

**Seventh SG13 Regional Workshop on
“Standardization of Future Networks towards
Building a Better Connected Africa”**



Technologies for Network 2030

Abuja, Nigeria, 3-4 February 2020

ICT in 2030

-- All things sensing

-- All things connected

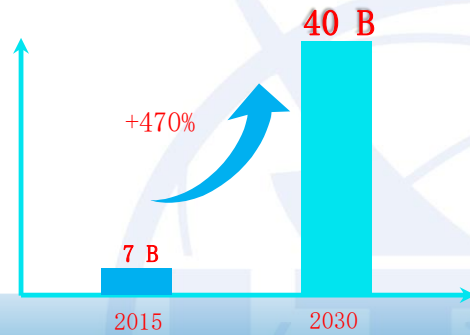
-- All things intelligent

Sensing

Connected

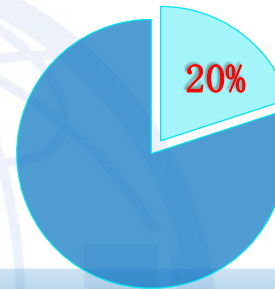
Intelligent

Smart devices will reach 40 billion, upgrading position from tools to assistant



Global personal smart device amount

Source: Huawei GIV



Users with 10+ smart devices

Source: Huawei GIV



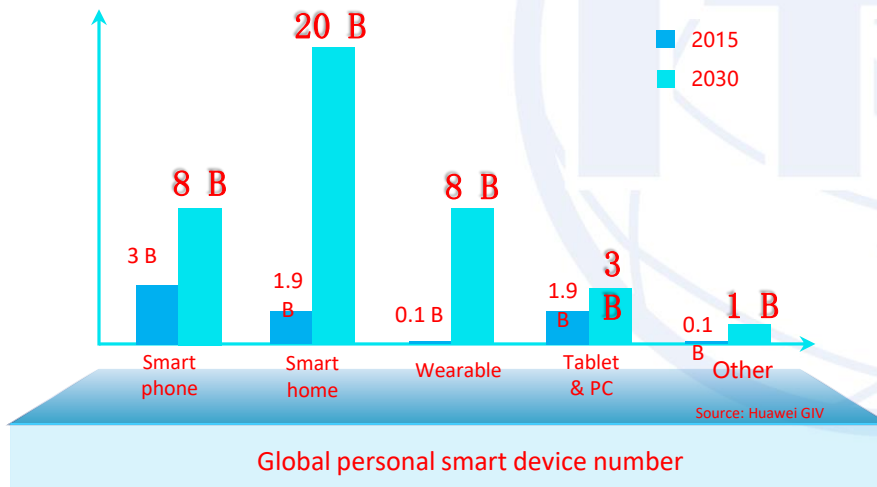
Device forms are evolving.



Role position is upgrading from tools to assistant, then even part of human body.

Smart devices will become necessities for life and basic platform for business

- Smart devices will get into human life in all scenarios, and become necessities for life.
- Smart devices will become basic platform for business, including e-business, O2O service, etc., improving society efficiency greatly.



Integrated information service with AR glass



Online leisure services on driverless car



O2O life services in smart home



Telecommuting platform on smart devices



Sensing

Connected

Intelligent

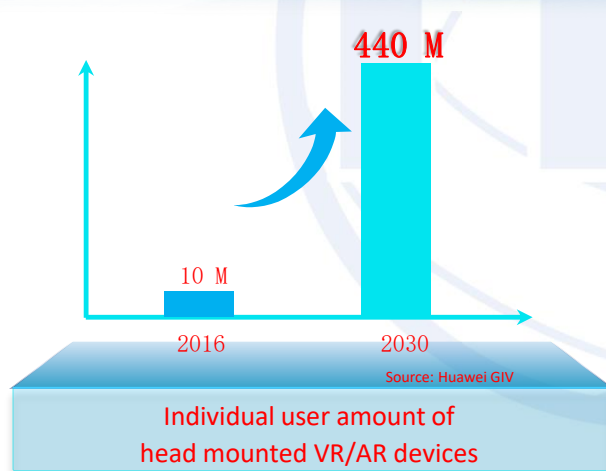
VR/AR individual users will reach 440 million, changing their recognition form

Miniaturized device
with low price

Content creation
and modelling

High speed & low
latency network

Gradual cloudification
of applicaitons



Gaming



Live Video



Business



Education



VR/AR will become a gaming, communication and social platform, being capable of general computing, realize ideal experience with digital world and real world deeply integrated

The world in 2030

-- All things sensing

-- **All things connected**

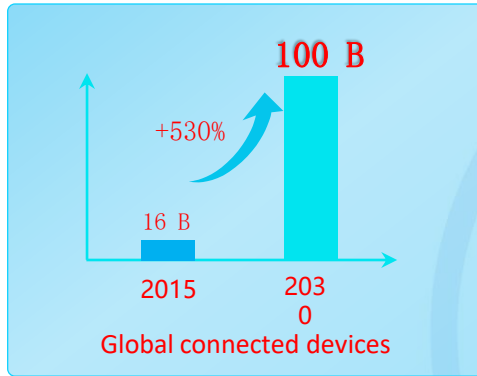
-- All things intelligent

Sensing

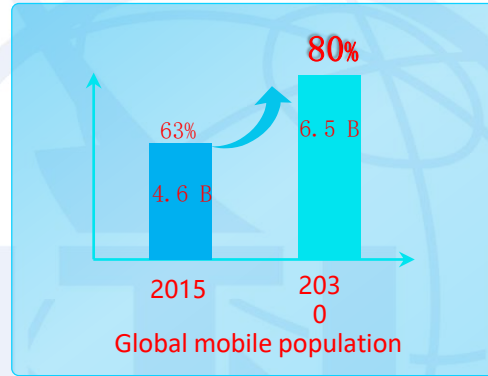
Connected

Intelligent

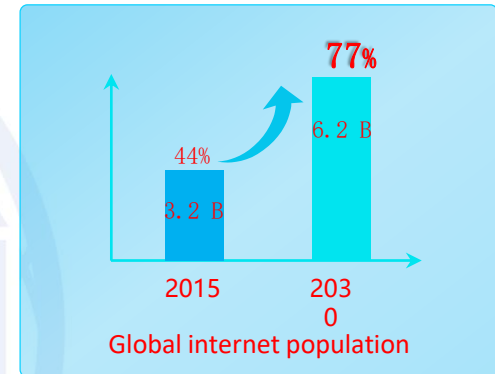
Global connections will reach 100 billion, mobile communication population will reach 80%, and internet population will reach 77%



Source: Huawei GIV



Source: Huawei GIV



Source: Huawei GIV

Connections will become basic human right, living resources



Connections will become corporate basic production material as electricity



Connections will become basic driver of national economy



UN: Global population will reach 8.1 billion in 2030.

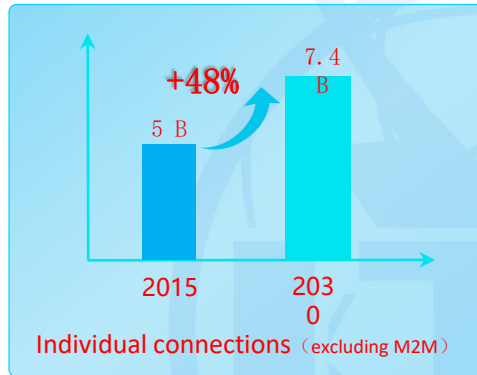


Sensing

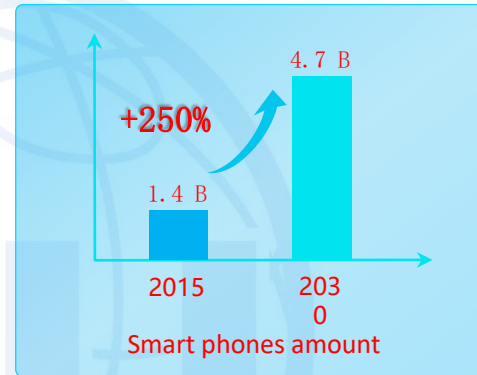
Connected

Intelligent

**In emerging countries, individual connections will increase by 48%,
smart phones amount will increase by 250%**



Source: Huawei GIV



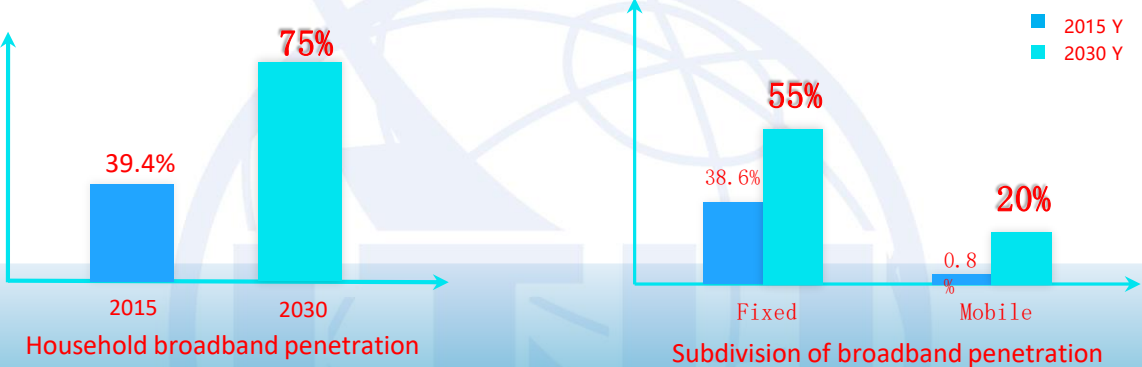
Source: Huawei GIV



Emerging countries will accelerate ICT infrastructure construction and expand connection coverage to drive economy growth.

Note: There are 147 countries or districts defined as emerging countries by Huawei.

Broadband will be popularized to 75% households, greatly weaken the restrain of spatial distance on economic activities



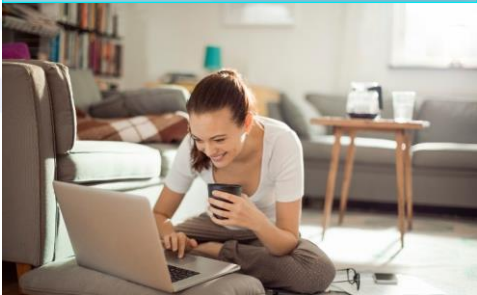
Source: Huawei GIV

Source: Huawei GIV

Broadband network will become household infrastructure



SOHO will become an important working pattern



Global broadband popularity will drive 4.5% GDP growth accumulated in 10 years



Source: World Bank study (Qiang et al.)

Sensing

Connected

Intelligent

**Gigabit broadband will be popularized to 30% households,
gigabit mobile network will cover 70% population**



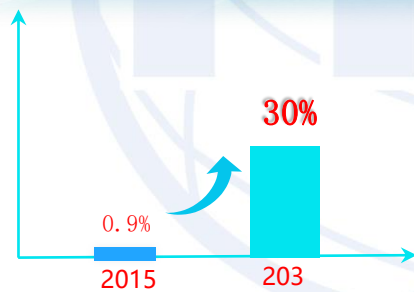
FTTx broadband construction accelerating



Gigabit 4G will expand roundly

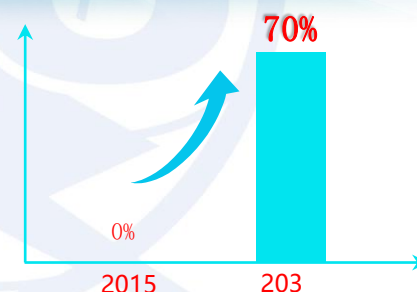


5G and WTTx broadband will develop quickly



Gigabit household broadband penetration

Source: Huawei GIV



Gigabit mobile network coverage rate

Source: Huawei GIV

Gigabit connection era is coming, a 4GB high-definition movie could be downloaded in 30 seconds, network experience will have qualitative change.



Sensing

Connected

Intelligent

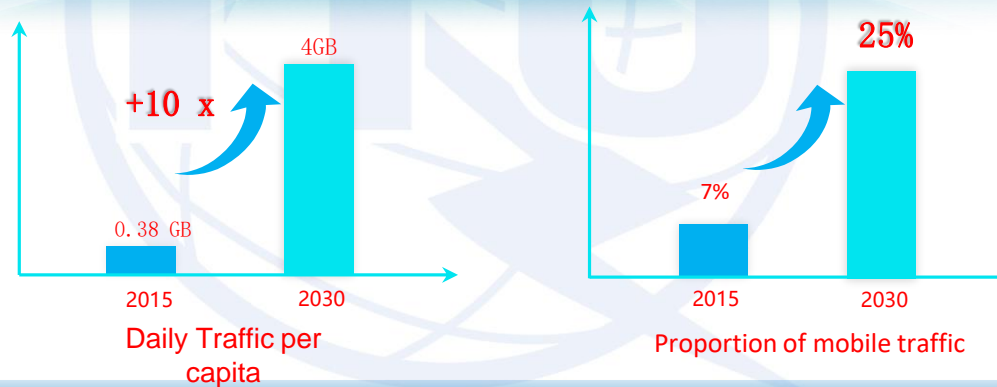
Daily communication traffic per capita will reach 4GB, mobile traffic will account for about 25% therein

Anytime anywhere online will become pervasive

Network access bandwidth will improve continuously

More and more high quality digital content

Unit price of traffic will decrease apparently



Source: Huawei GIV

Source: Huawei GIV

Daily communication traffic per capita, is equivalent to watching a 1080p HD movie online. Monetization of information traffic is becoming a new business topic.



Sensing

Connected

Intelligent

Video will contribute 89% of individual communication traffic, mobile video dataflow of usage will increase more than 25 times.



More time spent on video watching



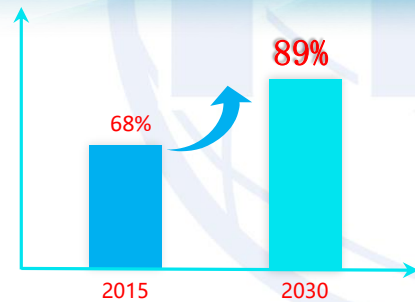
4K/8K video will be popular



Home surveillance video increasing greatly

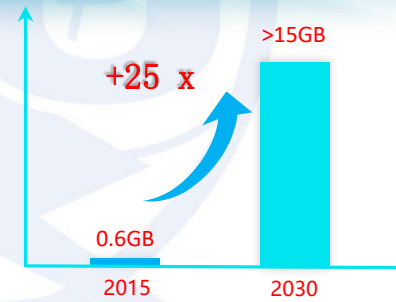


AR/VR video will increase sharply



Proportion of video in individual traffic

Source: Huawei GIV



Individual mobile video DOU

Source: Huawei GIV

Visual era has come, video is becoming major information carrier and changing people's sensing experience.

Sensing

Connected

Intelligent

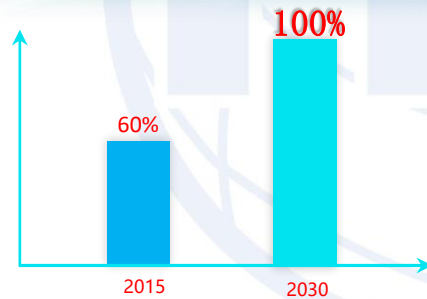
**100% enterprises will be connected to cloud services,
85% of enterprise applications will be cloud-based**

Higher efficiency and lower
cost for application
deployment

More powerful and
convenient platform
services

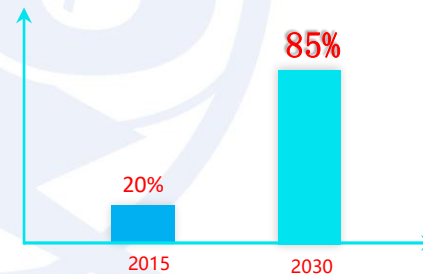
More flexible and agiler
resource sharing

New business model:
Pay As You Use



Cloud adoption rate of enterprises

Source: Huawei GIV



Cloud-based deployment rate of applications

Source: Huawei GIV

Cloudification will become an inevitable choice for enterprises' digital transformation.



Cloud service will penetrate into enterprises' operating procedures as internet, increasing their efficiency and benefit

Efficiency



Cloud service will drive increment of R&D efficiency, and shorten application deployment time by 90%.



Case:
R&D efficiency could be improve by 50% with Huawei Developer Cloud service

Benefit

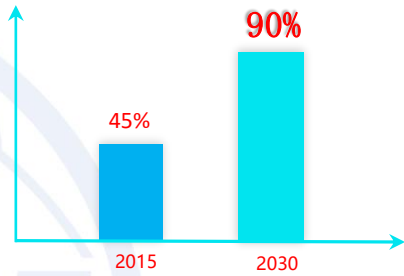
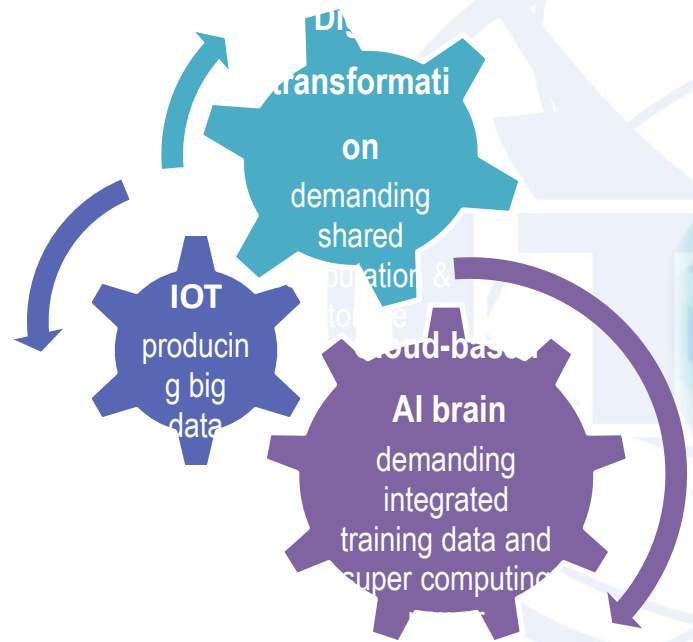


Cloud service will increase utilization rate of IT resources, improve total benefit of the society.

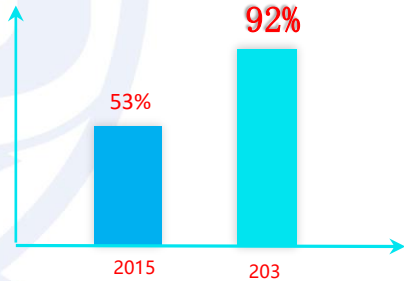


Case:
Computing energy consumption could be saved by 87%, If email, spreadsheet and CRM software are deployed on cloud, as per CLEER' estimation.

90% computing load and 92% storage will be carried on cloud datacenter



Cloud computing load share in datacenters



Cloud storage share in datacenters

Source: Huawei GIV

Centralized efficient share of computing and storage resources is a definite trend. Cloudification is becoming a sharing economy mode in global ICT industry.

Sensing

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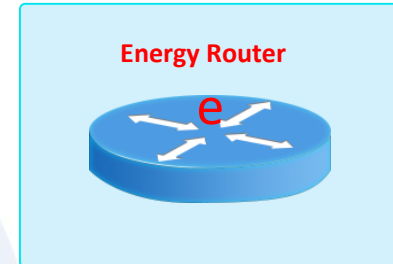
Carbon emissions of ICT industry per connection will drop by 80%



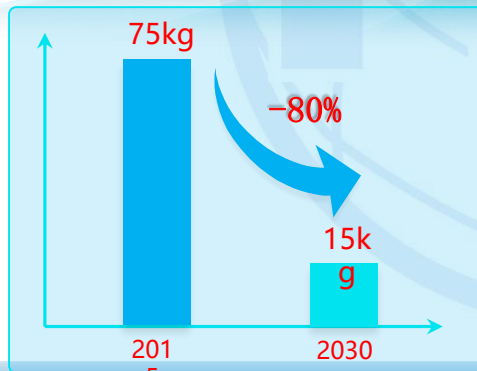
Average energy efficiency of ICT site will increase to 80% from 60% now



Proportion of photovoltaic power will increase to 10% from 2% now



Intelligent energy dispatch and off-peak power use



Source: Huawei GIV

Carbon emissions of ICT industry per connection



Solar power generation and storage module in a site

ICT enabled power saving and reduction of greenhouse gas emission will increase by about 11x



Smart services



Smart travel



Smart work



Smart building



Smart agriculture



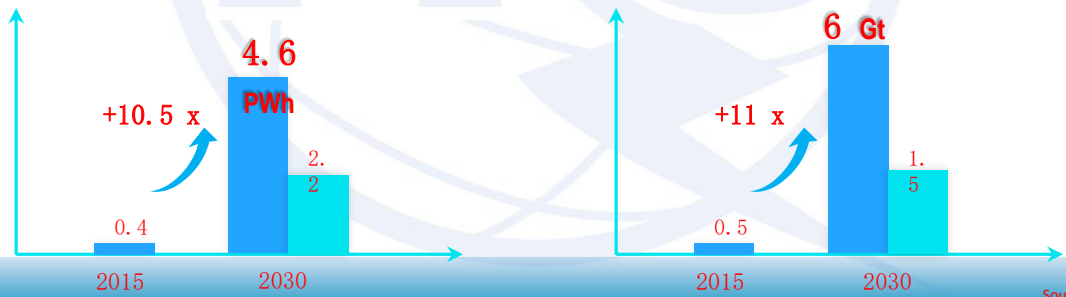
Smart transport



Smart grid

■ ICT enabled power saving
■ Power consumption of ICT

■ ICT enabled reduction of GHG emission
■ GHG emission of ICT industry



ICT is becoming important enabling technology for global greening. ICT enabled power saving and reduction of GHG emission, will greatly exceed the power consumption and GHG emission of ICT industry.

The world in 2030

-- All things sensing

-- All things connected

-- All things intelligent

Sensing

Connected

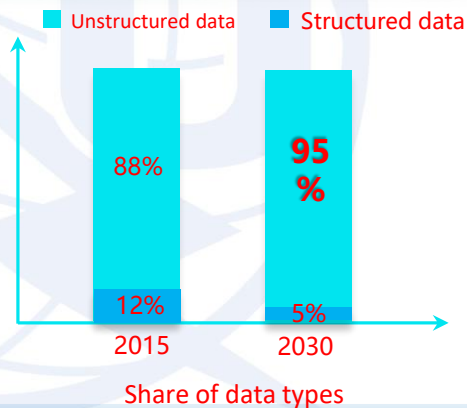
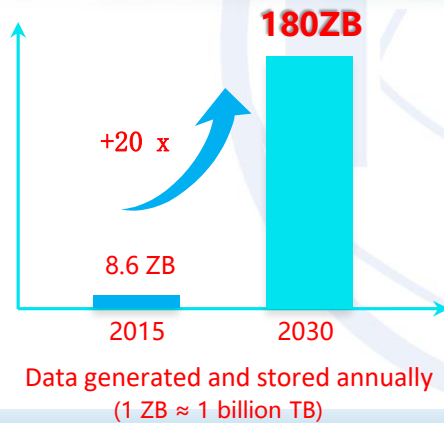
Intelligent

Data produced annually will reach 180 ZB, far beyond human capability to process manually, 95% data will be processed by AI.

Information collecting devices booming

Storage cost decreasing quickly

Digital transformation of all industries



The amount of data generated and stored in 1 second globally will be equivalent to 140 years of 1080P HD video.

**Data is becoming important asset for all people and enterprises.
Making decision utilizing all kinds of data by machine learning, will become a core mission of enterprise operation.**



86% enterprises will adopt AI, enterprise data utilization rate will increase to 80% from 10% in 2015.

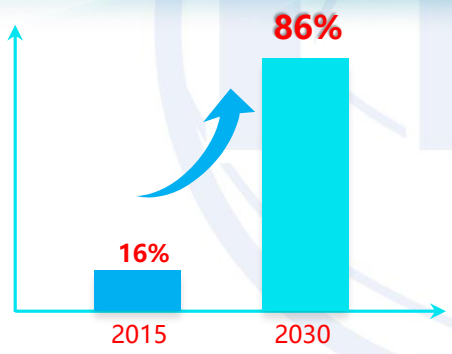
Algorithm
Computing power
Data
Troika driving AI development

**AIaaS
BDaaS
VSaaS**

Intelligent cloud service popularized

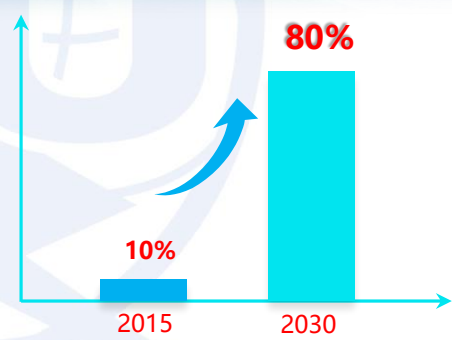


Intelligent edge devices will boom, data will be processed while being collected



AI adoption rate of enterprises

Source: Huawei GIV



Enterprise data utilization rate

Source: Huawei GIV

Most enterprises will adopt intelligent cloud services and intelligent edge devices, to realize “+ intelligence” revolution, improve data utilization rate, and drive enterprises’ procedure recreation and value upgrade.

Sensing

Connected

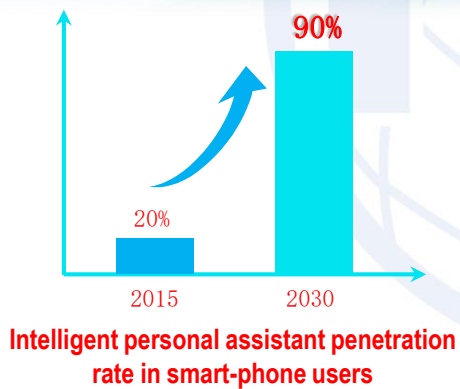
Intelligent

Intelligent personal assistant will serve 90% of smart-phone users, and become a strategic entrance of online services.

Information overload and too many applications

Information mainly processed by machine learning

Voice become mainstream man-machine interactive mode



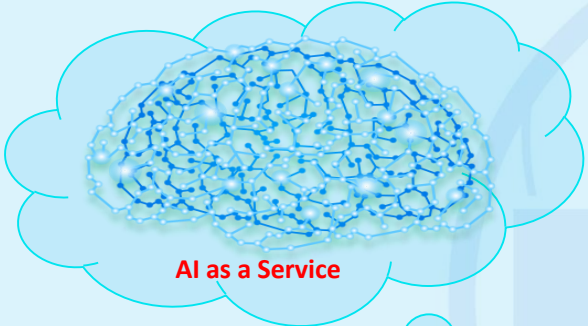
Source: Huawei GIV




- Intelligent personal assistant is a virtual software agent that communicates naturally with users via voice etc., and handles their private affairs or professional tasks.
- AI-enabled device market will worth tens of hundreds of billion of US dollars in 2030.

Human society will universally enter an “+ intelligence” era in 2030.

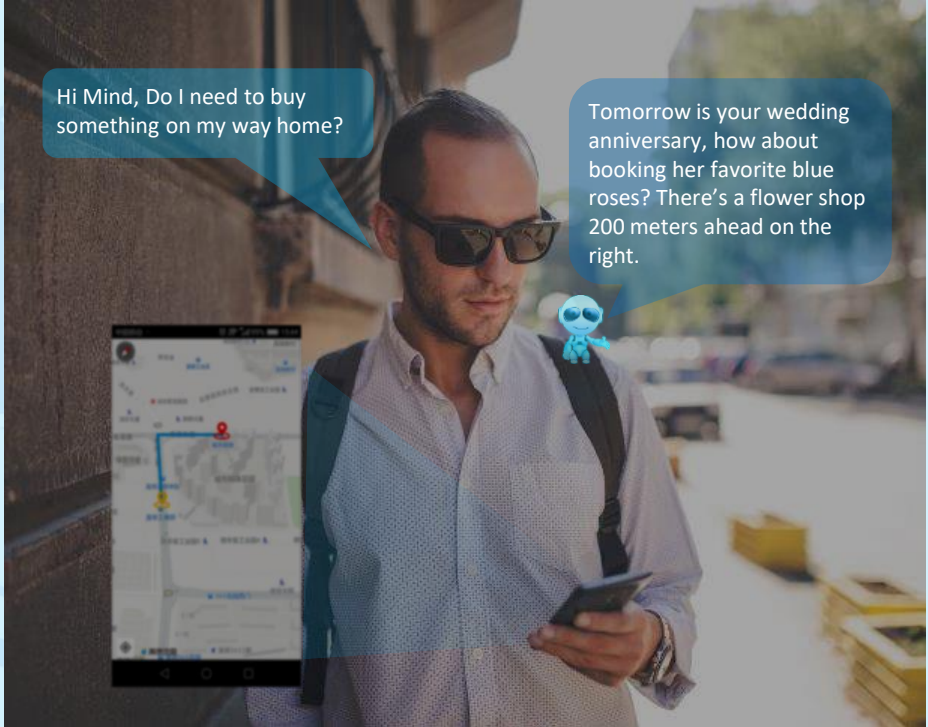
Through device-cloud synergy, intelligent personal assistant will greatly improve users' efficiency of information acquisition and decision-making level



AI as a Service



Personal assistant service for user's work and life anytime anywhere will be provided through device-cloud synergy.



Hi Mind, Do I need to buy something on my way home?

Tomorrow is your wedding anniversary, how about booking her favorite blue roses? There's a flower shop 200 meters ahead on the right.

Sensing

Connected

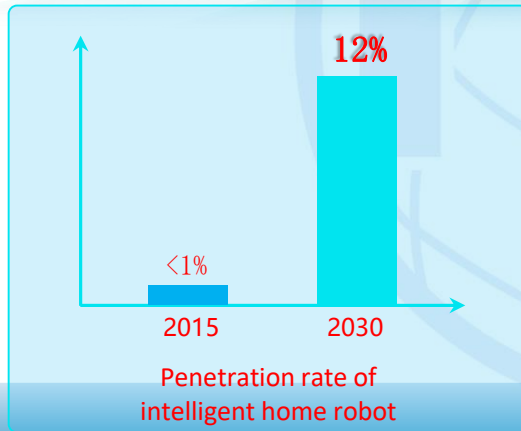
Intelligent

Intelligent service robots will serve 12% families, gradually influencing fundamental form of economy and society

AI technologies and applications getting ready

Decreasing cost of service robot

Global population aging seriously



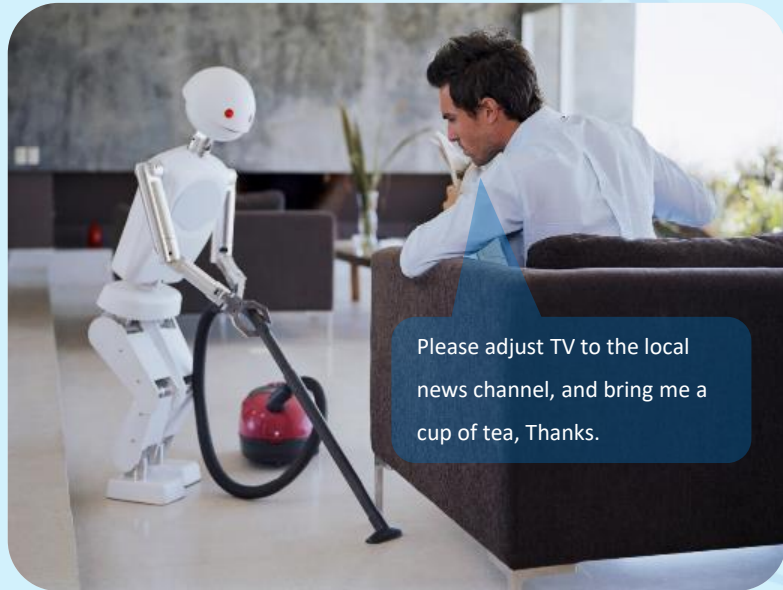
Source: Huawei GIV



- Service mode of aging society will be changed gradually.
- The intelligent home robot market will be worth hundreds of billion of US dollars.

As the automobile industry did, the intelligent service robot will gradually transform various sectors.

Some intelligent home robots will become the core of smart home services, gradually disrupting human life pattern.



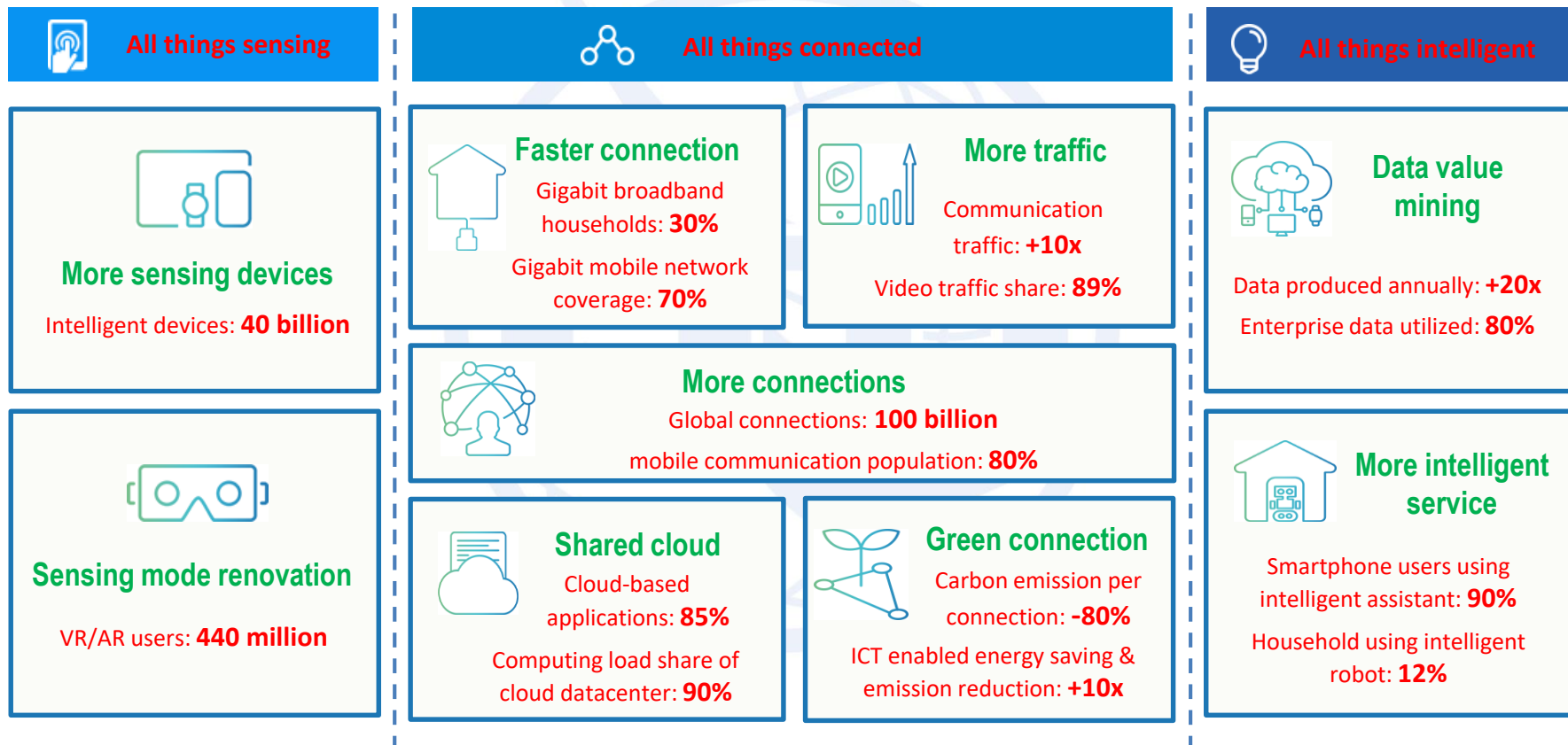
Please adjust TV to the local news channel, and bring me a cup of tea, Thanks.

Deft mechanical action capability of some intelligent home robot will remedy the intelligent limitation of traditional appliances.

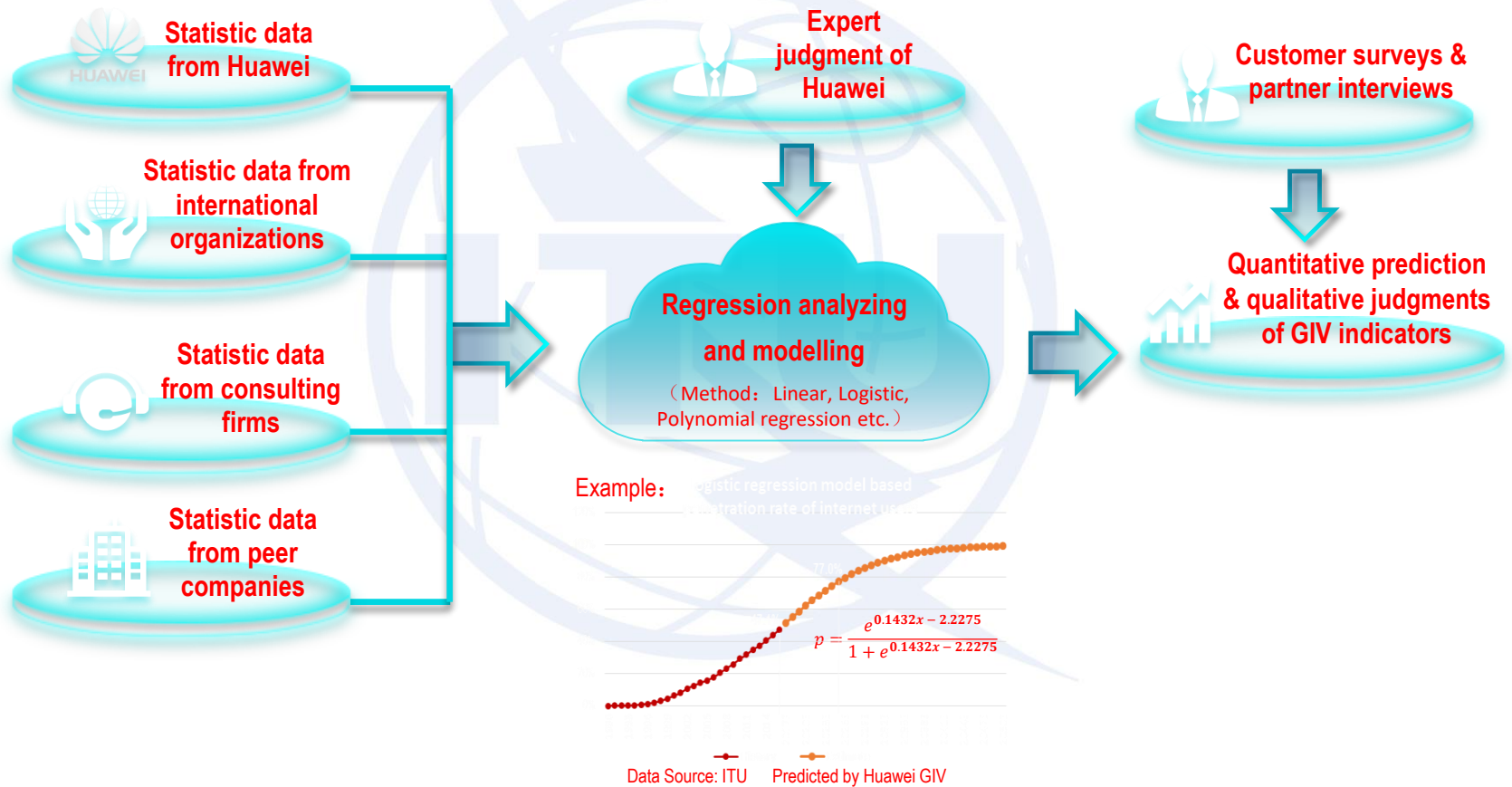


Intelligent home robot will greatly improve human life quality.

Global Industry Vision: How will ICT shape the world in 2030?



How does Huawei predict the indicators of Global Industry Vision?





Huawei Global Industry Vision

Let's create future together!

