# Navigating the Future of Global ICT Standards: Huawei's Vision for Enhanced Industry

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# 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

**170+**
countries and regions

**207,000**
employees

**55.4%**
of employees work in R&D

**No. 4**
in global R&D investment

**120,000+**
active patents held globally
(*Huawei has one of the world's largest patent portfolios.)



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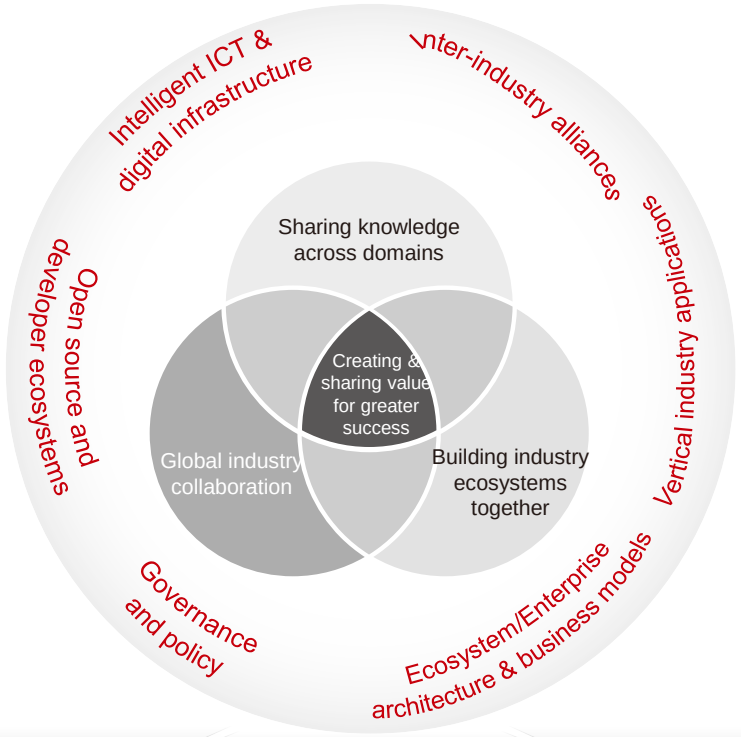
# Promoting standards and ecosystems in ICT infrastructure, smart devices, IAS, and other hardware and software domains




**~800**
**Industry organizations**

**450+**
**Key positions**

**68,000+**
**Standards contributions**

## Technological contributions

- Summitted 68,000+ standards contributions in connectivity, computing, smart devices, IAS, and other business domains

## Industry collaboration

- Collaboration with about 800 industry organizations
- Promoted deeper partnerships and mutual recognition of standards between industry organizations

## Value creation

- Built industry collaboration platforms to create industry-wide synergy
- Cultivated talent for digital transformation and created social value

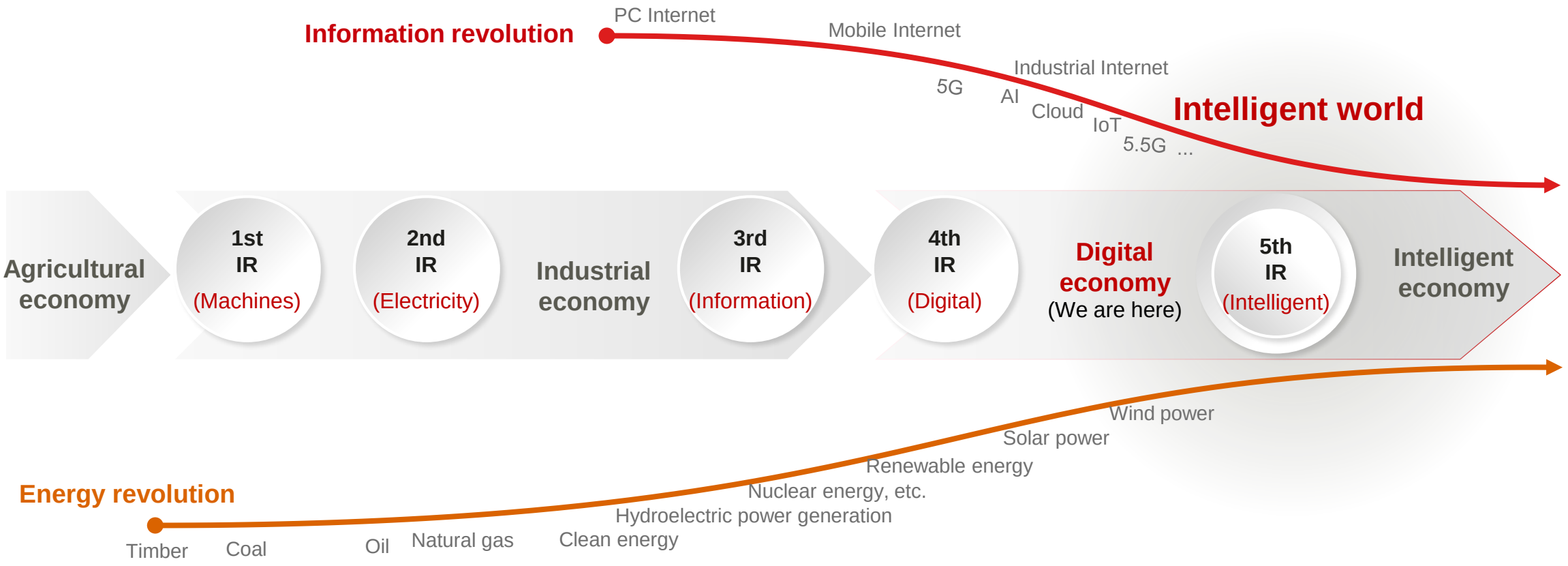

Huawei Proprietary - Restricted Distribution

# How Huawei think about the industry trends

--Digitalization, intelligent, and green


Huawei Proprietary - Restricted Distribution

# Digital and intelligent transformation, and decarbonization are the pathways to the intelligent world





Huawei Proprietary - Restricted Distribution

# Digitalization creates four types of value to boost national GDP

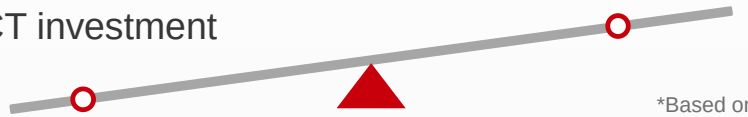
## Four types of value

| | | | |
|---|---|---|---|
| Countries | **Social value** | Better governance | Better livelihoods |
| | **Economic value** | Boosting the economy | Stronger competitive advantage |
| Industries | **Industry value** | Industry optimization | Structural transformation |
| Enterprises | **Business value** | Higher productivity at lower costs | Product upgrades |

## More ICT investment, faster GDP growth

**US$1**
in ICT investment

**US$3.5**
average GDP growth



*Based on 2019 data

**ICT investment has a bigger impact on GDP in less developed countries**

For every US$1 spent on ICT, GDP increases by:

| | | |
|---|---|---|
| **Developed countries** | (Average GDP per capita: US$52,000) | **US$1.3** |
| **Emerging economies** | (Average GDP per capita: US$12,000) | **US$2** |
| **Developing countries** | (Average GDP per capita: US$5,000) | **US$4.4** |

Source: Roland Berger



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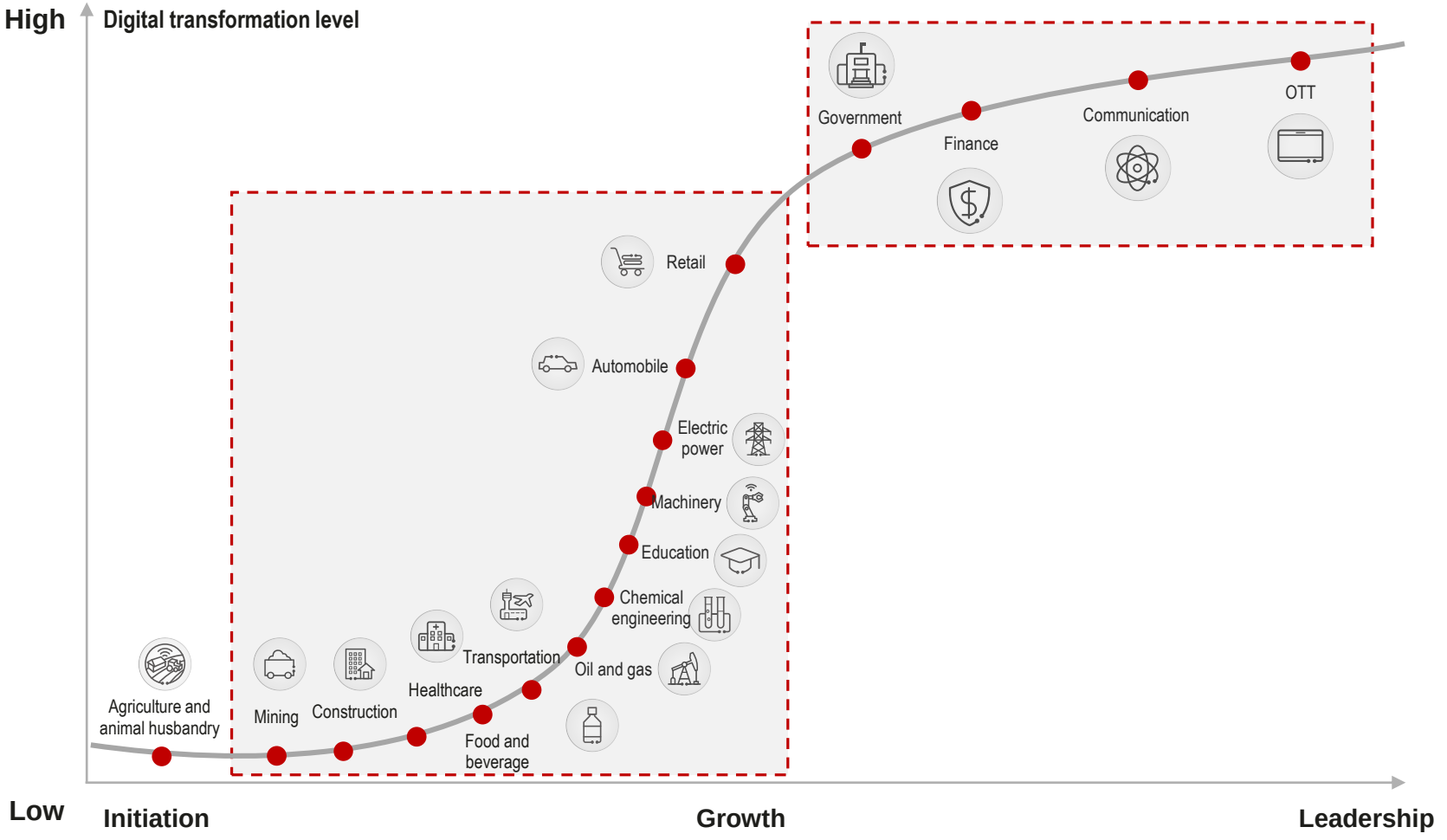
# Industries at different stages of digital transformation face different challenges




**Initiation**

Improving digital skills

**Growth**

Focusing on better products, services, and customer experience

**Contribution**

In-depth integration of technologies and business scenarios

*Source: Huawei Enterprise MI, Goldman Sachs, IDC, etc.*



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# Digital technology empowers green development and decarbonization

## 1. Green ICT
**Bit manage Watts & NCIe Standard Framework**

**ICT Energy-saving and Efficiency Standardization of NCI assessment methodologies**

Greener Vendor & Operator

Green Site
Green Network
Green O&M

## 2. ICT for Green
**Handprint Methodologies**

**Help all Industries production efficiency & Low Carbonization**

Greener Industries

Empower Industries **X10**

Source: GeSI and GSMA

## 3. Innovation for Green
**Disruptive Innovation 4 Future Digitalization and Low-Carbonization**

**Enable all Innovation factors for future Green orientation**

Greener Future

Innovate Green Future

- **NCI:** Network Carbon Intensity Index



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# Intelligent energy savings across the network: More Bits, Less Watts + Zero Bit, Zero Watt

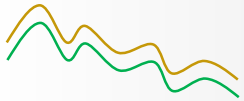
## Energy saving: Systematic → Intelligent

Active state: optimal energy efficiency

More Bits ↑

Less Watts ↓

Idle state: optimal power consumption



$Watts = f(Bit)|Flex\ KPI$

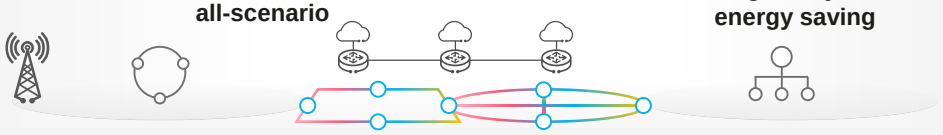
— Bit — Watt

### Green operations

| Visualized all-domain energy efficiency indicators | Dynamic resource management | A better experience and higher energy efficiency driven by data |
|---|---|---|

### Green networks

All-optical, all-scenario



Intelligent, dynamic energy saving

### Green site

| Medium and heavy load<br>**Intelligent power consumption control** | Medium and light load<br>**Real-time resource shutdown** | Extremely low load<br>**Ultimate hibernation** |
|---|---|---|

### Green DC

| Green structure | Green power | Green cooling |
|---|---|---|

## Helping carriers achieve green development

### Joint innovation with Orange

Engage 2025

First IP network-wide energy efficiency dashboard
First NEE2.0 network with optimal energy efficiency and superior experience
First FlexKPI-based elastic energy-saving network

| | |
|---|---|
| More Bits | **50%↑** |
| Less Watts | **Flat or Less** |
| Carbon emissions | **30% ↓** |

### Zero-carbon Qinghai Showcase

DESIRE

**D**efinition
**E**valuation
**S**imulation
**I**mplementation
**R**esult **E**valuation

- Multi-dimensional measurement and planning
- Precise site selection, **10% more efficient investment**
- Solution combination, **20% higher return on investment**
- Secure and efficient, **50% shorter TTM**
- Intelligent O&M, **15% lower energy consumption**



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# Eight outlooks for the Intelligent World 2030

**Healthcare**
Making Health Computable, Bettering Quality of Life

**Food**
Data-driven Food Production for More Bountiful, Inclusive, and "Green" Diets

**Cities**
New Digital Infrastructure Makes Cities More Human and Livable

**Energy**
Intelligent, Green Energy for a Better Planet

**Living Spaces**
Personalized Spaces with Novel Interactive Experiences

**Transportation**
Smart, Low-carbon Transport Opens up the Mobile Third Space

**Enterprises**
New Productivity, New Production Models, New Resilience

**Digital trustworthiness**
Digital Trust

| # of connections worldwide | General-purpose computing power (FP32) | AI computing power (FP16) | Cloud services as % of total enterprise application expenditure | Share of renewable energy in global electricity generation |
|---|---|---|---|---|
| **200 bn** | **3.3Z FLOPS, 10x ⬆** | **105 ZFLOPS, 500x ⬆** | **87%** | **50%** |



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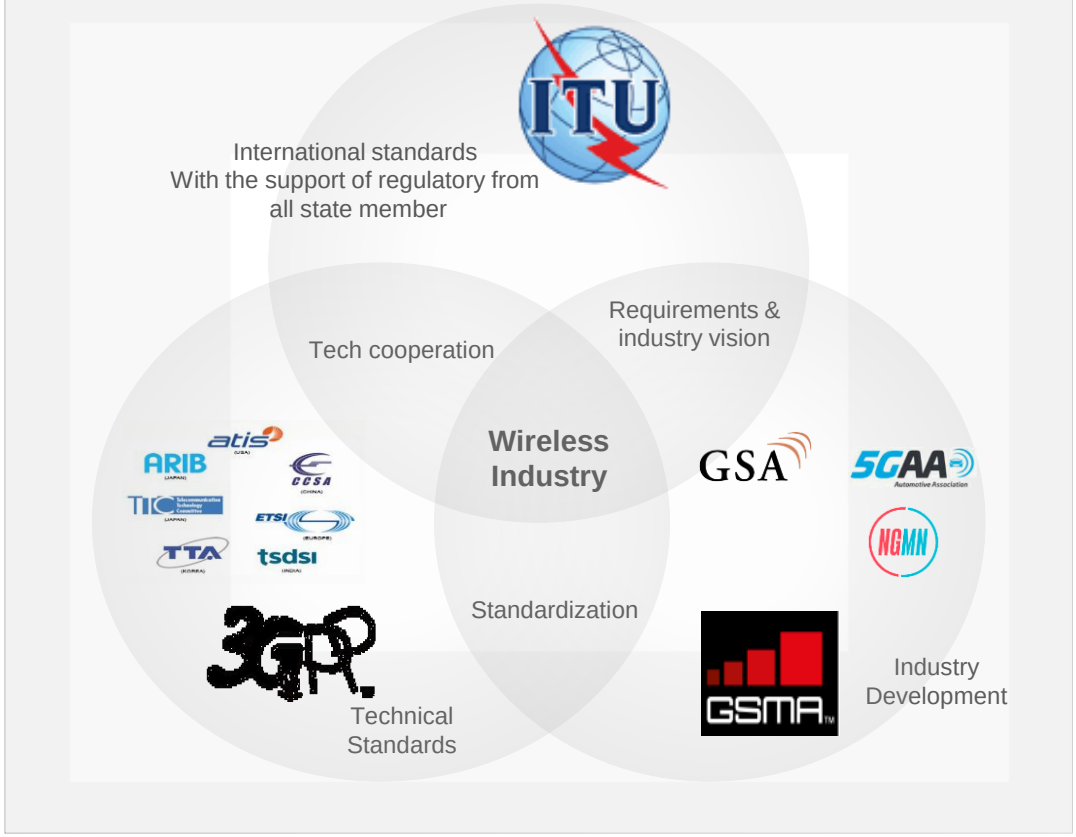
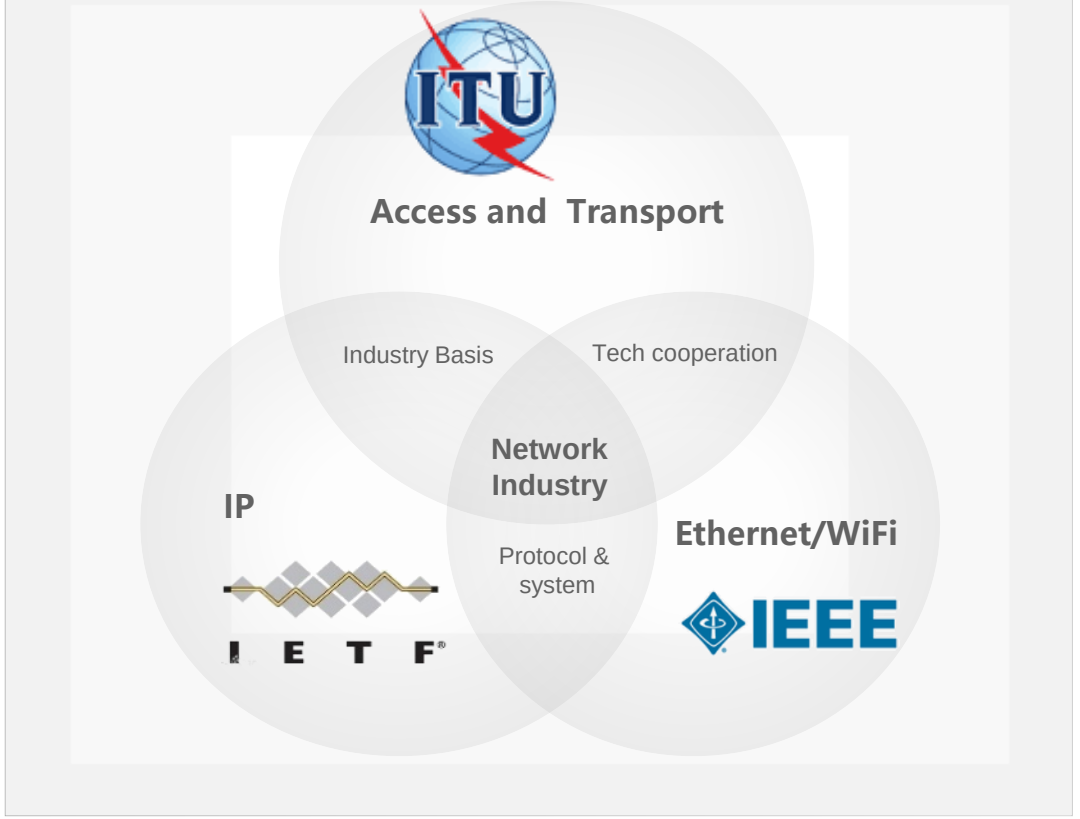
# How will Huawei contribute

# Standardization and technological Cooperation among organizations

## Sound development of wireless industry based on the smooth cooperation among related Orgs




## ITU-T defines the basis of fiber network generations and standards



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# 5G fast lane: Emergence of a B5G business consensus

## 5G has improved by leaps and bounds, and has spurred revenue growth for carriers

### Life changing capabilities
Explosion in HD video and short video services

**> 1 bn** 5G users

**HD video**
40% (4G) → **60% (5G)**

**Multi-speed playback**
5% (4G) → **40% (5G)**

### Driver of industry digitalization
More secure and efficient

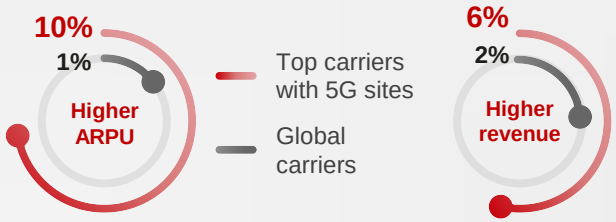
**20,000+** industry projects

**Smart mining**
**60%** of underground work brought above-ground

**Smart ports**
**75%** boost in handling efficiency

...

### Revenue booster
Conducive to business




## B5G has progressed in three key areas and is maturing

### From vision to standard setting

**5G-Advanced**
Officially confirmed by 3GPP

R18 R19 R20

3GPP
April 2021 2022 2030

### Clear key technological attributes

**10 Gbps** DL

**1 Gbps** UL

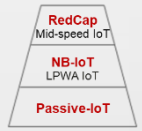
**100 bn** connections

**Native intelligence**

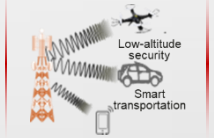
5.5G

### More scenarios

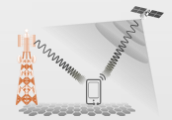
**100 bn IoT connections**




**Integrated sensing and communications**




**Satellite-ground collaboration**





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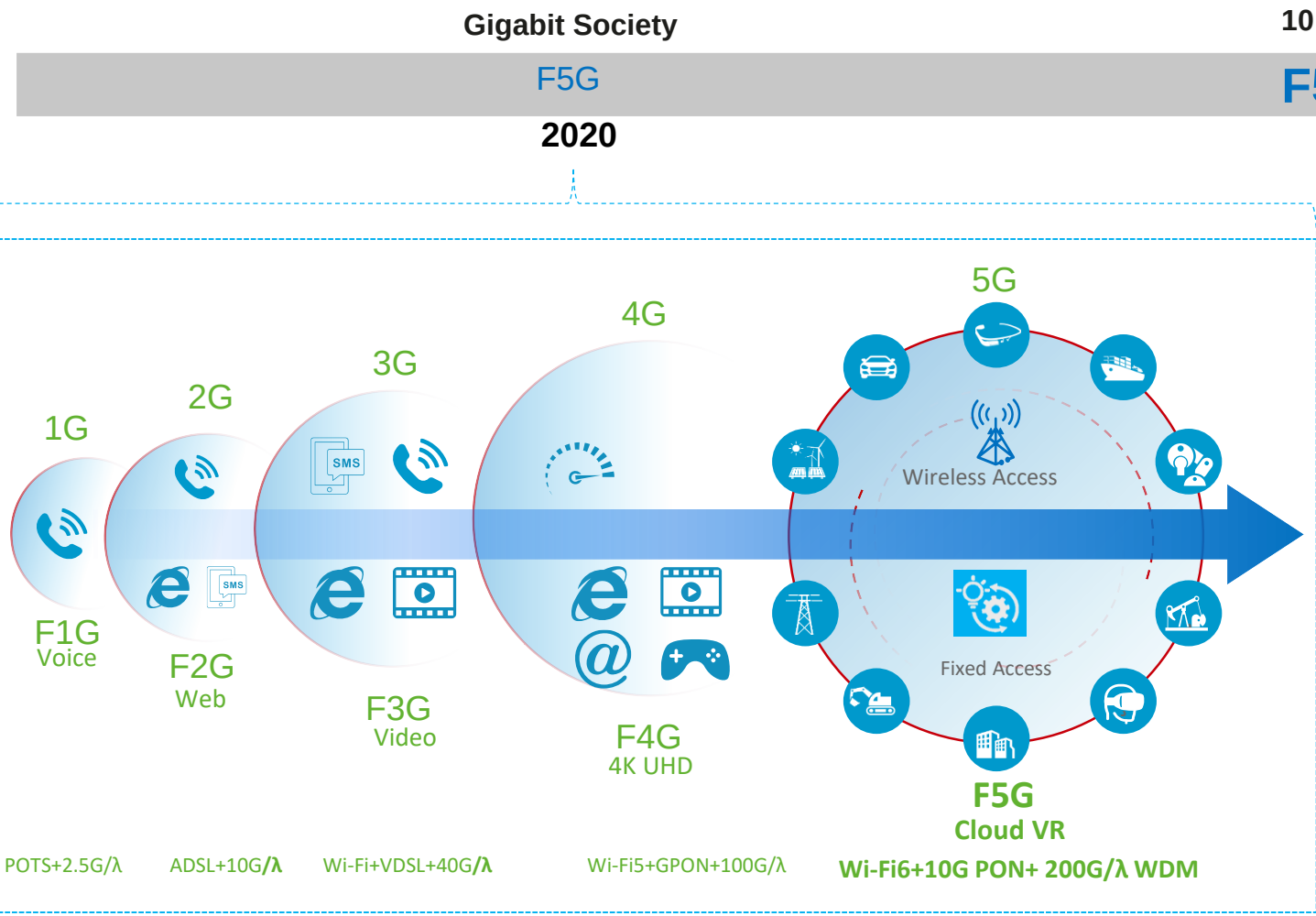
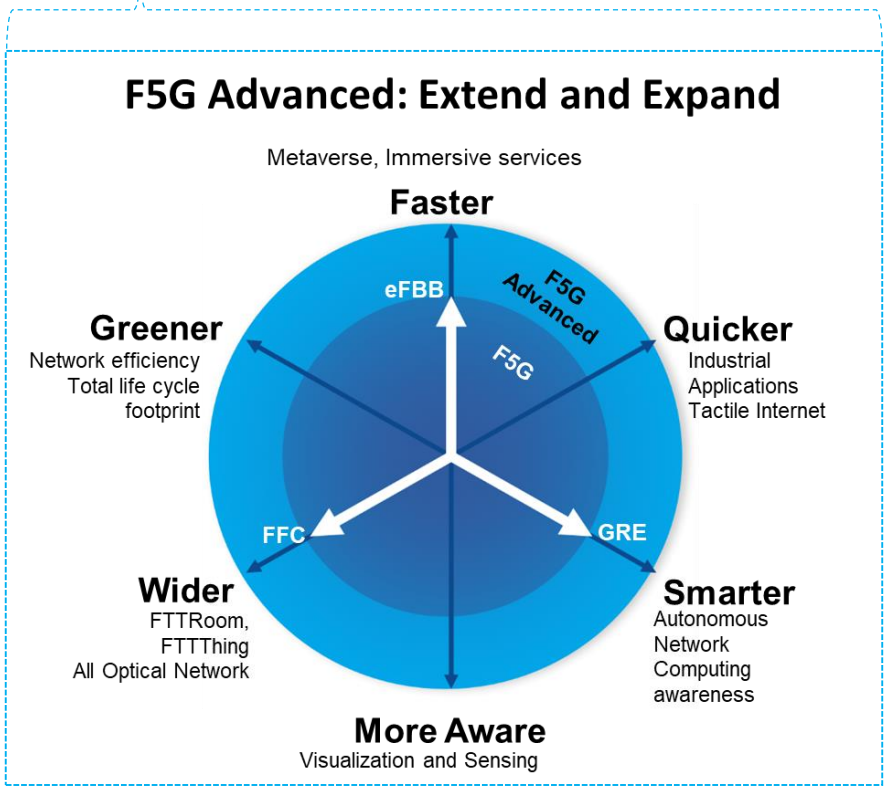
# Fixed Network evolves to F5G Advanced to enable 10G Everywhere




Fixed network evolved from F1G till F5G in past decades, now F5G is in deploying

F5G-Advanced is expected deploying from 2025



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# ITU/ISO/IEC, creating new value together

Finance | Manufacturing | Oil and gas | Electric power | Mining | Rail | Airport | Highway | Port | Education | Healthcare | Real estate | ……

**Weaving technologies into industry scenarios**

**Green Digital Action at COP28**

**Removing barriers and enable digital transition**

*For example:*

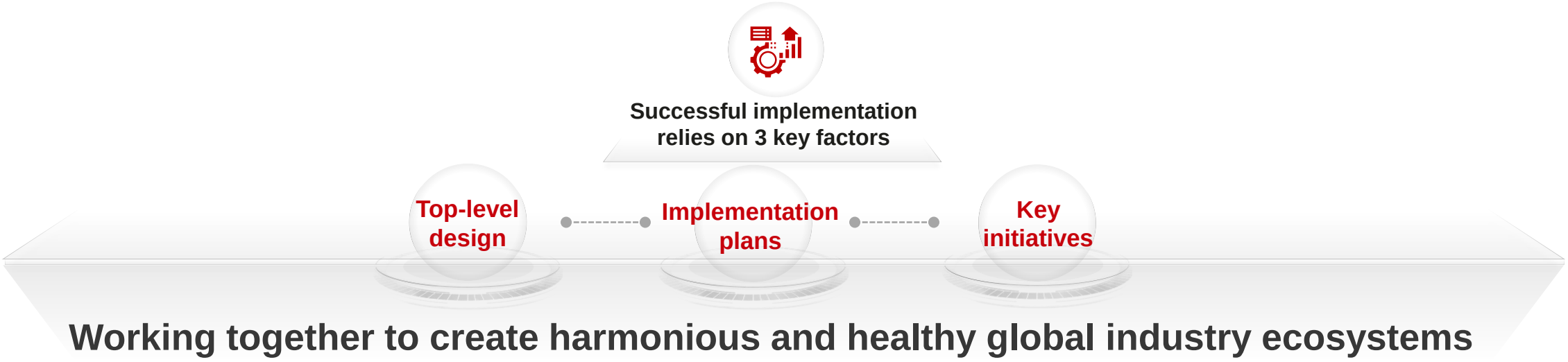
**AI for Good**

**Bridging Standards and Industry in AI:**

A Roundtable on the future of AI standardization and Industry Development at the AI for Good Global Summit 2024

Vertical Industry and Operators

# Working together to create a thriving industry




## Working together to create harmonious and healthy global industry ecosystems

**Standards organizations**

Joint innovation for greater development

[ex: WSC/SPCG]

**Industry alliances**

Setting trends and growing the industry

[ex: MSF]

**Open source communities**

Openness and enablement for stronger ecosystems

[ex: Eclipse foundation]

**Academic associations**

Business-academia cooperation to probe endless frontiers

[ex: 200+ academic members of ITU Kaleidoscope]



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# ITU-T and Industry engagement

**Maintaining and scaling industry and private sector engagement**

**ITU-T-Private Partnerships (ITU-T-PPs):** Develop more robust ITU-private partnerships. This could involve joint task forces focused on specific technology areas, where private sector entities can contribute their expertise and resources for a focused area.

**Flexible Participation Models:** Introduce more flexible participation models for private sector entities. Allowing companies to engage in specific areas of interest that can feed into ITU-T's work [ex: CxO meetings].

**Enhanced Communication and Marketing:** Improve communication strategies to highlight the benefits of participating in ITU-T's standardization activities to the private sector. Showcase success stories of private sector contributions leading to globally adopted standards. [ex: AI for Good]

**Exponential Rapid advancement of technological development**

**More agile Standardization Processes:** More agile standardization methodologies that allow for faster development and review (not only approval TAP/AAP) of standards. This could include modular standards development, where parts of a standard can be developed and approved independently.

**Early Engagement with Innovators:** Proactively engage with industry, and research institutions to identify emerging technologies early. This engagement can include creating industry sandboxes or partnerships that feed directly into the standardization process.



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# Thank you.

把数字世界带入每个人、每个家庭、
每个组织，构建万物互联的智能世界。

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