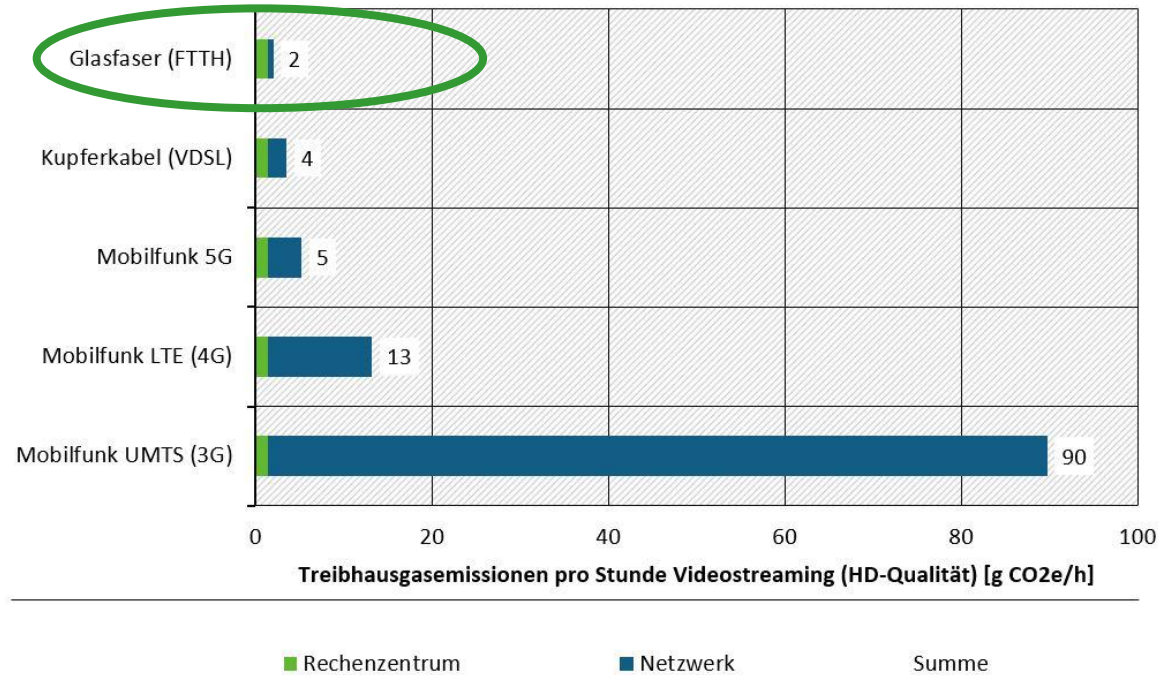


# Vergleich Vernetzungslösungen ....

	Mesh Wi-Fi Networking	Ethernet cable networking	Fiber Networking
<b>Networking effect</b>	Rate 100–500 Mbps	100-960Mbps	Far greater than 1000Mbps
<b>Advantages</b>	No cabling, Flexible deployment	Stable rate	Bandwidth has no bottleneck, stable, low latency
<b>Disadvantage</b>	Large bandwidth attenuation, unstable, high latency	Network cables need to be laid indoors, difficult to increase the speed and change the cable.	Cables need to be laid indoors, installation and deployment are complex.
<b>Application Scenarios</b>	100–300 M everywhere scenario Rooms <= 3	300–500 M everywhere scenario, rooms <= 4	300-1000M everywhere, Rooms >=3

# Glasfaser ....

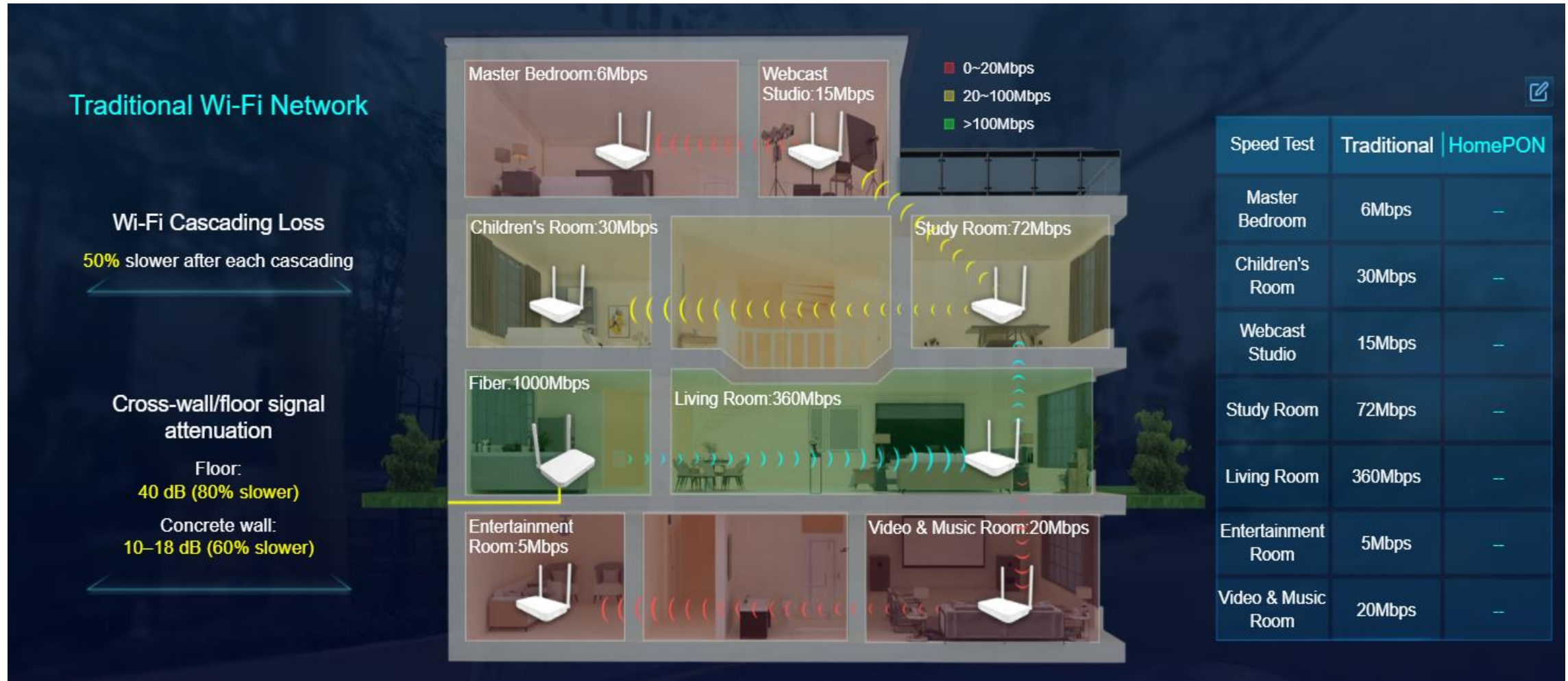
Treibhausgasemissionen Videostreaming Rechenzentrum und Übertragungsweg



Quelle: Umweltbundesamt

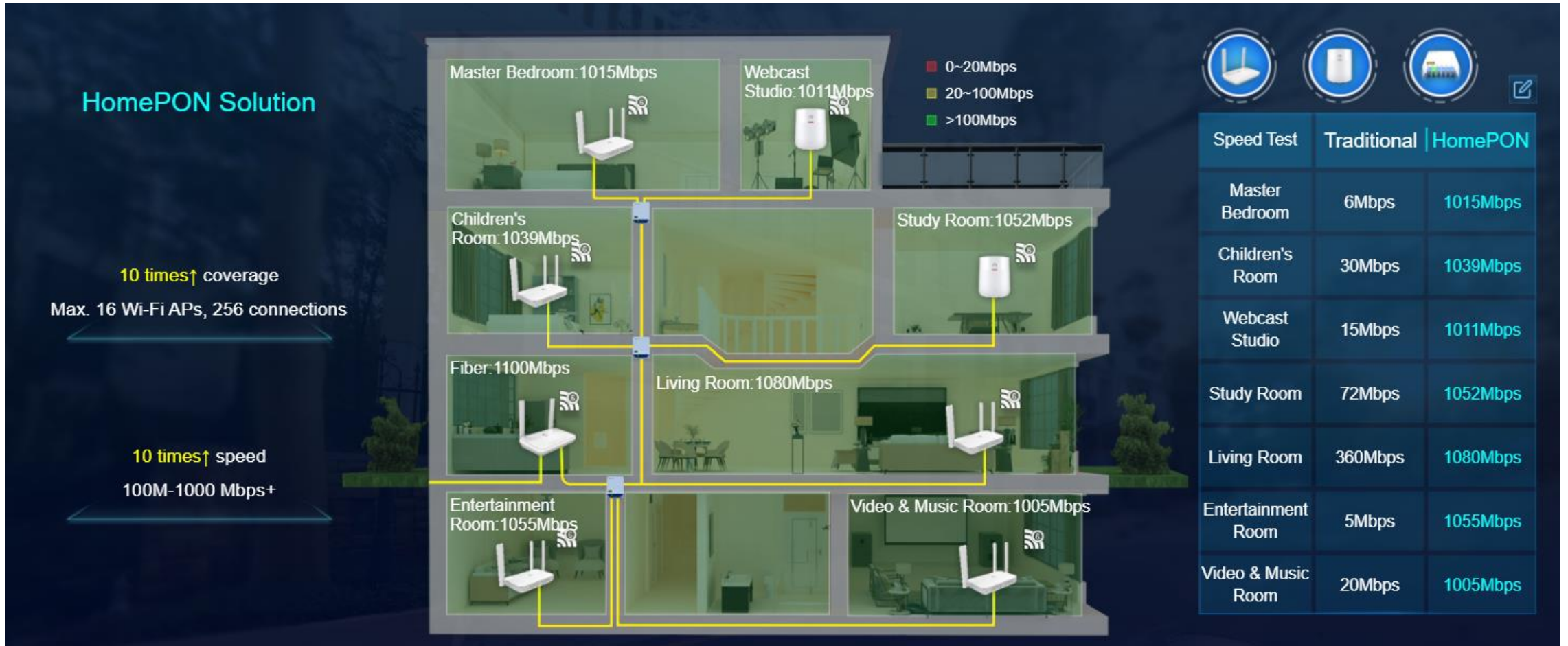
.... als nachhaltigste  
Anschluß-Technologie

# Die Herausforderungen heute für home Wi-Fi Netze





# 1Gbit/s in allen Räumen ?





# Idee: 'HomePON' Lösung (Fiber To The Room)

## Next-generation Huawei OptiXstar HomePON Optical Modem V800/K600 Series



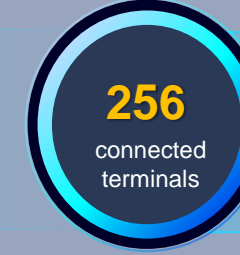
**>1G**  
Ultra-high speed  
No frame freezing  
occurs.



**<50ms**  
WiFi Roaming  
Seamless roaming  
Services are not  
interrupted.



**16**  
Wi-Fi hotspot  
PON Architecture




**256**  
connected  
terminals  
Multiple IOT Connections  
IoT always online.

# Lösungen für die vereinfachte Verkabelung

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

Example

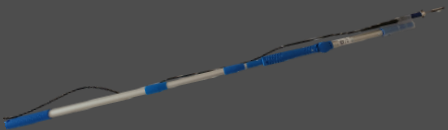
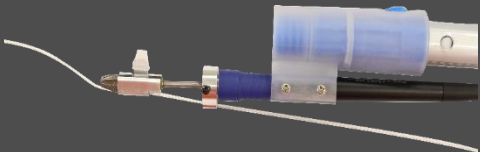


Description

- Unique fiber reinforced design: 15 N -> 75 N tension
- Unique double-sided tape technology: 2 times of construction -> 1 time of deployment
- Innovative termination solution: Splicing -> Pre-connection with micro heads

Open wire construction tool Hot melt tool Support rod

Example





Description

- Dedicated transparent fiber construction tool, 2 m/min quick construction
- Easy to use with USB power supply
- Compact design, 15 cm length, easy to carry

- 1-2m retractable pole design, convenient for ceiling construction
- Unique wheel design, easy storage of transparent fiber
- Integrated design of heating and lighting, with clear layout details

Best outer look Ultra-fine transparent fiber, invisible to deployment

Example





Features

- Transparent cables with hot melt adhesives are integrated, which can be deployed at one time.
- Straight fiber, strong adhesion, waterproof, oil-proof, wear-resistant, long-term reliability.
- Can pass through the door seam (The optical fiber is 2.0 mm x 1.6 mm. The optical fiber is proven to be able to pass through most door seam.)

Pipe threading tool Pipe threaded Pipe-through robot

Example



Description

- Optical cables can pass through a curved pipe or an assembled right-angled elbow.
- Obstacles in the pipe can be cleared.
- Up to 30 m

- Visible and controllable transition
- Able to pass Y-shaped pipes
- Optical cables can pass through a curved pipe or right-angled elbow.
- Up to 15 m

# FTTR für die nachhaltige Fiber ,only' Vernetzung

Compared with network cables, optical fibers are environmental friendly, easy to obtain, sustainable, and more energy-saving.



Copper resources are non-renewable

Copper mine



copper cable



Sustainable regeneration of sand

Sand (25% crust) >>> optical fiber

Can be recycled, easy to obtain, sustainable



60 – 75%

More energy efficient as compared to copper cables



70 – 85%

More energy efficient as compared to coaxial cables



100%

ODN is pure passive solution

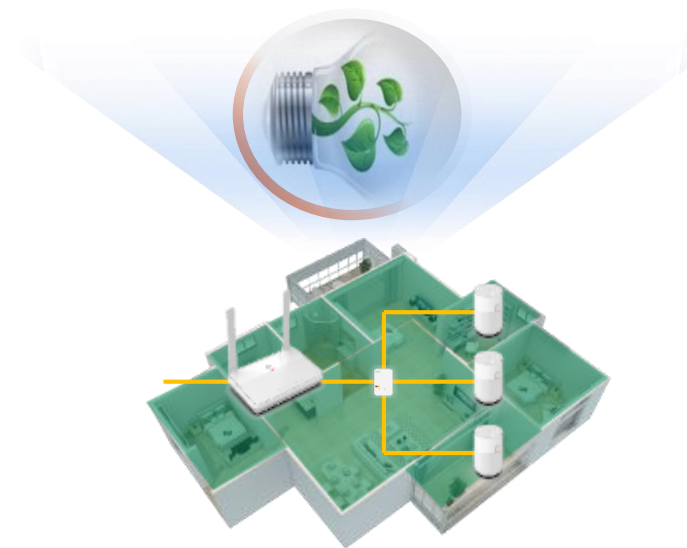
Remarks:

1. The calculation model is estimated based on the scenario where 10,000 home users are connected.

2. For the analysis method, refer to the EU Code of Conduct for Energy Consumption of Broadband Equipment (version 6) and Huawei model.

The ONT complies with the CoC v7 standard, Energy-saving

Each household saves 152 kWh electricity per year



When FTTR optical networks are used, it saves 152 kWh electricity per user per year.

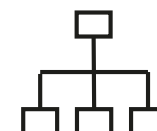
Note: Based on the typical configuration model of 1 master and 3 slave devices, each optical modem saves 38 degrees of power per year compared with the router. Compared with traditional router networking



# All-Optical: Ein Campus Beispiel Fudan University

## Project background

Fudan University reconstructed the networks of four campuses in batches against the Internet+ smart campus action plan and the network pressure introduced by smart service applications. They piloted their student dormitories first.



**Network  
architecture**

Bandwidth increased

**10X**

*XGS-PON access, gigabit acceleration*

## Scenarios and main requirements



Classroom  
network



Teaching staff  
office



Outdoor security  
protection



Student  
dormitory



Reading  
room



Canteen

**Broadband experience**

**Simple O&M**

**Continuous evolution**



**Power consumption  
reduction**

Entire-network power  
consumption

**↓ 30%**

*Eliminate power consumption of IT equipment rooms,  
saving air conditioners, and reducing fire risks.*



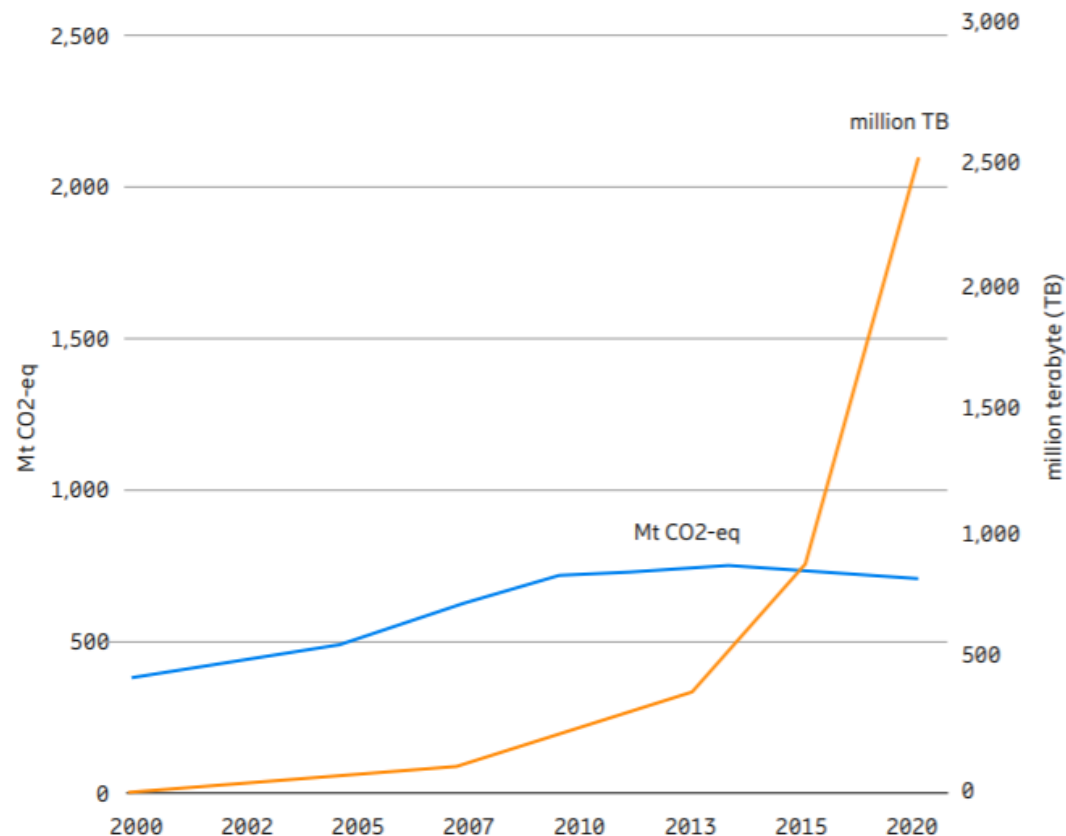
**Lifecycle**

**↑ 3X** *Network cable: 10 years  
→ Optical fiber: 30 years*

*IPv4 & IPv6 dual stack, 50G PON evolution*

# IKT Innovation – Eine Bestandsaufnahme

Figure 3: Carbon footprint of ICT and data traffic development



Source: Ericsson. 2019 <A quick guide to your digital carbon footprint>

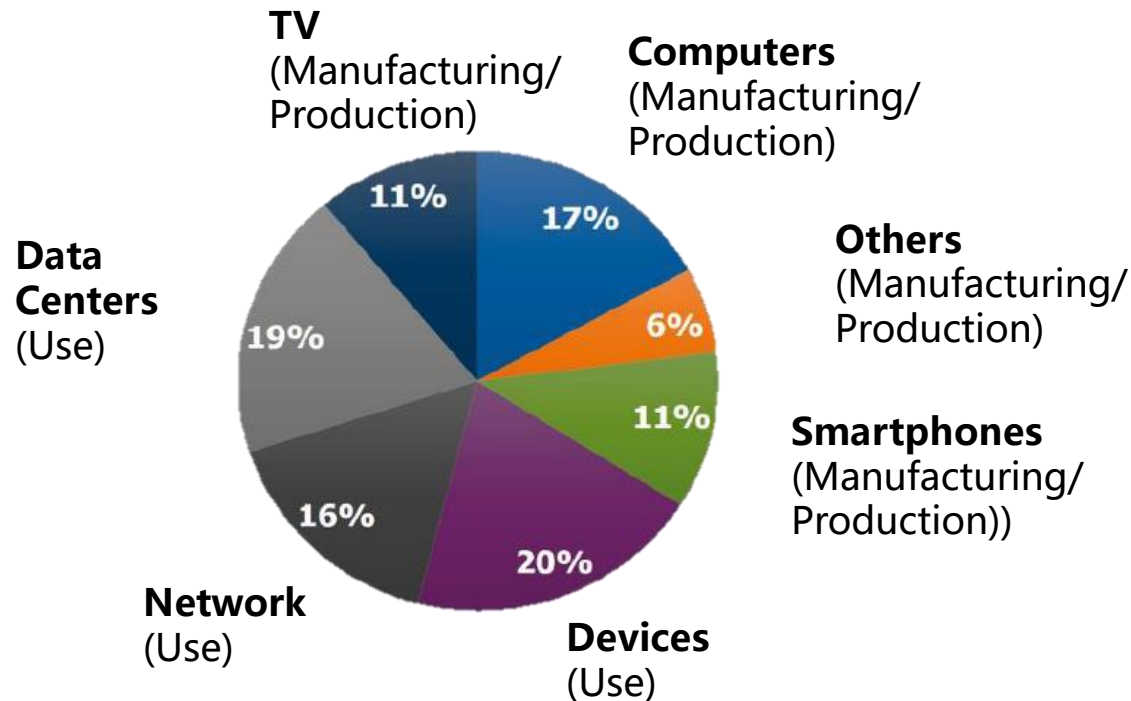


Die IKT Industrie ist ein Innovationstreiber /(- getriebener) im Sinne der Nachhaltigkeit

# Fußabdruck IKT Sektor

According to UN's research from 2018, the ICT sector's carbon footprint to be **1.4% of overall global emissions**.

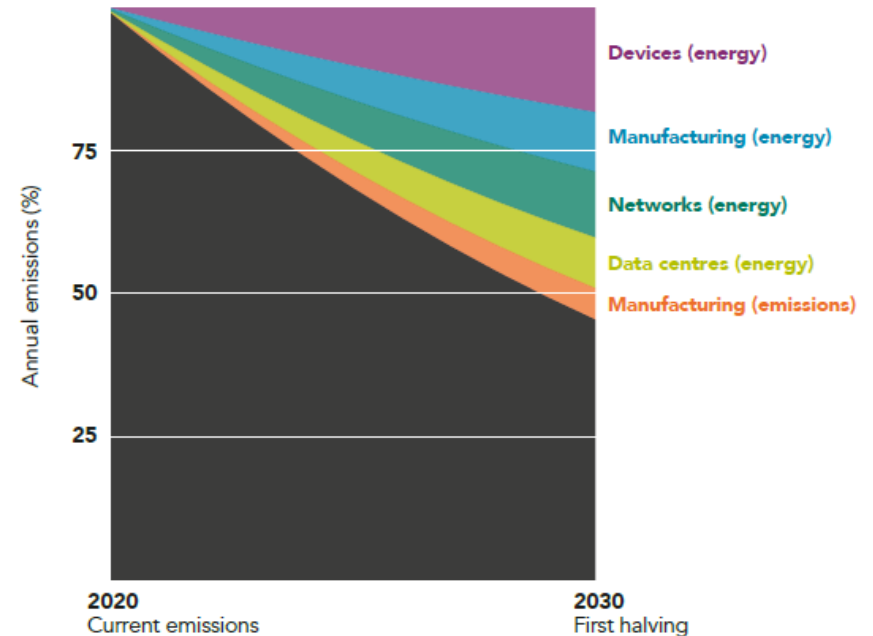
## Distribution of digital energy consumption per item in 2017



Source: The Shift Project report (2019). <LEAN ICT>

## Estimated 55% reduction of annual emissions for the digital industry sector by 2030.

### TRAJECTORY



Source: UN Global Climate Action Summit. (2019)  
<Exponential Climate Action Roadmap>



# Huawei: Leading provider of ICT infrastructure and smart devices



## Vision and mission:

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



**197,000**

Employees



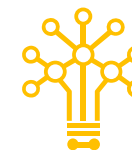
**170+**

Countries and R&D employees  
regions



**53.7%**

R&D employees



**No. 3**

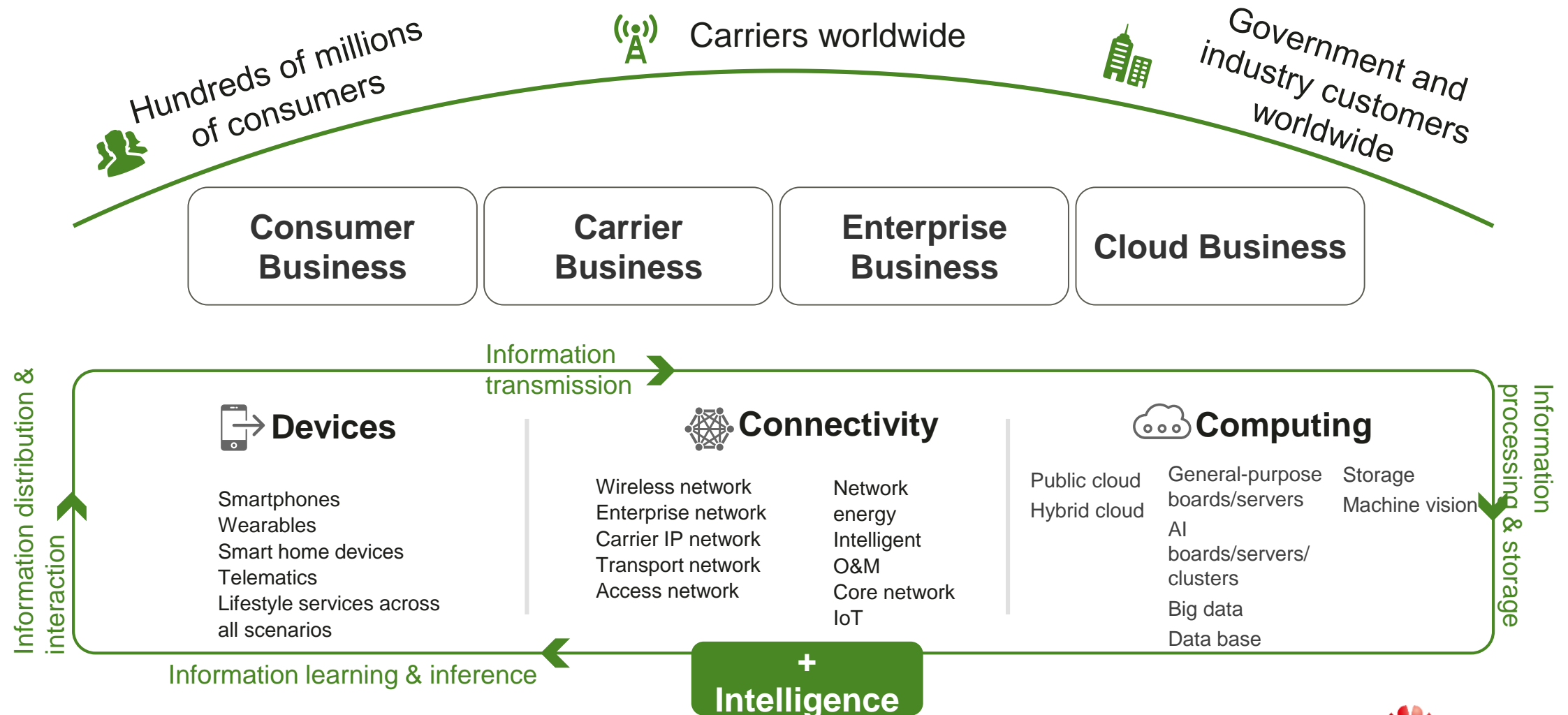
in R&D  
investment



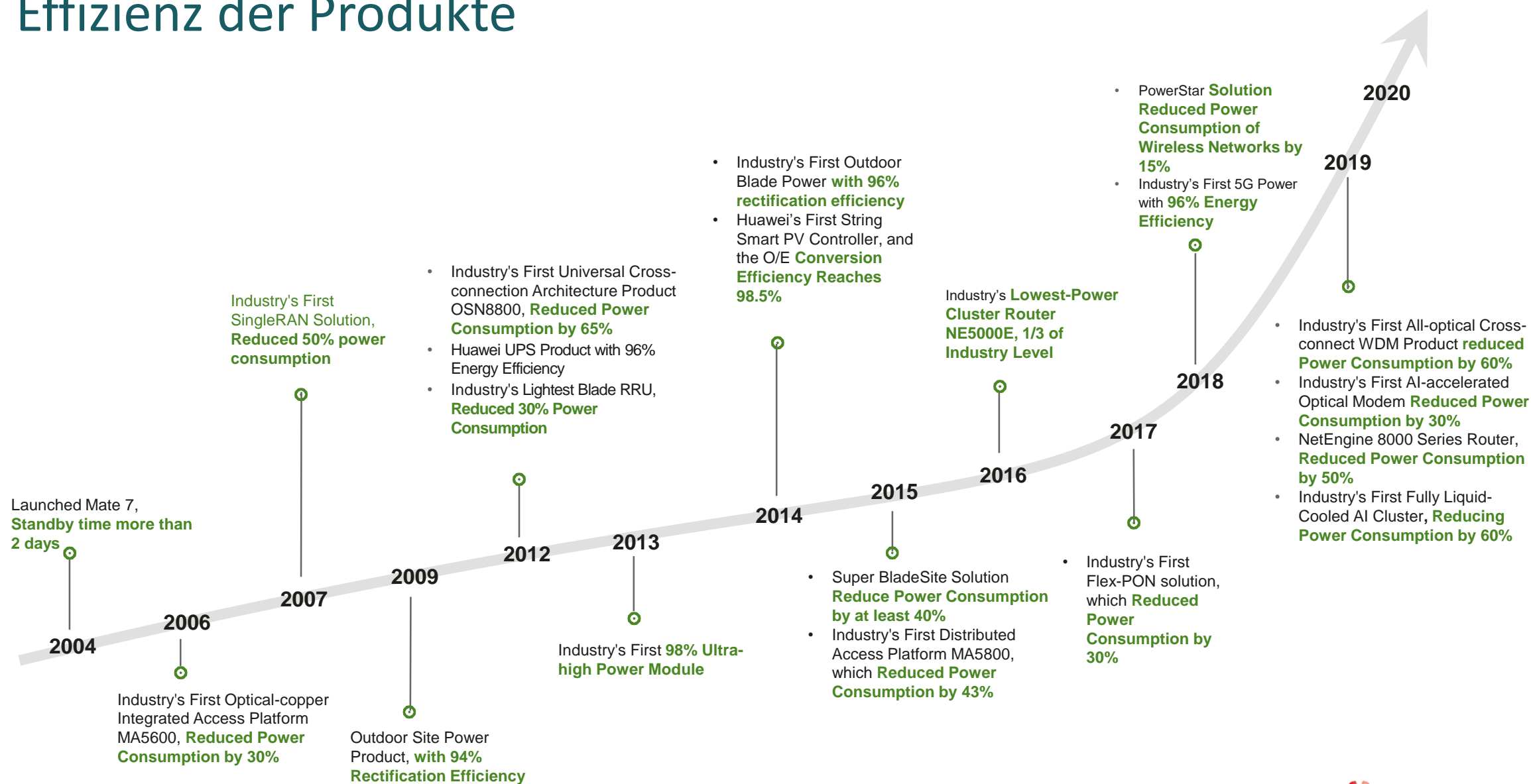
**49**

on Global 500

# Fokus auf IKT Technologien, Produkte, Lösungen und Dienstleistungen für 3 Kundengruppen



# Ausdauernde Technologie Innovation für immer höhere Energie Effizienz der Produkte





# Danke

# Thank You Xie Xie

*We believe:*

*Technology is not against nature,  
but part of nature.*

*Tech for a better planet.*

*It's our commitment, which drives us  
to keep moving forward.*

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

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