



# Internet of Things

Key Enabler for the Digital Economy

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# IoT Trend

In the next five years, IoT Markets will enter into the fast lane

Leading Industries and Governments promote IoT part of the national strategy



IoT drives a new round of industrial revolution

Connection amplifies value

Metcalfe's Law

Network value :

(Subscribers )<sup>2</sup>

Business innovation increases data value

(23% of the data to be analyzed)

Network undergoing profound changes

Structure: **40%** IoT data processes at the network edge

**79%** M2M traffic accesses through the gateway

Capacity: **50%** Network capacity be used for IoT connections

**50 billion** Connections by 2020

Source from IDC&Huawei MI



BY 2025, SENSORS WILL BE DEPLOYED  
AND CONNECTED TO A NETWORK AT A RATE  
OF ALMOST 2 MILLION PER HOUR OR JUST  
OVER 47 MILLION PER DAY.

BY 2025, WE COULD SEE THE NUMBER OF  
IOT DEVICES INSTALLED, CONNECTED,  
AND AUTONOMOUSLY MANAGED WILL REACH  
100 BILLION

100 BILLION  
AND AUTONOMOUSLY MANAGED WILL REACH  
100 BILLION



# Open and Cooperate to Build IoT Ecosystems



## Industry Standard



Chip/Module

Access and Network

Platform

Application

- CIIAI vice organization, drive IoT industry development.
- Joint SAP, NXP, CCID and etc. sponsoring Spark Team to promote the global model construction.
- Construct innovation centers and dedicated high-end team, innovate together with European companies.

. CIIAI: China Integration and Innovation Alliance of Internet and Industry

## Industry Alliance

Industry 4.0 Sparkle Team



# The Role of Huawei in the New Era



# Huawei "1+2+1" IoT Solution



Cloud Data Center

Device Management

Operation

1 Platform

IoT Platform



eLTE / LTE-M / 5G

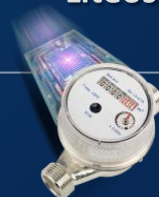


Agile IoT Network

2 Accesses

Liteos

1 Interface



# Liteos, Most Lightweight Open Source IoT OS



PC/Windows



Mobile/Android



IoT/Liteos

## Liteos: Make Sensors Intelligent

Open API

Connectivity Middleware

Liteos Kernel

Security



Smallest Kernel

**25%**  
ROM<10KB



Lowest Power Consumption

**20%**  
 $10^{-6}$ A level energy consumption

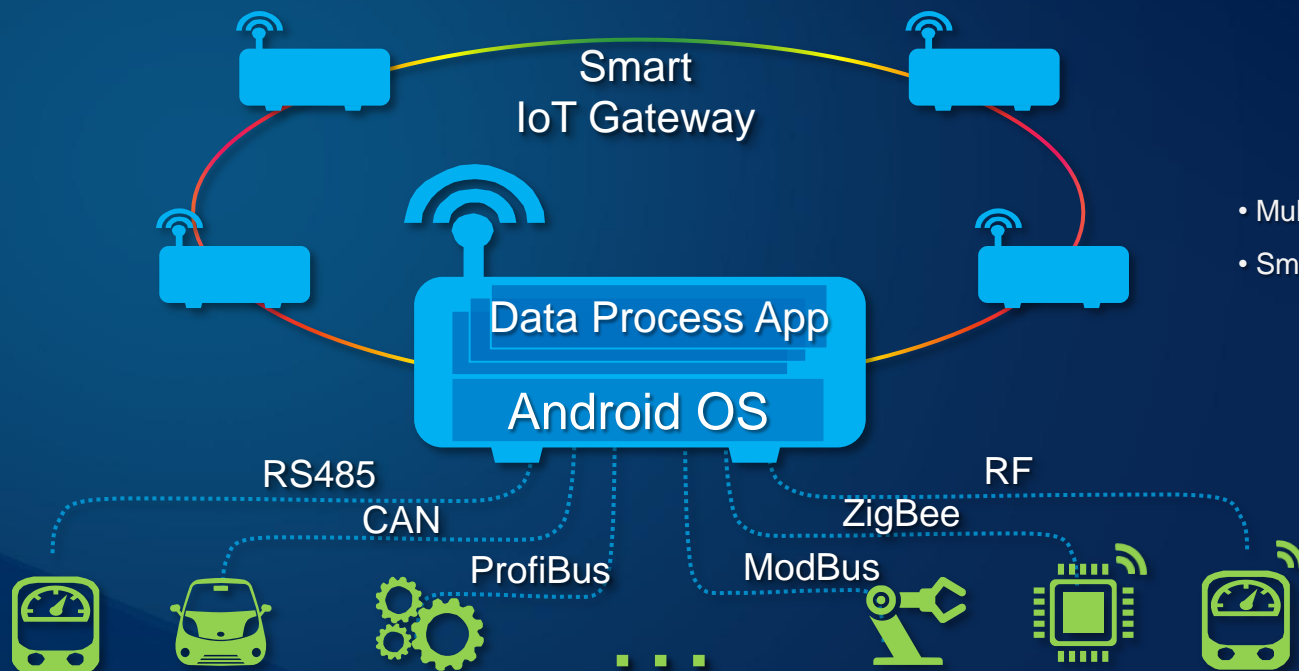


Fastest Response

**80%**  
 $10^{-6}$  s level response



# Smart IoT Gateway



- Multi-Protocol Unified Access
- Smart DATA Processing Platform





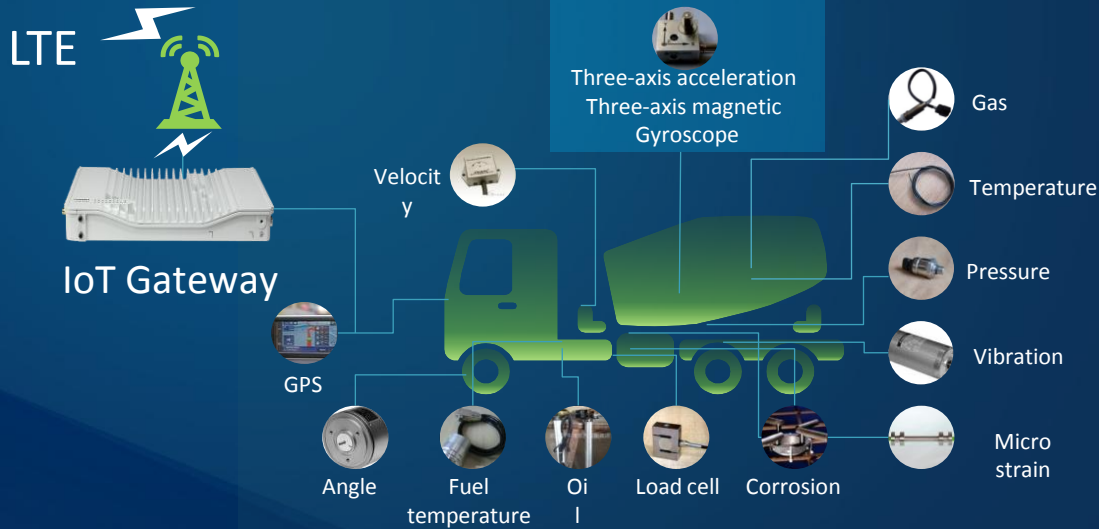
# Example Case

Partner +  HUAWEI



Analytics  
Big Data

Enabling Predictive  
Maintenance



# A Sea of Data, not just Telemetry



- Variety of Fields
- Diverse Intelligence
- Data Scientists!!
- Developers!!
- Partners!!



# Agile IoT Industry Solutions



## The Four Cornerstones of Connectivity

- **Supply** — Is used to measure current levels of supply for ICT products and services.  
(Bandwidth, telco investment, cloud service provider, IoT spending, ICT spending, 3G coverage, FTTH, data analytics, telecom QoS, and datacenters)
- **Demand** — Gauges demand for connectivity in the context of users and activity.  
(Fixed broadband households, mobile broadband users, mobile devices, app downloads, ecommerce, cloud migration, data for analytics, IoT devices, and datacenter servers)
- **Experience** — Variables that analyze the experience of connectivity for end users and organizations.  
(Fixed broadband affordability, mobile broadband affordability, download speed, latency, customer service, social network users, egovernment, IoT analytics, and datacenter management services)
- **Potential** — A forward-looking set of indicators pointing to future development of the DE.  
(CT patents, IT workforce, R&D, software developers, and market projections for IoT, cloud, Big Data, broadband, mobile, and datacenters)



# Digital Economy – 5 Transformation Enablers



Cloud services is the source of computational capabilities that is needed to create digital assets.



IoT comprises the devices and sensors at the edge of the digital ecosystem that enables the development of new products and services leading to new business models and digital value.



Big Data and analytics is the technology that enables the conversion of digital assets into digital value in the form of services.



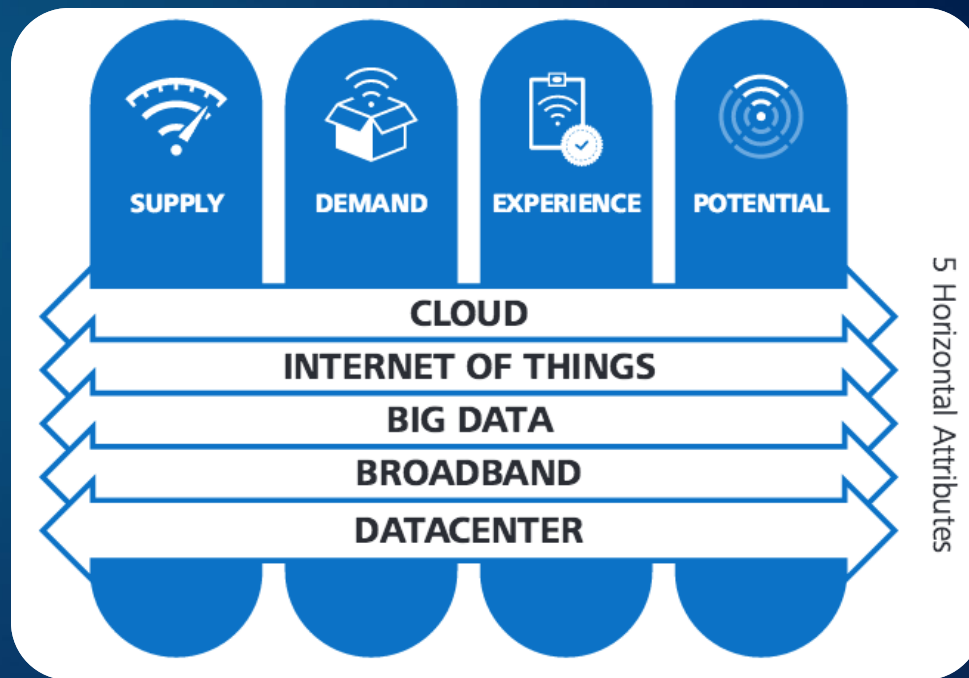
Broadband is the road that connects all the digital centers, and makes it possible to deliver digital value in the digital economy. Broadband connects the edge to the core.



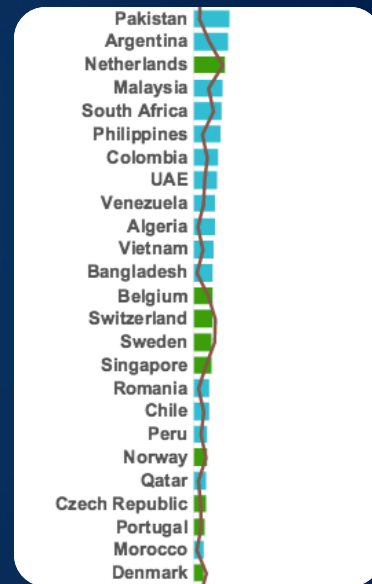
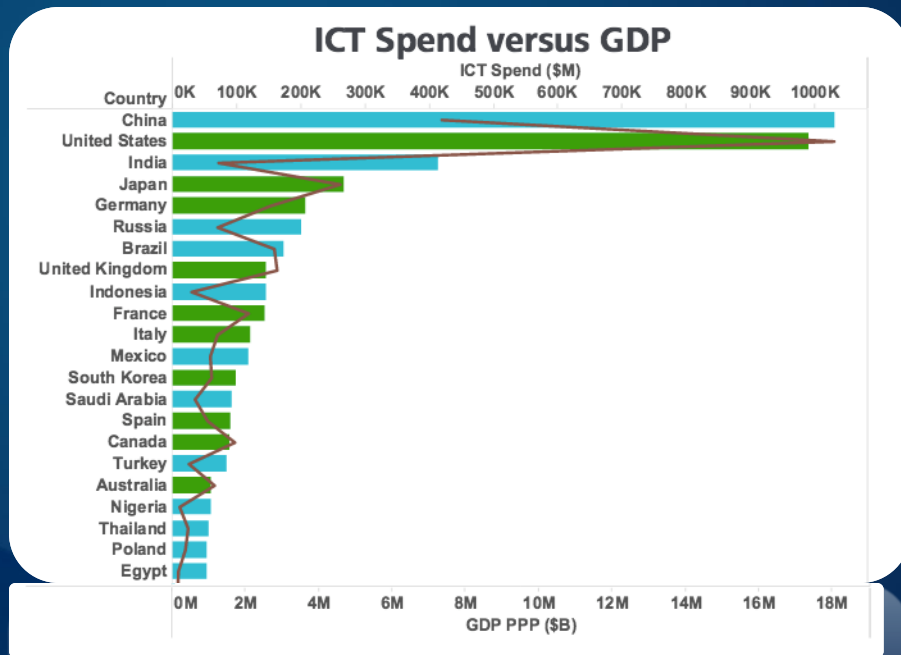
Datacenter is the compute and storage core that collects, process, stores, and deploys digital assets that are used to create value in the digital economy.



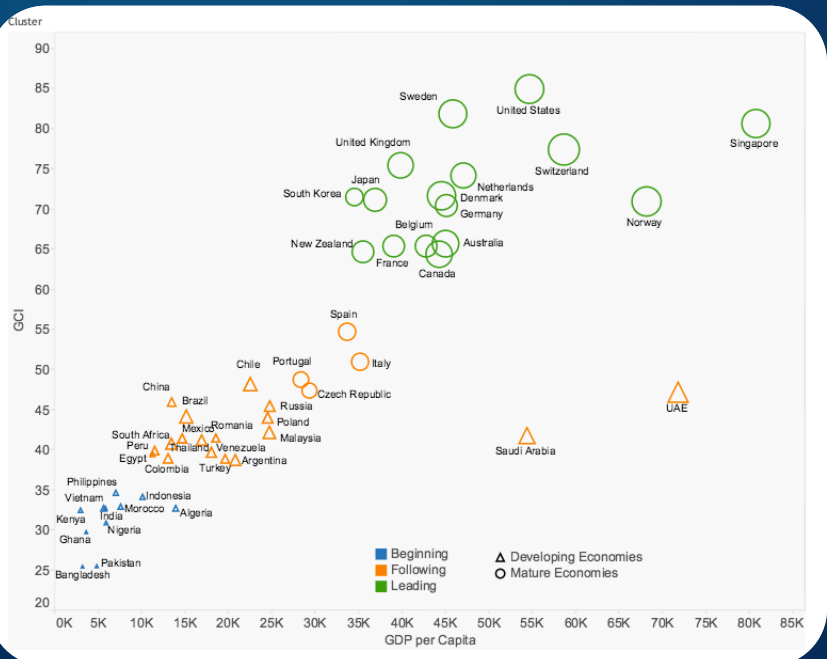
# Global Connectivity Index Dimensions



# Strong Correlation GCI / Economy



# GCI Ranking and Grouping



## Leaders

- United States 85
- Sweden 82
- Singapore 81
- Switzerland 78
- United Kingdom 78
- Netherlands 74
- Denmark 72
- South Korea 72
- Japan 71
- Norway 71
- Germany 71
- Australia 66
- Belgium 66
- France 66
- New Zealand 65
- Canada 65

## Followers

- Spain 55
- Italy 51
- Portugal 49
- Chile 48
- Czech Republic 48
- UAE 47
- China 47
- Qatar 47
- Russia 46
- Brazil 44
- Poland 44
- Malaysia 42
- Saudi Arabia 42
- Romania 42
- Thailand 42
- Mexico 41
- South Africa 41
- Peru 40
- Venezuela 40
- Egypt 40
- Colombia 39
- Turkey 39
- Argentina 39

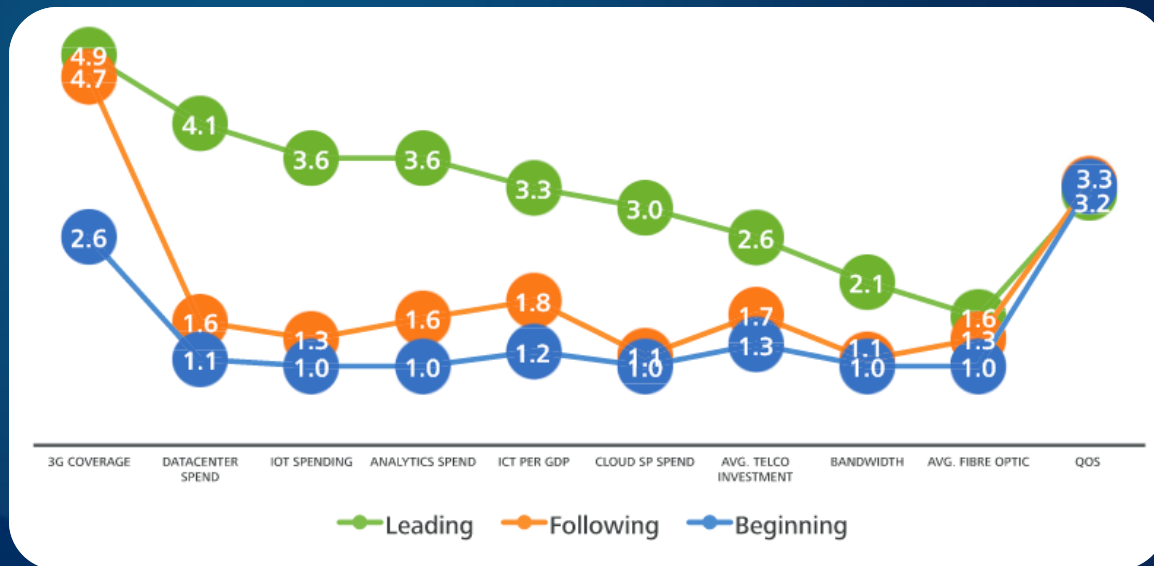
## Beginners

- Philippines 35
- Indonesia 34
- Morocco 33
- Algeria 33
- India 33
- Vietnam 33
- Kenya 33
- Nigeria 31
- Ghana 30
- Bangladesh 26
- Pakistan 26





# Cluster Performance by Supply Factors



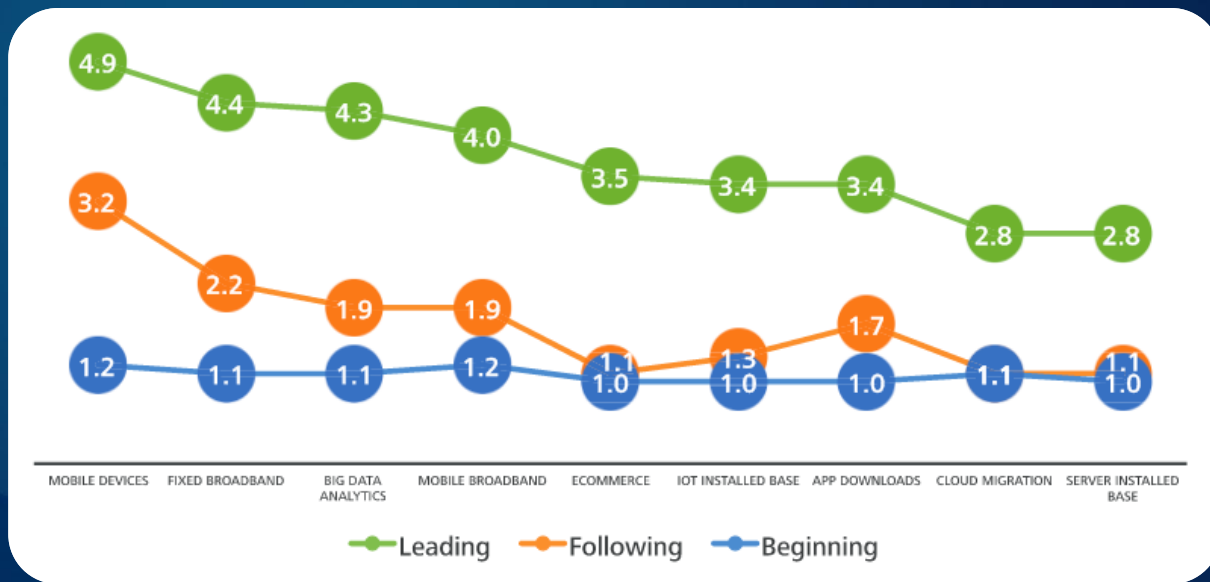
MATURE ECONOMIES HAVE  
BALANCED THE SUPPLY OF  
CORE AND THE EDGE

Leading Following Beginning

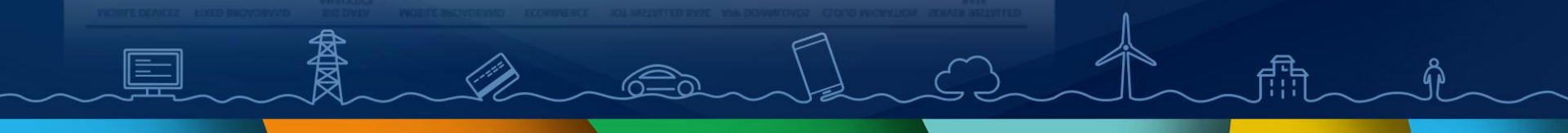
Լեզրում Բախումը Վերջնական



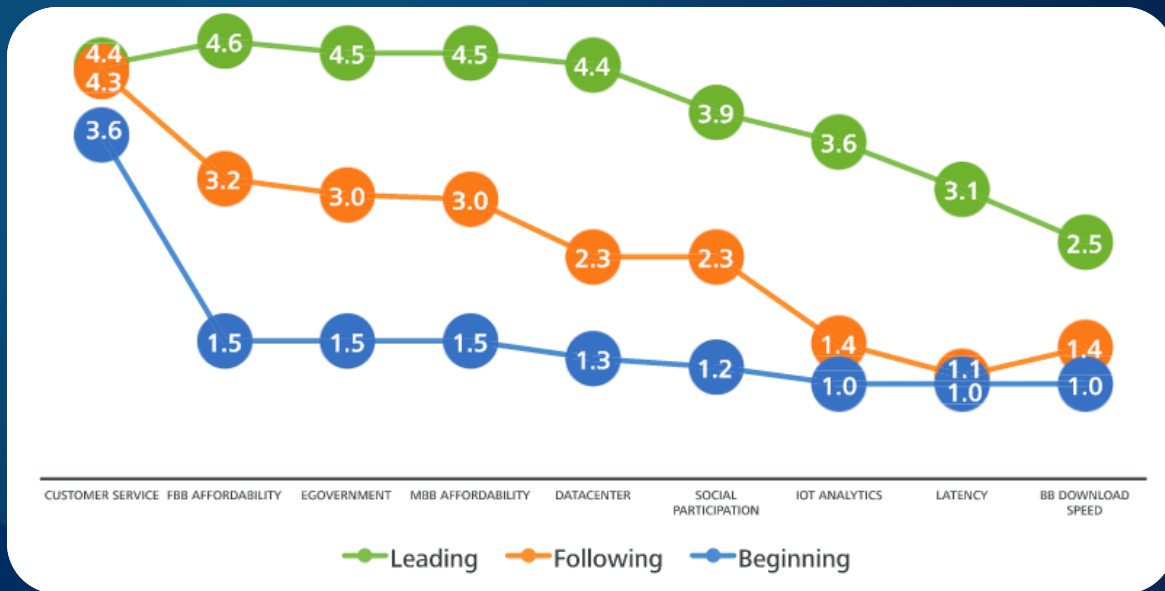
# Cluster Performance by Demand Factors



MATURE ECONOMIES HAVE SUCCESSFULLY DRIVEN DEMAND BESIDES PROVIDING GOOD SUPPLY



# Cluster Performance by Experience Factors



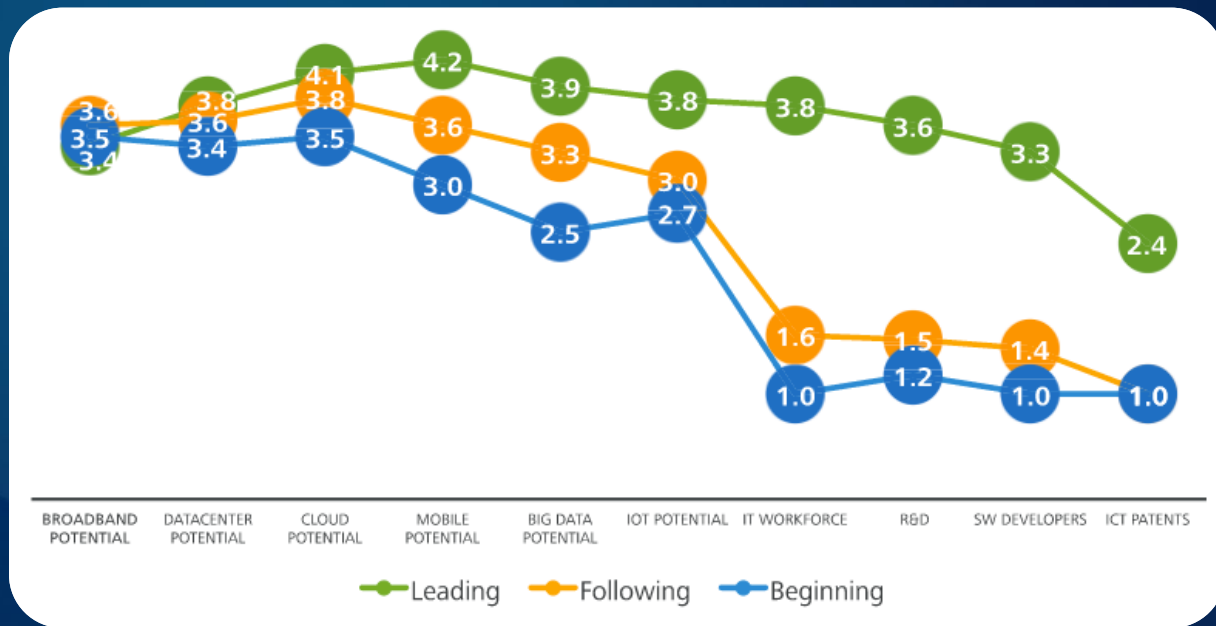
DEVELOPING COUNTRIES NEED TO RAMP UP THEIR EXPERIENCE FACTORS TO BECOME GCI LEADERS

Leading Following Beginning

Դեպքում Էջողումը Եզմլումը



# Cluster Performance by Potential Factors



DEVELOPING COUNTRIES HAVE SIGNIFICANT POTENTIAL TO RAMP UP THEIR GCI

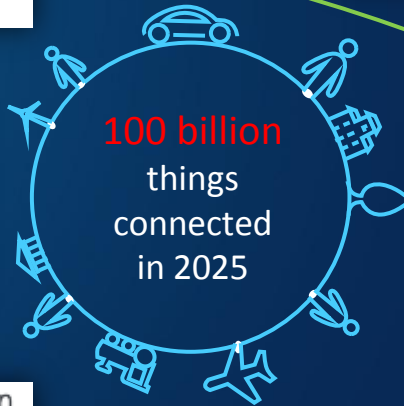


# Conclusions and Suggestions

- Lead the way to be more assertive in pushing for development and not just rely mainly on market forces that may not be sufficient or have different priorities.


- Invest in IoT and Big Data. Every connection introduces new sources of data, and decisions will need to be made on that data.

- Invest in core areas of ICT first —without a robust infrastructure/foundation, anything built atop of it risks falling prey to low usage due to poor experience.



- Focus on improving experience to sustain demand. There are plenty of other ways to improve experience, but ubiquitous broadband, real-time interactions, and speedy downloads are guaranteed to compel more use and more innovative solutions and applications.

- Invest in people. There are no shortcuts in transforming into a digital economy, especially when it comes to the IoT and Big Data.



Construction of ICT infrastructure is critical for a country's competitiveness. A 20% increase in ICT investment will grow GDP of a country by 1%.



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WE NO LONGER  
SURF THE  
INTERNET...  
THE INTERNET  
SURFS US....  
AND WE ALLOW  
IT TO!

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THANK YOU

