# ICT Trends, Innovation and Entrepreneurship

11-15 December 2017
Peradeniya, Sri Lanka

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# Agenda

- ICT  Developmental Trends
- Innovation
- Entrepreneurship & ICT Applications

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# Tech Innovation: Exciting Times ahead!

- Tech companies leading the Innovation: Apple , Amazon, Alphabet, Facebook , Microsoft : Top Five companies as against only one in 2007
- Industry 4.0 : Mechanization , Mass Production ,Computer & Automation , cyber-physical systems!
- AI Revolution: CEO Jensen Huang Leading AI Revolution in Silicon Valley is Fortune's 2017 Businessperson of the year
- Crypto Currency: Bitcoin crosses USD 12,000 mark for the first time : Japanese government recognized bitcoin as legal tender
- Driverless Cars , Autonomous transports , Cloud Computing , IOT , Smart Cities
- Robotics: Japan embraces robots ahead of 2020 Olympics
- 5G: SK Telecom demos 5G trial network using 3.5Hz spectrum
- 3-D Printing: From pixels to plate, food has become 3D printing's delicious new frontier

# ITU at a glance

*Meet us*

## What we do

**'Committed to Connecting the World'**

3 Sectors

**ITU Radiocommunication**
**Coordinating** radio-frequency spectrum and **assigning** orbital slots for satellites

**ITU Standardization**
**Establishing** global standards

**ITU Development**
**Bridging** the digital divide

193 MEMBER STATES

+700 INDUSTRY & INTERNATIONAL ORGANIZATIONS

+150 ACADEMIA MEMBERS

MEMBERSHIP

# ICTs and the SDGs

*"The spread of information and communication technology and global interconnectedness has great potential to accelerate human progress, to bridge the digital divide and to develop knowledge societies, as does scientific and technological innovation across areas as diverse as medicine and energy".* ***Agenda for Sustainable Development (Paragraph 15)***

fast forward together
#ICT4SDG


ICTs are catalytic drivers to enable the achievement of all the SDGs

Specifically referenced in the SDG targets:

- SDG4 Quality Education (4b)
- SDG5 Gender Equality (5b)
- SDG9 Industry, innovation and Infrastructure (9c)
- SDG 17 Partnerships for the Goals (17.8, as a means of implementation)

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# Agreed Global Telecommunication/ICT Targets – 2020

## ITU Plenipotentiary Conference 2014

### Goal 1 Growth : Enable and foster access to and increased use of telecommunications/ICTs

**55%** of households should have access to the Internet

**60%** of individuals should be using the Internet

**40%** Telecommunications/ICTs should be **40%** more affordable

GROWTH

### Goal 2 Inclusiveness – Bridge the digital divide and provide broadband for all

**50%** of households should have access to the Internet in the developing world; **15%** in the least developed countries

**50%** of individuals should be using the Internet in the developing world; **20%** in the least developed countries

**40%** affordability gap between developed and developing countries should be reduced by **40%**

**5%** Broadband services should cost no more than **5%** of average monthly income in the developing countries

INCLUSION

**90%** of the rural population should be covered by broadband services

Gender equality among Internet users should be reached

Enabling environments ensuring accessible ICTs for persons with disabilities should be established in all countries

### Goal 3 Sustainability – Manage challenges resulting from the telecommunication/ICT development

**40%** improvement in cybersecurity readiness

**50%** reduction in volume of redundant e-waste

**30%** decrease in Green House Gas emissions per device generated by the telecommunication/ICT sector

SUSTAINABILITY

### Goal 4 Innovation and partnership – Lead, improve and adapt to the changing telecommunication/ICT environment

Telecommunication/ICT environment conducive to innovation

Effective partnerships of stakeholders in telecommunication/ICT environment

INNOVATION

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Emergency

Education

Health

Agriculture


Governance

***ICTs are cross-sectoral and needs an ecosystem approach***

Investment

Applications

Policy & Regulation

Capacity Building

Transport

IoT, Sensor Networks

Universal Broadband

Green ICT & E-Waste

Measurements

Electricity

Infrastructure Security

Privacy & Security

Water

**SMART SOCIETY**

Spectrum Management

Digital Inclusion

Standards, Conformity & Interoperability

Finance

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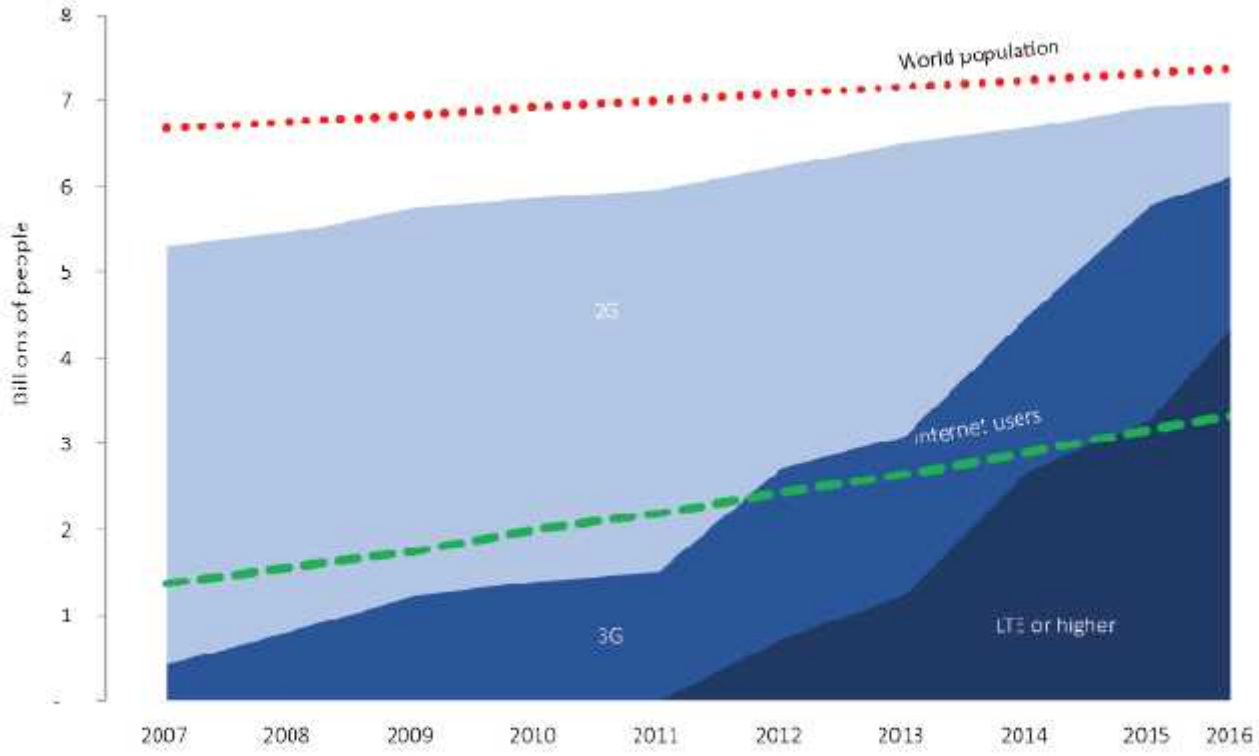
# Coverage of mobile-cellular networks in relation to world population and the number of Internet users (2007-2016)




Source: ITU.

The number of subscriptions per 100 population has grown from 33.9 in 2005 to 76.6 in 2010, 98.2 in 2015 and an estimated 103.5 in 2017.

The number of subscriptions worldwide now exceeds the global population, with subscriptions also exceeding population in 112 of the 176 countries included in IDI 2017

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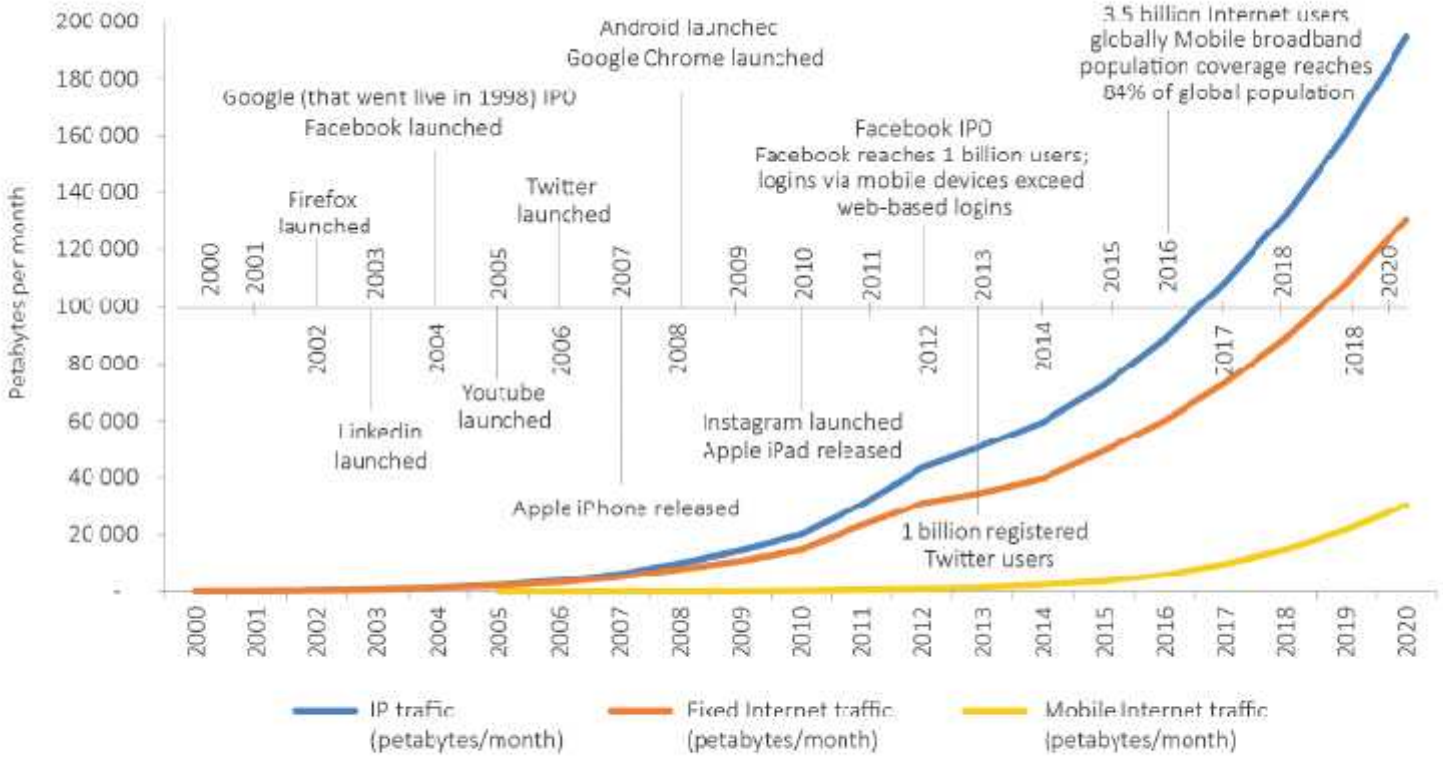
# Internet and IP traffic




Note: Fixed Internet traffic refers to traffic through fixed network providers on different platforms. Mobile Internet traffic refers to traffic through mobile-cellular networks. IP traffic refers to the sum of fixed and mobile Internet traffic (denoting all IP traffic crossing an Internet backbone) as well as non-Internet IP traffic (e.g. IP WAN, IP transport of TV and video-on-demand).
Source: ITU based on Cisco and company reports.

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# LTE Network deployment Status


By the end of June 2017 GSA reports there were:

**782** operators investing in LTE in 200 countries

**601** commercially launched LTE or LTE-Advanced networks in **192** countries, including

**98** LTE-TDD (TD-LTE) launched in **56** countries

**109** commercial VoLTE networks in **57** countries, and 170 operators investing in VoLTE in **75** countries

**197** launched networks are LTE-Advanced, in **96** countries

GSA forecasts c. **652** commercially launched LTE networks by end-2017

**6** NB-IoT and **2** LTE-M/Cat-M1 networks are commercially launched, with **55** NB-IoT and **16** LTE-M/Cat-M1 networks planned or being trialled

**22** operators, at least, have now made public commitments to deployment of pre-standards '5G' or standards-based 5G networks in **16** countries.

***Report: Evolution from LTE to 5G, GSA***

# IOT, Big Data and Artificial Intelligence – The new drivers of ICT ecosystem

Figure 4.1: IoT, cloud computing, big data and artificial intelligence – the new drivers of the ICT ecosystem


Source: ITU

Table 4.2: Estimated global market sizes for selected advanced ICTs (USD millions)

| | Estimated global revenues | | |
|---|---|---|---|
| | 2015 | 2020[a] | 2025[a] |
| IoT[b] | 193 500 | 267 000 | 640 000[c] |
| Big data[d] | 27 300 | 57 300 | 88 500 |
| Public cloud[e] | 75 300 | 278 200 | 489 800 |
| Artificial intelligence[f] | 644[g] | 6 076 | 36 818 |

[a]Forecast. [b]Statista (2017b); Hunke et al. (2017). [c]Estimate based on expected compound annual growth rate. [d]Statista (2016, p. 22). [e]Statista (2017a, p. 13). [f]Kaul and Wheelcock (2016). [g]Information for 2016.
Sources: Statista (2016, 2017a, 2017b), Hunke et al. (2017), Kaul and Wheelcock (2016).

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# Internet of Things

The ITU-T's definition of the IoT calls it "a global infrastructure for the information society, enabling advanced services by interconnecting (physical and virtual) things based on existing and evolving interoperable information and communication technologies"

**What Is It?**

"A global infrastructure for the information society, enabling advanced services by interconnecting (physical and virtual) things based on existing and evolving interoperable information and communication" (ITU-T)

**Who Makes It?**

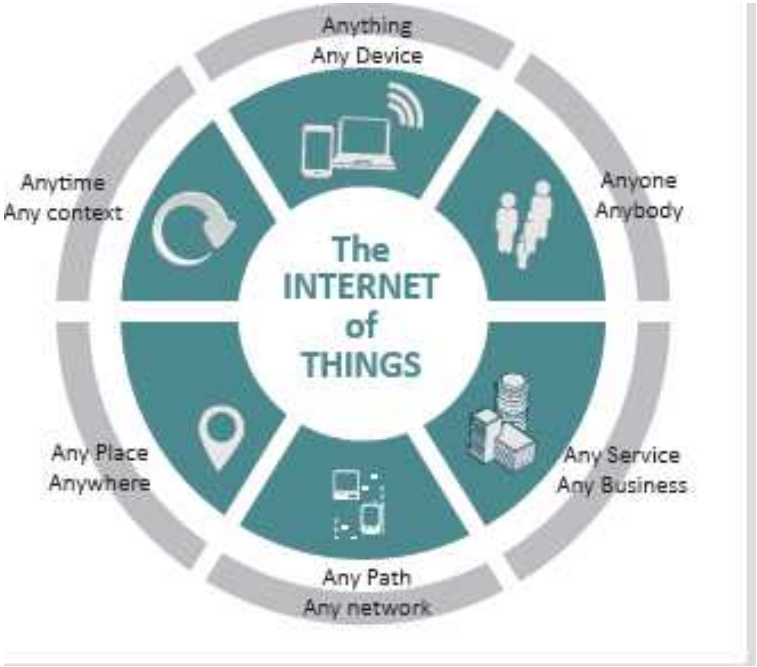
Device manufacturers, network operators, application platforms, software developers and (cloud-based) data analytics services providers

**How Is It Accessed?**

Connection of IoT devices via Wi-Fi, Bluetooth, mobile phone networks, specialized radio networks, global Internet

**Main current areas of investment**

- Smart cities
- Smart metering & grids
- Connected vehicles
- Healthcare

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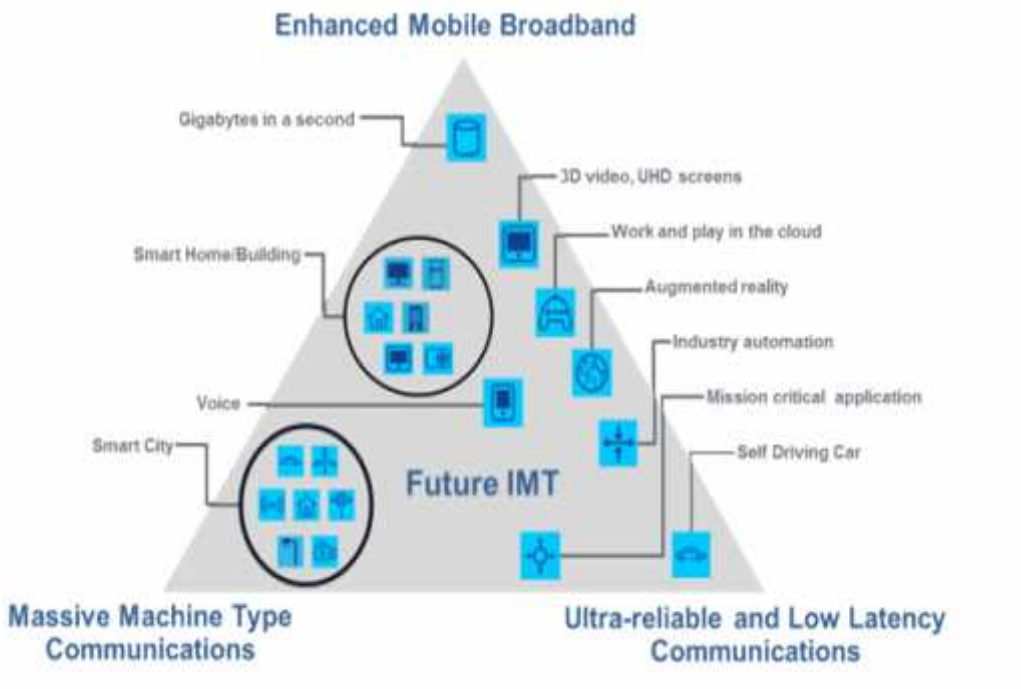
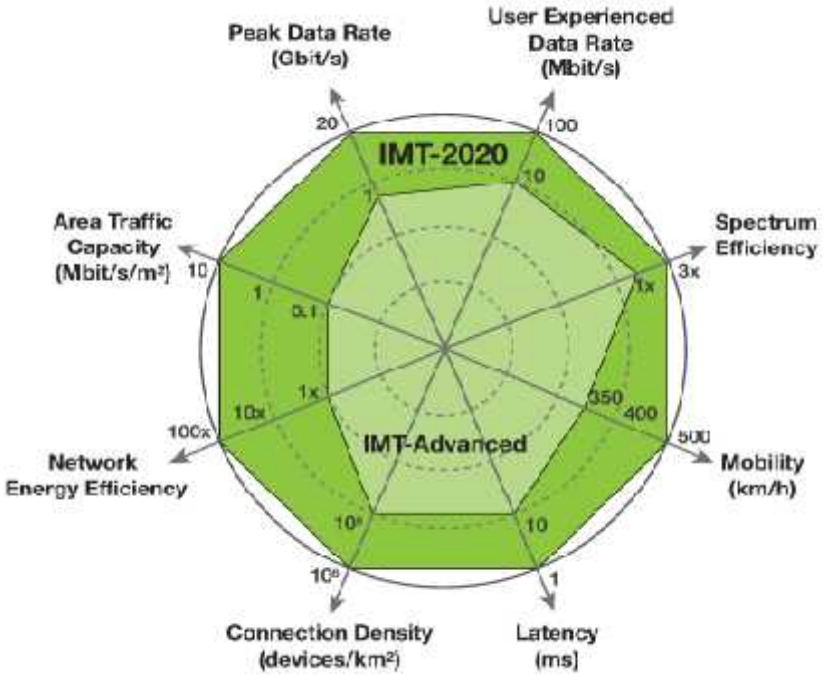
## Usage Scenarios for IMT 2020




## Key capabilities from IMT-Advanced to IMT-2020




*Massive machine communications an important aspect of IMT 2020*

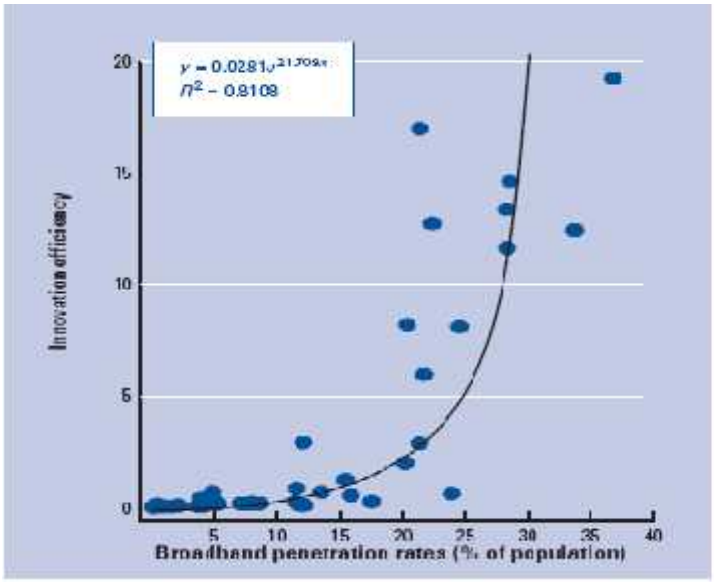
# Innovation

# Definitions of Innovation

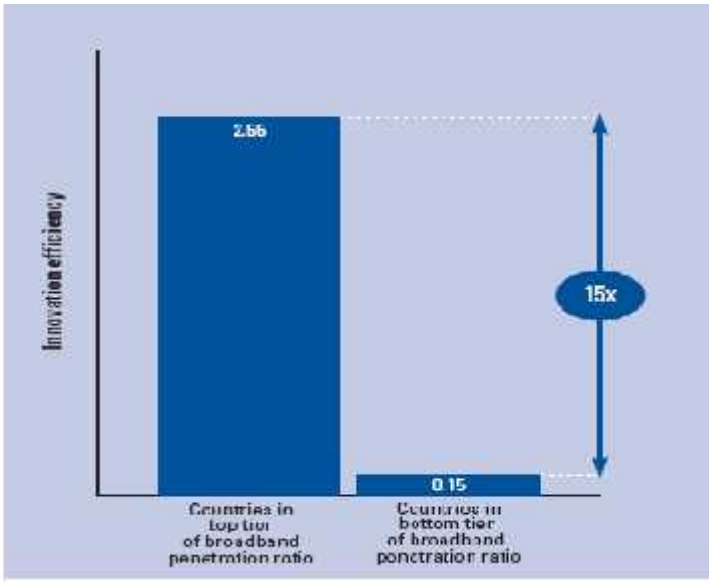
- Innovation is the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations" –OECD
- Innovation can be new to the world or new to the context
- "ICT affects business model, mindsets, organizational structures, R&D, markets, networks

# Impact of Broadband on Innovation

Innovation efficiency vs. broadband penetration




Innovation efficiency vs. broadband penetration ratio




Broadband facilitates innovation and entrepreneurship

Countries with a higher penetration see greater innovation

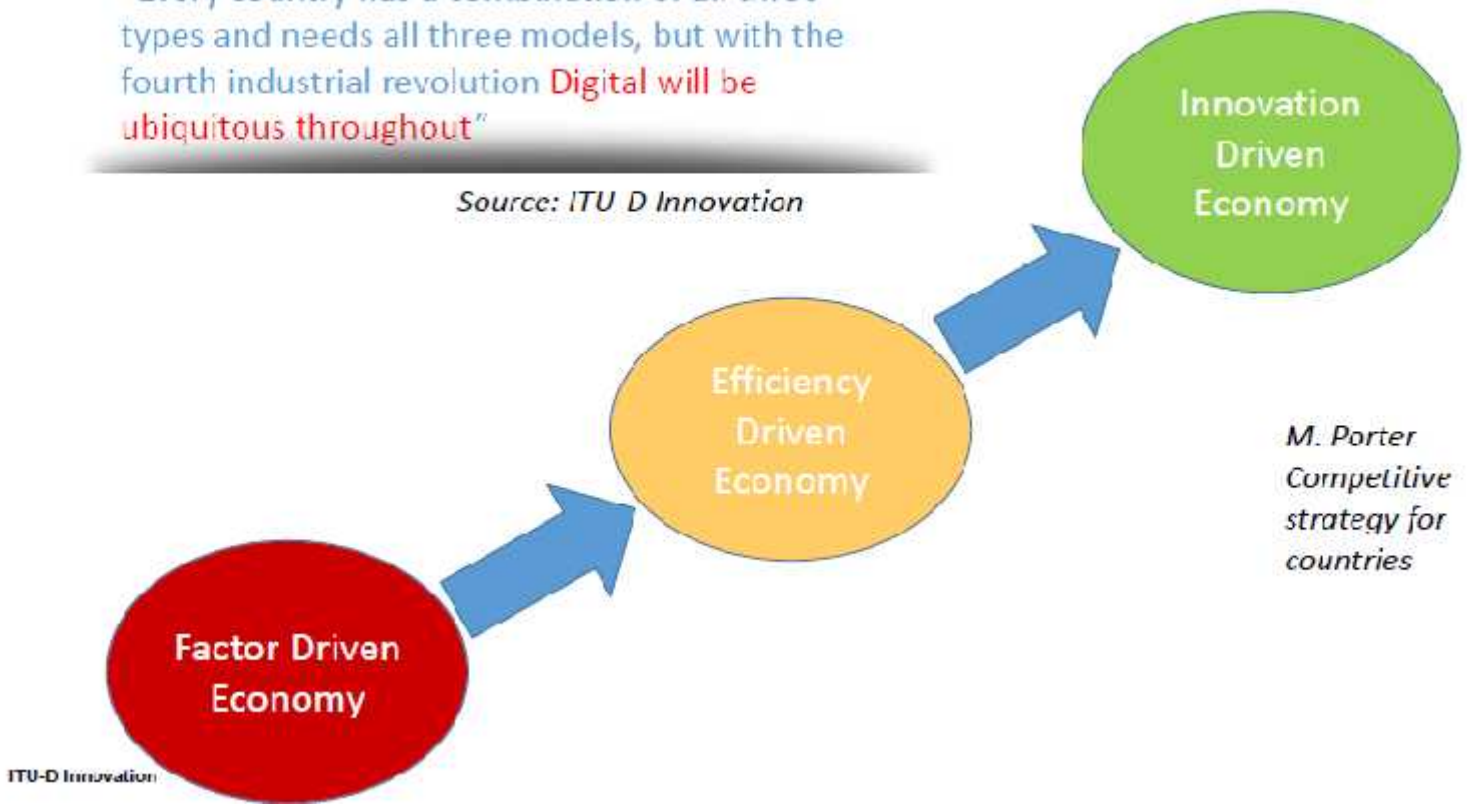
Broadband stokes innovation and it does so exponentially

Source: World Economic Forum

# Innovation Driven Economy

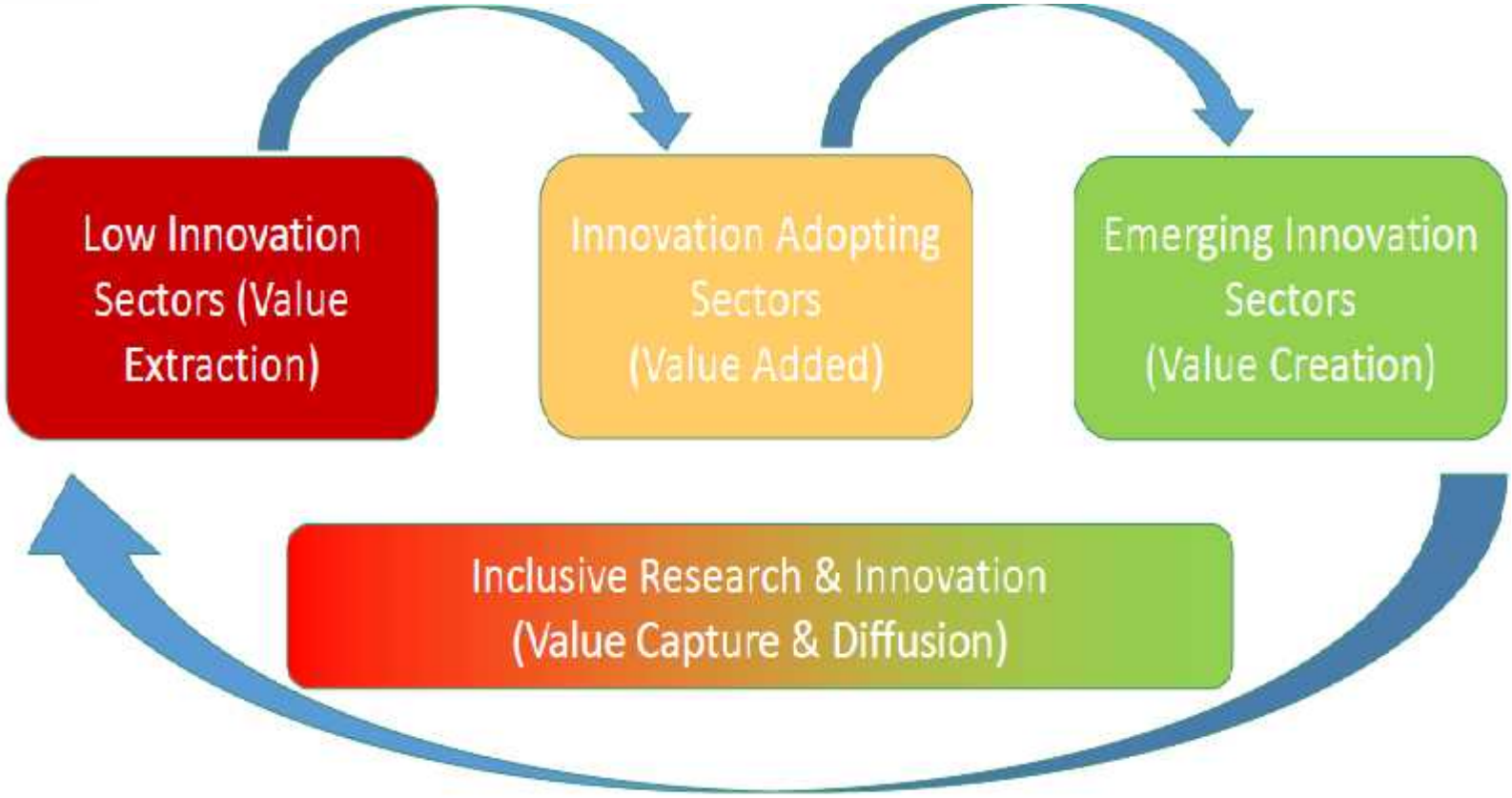
"Every country has a combination of all three types and needs all three models, but with the fourth industrial revolution Digital will be ubiquitous throughout"

*Source: ITU D Innovation*




*M. Porter Competitive strategy for countries*

# Accelerating Inclusiveness Between Sectors



# Stakeholder Ecosystem

## Ecosystem Stakeholders

**Public Sector**

"We need to promote job creation & innovate our Government services!"

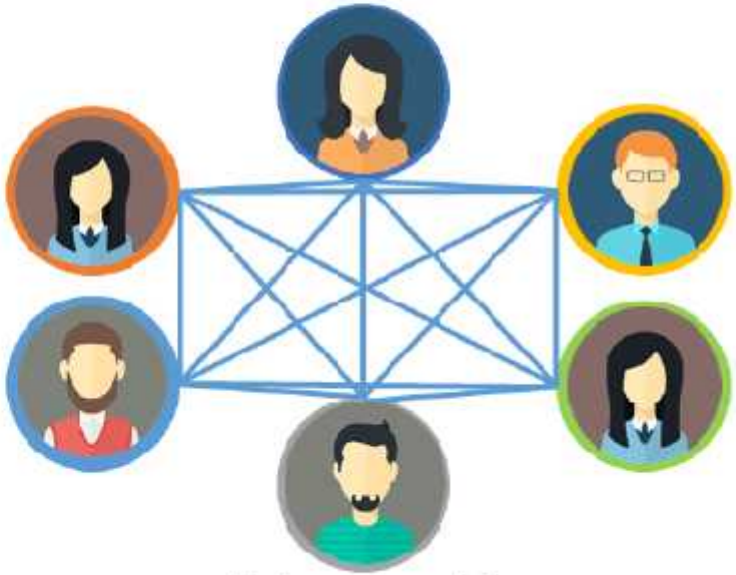
**Entrepreneurs**

"We need room to take risks + Our government does not listen to us"

**Private Sector**

"We need support to scale and go global."

"We need new ideas, demand, and growth"



**Academia**

"We need to prepare our students to be entrepreneurs"

"A lot of our innovations don't reach the market"

**Finance**

"We need to find the next Google!"

"Government needs to facilitate an institutional framework

**Entrepreneurial Support Networks**

"These entrepreneurs are not business

# Inclusive Digital Ecosystem

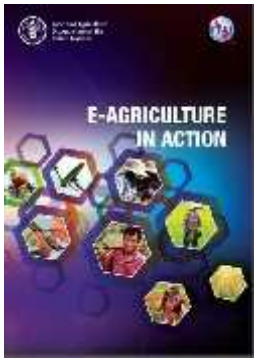
# Key Lessons on Innovation

# Entrepreneurship & ICT Applications

# Innovation Opportunities : e Agriculture

- *2015-2016:* Bhutan and Sri Lanka
- *ICT strategy* Lao PDR
- *2016-2017:* Philippines, Papua New Guinea, Fiji and Vanuatu

Food and Agriculture Organization of the United Nations




agriculture SOLUTIONS FORUM 2016

www.fao.org/asiapacific/events/detail-events/en/c/1343/


http://www.fao.org/3/a-i6733e.pdf

# ITU-WHO Partnership

## Soft- Infrastructure

## ICT for Better Health Outcomes


**US$ 7T**

Healthcare costs & productivity losses 2011-2025

**9M**

Premature deaths / year

**7 Billion**

Mobile cellular subscriptions

"We should all work to meet targets to reduce NCDs."

# Innovation Opportunities : e Health


- mDiabetes
- mCessation
- mSmartlife
- mHypertension
- mCervicalCancer
- mAgeing
- mTuberculosis_Tobacco
- .....

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# ICTs for Emergency Telecommunications

Resilient Infrastructure

Emergency telecommunications is an integral part of Telecommunications Development Bureau (BDT). Emergency Telecommunications division implements **activities** related to telecommunications/ICTs in disaster management and disaster risk reduction.


## Importance of ITU's Assistance

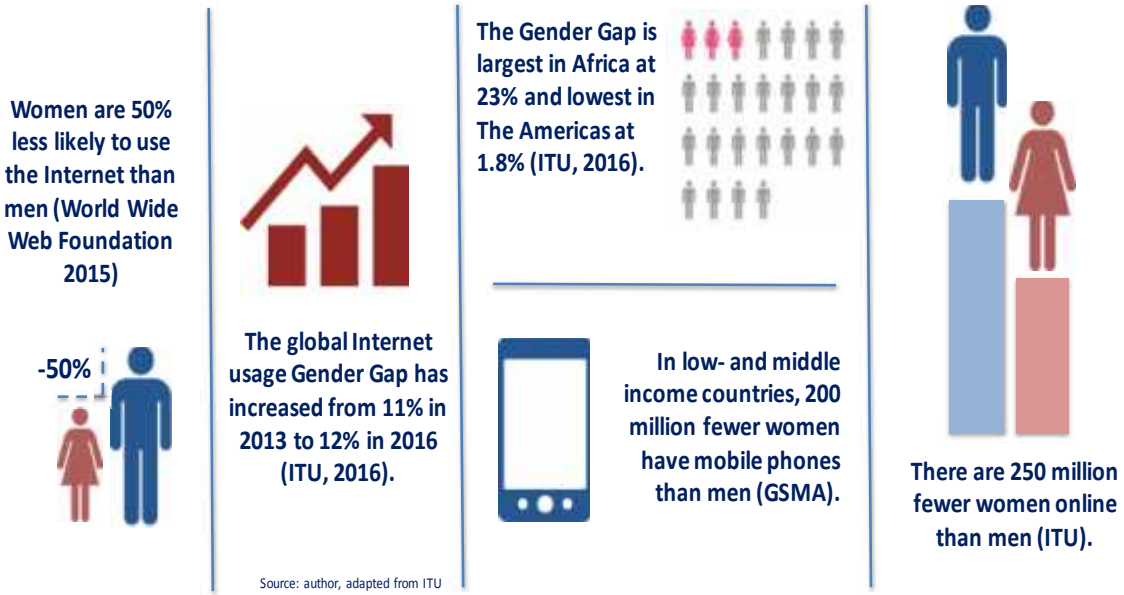
Providing a communication equipment for the government that is critical in:

- Coordinating rescue and relief operations;
- Setting up telemedicine links between hospitals and medics in the field
- Providing call centers where disaster victims can contact their loved ones
- Coordinating infrastructure recovery/re-building operations.

# SDG5 Gender Equality

Fast forward together #ICT4SDG

- Gender gap in mobile phone ownership and use is higher in lower-income and less connected countries





**Over 7,200 events in 160 countries, empowering more than 240,000 girls and young women globally.**

Source: Discussion paper for Davos, Connecting the Unconnected – Working together to achieve Connect 2020 Agenda Targets ITU data

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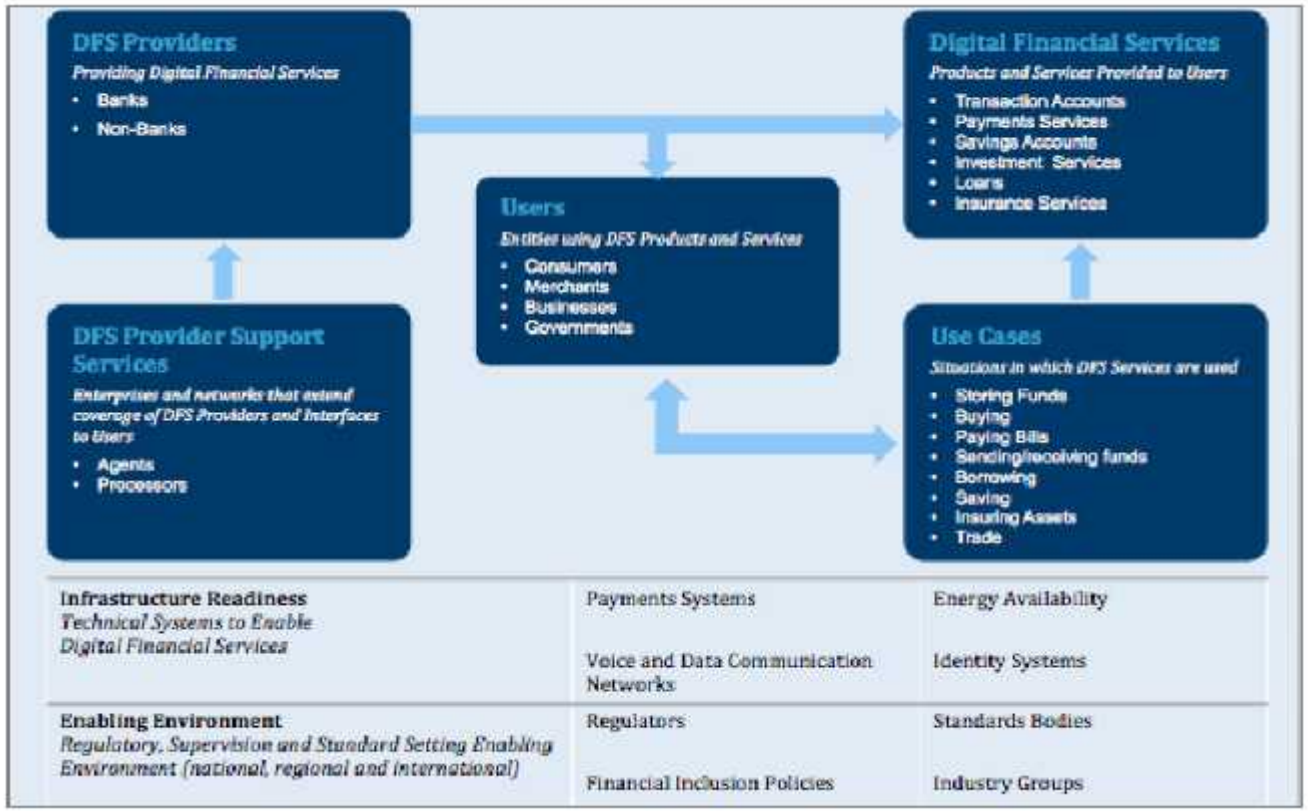
# Innovation Opportunities : Digital Financial Inclusion




ICT Infrastructure

ICT applications and services

Devices

Source: ITU-T Focus Group Digital Financial Services Outputs

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# ICTs for Innovation and SME

ITU-TRCSL Training on
ICTs for promoting Innovation & Entrepreneurship
12-15 September, 2017
Colombo, Sri Lanka

Objectives

ICTs play an important role in socio economic development of a country through job creation and entrepreneurship. ICT based business can be powerful tool for economic growth. Keeping this importance in mind, TRCSL Sri Lanka and ITU jointly initiated training courses on "ICTs for promoting Innovation and Entrepreneurship" in Colombo and provincial areas of Sri Lanka.

The main objectives of the training course are to:

- Increase practical entrepreneurial skills among students that will allow them to pursue their entrepreneurial aspirations and succeed and grow their businesses.
- Train the trainers who will introduce the course on provincial level; and
- Analyze Case studies on different countries of Asia-Pacific region, so that international best practices can be considered.

Target Audience

The training is aimed to build capacity under "Train the trainers" initiative who will conduct similar training courses in provincial areas of Sri Lanka. The target audiences are as follows:

- 50 students and trainers in Colombo
- 200 students in four provinces

Medium of Instruction

The training course in Colombo will be carried out in English.

The trainings in provinces would be used in English and vernacular as combination.

Webpage

http://www.itu.int/en/ITU-D/Regional-Presence/AsiaPacific/Pages/Events/2017/Sep-PIE/main.aspx

NEWS 24

Training begins to promote the Innovation and Entrepreneurship field



http://www.itu.int/en/ITU-D/Regional-Presence/AsiaPacific/Pages/Events/2017/Sep-PIE/main.aspx

# I Thank U (ITU)

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